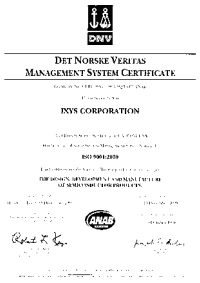
IXYS
Efficiency Through Technology

Contents

Sales Representatives and Distributors:
See "Sales Offices" at
www.ixys.com

QA and Environmental Management Systems

		Certificates
IXYS Power	ISO 9001:2000	
IXYS Semiconductor GmbH	ISO/TS 16949:2004 (includes ISO 9001:2000) ISO 14001:2004 OHSAS 18001:1999	
CLARE	ISO 9001:2000	
micronix	ISO 9001:2000	
WESTCODE	BS EN 9001:2000	 
MwT MicroWave Technology	ISO 9001:2000	

Microwave Technology Inc.
4268 Solar Way
Fremont, CA 94538

ISO 9001:2000

Alphanumeric Index

○ Not for new design
➢ New

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Westcode

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Symbols and Terms

a	Acceleration
BV_{CES}	Collector emitter breakdown voltage
BV_{DSS}	Drain source breakdown voltage
C_{ies}, C_{iss}	Input capacitance
C_{oes}, C_{oss}	Output capacitance
C_{res}, C_{rss}	Reverse transfer (Miller) capacitance
d	Duty cycle
d_A	Strike distance through air
di/dt, - di/dt	Rate of change of current
$(di/dt)_{cr}$	Critical rate of rise of current
di_F/dt, $-di_F/dt$	Rate of change of forward current
d_S	Creep distance on surface
dv/dt	Rate of rise of voltage
$(dv/dt)_{cr}$	Critical rate of rise of voltage
E_{AR}	Repetitive avalanche energy
E_{AS}	Non-repetitive avalanche energy
E_{off}	Turn-off energy per pulse
E_{on}	Turn-on energy per pulse
$E_{rec(off)}$	Reverse recovery losses at turn-off
$F_{(mounting)}$	Required force to mount hole-less discretes on heat sink
g_{fs}	Forward transconductance
I_{AR}	Repetitive avalanche current
I_{AVM}	Maximum average forward current
I_{BO}	Breakover current
$I_{C(on)}$	Short circuit current
I_C	Collector current
I_{C25}	Continuous DC collector current at T_C = 25°C
I_{C90}	Continuous DC collector current at T_C = 90°C
I_{CES}	Collector emitter leakage current
I_{CM}	Maximum pulsed collector current
I_D	Drain current
I_{DD}	Module supply current, operating mode
I_{DD0}	Module supply current, standby mode
$I_{D(cont)}$	Continuous drain current
I_{D25}	Continuous drain current at T_C = 25°C
I_{DAV}	Average DC output current
$I_{D(AV)M}$	Maximum average DC output current
I_{DM}	Maximum pulsed drain current
I_{DRM}	Maximum repetitive off-state current
$I_{D(RMS)}$	RMS output current
I_{DSS}	Drain source leakage current
I_F, I_T	Forward current
I_{FM}	Maximum forward current
I_{FAV}	Average forward current
$I_{F(AV)M}$, $I_{T(AV)M}$	Maximum average forward current
I_{FLT}	Sink current of fault terminal
I_{FRM}	Maximum repetitive forward current
$I_{F(RMS)}$, $I_{T(RMS)}$	RMS forward current
I_{FSM}, I_{TSM}	Maximum surge forward current
I_G, I_{GT}	Trigger gate current
I_{GD}	Non-trigger gate current
I_{GES}	Gate emitter leakage current
I_H	Holding current
$I_{IN(H)}$	Signal input current (high level)
$I_{IN(L)}$	Signal input current (low level)
I_{ISOL}	RMS current for isolation test
I_L	Latching current
I_R	Reverse current
I_{RM}	Maximum reverse recovery current
I_{RMS}	RMS current
I_{RRM}	Maximum repetitive reverse current
I_S	Continuous source current
I_{SM}	Maximum pulsed source current
I^2t	I^2t value for fusing
I_{TSM}	Maximum surge on-state current
K_f	Characteristic factor
K_p	Coeff. for energy per pulse Ep (material constant)
K_T	Temperature coefficient of VBO
L	Series stray inductance
M_d	Mounting torque
P_C	Collector power dissipation
P_D	Power dissipation
P_{GAV}	Average gate power dissipation
$P_{G(AV)M}$	Maximum average gate power dissipation
P_{GM}	Maximum gate power dissipation
P_{RSM}	Maximum surge reverse power dissipation
P_T, P_{tot}	Total power dissipation
Q_g	Total gate charge
Q_{gc}	Gate collector (Miller) charge
Q_{gd}	Gate drain (Miller) charge
Q_{ge}	Gate emitter charge
Q_{gs}	Gate source charge
Q_r	Reverse recovery charge
Q_{RM}	Reverse recovery charge (intrinsic diode)
Q_S	Recovered charge to IRM

Symbols and Terms

RBSOA	Reverse Bias Safe Operating Area
$R_{DS(on)}$	Static drain source on resistance
R_{FI}	Radio frequency interference (= EMI)
R_G	Gate resistance
R_{GE}	Gate emitter resistance
rT	Slope resistance (for power loss calculation only)
R_{thCK}; R_{thCH}	Thermal resistance case to heatsink
R_{thJA}	Thermal resistance junction to ambient
R_{thJC}	Thermal resistance junction to case
R_{thJK}; R_{thJH}	Thermal resistance junction to heatsink
R_{thJS}	Thermal resistance junction to heatsink
R_{thJW}	Thermal resistance junction to water
R_{thKA}	Thermal resistance heatsink to ambient
SCSOA	Short Circuit Safe Operating Area
T_{amb}, T_A	Ambient (cooling medium) temperature
T_C, T_{case}	Case temperature
$t_{d(off)}$	Turn-off delay time
$t_{d(on)}$	Turn-on delay time
t_{fi}	Current fall time (inductive load)
t_{fr}	Forward recovery time
t_{FLT}	Overcurrent or short circuit trip delay time
t_{gd}	Gate controlled delay time
T_J, T_{VJ}	Virtual junction temperature
T_{JM}, T_{VJM}	Maximum virtual junction temperature
T_K, T_H, T_S	Heatsink temperature
T_L	Lead temperature
$T_{S(max)}$	Maximum allowable heatsink temperature
T_{stg}	Storage temperature
t_P	Pulse time
t_q	Turn-off time
t_r	Current rise time
t_{rr}	Reverse recovery time
t_{rv}	Rise time of collector emitter voltage
t_{SC}	Short circuit duration
V_{BO}	Breakover voltage
V_{CE}	Collector emitter voltage
$V_{CE(sat)}$	Collector emitter saturation voltage
$V_{CE(sat)FLT}$	Collector emitter saturation voltage to indicate fault
V_{CEK}	Collector emitter clamp voltage on chip level
V_{CES}	Collector emitter voltage
V_{CGR}	Collector gate voltage
V_{DD}	Module supply voltage
$V_{DD\ FLT}$	Module supply voltage without fault
V_{DGR}	Drain gate voltage
V_{DRM}	Maximum repetitive forward blocking voltage
V_{DS}	Drain source voltage
V_{DSM}	Max. non-repetitive forward blocking voltage
V_{DSS}	Drain source breakdown voltage
Version	Various construction designs of products
V_F	Forward voltage
V_{FLT}	Voltage at fault terminal
V_{FR}	Forward recovery voltage
V_{GD}	Gate non-trigger voltage
V_{GE}	Gate emitter voltage
$V_{GE(th)}$	Gate emitter threshold voltage
V_{GEM}	Maximum transient collector gate voltage
V_{GES}	Maximum DC gate voltage
V_{GS}	Gate source voltage
$V_{GS(th)}$	Gate threshold voltage
V_{GSM}	Maximum transient gate source voltage
V_{GT}	Gate trigger voltage
V_H	Holding voltage
V_{IN}	Input control voltage
$V_{IN(H)}$	Input voltage threshold for IGBT turn-on
$V_{IN(L)}$	Input voltage threshold for IGBT turn-off
V_{ISOL}	Isolation voltage
V_R	Reverse voltage
V_{RES}	Input voltage threshold for Reset = active
V_{RGM}	Maximum reverse gate voltage
V_{RRM}	Maximum repetitive reverse voltage
V_{RSM}	Maximum non-repetitive reverse voltage
VSD	Forward voltage drop
V_T	Forward voltage
V_{T0}	Threshold voltage (for power loss calculation)
Z_{thJC}	Transient thermal impedance junction to case
Z_{thJK}, Z_{thJH}	Transient thermal impedance junction to heatsink

Semiconductor Catalog, Edition 2008

Note
As far as patents or other rights of third parties are concerned, liability is only assumed for components per se, not for applications, processes and circuits implemented with components or assemblies. The information describes the type of component and shall not be considered as assured characteristics.
Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability. Terms of delivery and rights to change design or specifications are reserved.
Changes have been made to earlier published specifications. The data herein supersedes all previously published informations.

Life support applications
IXYS products used in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury must be expressly authorized for such purposes.

Nomenclature

CAPSULE DEVICES

W 0646 W C 15 0 **(Sample)**

Device Type

W Rectifier diode
M Fast/soft recovery diode
F Extra fast diode
E HP Sonic-FRD™
N Phase control thyristor
R Distributed gate thyristor
P Fast turn-off thyristor
K Medium voltage thyristor
A Asymmetric thyristor (refer to Factory)
T Press-Pack IGBT capsule
S Symmetrical Gate Turn-off thyristor
H Fast Symmetrical Gate Turn-off thyristors
G Anode Short Gate Turn-off thyristors
Y Pulse Thyristors

0646 ***Device nominal current rating***
***** For devices exceeding 9999 amperes, digit 5 of the part number changes to C, D or E

Pole face Diameter

W 19 mm
Y 25 mm
K 29 mm
J 32 mm
L 34 mm
Q 38 mm
D 44.4 mm
N 47 mm
M 50 mm
P 57 mm
V 63 mm
H 68 mm
Z 73 mm
T 75 mm
E 85 mm
F 99 mm
G 125 mm

tq Code			
0	No code		
A	10	M	70
B	12	N	100
C	15	P	120
D	20	R	140
E	25	S	160
F	30	T	200
G	35	V	250
H	40	W	300
J	50	X	400
K	60	Y	500
L	65	Z	1000

Housing Type

A IGBT Capsule 26 mm (N, T, E, G)
B Welding Diodes 8 mm (D, P)
C Standard outline 14 mm (W, Y) 16 mm (K) 26 mm (L, Q, M, T, E) 26.5 mm (N) 33 mm (V) 36 mm (F, G) 37 mm (Z)
D Slim pack 21 mm (N), 24 mm (V, Z), Thick pack 26 mm (Z, F, G)
F Slim pack 19.5 mm (L), Thick pack 26 mm (K, N, V), 35 mmm (Z)
G Thick pack 35 mm (L, N)
H Slim pack 14 mm (N), Thick pack 26 mm(Y) or slotted 32 mm (V)
J Slim pack 19.5 mm (N) or Special thick pack 25.8 mm (V)
K Wespack 14.5 mm (J, Q, M, H)
L Wespack 26 mm (Q, M), -GTO 26 mm (L, N), 35 mm (V)
M Wespack 33 mm (H)
R Wespack 14 mm (Q), Standard 26 mm (N)
S 'S' housing 14 mm (Y), 26 mm (L), 27 mm (N)
T 'C' housing explosion rated (N, V, Z, T, F)
V 'D' housing explosion rated (V, Z, T)
W 'F' housing explosion rated (Z)
Y 'C' housing extended explosion rating (Z)

15 ***Voltage grade*** = V_{RRM} / V_{DRM} ÷ 100

V_{RRM} % of V_{DRM} for GTO's	
0	100
D	80
Y	100 V

0 ***t_q code or V_{RRM} % of V_{DRM} for GTO thyristors, or for Press-Pack IGBTs***
P PIN diode (Product Groups: W, M, F and E)

Nomenclature

STUD DEVICES

W 0508 S A 04 0 (Sample)

Device type

W Rectifier diode
M Fast/soft recovery diode
N Phase control thyristor
P Fast turn-off thyristor

0508 ***Device nominal current rating***

Polarity

S Normal
R Reverse (diode only)

Package

A ¾“ stud glass/metal
B ¾“ stud glass/metal stud removed
C ¾“ stud ceramic
D ¾“ stud ceramic stud removed
E ¾“ HV ceramic stud with lug
F ¾“ HV ceramic stud
G ¾“ ceramic stud with lug
H ½“ stud ceramic
J ½“ stud ceramic with flag
K M12 stud ceramic
L M12 stud ceramic with lug
M $^{3}/_{8}$“ stud ceramic
S 60 mm² square base
T ¾“ metal stud with 130 mm lead

15 ***Voltage grade*** = V_{RRM} / V_{DRM} ÷ 100

tq code

0 No code
A 10
B 12
C 15
D 20
E 25
F 30
G 35
H 40
J 50
K 60
L 65
M 70
N 100
P 120
R 140
S 160
T 200
V 250
W 300
X 400
Y 500
Z 1000

PRESS-PACK IGBT CAPSULE DEVICES

T 0240 N A 45 E

Device type

T Press-pack IGBT thyristor

0240 ***Device pulse current rating***

Pole face Diameter

E 85 mm
G 125 mm
N 47 mm
T 75 mm
V 63 mm

Die Series

C
A

45 ***Voltage grade***

Build Description for multiple square die

A Fully rated diode
E No diode
G IGBT to diode ratio of 2:1

Patents and Intellectual Property

IXYS products, listed in the Selector Guide, are covered in part or whole by the following patents.

Micronix

US 6,594,606
US 6,828,850
US 6,943,500
US 6,943,761
US 6,963,321
US 6,965,360
US 6,972,742
US 6,995,737

IXYS Colorado

US 4,891,686
US 5,640,045

MwT

US 4,596,959
US 4,677,391
US 4,768,005
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US 5,449,930
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123012 (South Korea)

Westcode

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EP 1168446
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GB 2264662
IN 181278
JP 11238826
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US 6678163
US 6303974
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US 5380598

IXYS GmbH

AT 406434
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DE 101 22 837
DE 101 60 361
DE 103 03 103
DE 102 01 378
DE 196 09 929
DE 196 30 902
DE 10 2004 022 724
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Clare

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IXYS Corp.

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US 4,860,072
US 4,876,517
US 4,881,106
US 4,890,013
US 4,912,619
US 4,931,844
US 4,970,576
US 4,972,043
US 5,017,508
US 5,034,796
US 5,049,961
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US 5,168,076
US 5,172,211
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US 5,500,616
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US D420 983

Optically Isolated Solid State Relays

The OptoMOS™ line of Solid State Relays uses discrete semiconductor components and the patented OptoMOS™ architecture to deliver fast, reliable, bounce-free switching in a compact design. From the world's smallest single pole, high-voltage, 4-pin relay to multi-pole and multifunction devices, OptoMOS™ products are an ideal solid state replacement for larger reed and electromechanical relays. Compared to older electromagnetic technologies, Clare OptoMOS™ relays offer significantly lower drive current, small package size, no susceptibility to magnetic interference, and solid state reliability. All of these are key requirements for the design of today's complex low-power, multichannel products.

The small single pole 4-pin SOP relays combine our state-of-the-art, double-molded, vertical-construction packaging with high performance to give you a reliable product with 20% savings in board space compared to other 4-pin products.

Dual pole OptoMOS™ relays combine two independent relays into a single 8-pin package paving the way for designers to condense functionality using a single component. Common-input OptoMOS™ relays provide a design alternative where two independent outputs are driven by the same input signal.

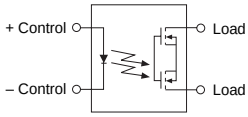
Features

- Low drive current
- High reliability
- No EMI/RFI generation
- Arc-free with no snubbing circuits
- Machine insertable, wave solderable
- AC/DC switching
- Current limiting (available)
- FCC compatible
- Low off state leakage

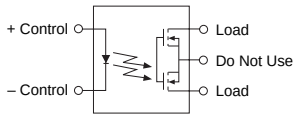
Applications

- Telecommunications/ Datacommunications
- Instrumentation
- Multiplexers
- Data acquisition/Electronic switching
- I/O subsystems
- Meters (watt-hour, water, gas)
- Medical equipment (patient/ equipment isolation)
- Security
- Aerospace
- Industrial controls

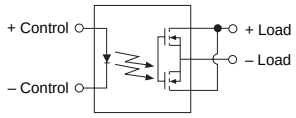
Block diagrams



AC/DC Configuration



DC Only Configuration



Single Pole Normally Open: 1-Form-A - Operational temperature range of -40^0 to 85^{0}C

➤ New	Part Number	Load Voltage V	Load Current mA	On Resistance Ω	Input Control Current mA	Switching Speeds T_{ON}/T_{OFF} ms	Isolation Voltage V_{rms}	Package Type ①	Features
	CPC1008N	100	150	8	2	2 / 0.5	1500	4-Pin SMT	
	CPC1016N	100	100	16	2	2 / 0.5	1500	4-Pin SMT	
	CPC1017N	60	100	16	1	10 / 10	1500	4-Pin SMT	
	CPC1018N	60	600	0.8	2	2 / 1	1500	4-Pin SMT	
➤	**CPC1020N**	30	1000	0.25	2	5 / 5	1500	4-Pin SMT	
	CPC1025N	400	120	30	2	2 / 1	1500	4-Pin SMT	
	CPC1030N	350	120	30	2	2 / 1	1500	4-Pin SMT	
	CPC1035N	350	100	35	2	2 / 1	1500	4-Pin SMT	
➤	**CPC1225N**	400	120	30	2	2 / 1	1500	4-Pin SMT	Supplementary Isolation
	CPC1230N	350	120	30	2	2 / 1	1500	4-Pin SMT	Supplementary Isolation
➤	**CPC1317**	70	150	16	1	2.5 / 2.5	3750	8-Pin SMT	Bidirectional TVS Protection
➤	**CPC1330**	350	120	30	2	2 / 1	5000	4-Pin SMT, TH	
➤	**CPC1335P**	350	100	35	1	10 / 10	3750	8-Pin SMT	Bidirectional TVS Protection
➤	**CPC1390**	400	140	22	2	1 / 0.5	5000	4-Pin SMT, TH	
➤	**CPC1393**	600	100	50	5	5 / 5	5000	4-Pin SMT, TH	
	CPC1510	250	200	15	5	2 / 2	3750	6-Pin SMT, TH	Active Current Limit, Thermal Shutdown, Speed Enhancement
➤	**CPC1560**	60	300	5.6	1	0.1 / 0.4	3750	8-Pin SMT, TH	
	LCA100	350	120	25	5	5 / 5	3750	6-Pin SMT, TH	
	LCA100L	350	120	25	5	5 / 5	3750	6-Pin SMT, TH	Current Limit
	LCA110	350	120	35	2	3 / 3	3750	6-Pin SMT, TH	
	LCA110L	350	120	35	2	3 / 3	3750	6-Pin SMT, TH	Current Limit
	LCA120	250	170	20	5	5 / 5	3750	6-Pin SMT, TH	
	LCA120L	250	150	20	5	3 / 3	3750	6-Pin SMT, TH	Current Limit
	LCA125	350	170	16	5	5 / 5	3750	6-Pin SMT, TH	
	LCA125L	350	170	20	5	5 / 5	3750	6-Pin SMT, TH	Current Limit

Optically Isolated Solid State Relays

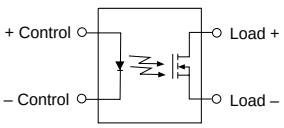
Single Pole Normally Open: 1-Form-A - Operational temperature range of -40⁰ to 85⁰C

Part Number ➤ New	Load Voltage V	Load Current mA	On Resistance Ω	Input Control Current mA	Switching Speeds T_{ON}/T_{OFF} ms	Isolation Voltage V_{rms}	Package Type ①	Features
LCA126	250	170	15	5	5 / 5	3750	6-Pin SMT, TH	
LCA127	250	200	10	5	5 / 5	3750	6-Pin SMT, TH	
LCA127L	250	170	15	5	5 / 5	3750	6-Pin SMT, TH	Current Limit
LCA129	250	170	20	2	8 / 8	3750	6-Pin SMT, TH	
LCA710	60	1000	0.5	10	2.5 / 0.25	3750	6-Pin SMT, TH	
LCA712	60	1000	0.5	10	2.5 / 0.5	3750	6-Pin SMT, TH	Low Off-State Leakage 10nA
LCA715	60	1800	0.25	10	5 / 2	3750	6-Pin SMT, TH	High Load Current
➤ **LCA717**	30	2000	0.15	2	3 / 3	3750	6-Pin SMT, TH	
LCA182	350	120	35	0.25	3 / 3	3750	6-Pin SMT, TH	Ultra Low Input Control Current
OMA160	250	50	100	10	0.125/0.125	3750	6-Pin SMT, TH	Low Off-State Leakage 25nA
PLA110	400	150	22	5	1 / 0.25	3750	6-Pin SMT, TH	
PLA110L	400	150	25	5	1 / 0.25	3750	6-Pin SMT, TH	Current Limit
PLA132	60	600	1	5	5 / 2	3750	6-Pin SMT, TH	
PLA134	100	350	3	5	5 / 5	3750	6-Pin SMT, TH	
PLA140	400	250	8	5	3 / 1	3750	6-Pin SMT, TH	
PLA140L	400	170	13	5	5 / 3	3750	6-Pin SMT, TH	Current Limit
PLA143	600	100	50	2	5 / 5	4000	6-Pin SMT, TH	
PLA150	250	250	7	5	2.5 / 0.5	3750	6-Pin SMT, TH	
PLA160	300	50	100	10	0.05 / 0.05	3750	6-Pin SMT, TH	Low Off-State Leakage 25nA
PLA170	800	100	50	5	5 / 5	3750	6-Pin SMT, TH	
PLA190	400	150	22	5	1 / 0.5	5000	6-Pin SMT, TH	
PLA191	400	250	8	5	1.5 / 0.25	5000	6-Pin SMT, TH	
PLA192	600	150	22	5	5 / 5	5000	6-Pin SMT, TH	
PLA193	600	100	50	5	5 / 5	5000	6-Pin SMT, TH	
XCA170	350	100	50	5	5 / 5	3750	6-Pin SMT, TH	

Single Pole Normally Open: 1-Form-A DC-Only - Operational temperature range of -40⁰ to 85⁰C

Part Number	Load Voltage V	Load Current mA	On Resistance Ω	Input Control Current mA	Switching Speeds T_{ON}/T_{OFF} ms	Isolation Voltage V_{rms}	Package Type ①	Features
CPC1002N	60	700	0.55	2	5 / 2	1500	4-Pin SMT	
CPC1004N	100	300	4	2	3 / 1	1500	4-Pin SMT	Operat. Temperat. to +110°C

Block diagram



① For Package Type, SMT indicates Surface Mount Technology while TH indicates Through-hole.

Optically Isolated Solid State Relays

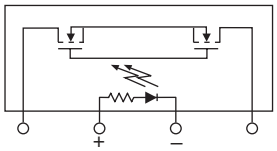
Single Pole Normally Open: 1-Form-A Voltage Controlled - Operational temperature range of -40⁰ to 85⁰C

Part Number ➤ New	Load Voltage V	Load Current mA	On Resistance Ω	Input Control Voltage V	Switching Speeds T_{ON}/T_{OFF} ms	Isolation Voltage V_{rms}	Package Type	Features
➤ **CPC1217Y**	60	200	16	5-12	5 / 5	2500	4-Pin SIP	Reed Relay
➤ **CPC1218Y**	60	600	0.8	5-12	5 / 5	2500	4-Pin SIP	Replacement

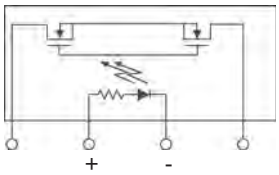
Single Pole Normally Open: 1-Form-B Voltage Controlled - Operational temperature range of -40⁰ to 85⁰C

➤ **CPC1219Y**	60	200	16	5-12	5 / 5	2500	4-Pin SIP	

Block diagram CPC1217Y + CPC1218Y



Block diagram CPC1219Y

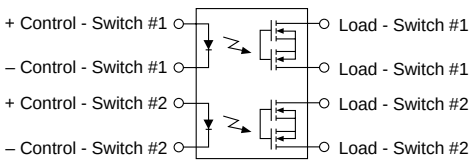


Dual Independent Single Pole Normally Open: Dual 1-Form-A
Operational temperature range of -40⁰ to 85⁰C

Part Number	Load Voltage V	Load Current mA	On Resistance Ω	Input Control Current mA	Switching Speeds T_{ON}/T_{OFF} ms	Isolation Voltage V_{rms}	Package Type ①	Features
LAA100	350	120	25	5	5 / 5	3750	8-Pin SMT, TH	
LAA100L	350	120	25	5	5 / 5	3750	8-Pin SMT, TH	Current Limit
LAA110	350	120	35	5	3 / 3	3750	8-Pin SMT, TH	
LAA110L	350	120	35	5	3 / 3	3750	8-Pin SMT, TH	Current Limit
LAA120	250	170	20	5	5 / 5	3750	8-Pin SMT, TH	
LAA120L	250	150	25	5	5 / 5	3750	8-Pin SMT, TH	Current Limit
LAA125	350	170	16	5	5 / 5	3750	8-Pin SMT, TH	
LAA125L	350	150	20	5	5 / 5	3750	8-Pin SMT, TH	Current Limit
LAA126	250	170	15	5	5 / 5	3750	8-Pin SMT, TH	
LAA126L	250	170	20	5	5 / 5	3750	8-Pin SMT, TH	Current Limit
LAA127	250	200	10	5	5 / 5	3750	8-Pin SMT, TH	
LAA127L	250	170	15	5	5 / 5	3750	8-Pin SMT, TH	Current Limit
LAA710	60	1000	0.5	10	2.5 / 0.25	3750	8-Pin SMT, TH	
OAA160	250	50	100	3	0.125/0.125	3750	8-Pin SMT, TH	Low Off-State Leakage 25nA
PAA110	400	150	22	5	1 / 0.25	3750	8-Pin SMT, TH	
PAA110L	400	150	25	5	1 / 0.25	3750	8-Pin SMT, TH	Current Limit
PAA132	60	600	1	5	5 / 2	3750	8-Pin SMT, TH	
PAA140	400	250	8	5	1.5 / 0.25	3750	8-Pin SMT, TH	
PAA140L	400	200	13	5	5 / 3	3750	8-Pin SMT, TH	Current Limit
PAA150	250	250	7	5	2.5 / 0.5	3750	8-Pin SMT, TH	
PAA190	400	150	22	5	1 / 0.5	5000	8-Pin SMT, TH	
PAA191	400	250	8	5	3 / 1	5000	8-Pin SMT, TH	
PAA193	600	100	50	5	5 / 5	5000	8-Pin SMT, TH	
XAA170	350	100	50	5	5 / 5	3750	8-Pin SMT, TH	

① For Package Type, SMT indicates Surface Mount Technology while TH indicates Through-hole.

Block diagram

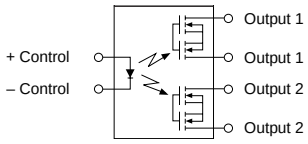


Common Input, Dual Pole: 2-Form-A- Operational temperature range of -40⁰ to 85⁰C

Part Number	Load Voltage V	Load Current mA	On Resistance Ω	Input Control Current mA	Switching Speeds T_{ON}/T_{OFF} ms	Isolation Voltage V_{rms}	Package Type ①	Features
LCA210	350	85	35	8	3 / 3	3750	8-Pin SMT, TH	
LCA210L	350	100	35	5	4 / 4	3750	8-Pin SMT, TH	Current Limit
LCA211	350	85	35	8	1 / 1.2	3750	8-Pin SMT, TH	
LCA220	250	120	20	10	5 / 5	3750	8-Pin SMT, TH	

① For Package Type, SMT indicates Surface Mount Technology while TH indicates Through-hole.

Block diagram

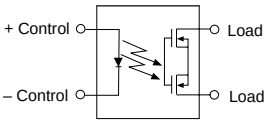


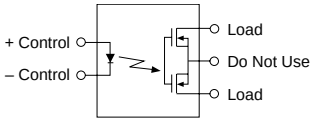
Single Pole Normally Closed: 1-Form-B - Operational temperature range of -40⁰ to 85⁰C

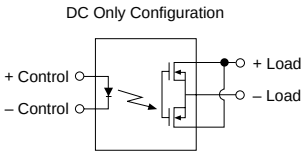
➤ New Part Number	Load Voltage V	Load Current mA	On Resistance Ω	Input Control Current mA	Switching Speeds T_{ON}/T_{OFF} ms	Isolation Voltage V_{rms}	Package Type ①	Features
➤ **CPC1117N**	60	150	16	1	1 / 2	1500	4-Pin SMT	
CPC1130N	350	120	30	2	2 / 2	1500	4-Pin SMT	
CPC1135N	350	120	35	1	2 / 2	1500	4-Pin SMT	
CPC1150N	350	120	50	2	1 / 2	1500	4-Pin SMT	
CPC1231N	350	120	30	2	2 / 2	1500	4-Pin SMT	Supplementary Isol.
LCB110	350	120	35	5	3 / 3	3750	6-Pin SMT, TH	
LCB111	350	120	35	2	5 / 5	3750	6-Pin SMT, TH	
LCB120	250	170	20	5	5 / 5	3750	6-Pin SMT, TH	
LCB126	250	170	15	5	5 / 5	3750	6-Pin SMT, TH	
LCB127	250	200	10	5	5 / 5	3750	6-Pin SMT, TH	
PLB150	250	250	7	5	1 / 2.5	3750	6-Pin SMT, TH	

① For Package Type, SMT indicates Surface Mount Technology while TH indicates Through-hole.

Block diagram





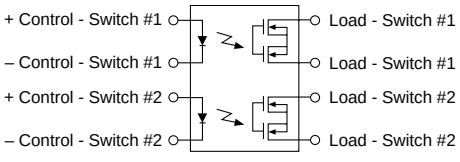


Dual Independent Single Pole Normally Closed: 1-Form-B - Operational temperature range of -40⁰ to 85⁰C

Part Number	Load Voltage V	Load Current mA	On Resistance Ω	Input Control Current mA	Switching Speeds T_{ON}/T_{OFF} ms	Isolation Voltage V_{rms}	Package Type ①
LBB110	350	120	35	5	3 / 3	3750	8-Pin SMT, TH
LBB120	250	170	20	5	5 / 5	3750	8-Pin SMT, TH
LBB126	250	170	15	5	5 / 5	3750	8-Pin SMT, TH
LBB127	250	200	10	5	5 / 5	3750	8-Pin SMT, TH
PBB150	250	250	7	5	2.5 / 2.5	3750	8-Pin SMT, TH
XBB170	350	100	50	5	5 / 5	3750	8-Pin SMT, TH

① For Package Type, SMT indicates Surface Mount Technology while TH indicates Through-hole.

Block diagram

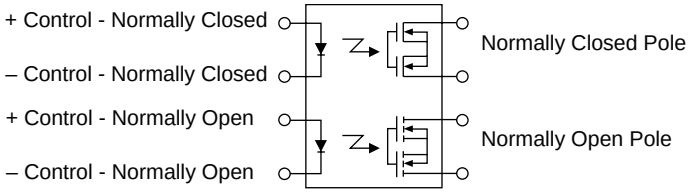


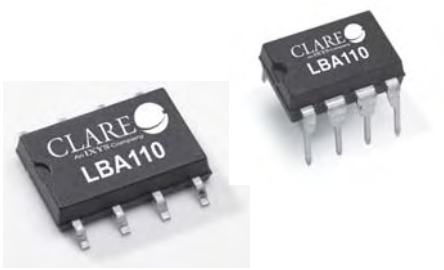
Dual Pole Combination: Form-A & B - Operational temperature range of -40⁰ to 85⁰C

Part Number	Load Voltage V	Load Current mA	On Resistance Ω	Input Control Current mA	Switching Speeds T_{ON}/T_{OFF} ms	Isolation Voltage V_{rms}	Package Type ①	Features
LBA110	350	120	35	2	3 / 3	3750	8-Pin SMT, TH	
LBA110L	350	120	35	5	3 / 3	3750	8-Pin SMT, TH	Current Limit
LBA120	250	170	20	5	5 / 5	3750	8-Pin SMT, TH	
LBA120L	250	150	25	5	5 / 5	3750	8-Pin SMT, TH	Current Limit
LBA126	250	170	15	5	5 / 5	3750	8-Pin SMT, TH	
LBA126L	250	150	20	5	5 / 5	3750	8-Pin SMT, TH	Current Limit
LBA127	250	200	10	5	5 / 5	3750	8-Pin SMT, TH	
LBA127L	250	150	15	5	5 / 5	3750	8-Pin SMT, TH	Current Limit
PBA150	250	250	7	5	2.5 / 2.5	3750	8-Pin SMT, TH	
XBA170	350	100	50	5	5 / 5	3750	8-Pin SMT, TH	

① For Package Type, SMT indicates Surface Mount Technology while TH indicates Through-hole.

Block diagram



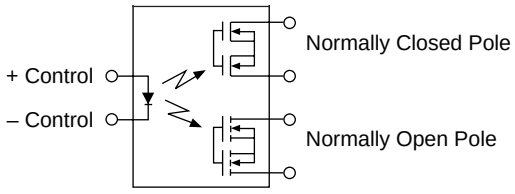


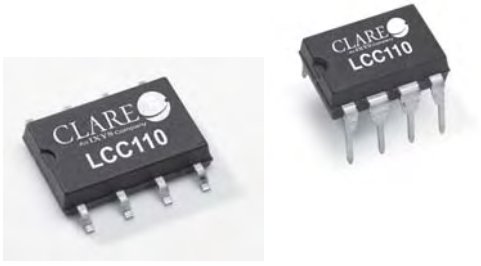
Common Input: 1-Form-C - Operational temperature range of -40⁰ to 85⁰C

Part Number	Load Voltage V	Load Current mA	On Resistance Ω	Input Control Current mA	Switching Speeds T_{ON}/T_{OFF} ms	Isolation Voltage V_{rms}	Package Type ①
LCC110	350	120	35	8	4 / 4	3750	8-Pin SMT, TH
LCC120	250	170	20	10	5 / 5	3750	8-Pin SMT, TH

① For Package Type, SMT indicates Surface Mount Technology while TH indicates Through-hole.

Block diagram





Optically Isolated AC-Power Switches

The OptoMOS™ line of power products use dual power SCR outputs to produce an alternative to optocoupler and Triac circuits. These AC Power Switches are robust enough to provide a blocking voltage of up to 800V_P. In addition, tightly controlled zero-cross circuitry ensures switching of AC loads without the generation of transients. The input and output circuits are optically coupled to provide 3750V_{rms} of isolation and noise immunity between control and load circuits. Long life and environmental integrity make these power switches ideal to control a variety of AC circuits in industrial environments where electromagnetic interference would disrupt the operation of electromechanical relays.

Features

- Load current up to 2A
- Blocking voltage up to 800V_P
- 5mA sensitivity
- Zero-crossing detection
- DC control, AC switching
- Optically isolated I/O
- TTL and CMOS compatible
- Low EMI and RFI generation
- High noise immunity
- VDE compatible
- Machine insertable, wave solderable
- Switching speed < 0.5 cycle

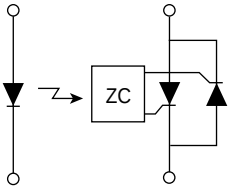
Applications

- Programmable controls
- Process control
- Power control panels
- Remote switching
- Gas pump electronics
- Contactors
- Large relay control circuits
- Solenoids
- Motor controls
- Heater controls

Operational temperature range of -40^0 to 85^{0}C

Part Number ➤ New	Blocking Voltage V_P	Load Current A_{rms}	Input Control Current mA	Operating Frequency min/max Hz	Isolation Voltage V_{rms}	Package Type	Features
CPC1943G	240	0.5	5	20 / 400	3750	D, E	
CPC1945G	400	1	5	20 / 400	3750	C	
CPC1945Y	400	1	5	20 / 400	3750	A	
➤ **CPC1961G**	600	0.2	5	20 / 400	3750	F, G	Dual
CPC1963G	600	0.5	5	20 / 500	3750	D, E	
CPC1965G	600	1	5	20 / 400	3750	C	
CPC1965Y	600	1	5	20 / 400	3750	A	
CPC1972G	800	0.25	5	20 / 500	3750	D, E	
➤ **CPC1976Y**	600	2	5	20 / 500	3750	B	
➤ **PD1201**	400	1	5	20 / 500	3750	C	
PD2401	500	1	5	20 / 500	3750	C	
PD2601	600	1	5	20 / 500	3750	C	
PM1204	400	0.5	5	20 / 500	3750	D, E	
PM1205	500	0.5	5	20 / 500	3750	D, E	
PM1206	600	0.5	5	20 / 500	3750	D, E	
PS1201	400	1	5	20 / 500	3750	A	
PS2401	500	1	5	20 / 500	3750	A	
PS2601	600	1	5	20 / 500	3750	A	

Block Diagram



A

B

C

D

E

F

G

Power Solid State Relays

(Power dissipation greater than 1 Watt)

Power SIP, ISOPLUS™-264 and i4-PAC™ Relays

Clare and IXYS have joined forces to bring OptoMOS™ technology, reliability, and compact size to the new Power SIP, i4-PAC and ISOPLUS-264 series of power solid state relays. Development of these new products was founded on the blending of Clare's traditional strengths in the design and manufacture of photovoltaic integrated circuits (ICs), leadframe design, and multichip packaging with IXYS' expertise in power MOSFETs, power packages, and substrate technology.

The optically coupled MOSFET technology provides 2500V_{rms} of input to output isolation. Similar to Clare's solid state relays, the optically coupled output is controlled by a GaAlAs infrared LED.

Clare Power Relays are now offered in three package types: the **Power SIP**, the **i4-PAC**, and the **ISOPLUS-264**. The Power SIP package offers pin-to-pin compatibility with other solid state relays providing an easy upgrade path for existing designs and compatibility for new designs.

The i4-PAC and the ISOPLUS-264 packages feature a unique assembly process whereby the silicon is soft soldered onto a Direct Copper Bond (DCB) substrate rather than traditional bonding onto an epoxy encapsulated copper frame. This structure allows for a substantially lower junction-to-case thermal impedance when compared to conventionally assembled power relays. The i4-PAC thermal resistance is 0.35°C/W while the ISOPLUS-264 has an even lower impedance of 0.30°C/W.

Although exposed on the backside of these packages, the electrically non-conductive surface of the DCB ceramic substrate provides 2500V_{rms} of isolation to the package's electrically conductive power switching and control leads.

The combination of an electrically isolated non-conductive exterior and low thermal impedance makes the new i4-PAC and ISOPLUS-264 power relays an ideal solution for power applications preferring a non-biased heat sink with superior thermal management properties.

Features

- Handles loads up to 9A
- Voltage ratings up to 1000V_P
- Low On-resistance
- Non-conductive thermal pad for heat sink applications
- Industry standard 4-Pin SIP package
- Low input control current
- Low thermal impedances:
  0.30°C/W - ISOPLUS-264
  0.35°C/W - i4-PAC
  1.5°C/W - Power SIP

Applications

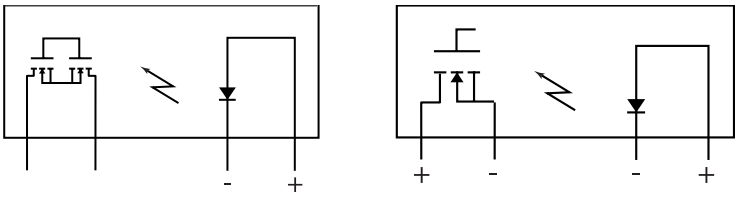
- Motor controls
- Robotics
- Medical equipment
- Railroad/traffic controls
- Consumer appliances
- Industrial control
- Test and measurement equipment

Specifications for: AC/DC Single Pole Power SIP, ISOPLUS-264 and i4-PAC Relays

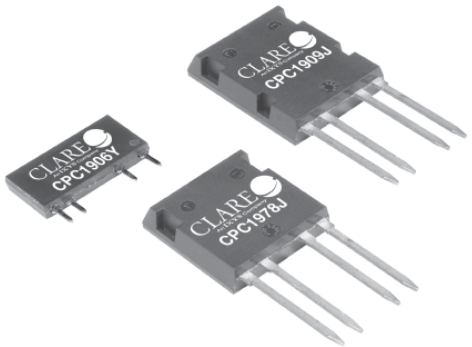
Part Number ② ➤ New	Blocking Voltage V_P	Load Curent No Heat Sink A_{rms}	Load Curent with Heat Sink ① A_{rms}	Load Curent with T_C=25°C A_{rms}	On Resistance Ω	Input Control Current mA	Switching Speeds T_{ON}/T_{OFF} ms	Package Type
CPC1906	60	2.0		-	0.3	10	10 / 5	Power SIP
CPC1908	60	3.5	8.5	15	0.3	10	20 / 5	i4-PAC
CPC1909	60	6.5	15.0	15	0.1	10	25 / 10	ISOPLUS-264
CPC1916Y	100	2.5		-	0.34	10	5 / 3	Power SIP
CPC1918	100	5.25	13.0	15	0.1	10	25 / 10	ISOPLUS-264
CPC1926Y	250	0.7		-	1.4	10	10 / 10	Power SIP
➤ **CPC1927**	250	2.7	6.7	15	0.2	10	25 / 10	ISOPLUS-264
CPC1967	400	1.35	3.35	13.15	0.85	10	20 / 5	i4-PAC
CPC1973Y	400	0.35		-	5.0	10	5 / 3	Power SIP
CPC1977	600	1.25	3.1	12.25	1.0	10	20 / 5	i4-PAC
CPC1978	800	0.75	1.85	7.25	2.3	10	20 / 5	i4-PAC
CPC1979	600	1.4	3.5	14.5	0.75	10	25 / 5	ISOPLUS-264
CPC1981Y	1000	0.18		-	18.0	10	10 / 5	Power SIP
CPC1986	1000	0.65	1.6	6.5	3.0	10	20 / 5	i4-PAC
CPC1988	1000	0.9	2.25	9.4	2.5	10	20 / 5	ISOPLUS-264

① *5°C/W Heat Sink,* ② *All parts provide 2500 V_{rms} of isolation voltage.*

Block Diagrams



DC Only



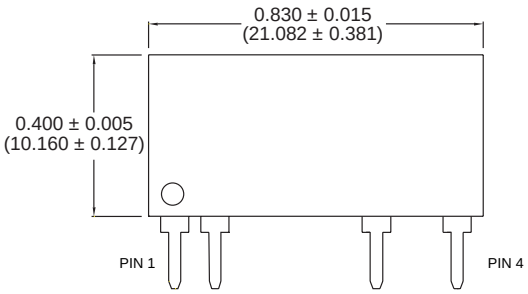
Specifications for: DC-only Single Pole i4-PAC Relays

Part Number ② ➤ New	Blocking Voltage V_P	Load Curent No Heat Sink A_{DC}	Load Curent with Heat Sink ① A_{DC}	Load Curent with T_C=25°C A_{DC}	On Resistance Ω	Input Control Current mA	Switching Speeds T_{ON}/T_{OFF}	Package Type
➤ **CPC1708**	60	4.0	11.85	24	0.08	10	20 / 5	i4-PAC
➤ **CPC1709**	60	9.0	22.8	32	0.05	10	20 / 5	ISOPLUS-264
CPC1718	100	6.75	17.5	32	0.075	10	20 / 5	ISOPLUS-264
CPC1727	250	3.4	8.6	20	0.09	10	20 / 5	ISOPLUS-264
CPC1777	600	1.5	4.6	15	0.5	10	20 / 5	i4-PAC
CPC1779	600	1.65	4.12	15	0.4	10	20 / 5	ISOLPLUS-264
CPC1786	1000	0.65	1.75	6.9	2.0	10	20 / 5	i4-PAC
CPC1788	1000	1.0	2.45	10.3	1.25	10	20 / 5	ISOPLUS-264

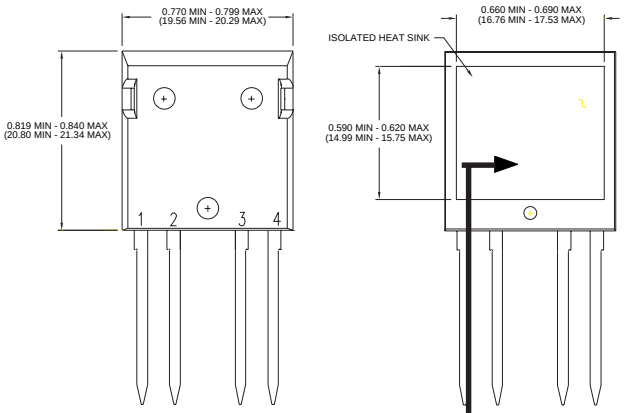
① *5°C/W Heat Sink,* ② *All parts provide 2500 V_{rms} of isolation voltage.*

Package Dimensions

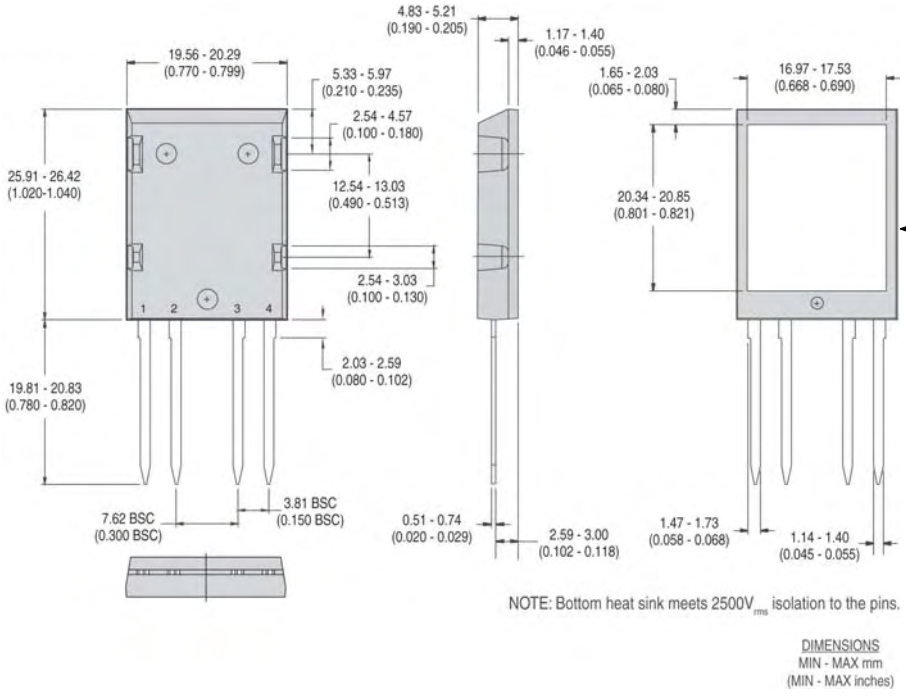
Power SIP



i4-PAC™



ISOPLUS264



Non-conductive thermal pad

NOTE: Bottom heat sink meets 2500V_{rms} isolation to the pins.

DIMENSIONS
MIN - MAX mm
(MIN - MAX inches)

Dimensions: inches (mm)

Linear Optocouplers and Isolation Amplifiers

OptoMOS™ Linear Optocouplers feature an infrared LED optically coupled to a pair of phototransistors. One feedback (input) phototransistor is used to generate a control signal that provides a servomechanism to the LED drive current thus compensating for the LEDs nonlinear time and temperature characteristics. The output phototransistor provides an isolated output signal that is linear with respect to the servo LED current.

OptoMOS™ Linear Isolation Amplifiers integrate a linear optocoupler with two independent LF356 op-amps in a single 16-pin package. These amplifiers can couple both AC and DC signals in either unipolar or bipolar modes, while providing $3750V_{rms}$ of input/output isolation. Using a servo control loop to compensate for the nonlinear time and temperature characteristics of the LED, these amplifiers distinguish themselves among conventional optocouplers by significantly improving linearity and stability.

Features

- Couples analog and digital signals
- $3750V_{rms}$ input/output isolation
- Wide bandwidth (>200kHz)
- High gain stability
- Low input/output capacitance
- Low power consumption
- 0.01% servo linearity
- THD 87dB typical
- Machine insertable, wave solderable
- VDE compatible

Applications

- Modem transformer replacement with no insertion loss
- Digital telephone isolation
- Power supply feedback voltage/current
- Medical sensor interfacing
- Isolation of process control transducers

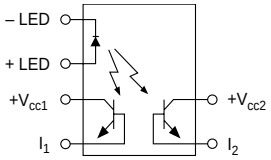
Operational temperature range of -40⁰ to 85⁰C

➤ Part Number New	Servo Gain K1	Forward Gain K2	Transfer Gain K3	Input Control Current mA	Isolation Voltage V_{rms}	Package Type ①
LOC110	0.004 / 0.030	0.004 / 0.030	0.55 / 1.43	2-10	3750	8-Pin SMT, TH
LOC111	0.008 / 0.030	0.006 / 0.030	0.733 / 1.072	2-10	3750	8-Pin SMT, TH
LOC112	0.004 / 0.030	0.004 / 0.030	0.55 / 1.43	2-10	3750	8-Pin SMT, TH
➤ **LOC117**	0.008 / 0.030	0.006 / 0.030	0.887 / 1.072	2-10	3750	8-Pin SMT, TH
LOC210P	0.004 / 0.030	0.004 / 0.030	0.733 / 1.072	2-10	3750	16-Pin SMT
LOC211P	0.008 / 0.030	0.006 / 0.030	0.733 / 1.072	2-10	3750	16-Pin SMT
LIA100	0.004 / 0.030	0.004 / 0.030	0.55 / 1.43	2-10	3750	16-Pin SMT
LIA101	0.004 / 0.030	0.004 / 0.030	0.733 / 1.072	2-10	3750	16-Pin SMT

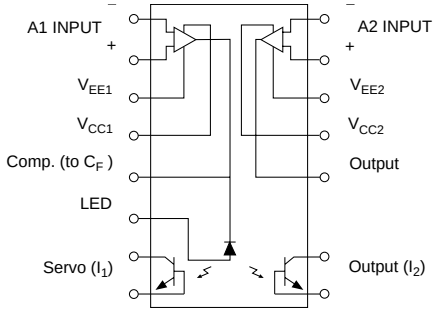
① *For Package Type, SMT indicates Surface Mount Technology while TH indicates Through-hole.*

Block Diagrams

LOC



LIA



Optically Isolated Error Amplifiers

Optically Isolated Linear Error Amplifiers combine Clare's optical technology with an industry standard 431-type precision programmable shunt regulator to provide linear isolated feedback for power supply designs. The LIA120 features matched photodiodes for linear high-gain response exhibiting excellent temperature stability for a total gain error of less than 2dB.

These devices are well suited for isolated high-gain feedback amplifiers that require excellent linearity and low temperature variation such as power supply feedback stages, modem and audio transformer replacements, industrial control signals, and sensor feedback.

Features

- Optocoupler, precision reference, and error amplifier in single package
- Low voltage operation 2.7V
- 3750 V_{rms} isolation
- Fully Matched IC Linear Optocoupler-LIA120
- 70dB Linearity (typ.) LIA120

Applications

- Power supply feedback
- Telecom central office supply
- Telecom bricks
- Modem transformer replacement

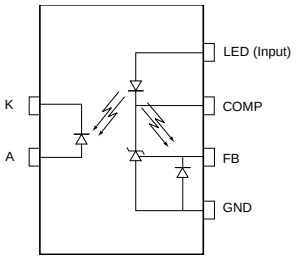
Operational temperature range of -40⁰ to 85⁰C

Part Number ➤ New	Reference Voltage	V_{REF} Tolerance	CTR K1	CTR K2	CTR Matching K3	Linearity V_{rms}	Isolation Voltage	Package Type ①
➤ **LIA120**	1.24V	1%	1 to 3%	1 to 3%	85 to 115%	70dB	3750	8-Pin SMT, TH
➤ **LIA130**	1.24V	1%	N/A	N/A	N/A	N/A	3750	8-Pin SMT, TH

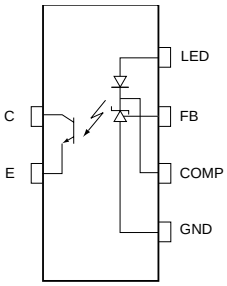
① *For Package Type, SMT indicates Surface Mount Technology while TH indicates Through-hole.*

Block Diagrams

LIA120



LIA130



Single and Dual Optocouplers

Single and dual OptoMOS™ products provide an optically isolated means of current detection or control of switching circuits. Devices offer a single or dual antiparallel LED input stage for unidirectional or bidirectional signal control to the optically coupled phototransistor output. The phototransistor output can be either a single transistor or, for greater gain, a darlington transistor.

These optocouplers allow for either AC or DC input circuits and are ideal for telecom, industrial control, and instrumentation circuits where electrical isolation of control circuitry is crucial.

Features

- AC and DC compatible inputs
- 3750V_{rms} input/output isolation
- Machine insertable, wave solderable

Applications

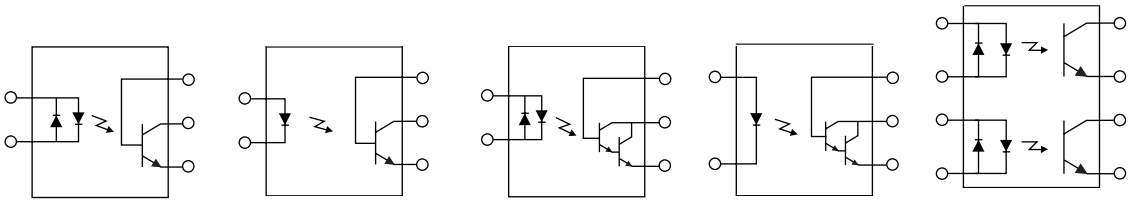
- Telecom switching
- Tip/ring circuits
- Modem switching (laptops, notebooks, PDAs)
- Loop detection
- Ringing detection
- Current sensing

Operational temperature range of -40⁰ to 85⁰C

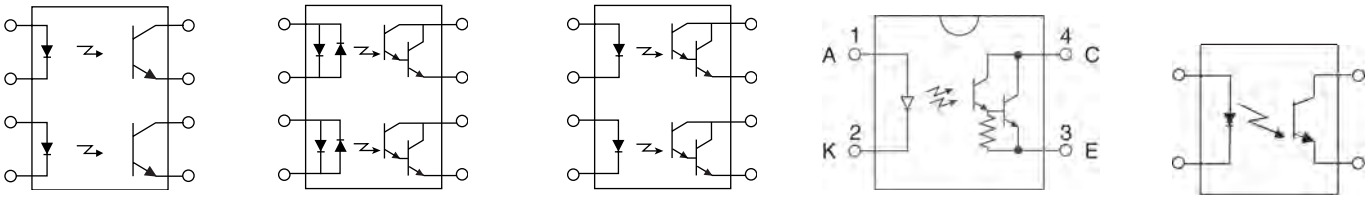
➤	Part Number New	Breakdown Voltage V	Nominal Current Transfer Ratio %	Saturation Voltage V	Input Control Current mA	Isolation Voltage V_{rms}	Package Type ①	Configuration
➤	**CPC1001N**	30	330	0.3	0.2	1500	4-Pin SMT	J
	CPC1301	350	5500	1	1	5000	4-Pin SMT, TH	I
	CPC1302	350	5500	1	1	3750	8-Pin SMT, TH	H
➤	**CPC1303**	30	1000	0.5	0.2	5000	4-Pin SMT, TH	J
	LDA100	20	100	0.5	6	3750	6-Pin SMT, TH	A
	LDA101	20	100	0.5	6	3750	6-Pin SMT, TH	B
➤	**LDA102**	30	350	0.5	1	3750	6-Pin SMT, TH	B
	LDA110	20	1000	0.8	2	3750	6-Pin SMT, TH	C
	LDA111	20	1000	0.8	2	3750	6-Pin SMT, TH	D
	LDA200	20	100	0.5	6	3750	8-Pin SMT, TH	E
	LDA201	20	100	0.5	6	3750	8-Pin SMT, TH	F
➤	**LDA202**	20	100	0.5	6	3750	8-Pin SMT, TH	E
➤	**LDA203**	20	100	0.5	6	3750	8-Pin SMT, TH	F
	LDA210	20	1000	0.8	2	3750	8-Pin SMT, TH	G
	LDA211	20	1000	0.8	2	3750	8-Pin SMT, TH	H
➤	**LDA212**	20	1000	0.8	2	3750	8-Pin SMT, TH	G
➤	**LDA213**	20	1000	0.8	2	3750	8-Pin SMT, TH	H

① *For Package Type, SMT indicates Surface Mount Technology while TH indicates Through-hole.*

Block Diagrams



A B C D E



F G H I J

Multifunction Products

The OptoMOS™ line of Multifunction products combines optically isolated discrete component functions into a single package. These products mix and match solid state relays, optocouplers, bridge rectifiers, Darlington transistors, and zener diodes to create highly functional circuits in a single, small package. Multifunction devices allow designers to consolidate circuit functions into a single device, freeing up valuable board space and reducing component count. Designed specifically for the telecommunications industry, the Integrated Telecom Circuit (ITC) series is well suited for voice telephony and modem applications, providing most of the major functions required when designing DAA (Data Access Arrangement) or voice (FXO) line interface circuits.

Features

- 3750V_{rms} input to output isolation
- Multiple functionality in single package
- Current limiting (part numbers with L suffix)
- Machine insertable, wave solderable
- TTL and CMOS compatible

Applications

- Telecommunication/Datacommunication
- Instrumentation
- I/O subsystems
- Electronic switching
- Medical equipment (patient/equipment isolation)
- Security
- Aerospace
- Industrial controls

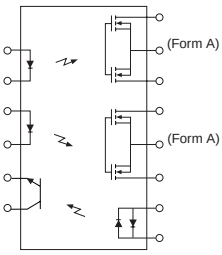
Combination SSR & Optocoupler Products (IAx, IBx, TS, XS) - Operational temperature range of -40^0 to 85^{0}C

	Relay Parameters				Optocoupler Parameters						
Part Number	Load Voltage V_P	Current Handling mA	On Resistance Ω	Input Control Current mA	Break-down Voltage V	Current Transfer Ratio %	Saturation Voltage V	Input Control Current mA	Isolation Voltage V_{rms}	Package Type ①	Features
IAA110P	350	100	35	5	20	33	0.5	6	3750	16-Pin SMT	
IAA170P	350	100	50	5	20	33	0.5	6	3750	16-Pin SMT	
IAB110P	350	100	35	5	20	33	0.5	6	3750	16-Pin SMT	
IAD110P	350	100	35	5	20	33	0.5	6	3750	16-Pin SMT	
IAD170P	350	100	50	5	20	33	0.5	6	3750	16-Pin SMT	
IBB110P	350	100	35	5	20	33	0.5	6	3750	16-Pin SMT	
TS112N	350	120	20	2	20	100	0.5	6	1500	8-Pin SMT	Narrow body
TS117	350	120	35	2	20	100	0.5	6	3750	8-Pin SMT, TH	
TS117L	350	120	35	2	20	100	0.5	6	3750	8-Pin SMT, TH	Current Limit
TS118	350	120	35	5	20	100	0.5	6	3750	8-Pin SMT, TH	Form B
TS120	350	120	35	5	20	1000	0.8	2	3750	8-Pin SMT, TH	
TS120L	350	120	35	5	20	1000	0.8	2	3750	8-Pin SMT	Current Limit
TS122	350	170	20	5	20	100	0.5	6	3750	8-Pin SMT, TH	
TS190	350	150	22	5	20	100	0.5	6	3750	8-Pin SMT, TH	
TS190L	350	150	25	5	20	100	0.5	6	3750	8-Pin SMT	Current Limit
XS170	350	120	50	2	20	100	0.5	6	3750	8-Pin SMT, TH	

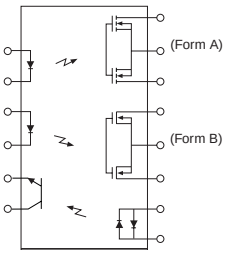
① *For Package Type, SMT indicates Surface Mount Technology while TH indicates Through-hole.*

Block Diagrams

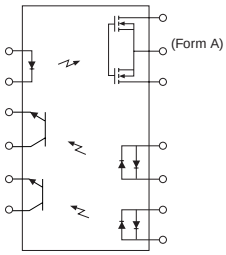
IAA Series



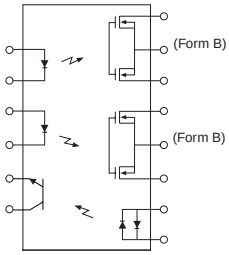
IAB Series



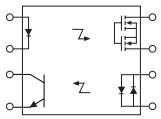
IAD Series



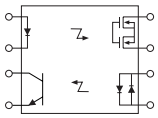
IBB Series



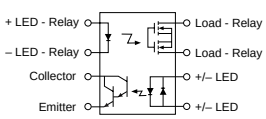
XS170 and TS with Form A Relay



TS118 with Form B Relay



TS120



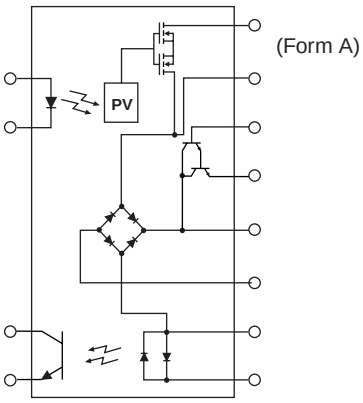
Telecom Series (ITC) - Operational temperature range of -40⁰ to 85⁰C

	Relay Parameters				Octocoupler Parameters						
Part Number	Load Voltage V_P	Load Current mA	On Resistance Ω	Input Control Current mA	Break-down Voltage V	Current Transfer Ratio %	Saturation Voltage V	Input Control Current mA	Isolation Voltage V_{rms}	Package Type ①	Features
ITC117P	350	120	15	5	20	33	0.5	6	3750	16-Pin SMT	
ITC117PL	350	120	15	5	20	33	0.5	6	3750	16-Pin SMT	Current Limit
ITC135P	350	120	15	5	20	33	0.5	6	3750	16-Pin SMT	Half-wave ringing detect
ITC137P	350	120	15	5	20	33	0.5	6	3750	16-Pin SMT	Full-wave ringing detect

① *For Package Type, SMT indicates Surface Mount Technology while TH indicates Through-hole.*

Block Diagrams

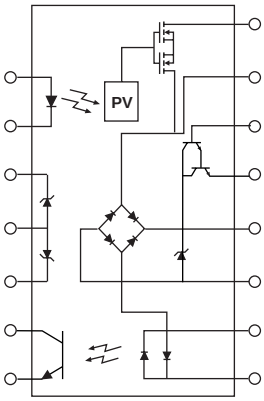
No zener protection
Bidirectional opto-input



(Form A)

ITC117

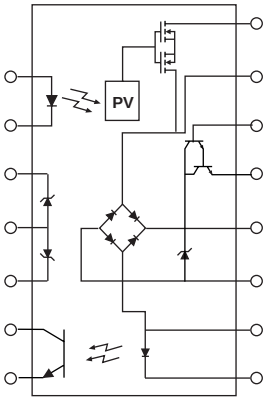
Zener protection
Bidirectional opto-input



(Form A)

ITC137

Zener protection
Unidirectional opto-input



(Form A)

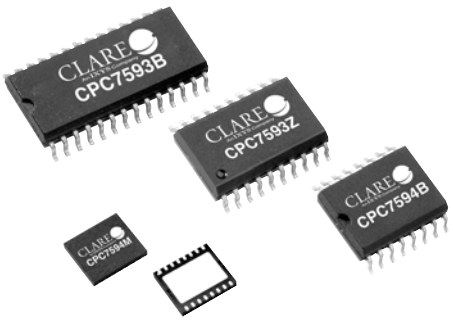
ITC135

Line Card Access Switch (LCAS)

The Line Card Access Switch (LCAS) product family is an integral part of Clare's product portfolio for the telecommunications market. Clare's unique high-voltage Silicon-On-Insulator (SOI) process technology, manufactured in its state-of-the-art fab in Beverly, MA, provides the foundation for a multitude of silicon solutions that enable low power, high density line cards.

The LCAS product family consists of monolithic ICs that contain high-voltage switches for tip and ring line break, power ringing, line test access, test in access, and ringing generator testing. They provide the necessary functions to replace all 2-Form-C electromechanical relays found on both traditional voice and integrated voice and data (IVD) line cards found in Central Office, Digital Loop Carriers, and Channel Banks.

New features include: (1) TTL compatible inputs, (2) Smart logic for safe power up and hot plug state control, and (3) Increased dv/dt immunity.



Features

- Small surface mount SOIC or DFN package
- Monolithic IC reliability
- Low, matched on-resistance
- Built-in zero-cross switching
- Impulse noise reduction
- Current limiting, thermal shutdown and SLIC protection
- Robust power cross and lightning surge performance
- Ultra-low power consumption of <10.5mW
- Pin-to-pin compatibility to the Legerity 7581, 7582, and 7583 SOIC products

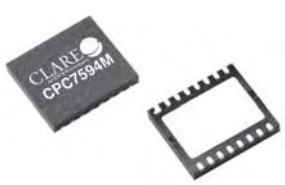
Applications

- VOIP gateways
- Central Offices (CO)
- Digital Loop Carriers (DLC)
- Digitally Added Main Line (DAML)
- Hybrid Fiber Coax (HFC)
- Fiber in the Loop (FITL)
- Pair Gain systems
- Channel banks
- PBX systems

		Switching Pairs						Protection Features				
Part Number	# Switches	Break	Ringing	Test Out	Test in	Ringing Test	Zero-Cross Swichting	Diode Bridge	Protection SCR	Minimum Hold Current mA	Logic States	Package Type
CPC7591xA	4	•	•				•	Half	•	110	3	16 SOIC or DFN
CPC7591xB	4	•	•				•	Full			3	16 SOIC or DFN
CPC7592xA	6	•	•	•			•	Half	•	60	4	16 SOIC or DFN
CPC7592xB	6	•	•	•			•	Full			4	16 SOIC or DFN
CPC7592xC	6	•	•	•			•	Half	•	110	5	16 SOIC or DFN
CPC7593xA	10	•	•	•	•	•	•	Half	•	110	7	20 or 28 SOIC or 28 DFN
CPC7593xB	10	•	•	•	•	•	•	Full			7	20 or 28 SOIC or 20 DFN
CPC7593xC	10	•	•	•	•	•	•	Half	•	110	8	20 or 28 SOIC or 20 DFN
CPC7593xD	10	•	•	•	•	•	•	Full			8	20 or 28 SOIC or 20 DFN
CPC7594xA	6	•	•		•		•	Half	•	110	4	16 SOIC or DFN
CPC7594xB	6	•	•		•		•	Full			4	16 SOIC or DFN
CPC7594xC	6	•	•		•		•	Half	•	110	4	16 SOIC or DFN
CPC7595xA	10	•	•	•	•	•	•	Half	•	110	7	20 or 28 SOIC or 28 DFN
CPC7595xB	10	•	•	•	•	•	•	Full			7	20 or 28 SOIC or 28 DFN
CPC7595xC	10	•	•	•	•	•	•	Half	•	110	8	20 or 28 SOIC or 28 DFN
CPC7581xA	4	•	•				•	Half	•	60	3	16 SOIC or DFN
CPC7581xB	4	•	•				•	Full			3	16 SOIC or DFN
CPC7581xC	4	•	•				•	Half	•	110	3	16 SOIC or DFN
CPC7582xA	6	•	•	•			•	Half	•	60	4	16 SOIC
CPC7582xB	6	•	•	•			•	Full			4	16 SOIC
CPC7582xC	6	•	•	•			•	Half	•	110	5	16 SOIC
CPC7583xA	10	•	•	•	•	•	•	Half	•	100	7	20 or 28 SOIC
CPC7583xB	10	•	•	•	•	•	•	Full			7	20 or 28 SOIC
CPC7583xC	10	•	•	•	•	•	•	Half	•	100	8	20 or 28 SOIC
CPC7583xD	10	•	•	•	•	•	•	Full			8	20 or 28 SOIC

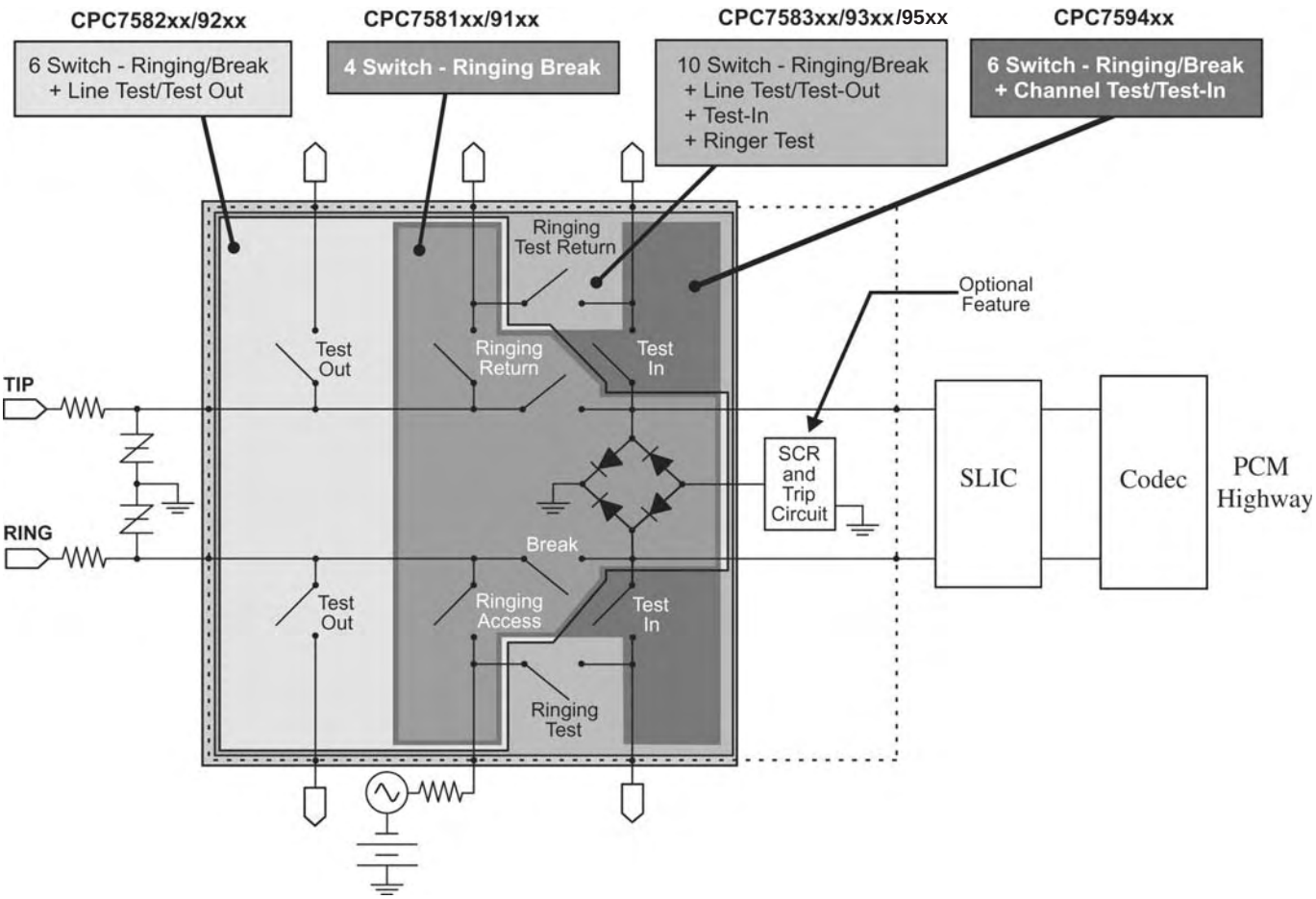
Line Card Access Switch (LCAS) DFN Package Products

With the introduction of the DFN Package, the same functionality and performance now comes at a fraction of the size and makes 32 channel (or greater) line cards a reality. Even compared to fourth generation EMRs, these DFNs offer a dramatic area and height savings of 65% and 80% respectively. All LCAS versions listed below are available in the DFN package. The last digit in the part number indicates the logic version and is the same for both the DFN and SOIC versions.



Part Number	Package	W mm	L mm	H mm	Area mm²	# of EMRs LCAS replaces	Area Savings vs EMRs
CPC7591Mx	16DFN	6	7	0.9	42	1	43%
CPC7592Mx	16DFN	6	7	0.9	42	2	71%
CPC7593Mx	28DFN	7	11	0.9	77	3	65%
CPC7594Mx	16DFN	6	7	0.9	42	2	71%
CPC7595Mx	28DFN	7	11	0.9	77	3	65%

Block Diagram



LITELINK™ Silicon DAA, Phone Line Interface

The LITELINK™ phone line interface is the industry's only single package silicon Data Access Arrangement, featuring a 32-pin, small outline, low profile, surface mount package. It is ideal for both voice and data (V.22bis to V.90/V.92) and applications in particularly dense circuit environments. The internal optical isolation barrier eliminates high cost transformer or capacitive isolation circuits. This solution saves cost relative to competitive circuits through reduced passive component count and smaller printed circuit board space.

The 3kV$_{rms}$ internal isolation barrier exceeds all worldwide regulatory requirements. The optical isolation barrier yields low distortion performance necessary for high speed communications. In addition, the LITELINK™ application circuit is capable of surviving 6kV (10usec x 700usec) lightning surge waveforms (K.21) making it the most robust silicon DAA on the market.

LITELINK™ offers the lowest operational phone line quiescent current. The device easily interfaces to commonly available standard single-ended or differential voice and modem codecs on the market. Contact Clare for information on codec reference designs that offer programmable AC termination impedance for global applications. LITELINK™ complies with international PSTN agency requirements.

The newest device is the CPC5622, which is part of the LITELINK™ III product family. It offers continuous Caller-ID (CID) signal reception which is ideal for telephony applications in countries where CID information is present before the ringing signal. The CPC5622 also offers both full and half wave ringing signal detection allowing the designer to choose the appropriate interface to the codec/DSP block.

Features

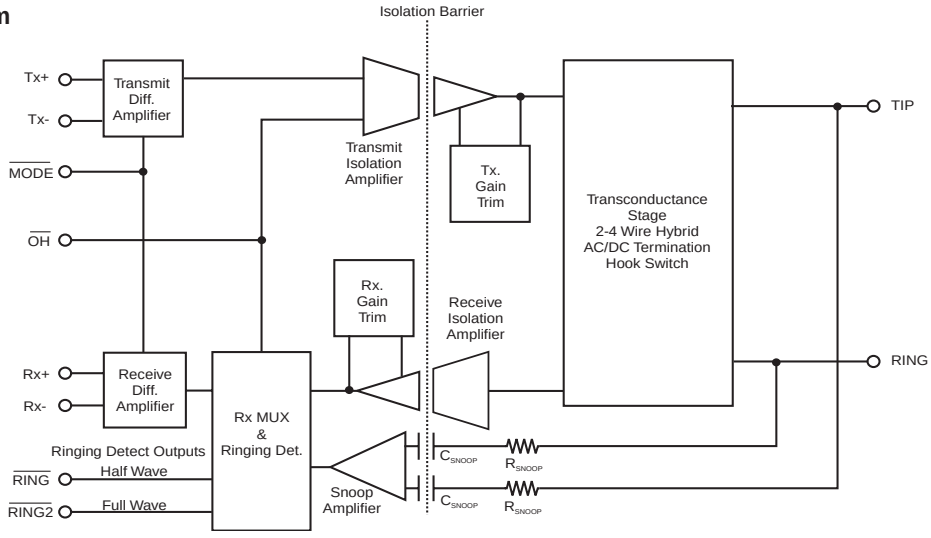
- Voice and data applications
- Modem DAA for speeds up to V.92
- Half-wave or full-wave ringing detection
- Worldwide telephone network compatibility
- Caller-ID reception
- Line side powered from telephone line
- 3.3V to 5V power supply
- Easy interface with modem ICs and voice codecs
- High power transmit option for voice applications (>3dBm)

Applications

- VoIP gateways
- PBXs
- Satellite set-top box
- V.92 modems
- Fax machines
- Voice mail systems
- Embedded modems
- Remote metering
- Security systems

Part Number	Family	Isolation Voltage V_{rms}	Power Supply	MODE pin	Caller ID	Ringing Detect	Status
CPC5622	LITELINK III	3000	3.3V to 5V	Yes	Continuous	Half & Full wave	Recommended for New Designs
CPC5621	LITELINK III	3000	3.3V to 5V	Yes	Selectable	Full wave	Recommended for New Designs
CPC5620	LITELINK III	3000	3.3V to 5V	Yes	Selectable	Half wave	Recommended for New Designs
CPC5611	LITELINK II	1500	3.3V to 5V	No	Selectable	Full wave	
CPC5610	LITELINK II	1500	3.3V to 5V	No	Selectable	Half wave	
CPC5604	LITELINK I	1500	5V	No	Selectable	Half wave	

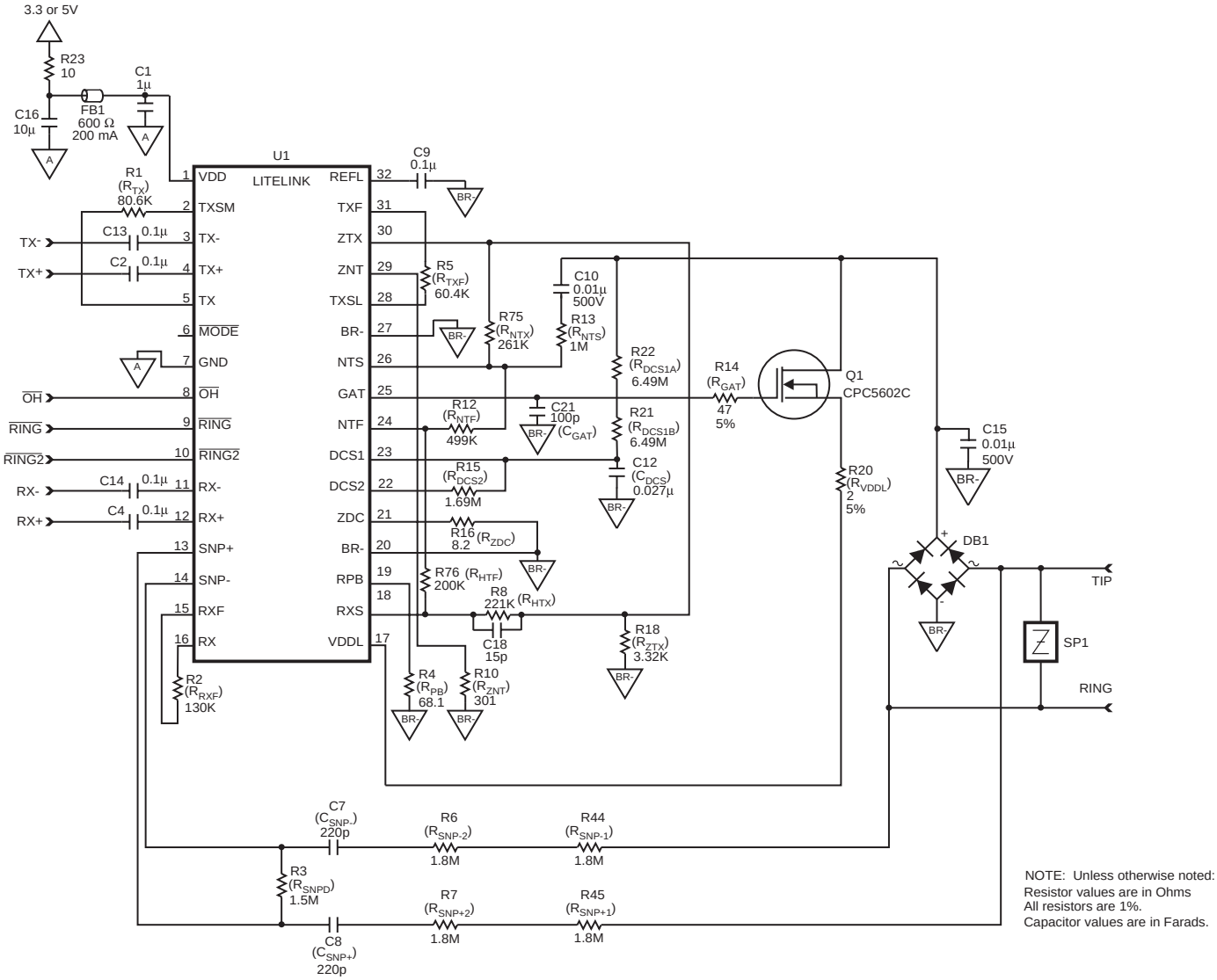
CPC5622 LITELINK™ III Block Diagram



Optional LITELINK™ Support Components

CPC5601	Optically Isolated Programmable Driver IC	16-Pin SOIC
CPC5608	5-Channel, Low-Power Transistor Array IC	8-Pin SOIC

CPC5622 LITELINK™ III Reference Design Schematic



NOTE: Unless otherwise noted:
Resistor values are in Ohms
All resistors are 1%.
Capacitor values are in Farads.

Phone Line Supervisory ICs

CPC5712 Phone Line Monitor with Detectors IC

The CPC5712 is a special purpose Phone Line Monitor with Detectors (PLMD) integrated circuit that is used in various high-voltage telephony applications such as VoIP gateways and IP-PBXs. The device monitors the TIP/RING potential through a high-impedance divider (resistor isolation) to derive two programmable signal-level detects, polarity information, and a scaled representation of the phone voltages. In use, the resistor divider and the high input impedance of the CPC5712 make the circuit practically undetectable on the line. The high-impedance resistive barrier application circuit is fully compliant to the EN60950 safety standard, and meets ITU-T K.21 over-voltage and over-current specification.

The two voltage-level detects are programmed with external resistors, which gives the designer complete freedom with respect to line voltage detection levels. The level settings also have programmable hysteresis to prevent false triggering conditions. Detection of these levels allows the user to determine the condition of the line.

This device can also be used in non-telephony applications such as instrumentation and industrial controls, especially when a low-level differential level needs to be detected in the presence of a large common-mode voltage.

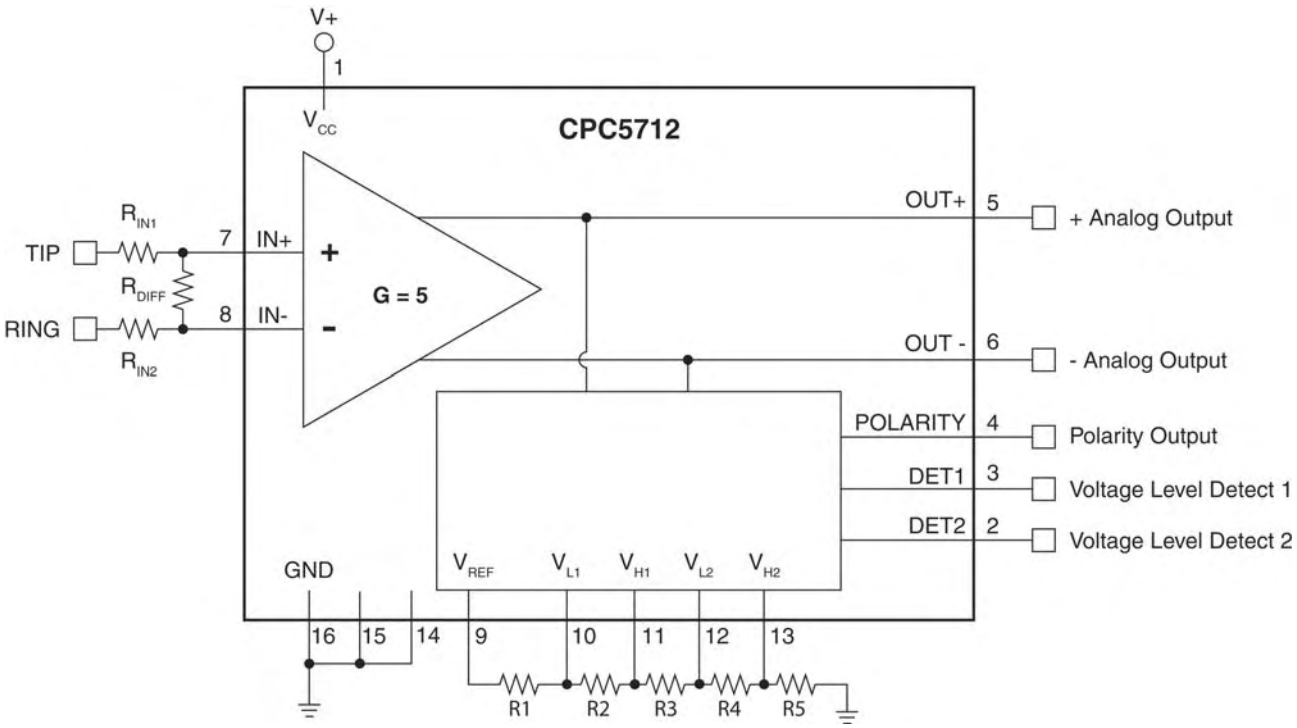
Features

- Two independent Programmable Level Detectors with Programmable Hysteresis
- Fixed-Level Polarity Detector with Hysteresis
- Differential Linear Output
- Minimum External Components
- Excellent Common-Mode Rejection Ratio (CMRR>55dB)
- Application Circuits meet Isolation Requirements of Worldwide Telephony Standards
- Worldwide Telephone Network Compatibility
- 3.0 V to 5.5V Operation
- High Differential Input Impedance; Very Low Common-Mode Input Impedance
- Fixed Gain
- CMOS Logic Level Output (TTL Compatible)
- Small QSOP 16-Lead Package

Applications

- VoIP Gateways, IP-PBX, xDSL
- TIP/RING Monitoring
- Line-In-Use Detection
- Polarity Detection
- Battery Detection, PSTN Check
- Non-Telephony Voltage-Level Detection Applilcations
- Instrumentation
- Industrial Controls

Block Diagram



CPC5710 Phone Line Monitor IC

Clare's CPC5710N 8-pin SOIC is a versatile building block for designing telephone line monitoring circuits. High common-mode rejection ratio (>40dB) and high input impedance makes the CPC5710N an excellent choice for tip/ring voltage monitoring, battery presence detection, line-in-use detection (another-phone-off-hook), polarity reversal, display feature (Caller ID) signal reception, ringing detection, and discrete voice recording.

The CPC5710N high impedance input circuit eliminates phone line monitoring discrete components that reduce central office (CO) battery voltage to Customer Premise Equipment (CPE) equipment. This allows the CPE equipment to work properly on long phone loops and meet difficult worldwide regulatory low CO voltage conditions. The high impedance resistive barrier application circuit is fully compliant to the EN60950 safety standard and meets the ITU-T K.21 over-voltage and over-current specifications. Common applications include telephony gateways, IP-PBX, computer telephony, embedded modems, set-top boxes, voice recording applications, and point-of-sale equipment.

Features

- Excellent common-mode rejection ratio (CMRR), >40 dB
- Supplied application circuits meet EN60950 Safety and ITU-T K.21 specification isolation requirements
- High input impedance circuit eliminates line voltage drop for better performance and compliance to worldwide specifications
- Small 8-pin SOIC
- Worldwide telephone network compatibility
- Full-wave ringing level detector comparator with internal threshold, large hysteresis, and logic-level output
- 3.3V to 5V operation
- High differential input impedance, very low common mode input impedance
- Fixed gain
- Differential or single-ended linear output
- TTL logic input
- CMOS logic output (TTL compatible)
- Virtually non-detectable in voice monitoring

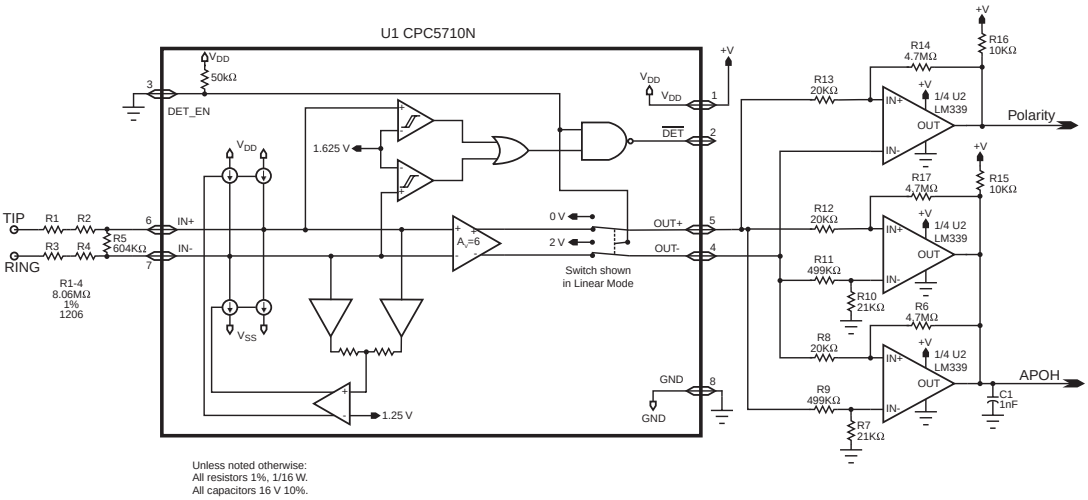
Applications

In monitoring applications the CPC5710N can be used for:

- Display feature (caller ID) signal processing
- Line-in-use detection (another phone-off-hook)
- Ringing signal level detection
- Battery presence monitoring
- Tip and ring lead voltage monitoring
- Line polarity

Part Number	Power Supply
CPC5710	3.3V to 5V

APOH and Polarity Detection Application Circuit



CPC1465 SHDSL / ISDN DC Termination ICs

The CPC1465 provides a polarity-insensitive DC termination for wetting (sealing) current on the CPE side conforming to ITU-T G.991.2 to eliminate corrosion on SHDSL/ISDN lines. The CPC1465 has excellent linearity (70dB typ.) to minimize harmonic distortion and well-controlled turn-on and turn-off characteristics to minimize injecting impulse noise with in band signal energy into the channel.

This DC termination IC, which interfaces with the tip/ring pair, is rated at 300V and is able to handle power cross and lightning transients with appropriate protection. Manufactured in Clare's proven 320V Silicon On Insulator (SOI) process, the CPC1465 is packaged in a 16-pin SOIC or DFN.

Features

- Meets wetting (sealing) current requirements per ITU-T G.991.2
- Integrated bridge rectifier for polarity correction
- Uses inexpensive optocoupler for DC signaling
- Electronic inductor, breakover, and latch circuits
- Current limiting and excess power protection circuits
- ANSI SHDSL and ISDN compatible
- MLT and SARTS compatible
- Excellent linearity (70dB typ.)

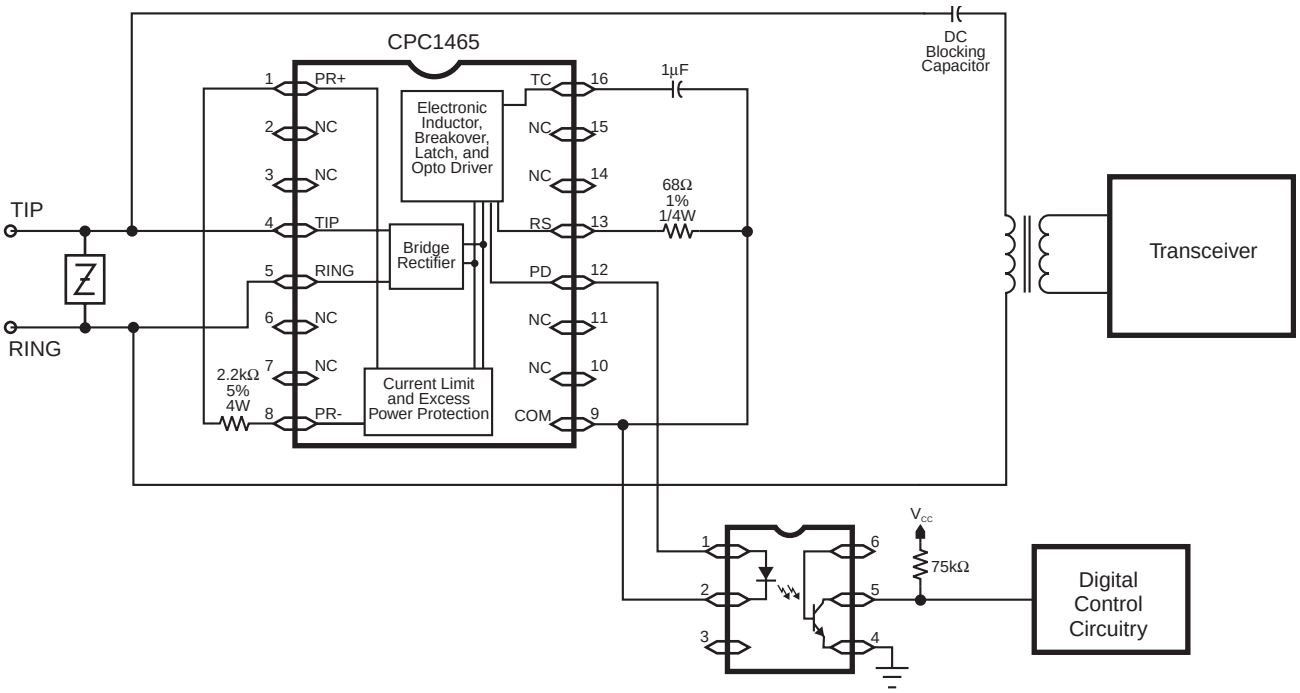
Applications

- SHDSL
- ISDN
- Router and bridge customer premises equipment
- Leased line equipment
- T1/E1 network line cards and repeaters
- Network Termination 1 (NT1) equipment
- Mechanized Loop Test (MLT) networks
- Switched Access Remote Test System (SARTS) networks

High-speed Line Interface Product

Part Number New	Package
CPC1465D	16-pin SOIC
➤ **CPC1465M**	16-pin DFN

Block Diagram



CPC1466 Broadband ADSL / VDSL DC Termination IC

The CPC1466 is a DC Termination IC for broadband ADSL/ VDSL applications. The high-voltage, monolithic device provides a termination for DC wetting (sealing) current in customer premises equipment (CPE) to eliminate phone line corrosion on DSL twisted-pair copper lines without telephone voice services (i.e. only broadband services).

Internally, a bridge rectifier provides a polarity-insensitive DC termination for DSL loop sealing current. The IC includes an electronic inductor, breakover and latch circuits, current limit and excess power protection. A sealing current detect output provides the means to monitor the loop for the presence of sealing current in the loop.

The CPC1466 is manufactured in Clare's high voltage BCDMOS process that is used extensively in telephony applications worldwide.

Features

- Meets wetting (sealing) current requirements per ITU-T G.992.3
- Integrated bridge rectifier for polarity correction
- Uses inexpensive opto-coupler for DC sealilng current monitoring
- Electronic inductor, breakover, and latch circuits
- Current limiting and excess power protection circuits
- ADSL / VDSL compatible with low-pass filter network
- MLT and SARTS compatible
- Compatible with portable test sets
- Small SOIC or DFN Package
- DFN package 60 percent smaller than SOIC

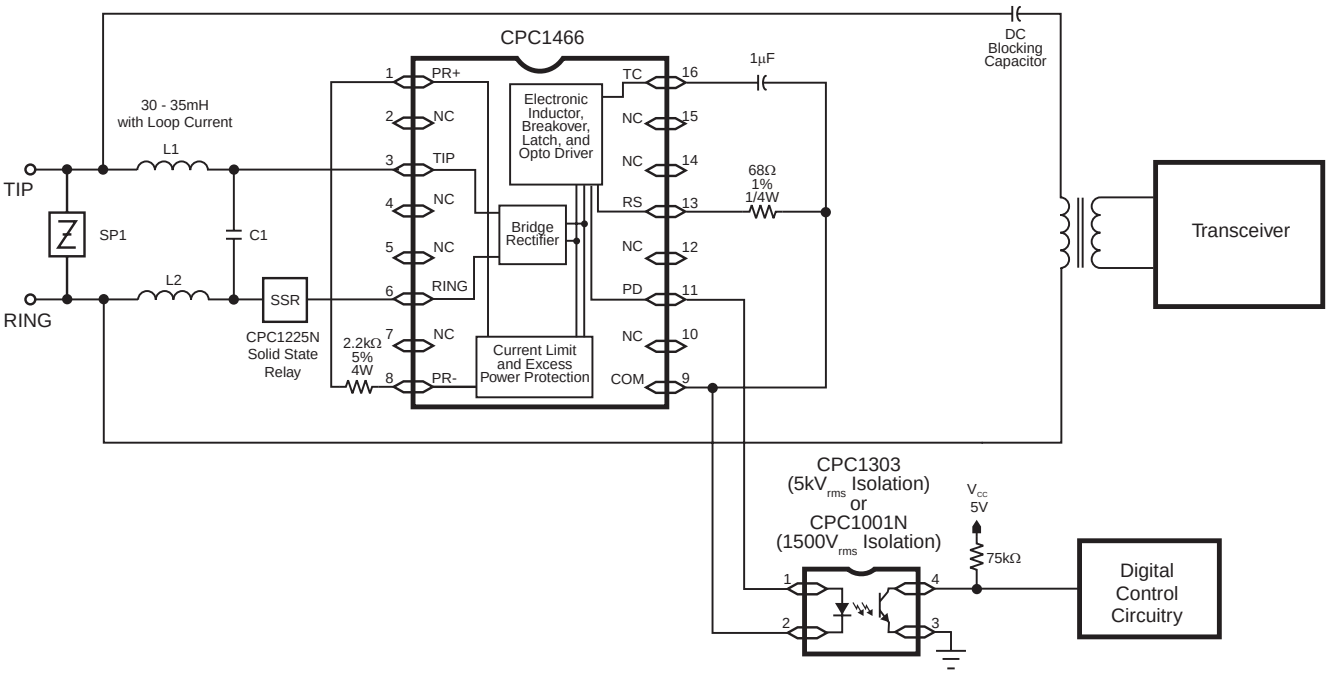
Applications

- ADSL / VDSL broadband modems
- Router and bridge customer premises equipment
- Leased line equipment
- Mechanized Loop Test (MLT) networks
- Switched Access Remote Test System (SARTS) networks

High-speed Line Interface Product

➤ Part Number New	Package
➤ **CPC1466D**	16-pin SOIC

Block Diagram



Data Access Arrangement (DAA) Modules

The Cybergate family is Clare's turnkey modular DAA solution. The V.34 family provides the circuitry required in a single, completely functional DAA circuit in a 1.07" x 1.07" x 0.4" plastic module. This plug-and-play design allows the user to choose the necessary options to minimize costs, and in turn, maximize value. Standard features include surge protection, transient protection zeners, ringing detection, hook switch circuitry, gyrator circuitry (impedance balancing), and a transformer. Caller-ID (CID) and loop current detection are also available as options.

Features

- 28.8kbps (except for CYG2911 at 9.6kbps)
- Optional caller ID and loop current sense
- Ringing detection
- Low power Hook Switch
- Surge protection
- Low THD
- Gyrator circuitry
- Meets most regulatory agency requirements

Applications

- Modems
- Remote data acquisition
- Fax machines
- Security/metering
- Computer telephony
- PBX
- Voice mail systems

Cybergate Data Access Arrangements

Part Number	Region	Hook Switch Resistance Ω	DC Loop Current mA	Return Loss (min.) dB	Insertion Loss (max.) TX-Transmit RX-Receive V_{rms}	Ringing Voltage Detection Range V_{rms}	Isolation Voltage	Features: Ringing Detection: Full Wave	Features: Ringing Detection: Half Wave	Features: Caller-ID	Features: Loop Current Detect	Features: 911 Emergency	Features: 2-4 Wire Conversion
CYG2000	N. America Asia	15	20-120	18	Tx 7 Rx 7	20-150	1000		•				
CYG2001	N. America Asia	15	20-120	18	Tx 7 Rx 7	20-150	1000	•					
CYG2010	N. America Asia	15	20-120	18	Tx 7 Rx 7	20-150	1000		•		•		
CYG2011	N. America Asia	15	20-120	18	Tx 7 Rx 7	20-150	1000	•			•		
CYG2020	N. America Asia	15	20-120	18	Tx 7 Rx 7	20-150	1000		•	•			
CYG2021	N. America Asia	15	20-120	18	Tx 7 Rx 7	20-150	1000	•		•			
CYG2030	N. America Asia	15	20-120	18	Tx 7 Rx 7	20-150	1000		•	•	•		
CYG2031	N. America Asia	15	20-120	18	Tx 7 Rx 7	20-150	1000	•		•	•		
CYG2100	Europe	35	5-120	14	Tx 7 Rx 7	29-150	1500		•				
CYG2110	France	35	5-120	14	Tx 7 Rx 7	29-150	1500		•				
CYG2111	CTR-21	35	5-120	14	Tx 7.5 Rx 7.5	29-150	1500		•				
CYG2120	Spain	35	5-120	14	Tx 7 Rx 7	28-150	1500		•				
CYG2217	N. America Asia	15	20-120	39	Tx 7 Rx 1	20-150	1000		•				•
CYG2218	N. America Asia	15	20-120	39	Tx 1 Rx 1	20-150	1000		•				•
CYG2300	Germany	-	5-120	14	Tx 7 Rx 7	29 MIN	1500		•				
CYG2320	Australia	-	5-120	14	Tx 7 Rx 7	29 MIN	1500		•				
CYG2911	N. America Asia	15	20-120	18	Tx 9 Rx 9	20-150	1000		•	•		•	

**All of the parts listed are in a DIP package, operate using a 5V power supply, have a minimum On-hook impedance of 10 MΩ, Maximum Total Harmonic Distortion (THD) of 0.01% and a tip to ring surge protection voltage of 300V.*

Embedded Modem Module (EMM)

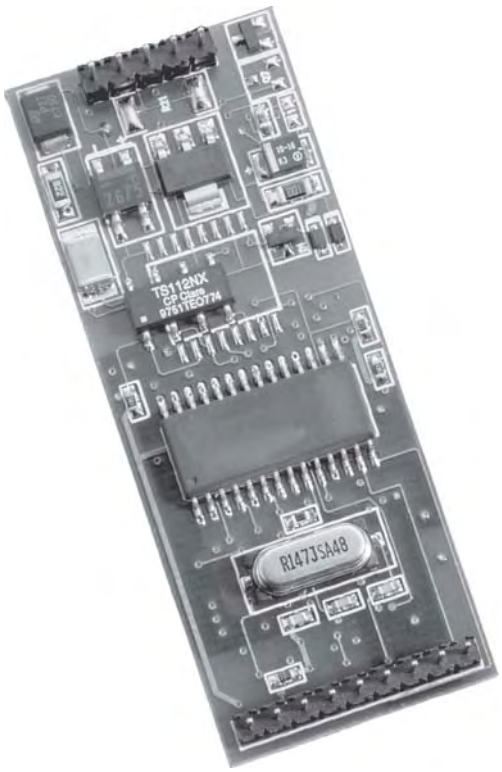
The Embedded Modem Module combines a datapump and microcontroller with the Data Access Arrangement (DAA) to deliver an all-in-one solution for V.22 bis modem transaction-oriented applications. This plug-and-play module provides a total solution complete with transferable FCC registration. It supports a standard serial V.24 TTL interface to the DTE equipment. The CPC2400E features a quick handshake time of 1.6 seconds. This offers a clear advantage for short connection sessions when compared to V.34 and V.90 modems which have a data handshake period greater than 10 seconds.

Features

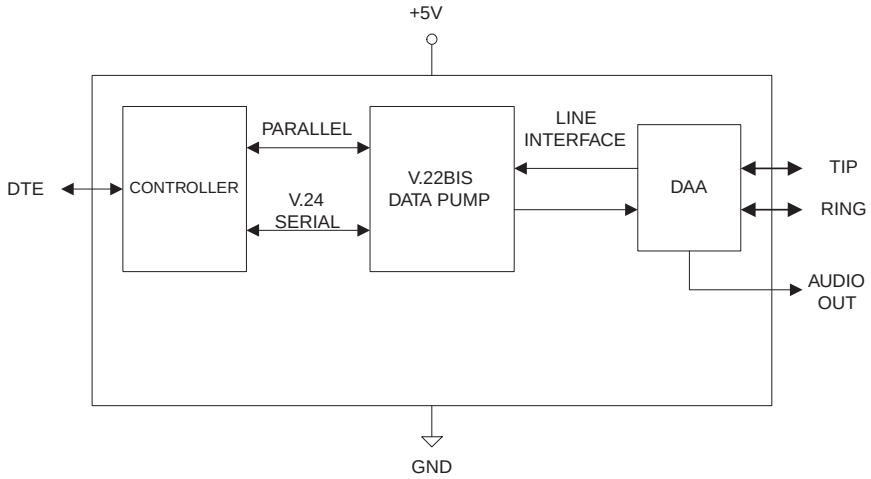
- Easy integration and installation
- Small footprint of 1.00” x 2.50”
- Low power consumption
- 5V Power Supply operation
- Supports V.22bis, V.22, V.23
- FCC part 15B compliant
- FCC part 68 user transferable registration
- UL Approved

Applications

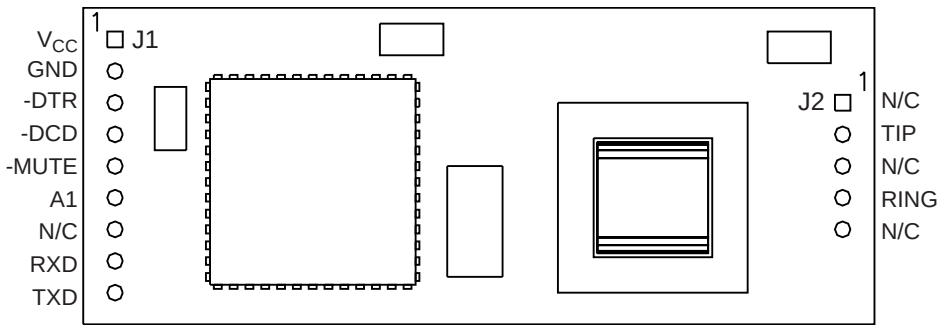
- Point-of-Sale (POS)
- Gaming equipment
- Utility metering
- Lock boxes
- Remote monitoring
- Embedded applications
- Medical appliances



Block Diagram



Pin Diagram



Tone Signaling Products

Tone Signaling Products include MF Trunk Signaling ICs, Call Progress Detectors and Generators, and Hook Switch Status Devices.

Call Progress Detectors and Generators

Clare's family of Call Progress Detectors and Generators provides an inexpensive method of detecting and generating common call progress tones including busy tone, dial tone, call waiting tones, and others. The family includes both an inexpensive band detector and precise call tone detectors that detect individual tones. Detectors are available in both DIP and SOIC packages, and operate on a 3V to 5V supply. The call progress generator allows for a simple method of providing dial tone, busy tone, and other call progress tones in applications where a POTS interface is required such as VoIP or other network gateways.

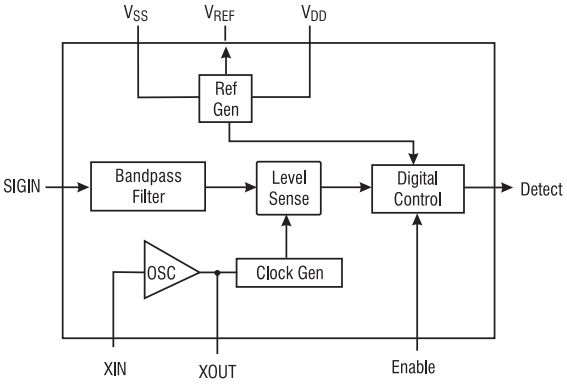
Features

- Receive and generate common call progress tones
- Detectors operate with a single 3 to 5 Volt supply
- Linear input (detectors) and output (generator)
- Inexpensive band detector with wide dynamic range (>38dB)
- Low power consumption
- Detectors available for both common call progress and SIT tones
- Available in both DIP and SOIC packages

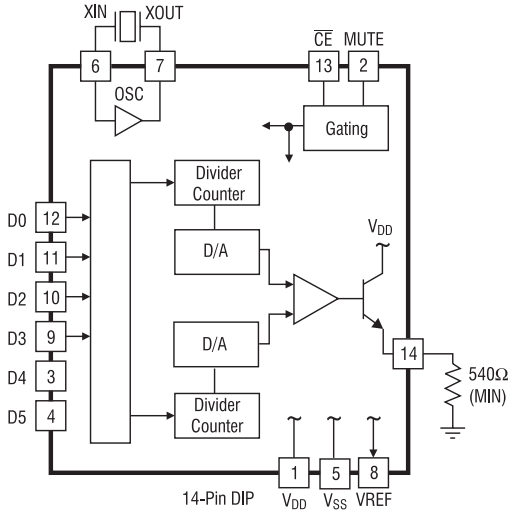
Applications

- PBX circuits
- Billing systems
- Test equipment
- Point of Sale terminals
- Pay telephones

M-980-02



M-991



Part Number	Function	Detection Frequencies: Band 350 + 440Hz	Dial Tone 440 + 480Hz	Audible Ringing 480 + 620Hz	Busy Tone	Special Information Tones (SIT) 315-640Hz	Package Type
M-980-02	Detector	•					16-Pin SMT, 8-Pin TH
M-982-02	Detector		•	•	•		20-Pin SMT, 22-Pin TH
M-985-01	Detector		•	•	•	•	20-Pin SMT, 22-Pin TH
M-991	Generator		•	•	•		16-Pin SMT, 14-Pin TH

MF Trunk Signaling ICs

MF signaling ICs, available in a variety of formats, eliminate the need for additional software required to implement MF signaling protocols in trunk circuits. Used in MF trunk signaling applications, these products include a family of PCM digital MF tranceivers in a variety of formats. Signaling formats include R1 (A Law and µ Law), and R2 Specification.

The M-993 is a stand-alone generator that provides a simple, inexpensive method of generating analog R1 MF signaling tones. Already used in thousands of systems worldwide, these products give the system designer a proven method of providing MF signaling capability.

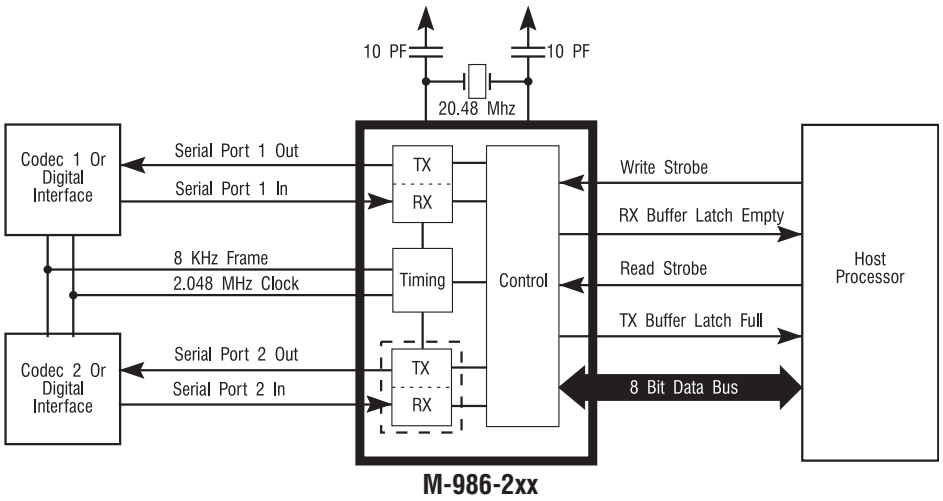
Features

- Direct PCM interface to chip
- Manual or Compelled Mode operation for R2 signaling
- 2.048 MHz clocking
- Dual Channel
- Microprocessor read/write interface
- R1 and R2 formats provided

Applications

- Trunk Circuits requiring MF trunk signaling in R1 or R2 signaling formats

Block Diagram



Part Number	Function	CCITT R1	CCITT R2	A Law PCM	µ Law PCM	PCM in/Out	Analog out	PackageType
M-986-2A1P	Transceiver	•		•	•	•		44-Pin SMT, 40-Pin TH
M-986-2R2P	Transceiver		•	•		•		44-Pin SMT, 40-Pin TH
M-993	Generator	•					•	14-Pin DIP TH

Hook Switch Status Devices

M-949-01 Line Sense Relay

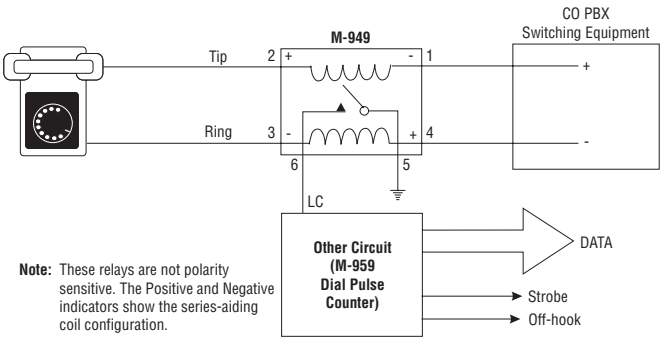
- Senses telephone line current from 18 to 125 mA
- Used by control circuitry for on-hook/off-hook monitoring, switch hook flash detection and rotary dial pulse
- Provides 1500V_{DC} coil-to-contact isolation
- Includes 1-Form-A relay contact
- Applications Include: Central Office products, PBX and key systems, rotary dial monitoring devices

M-949-11 Balanced Dual Coil Telephone Line Current Sensing Relay

- Senses telephone line current from 15 to 200mA
- Used by control circuitry for on-hook/off-hook monitoring, switch hook flash detection and rotary dial pulse
- Meets high isolation voltage requirement of 4000V
- Meets UL and British Standard specifications
- Includes 1-Form-A relay contact

M-959 Dial Pulse Counter and Hook Status Monitor

- Independent hook status monitoring
- Time-guarded dial pulse counting
- 10 or 20 PPS dialing speeds pin selectable
- Valid data output strobe



High Voltage Products - Analog Switches and Display Drivers

The high-voltage process technology used on these devices is Clare's reliable BCDMOS on SOI (Silicon On Insulator). This process offers unique performance features such as multiple 300 Volt open drain FET devices and 200 Volt bi-directional analog switch cells with 1 Amp peak current capability.

CPC7220/CPC7221 High-Voltage 8 Channel Analog Switch

The CPC7220 and CPC7221 are low charge injection 8-channel high-voltage analog switch integrated circuits (ICs). These devices are capable of switching large load voltages and have a flexible load voltage range, e.g. V_{PP}/V_{NN}: +40V/-160V or +100V/ 100V. Switch manipulation is managed by an 8-bit serial to parallel shift register whose outputs are buffered and stored by an 8-bit transparent latch. Level shifters buffer the latch outputs and operate the high-voltage switches.

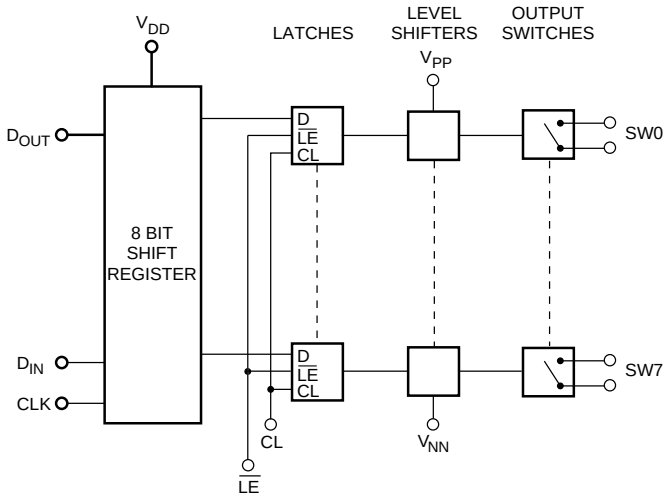
Features

- DC to 10MHz analog signal frequency
- 200 Volts peak-to-peak output switches
- Low quiescent power dissipation (< 1µA typical)
- Output on-resistance typically 20Ω
- TTL inputs and outputs for 3.3V interface
- 28-Pin SOIC Package

Applications

- Ultrasound imaging
- Printers
- Industrial controls and measurement

Block Diagram



CPC6826 High-Voltage EL Lamp Driver

The CPC6826 is an electroluminescent (EL) lamp driver designed for applications operating from an input supply voltage range of 1.8V to 3.5V. The architecture features an integrated boost switching supply with an H-bridge driver circuit to illuminate the EL lamp. Three passive components are required to complete the boost switcher circuit: an inductor, a capacitor, and a diode. The internal high-voltage H bridge provides a nominal ±75V output between pins V_A and V_B.

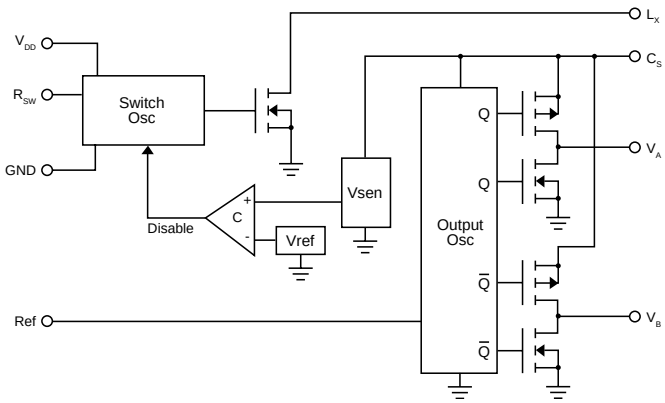
Features

- 1.8V to 3.5V supply voltage
- DC to AC conversion
- Adjustable output frequency
- Adjustable switch frequency
- Output voltage regulation
- 150V_{PP} H-Bridge drive output
- Enable/Disable function
- MSOP-8 Package

Applications

- Mobile cellular phones
- Keypad illumination
- Instrument panels

Block Diagram



Optically Isolated Gate Driver Circuits

The CPC1580 and CPC1590 are high speed Optically Isolated Gate Driver ICs. On-chip circuitry charges an external capacitor from the AC load voltage which eliminates the need for an external IC power supply. The Driver IC is ideal for low duty cycle switching applications.

Features

- Low drive power requirements (TTL/CMOS Compatible)
- Fast switching T_{ON}/T_{OFF} 20/200 µsec
- Load Voltages up to 200V
- No external IC power supply

Applications

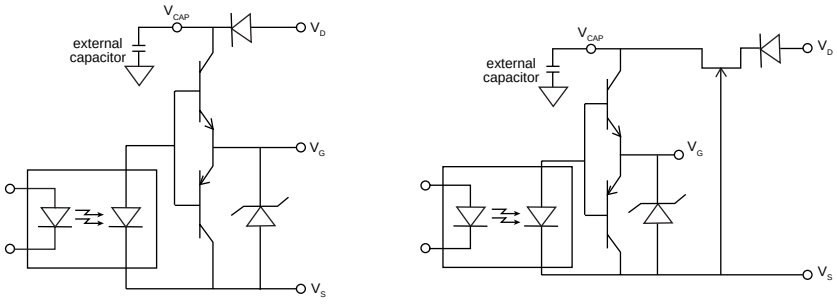
- Instrumentation
  - Multiplexers
  - Electronic switching
  - I/O Subsystems
  - Meters (Watt-Hour, Water, Gas)
- Medical Equipment (patient/equipment isolation)
- Security
- Aerospace
- Industrial controls

Operational temperature range of -40⁰ to 85⁰C

Part Number ➤ New	Input Control Current mA	Gate Voltage @ I_F = 5mA V_G	Load Voltage V_D	Regulated Capacitor Voltage $V_{CAP-MAX}$	Nominal Switching Speeds ① T_{ON} / T_{OFF} ms	Isolation Voltage V_{rms}	Package Type ②
➤ **CPC1580**	5	7.5 to 12	65	V_{DS}-0.2	0.04 / 0.4	3750	8-Pin SMT
➤ **CPC1590**	5	7.5 to 9.1	200	16	0.04 / 0.4	3750	8-Pin SMT

① With I_F = 5mA ② For Package Type, SMT indicates Surface Mount Technology while TH indicates Through-hole.

Block Diagrams



Optically Isolated Dual MOSFET Gate Driver

The FDA215 is a Dual Optically Isolated Photodiode Array. The light-activated array produces an open circuit voltage of 8 Volts. This device is suited for use in discrete solid state relay designs.

Features

- Isolated 5V photovoltaic output
- May be configured for AC and DC switching
- Floating outputs for parallel or series configuration

Applications

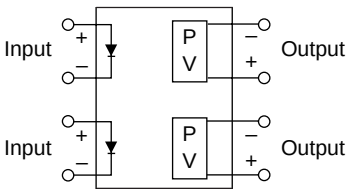
- MOSFET Driver
- Programmable control
- Process control
- Instrumentation

Operational temperature range of -40⁰ to 85⁰C

Part Number	Input Control Current I_F mA	Open Circuit Voltage V_{OC}	Nominal Short Circuit Current I_{SC} µA	Switching Speeds T_{ON}/T_{OFF} ms	Isolation Voltage V_{rms}	Package Type ①
FDA215	5	5	2.5	5 / 5	3750	8-Pin SMT, TH

① For Package Type, SMT indicates Surface Mount Technology while TH indicates Through-hole.

Block Diagram



FETs, N-Channel Depletion Mode

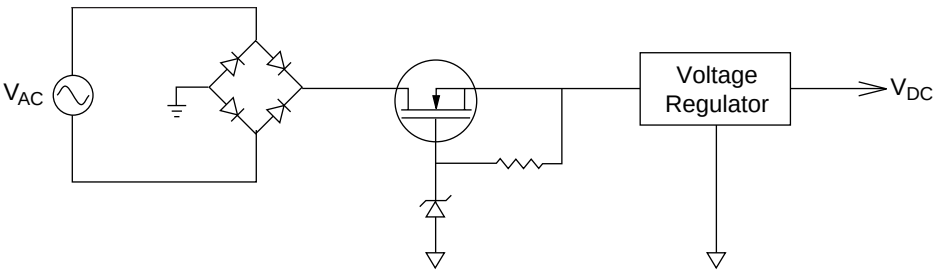
Clare's N-channel depletion mode Field Effect Transistors (FETs) utilize a proprietary third generation vertical DMOS process. The third generation process realizes world class, high-voltage MOSFET performance in an economical silicon gate process. The vertical DMOS process yields a robust device for high power applications with high input impedance. These highly reliable FET devices have been used extensively in Clare's solid state relays for industrial and telecommunications applications.

The normally-on MOSFETs are well suited for low cost, pre-regulator applications that are tolerant of high voltage drop and power dissipation between the power source and the output regulator stage. The pre-regulator is particularly effective as an inexpensive solution for filtering AC line voltage variations in non-isolated DC power supplies as compared to switch-mode power supplies or step-down transformers.

FETs N-Channel Depletion Mode

Part Number	BV_{DSX} V	$R_{DS(ON)}$ Max Ω	$V_{GS(off)}$ Min V	$V_{GS(off)}$ Max V	I_{DSS} @ V_{GS} = 0V Min mA	Package
CPC3703	250	4	-1.6	-3.9	300	SOT89
CPC3710	250	10	-1.6	-3.9	220	SOT89
CPC3714	350	14	-1.6	-3.9	240	SOT89
CPC3720	350	22	-1.6	-3.9	130	SOT89
CPC3730	350	30	-1.6	-3.9	140	SOT89
CPC5602	350	14	-2.0	-3.6	130	SOT223
CPC5603	415	14	-2.0	-3.6	130	SOT223

Application - Pre-regulator Non-isolated Power Supply with Depletion Mode FET



Solar Cell Products

The Clare Solar Cell is a revolutionary new product offering that addresses the diverse needs and applications of the growing low power solar energy market. This technology development is based on Clare's strength in photovoltaic silicon processing and IC packaging. The Solar Cell product family offers several open circuit voltage levels (4 or 8 Volts) when activated by natural or artificial light. These voltage levels correlate to common circuit board power supply voltages making the solar cell ideal for battery charging applications and trickle charge power sources. Standard JEDEC SOIC package styles make these Solar Cell products ideal for prototype and high volume production usage.

Clare's flexible Solar Cell architecture facilitates product family growth by means of its scalable technology thus paving the way for future solar cell offerings with different voltage and current ratings. Additionally, since there is excellent isolation between the various circuit elements on the Solar Cell's photovoltaic die, it is possible to add options such as power management or logic control circuitry with minimal incremental cost to the product.

Features

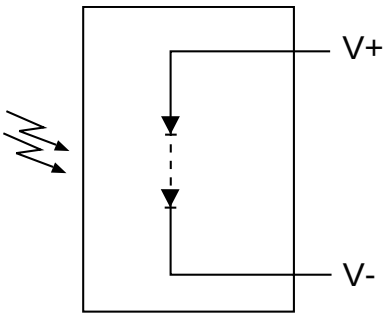
- Select from multiple voltage and current outputs
- 4 V - 8 V output
- 25 µA - 100 µA current output
- Provides true wireless power
- Triggers with natural sunlight or artificial light
- Semiconductor miniature size and reliability

Applications

- Portable Electronics
- Solar Battery Chargers
- Battery Operated Equipment
- Consumer Electronics
- Off Grid Installation
- Wireless Sensors and Detection
- Self Powered Sunlight/ Light Detection
- Self Powered Products
- Remote Installation

Product Part Number	Open Circuit Voltage V	Short Circuit Current µA	SOIC Package
CPC1822	4	50	8-Pin
CPC1824	4	100	16-Pin
CPC1831	8	25	8-Pin
CPC1832	8	50	16-Pin

Block Diagram



Application Notes

The following application notes can be downloaded from our web site at www.clare.com

General

- AN-131 Handling MOS Devices

Solid-State Relays

- AN-108 Current Limited Solid State Relays
- AN-145 Advantages of Solid State Relays Over Electromechanical Relays (English, Espanol, Deutsch, Francais)

Opto-Isolators

- AN-107 LOCxx Series - Isolated Amplifier Design Principals
- AN-109 LOC110 - Variable Speed Motor Controller Design
- AN-111 Isolated 0-10 V to 4-20 mA Converter Application
- AN-118 Detecting Line Polarity Reversal

Multifunction Products

- AN-112 Ground-Start Supervision Circuit Using Clare's IAA110
- AN-114 ITC117P Integrated Telecom Circuit

Optically Isolated Gate Drivers

- AN-201 CPC1580 Application Technical Information

Line Interface Products

LCAS

- AN-100 Design Surge and Power Fault Protection for Subscriber Line Interfaces
- AN-144 Impulse Noise Benefits of Line Card Access Switches
- AN-154 LCAS Longitudinal Balance Calculator Excel Spreadsheet for Line Card Applications

LITELINK™ Silicon DAA

- AN-102 Loop Current Detection for LITELINK™
- AN-140 Understanding LITELINK™ II
- AN-146 Guidelines for Effective LITELINK™ Designs
- AN-152 Using LITELINK™ III in a LITELINK™ II Circuit
- AN-155 Understanding LITELINK™ Display Feature Signal Routing and Applications
- AN-157 Increased LITELINK™ Transmit Power
- AN-158 LITELINK™III Application Circuit Calculations

Tone Signaling Products

- AN-125 M-986 - Configuring the M-986 MF Trunk Signaling
- AN-128 M-980 - Algorithm for Call Progress Signal Detection
- AN-129 M-991 - Call Progress Tone Generator
- AN-130 Call Progress Tone Standards
- AN-132 M-980 - Clare Components in Private Pay Stations
- AN-138 M-980 - Call Progress Tone Detector Applications
- AN-142 M-949 - Loop Current Sensing and Ring Chatter

Cybergate Products

- AN-121 Cybergate 20xx Series
- AN-122 Cybergate 21xx Series
- AN-123 Using CYG2911 and TS117 in APOH (911) Circuits
- AN-124 FCC "B" Surge Requirements

Analog & Mixed Signal ASIC Capabilities

Since our founding in 1983, Micronix has supplied hundreds of high performance mixed analog-digital integrated circuits for the commercial, industrial and military markets.

Using our own Intellectual Property (IP) combined with third party IP, we can work with you to develop an ASSP that meets the needs of your particular industry or we can perform a complete turnkey solution of a high volume, proprietary mixed-signal ASIC specifically for your product.

As a subsidiary of IXYS, we have access to an in-house High Voltage Silicon On Insulator foundry and multi-chip module assembly line. Additionally, we have developed strategic alliances with other select, highly capitalized wafer foundries and assembly houses. This unique capability enables us to apply the optimum mix of circuit topology and process to each application.

Experience has taught us that the most successful programs are those in which our customer's engineering staff play a major role in defining the circuit requirements. This close working relationship maximizes the benefits derived from a custom integrated circuit.

We believe that in today's complex business and technical relationships, trust and loyalty are as relevant as they ever have been. These simple virtues have provided the foundation of our growth, and we are committed to bringing them into each new business relationship.

Mixed Signal Design Flow

- **Turnkey:**
  Micronix develops and manufactures a device that meets your product specifications.
- **Collaborative**:
  Your digital design is incorporated via VHDL (or other high level language) or GDSII with Micronix analog functions to develop and manufacture a device that meets your product specifications.

General Performance Parameters

- Supply Voltages from 0.5 V to 550 V
- Operating Frequencies from DC to 150MHz

Foundry Partners

- **US:** AMI, X-Fab
- **Europe:** AMI, X-Fab, Zarlink
- **Asia:** Dongbu, Samsung, UMC

Process Technologies

- CMOS Mixed Signal w/High Voltage
- Bipolar
- BiCMOS
- SOI BCDMOS High Voltage

Packaging

- Through-Hole
  DIP, PGA
- Surface Mount
  BGA
  CLCC, PLCC
  QFN, QFP
  SOIC
- Multi-Chip Module
- TCP/COF (Tape Carrier Packaging, Chip On Flex)
  70mm
  Super 48mm
  Super 35mm
- Tested Die (option = bumped)
  Waffle Pack
  Wafer (Inked or wafer map)
- Tape & Reel

Screening

- Mil-Std-883 Class B
- Custom

Quality

- Mil-I-45208 Certified
- ISO 9001:2000 Certified

MX840A/B

Hex Driver for GaAs FET Switches and Attenuators

micronix An IXYS Company

Features

- CMOS Technology
- TTL/CMOS compatible inputs
- Low switching noise
- <5nS typical true / complement output skew
- <3.5nS typical output rise and fall times
- Up to 11V output voltage
- Output high voltage programmable via V_{OPT}
- Output low voltage programmable via V_{EE}

Applications

- Digital control of analog circuits
- Level shifting and amplification
- Circuit applications requiring complementary signal generation with low skew
- Bias control for a PIN diode drivers in a microwave switch

General Description

The MX840A and MX840B are high speed six channel level shifters with complimentary output drivers. The MX840A features a 3.3V V_{CC} positive supply, and the MX840B features a 5.0V V_{CC} positive supply.

The input buffers accept digital TTL or CMOS level signals, amplifies them to the V_{CC} and GND supply rails, and generates complementary outputs. The translator level shifts these output signals by amplifying them to the V_{CC} and V_{EE} supply rails.

The output drivers then buffer the signals to V_{OPT} and V_{EE}. V_{OPT} may be set within the range of V_{CC} and GND. The output drivers also adjust the complimentary signals for minimized skew error.

The MX840A and MX840B are designed to operate over a temperature range of -40°C to +85°C, and are available as die in wafer form, die in waffle pack, 24 lead SOIC package, and SOIC on Tape and Reel.

Ordering Information

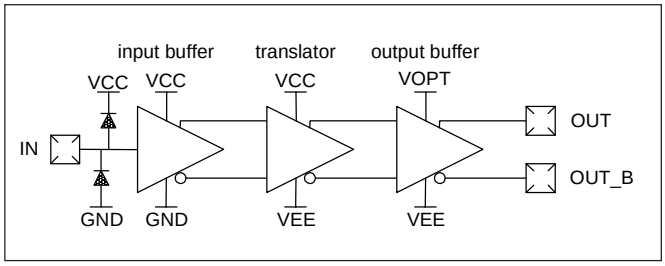
MX840A

Part No.	Description	Quantity
MX840AB	24 Lead SOIC Tube	32

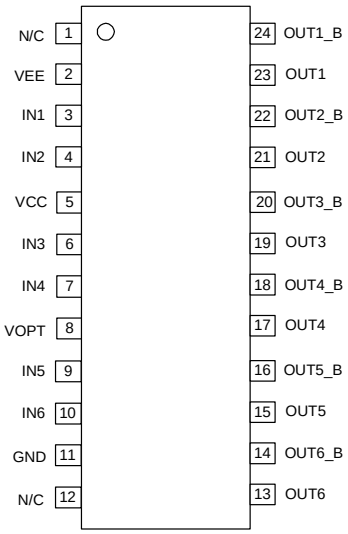
MX840B

Part No.	Description	Quantity
MX840BB	24 Lead SOIC Tube	32

Functional Block Diagram



24 Lead SOIC Configuration



MX841

White LED Step-Up Converter with Linear Dimming Control

micronix An IXYS Company

Features

- 1.1V to 5.5V Input Range
- 2 Amp Peak Switch Current
- High Efficiency > 80%
- 20V Maximum Output with Over-Voltage Protection
- LED Intensity Control
- 1.0 MHz Fixed Frequency Switching
- 8 Lead SOIC Package
- RoHS Compliant Product

Applications

- White LED Display Backlighting
  - Low Voltage: Mobile Phones, PDA's, MP3 Players, Digital Cameras
  - High Drive Current: Vehicle Instrumentation Panels

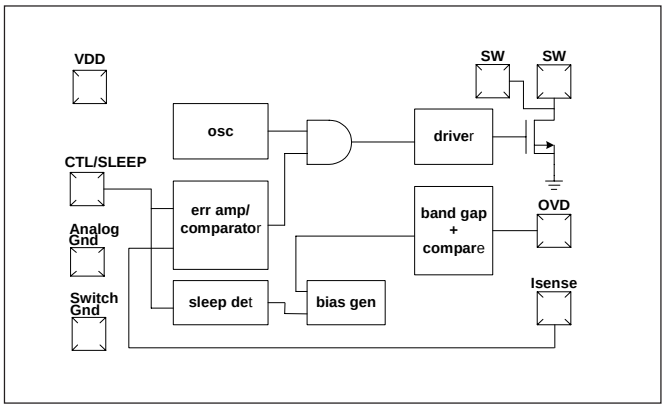
General Description

The MX841 is a fixed frequency, constant current source step-up DC/DC converter. The output current is directly regulated making the MX841 ideal for driving series connected white light emitting diodes (LED's) in backlight applications. The MX841 powers up to 3 series white LED's at 1.1V, and 20 series/parallel white LED's at 5.0V.The MX841 features a 1.0MHz switching frequency to accommodate the use of small capacitors and a small inductor necessary in size sensitive portable applications. Light intensity and shutdown are conveniently controlled by a single analog voltage. Power efficiency and battery life are extended through the use of a high voltage, low R_{DSON} N-channel MOSFET switch.The MX841 is designed to operate over a temperature range of -40°C to +85°C, and is available in an SOIC-8 Package, with or without an Exposed Pad in Tube or on Tape and Reel. (Alternate package types available upon request).

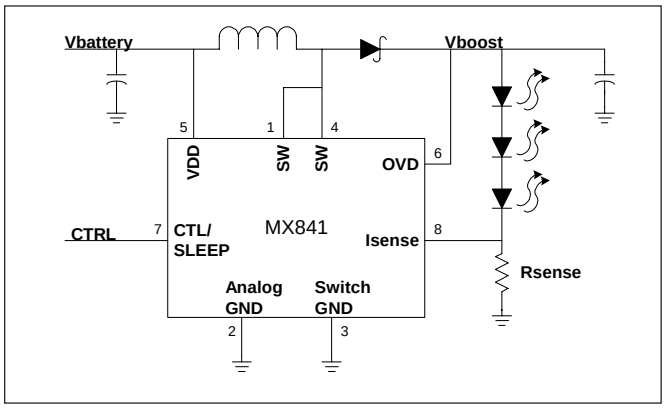
Ordering Information

Part No.	Description	Qty
MX841BE	SOIC-8 Exposed Pad Tube	100
MX841BETR	SOIC-8 Exposed Pad T&R	1,000

Functional Block Diagram



Typical Application



MX844

12 BIT, MULTI-CHANNEL POWER & TEMP SENSOR FOR MONITOR & CONTROL SYSTEMS

Features

- Wide Input Supply Range: 4.5V to 40V
- Programmable gain differential amplifier (±10mV, ±25mV, ±50mV, ±250mV ranges)
- 4 channel differential input multiplexer (3 input channels plus ground)
- Integrated 12-bit ADC
- Serial data output (SDO) with data ready pin
- Fine calibration of Full Scale Range (FSR) using VTRIM pin
- Bi-directional Current Sense
- Internal temperature sensor with 0.2°C resolution
- Compatible with 3.3V and 5V Microcontrollers
- Operating Temperature Range: -40°C to 85°C
- 5mm x 5mm, QFN-28 RoHS Package

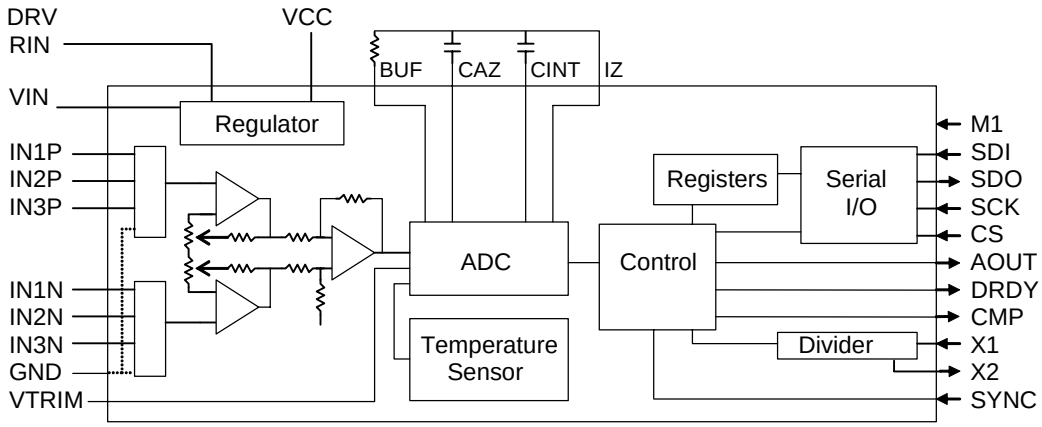
General Description

The MX844 is a fully integrated subsystem that measures temperature plus differential current and voltage. An internal temperature sensor measures ambient temperature with 2.5°C accuracy. Current and voltage measurements are made differentially through a four input multiplexer connected to a programmable gain fully differential sense amplifier. The differential sense amplifier is optimized to measure very small positive or negative voltages near ground for low side bi-directional sensing. A dual slope ADC converts the temperature sensor or sense amplifier outputs to a 12-bit digital word that includes 3 ½ digits plus sign. The input multiplexer channel and programmable gain amplifier range may be changed between ADC conversions. An on-chip voltage regulator enables the MX844 to operate over a wide input voltage range of 4.5 to 40 volts.Controller interrupt or over-voltage/over-current signals may be generated by a pair of 12-bit digital comparators configured as a window comparator or simple threshold detection function. The serial port supports standard 4-wire synchronous serial data, or asynchronous serial „talk-only“ data, and is compatible with most 3.3V and 5V microcontrollers.

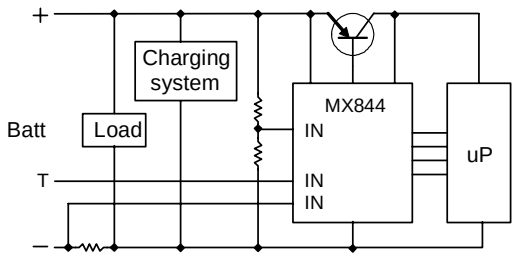
Ordering Information

Part No.	Description	Qty
MX844R	QFN-28 Tube	73
MX844RTR	QFN-28 Tape & Reel	2500

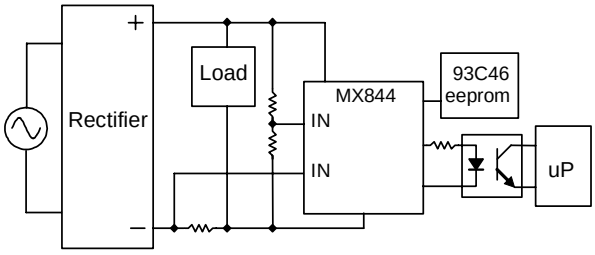
Functional Block Diagram



Typical Application



Battery charge/discharge current, voltage, temperature



Isolated voltage, current, and temperature sensing

MX846-02

50 mA Switched Capacitor Buck-Boost DC/DC Converter with Regulated Output

Features

- Fully Regulated Output Voltage (5 V and Adjustable)
- Input Voltage Range from 3 V to 5 V
- 50 mA Output Current
- Output Accuracy: ±5%
- High Switching Frequency: 1MHz
- Low Power Shutdown Mode: 1 µA (Typical)
- Minimum Number of Low Cost External Components
- 8 lead, RoHS compliant, SOIC package
- Wide Temperature Range: -40°C to +85°C

Applications

- Local 3V to 5V Conversions
- Battery Powered Devices
- Computer Peripherals and Add-On Cards
- Portable Instruments
- Mobile Phones

General Description

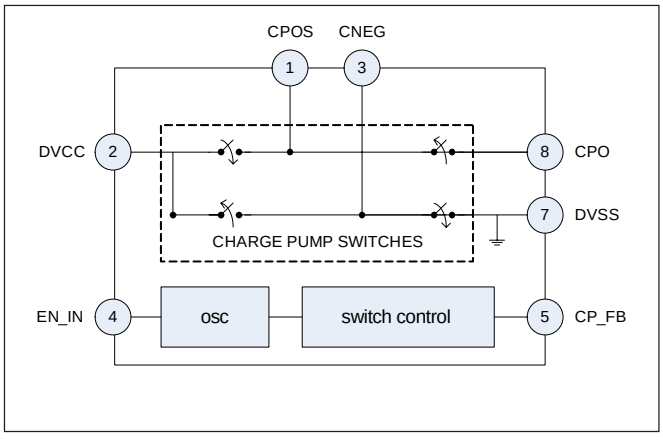
The MX846 is a 50 mA regulated output switched capacitor Buck-Boost DC/DC Converter targeting portable, battery powered devices. The MX846 supplies a high efficiency regulated output voltage with a minimum number of external components. The output is adjustable from 3 to 5 volts with an accuracy of ±5%. The charge pump topology of the MX846 eliminates the need for an inductor making it ideal for low noise applications.

With an operating range of 3 to 5 volts, and a typical shutdown current of 1 µA, the MX846 is an optimum choice for portable battery powered devices. A 1MHz switching frequency enables the use of small charge pump and filter capacitors to meet the demands of size sensitive applications.

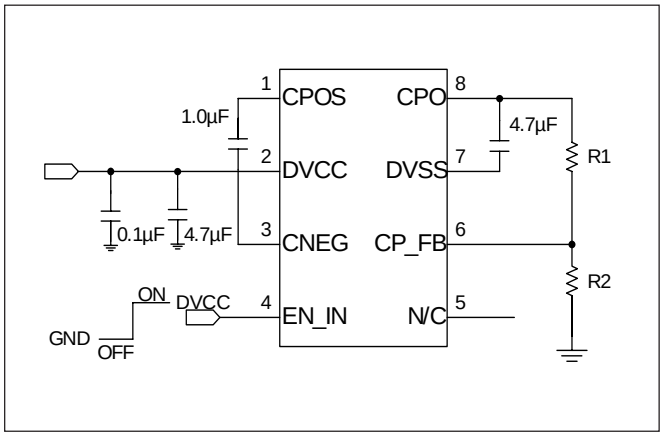
Ordering Information

Part No.	Description	Qty
MX846B	SOIC-8 Tube	100
MX846BTR	SOIC-8 Tape and Reel	2500

Functional Block Diagram



Typical Application



Features

- CMOS Technology
- ±15 Volt Output Driver Supply Voltage
- Drives Segment or Active Matrix Displays
- 4 Level Gray Scale
- 25MHz Clock Frequency
- Bi-Directional Data Transfer
- Selectable Register Length
- 2.7V to 5.5V Logic Supply Voltage
- Cascadable

Applications

- eBooks / eReaders
- Electronic Shelf Labels / Point Of Purchase Displays
- Mobile Phones / Portable Hand Held Devices
- Smart Cards
- Signage

General Description

The MX860 is a selectable 240, 256, or 268 bit long 2-bit wide serial-input parallel-output digital shift register with level conversion on each parallel output which converts the 2 digital bits into VPOS, VSS, or VNEG analog output voltages. An 8-bit input bus simultaneously inputs 4 groups of 2 bits each.

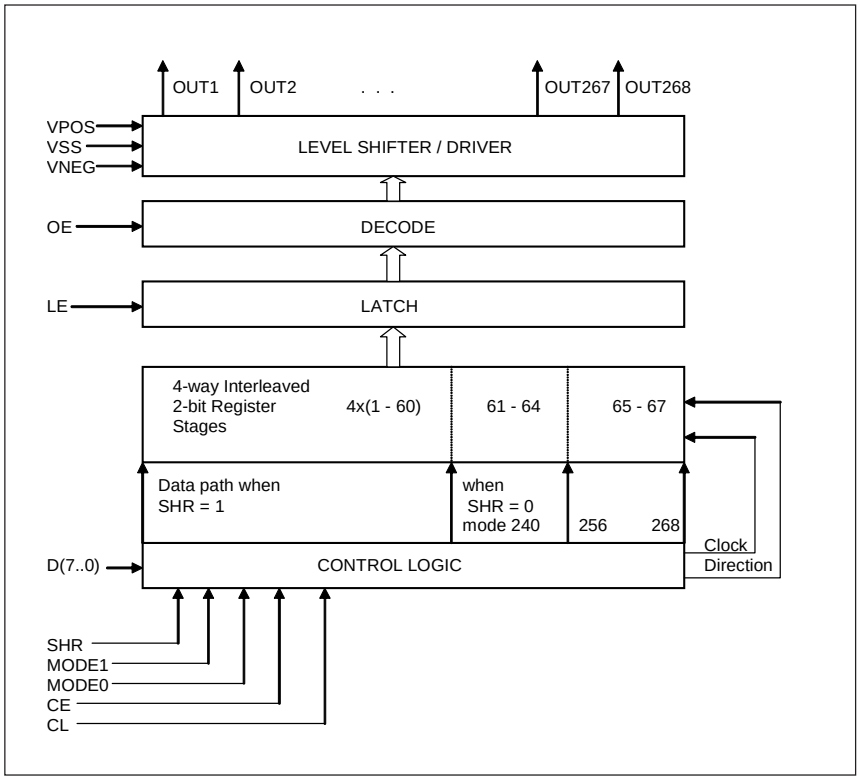
The MX860 consists of a selectable length Bi-Directional Input Register, Transfer Latch, and 268 bit Level Shifter / Output Driver. Each „OUT" pin is switched to one of [VSS, VPOS, VNEG] according to the D0...D7 logic levels clocked into the MX860, modified by the OE pin.

The MX860 is designed to operate over a temperature range of -40°C to +85°C, and is available as Gold Bumped in Wafer Form or Waffle Pack, and 48mm Tape Carrier Package.

Ordering Information

Part No.	Description
MX860WB	Gold Bumped Die / Wafer Form
MX860XB	Gold Bumped Die / Waffle Pack
MX860TC	48mm Super Wide Tape Carrier

Block Diagram



MX868

12 Bit Digital Output Magnetic Flux Sensor

micronix An IXYS Company

Features

- Single 5 Volt Power Supply
- Externally Configurable ±50A Bi-DirectionCurrent Sense per Turn
- 12-Bit Serial Digital Output
- Full Scale Magnetic Flux Intensity of ±500Gauss
- 2K Conversions/Second
- Microcontroller Compatible
- Standard 3 Wire Serial Interface plus ChipSelect
- In System Calibration: OTP Full Scale Trim viathe Serial I/O Port
- Programmable Digital Filter Time Constant
- 8 Lead DFN package RoHS Compliant

Applications

- Load Detection and Management
- Motor Control
- Power Supplies

General Description

The MX868 is a 12 Bit Digital Output Magnetic Flux Sensor. The device is a complete sampled data subsystem that converts a magnetic flux intensity of ±500 Gauss full scale into a 12-bit digital output word. The sensor operates as a slave on the serial interface with TTL-level compatible inputs SDI (serial data input), SCK (serial clock), and CS* (chip select, active low). Terminal SDO is the tri-state serial data output.

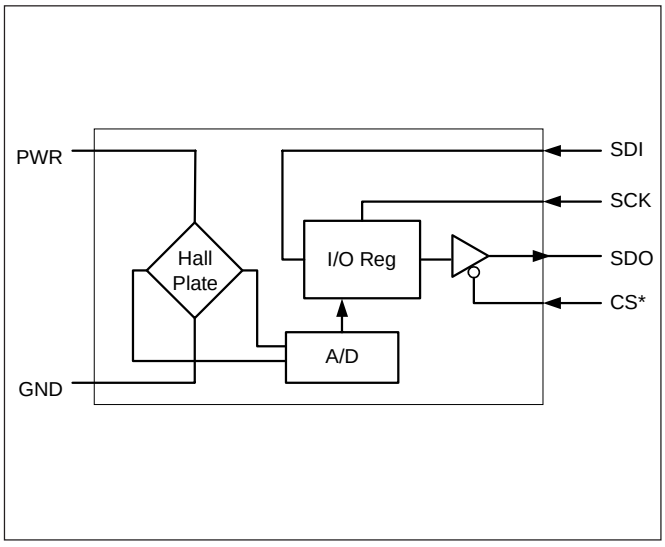
An adjustable exponentially weighted moving average digital filter is included that is capable of improving the signal to noise ratio while reducing the signal bandwidth. The full scale trim and/or the digital filter time constant are controllable through the serial I/O interface and are one-time programmable through the serial interface (once programmed, the values are loaded at every power-on).

The MX868 can be mounted onto a PCB or incorporated into a magnetic assembly and then calibrated in-system through the serial interface. The operating voltage range is 4.5V to 5.5V.

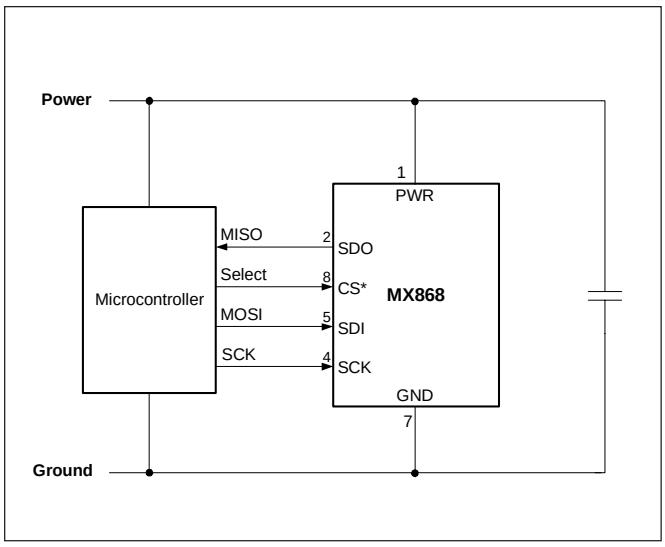
Ordering Information

Part No.	Description	Qty
MX868R	DFN-8 Tube	91
MX868RTR	DFN-8 Tape & Reel	2500

Functional Block Diagram Typical



Application Circuit



MX877

8-Channel, 60V Relay/Load Driver
Push-Pull Output, 3 Wire Interface

Features

- 8 Outputs Rated at 60V, 80mA
- Push-Pull Driver Configuration
- 6V to 60V Driver Supply Range
- 2.7V to 5.5V Logic Supply Range
- 3 Wire Serial Interface plus Chip Select
- Captures Serial & Parallel Input Data
- Outputs can be paralleled
- 28 Lead QFN Package

Applications

- White Goods
- ATE
- Industrial Equipment
- Automotive Relay Control

General Description

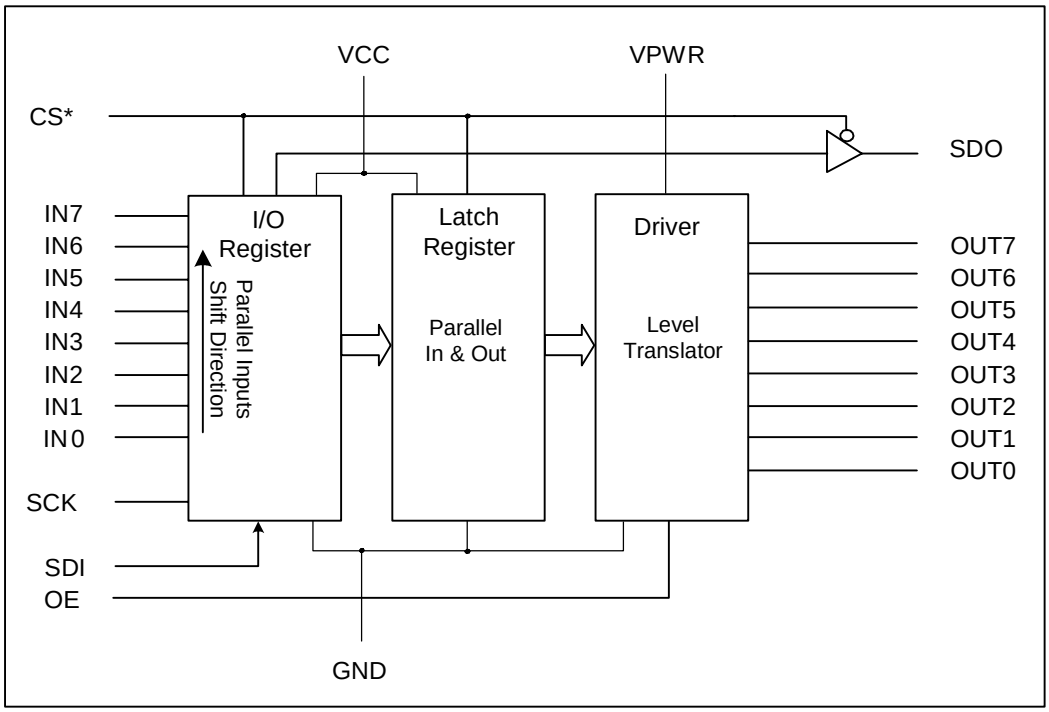
The MX877 is an 8 channel high voltage switch with 8-bit parallel or serial input control. The MX877 connects directly to a microprocessor through a standard 3 wire serial interface. The push-pull output configuration can drive up to 60 volts at 80mA. Outputs can be paralleled for increased drive current up to a device total of 400mA sink or source.

The MX877 is designed to operate over a temperature range of -40°C to +85°C, and is available in a QFN-28 Package.

Ordering Information

Part No.	Description	Qty
MX877R	QFN-28	73
MX877RTR	QFN-28 Tape & Reel	2500

Functional Block Diagram



MX878

8-Channel, 60V Relay/Load Driver
Open Drain Output, 3 Wire Interface

Features

- 8 Outputs Rated at 60V, 200mA
- Open Drain Pull-Down Driver Configuration
- 6V to 60V Driver Supply Range
- 2.7V to 5.5V Logic Supply Range
- 3 Wire Serial Interface plus Chip Select
- Captures Serial & Parallel Input Data
- Outputs can be paralleled
- 28 Lead QFN Package

Applications

- White Goods
- ATE·Industrial Equipment
- Automotive Relay Control

General Description

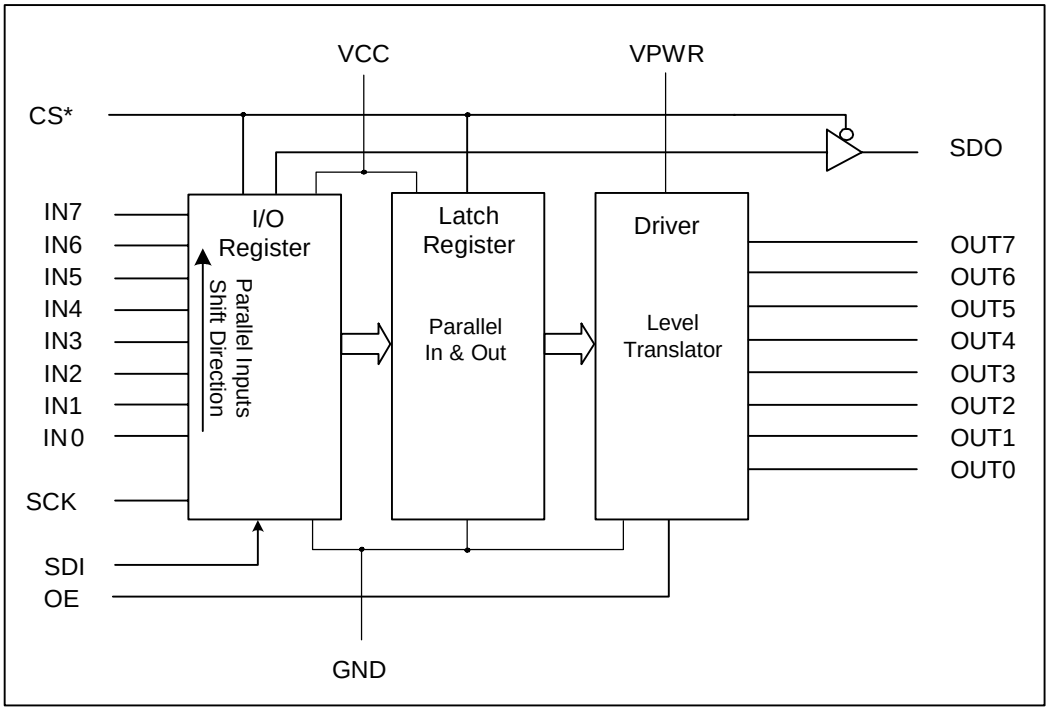
The MX878 is an 8 channel high voltage switch with 8-bit parallel or serial input control. The MX878 connects directly to a microprocessor through a standard 3 wire serial interface. The open drain pull-down output configuration can drive up to 60 volts at 200mA. Outputs can be paralleled for increased drive current up to a device total of 1000mA sink.

The MX878 is designed to operate over a temperature range of -40°C to +85°C, and is available in a QFN-28 Package.

Ordering Information

Part No.	Description	Qty
MX878R	QFN-28	73
MX878RTR	QFN-28 Tape & Reel	2500

Functional Block Diagram



MX879

8-Channel, 60V Relay/Load Driver
Open Drain Output, 3 Wire Interface

Features

- 8 Outputs Rated at 60V, 120mA
- Open Drain Pull-Up Driver Configuration
- 6V to 60V Driver Supply Range
- 2.7V to 5.5V Logic Supply Range
- 3 Wire Serial Interface plus Chip Select
- Captures Serial & Parallel Input Data
- Outputs can be paralleled
- 28 Lead QFN Package

Applications

- White Goods
- ATE
- Industrial Equipment
- Automotive Relay Control

General Description

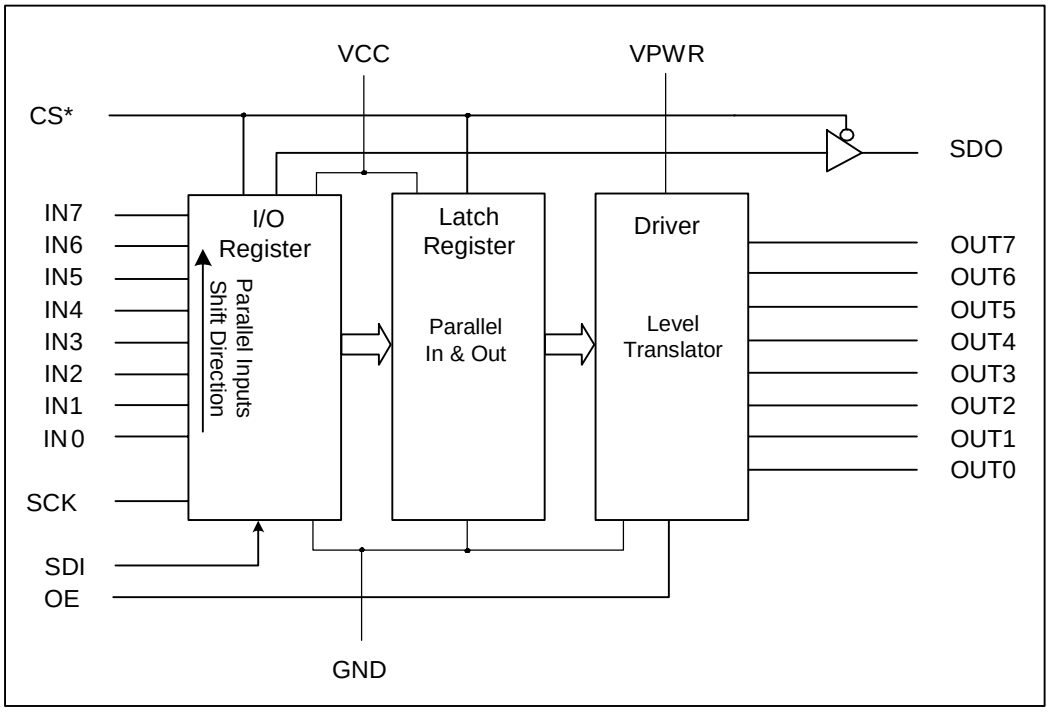
The MX879 is an 8 channel high voltage switch with 8-bit parallel or serial input control. The MX879 connects directly to a microprocessor through a standard 3 wire serial interface. The open drain pull-up output configuration can drive up to 60 volts at 120mA. Outputs can be paralleled for increased drive current up to a device total of 600mA source.

The MX879 is designed to operate over a temperature range of -40°C to +85°C, and is available in a QFN-28 Package.

Ordering Information

Part No.	Description	Qty
MX879R	QFN-28	73
MX879RTR	QFN-28 Tape & Reel	2500

Functional Block Diagram



MX881

Xenon Flash Controller & LED Torch Driver

Features

- Highly Integrated Solution that includes:
  - Optimized Flyback Boost Converter Controller, IGBT Driver, 100mA LED Torch Driver, and Transformer Drive Transistor
- Small Size (3mm x 5mm DFN-16)
- High Efficiency
- 3.0 to 5.5 Volt Battery Operation
- 1.65 to 5.5 Volt Digital Interface Operation
- Low Shut Down Current: 0.1µA
- SPI and I²C Bus Compatibility
- Programmable Average Battery Current: (50mA – 220mA)
- Programmable Output Voltage: (300V - 330V)

Applications

- Camera Cell Phones, Digital Still Cameras, and Optical Film Cameras

General Description

The MX881 offers a highly integrated Xenon Flash controller, providing an ideal solution for small form factor flash and torch lighting applications. The MX881 integrates a user programmable Controller, IGBT Driver, 100mA LED Torch Driver, and Transformer Drive Transistor to significantly reduce component count, solution size, and design complexity.

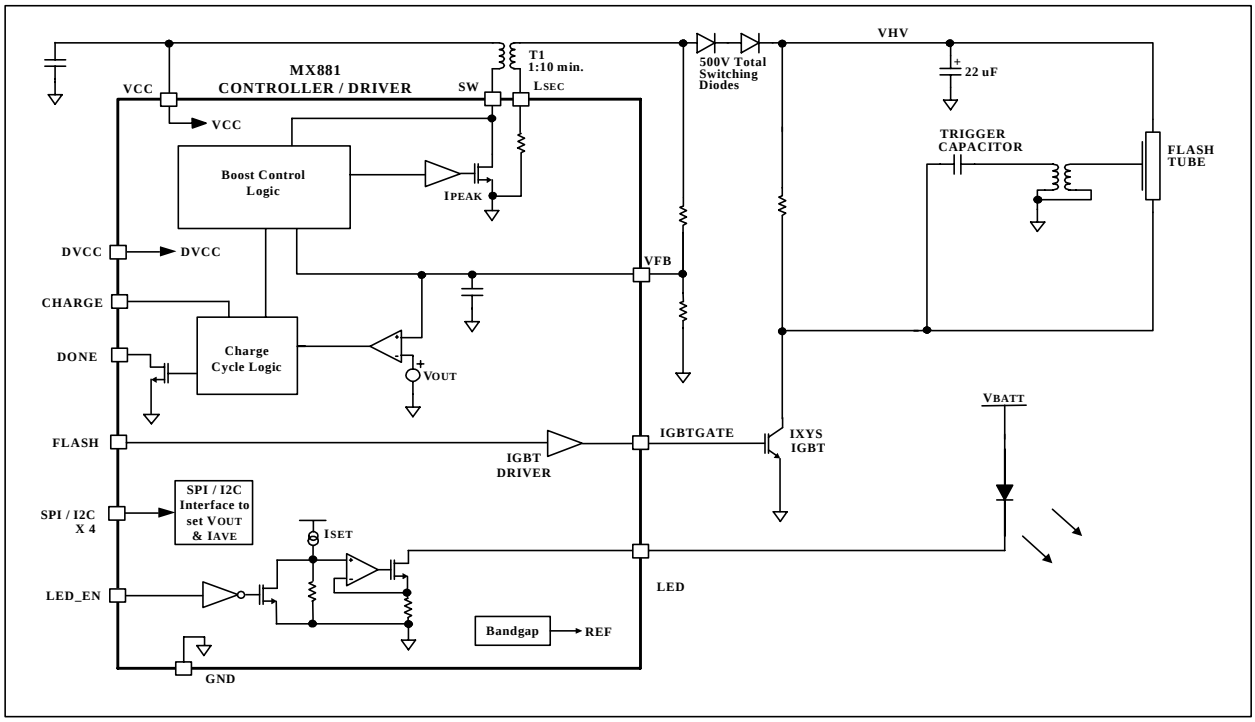
The Boost Control Logic manages the peak primary current and off time to optimize charge time and control average battery current.

The Charge Cycle Control starts the charge cycle on a low to high transition of the CHARGE input. Then detects when the output voltage has reached the desired voltage and stops the Boost Control Logic, while asserting the DONE output signal. The SPI/I²C serial interface adds the flexibility of 6 programmable average battery currents and 4 programmable high voltage output levels for the flash function.

Ordering Information

Part No.	Description	Qty
MX881R	3mm X 5mm DFN-16	73
MX881RTR	DFN-16 Tape & Reel	2000

Typical Application



MX884

High-Side Current Monitor
With 10-Bit Serial Digital Output

Features

- 3-60 V Operating Voltage Range
- Integrated 10-bit ADC
- 3 wire serial interface
- Microcontroller Compatible
- Low Power
- Minimum External Components
- TSOT-23 RoHS Compliant Package

Applications

- Lighting Management
- Current Shunt Measurement
- Remote Sensing
- Battery Monitoring
- Microprocessor Controlled Power Management

General Description

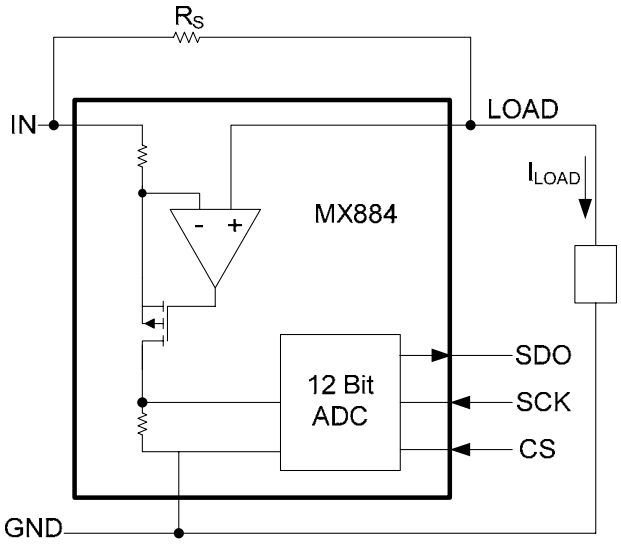
The MX884 targets power management applications where high noise immunity and low cost are primary requirements. Its integrated 10-bit ADC provides high resolution, making it ideal for current monitoring systems. The MX884 enables digital power management, in which a microcontroller can readily monitor the current in a system and perform other control functions in power systems and motion control products.

The MX884 converts a small voltage developed across an external „current“ sense resistor to a 10-bit digital output. It features a wide common mode input supply voltage range of 3V to 60V and easily interfaces to most microcontrollers. The design is simple yet cost-effective, requiring very few external components, making it especially suitable for high volume applications.

Ordering Information

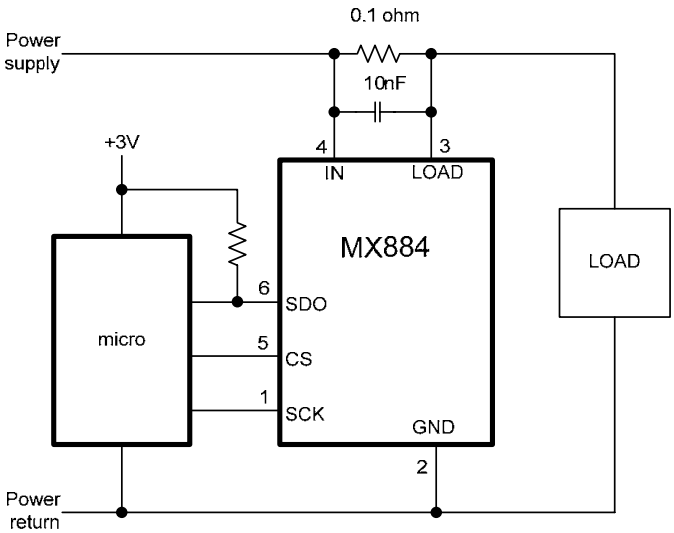
Part No.	Description	Qty
MX884HTTR	6L TSOT23 Tape & Reel	3,000

Functional Block Diagram



Typical Application Circuit

(1 Amp full scale)



MX887D

µPower Hall-Effect Switch

Features

- µPower Operation (15 µW typical at 25°C)
- Omni polar (switches with N or S pole)· 2.5 to 5.5 Volt Operation
- Simple Digital Output Interfacing
  - Open Drain
- Ultra Low Offset Canceling Amplifiers Provide
  - Sensitive, Accurate, Stable Switching Points and Immunity to Mechanical Stress
- Solid State Circuitry
- Operating Temperature Range: -40°C to +85°C
- RoHS Compliant TSOT-23 3 Lead Package

Applications

- Handheld Portable Devices
- White Goods
- Automotive - Body Systems
- Security Systems
- High Reliability Reed Switch Replacement

General Description

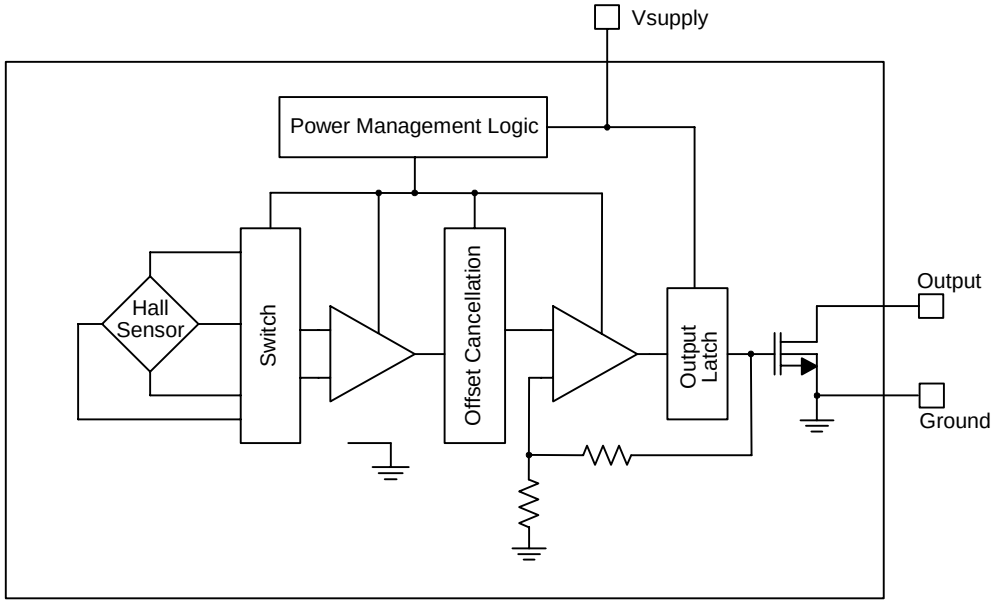
The MX887D integrated Hall-Effect switch targets the requirements of low-power portable devices with battery operating voltages from 2.5V to 5.5V. On-chip power management circuitry reduces the effective average current to just 5µA at 3.0 V_{SUPPLY}.

The switch output will turn „on“ when either a north or south magnetic pole is applied. The absence of a magnetic field will turn the switch into a high impedance „off“ state. Emulating the behavior of a traditional reed switch, together with the advantages of high integration and solid state reliability, makes the MX887D is an ideal replacement in low-power portable device applications.

Ordering Information

Part No.	Description	Qty
MX887DHTTR	TSOT-23 3L Tape & Reel	3000

Functional Block Diagram



MX887P

µPower Hall-Effect Switch

Features

- µPower Operation (15 µW typical at 25°C)
- Omni polar (switches with N or S pole)
- 2.5 to 5.5 Volt Operation
- Simple Digital Output InterfacingCMOS Push-Pull
- Ultra Low Offset Canceling Amplifiers ProvideSensitive, Accurate, Stable Switching Points and Immunity to Mechanical Stress
- Solid State Circuitry
- Operating Temperature Range: -40°C to +85°C
- RoHS Compliant TSOT-23 3 Lead Package

Applications

- Handheld Portable Devices
- White Goods
- Automotive - Body Systems
- Security Systems
- High Reliability Reed Switch Replacement

General Description

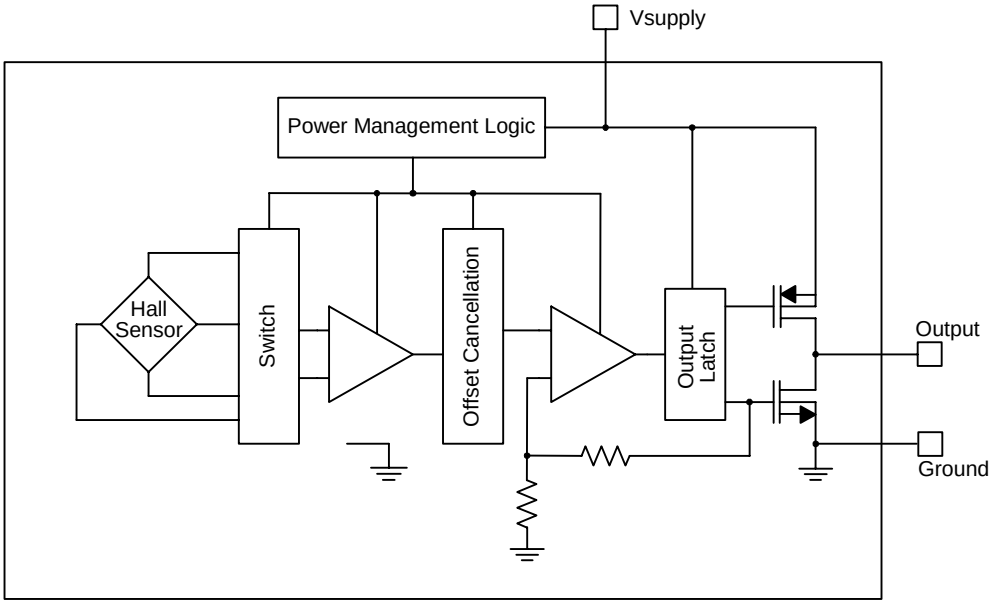
The MX887P integrated Hall-Effect switch targets the requirements of low-power portable devices with battery operating voltages from 2.5V to 5.5V. On-chip power management circuitry reduces the effective average current to just 5µA at 3.0 V_{SUPPLY}.

The switch output will transition to the Ground potential when either a north or south magnetic pole is applied. The removal of a magnetic field will transition the switch to the Vsupply potential. Emulating the behavior of a traditional reed switch, together with the advantages of high integration and solid state reliability, makes the MX887P is an ideal replacement in low-power portable device applications.

Ordering Information

Part No.	Description	Qty
MX887PHTTR	TSOT-23 3L Tape & Reel	3000

Functional Block Diagram



MX895

-300V Full Bridge Gate Driver

Features

- Full Bridge Gate Driver
- Internal high voltage level shift function
- Negative 300V Lamp Supply Voltage
- 3V to 12V CMOS Logic Compatible
- External Dead Time Control

Applications

- Commutator for High Intensity Discharge Lamps

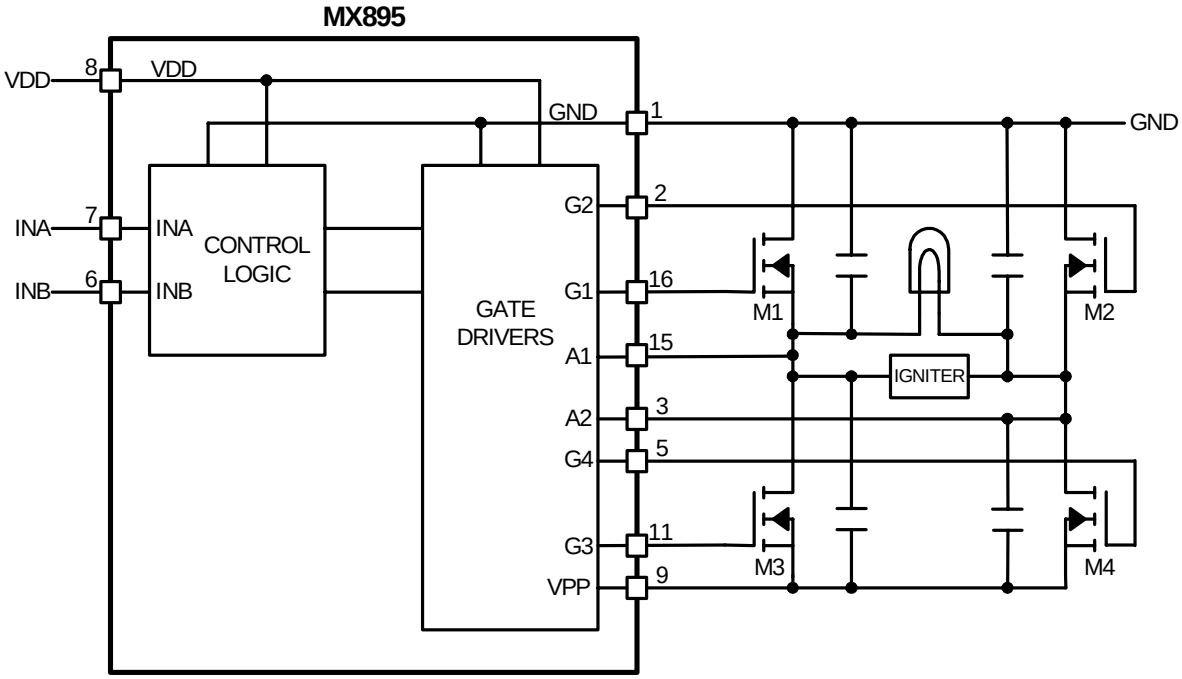
General Description

The MX895 is a high voltage integrated circuit fabricated using a trench isolated BiCMOS process. The circuit is designed for driving N-channel power MOSFETs in a full bridge configuration. The circuit is intended as a commutator for High Intensity Discharge (HID) lamps.

Ordering Information

Part No.	Description	Qty
MX895B	SOIC-16 Tube	49
MX895BTR	SOIC-16 Tape & Reel	2500

Functional Block Diagram and Typical Application Circuit



MXEI1480

±15V ePaper Source Driver

Features

- CMOS Technology
- ±15 Volt Output Driver Supply Voltage
- Drives Segment or Active Matrix Displays
- 4 Level Gray Scale
- 25MHz Clock Frequency
- Bi-Directional Data Transfer
- Selectable Register Length
- 2.7V to 5.5V Logic Supply Voltage
- Cascadable

Applications

- eBooks / eReaders
- Electronic Shelf Labels / Point Of Purchase Displays
- Mobile Phones / Portable Hand Held Devices
- Smart Cards
- Signage

General Description

The MXEI1480 is a selectable 400, or 480 bit long 2-bit wide serial-input parallel-output digital shift register with level conversion on each parallel output which converts the 2 digital bits into VPOS, VSS, or VNEG analog output voltages. An 8-bit input bus simultaneously inputs 4 groups of 2 bits each.

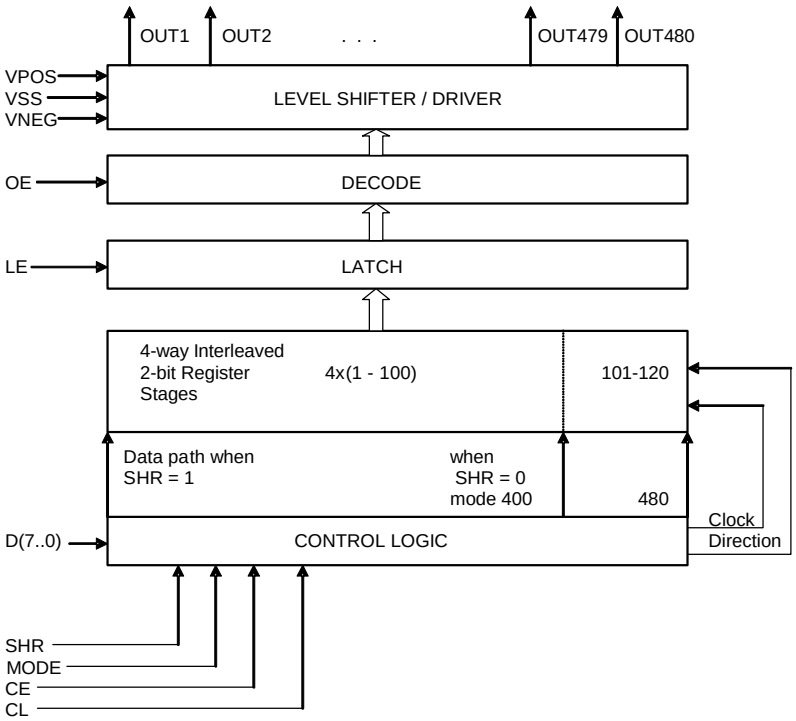
The MXEI1480 consists of a selectable length Bi-Directional Input Register, Transfer Latch, and 480 bit Level Shifter / Output Driver. Each „OUT“ pin is switched to one of [VSS, VPOS, VNEG] according to the D0...D7 logic levels clocked into the MXEI1480, modified by the OE pin.

The MXEI1480 is designed to operate over a temperature range of -40°C to +85°C, and is available as Gold Bumped Die in Wafer Form or Waffle Pack, and 70mm Tape Carrier Package.

Ordering Information

Part No.	Description
MXEI1480WB	Gold Bumped Die / Wafer Form
MXEI1480XB	Gold Bumped Die / Waffle Pack
MXEI1480TC	70mm Super Wide Tape Carrier

Block Diagram



MX6895

-550V Full Bridge Gate Driver

Features

- Full Bridge Gate Driver
- Internal high voltage level shift function
- Negative 550V Lamp Supply Voltage
- 3V to 12V CMOS Logic Compatible
- External Dead Time Control
- 8V to 12V Input Supply Voltage
- No External Bootstrap Capacitors

Applications

- Commutator for High Intensity Discharge Lamps
  - Vehicle Head Lamps
  - Outdoor/Street Lighting
  - Multimedia Projectors
  - Warehouse Lighting

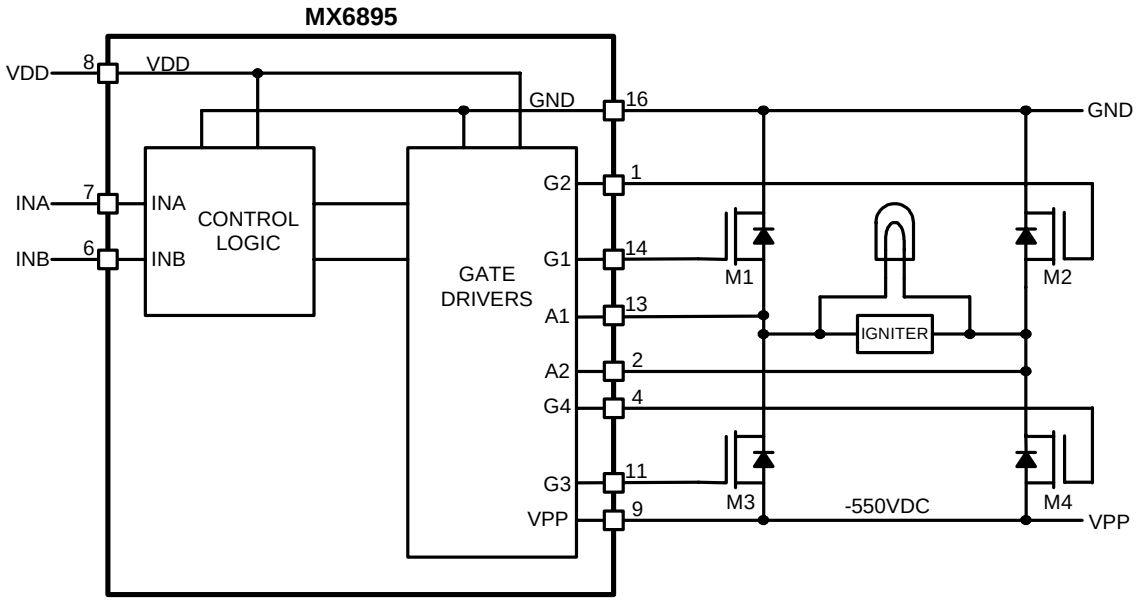
General Description

The MX6895 features our high voltage integrated circuit (HVIC) technology integrating high and low side N-channel power MOSFET drivers in a full bridge configuration. The circuit is intended as a commutator for High Intensity Discharge (HID) lamps.

Ordering Information

Part No.	Description	Qty
MX6895BE	SOIC-16 Tube	49
MX6895BETR	SOIC-16 Tape & Reel	2500

Functional Block Diagram and Typical Application Circuit



MX856 / MX857

Single Driver for GaAs FET Switches and Attenuators

micronix An IXYS Company

Features

- CMOS Technology
- TTL/CMOS compatible inputs
- Low switching noise
- 5nS typical true / complement output skew
- 5nS typical output rise and fall times
- Up to 20V output voltage
- Output high voltage programmable via V_{OPT}
- Output low voltage programmable via V_{EE}

Applications

- Digital control of analog circuits
- Level shifting and amplification
- Circuit applications requiring complementary signal generation with low skew
- Bias control for PIN diode drivers in a microwave switch

General Description

The MX856 and MX857 are high speed single channel level shifters with complimentary output drivers. The MX856 features a 5.0V V_{CC} positive supply, and the MX857 features a 3.3V V_{CC} positive supply.

The input buffers accept digital TTL or CMOS level signals, amplifies them to the V_{CC} and GND supply rails, and generates complementary outputs. The translator level shifts these output signals by amplifying them to the V_{CC} and V_{EE} supply rails.

The output drivers then buffer the signals to V_{OPT} and V_{EE}. V_{OPT} may be set within the range of V_{CC} and GND. The output drivers also adjust the complimentary signals for minimized skew error.

The MX856 and MX857 are designed to operate over a temperature range of -40°C to +85°C, and are available as die in wafer form, die in waffle pack, 8 lead SOIC package, and SOIC on Tape and Reel.

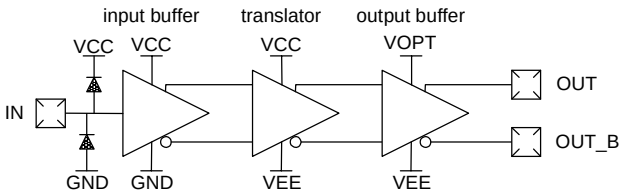
Ordering Information MX856

Part No.	Description	Qty
MX856B	8 Lead SOIC Tube	100
MX856BTR	SOIC on Tape & Reel	1000

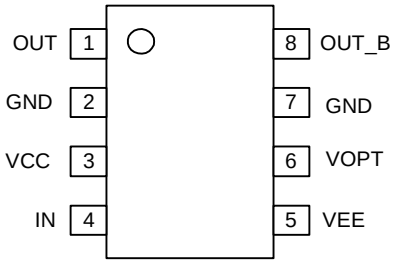
Ordering Information MX857

Part No.	Description	Qty
MX857B	8 Lead SOIC Tube	100
MX857BTR	SOIC on Tape & Reel	1000

Functional Block Diagram



8 Lead SOIC Configuration



MX8681

12-Bit Digital Output Magnetic Flux Sensor
±200 Gauss / 2KHz Conversion Rate

Features

- Higher Sensitivity Version of the MX868
- Single 5 Volt Power Supply
- Externally Configurable ±20A Bi-Direction Current Sense per Turn
- 12-Bit Serial Digital Output
- Full Scale Magnetic Flux Intensity of ±200 Gauss
- 2K Conversions/Second
- Microcontroller Compatible
- Standard 3 Wire Serial Interface plus Chip Select
- In System Calibration: OTP Full Scale Trim via the Serial I/O Port
- Programmable Digital Filter Time Constant
- 4mm x 4mm 8 Lead DFN package RoHS Compliant

Applications

- Load Detection and Management
- Motor Control
- Power Supplies

Ordering Information

Part No.	Description	Qty
MX8681R	DFN-8 Tube	91
MX8681RTR	DFN-8 Tape & Reel	2500

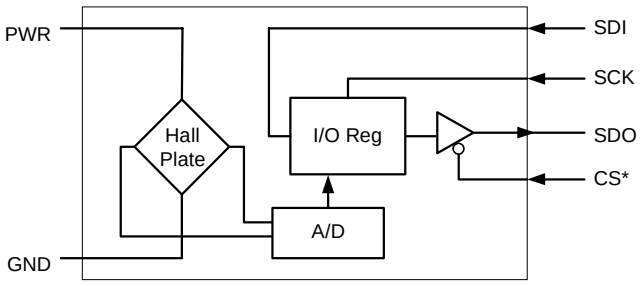
General Description

The MX8681 is a 12 Bit Digital Output Magnetic Flux Sensor. The device is a complete sampled data subsystem that converts a magnetic flux intensity of ±200 Gauss full scale into a 12-bit digital output word. The sensor operates as a slave on the serial interface with TTL-level compatible inputs SDI (serial data input), SCK (serial clock), and CS* (chip select, active low). Terminal SDO is the tri-state serial data output.

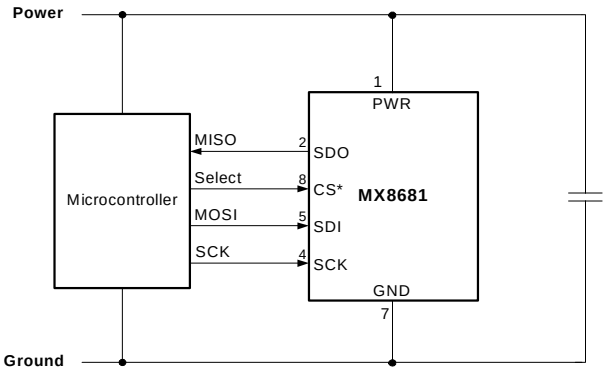
An adjustable exponentially weighted moving average digital filter is included that is capable of improving the signal to noise ratio while reducing the signal bandwidth. The full scale trim and/or the digital filter time constant are controllable through the serial I/O interface and are one-time programmable through the serial interface (once programmed, the values are loaded at every power-on).

The MX8681 can be mounted onto a PCB or incorporated into a magnetic assembly and then calibrated in-system through the serial interface. The operating voltage range is 4.5V to 5.5V.

Functional Block Diagram Typical



Application Circuit



MX8682

12-Bit Digital Output Magnetic Flux Sensor
±100 Gauss / 2KHz Conversion Rate

Features

- Higher Sensitivity Version of the MX8681
- Single 5 Volt Power Supply
- Externally Configurable ±10A Bi-Direction Current Sense per Turn
- 12-Bit Serial Digital Output
- Full Scale Magnetic Flux Intensity of ±100 Gauss
- 2K Conversions/Second
- Microcontroller Compatible
- Standard 3 Wire Serial Interface plus Chip Select
- In System Calibration: OTP Full Scale Trim via the Serial I/O Port
- Programmable Digital Filter Time Constant
- 4mm x 4mm 8 Lead DFN package RoHS Compliant

Applications

- Load Detection and Management
- Motor Control
- Power Supplies

General Description

The MX8682 is a 12 Bit Digital Output Magnetic Flux Sensor. The device is a complete sampled data subsystem that converts a magnetic flux intensity of ±100 Gauss full scale into a 12-bit digital output word. The sensor operates as a slave on the serial interface with TTL-level compatible inputs SDI (serial data input), SCK (serial clock), and CS* (chip select, active low). Terminal SDO is the tri-state serial data output.

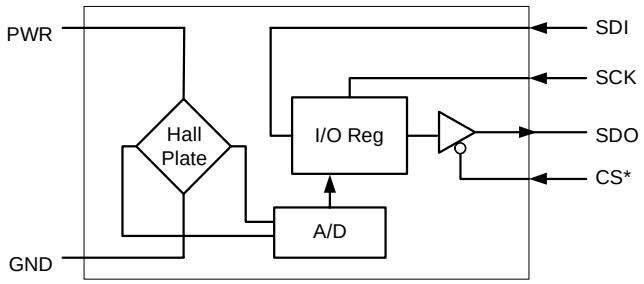
An adjustable exponentially weighted moving average digital filter is included that is capable of improving the signal to noise ratio while reducing the signal bandwidth. The full scale trim and/or the digital filter time constant are controllable through the serial I/O interface and are one-time programmable through the serial interface (once programmed, the values are loaded at every power-on).

The MX8682 can be mounted onto a PCB or incorporated into a magnetic assembly and then calibrated in-system through the serial interface. The operating voltage range is 4.5V to 5.5V.

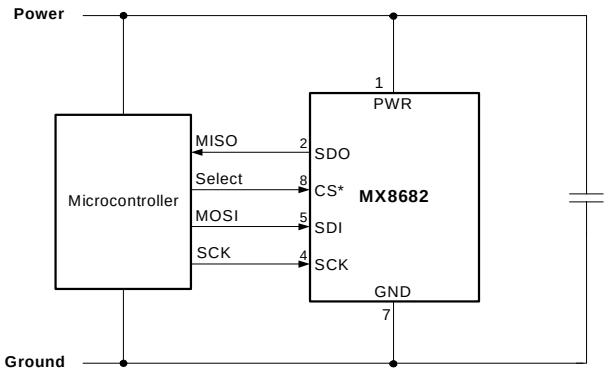
Ordering Information

Part No.	Description	Qty
MX8682R	DFN-8 Tube	91
MX8682RTR	DFN-8 Tape & Reel	2500

Functional Block Diagram Typical



Application Circuit



MX8683

10-Bit Digital Output Magnetic Flux Sensor
±200 Gauss / 20KHz Conversion Rate

Features

- Single 5 Volt Power Supply
- Externally Configurable ±20A Bi-DirectionCurrent Sense per Turn
- 12-bit Serial Digital Output / 10-bit ADC
- Full Scale Magnetic Flux Intensity of ±200Gauss
- 20K Conversions/Second
- Microcontroller Compatible
- Standard 3 Wire Serial Interface plus ChipSelect
- In System Calibration: OTP Full Scale Trim viathe Serial I/O Port
- Programmable Digital Filter Time Constant
- 4mm x 4mm 8 Lead DFN package RoHS Compliant

Applications

- Load Detection and Management
- Motor Control
- Power Supplies

General Description

The MX8683 is a 10-bit Digital Output Magnetic Flux Sensor. The device is a complete sampled data subsystem that converts a magnetic flux intensity of ±200 Gauss full scale into a 12-bit format digital output word, (10-bit resolution). The sensor operates as a slave on the serial interface with TTL-level compatible inputs SDI (serial data input), SCK (serial clock), and CS* (chip select, active low). Terminal SDO is the tri-state serial data output.

An optional exponentially weighted moving average digital filter is included that averages the 10-bit ADC output into a 12-bit output word. The digital filter has a transfer function equivalent to a first order low pass filter.

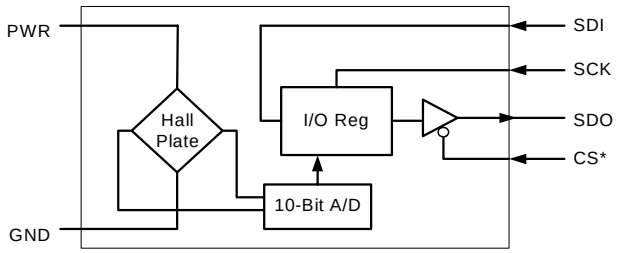
The full scale trim and/or the digital filter time constant are controllable through the serial I/O interface and are one-time programmable through the serial interface (once programmed, the values are loaded at every power-on).

The MX8683 can be mounted onto a PCB or incorporated into a magnetic assembly and then calibrated in-system through the serial interface. The operating voltage range is 4.5V to 5.5V.

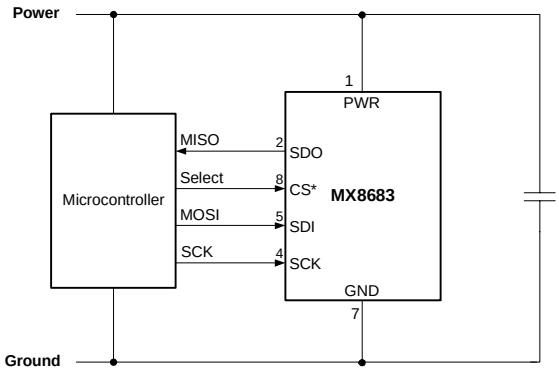
Ordering Information

Part No.	Description	Qty
MX8683R	DFN-8 Tube	91
MX8683RTR	DFN-8 Tape & Reel	2500

Functional Block Diagram Typical



Application Circuit



MX8771

16-Channel, 60V Driver
Push-Pull Output, I2C Interface

Features

- 16 Push-Pull Outputs Rated at 60V, 15mA
- 6V to 60V Driver Supply Range
- 1.65V to 5.5V Logic Supply Range
- I2C Interface
- Synchronous update across multiple packages
- Outputs can be paralleled
- 28 Lead QFN Package

Applications

- White Goods
- ATE
- Industrial Equipment

General Description

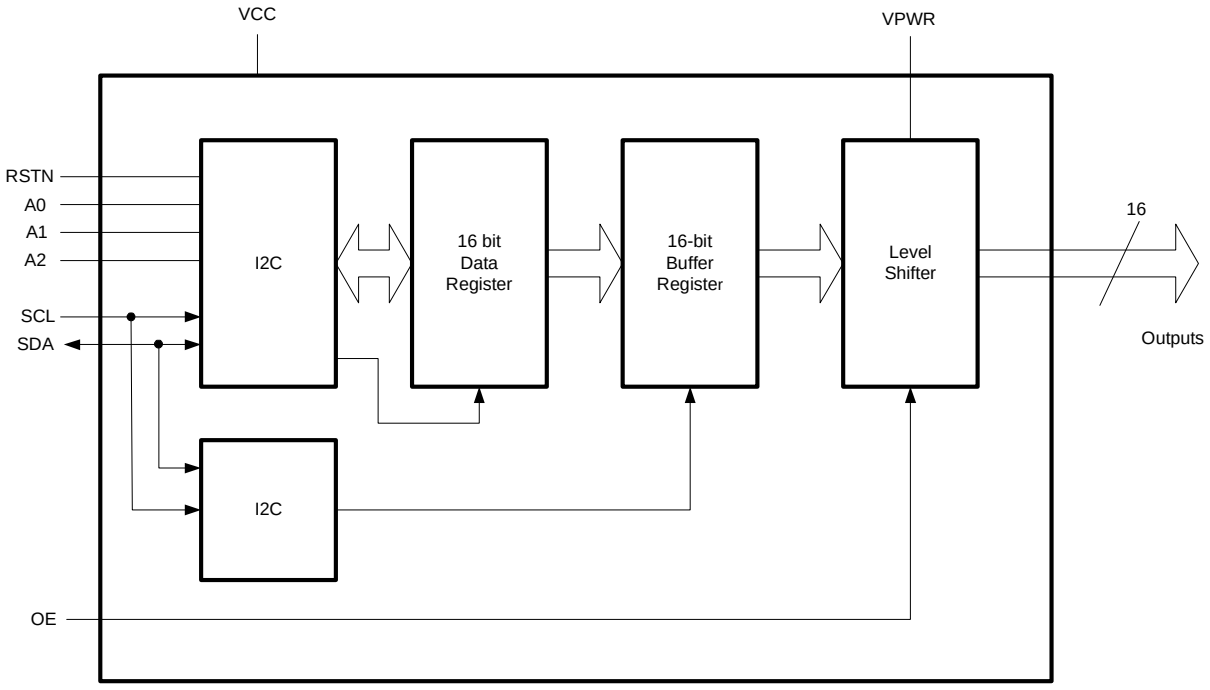
The MX8771 is a 16 channel high voltage switch with I2C serial input control. The MX8771 connects directly to a microprocessor through a standard I2C interface. The push-pull output configuration can drive up to 60 volts at 15mA. Outputs can be paralleled for increased drive current up to a device total of 240mA sink or source.

The MX8771 is designed to operate over a temperature range of -40°C to +85°C, and is available in a QFN-28 Package.

Ordering Information

Part No.	Description	Qty
MX8771R	QFN-28	73
MX8771RTR	QFN-28 Tape & Reel	2500

Functional Block Diagram



MX8830B / MX8830R / MX8830X

Synchronous Buck MOSFET Driver

Features

- Logic Level Gate Drive Compatible
- 1A Source, 1A Sink Peak Drive Current
- Programmable High-Side Driver Turn-on Delay
- Supports Floating Voltage for Top Driver Up to 24V
- MX8830B/MX8803R/MX8830X: Undervoltage Lockout
- MX8830R/MX8830X: Output Shutdown, Low Side Shutdown Inputs
- 10µA Shut Down Current
- 2mA Quiescent Current (Non- Switching)
- Bootstrapped High Side Driver
- Cross-Conduction Protection

Applications

- Multiphase Desktop CPU Supplies
- Mobile CPU Core Voltage supplies
- High Current / Low Voltage DC/DC Synchronous Buck Converters

General Description

The MX8830 family are 1A Source / 1A Sink Synchronous Buck MOSFET Drivers. These Synchronous Buck MOSFET Drivers are specifically designed to drive two N-channel power MOSFETs in a synchronous buck converter. The High-Side driver is powered via a bootstrapped power connection. The driver is capable of 13ns High-Side output, and 12ns Low-Side output transition times driving a 3000pF load.

The MX8830B, MX8830R, and MX8830X incorporate an undervoltage lockout to prevent unintentional gate drive output during low voltage conditions. The MX8830R/X include External Shutdown, and the MX8830X Low-Side Drive Shutdown features. Simultaneous shutdown of both outputs prevents rapid output capacitor discharge. The high-side turn-on delay is adjustable with an external capacitor added at the DLY pin.

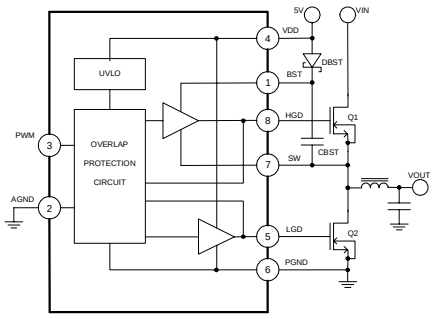
The MX8830B/MX8830R/MX8830X are designed to operate over a temperature range of -40°C to +85°C. The MX8830B is available in an 8-Lead SOIC, and the MX8830R in a 10-lead DFN.

Ordering Information

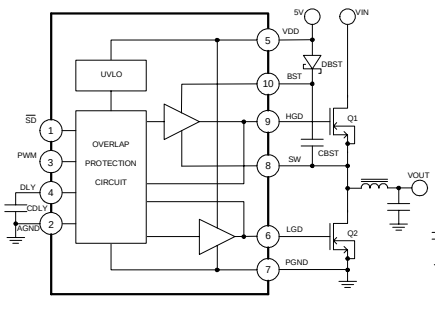
Part No.	Package	Pack Qty
MX8830B	SOIC-8	98 (Tube)
MX8830BTR	SOIC-8	2500 (Tape&Reel)
MX8830R10	DFN-10	121 (Tube)
MX8830R10TR	DFN-10	2000 (Tape&Reel)
MX8830X	Die	Waffle Pack

Functional Block Diagram and General Application Circuit

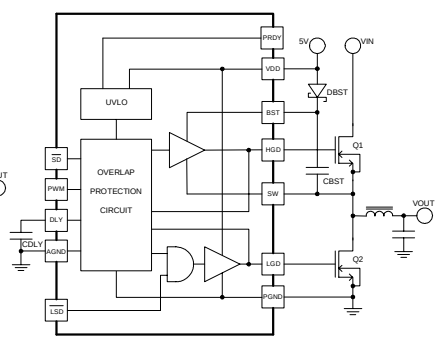
MX8830B



MX8830R



MX8830X



MX8871D

Low Power Hall-Effect Switch

Features

- MX887D with 64 times faster sampling
- Omni polar (switches with N or S pole)
- 2.5 to 5.5 Volt Operation
- Simple Digital Output Interfacing
  - Open Drain
- Ultra Low Offset Canceling Amplifiers Provide
  - Sensitive, Accurate, Stable Switching Points and Immunity to Mechanical Stress
- Solid State Circuitry
- Operating Temperature Range: -40°C to 100°C
- RoHS Compliant TSOT-23 3 Lead Package

Applications

- White Goods
- Automotive
- Security Systems
- High Reliability Reed Switch Replacement

General Description

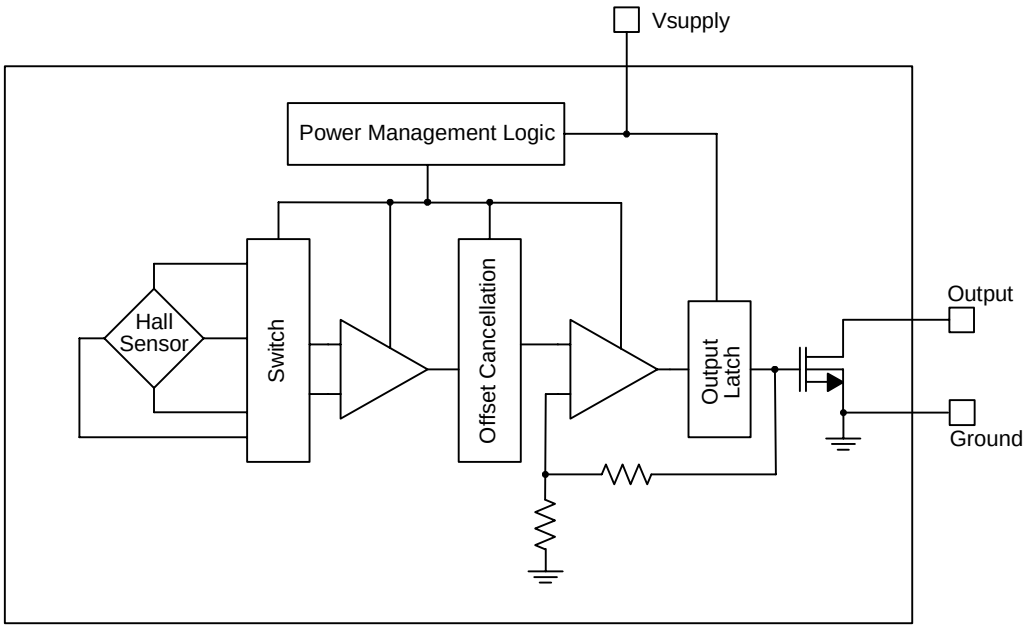
The MX8871D integrated Hall-Effect switch targets battery operating voltages from 2.5V to 5.5V. On-chip power management circuitry reduces the effective average current to just 125µA at 3.0 V_{SUPPLY}.

The switch output will turn „on“ when either a north or south magnetic pole is applied. The absence of a magnetic field will turn the switch into a high impedance „off“ state.

Ordering Information

Part No.	Description	Qty
MX8871DHTTR	TSOT-23 3L Tape & Reel	3000

Functional Block Diagram



MX8871P

Low Power Hall-Effect Switch

Features

- MX887P with 64 times faster sampling
- Omni polar (switches with N or S pole)
- 2.5 to 5.5 Volt Operation
- Simple Digital Output Interfacing
  - CMOS Push-Pull
- Ultra Low Offset Canceling Amplifiers Provide
  - Sensitive, Accurate, Stable Switching Points and Immunity to Mechanical Stress
- Solid State Circuitry
- Operating Temperature Range: -40°C to 100°C
- RoHS Compliant TSOT-23 3 Lead Package

Applications

- White Goods
- Automotive
- Security Systems
- High Reliability Reed Switch Replacement

General Description

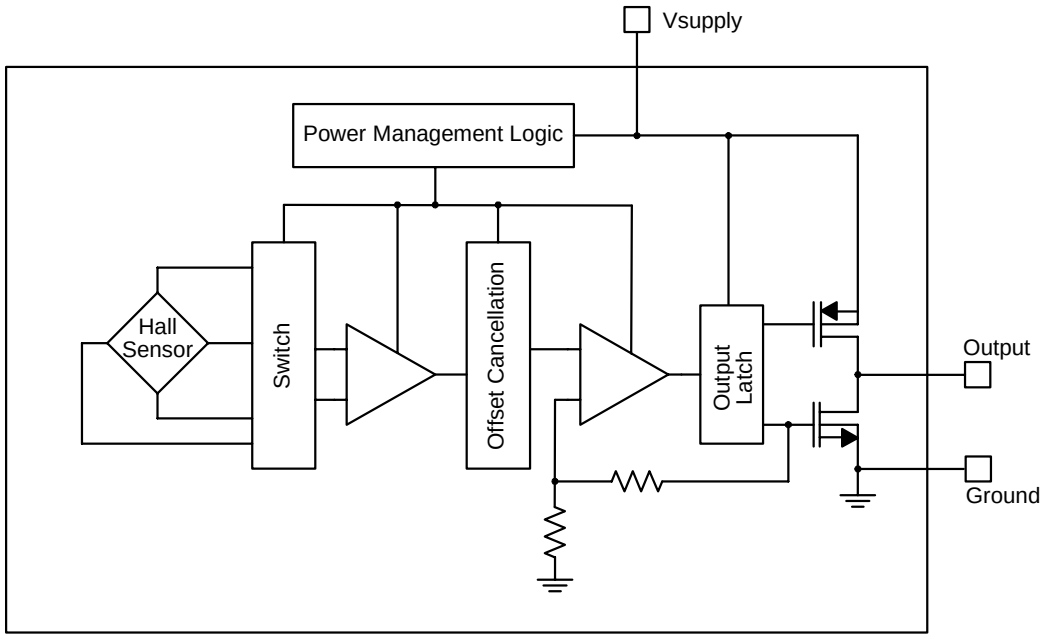
The MX8871P integrated Hall-Effect switch targets battery operating voltages from 2.5V to 5.5V. On-chip power management circuitry reduces the effective average current to just 125µA at 3.0 V_{SUPPLY}.

The switch output will transition to the Ground potential when either a north or south magnetic pole is applied. The absence of a magnetic field will transition the switch to the V_{SUPPLY} potential.

Ordering Information

Part No.	Description	Qty
MX8871PHTTR	TSOT-23 3L Tape & Reel	3000

Functional Block Diagram



MXEI2240

240 Output ePaper Gate Driver

micronix An IXYS Company

Features

- CMOS Technology
- Drives Segment or Active Matrix Displays
- 16 to 57.5 Volt Output Drive
- Selectable Output Shift Direction andPolarity
- 3 Output Switching Modes
- Cascadable (4 Maximum)

Applications

- eBooks / eReaders
- Electronic Shelf Labels / Point Of Purchase Displays
- Mobile Phones / Portable Hand Held Devices
- Smart Cards
- Signage

General Description

The MXEI2240 is a 240 bit serial shift register, level translator, and high voltage buffered driver. The shift register is 'seeded' by the CE1, CE2, R/L, SPV, and CKV inputs.

The output pulse pattern is selected with the MODE1 and MODE2 inputs. A one pulse, continuous two pulse, jumping two pulse, or no pulse pattern can be generated. Pulse polarity is selected with the WALK0 input.

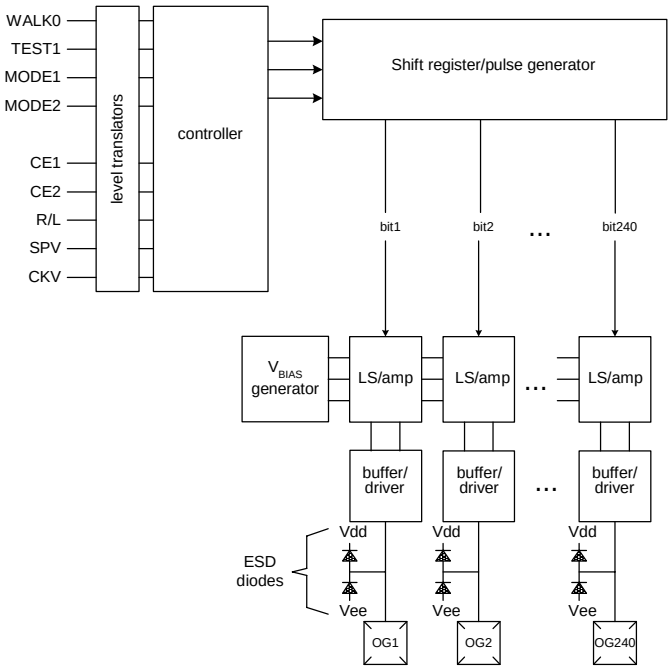
The register output bits are amplified rail-rail from V_{EE} to V_{DD}, and the output strength of the buffer drivers is modulated by the Vbias generator. This allows the OGn outputs to be continuously optimized for peak performance while minimizing transients over a wide operating range.

The MXEI2240 is designed to operate over a temperature range of -40°C to +85°C, and is available as Gold Bumped Die in Wafer Form or Waffle Pack.

Ordering Information

Part No.	Description
MXEI2240WB	Gold Bumped Die / Wafer Form
MXEI2240XB	Gold Bumped Die / Waffle Pack

Block Diagram



MXEI2300

300 Output E Ink Gate Driver

Features

- CMOS Technology
- Drives Segment or Active Matrix Displays
- 16 to 47 Volt Output Drive
- Selectable Output Shift Direction and Polarity
- 3 Output Switching Modes
- Cascadable (4 Maximum)

Ordering Information

Part No.	Description
MXEI2300WB	Gold Bumped Die / Wafer Form
MXEI2300XB	Gold Bumped Die / Waffle Pack

General Description

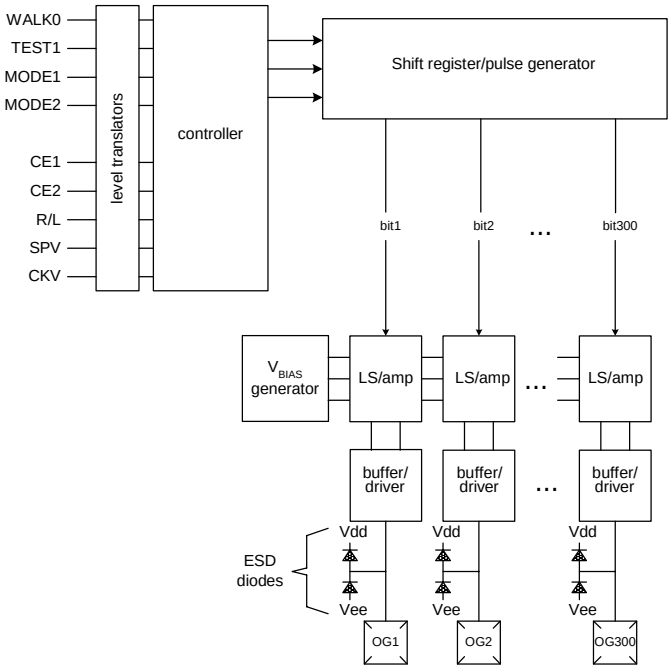
The MXEI2300 is a 300 bit serial shift register, level translator, and high voltage buffered driver. The shift register is 'seeded' by the CE1, CE2, R/L, SPV, and CKV inputs.

The output pulse pattern is selected with the MODE1 and MODE2 inputs. A one pulse, continuous two pulse, jumping two pulse, or no pulse pattern can be generated. Pulse polarity is selected with the WALK0 input.

The register output bits are amplified rail-rail from V_{EE} to V_{DD}, and the output strength of the buffer drivers is modulated by the Vbias generator. This allows the OGn outputs to be continuously optimized for peak performance while minimizing transients over a wide operating range.

The MXEI2300 is designed to operate over a temperature range of -40°C to +85°C, and is available as Gold Bumped Die in Waffle Pack, Gold Bumped Die in Wafer Form, Tape Carrier Package, and BGA Package.

Block Diagram



MXHV9910

Off-Line High Brightness LED Driver

Features

- 8V to 450V Input Voltage Range
- >90% Efficiency
- Drives from 1 to Hundreds of LEDs in Series/Parallel Combinations
- Regulated LED Drive Current
- Linear or PWM Brightness Control
- Resistor Programmable Oscillator Frequency
- SOIC-8 EP RoHS Compliant Package

Applications

- Flat Panel Display RGB Backlighting
- Signage and Decorative LED Lighting
- DC/DC or AC/DC LED Driver Applications

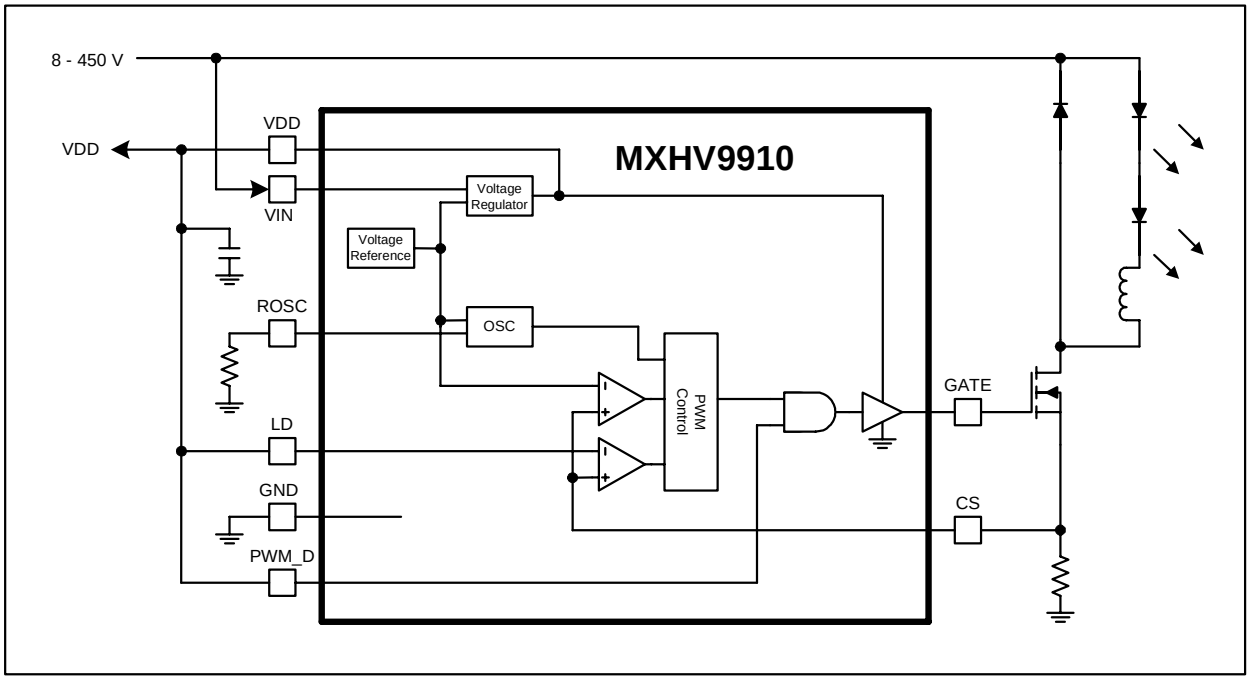
General Description

The MXHV9910 is a high-efficiency off-line LED driver. Manufactured using a dialectically isolated process the MXHV9910 can operate from 8V to 450V. This highly versatile input operating voltage enables a broad range of High Brightness (HB) LED applications. The MXHV9910 drives an external MOSFET at a fixed oscillator frequency set by an external resistor. Peak constant current to an LED string is maintained by modulating the MOSFET GATE signal on and off through the external current sense resistor connected to the CS input. Dimming of and LED string is controlled by adjusting the duty cycle of the PWM input, or applying a control voltage from 0 to 250mV to the LD input.

Ordering Information

Part No.	Description	Qty
MXHV9910BE	SOIC-8 EP Tube	100
MXHV9910BETR	SOIC-8 EP Tape & Reel	2000

Functional Block Diagram and Typical Application



MXHV9911

Off-Line High Performance LED Driver

Features

- 8V to 250V Input Voltage Range
- Constant Frequency Current Mode Converter
- Closed Loop LED Current Control
- Resistor Programmable Slope Compensation
- Resistor Programmable Oscillator Frequency
- Linear or PWM Brightness Control
- Large PWM Dimming Ratio
- Open LED String (Over Voltage) Protection
- Shorted LED String (Over Current) Protection
- Multi-Device Synchronization Capability
- Capacitor Programmable Soft-Start Function
- Auxiliary Winding V_{DD} Operation Capability
- SOIC-16 EP RoHS Compliant Package

Applications

- Flat Panel Display RGB Backlighting
- Signage and Decorative LED Lighting
- DC/DC or AC/DC LED Driver Applications

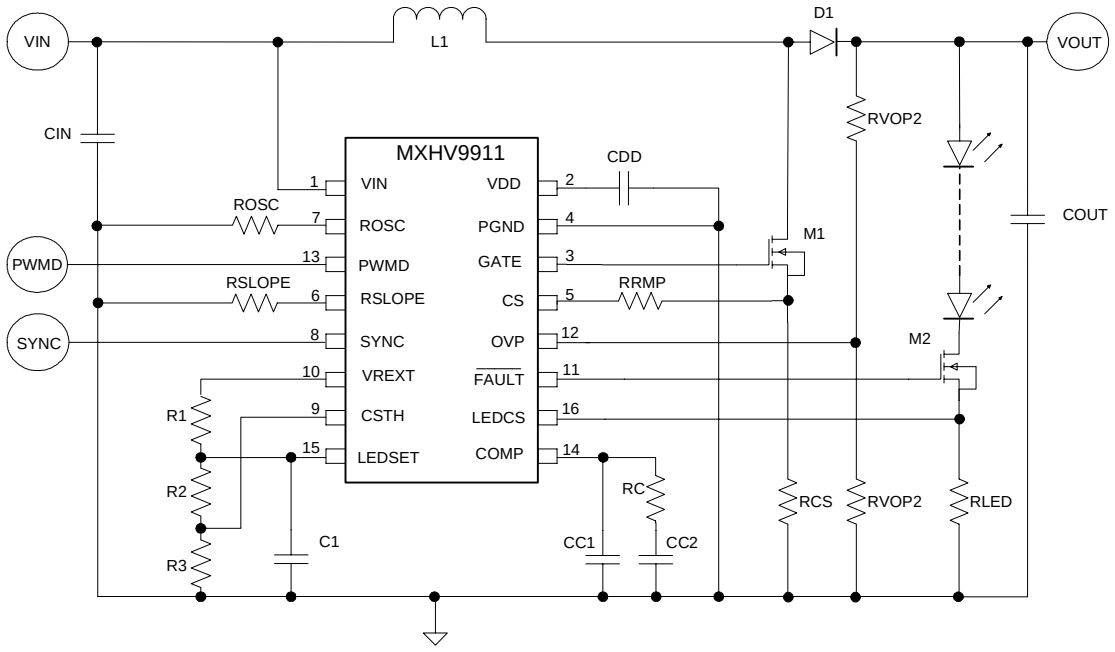
General Description

The MXHV9911 is a high-efficiency off-line LED driver designed to operate as a constant current source. MXHV9911 can operate from 8Vdc to 250Vdc and the range can be extended by using external zener diodes. The wide input operating voltage enables a broad range of High Brightness (HB) LED applications that include Off-Line. The MXHV9911 employs a constant frequency, peak- current mode control with slope compensation that can be configured as buck, boost, buck-boost or SEPIC configuration. The user can program the oscillator frequency and the slope compensation ramp to optimize efficiency and external component size. Multiple MXHV9911 controllers can be synchronized to an external clock applied to the SYNC pin. The MXHV9911 can accomplish a very wide LED dimming range by using a combination of analog and digital brightness controls.

Ordering Information

Part No.	Description	Qty
MXHV9911BE	SOIC-16 EP Tube	100
MXHV9911BETR	SOIC-16 EP Tape & Reel	2000

Functional Block Diagram and Typical Application



MXJDJ822

LED Color Management Controller

Features

- Multiple Color Input Formats (CIE XYZ, Yxy, Yu' v', and RGB)
- 3 Channel Analog Interface to Color Sensor (X,Y and Z Channels)
- 3 Channel 12-bit PWM Output (Red, Green, Blue LED Channels)
- I²C Serial Interface
- Optional External Push-Button Interface
- Color Set Point Calibration to System Measurements
- Internal Clock Generator & Voltage Reference
- Error Flag Output
- Passive External Components
- Mixed Signal CMOS Technology
- 5V Digital and Analog Supply Voltages
- -40°C to +85°C Operating Range
- RoHS Compliant 24 Lead SOIC Package

General Description

The MXJDJ822 is an optical feedback controller for LED based lighting systems. These systems typically consist of red, green and blue LED's, LED drivers, a tri-color photosensor, and the MXJDJ822 feedback controller.

The MXJDJ822 processes color information from the phototsensor and adjusts the red, green and blue LED drivers to achieve the desired color. Through the feedback control of the MXJDJ822 an LED array will maintain its color over time and temperature.

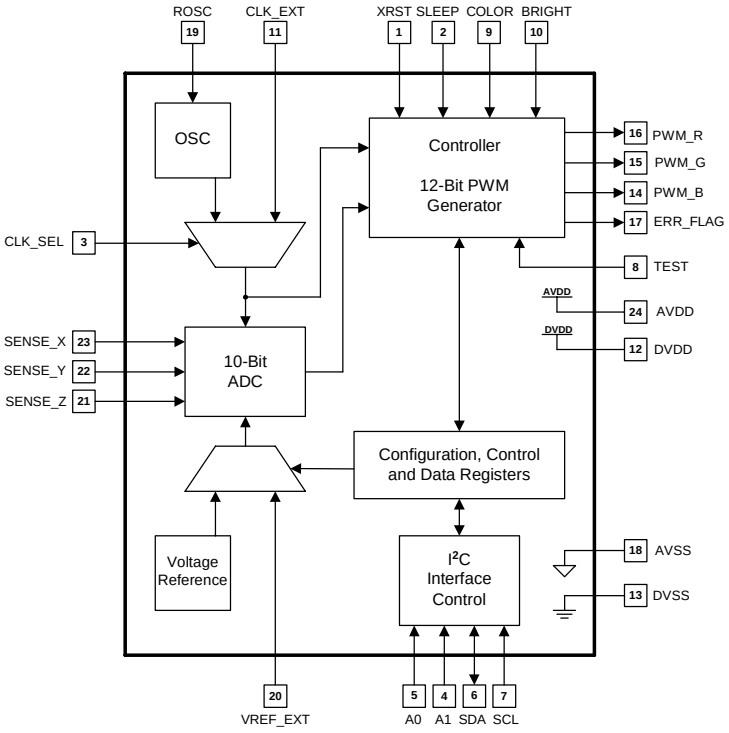
The desired color from the light output of the LED array is user programmable by simply writing the color coordinates from the CIE color space into the MXJDJ822 through the I²C serial interface.

The LED drivers are controlled by PWM signals from the MXJDJ822. These signals determine the on-time durations of the red, green and blue LED's. On-time durations are continuously adjusted in real-time to match the light output of the LED array to the desired color programmed into the MXJDJ822.

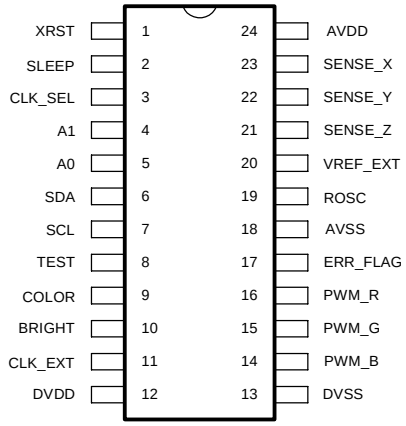
Ordering Information

Part No.	Description	Qty
MXJDJ822B	SOIC-24 Tube	31
MXJDJ822BTR	SOIC-24 Tape & Reel	

Functional Block Diagram



Pin Configuration



MMIC Amplifiers

- Robust 0.25 micron gate-length PHEMT MMICs
- Ultra Broadband Performance, (1-20 GHz, and 2-10 GHz)
- Range of PSAT from +15 dBm to +30 dBm
- Designed for EW, Radar, Communications, and Instrumentation applications
- Available in chip form and custom packaging
- Input and Output matched to 50 ohms
- Space / Hi-Rel screening available

Military/Commercial MMICs

Model ➤ New	Case Code QFN	Freq Range GHz	Linear Gain Typ/Min dB	Gain Flatness Typ/Max ± dB	Input Return Loss Typ dB	Output Return Loss Typ dB	Noise Figure Typ dBm	Pout @ -1 dB Typ/Min dBm	IP3 Typ dBm	Vgs Voltage Applied V	DC Voltage Applied V	DC Current Typ/Max mA
➤ **MMA-021015** ***In Production***	chip	2-10	18.0 / -	2.5 / -	-12	-15	4,8	17.0 / -		NA	6,0	89 / -
➤ **MMA-022028** ***In Development***	chip	2-10	7.0 / 6.0	1.0 / -	-10	-15	6,5	28.0 / 26.0		-0,3	8,0	420 / 500

Instrumentation and Communication MMICs

Model ➤ New	Case Code QFN	Freq Range GHz	Linear Gain Typ/Min dB	Gain Flatness Typ/Max ± dB	Input Return Loss Typ dB	Output Return Loss Typ dB	Noise Figure Typ dBm	Pout @ -1 dB Typ/Min dBm	IP3 Typ dBm	Vgs Voltage Applied V	DC Voltage Applied V	DC Current Typ/Max mA
➤ **MMA-206024-Q3** ***In Development***	3X3	2.0-6.0	17.0 / 15.0	1.0 / 1.5	12	12[1]/10[2]	3,5	25.0 / 24.0	40,0	-0,9	8,0	250 / 300
➤ **MMA-053223-Q3** ***In Production***	3X3	0.5-3.2	12.0 / -	1.5 / -	10	10	3,5	24.0 / -	42,0	NA	6,0	120 / 200

[1] @ 2-4 GHz, [2] @ 4-6 GHz

WiMAX / WLAN MMICs

- Operates in all WiMAX / WLAN frequency ranges 2.5, 3.5, and 5.5 GHz
- Pave @ 2% EVM up to +29.5 dBm @ 3.5 GHz
- P-1dB options; +36.5dBm, +33dBm, and +30dBm
- Two gain configurations; Single and dual stage
- Ideally suited for power amplification of WiMAX / WLAN base stations, or access points
- Input and Output matched to 50 ohms
- Available in RoHS Compliant Low Cost QFN packages

Model ➤ New	Case Code QFN	Freq Range GHz	Linear Gain Typ/Min dB	Gain Flatness Typ/Max ± dB	Input Return Loss Typ dB	Output Return Loss Typ dB	Pout @ -1 dB Typ/Min dBm	Pout @ 2.0% EVM Typ dBm	IP3 Typ dBm	Vgs Voltage Applied V	DC Voltage Applied V	DC Current Typ/Max mA
➤ **MMA-232730-Q4** ***In Development***	4X4	2.3-2.7	24.0 / 20.0	1.0 / 1.2	10	8	29.0 / -	22,0	45,0	-0,9	7,5	450 / 500
➤ **MMA-232733-Q5** ***In Development***	5X5	2.3-2.7	10.5 / 10.0	0.8 / 0.9	NA	NA	33.0 / 32.5	26,0	46,0	-1,0	7,5	600 / -
➤ **MMA-333737-Q10** ***In Development***	10X10	3.3-3.7	13.0 / 12.0	NA	NA	NA	36.5 / -	29,0	48,0	NA	8,5	1000 / -
➤ **MMA-333830-Q4** ***In Development***	4X4	3.3-3.8	11.0 / 10.0	1.0 / 1.2	7	10	28.5 / -	21,5	45,0	-0.9	7,5	300 / 400
➤ **MMA-333833-Q5** ***In Development***	5X5	3.3-3.8	11.0 / 9.0	1.0 / 1.2	10	10	33.0 / -	25,0	46,0	-0.9	7,5	600 / 800
➤ **MMA-343737-Q10** ***In Development***	10X10	3.4-3.7	13.0 / 12.0	NA	NA	NA	36.5 / -	29,0	48,0	NA	8,5	1000 / -
➤ **MMA-495930-Q4** ***In Development***	4X4	4.9-5.9	20.0 / 18.0	1.0 / 1.2	8	8	30.0 / -	22,0	45,0	-0,9	7,5	450 / 500
➤ **MMA-495933-Q5** ***In Production***	5X5	4.9-5.9	10.5 / 10.0	0.8 / 0.9	NA	NA	33.0 / 32.5	26,0	46,0	-1,0	7,5	600 / -

Standard GaAs FETs / PHEMTs

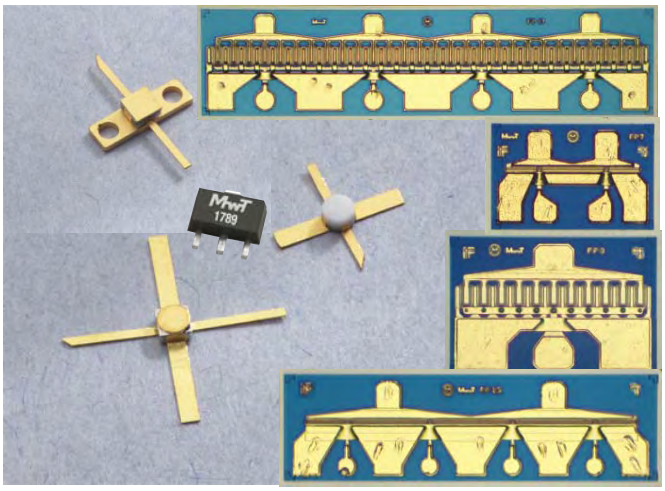
- Ultra Linear, High Dynamic Range, Low Phase Noise
- GaAs Process is Approved for Space Applications with Proven Reliability
- Commercial, Industrial, Military, and Space Grades
- 100% Wafer Bond Pull, Die Shear, Wafer DC Burn In, and Bake Tests in Evaluation per MIL-PRF-38534
- 100% Die Probe Test with Data Recorded for Shipment
- 100% Visual Inspection (Level 1, 3, or 4)
- 100% Idss Match to Provide Performance Consistency
- RF Sample Test Capability Available Upon Request
- Standard and Custom Device Specifications
- High-Rel and Space-Rel Screening Options Available
- RoHS (lead-free) Compliant Product Available

MwT Standard GaAs FETs / PHEMTs RF Properties (DC Properties Listed on 2nd Page)

Model ➤ New	Package Available Sealed / Hermetic	Gate Width / Length um	Gate Layout Method	Gate Drain Source Bond Pads Qty	Chip Thick-ness & VIA mil, y/n	S.S. Gain @12GHz Typ/Min dB	N. F. @12GHz Typ/Max dB	Ga @ N.F @12GHz Typ/Min dB	P-1dB @ 12GHz Typ/Min dBm	IP3 @ 12GHz Typ dBm	Nominal Chip Size um • um	Ideal Circuit
MwT-1	70, 73 / 71	630/0.3	single stripe	1, 1, 2	5, no	10.0 / 9.0	2.0 / -	7.0 / -	24.0/23.0	-	775 • 241	FB Amp
MwT-2	70, 73 / 71	630/0.3	single stripe	2, 2, 3	5, no	8.5 / 8.0	- / -	- / -	24.5/23.0	-	775 • 241	BA Amp
MwT-3	70, 73 / 71	300/0.3	single stripe	1, 1, 2	5, no	11.0 / 10.0	- / -	- / -	21.0/20.0	-	406 • 241	BA Amp
MwT-4	70, 73 / NA	180/0.3	single stripe	1, 1, 2	5, no	9.0 / 8.0	1.5 / 1.8	9.0 / 8.0	14.0/13.0	-	356 • 241	Osc & Amp
MwT-5	NA / NA	2•300/0.3	dual gate	3, 1, 2	5, no	13.0 / 12.0	3.5 / -	11.0 / -	19.0/15.0	-	406 • 241	Buffer Amp
MwT-7	70, 73 / NA	250/0.3	single stripe	2, 2, 2	5, no	10.5 / 10.0	2.0 / -	8.0 / -	20.0/18.0	-	356 • 241	BA/SE Amp
MwT-LP7	70, 73 / NA	250/0.3	single stripe	2, 2, 2	5, no	10.5 / 10.0	2.0 / -	8.0 / -	20.0/18.0	-	356 • 241	Oscillator
MwT-8	71	2400/0.3	Interdigit	2, 2, 3	4, no	7.5 / 7.0	-	-	28.0/27.0	-	673 • 305	Power Amp
MwT-A9	70, 73 / 71	750/0.3	single stripe	1, 1, 2	5, no	9.5 / 8.5	1.8 / -	6.5 / 6.0	25.5/23.0	-	419 • 292	FB Amp
MwT-A989	sot89	750/0.5	Interdigit	1, 1, 2	4, no	17.0/15.0 (1)	0.9 (1)	-	25.0/23.0	40	419 • 292	Power Amp
➤ **MwT-A989SB**	sot89	750/0.5	Interdigit	1, 1, 2	4, no	17.0/15.0 (1)	0.9 (1)	-	25.0/23.0	40	419 • 292	Power Amp
MwT-10	NA	83/0.3	single stripe	1,1,2	5, no	4.5 / 5.5	4.5 / 5.0	- / -	11.0/12.0	-	279 • 241	BA Amp
➤ **MwT-11**	71	2400/0.3	Interdigit	2, 2, 3	4, no	9.0 / 7.0	-	-	30.0/28.0	-	775 • 343	Power Amp
MwT-16	- / -	900/0.3	single stripe	6, 2, 7	5, no	8.5 / 7.5	- / -	- / -	27.0/26.0	-	1067 • 241	BA Amp
MwT-17	89 / 71	2400/0.8	Interdigit	4, 4, 5	5, no	7.0 / 6.0	(2)	-	29.5/28.5	45/-	1130 • 279	BA/FB Amp
MwT-1789HL	sot89	2400/0.8	Interdigit	4, 4, 5	4, no	--	(3)	14.0 (1)	28,0	46	1130 • 279	High Linearity
MwT-1789LN	sot89	2400/0.8	Interdigit	4, 4, 5	4, no	--	(4)	16.0 (1)	28,0	46	1130 • 279	Low Noise
MwT-1789SB	sot89	2400/0.8	Interdigit	4, 4, 5	4, no	--	(3)	18.0 (1)	28,0	44	1130 • 279	Power Amp
➤ **MwT-17Q3**	QFN	2400/0.8	Interdigit	4, 4, 5	4, no	18.0/16.0 (1)	1.5 (1)	-	28.0/27.0	46	1130 • 279	Power Amp
MwT-22	71	4800/0.5	Interdigit	6, 6, 7	4, no	12.0 / 9.0	-	-	33.0/31.0	48	1651 • 508	Power Amp
➤ **MwT-22Q4**	QFN	4800/0.5	Interdigit	6, 6, 7	4, no	13.5/12.0 (5)	-	-	33.0/32.0	48	1651 • 508	Power Amp
➤ **MwT-25**	-	14400/0.5	Interdigit	6, 6, 7	4, no	10.0 / 9.0	-	-	37.5/36.0	48	2311 • 508	Power Amp
➤ **MwT-PH5**	-	300/0.3	single stripe	1, 1, 2	4, no	18.0 / 15.0	2.0 / -	12.0 / -	20.0/18.0	-	406 • 241	Power Amp
MwT-PH7	70, 73 / 71	250/0.3	single stripe	2, 1, 2	4, no	13.5 / 12.0	-	-	24.0/22.0	-	356 • 241	Medium pow
➤ **MwT-PH8**	71	1200/0.3	Interdigit	2, 2, 3	4, no	10.0 / 9.0	-	-	30.0/29.0	-	673 • 305	Medium pow
MwT-PH9	70, 73 / 71	750/0.3	single stripe	1, 1, 2	4, no	10.0 / 9.0	-	-	27.0/26.0	-	419 • 292	Power Amp
MwT-PH11	71	2400/0.3	Interdigit	2, 2, 3	4, no	9.0 / 7.0	-	-	32.0/30.0	42	775 • 343	Power Amp
➤ **MwT-PH15**	70, 73 / 71	630/0.3	single stripe	3, 2, 5	4, no	12.0 / 10.0	-	-	28.5/27.0	-	775 • 241	Medium pow
➤ **MwT-PH15QACSB**	QFN	630/0.3	single stripe	3, 2, 5	4, no	11.0 / -	-	-	25.0 / -	-	775 • 241	Medium pow
➤ **MwT-PH16**	71	900/0.3	single stripe	6, 2, 7	4, no	11.5 / 10.0	-	-	30.0/28.5	-	1067 • 241	Medium pow
➤ **MwT-PH16A**	-	1600/0.25	Interdigit	4, 4, 5	4, no	11.0 / 9.5	-	-	31.0/29.0	-	1126 • 330	Medium pow

SB = Self-Biased (1) @ 2.0GHz, (2) noise figure = 0.8dB @ 0.9Ghz, (3) noise figure = 3.0dB @ 2.0Ghz,
(4) noise figure = 1.3dB @ 2.0Ghz, (5) @ 4.0Ghz

GaAs FETs / PHEMTs



MwT Standard GaAs FETs / PHEMTs RF Properties (RF Properties Listed on First Page)

➤ New	Model	Device Type	I_{dss} Range Min/Max mA	Gm Tested at Vds/Vgs V/V	Gm Typ/Min mS	Vp Tested at Vds/Ids V/mA	Vp Typ/Max (- V)	Bvgso Tested at Igs (- mA)	Bvgso Typ/Min (- V)	Bvgdo Tested at Igd (- mA)	Bvgdo Typ/Min V/V	Vds Absolute Max V	Chip Rth Typ 0C/W
	MwT-1	MESFET	60 / 240	4.0 / 0.0	120 / 90	3.0 / 4.0	2.0 / 5.0	1.0	10.0 / 5.0	1,0	10.0 / 6.0	6,0	80
	MwT-2	MESFET	60 / 240	4.0 / 0.0	100 / 75	3.0 / 4.0	2.0 / 5.0	0.4	12.0 / 6.0	0,4	12.0 / 8.0	7,0	80
	MwT-3	MESFET	30 / 120	4.0 / 0.0	55 / 35	3.0 / 2.0	2.0 / 5.0	0.2	12.0 /6.0	0,2	12.0 / 8.0	7,0	150
	MwT-4	MESFET	18 / 66	3.0 / 0.0	35 / 27	3.0 / 1.0	1.5 / 4.0	0.2	8.0 / 5.0	0,2	8.0 / 6.0	6,0	250
	MwT-5	MESFET	30 / 110	2.0 / 0.0	40 / 23	3.0 / 0.0	2.0 / 4.5	0.4	8.0 / 5.0	0,4	10.0 / 7.0	6,5	150
	MwT-7	MESFET	26 / 98	3.0 / 0.0	45 / 36	3.0 / 1.0	1.5 / 4.5	0.4	8.0 / 5.0	0,4	8.0 / 6.0	6,0	180
	MwT-LP7	MESFET	38 / 98	3.0 / 0.0	45 / 36	3.0 / 1.0	1.5 / 4.5	0.4	8.0 / 5.0	0,4	8.0 / 6.0	6,0	180
	MwT-8	MESFET	120 / 480	2.5 / 0.0	160 / 144	3.0 / 5.0	2.0 / 5.0	1,2	12.0 / 8.0	1,2	12.0 / 8.0	7.5	45
	MwT-A9	MESFET	78 / 282	2.0 / 0.0	120 / 95	3.0 / 5.0	2.0 / 5.0	1.0	10.0 / 5.0	1.0	10.0 / 6.0	6.0	70
	MwT-A989	MESFET	100 / 200	2.0 / 0.0	90 / 120	3.0 / 5.0	2.5 / 5.0	1.0	10.0 / 5.0	1.0	10.0 / 6.0	8.0	75
➤	**MwT-A989SB**	MESFET	100 / 200	2.0 / 0.0	90 / 120	3.0 / 5.0	2.5 / 5.0	1.0	10.0 / 5.0	1,0	10.0 / 6.0	8,0	75
	MwT-10	MESFET	8 / 30	3.0 / 0.0	12 / 16	3.0 / 0.5	1.5 / 4.0	0,1	4.0 / 7.0	0,1	5.0 / 7.0	5,0	450
➤	**MwT-11**	MESFET	240 / 920	2.5 / 0.0	380 / 290	3.0 / 16.0	2.0 / 5.0	2,4	12.0 / 8.0	2,4	12.0 / 8.0	8.0	28
	MwT-16	MESFET	90 / 360	2.0 / 0.0	130 / 108	3.0 / 6.0	2.0 / 5.0	0.6	12.0 / 6.0	0,6	12.0 / 8.0	7,0	55
	MwT-17	MESFET	240 / 920	2.0 / 0.0	380 / 290	3.0 / 6.0	2.5 / 5.0	1.6	12.0 / 6.0	1,6	12.0 / 8.0	7,0	33
	MwT-1789HL	MESFET	440 / 680	2.5 / 0.0	380	3.0 / 16.0	2.0 / 5.0	2,4	12.0 / 6.0	2,4	12.0 / 9.0	8.0	35
	MwT-1789LN	MESFET	440 / 680	2.5 / 0.0	380	3.0 / 16.0	2.0 / 5.0	2,4	12.0 / 6.0	2,4	12.0 / 9.0	8.0	35
	MwT-1789SB	MESFET	440 / 680	2.0 / 0.0	380	3.0 / 16.0	2.5 / 5.0	2,4	12.0 / 6.0	2,4	12.0 / 9.0	8.0	30
➤	**MwT-17Q3**	MESFET	440 / 680	2.5 / 0.0	380	3.0 / 16.0	2.0 / 5.0	2,4	12.0 / 6.0	2,4	12.0 / 9.0	8,0	35
	MwT-22	MESFET	800 / 1200	2.5 / 0.0	650 / 500	3.0 / 30.0	2.0 / 5.0	5.0	12.0 / 8.0	0,5	14.0 / 12.0	9.0	12
➤	**MwT-22Q4**	MESFET	800 / 1200	2.5 / 0.0	650	3.0 / 30.5	2.0 / 5.0	5.0	12.0 / 8.0	5,0	14.0 / 12.0	9,0	12
➤	**MwT-25**	MESFET	2000/2600	2.5 / 0.0	1500 / 1000	3.0 / 150.0	2.0 / 5.0	14.0	12.0 / 8.0	14,0	16.0 / 14.0	12.0	6
➤	**MwT-PH5**	PHEMT	40 / 120	2.5 / 0.0	60 / 40	3.0 / 2.0	1.2 / 2.5	0,4	12.0 / 6.0	0,4	13.0 / 10.0	7.0	150
	MwT-PH7	PHEMT	50 / 122	2.5 / 0.0	80 / 50	3.0 / 1.0	1.2 / 2.5	0,4	12.0 / 6.0	0,4	12.0 / 8.0	7.0	150
➤	**MwT-PH8**	PHEMT	240 / 600	2.5 / 0.0	320 / 240	3.0 / 8.0	1.2 / 2.5	1,2	12.0 / 6.0	1,2	13.0 / 10.0	8.0	40
	MwT-PH9	PHEMT	120 / 292	2.5 / 0.0	200 / 150	3.0 / 5.0	1.2 / 2.5	1,0	12.0 / 6.0	1,0	13.0 / 10.0	8,0	56
	MwT-PH11	PHEMT	440 / 800	2.0 / 0.0	800 / 450	3.0 / 16.0	1.2 / 2.5	2,4	12.0 / 6.0	2,4	13.0 / 10.0	8,0	24
➤	**MwT-PH15**	PHEMT	120 / 240	2.5 / 0.0	200 / 130	3.0 / 2.0	1.2 / 2.5	1.0	12.0 / 6.0	1.0	13.0 / 10.0	8.0	65
➤	**MwT-PH15QACSB**	PHEMT	120 / 240	2.0 / 0.0	200 / 130	--	--	--	--	--	--	8,0	65
➤	**MwT-PH16**	PHEMT	150 / 360	2.5 / 0.0	280 / 180	3.0 / 3.0	1.2 / 2.5	1.0	12.0 / 6.0	1.0	13.0 / 10.0	8.0	45
➤	**MwT-PH16A**	PHEMT	300 / 600	2.0 / 0.0	400 / 300	3.0 / 2.0	1.2 / 2.5	2,0	8.0 / 6.0	2,0	13.0 / 10.0	9.0	30

NOTE: Contact Factory For Binning Ranges

Wireless Amplifiers (MPS, ULA and WPS WiMax)

- Miniature, Low Cost, SMT, Flange, & Leadless Options
- Miniature, High Reliability, Hermetic SMT Options
- Low Noise, High Linearity, and Broadband Options
- Suitable for High Dynamic Range LNA Applications
- Suitable for High Linear Driver Amp Gain Stages
- Low VSWR for Improved Cascade Performance
- Single Voltage Supply and Low Current Operation
- Uses MwT's Hi-Rel and Space-Qualified GaAs Devices
- Most Parts are Eutectic Assembly for High Reliability
- Standard and Custom Amplifier Specifications
- High-Rel and Space-Rel Screening Available (class H, K, and S)

MwT Standard High Linearity Driver Amplifiers

Model (Case Code - XX) ➤ New	Case Code (- XX) Sealed SMT,Flange	Freq Range MHz	Linear Gain Typ/Min dB	Gain Flatness Typ/Max ± dB	VSWR Input Typ/Max dB	VSWR Output Typ/Max dB	Noise Figure Typ/Max dB	Pout @ -1 dB Typ/Min dBm	IP3 Typ/Min dBm	DC Voltage Applied V	DC Current Typ-Max mA
➤ **MPS-0030H16-XX**	02	10-3000	14.5/16.0	0.50/0.80	2.0 / -	2.0 / -	-	27.0 / 25.5	33.5 / -	7.0-8.0	240-270
➤ **MPS-0325A9D-XX**	82	300-2500	12.5/13.5	0.20/0.60	1.4 / 1.7	1.2 / 1.7	4.0 / -	25.0 / -	42.0 / 39.0	7,5	300-330
MPS-081017-XX	02	800-1000	15.0/14.0		2.0 / -	2.5 / -	-	28.5 / -	45.0 / 42.0	7,5	380-450
MPS-0810A9-XX	02	800-960	15.0/14.0		1.5 / -	2.0 / -	1.1 / 1.5	20.5 / -	34.0 / -	6,0	160-240
MPS-0810A9D-XX	82 , -	800-960	14.0/13.0	0.20/0.30	1.4 / 1.5	1.2 / 1.5	5.0 / -	26.0 / 25.0	42.0 / 41.0	7,5	300-400
MPS-0820A9D-XX	02	800-2050	13.5/12.5		1.4 / -	1.4 / -	5.5 / -	24.0 / -	43.0 / -	6,0	220-280
MPS-093011-XX	82 , 85, *	800-1000	16.0/14.0	0.25/0.50	1.5 / -	2.2 / -	6.0 / -	30.0 / -	45.0 / 43.0	7,5	380-450
MPS-1720A9-XX	02	800-960	14.0/13.0		2.1 / 2.2	1.5 / 2.1	1.1 / 1.5	20.0 / -	33.0 / -	6,0	100-140
MPS-172208-XX	82 , 85	1900-2000	13.0/12.0	0.20/0.50	2.0 / 2.5	2.0 / 2.5	5.0 / -	26.0 / 25.0	38.0 / -	7,5	380-450
MPS-173011-XX	82 , 85, *	1400-1700	14.0/13.0	0.25/0.50	1.5 / -	2.2 / -	6.0 / -	30.0 / -	45.0 / 42.0	7,5	380-450
MPS-1820A9D-XX	82, -, 02	1800-2000	14.0/13.0	0.20/0.30	1.4 / 1.5	1.2 / 1.5	5.0 / -	26.0 / 25.0	42.0 / 41.0	7,5	300-400
MPS-182117-XX	02	1800-2100	14.0/13.0		2.0 / -	2.5 / -	-	28.5 / -	45.0 / 42.0	7,5	380-450
MPS-182217-XX	82, -, 02	1800-2200	14.0/13.0	0.25/0.50	1.5 / -	3.0 / -	6.0 / -	28.5 / -	45.0 / 42.0	7,5	380-450
MPS-2125A9D-XX	82, -, 02	2100-2500	14.0/13.0	0.20/0.50	1.4 / 1.5	1.2 / 1.5	5.0 / -	26.0 / 25.0	42.0 / 41.0	7,5	300-400
MPS-213011-XX	82, 85, 02	1700-2100	14.0/13.0	0.25/0.50	1.5 / -	2.2 / -	6.0 / -	29.0 / -	45.0 / 42.0	7,5	380-450
MPS-242520-XX	- , 83	2400-2500	13.0/12.0	0.30/0.50	3.0 / -	2.0 / -	- / -	36.0 / 35.0	- / -	8,0	750-900
MPS-242717-XX	02	2400-2700	13.0/12.0		2.0 / -	-	-	28.0 / -	45.0 / 42.0	6.0-7.0	380-450
MPS-252730-XX	- , 83	2500-2700	13.0/12.0	0.40/0.60	3.0 / -	2.0 / -	- / -	36.0 / 35.0	- / -	8,0	750-900
MPS-253011-XX	02, 82 , 85, *	2400-2700	13.0/12.0	0.25/0.50	1.5 / -	2.2 / -	6.0 / -	29.0 / -	45.0 / 42.0	7,5	380-450
MPS-343517-XX	02, 82	3400-3500	13.0/12.0	0.25/0.50	2.0 / -	2.2 / -	6.0 / -	29.0 / -	45.0 / 42.0	7,5	380-450
MPS-3435A9D-XX	82 , -	3400-3500	13.0/12.0	0.20/0.30	1.4 / 1.5	1.3 / 1.5	6.0 / -	24.0 / 23.0	41.0 / 39.0	7,5	300-400
MPS-343617-XX	82	3400-3600	13.0/12.0		2.0 / -	2.2 / -	-	29.0 / -	48.0 / 44.0	7,5	350-420
MPS-343717-XX	02	3400-3700	12.5/11.7		1.5 / -	2.5 / -	-	28.5 / -	45.0 / 42.0	6.0-7.0	330-400
MPS-343717-XX	82	3400-3700	12.5/11.7		1.5 / -	2.5 / -	-	28.5 / -	45.0 / 42.0	6,7	380-450
MPS-363817-XX	82	3600-3800	13.0/12.0		2.0 / -	2.2 / -	-	29.0 / -	48.0 / 44.0	7,5	350-420
ULA 808-XX ***Special Order Only***	82 , -	1800-2100	14.0/13.0	0.25/0.50	2.0 / -	2.0 / -	- / -	28.0 / -	48.0 / 46.0	8,0	270-350
ULA 818-XX ***Special Order Only***	82 , -	800-1000	15.5/14.0	0.25/0.50	1.5 / -	1.5 / -	- / -	28.0 / -	48.0 / 46.0	8,0	270-350

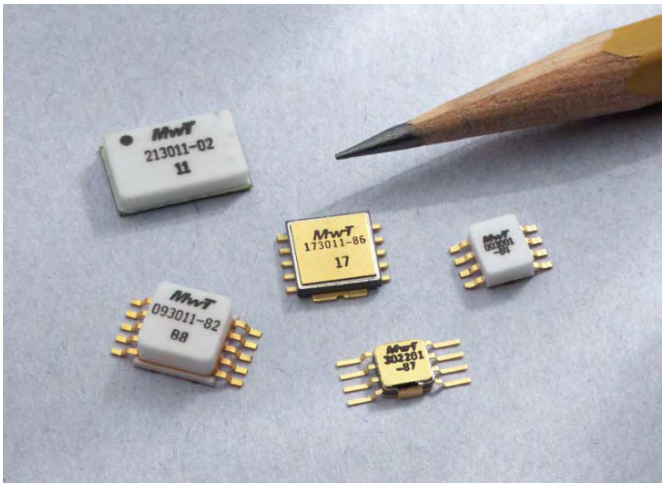
*** Hermetic Version Available (96 package)**

MwT Standard Low Noise Receiver Amplifiers

Model (Case Code - XX) ➤ New	Case Code (- XX) Sealed SMT,Flange	Freq Range MHz	Linear Gain Typ/Min dB	Gain Flatness Typ/Max ± dB	VSWR Input Typ/Max dB	VSWR Output Typ/Max dB	Noise Figure Typ/Max dB	Pout @ -1 dB Typ/Min dBm	PAE @ -1 dB Typ %	IP3 Typ/Min dBm	DC Voltage Applied V	DC Current Typ/Max mA
MPS-080817P-XX	82, 85, 02	806-849	14.0/13.0	0.20/0.50	2.0 / 2.5	2.0 / 2.5	1.1 / 1.5	28.0 / NA	26	44.0 / 42.0	7,5	330 / 400
MPS-080817N-XX	82, 85, 02	806-849	13.5/12.0	0.20/0.50	2.0 / 2.5	2.0 / 2.5	0.8 / 1.0	23.0 / NA	26	36.0 / 33.0	7,5	180 / 250
MPS-0808A9-XX	85	806-849	16.0/14.0	0.20/0.50	2.0 / 2.5	2.0 / 2.5	1.1 / 1.5	22.0 / NA	26	36.0 / 33.0	6,0	180 / 250
MPS-080917P-XX	85, 02	870-925	14.5/13.0	0.20/0.50	2.0 / 2.5	2.0 / 2.5	1.1 / 1.5	28.0 / NA	26	44.0 / 42.0	7,5	330 / 400
MPS-080917N-XX	82, 85, 02	870-925	13.5/12.0	0.20/0.50	2.0 / 2.5	2.0 / 2.5	0.8 / 1.0	23.0 / NA	26	36.0 / 33.0	7,5	180 / 250
MPS-0809A9-XX	82, 85	870-925	16.0/14.0	0.20/0.50	2.0 / 2.5	2.0 / 2.5	1.1 / 1.5	22.0 / NA	26	36.0 / 33.0	6,0	180 / 250
MPS-090917P-XX	82, 85, 02	925-960	14.5/13.0	0.20/0.50	2.0 / 2.5	2.0 / 2.5	1.1 / 1.5	28.0 / NA	26	44.0 / 42.0	7,5	330 / 400
MPS-090917N-XX	85, 02	925-960	13.5/12.0	0.20/0.30	2.0 / 2.5	2.0 / 2.5	0.8 / 1.0	23.0 / NA	26	36.0 / 33.0	7,5	180 / 250
MPS-0909A9-XX	82, 85	925-960	16.0/14.0	0.20/0.50	2.0 / 2.5	2.0 / 2.5	1.1 / 1.5	22.0 / NA	26	36.0 / 33.0	6,0	180 / 250
MPS-1718A9-XX	82, 85	1710-1785	15.5/14.0	0.20/0.50	2.0 / 2.5	2.0 / 2.5	1.1 / 1.5	22.0 / NA	26	36.0 / 33.0	6,0	100 / 150
MPS-1820A9-XX	82, 85	1850-1910	15.5/14.0	0.20/0.50	2.0 / 2.5	2.0 / 2.5	1.1 / 1.5	22.0 / NA	26	36.0 / 33.0	6,0	100 / 137
MPS-081017N-XX	02		800-960	13.5/12.0		2.0 / -	2.0 / -	1.0 / 1.3	21.0 / -	36.0 / -	6.0-7.0	180-250
MPS-081017P-XX	02		800-960	14.0/13.0		2.0 / -	2.0 / -	1.3 / 1.7	26.0 / -	44.0 / -	6.0-7.0	330-400

Note: Contact factory for hermetic package and low cost surface mount package.

Wireless Amplifiers (MPS, ULA and WPS WiMax)



MwT Standard Broad Band General Purpose Amplifiers

Model (Case Code - XX) ➤ New	Case Code (- XX) Sealed SMT,Flange	Case Code (- XX) Hermetic SMT	Freq Range MHz	Linear Gain Typ/Min dB	Gain Flatness Typ/Max ± dB	VSWR Input Typ/Max dB	VSWR Output Typ/Max dB	Noise Figure Typ/Max dB	Pout @ -1 dB Typ/Min dBm	PAE @ -1 dB Typ %	IP3 Typ/Min dBm	DC Voltage Applied V	DC Current Typ/Max mA
➤ **MPS-002701-XX**	84	-	00-2700	11.5/10.5	0.5/0.8	2.0 / -	1.8 / -	6.0 / -	20.0 / 19.0	-	35.0 / -	5,0	120 / 160
MPS-003001-XX	84	87	20-3000	11.5/10.5	0.80/1.20	1.6 / 2.5	1.6 / 2.5	4.0*/ -	21.0 / 19.0	30*	34.0 / -	5,0	90 / 160
MPS-013001-XX	84	-	100-3000	11.5/10.5	0.80/1.20	1.6 / 2.5	1.6 / 2.5	3.5*/5.0*	21.0 / 19.0	30	34.0 / -	5,0	90 / 160
➤ **MPS-032701A-XX**	82	96	300-2700	20.0 / -	1.0 / -	2.0 / -	2.0 / -	5.0 / -	20.0 / 19.0	-	34.0 / -	5,0	320 / 360
➤ **MPS-0425A9D-XX**	82	96	400-2500	14.0/13.0	-	1.4 / 1.7	1.2 / 1.7	-	25.0 / -	-	42.0 / -	7,5	300 / 330
MPS-082508-XX	82, 85	96	800-2500	13.0/11.0	0.50/1.00	2.0 / 2.5	2.0 / 2.5	5.0 / -	27.0 / 26.0	25	38.0 / 36.0	12,0	200 / 300
MPS-302201-XX	-	87	100-3000	11.5/10.5	0.50/0.80	1.6 / 2.5	1.6 / 2.5	3.5*/5.0*	22.0 / 20.5	30	35.0 / -	5,0	90 / 160

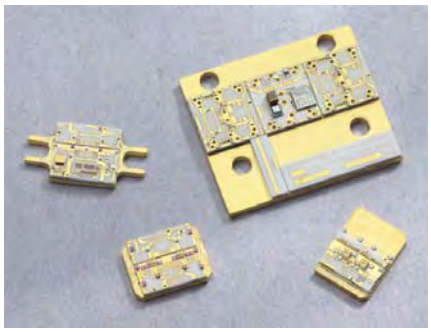
*** NF - See Data Sheet**

WPS - WiMax Amplifiers

Model (Case Code - XX) ➤ New	Case Code Sealed	Freq Range MHz	Linear Gain Typ dB	Gain Flatness Typ/Max ± dB	VSWR Input Typ	VSWR Output Typ	P1dB Typ dBm	Pout @ 2.0% EVM Typ dBm	IP3 Typ/Min dBm	DC Voltage V	DC Current Typ/Max mA
WPS-242717-XX	02, 82	2450-2700	13,0	0.30/0.60	1,5	2,5	28,5	22,0	45,0	7,5	330
WPS-252717-XX	82	2500-2700	13.0	0.30/0.60	1,5	2,5	28,5	22.0 (1)	45,0	7,5	300
WPS-252724-XX	02, 99	2500-2700	14.0	0.30/0.60	1,5	2,5	36,0	29,0	50,0	8,5	1200
➤ **WPS-303322-XX**	02	3000-3300	13.0	0.30/0.60	1,5	2,5	32,0	26.0 (1)	47,0	8,0	600
WPS-343617-XX	82	3400-3600	13.0	0.30/0.60	1,5	2,5	29,0	22.0 (1)	48,0	7,5	380-450
WPS-343717-XX	82	3400-3700	13.0	0.30/0.60	1,5	2,5	29,0	22.0 (1)	45,0	7,5	380-450
WPS-343722-XX	02	3400-3700	13.0	0.30/0.60	1,5	2,5	32,0	26.0 (1)	47,0	8,0	600
WPS-343724-XX	02, 99	3400-3700	14.0	0.30/0.60	1,5	2,5	36,0	29,0	50,0	8,0	1200
WPS-363817-XX	82	3600-3800	13.0	0.30/0.60	1,5	2,5	29,0	22.0 (1)	48,0	7,5	380-450
➤ **WPS-444922-XX**	02	4400-4900	11.0	0.30/0.60	1,5	2,5	32,0	26,0	47,0	7,5	600
➤ **WPS-445122-XX**	02	4400-5100	11.0	0.30/0.60	1,5	2,5	32,0	26,0	47,0	7,5	600
➤ **WPS-495122-XX**	02	4900-5100	11.0	0.30/0.60	1,5	2,5	32,0	26,0	47,0	7,5	600
WPS-495917-XX	02	4900-5900	13.0	0.30/0.60	1,5	2,5	28,5	22,0	44,0	7,5	300
WPS-495922-XX	02	4900-5900	11.0	0.30/0.60	1,5	2,5	32,0	26,0	47,0	7,5	600
➤ **WPS-545922-XX**	02	5400-5900	11.0	0.30/0.60	1,5	2,5	32,0	26,0	47,0	7,5	600

(1) @ 2.5% EVM

Hybrid Microwave Modules



- Miniature Drop-In Hybrid Amplifiers
- Low Noise, High Gain, and High Power Options
- Gain Block, Temp Comp, and Regulator Options
- Low VSWR for Improved Cascade Performance
- Single Voltage Supply and Low Current Design
- Uses MwT's Space-Qualified GaAs Devices and Thin Film Substrates
- 100% Eutectic Assembly Technique Assure High Reliability
- Standard and Customer Specific Specifications
- Connectorized Amplifier Options Upon Request
- High-Rel and Space-Rel Qualification Available

MwT Standard Gain Block Modules

Model ➤ New	Freq Range GHz	Linear Gain Typ/Min dB	Gain Flatness Typ/Max ± dB	VSWR : 1 In & Out Typ/Max	Reverse Isolation Typ dB	Noise Figure Typ dB	Pout @ -1 dB Typ/Min dBm	IP3 Typ	Current @ +8 V Typ/Max mA	Case Code	Carrier Size mil x mil
MwT 0206-11P2	2.0-6.0	6.0 / 5.0	0.4 / 0.6	1.7 / 2.0	-18,0	7.0	30.0 / 29.5	41,0	850 / 950	S/Z-1	300 • 600
MwT 0206-1G1	2.0-6.0	16.0 / 15.0	0.6 / 0.6	1.8 / 2.0	-30,0	4.5	17.0 / 16.0	27,0	150 / 180	U/L-1	300 • 600
MwT 0206-1G2	2.0-6.0	18.0 / 17.0	0.5 / 0.6	1.8 / 2.0	-30,0	3.5	19.0 / 18.0	29,0	150 / 200	U/L-1	300 • 600
MwT 0206-2P2	2.0-6.0	10.5 / 10.0	0.4 / 0.6	1.5 / 1.8	-20,0	4.5	24.5 / 24.0	35,0	220 / 260	S/Z-1	300 • 600
MwT 0206-7G2	2.0-6.0	11.0 / 10.5	0.4 / 0.6	1.5 / 1.8	-20,0	3.0	15.0 / 14.0	25,0	60 / 80	S/Z-1	300 • 600
MwT 0206-9P2	2.0-6.0	11.0 / 10.0	0.4 / 0.6	1.7 / 2.0	-20,0	4.0	26.0 / 25.0	37,0	260 / 290	S/Z-1	300 • 600
MwT 0206-A9G1	2.0-6.0	17.0 / 16.0	0.5 / 0.6	1.8 / 2.0	-30,0	1.5	15.0 / 14.0	25,0	50 / 55	S/Z-1	300 • 600
➤ **MwT 0206-A9N2**	2.0-6.0	15.0 / 12.5	2.0 / 2.5	1.7 / 2.0	-17,0	1.0	15.0 / 13.0	25,0	50 / 70	S/Z-1	300 • 600
MwT 0618-2P1	6.0-18.0	5.0 / 4.5	0.4 / 0.6	1.5 / 1.7	-20,0	7.0	24.8 / 24.0	35,0	200 / 250	S/Z-2	250 • 500
MwT 0618-2P2	6.0-18.0	5.5 / 5.0	0.3 / 0.5	1.5 / 1.7	-20,0	7.0	25.5 / 24.5	36,0	220 / 275	S/Z-2	250 • 500
MwT 0618-3P1	6.0-18.0	6.0 / 5.0	0.4 / 0.6	1.5 / 1.7	-20,0	6.5	20.5 / 20.0	30,0	100 / 120	S/Z-2	250 • 500
MwT 0618-3P2	6.0-18.0	6.5 / 6.0	0.3 / 0.5	1.5 / 1.7	-20,0	6.5	21.5 / 21.0	31,0	100 / 120	S/Z-2	250 • 500
MwT 0618-4N1	6.0-18.0	7.5 / 7.0	0.4 / 0.6	1.5 / 1.7	-20,0	4.5	14.0 / 12.0	25,0	40 / 60	S/Z-2	250 • 500
MwT 0618-4N2	6.0-18.0	8.0 / 7.5	0.4 / 0.6	1.5 / 1.7	-20,0	4.0	14.0 / 11.0	25,0	40 / 60	S/Z-2	250 • 500
MwT 0618-H4N2	6.0-18.0	9.0 / 8.5	0.4 / 0.6	1.5 / 1.7	-20,0	3.0	10.0 / 7.0	20,0	40 / 60	S/Z-2	250 • 500
MwT 0618-5G1	6.0-18.0	10.0 / 9.5	0.4 / 0.6	1.5 / 1.7	-30,0	5.5	16.0 / 14.0	26,0	90 / 100	S/Z-2	250 • 500
MwT 0618-5G2	6.0-18.0	10.5 / 10.0	0.4 / 0.6	1.5 / 1.7	-30,0	5.0	18.0 / 15.5	28,0	100 / 120	S/Z-2	250 • 500
MwT 0618-7G2	6.0-18.0	7.5 / 7.0	0.4 / 0.6	1.5 / 1.7	-20,0	5.0	15.0 / 14.0	25,0	60 / 80	S/Z-2	250 • 500
MwT 0618-12P2	6.0-18.0	4.6 / 4.2	0.4 / 0.6	1.5 / 1.7	-20,0	7.5	27.5 / 27.0	38,0	350 / 450	S/Z-2	250 • 500
MwT 0618-H15P2	6.0-18.0	8.5 / 7.5	0.4 / 0.6	1.5 / 1.7	-20,0	7.5	27.0 / 26.0	34,0	250 / 275	S/Z-2	250 • 500
MwT 0618-H15P3	6.0-18.0	7.5 / 6.5	0.4 / 0.6	1.5 / 1.7	-20,0	7.5	29.0 / 28.0	36,0	250 / 300	S/Z-2	250 • 500
MwT 0618-H16P3	6.0-18.0	5.0 / 6.0	0.8 / 1.2	1.7 / 2.0	-17,0	8.0	30.0 / 29.0	38,0	450 / 550	S/Z-2	250 • 500
➤ **MwT 0618-H5G2**	6.0-18.0	15.0 / 14.0	0.5 / 1.0	1.7 / 2.0	-17,0	3.0	20.0 / 17.0	29,0	80 / 120	S/Z-2	250 • 500
MwT 0618-H7P2	6.0-18.0	9.0 / 9.5	0.5 / 1.0	1.7 / 2.0	-17,0	5.5	21.0 / 24.0	33,0	110 / 150	S/Z-2	250 • 500
MwT 0820-3P1	8.0-20.0	5.0 / 4.5	0.4 / 0.6	1.5 / 1.7	-20,0	7.5	19.0 / 18.0	29,0	100 / 120	S/Z-2	250 • 500
MwT 0820-3P2	8.0-20.0	5.5 / 5.0	0.4 / 0.6	1.5 / 1.7	-20,0	7.0	20.0 / 19.0	29,0	100 / 120	S/Z-2	250 • 500
MwT 0820-4N1	8.0-20.0	6.0 / 5.5	0.4 / 0.6	1.5 / 1.7	-20,0	8.0	14.0 / 12.0	25,0	40 / 60	S/Z-2	250 • 500
MwT 0820-4N2	8.0-20.0	6.5 / 6.0	0.4 / 0.6	1.5 / 1.7	-20,0	4.0	14.0 / 11.0	25,0	40 / 60	S/Z-2	250 • 500
MwT 0820-5G1	8.0-20.0	9.0 / 8.0	0.4 / 0.6	1.5 / 1.7	-28,0	4.0	16.0 / 14.0	26,0	90 / 110	S/Z-2	250 • 500
MwT 0218-4N1	2.0-18.0	6.0 / 5.0	0.8	1.7 / 2.0	-20,0	7.0	15.0 / 14.0	25,0	100 / 120	S/Z-2	250 • 500
MwT 0218-4N2	2.0-18.0	6.5 / 6.0	1.2	1.7 / 2.0	-20,0	8.5	17.0 / 16.0	26,0	160 / 180	S/Z-2	250 • 500
MwT 0218-H4N1	2.0-18.0	12.0 / 11.0	0.8	1.7 / 2.0	-20,0	4.0	6.0 / 5.0	15,0	40 / 50	S/Z-2	250 • 500
MwT 0218-H4N2	2.0-18.0	11.0 / 10.0	0.8	1.7 / 2.0	-20,0	4.0	12.0 / 11.0	24,0	60 / 75	S/Z-2	250 • 500

Note: Typical 2nd Harmonics @ P-I -21.0 dBc Typ

MwT Standard Temperature Compensation Modules

Model	Freq Range GHz	Insertion Loss Typ/Max dB	Loss Flatness ± Max dB	Atten. Typ / Min dB	Current @ +8 V Max mA	Case Code	Carrier Size milxmil
MwT 0206-TCM	2.0-6.0	1.0 / 2.5	0.4 / 0.6	13.0 / 12.0	10 / 20	S/Z-1	300 • 600
MwT 0618-TCM	6.0-18.0	2.5 / 3.0	0.4 / 0.6	13.0 / 12.0	10 / 20	S/Z-2	250 • 500

MwT Standard Voltage Regulator Modules (Each Module Contains Dual Adjustable Voltage Regulators

Model	Freq Range GHz	Insertion Loss Typ/Max dB	Ripple Rej @ 120Hz Min dB	Pw Diss Per VR Max Watts	Regulated Voltage Min / Max V	Supply Voltage Typ / Max V	Total Sup. Current Max mA	Case Code	Carrier Size milxmil
MwT 0206-VRM	2.0-6.0	- / 0.5	50.0	1.5	7.9 / 8.1	12.0 / 20.0	800	U/L-1	300 • 600
MwT 0618-VRM	6.0-18.0	- / 1.0	50.0	1.5	7.9 / 8.1	12.0 / 20.0	800	U/L-2	250 • 500

Standard, Military, and Hi-Rel Connectorized Amplifiers

MicroWave Technology

Model Number WideBand Amplifier Type	Freq Range GHz	Linear Gain dB MIN/TYP	Gain Flatness ±dB MAX	Noise Figure dB MAX/TYP	Pout-1dB dBm MIN/TYP	Current @12 V mA MAX *	Case Code
AW052202N	0.5-2	30/33	1.4	2.5/2.2	15/17	300	SL-2
AW052203	0.5-2	23/26	1.0	3.0/2.5	17/19	260	SL-2
AW054201N	0.5-4	19/26	1.0	2.5/2.2	15/17	220	SL-2
AW054203	0.5-4	21/24	1.0	4.5/4.0	16/18	260	SL-2
AW12201N	1-2	28/31	1.1	2.5/2.2	18/20	225	SL-2
AW12203	1-2	27/30	1.1	3.5/3.0	27/28	555	SL-2
AW26201N	2-6	21/23	1.0	2.5/2.2	13/15	155	SL-2
AW26204	2-6	19/21	1.0	4.5/4.0	23/24	335	SL-2
AW28201N	2-8	29/32	1.5	3.0/2.5	13/15	175	SL-2
AW28302	2-8	31/33	1.5	5.5/5.0	23/24	615	SL-3
AW612301N	6-12	30/32	1.0	3.5/3.0	16/17	240	SH-3
AW612304	6-12	22/23	1.0	6.5/6.0	27/28	750	SH-4
AW1218301N	12-18	24/26	0.8	3.5/3.0	14/15	230	SH-3
AW1218504	12-18	29/31	1.3	7.5/7.0	27/28	1200	SH-6
AW818301N	8-18	24/26	1.0	3.5/3.0	14/15	230	SH-3
AW818504	8-18	29/32	1.5	7.5/7.0	27/28	1300	SH-6
AW618301N	6-18	24/26	1.3	3.5/3.0	14/15	230	SH-3
AW618302	6-18	19/21	1.3	6.0/5.5	20/21	350	SH-3
AW618404	6-18	20/22	1.5	7.5/7.0	27/28	1200	SH-5
AW218201N	2-18	25/28	1.8	5.0/4.5	6/7	135	SH-2
AW218301N	2-18	24/26	2.0	6.5/6.0	15/16	365	SH-3
AW218301	2-18	20/22	2.0	6.0/5.5	20/21	500	SH-3
Model Number Temp Comp Amplifier Type	**Freq Range GHz**	**Linear Gain dB MIN/TYP**	**Gain Flatness ±dB MAX**	**Noise Figure dB MAX/TYP**	**Gain vs Temp ±dB MAX**	**Current @12 V mA MAX ***	**Case Code**
AT26301	2-6	21/23	1.0	6.0/5.5	0.8	300	SL-3
AT26401	2-6	36/40	1.5	5.5/5.0	1.0	470	SL-4
AT618401	6-18	22/24	1.0	7.5/7.0	0.8	380	SH-4
AT618501	6-18	31/33	1.3	7.0/6.5	0.8	500	SH-5
Model Number Limiting Amplifier Type	**Freq Range GHz**	**Pin Dynamic dBm MIN/MAX**	**Noise Power dBm MAX**	**Pout-sat dBm MIN/MAX**	**Pout Flatness ±dB MAX**	**Current @12 V mA MAX ***	**Case Code**
AL26501	2-6	-50/10	7.0	+15/+20	1.0	500	SL-5
AL618801	6-18	-50/10	10.0	+15/+20	2.0	800	LH-44
Model Number Low Noise Amplifier Type	**Freq Range GHz**	**Linear Gain dB MIN**	**Gain Flatness ±dB MAX**	**Noise Figure dB MAX/TYP**	**Pout-1dB dBm MIN/TYP**	**Current @12 V mA MAX ***	**Case Code**
AN12201N	1.2-1.8	28/31	0.5	1.7	15/17	180	CL-1
AN23201N	2.2-2.9	28/31	0.5	1.7	15/17	180	CL-1
AN45201N	4.4-5.0	25/27	0.5	1.7	15/17	180	CL-1
AN78201N	7.2-7.8	23/25	0.5	1.8	14/16	150	CH-1
AN910201N	9.0-10.0	21/23	0.5	1.8	14/16	150	CH-1
AN1415301N	14.5-15.3	24/27	0.5	2.1	13/15	200	CH-3
AN1718401N	17.7-18.7	29/32	1.0	2.8	12/14	250	CH-3
Model Number Med Power Amplifier Type	**Freq Range GHz**	**Linear Gain dB MIN**	**Gain Flatness ±dB MAX**	**VSWR In/Out MAX**	**Pout-1dB dBm MIN/TYP**	**Current @12 V mA MAX ***	**Case Code**
AP45401	4.4-5.0	35.0	0.6	1.5/1.5	30.0/30.5	1400	CL-3
AP67402	5.9-6.4	33.0	0.6	1.5/1.5	33.0/33.5	2700	CL-3
AP78401	7.2-8.4	33.0	0.8	1.5/1.5	30.0/30.5	1450	CH-3
AP910401	9.0-10.0	32.0	0.8	1.5/1.5	30.0/30.5	1450	CH-3
AP1011401	10.7-11.7	27.0	0.8	1.5/1.5	30.0/30.5	1550	CH-3
AP1415401	14.0-14.5	23.0	0.5	1.5/1.5	29.0/30.0	1700	CH-3
AP1718501	17.7-18.7	24.0	1.0	1.8/1.8	26.0/27.0	1250	CH-5
Model Number Telecom Power Amplifier Type	**Freq Range GHz**	**Linear Gain dB MIN**	**Gain Flatness ±dB MAX**	**IMD3 (dBc) @ Po dBm/Tone**	**Pout-1dB dBm MIN/TYP**	**Current @12 V mA MAX ***	**Case Code**
AP1819701	18.1-18.6	30	0.5	-50@+15	27	2300	PH-01
AP1819801	18.1-18.6	35	0.5	-54@+15	29	2700	PH-01

Contact factory for application assistance on custom and standard amplifiers. Hi-Rel and Space-Rel screening are available.

*** Built in voltage regulator.**

DE Linear and Switch Mode Series

The patented DE-SERIES Fast Power™ MOSFETs are in a new class of unique high power transistors designed as a circuit element from the ground up for high speed, high frequency, high power applications at frequencies up to 100 MHz. DEI's Fast Power™ technology features low insertion inductance (≤ 1.5 nH), and a low profile package, with $R_{(theta)JHS}$ as low as 0.17ºC/W, which provides exceptional switching speeds and power handling capabilities. The DE-Series MOSFETs offer 10 times the speed and 3 times the thermal dissipation, with $^1/_2$ the volume, $^1/_3$ the weight and greatly reduced die stress, of comparable conventional power MOSFET devices.

Features

- Isolated Substrate
  - high isolation voltage (> 2500 V)
  - excellent thermal transfer
  - increased temperature and power cycling capability
- IXYS advanced low Q_g process
- Low gate charge and capacitances
  - easier to drive
  - faster switching
- Low $R_{DS(on)}$
- Very low insertion inductance (≤ 1.5 nH)

Advantages

- Optimized for RF and high speed switching at frequencies to 175 MHz
- Higher voltages - lower DC current requirements, higher load impedances, reduced system size and weight, simplifies paralleling of devices
- Easy to mount - no insulators needed
- High power density

Applications

- RF Power Amplifiers
- High Frequency SMPS
- Laser Diode Drivers
- RF Power Generators
- Induction Heating
- High Speed Pulse Generators

Linear Z-MOS

Part Number	Configuration	B_{VDSS}	I_d A	Gain 175 MHz dB	Pout 175 MHz W	Pd W	Fig. No.	Package Style Outlines page O-29
100V (operating) Linear RF MOSFETS								
IXZ2210N50L	PUSH-PULL		10X2	14	550	1080	D3	D2 DE 275
IXZH10N50LA	SINGLE G-S-D		9	14	150	180	X014a*	Weight = 2 g
IXZH10N50LB	SINGLE D-S-G		9	14	150	180	X014a#	
IXZ1221050L-754	tbd	tbd	tbd	tbd	tbd	tbd	tbd	
50V (operating) Linear RF MOSFETS								
IXZ215N12L	SINGLE	125	15	13	150	300	D2	

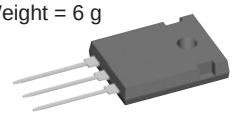
Switch Mode Z-MOS FETs

Part Number	Configuration	BV_{DSS}	I_D A	$R_{DS(on)}$ Ω	tr ns	Ciss pF	Coss pF	Crss	Pd	Fig.
IXZ2211N50	PUSH-PULL	500	11X2	0.6		790	78	12	1030	D3
IXZ318N50	SINGLE		19	0.325		1960	139	19	880	D4
IXZH18N50	SINGLE		19	0.325		1960	139	19	300	X014a
IXZR18N50	SINGLE G-D-S		19	0.325		1960	139	19	300	X016a
IXZR18N50A	SINGLE G-S-D		19	0.325		1960	139	19	300	X016a*
IXZR18N50B	SINGLE D-S-G		19	0.325		1960	139	19	300	X016a#
IXZ316N60	SINGLE	600	18	0.44	4	1930	125	17.8	880	D4
IXZH16N60	SINGLE		18	0.44					300	X014a
IXZR16N60	SINGLE G-D-S		18	0.44					300	X016a
IXZR16N60A	SINGLE G-S-D		18	0.44					300	X016a*
IXZR16N60B	SINGLE D-S-G		18	0.44					300	X016a#
IXZ308N120	SINGLE	1200	8	2.1	5	1960	59	9.2	880	D4
IXZH08N120	SINGLE		8	2.1					300	X014a
IXZR08N120	SINGLE G-D-S		8	2.1					300	X016a
IXZR08N120A	SINGLE G-S-D		8	2.1					300	X016a*
IXZR08N120B	SINGLE D-S-G		8	2.1					300	X016a#

D3 **DE 275x2**
Weight = 4 g

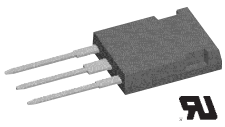
D4 **DE 375**
Weight = 3 g

X014a **TO-247 AD**
Weight = 6 g



Pin configuration
X014a* GSD
X014a# DSG

X016a **ISOPLUS247™**
Weight = 5 g
Pin config.: GDS



X016a*
Pin config. GSD
X016#
Pin config. DSG

Switch Mode MOSFETs

DE Series (DE Package)

Part Number	Configuration	B_{VDSS} V	ID A	$R_{DS(ON)}$ Ω	$T_{R(ON)}$ ns	C_{ISS} pF	C_{OSS} pF	C_{RSS} pF	PD W	Fig. No.
100V (max) Switch Mode MOSFETS										
DE150-101N09A	**SINGLE**	100	9	0.16	4	800	200	30	200	D1
DE275-101N30A	**SINGLE**		30	0.05	5	2500	500	100	270	D2
200V (max) Switch Mode MOSFETS										
DE150-201N09A	**SINGLE**	200	15	0.2	4	700	150	20	200	D1
DE275-201N25A	**SINGLE**		25	0.08	5	2500	250	50	590	D2
500V (max) Switch Mode MOSFETS										
DE150-501N04A	**SINGLE**	500	4.5	1.5	4	700	90	5	200	D1
DE275-501N16A	**SINGLE**		16	0.4	2	1800	150	40	590	D2
DE275X2-501N16A	**PUSH-PULL**		16	0.38	2	1800	150	45	1180	D3
DE375-501N21A	**SINGLE**		25	0.22	3	2000	200	45	940	D4
DE475-501N44A	**SINGLE**		44	0.11	5	5500	230	130	1800	D5
1000V (max) Switch Mode MOSFETS										
DE150-102N02A	**SINGLE**	1000	2	7.8	4	500	150	3	200	D1
DE275-102N06A	**SINGLE**		8	1.6	2	1800	130	25	590	D2
DE275X2-102N06A	**PUSH-PULL**		16	1.6	2	1800	130	25	1180	D3
DE375-102N10A	**SINGLE**		10	1.2	3	2900	100	25	940	D4
DE375-102N12A	**SINGLE**		12	0.95	3	2000	150	30	940	D4
DE475-102N20A	**SINGLE**		20	0.6	5	5600	175	50	1800	D5
DE475-102N21A	**SINGLE**		24	0.41	5	5500	200	60	1800	D5

F Series (Industry Standard Packages)

Part Number	Configuration	B_{VDSS} V	ID A	$R_{DS(ON)}$ Ω	$T_{R(ON)}$ ns	C_{ISS} pF	C_{OSS} pF	C_{RSS} pF	PD W	Fig. No.
200V (max) Switch Mode MOSFETS										
IXFH60N20F	SINGLE	200	60	0.038	14	2930	940	320	315	X014a
IXFT60N20F	SINGLE		60	0.038	14	2930	940	320	315	X019
500V (max) Switch Mode MOSFETS										
IXFH12N50F	SINGLE	500	12	0.4	14	1870	290	90	180	X014a
IXFT12N50F	SINGLE		12	0.4	14	1870	290	90	180	X019
IXFH21N50F	SINGLE		21	0.25	12	2600	470	160	300	X014a
IXFT21N50F	SINGLE		21	0.25	12	2600	470	160	300	X019
IXFH28N50F	SINGLE		28	0.19	13	3000	500	130	315	X014a
IXFT28N50F	SINGLE		28	0.19	13	3000	500	130	315	X019
IXFK44N50F	SINGLE		44	0.12	18	5500	990	330	500	X020a
IXFX44N50F	SINGLE		44	0.12	18	5500	990	330	500	X015a
IXFK55N50F	SINGLE		55	0.085	20	6700	1250	330	560	X020a
IXFN55N50F	SINGLE		55	0.085	20	6700	1250	330	600	X027a
IXFX55N50F	SINGLE		55	0.085	20	6700	1250	330	560	X015a
1000V (max) Switch Mode MOSFETS										
IXFH6N100F	SINGLE	1000	6	1.9	14	1870	190	60	180	X014a
IXFT6N100F	SINGLE		6	1.9	14	1870	190	60	180	X019
IXFH12N100F	SINGLE		12	1.05	12	2700	305	93	300	X014a
IXFR12N100F	SINGLE		12	1.05	12	2700	305	93	300	X016a
IXFT12N100F	SINGLE		12	1.05	12	2700	305	93	300	X019
IXFK21N100F	SINGLE		21	0.5	16	5500	640	190	500	X020a
IXFX21N100F	SINGLE		21	0.5	16	5500	640	190	500	X015a
IXFK24N100F	SINGLE		24	0.39	18	6600	760	230	560	X020a
IXFN24N100F	SINGLE		24	0.39	18	6600	760	230	600	X027a
IXFX24N100F	SINGLE		24	0.39	18	6600	760	230	560	X015a

Package style
Outline drawings on page O-29

D1 **DE 150**
Weight = 2 g

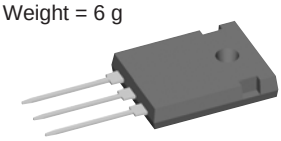
D2 **DE 275**
Weight = 2 g

D3 **DE 275x2**
Weight = 4 g

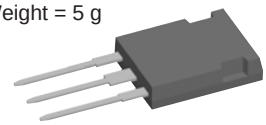
D4 **DE 375**
Weight = 3 g

D5 **DE 475**
Weight = 3 g

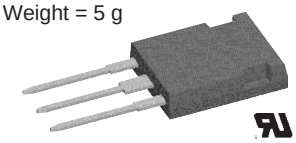
X014a **TO-247 AD**
Weight = 6 g



X015a **PLUS247**
Weight = 5 g

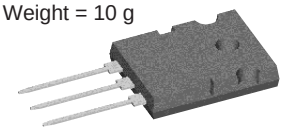


X016a **ISOPLUS247™**
Weight = 5 g

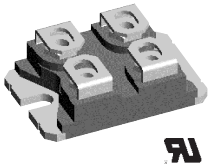


X019 **TO-268AA**
Weight = 4 g

X020a **TO-264**
Weight = 10 g



X027a **SOT-227B miniBLOC**
Weight = 30 g



RF MOSFET Gate Driver IC

The DEIC 420 ultra-fast high current driver is optimized to drive DEI DE-Series MOSFETs for high efficiency performance in RF generators, laser diode drivers, pulse generators, and high frequency power conversion applications. It is designed to switch power MOSFETs with minimum switching times at frequencies to 45 MHz. The innovative DEIC 420 is manufactured in DEI's patented low-inductance RF package, offering superior thermal performance and high continuous operating frequencies.

Features

- Wide operating voltage range from 8 V to 30 V
- Very low output impedance
- No internal cross conduction which allows operating frequencies to 45 MHz
- Latch-up protected to rated reverse current
- Output Current - up to 20 A peak
- Very low thermal impedance
- Matched rise and fall times
- Evaluation Board available

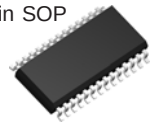
Applications

- Class D and E RF Generators
- Laser Diode Drivers
- High Frequency Power Factor Correction
- Acoustic Transducer Drivers
- High Frequency SMPS
- Pulse Generators

Fig. D1
DE 150

Fig. D2
DE 275

X550
28-pin SOP



MOSFET Driver ICs

Part Number	Configu-ration	t_{on}/t_{off} ns	Logic	Peak I A	Zout Ω	Package	PD W	Enable Pin	Kelvin Input	Evaluation Board
DEIC420	SINGLE	3/4	Non-Inv	20	0.6	DE275	100	NO	NO	EVIC420A/B
DEIC421	SINGLE	3/4	Non-Inv	20	0.6	DE275-IC	100	NO	YES	
DEIC515	SINGLE	3/4	Non-Inv	15	0.6	DE150-IC	100	NO	YES	
IXDD415SI	DUAL	3/4	Non-Inv	15	0.8	SOIC-28 w/heat slug	12	YES	YES	EVDD415

Outline drawings
see pages O-29

Laser Diode Driver IC

Part Number	Pulse Width	Max Freq.	Peak I A	Package	Evaluation Board
IXLD02SI	1.5nS to >1µS	17MHz	2	SOIC-28 w/heat slug	EVLD02

Evaluation Boards

Part Number	Configuration
EVDD415	IXDD415SI for DE Series
EVIC420A	DEIC420 for DE150/275
EVIC420B	DEIC420 for DE375/475

Driver and MOSFET

Part Number New	tON/tOFF ns	Logic	BVdss V	Peak I A	Zout Ω	Package	PD W	Kelvin Input
➤ **IXZ4DF08N120**	4/4	NI DRIVER	1200	8	0.6	4DF	500	YES
➤ **IXZ4DF12N100**	4/4	NI DRIVER	1000	12	0.4	4DF	500	YES
➤ **IXZ4DF18N50**	4/4	NI DRIVER	500	18	0.325	4DF	500	YES

ISOPLUS Family

ISOPLUS220™
ISOPLUS247™
ISOPLUS264™
ISOPLUS i4-PAC™
ISOPLUS-DIL™

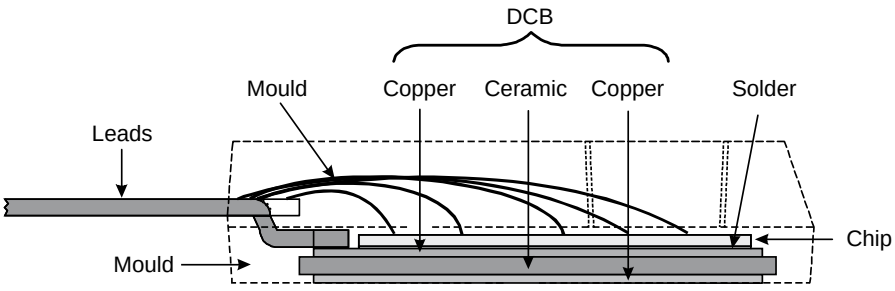
Isolated Discrete Packages

ISOPLUS247™ is the DCB isolated version of the PLUS247™ package (TO-247 without a mounting hole). The design of this new patented package is revolutionary: the silicon chip is soft soldered onto a Direct Copper Bond (DCB) substrate instead of the usual copper lead frame. The DCB ceramic, the same substrate material as used in the high power modules, not only provides high isolation capability (2500 V_{RMS}) but also unbeatable low thermal resistance compared to conventional, external mounted isolation materials.

Advantages:

- Isolation capability from leads to backside 2500 V_{RMS} – no external isolation foil needed
- Thermal resistance from Junction to Case only slightly higher as for non-isolated version
- Increased power- and temperature cycling capability
- DCB can be patterned like printed circuit boards – allowing special functions to be realized

Package cross section



While the junction-to-case thermal resistance is higher than an equivalent, non-isolated device, what really matters is the total thermal resistance from junction-to-heatsink (R_{thJH}). Comparing a device in ISOPLUS247™ to its companion in the non-isolated package with an external isolation foil, one can see that the overall R_{th} is now lower for the part in the already isolated package (see example).

Due to the matched thermal expansion coefficients of silicon and DCB ceramic, mechanical stress to the die and solder caused by power- and temperature cycling is reduced so that reliability is improved. Mounting is done with clips, which not only saves time but also guarantees constant pressure force over the whole lifetime of the assembly.

Parts in the **ISOPLUS247™** housing can be identified by the letter "**R**" in the IXYS part number. Potentially all devices now encapsulated in TO-247, TO-264 and PLUS247™ housings can be molded in the ISOPLUS247™. There are already more than 100 different ISOPLUS247™ types available.

Another interesting feature is the capability to pattern the DCB substrate like a printed circuit board. Now additional special functions can be realized, e.g. the **series connection of single** diode chips within one package.

ISOPLUS220™, **ISOPLUS247™** and **ISOPLUS264™** are the DCB sustitutes for the corresponding standard packages.

A larger version of this packaging technology is named **ISOPLUS i4-PAC™**. It has up to five terminal pins, making it possible to build up full diode bridges, phase-leg transistor configurations, buck and boost converters and much more within one isolated discrete package.

ISOPLUS-DIL™ is the latest member of IXYS ISOPLUS family. 37.5 mm long and 25 mm wide, plane power pins for 300 A RMS on one side and 12 control pins on the oposite side enables IXYS to provide the user with high current six-pack configuration in one package.

ISOPLUS-DIL™ features the highest power density and reliability and is therefore ideally suited for automotive designs.

Example: ISOPLUS247™ compared to conventional isolated device

Type	Package	Isolation	R_{thJC} K/W	R_{thCK} K/W	Total K/W	Factor
IXF**R** 180N10	ISOPLUS247™	internal DCB	0.3	0.15	0.45	1
IXF**X** 180N10	PLUS247™	**external foil**	0.22	**1.02**	1.24	**2.8**

ISOPLUS220™

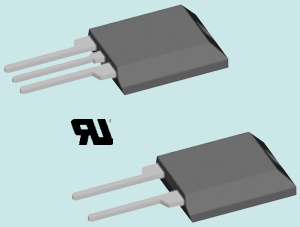
Product ➢ New	Type	V_{DSS} V	I_{D25} A	$R_{DS(on)}$ mΩ
MOSFETs	IXTC110N055T	55	78	9.0
Trench Gate	IXTC180N055T	55	105	5.0
	IXTC220N055T	55	130	4.4
	IXTC240N055T	55	132	4.0
	IXTC280N055T	55	145	3.6
	IXTC200N075T	75	110	5.5
	IXTC220N075T	75	115	5.0
	IXTC250N075T	75	128	4.4
	IXTC152N085T	85	90	7.0
	IXTC180N085T	85	110	6.1
	IXTC200N085T	85	110	5.5
	IXTC230N085T	85	120	5.3
	IXTC160N10T	100	83	7.5
	IXTC180N10T	100	90	7.0
	IXTC200N10T	100	101	6.3
	IXTC160N15T	150	95	9.6
	IXTC102N20T	200	60	22
	IXTC110N25T	250	60	24
Polar	IXFC110N10P	100	60	17
	IXFC96N15P	150	42	26
	IXFC74N20P	200	35	36
	IXFC52N30P	300	25	75
	IXFC16N50P	500	10	450
	IXFC26N50P	500	15	260
	IXTC26N50P	500	15	260
	IXFC36N50P	500	19	190
	IXFC14N60P	600	8	630
	IXFC22N60P	600	12	360
	IXFC30N60P	600	15	250
	IXFC10N80P	800	5	1200
	IXFC12N80P	800	7	900
	IXFC14N80P	800	8	750
	IXFC16N80P	800	9	600
	IXFC20N80P	800	10	570
CoolMOS™	IXKC15N60C5	600	15	165
➢	IXKC19N60C5	600	19	125
➢	IXKC20N60C	600	15	190
➢	IXKC23N60C5	600	23	100
	IXKC40N60C	600	28	95
	IXKC13N80C	800	13	290
	IXKC25N80C	800	25	150

Product	Type	V_{CES} V	I_C A	$V_{CE(sat)}$ max V
IGBTs	IXGC 16N60B2	600	28	2.3
	IXGC 16N60B2D1	600	28	2.3
	IXGC 16N60C2	600	20	3.0
	IXGC 16N60C2D1	600	20	3.0

If your application requires electrically isolated TO-220 device, then it needs ISOPLUS220™ parts. We have replaced the normal copper lead frame with our proprietary lead frame to give it -

- Superior heat transfer junction to heatsink
- 2500 V isolation voltage
- Higher current and power control
- Less weight

Available products include
- MOSFETs
- IGBTs
- FREDs
- SCRs
- Rectifiers
- Schottky diodes

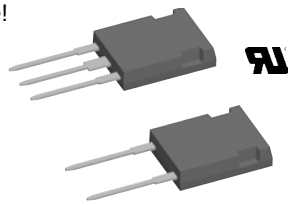


Product	Type	V_{RRM} V	$I_{F/T(AV)M}$ A	V_F V
Dual Ultrafast Diodes				
	Phase leg			
NEW	DPG 30P300PJ	2x 300	30	0.98
NEW	DPG 10P400PJ	2x 400	10	1.02
	DSEE 15-12CC	2x 600	15	1.50
	DSEE 29-12CC	2x 600	30	1.75
	Common cathode			
	DSEC 16-06AC	600	2x 10	1.42
	DSEC 29-06AC	600	2x 15	1.34
	DSEC 59-06BC	600	2x 30	1.56
Schottky Diode			*T_{VJ} = 125°C*	
	DSS 20-01AC	100	20	0.8
GaAs Schottky Diode				
	Phase leg		*T_{VJ} = 125°C*	
	DGSS 10-06CC	2x 300	10	cont. fact.
	DGSS 20-06CC	2x 300	20	cont. fact.
Rectifier Diode			*T_{VJ} = 150°C*	
	DSI 30-08AC	800	30	1.25
	DSI 30-12AC	1200	30	1.25
Series connected				
	DSP 8-12AC	2x 1200	11	1.25
Thyristor			*T_{VJ} = 125°C*	
	CS 19-08ho1C	80 0	13	1.25
	CS 29-08io1C	800	23	1.20
	CS 19-12ho1C	1200	13	1.25
	CS 29-12io1C	1200	23	1.20

See alphanumeric index
for the page number of the particular product.

ISOPLUS247™, ISO264 and ISOPLUS264™

Isolating TO-247 power devices has never been easier than using our new ISOPLUS247™ products. They're internally isolated with our proprietary "integrated leadframe" using our DCB ceramic substrate as part of the package!



The result -
- **Excellent thermal transfer** (R_{thJH})
- **High Isolation Voltage** (V_{ISOL} >2500 V)
- **Increased Temperature & Power Cycling** capability
- **Reduced EMI/RFI** emissions due to lower stray capacitance (junction to heatsink)
- **Less weight**

Type	V_{DSS} V	$I_{D(cont)}$ A	$R_{DS(on)}$ Ω
MOSFETs in ISOPLUS247™			
IXTR 200N10P	100	120	0.008
IXFR 200N10P	100	120	0.008
IXFR 180N15P	150	180	0.013
IXFR 140N20P	200	90	0.022
IXFR 102N30P	300	60	0.036
IXFR 140N30P	300	82	0.024
IXFR 36N50P	500	19	0.17
IXFR 44N50P	500	24	0.15
IXFR 64N50P	500	35	0.1
IXFR 80N50P	500	45	0.07
IXFR 40N50Q2	500	29	0.14
IXFR 66N50Q2	500	50	0.074
IXFR 30N60P	600	15	0.27
IXFR 36N60P	600	20	0.2
IXFR 48N60P	600	32	0.15
IXFR 64N60P	600	36	0.1
IXKR 40N60C	600	38	0.07
IXFR 20N80P	800	10	0.5
IXFR 24N80P	800	14	0.4
IXFR 32N80P	800	20	0.27
IXFR 44N80P	800	26	0.19
IXFR 38N80Q2	800	28	0.3
IXKR 25N80C	800	25	0.15
IXFR 24N90Q	900	24	0.4
IXFR 4N100Q	1000	3.5	3
IXFR 14N100Q2	1000	9.1	1
IXFR 21N100Q	1000	19	0.5
IXFR 24N100	1000	28	0.39
MOSFETs in ISOPLUS264™			
IXTL 2x240N055T	55	240	4.4
IXTL 2x220N075T	75	220	5.5
IXTL 2x200N085T	85	200	6.0
IXTL 2x180N10T	100	180	7.4
IXFL 100N50P	500	70	0.05
IXFL 80N50Q2	500	80	0.066
IXFL 82N60P	600	54	0.08
IXKL 60N80P	800	42	0.14
IXFL 38N100Q2	800	22	0.28
IXKL 34N100	800	34	0.28
MOSFETs in ISO264™			
IXKG 25N80C	800	25	0.15

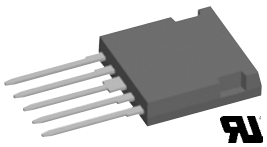
See alphanumeric index for the page number of the particular part

Type	V_{CES} V	I_C A	$V_{CE(sat)}$ V
IGBT + FRED			
IXGR 40N60C2D1	600	56	2.70
IXGR 50N60C2D1	600	75	2.70
IXGR 60N60C2D1	600	75	2.70
IXGR 32N90B2D1	900	47	2.90
IXGR 50N90B2D1	900	40	2.90
IXA 17IF1200HJ	1200	27	2.10
IXA 37IF1200HJ	1200	57	2.10
IXA 55I1200HJ	1200	84	2.10
IXSR 35N120BD1	1200	52	3.60
IXGR 32N170H1	1700	38	3.50
IXGR 32N170AH1	1700	26	5.20
Type	**V_{RRM} V**	**I_F A**	**V_F V**
UltraFast Rectifiers		*T_{VJ} = 150°C*	
DSEK 60-02AR	200	2x 30	0.85
DPG 60C300HJ	300	2x 30	0.96
DSS 17-06CR*	600	15	2.71
DSEP 30-06BR	600	30	1.56
DPH 30IS600HI*	600	30	1.89
DSEI 30-10AR	1000	30	1.88
DSEP 15-12CR*	1200	15	2.67
DSEP 30-12CR*	1200	30	3.10
DSEP 30-12AR	1200	30	1.79
DSEP 60-12AR	1200	60	1.74
Schottky		*T_{VJ} = 125°C*	
DSSS 35-008AR	2x 80	35	0.68
DSSS 30-01AR	2x 100	30	0.63
DSSK 80-006BR	60	2x 40	0.51
DSSK 70-008AR	80	2x 35	0.64
DSSK 60-015AR	150	2x 30	0.69
DSSK 60-02AR	200	2x 30	0.70
Rectifiers		*T_{VJ} = 150°C*	
DSP 25-16AR	2x 1600	25	1.18
DSI 45-16AR	1600	45	1.30
DSP 45-16AR	2x 1600	45	1.30
DSIK 45-16AR	1600	2x 45	1.30
Type	**V_{RRM} V**	**I_T A**	**V_T V**
Thyristor		*T_{VJ} = 125°C*	
CS 45-16io1R	1600	80	1.73

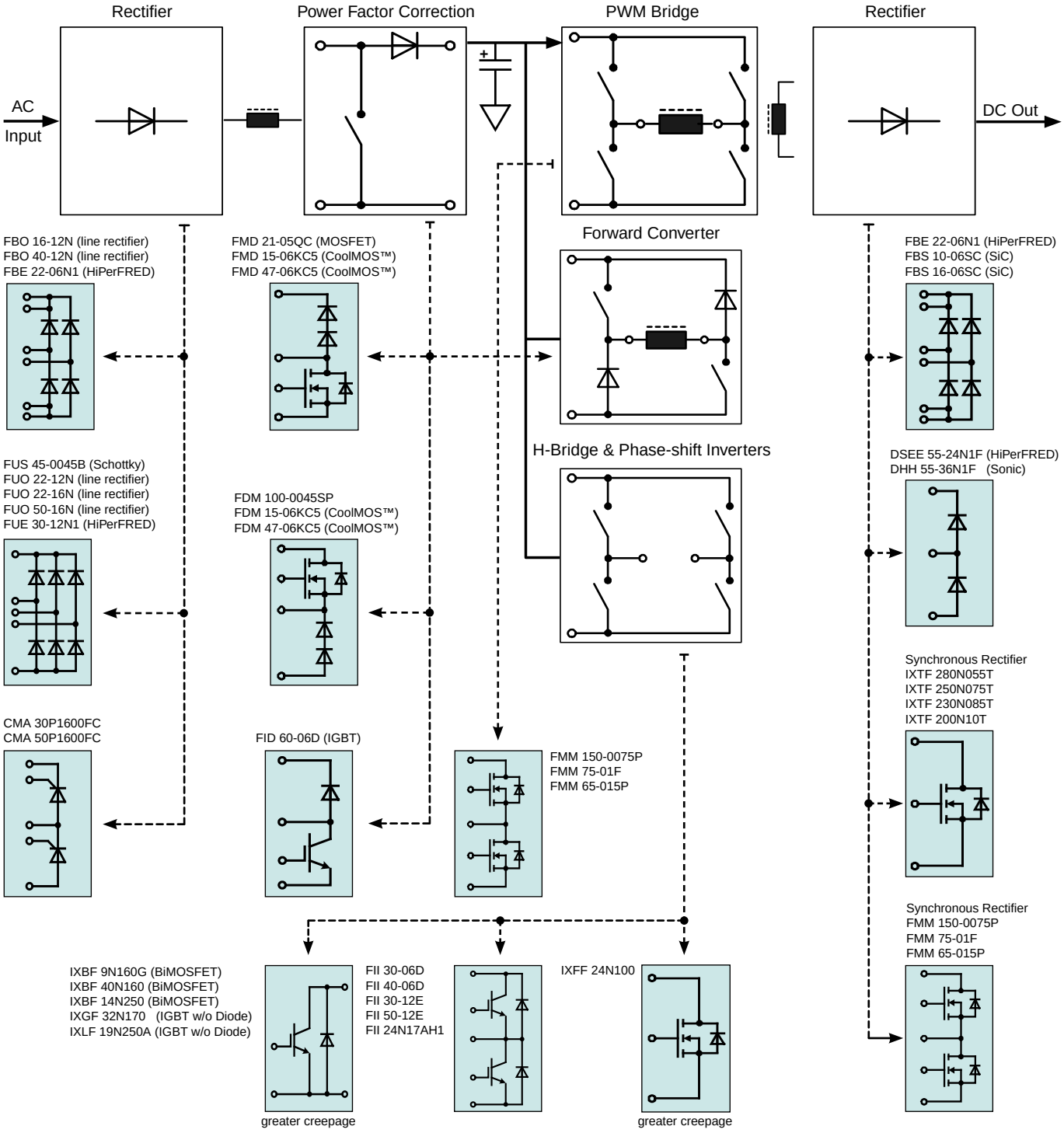
* series connected diodes

ISOPLUS i4-PAC™

3, 4 and 5 leaded packages for various circuit topologies



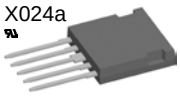
DCB base plate
- 2500 V electrical isolation
- low thermal resistance
- increased power & temperature cycling
- saves space
- replaces multiple discretes
- reduces parasitic inductance and capacitance
- reduces EMI
- less weight

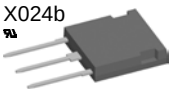


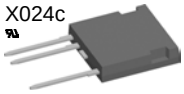
See application note „Combining the features of modules and discretes in a new Power Semiconductor packages“ for general description of the packaging technologies.

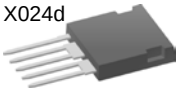
See alphanumeric index for the page number of the particular product.

ISOPLUS i4-PAC™









Type with MOSFET ➢ New	Configu-ration	Circuit diagram / Technology	V_{DSS} V	I_{D25} T_C = 25°C A	I_{D90} T_C = 90°C A	$R_{DS(on)}$ typ. T_C = 25°C mΩ	Fig. No.
FMM 150-0075P	phase leg	B Trench MOSFET	2x 75	150	120	4.7	X024a
FMM 75-01F		B HiPerFET	2x 100	75	50	20.0	
FMM 65-015P		B Trench MOSFET	2x 150	65	50	13.0	
➢ **IXTF 280N055T**	single	A Trench MOSFET	55	160		max 4.0	X024d
➢ **IXTF 250N075T**		A Trench MOSFET	75	140		max 4.4	
➢ **IXTF 230N085T**		A Trench MOSFET	85	130		max 5.3	
➢ **IXTF 200N10T**		A Trench MOSFET	100	120		max 6.3	
IXKF 40N60SCD1		H CoolMOS™ & serial Schottky & HiPerFRED as free wheel. Diode	600	38	25	60.0	X024c
IXFF 24N100		A HiPerFET	1000	22	15	320.0	X024c
FMD 21-05QC	boost	E HiPerFET & HiPerDynFRED	500	21	15	180.0	X024a
➢ **FMD 15-06KC5**		E CoolMOS™ & HiPerDynFRED	600	under development			
FMD 40-06KC		E CoolMOS™ & HiPerDynFRED	600	contact factory			
➢ **FMD 47-06KC5**		E CoolMOS™ & HiPerDynFRED	600	under development			
FDM 100-0045SP	buck	F Trench MOSFET & Schottky	45	100	80	5.7	X024a
➢ **FDM 15-06KC5**		G CoolMOS™ & HiPerDynFRED	600	under development			
➢ **FDM 47-06KC5**		G CoolMOS™ & HiPerDynFRED	600				

CoolMOS™ is a trademark of Infineon Technologies

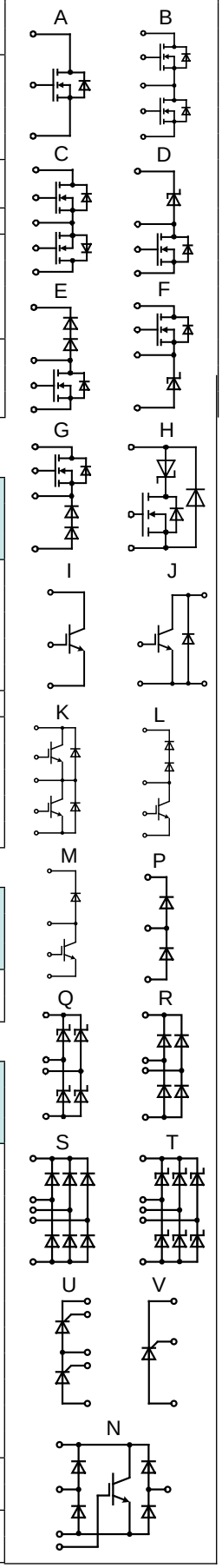
Type with IGBT ➢ New	Configu-ration	Circuit diagram / Technology	V_{CES} V	I_{C25} T_C = 25°C A	I_{C90} T_C = 90°C A	$V_{CE(sat)}$ typ. T_C = 25°C V	Fig. No.
FII 30-06D	phase leg	K NPT IGBT	2x 600	30	18	1.9	X024a
FII 40-06D		K NPT IGBT	2x 600	40	25	1.8	
FII 30-12E		K NPT3 IGBT	2x 1200	50	32	2.4	
FII 50-12E		K NPT3 IGBT	2x 1200	50	32	2.0	
➢ **FII 24N17AH1**		K High voltage IGBT	2x 1700	18	11	4.5	
FID 60-06D	boost	M NPT IGBT & HiPerFRED	600	65	40	1.6	X024a
IXBF 9N160G	single	J BiMOSFET	1600	7	4	4.9	X024c
IXBF 40N160		J BiMOSFET	1600	28	16	6.2	
➢ **IXGF 32N170**		I High voltage IGBT	1700	26	12	3.5	
➢ **IXBF 14N250**		J BiMOSFET	2500		under development		
IXLF 19N250A		I High voltage IGBT	2500	32	19	3.2	

Type AC Switch ➢ New	Circuit diagram / Technology	Voltage V	Current T_C = 25°C A	Fig. No.
FMK 75-01F	C MOSFET Common Source	100	2x 50	X024a
FIO 50-12BD	N 1-phase Bridge and IGBT	1200	32	

Type Bipolar ➢ New	Configuration	Circuit diagram / Diode type	Voltage V	$I_{D(AV)M}$ T_C = 90°C A	Fig. No.
FUS 45-0045B	3-phase bridge	T Schottky	45	45	X024a
FBS 10-06SC	1-phase bridge	Q Si-Carbide	600	contact factory	
FBS 16-06SC	1-phase bridge	Q Si-Carbide	600	contact factory	
FBE 22-06N1	1-phase bridge	R HiperFRED	600	20	
FUE 30-12N1	3-phase bridge	S HiperFRED	1200	30	
FBO 16-12N	1-phase bridge	R Rectifier	1200	22	
FBO 40-12N	1-phase bridge	R Rectifier	1200	40	
FUO 22-12N	3-phase bridge	S Rectifier	1200	27	
FUO 22-16N	3-phase bridge	S Rectifier	1600	27	
FUO 50-16N	3-phase bridge	S Rectifier	1600	50	
CMA 30P1600FC	phase leg	U Thyristor	2x 1600	30	
CMA 50P1600FC	phase leg	U Thyristor	2x 1600	50	
CS 20-22moF1	single part, high voltage	V Thyristor	2200	18	X024c
CS 20-25mo1F	single part, high voltage	V Thyristor	2500	18	
DSEE 55-24N1F	phase leg	P HiperFRED	2x 1200	55	X024b
DHH 55-36N1F	phase leg	P Sonic-FRD	2x 1800	50	

Package style

Outline drawings on pages O-30...O-52



High Current low $R_{DS(on)}$ Trench MOSFET Six-Pack

New DCB based surface mount package for automotive applications

In the automotive industry the usage of electronics is growing each year, especially with MOSFET technology. Steering aids, valve control, active suspension and many other functions in a car are driven by MOSFETs. The trends in these applications are the usage of Trench MOSFET and miniaturization of the electronic components, which results in low inductance designs with low EMC disturbance, easy manufacturability and the most important one, reliability. IXYS has introduced the new GWM product series exactly for these applications fulfilling these market demands.

The standard GWM ISOPLUS-DIL™ (Dual-In-Line) package includes a Trench MOSFET Six-Pack, also customized configurations can be integrated.
The ISOPLUS-DIL™ package is a new member of the IXYS ISOPLUS family. The IXYS ISOPLUS family is well known for its advantages: the expansion coefficient of the DCB is close to that of silicon which results in high temperature cycle reliability, the heat transfer through the ceramic is optimal, if the GWM is compared with standard solutions the current loops are reduced and also the parasitic capacity is reduced. Both results in better EMI behavior of the application. The advantages of the Direct Copper Bonded substrate results in a very reliable, high power density component. The GWM, targeted for the automotive segment, will be qualified according to the AEC-Q101.

The GWM ISOPLUS-DIL™ Six-Pack is a very compact and reliable solution for automotive applications, which contains the latest technology of Trench MOSFET's. With the electrical and mechanical properties of the GWM ISOPLUS-DIL™, design-in and usability is improved compared to solutions currently used.

In GMM 3x-series the Six-Pack is split up in 3 electrically isolated and identical phase legs. The advantage is a lower stray inductance with a superior performance at very high frequencies used for SMPS topologies.

IPC 75PX330GD makes use of the same internal construction as GMM 3x-series but it is built with very fast switching 300 V IGBTs.

Features

- Low R_{DSon}
- Optimized intrinsic reverse diode
- High level of integration
- Multi chip packaging
- High power density
- High current power terminals (300 A, RMS)
- Auxiliary terminals for MOSFET control
- Terminals for soldering (wave or re-flow) or welding connections
- Isolated DCB ceramic base plate with optimized heat transfer
- 1000 V electrical isolation
- Logic level version feasible

Applications

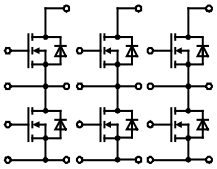
- Automobile electric power steering
- Active suspension
- Water pump
- Automobile starter generator
- Propulsion drives
- Fork lift drives
- Battery operated equipment

Benefits

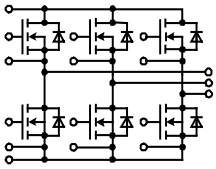
- Highest reliability
- Easy assembly
- Optimized EMI behavior
- Extremely low power loss
- Less weight

ISOPLUS-DIL™

Customized configurations possible



GMM



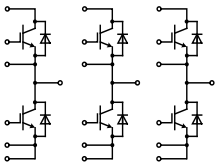
GWM

Six-Pack Trench MOSFET

Type ➢ New	Trench Gate Level	V_{DS} max. V	$I_{D(cont)}$ T_C = 25°C A	I_{D90} T_C = 90°C A	$R_{DS(on)}$ typ. T_C = 25°C mΩ	$Q_{G(on)}$ typ nC	t_{rr} typ. ns	Fig. No.
GWM 220-004P3-SL	standard	40	190	145	2.0	490	70	X026a
GWM 220-004P3-SMD	standard		190	145	2.0	490	70	X026c
➢ **GWM 220-004X1-SL**	standard		under development					X026a
➢ **GWM 220-004X1-SMD**	standard							X026c
➢ **GWM 160-0055X1-SL**	standard	55	160	120	2.7	105	40	X026a
➢ **GWM 160-0055X1-SMD**	standard		160	120	2.7	105	40	X026c
➢ **GWM 120-0075X1-SL**	standard	75	under development					X026a
➢ **GWM 120-0075X1-SMD**	standard							X026c
➢ **GWM 100-0085X1-SMD**	standard	85	contact factory					X026c
➢ **GWM 100-01X1-SL**	standard	100	90	68	7.5	90	55	X026a
➢ **GWM 100-01X1-SMD**	standard		90	68	7.5	90	55	X026c

➢ **GWM xxx-xxx-BL**	for types with Bent Leads contact factory			X026b

➢ **GMM 3x160-0055X2-SMD**	standard	55	under development	X026d
➢ **GMM 3x120-0075X2-SMD**	standard	75		X026d

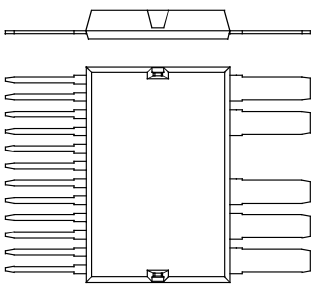


IPC ...

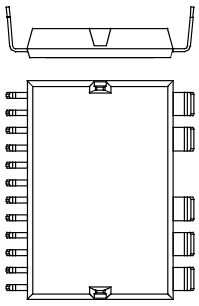
Six-Pack IGBT

Type ➢ New	V_{CES} max. V	I_{C25} T_C = 25°C A	V_{CES} typ. T_J = 25°C V	@ I_C A	$E_{(off)}$ mJ	I_{F25} T_C = 25°C nC	Fig. No.
➢ **IPC 75PX330GD**	330	75	1.85	100	under development		X026d

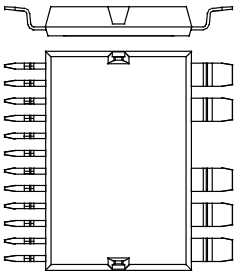
Outline drawings on pages O-30...O-52



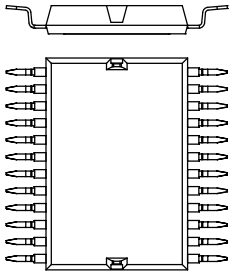
GWM xxx - SL
STRAIGHT **L**EADS



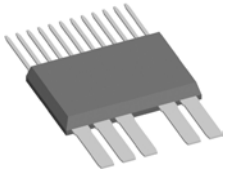
GWM xxx - BL
BENT **L**EADS



GWM xxx - SMD
SURFACE **M**OUNT **D**EVICE



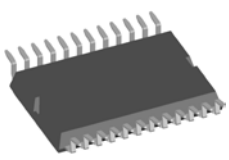
GMM 3x xxx - SMD
IPC 75PX330GD
SURFACE **M**OUNT **D**EVICE



X026a **ISOPLUS-DIL™**
Weight = 25 g

X026b **ISOPLUS-DIL™**
Weight = 25 g

X026c **ISOPLUS-DIL™**
Weight = 25 g



X026d **ISOPLUS-DIL™**
Weight = 25 g

Insulated Gate Bipolar Transistors (IGBT)

Xtreme light Punch Through (XPT) IGBTs are the latest generation IGBTs, which are ideal for extremely critical applications, requiring lowest conduction and switching losses and 10 µs short-circuit withstand capability and a positive temp coefficient of $V_{CE(sat)}$.
Either discrete or co-packaged with ultrafast soft recovery Sonic diodes, IXYS XPT IGBTs have lower saturation voltage $V_{CE(sat)}$ and low total switching energy (E_{on} + E_{off}). These result in reduced power dissipation and higher power density in a wide range of motion control applications, such as air conditioners, refrigerator compressors, home appliances, AC drives, and circulating pump speed controllers.

Non-Punch Through (NPT) IGBTs Ideal for paralleling, also sometimes preferred for motor drive applications.
‚D' Class – IXDxxxx part numbers 600/1200 V rated NPT IGBTs ‚E' Class – IXExxxx part numbers 1200 V rated NPT IGBTs.

Soft-Punch Through (NPT3) IGBTs are the Third Generation NPT IGBTs They feature extremely low E_{on} and E_{off} and very fast turn-off times with negligible tail current.

Trench IGBTs in the 600 V and 1200 V class for slow to medium-speed switching applications.

All these IGBTs feature 10 µs short-circuit-withstand capability and a positive temperature coefficient of $V_{CE(sat)}$. They feature extremely low E_{on} and E_{off} and very fast turn-off times with negligible tail current.

G-series Legacy IGBTs

The "G" series IGBTs use HDMOS™, a planar, high density process which incorporates new techniques to improve operating characteristics and stability at high voltages. This technology combines with a poly silicon gate cell structure, which gives this family of IGBTs a peak current capability of two times its 90°C current rating.

G-series, A B & C Class IGBTs

G-Series IGBTs are available with and without a body diode and very high voltage IGBTs are included under this family. Both NPT and PT IGBTs are designated as G-series and classified as being "A" for low speed, "B" for medium-speed and "C" for high speed or very high speed applications. In the same-series, today, IXYS is trying to push "A2", "B2" and "C2" class of IGBTs, as well as "A3", "B3", and "C3" class with the development of the latest Polar IGBT platform.

G-series, A2 B2 & C2 Class IGBTs

IXYS' new A2, B2, C2-Class IGBTs offer greater system design flexibility and the opportunity to reach the best compromise between conflicting requirements of switching frequency, efficiency and cost. This family of IGBTs exhibit excellent choices of saturation voltage versus speed, resulting in much improved efficiencies over traditional NPT IGBTs.

These IGBTs use IXYS' next generation IGBT Technology, tailored to provide significant improvements in efficiency for off-line power conversion applications requiring 600V devices with switching frequency ranges of DS to 10kHz, 1kHz to 100kHz and 25kHz to 200kHz for each of the IGBT Classes respectively. The A2 and B2-Class IGBTs have up to 25% lower saturation voltage and lower turn-off versus prior generation of IGBTs. These performance improvements are further enhanced by a 25% reduction in thermal resistance, additionally providing significant increases in power handling and reliability.

G-series, A3 B3 & C3 Class (GenX3™) IGBTs

Manufactured using IXYS' robust HDMOS IGBT process, these IGBTs are suitable for high power applications requiring switching frequencies upwards of 150kHz. These devices utilize IXYS proven Punch-Through (PT) technology providing higher surge current capabilities and a saturation voltage with a negative temperature coefficient, reducing conduction losses with increasing temperature.

S-series Legacy (SCSOA) IGBTs

Legacy S-series IGBTs combine the advantages of MOS gated drive simplicity with the high current handling capability of bipolar transistors. These "S" series devices are ultra-rugged IGBTs that can survive overload and accidental short circuit currents for a guaranteed period of time. This allows the design of gating circuits that would detect these fault currents and turn-off the IGBT before device degradation.
The basic cell design characteristics are very similar to power MOSFETs. The drive circuitry required to control the gate is basically the same as a power MOSFETs. During turn-on of the IGBT, minority carrier injection into the N-drift region modulates the body on-resistance to a level 10 to 20 times lower than an equivalently sized MOSFET, resulting in a proportionate 5 to 10 times increase in current handling capability.

S-series A B & C Class IGBTs

The "S" series IGBTs such as IXSA, IXSH, IXSN, etc. are Short-Circuit Safe Operating Area (SCSOA) rated devices. They are members of an advanced series of N-channel power MOS products, which use HDMOS™, a proprietary vertical DMOS technology developed by IXYS. HDMOS™ is a planar, high density process, which incorporates new techniques to improve operating characteristics and stability at high voltage. They can survive overload and accidental short circuits currents for a guaranteed period of time. This allows the design of gating circuits that would detect these fault currents and turn-off the IGBT before device degradation.

S-series, B2 Class IGBTs

This family of Short Circuit Rated IGBTs feature a 25% reduction in lower saturation voltage and lower turn-off energy. Their improved performance enables better efficiency in a broad range of motor control applications. This family utilizes IXYS' next generation IGBT technology to provide significant improvements in efficiency for switching frequencies up to 30kHz, while also providing a robust short circuit capability. Performance is further enhanced by a 25% reduction in thermal resistance, providing significant increases in power handling and reliability.

Insulated Gate Bipolar Transistors (IGBT)

These 600V Short Circuit Rated B2-Class Medium Speed IGBTs are targeted at the expanding use of variable speed drive technology in the appliance and automation industry. Typical industrial products are motor drives for robotics and conveyer belts. Common products in the appliance field include washing machines, refrigerators, vacuum cleaners and air conditioners. These high efficient IGBTs are also optimal for inverters for electrical scooters and light electrical vehicles applications.

L-series IGBTs

These IGBTs are high voltage devices designed and optimized for capacitor discharge circuits. With voltage ratings from 2500V to 4500V, these devices can be used as substitutes for high voltage MOSFETs offering significantly lower voltage drops and comparable switching speeds. They can also be used as substitutes for high voltage thyristors, electromechanical triggers, and discharge relays. Suitable applications include switch mode power supplies, DC-DC converters, resonant converters, laser/x-ray generators, and discharge circuits.

1600 V & 1700 V Low Sat IGBTs

These rugged High Voltage NPT devices are designed for capacitor discharge applications, featuring a low saturation voltage, high power density, & high peak current capability.

These High Voltage NPT IGBTs enable the elimination of more costly, lower performance solutions such as thyristors or series connected MOSFETs or IGBTs typically used at voltages above 1200 V. Offered as co-packs, they provide a more complete solution for power conversion applications to improved efficiency and reliability due to reduced voltage drop, lower switching losses and the need for fewer components.

1600 V & 1700 V Low Sat IGBTs w/diode

These are rugged High Voltage NPT devices featuring a low saturation voltage. They are co-packed with SONIC-FRD Fast Recovery Diodes providing superior soft recovery characteristics, minimizing switching noise and eliminating the need for costly snubber circuits. In addition, these diodes exhibit low temperature dependence, rugged performance, very soft recovery with very low loss/reverse current.

1600 V & 1700 V High Speed IGBTs

This family of 1600V/1700V IGBTs are rugged NPT devices targeted for high voltage applications, requiring 10 µs short circuit withstand capability. They are particularly suitable for high voltage switching applications. IXYS offers its fast switching “A” version 1700V NPT IGBTs in co-pack and phaseleg configurations for PWM applications with switching frequencies upwards of 50kHz. Common applications include AC motor speed control, DC servo, robot drives, DC choppers, UPS, capacitor discharge circuits, pulser circuits, switch-mode and resonant-mode power supplies.

1600 V & 1700 V High Speed IGBTs w/diode

These IGBTs are co-packed versions of the 1600 V & 1700 V high speed IGBTs. They are rugged NPT devices offering high current capabilities with simple MOS Gate-Control. They are co-packed with SONIC-FRD fast recovery diodes that feature superior soft recovery characteristics, minimizing switching noise and eliminating the need for costly snubber circuits.

Very High Voltage (2500 V - 4000 V) IGBTs

IXYS’ unique offering of discrete 2500V and 4000V VHV IGBTs provide a myriad of benefits to system designers in high voltage applications. The very high voltage and current ratings of these parts coupled with simplified MOS Gate-Control greatly reduce the complexity of high voltage switching. These IGBTs vastly simplify the circuitry needed for switching in high voltage designs.

They can enable the use of a single device in systems whose circuits use multiple cascaded lower voltage switches. This device consolidation reduces the numbers of power devices, while also improving cost and efficiency by eliminating complex drive and voltage balancing components. In those applications using high voltage thyristors, designers sacrifice the ability to easily turn-off the switch without greatly increasing circuit complexity. VHV IGBTs have the ability to turn switch current on and off, enabling the designer to implement signal modulation schemes for improved efficiency and wave shaping, as well as enabling load disconnect for improved systems safety.

B-series (BiMOSFET) IGBTs

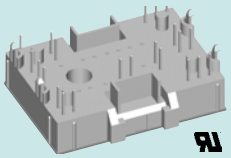
IXYS BiMOSFETs are devices, which have combined strengths of MOSFETs and IGBTs. Non-epitaxial construction and new fabrication processes were used in making BiMOSFETs a great success. BiMOSFETs have found many applications, where high voltage (above 1200V) MOSFETs are desired but unavailable. BiMOSFETs have MOSFET-like characteristics, yet have very low switching and conduction losses as compared to an equally rated MOSFET.

R-series (Reverse Blocking) IGBTs

R-series IGBTs are devices with an inherent capability to block voltage in both the forward direction and reverse direction. The IXRH40N120 can control 40A continuous and can block 1200 V and comes in the standard TO-247 package. The IXRP15N20 can control 15 A and can block 1200 V. The added feature of reverse blocking does not compromise the performance of the RIGBT as compared to state of the art standard IGBTs. The RIGBT features a low voltage drop of 2.2 V typical in the on state and can switch off.

IGBT Modules – CBI Configuration

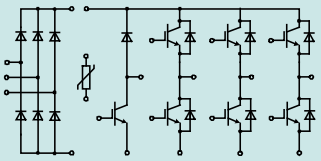
CBI



X110 MiniPack2

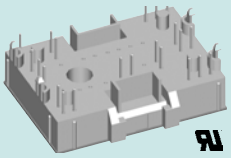
Outline drawings on pages O-30...O-52

See data sheet for pin arrangement



Type	Rectifier 3~			Inverter 3~					Brake chopper		
	V_{RRM}	I_{FAVM} T_H = 80°C	R_{thJC} typ.	V_{CES}	I_C T_C = 25°C	I_C T_C = 80°C	$V_{CE(sat)}$ typ.	R_{thJC} typ.	V_{CES}	I_C T_C = 90°C	R_{thJC} typ.
➢ New	V	A	K/W	V	A	A	V	K/W	V	A	K/W
600 V NPT IGBT											
➢ **MIAA10WB600TMH**	1600	62	2.1	600	18	13	2.1	1.8	600	13	1.8
➢ **MIAA10WF600TMH**	1600	62	2.1	600	18	13	2.1	1.8	no brake chopper included		
➢ **MIAA15WB600TMH**	1600	62	2.1	600	23	16	2.1	1.6	600	16	1.6
➢ **MIAA20WB600TMH**	1600	62	2.1	600	29	20	2.1	1.3	600	20	1.3
600 V Trench IGBT											
➢ **MITA30WB600TMH**	1600	90	1.4	600	40	27	1.5	1.4	600	27	1.4
1200 V Trench IGBT											
➢ **MITA10WB1200TMH**	1600	62	2.1	1200	17	12	1.9	1.9	1200	12	1.9
➢ **MITA15WB1200TMH**	1600	62	2.1	1200	30	21	1.8	1.1	1200	21	1.1
➢ **MITB10WB1200TMH**	1600	62	2.1	1200	17	12	1.9	1.9	1200	12	1.9
➢ **MITB15WB1200TMH**	1600	62	2.1	1200	29	20	1.7	1.2	1200	20	1.2
1200 V XPT IGBT											
➢ **MIXA10WB1200TMH**	1600	62	2.1	1200	tbd	tbd	1.8	tbd	1200	tbd	tbd
➢ **MIXA20WB1200TMH**	1600	62	2.1	1200	tbd	tbd	1.8	tbd	1200	tbd	tbd

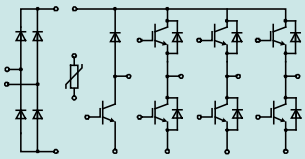
CBI



X110 MiniPack2

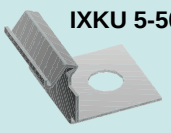
Outline drawings on pages O-30...O-52

See data sheet for pin arrangement

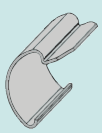


Type	Rectifier			Inverter					Brake chopper		
	V_{RRM}	I_{FAVM} T_H = 80°C	R_{thJC} typ.	V_{CES}	I_C T_C = 25°C	I_C T_C = 80°C	$V_{CE(sat)}$ typ.	R_{thJC} typ.	V_{CES}	I_C T_C = 90°C	R_{thJC} typ.
➢ New	V	A	K/W	V	A	A	V	K/W	V	A	K/W
600 V NPT IGBT											
➢ **MIAA10WE600TMH**	1600	23	2.1	600	18	13	2.1	1.8	600	13	1.8
➢ **MIAA10WD600TMH**	1600	23	2.1	600	18	13	2.1	1.8	no brake chopper included		
➢ **MIAA15WE600TMH**	1600	23	2.1	600	23	16	2.1	1.6	600	16	1.6
➢ **MIAA15WD600TMH**	1600	23	2.1	600	23	16	2.1	1.6	no brake chopper included		
➢ **MIAA20WE600TMH**	1600	23	2.1	600	29	20	2.1	1.3	600	20	1.3
➢ **MIAA20WD600TMH**	1600	23	2.1	600	29	20	2.1	1.3	no brake chopper included		

Mechanical mounting part



IXKU 5-505



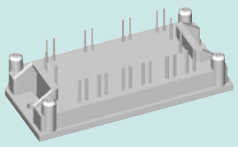
IXRB 5-506

➢ **IXKU 5-505**	Screw clip
➢ **IXRB 5-506**	Click clip

IGBT Modules – CBI Configuration

CBI 1

IGBT Modules

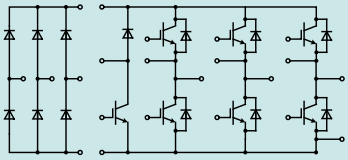


X111 E1-Pack

Package style

Outline drawings on pages O-30...O-52

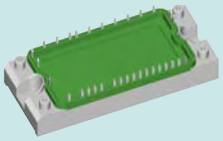
See data sheet for pin arrangement



Type	Rectifier 3~			Inverter 3~					Brake chopper		
	V_{RRM}	I_{DAVM} T_H = 80°C	R_{thJC} typ.	V_{CES}	I_C T_C = 25°C	I_C T_C = 80°C	$V_{CE(sat)}$ typ.	R_{thJC} typ.	V_{CES}	I_C T_C = 80°C	R_{thJC} typ.
➢ New	V	A	K/W	V	A	A	V	K/W	V	A	K/W
600 V NPT IGBT											
MUBW 10-06A6K	1600	61	2.10	600	12	8	2.5	2.80	600	8	2.80
MUBW 15-06A6K		65	1.90		19	14	2.4	1.70		8	2.80
MUBW 20-06A6K		65	1.90		25	17	2.0	1.50		8	2.80
MUBW 25-06A6K		65	1.90		31	21	2.1	1.25		14	1.70
MUBW 35-06A6K		89	1.40		42	29	2.3	0.95		17	1.50
1200 V NPT IGBT											
MUBW 15-12A6K	1600	89	1.40	1200	19	13	3.0	1.35	1200	13	1.35
MUBW 30-12A6K		89	1.40		30	21	3.0	0.95		13	1.35
1200 V NPT³ IGBT											
MUBW 30-12E6K	1600	89	1.40	1200	30	21	3.1	0.95	1200	13	1.35
1200 V Trench IGBT											
➢ **MUBW 45-12T6K**	1600	104	1.10	1200	43	31	2.5	0.80	1200	13	1.35

CBI 2

IGBT Modules

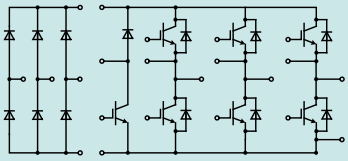


X112 E2-Pack

Package style

Outline drawings on pages O-30...O-52

See data sheet for pin arrangement

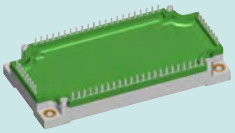


Type	Rectifier 3~			Inverter 3~					Brake chopper		
	V_{RRM}	I_{DAVM} T_H = 80°C	R_{thJC} typ.	V_{CES}	I_C T_C = 25°C	I_C T_C = 80°C	$V_{CE(sat)}$ typ.	R_{thJC} typ.	V_{CES}	I_C T_C = 80°C	R_{thJC} typ.
➢ New	V	A	K/W	V	A	A	V	K/W	V	A	K/W
600 V NPT IGBT											
MUBW 10-06A7	1600	18	1.50	600	20	15	1.9	1.50	600	15	1.50
MUBW 15-06A7		18	1.50		25	18	1.9	1.30		15	1.50
MUBW 20-06A7		24	1.30		35	25	1.9	1.00		18	1.40
MUBW 30-06A7		24	1.30		50	35	1.9	0.70		18	1.30
MUBW 50-06A7		29	1.10		75	50	1.9	0.50		25	1.00
1200 V NPT IGBT											
MUBW 10-12A7	1600	18	1.50	1200	20	15	2.3	1.20	1200	15	1.20
MUBW 15-12A7		24	1.30		35	25	2.0	0.70		15	1.20
MUBW 25-12A7		24	1.30		50	35	2.2	0.55		15	1.20
MUBW 35-12A7		29	1.10		50	35	2.5	0.55		25	0.70
1200 V NPT³ IGBT											
MUBW 35-12E7	1600	29	1.10	1200	52	36	2.2	0.55	1200	25	0.70
1200 V Trench IGBT											
MUBW 15-12T7	1600	24	1.30	1200	25	15	1.7	1.20	1200	15	1.20
MUBW 25-12T7		24	1.30		40	25	1.7	0.80		15	1.20
MUBW 40-12T7		29	1.10		62	44	2.0	0.60		25	0.70
1200 V XPT IGBT											
➢ **MIXA20WB1200TED**	1600	24	1.30	1200	25	19	1.8	1.26	1200	19	1.26
➢ **MIXA40WB1200TED**		29	1.10		55	40	1.8	0.64		40	0.64

IGBT Modules – CBI Configuration

CBI 3

IGBT Modules

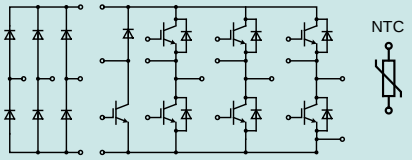


X113 E3-Pack

Package style

Outline drawings on pages O-30...O-52

See data sheet for pin arrangement



Type	Rectifier 3~			Inverter 3~					Brake chopper		
	V_{RRM}	I_{DAVM} T_H = 80°C	R_{thJC} typ.	V_{CES}	I_C T_C = 25°C	I_C T_C = 80°C	$V_{CE(sat)}$ typ.	R_{thJC} typ.	V_{CES}	I_C T_C = 80°C	R_{thJC} typ.
➢ New	V	A	K/W	V	A	A	V	K/W	V	A	K/W
600 V NPT IGBT											
MUBW 50-06A8	1600	40	1.10	600	75	50	1.9	0.50	600	25	1.00
MUBW 75-06A8		46	0.94		100	65	2.0	0.39		35	0.75
MUBW 100-06A8		60	0.73		125	85	1.9	0.30		50	0.55
1200 V NPT IGBT											
MUBW 35-12A8	1600	27	1.30	1200	50	35	2.5	0.55	1200	25	0.70
MUBW 50-12A8		46	0.94		85	60	2.2	0.35		35	0.55
1200 V NPT³ IGBT											
MUBW 50-12E8	1600	50	0.94	1200	90	62	1.9	0.35	1200	35	0.55
1200 V Trench IGBT											
MUBW 50-12T8	1600	50	0.94	1200	75	50	1.7	0.45	1200	35	0.55
MUBW 75-12T8		50	0.94		105	75	1.7	0.35		35	0.55
1200 V XPT IGBT											
➢ **MIXA60WB1200TEH**	1600	50	0.94	1200	85	59	1.8	0.43	1200	35	0.60
1700 V Trench IGBT											
➢ **MUBW 50-17T8**	2200	120	1.10	1700	74	53	2.0	0.43	1700	34	0.62
➢ **MUBW 75-17T8**		140	0.95		113	80	2.0	0.48		34	0.62

Gate Driver Board *GDBD 4410*

drives 7 Gates of a Converter – Break – Inverter IGBT Power Module for Industrial Applications

GDBD 4410 simplifies driving CBI2 and CBI3 module types. Pin locations of the driver board match that of the CBI modules. Thus it can be mounted very close to the gate control pins of the module, providing the shortest possible traces from driver to the gate and an easy routing on the main inverter board. GDBD4410 is a fast and easy to use solution and ideal for testing and small inverter series.

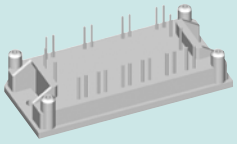
Main features are:

- Drives CBI modules up to 100A/600V and 50A/1200V
- Driver for brake IGBT included
- Design is based on IXBD4410/11 chipset
- High output gate current up to ± 2 A peak per gate
- Integrated charge pump for negative gate drive to speed up IGBT turn off and the suppress spurious gate noise triggering
- Noise immune pulse transformer for high dV/dt applications (>50 kV/µs)
- VCEsat sensing for short circuit protection
- Failure status signal
- Ground referenced and TTL/CMOS compatible interface for control signals
- +15V unipolar power supply required
- Operating frequency up to 25 kHz

IGBT Modules – Six-Pack configuration

Six-Pack

IGBT Modules

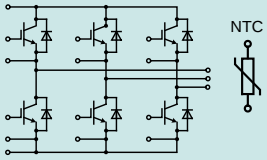


X111 E1-Pack

Package style

Outline drawings on pages O-30...O-52

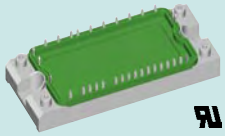
See data sheet for pin arrangement



Type / ➢ New	V_{CES} V	I_{C25} IGBT T_C = 25°C A	I_{C80} IGBT T_C = 80°C A	$V_{CE(sat)\ typ}$ IGBT T_J = 25°C V	E_{off} IGBT T_J = 125°C mJ	R_{thJC} IGBT K/W	I_{F25} diode T_C = 25°C A	I_{F80} diode T_C = 80°C A	NTC
600 V PT IGBT									
MWI 60-06G6K	600	60	41	2.3	0.5	0.7	48	33	•
1200 V NPT IGBT									
MWI 15-12A6K	1200	19	13	3.0	1.1	1.37	24	16	•
1200 V NPT³ IGBT									
MWI 30-12E6K	1200	29	21	2.5	1.8	0.95	24	16	•
MWI 50-12E6K		51	36	2.4	2.6	0.60	49	32	•
1200 V Trench IGBT									
MWI 45-12T6K	1200	43	31	1.9	3.4	0.80	49	32	•
MWI 60-12T6K		58	41	1.9	4.8	0.62	49	32	•
MWI 80-12T6K		80	56	2.0	6.5	0.46	80	51	•

Six-Pack

IGBT Modules

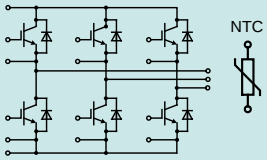


X112 E2-Pack

Package style

Outline drawings on pages O-30...O-52

See data sheet for pin arrangement

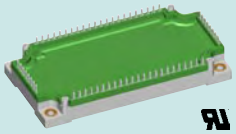


Type / ➢ New	V_{CES} V	I_{C25} IGBT T_C = 25°C A	I_{C80} IGBT T_C = 80°C A	$V_{CE(sat)\ typ}$ IGBT T_J = 25°C V	E_{off} IGBT T_J = 125°C mJ	R_{thJC} IGBT K/W	I_{F25} diode T_C = 25°C A	I_{F80} diode T_C = 80°C A	NTC
600 V NPT IGBT									
MWI 30-06A7	600	45	30	1.9	1.0	0.88	36	24	
MWI 30-06A7T		45	30	1.9	1.0	0.88	36	24	•
MWI 50-06A7		75	50	1.9	1.7	0.55	72	45	
MWI 50-06A7T		75	50	1.9	1.7	0.55	72	45	•
MWI 75-06A7		90	60	2.1	2.5	0.44	140	85	
MWI 75-06A7T		90	60	2.1	2.5	0.44	140	85	•
1200 V NPT IGBT									
MWI 15-12A7	1200	30	20	1.0	1.8	0.88	25	17	
MWI 25-12A7		50	35	2.2	2.8	0.55	50	33	
MWI 25-12A7T		50	35	2.2	2.8	0.55	50	33	•
MWI 35-12A7		62	44	2.2	4.2	0.44	50	33	
MWI 35-12A7T		62	44	2.2	4.2	0.44	50	33	•
MWI 50-12A7		85	60	2.2	5.6	0.35	110	70	
MWI 50-12A7T		85	60	2.2	5.6	0.35	110	70	•
1200 V NPT³ IGBT									
MWI 25-12E7	1200	52	36	1.9	2.5	0.55	50	33	
MWI 50-12E7		90	62	2.1	4.0	0.35	110	70	
1200 V Trench IGBT									
➢ **MWI 35-12T7T**	1200	60	35	1.7	4.1	0.62	50	33	•
MWI 50-12T7T		75	50	1.7	6.5	0.49	110	70	•
MWI 75-12T7T		105	75	1.7	9.5	0.35	150	100	•
1200 V XPT IGBT									
➢ **MIXA40W1200TED**	1200	55	40	1.8	4.4	0.64	44	29	•
➢ **MIXA60W1200TED**		85	59	1.8	6.0	0.43	88	59	•

IGBT Modules – Six-Pack configuration

Six-Pack

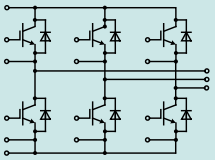
IGBT Modules



X113 E3-Pack
Package style

Outline drawings on pages O-30...O-52

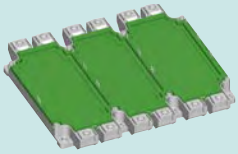
See data sheet for pin arrangement



Type	V_{CES}	I_{C25} IGBT T_C = 25°C	I_{C80} IGBT T_C = 80°C	$V_{CE(sat)\ typ}$ IGBT T_J = 25°C	E_{off} IGBT T_J = 125°C	R_{thJC} IGBT	I_{F25} diode T_C = 25°C	I_{F80} diode T_C = 80°C	NTC
➢	V	A	A	V	mJ	K/W	A	A	
600 V NPT IGBT									
MWI 100-06A8	600	130	88	2.0	2.9	0.30	140	88	
MWI 100-06A8T		130	88	2.0	2.9	0.30	140	88	•
MWI 150-06A8		170	115	2.0	4.6	0.24	210	130	
MWI 150-06A8T		170	115	2.0	4.6	0.24	210	130	•
MWI 200-06A8		215	155	2.0	6.3	0.18	260	165	
MWI 200-06A8T		215	155	2.0	6.3	0.18	260	165	•
1200 V NPT IGBT									
MWI 75-12A8	1200	125	85	2.2	10.5	0.25	150	100	
MWI 75-12A8T		125	85	2.2	10.5	0.25	150	100	•
MWI 100-12A8		160	110	2.2	14.6	0.19	200	130	
MWI 100-12A8T		160	110	2.2	14.6	0.19	200	130	•
1200 V NPT³ IGBT									
MWI 75-12E8	1200	130	90	2.0	7.5	0.25	150	100	
MWI 100-12E8		165	115	2.0	10.0	0.19	200	130	
1200 V Trench IGBT									
MWI 75-12T8T	1200	100	75	1.7	9.5	0.35	150	100	•
MWI 100-12T8T		140	100	1.7	12.0	0.26	200	130	•
MWI 150-12T8T		200	150	1.7	17.0	0.18	tbd	tbd	•
1700 V SPT+ IGBT									
➢ **MWI 100-17E8T**	1200	145	100	2.3	24.9	0.25	tbd	100	•
➢ **MWI 150-17E8T**		195	150	1.3	37.9	0.17	tbd	150	•

Six-Pack

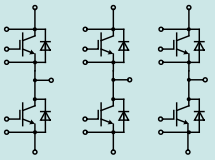
IGBT Modules



X114 E9-Pack
Package style

Outline drawings on pages O-30...O-52

See data sheet for pin arrangement

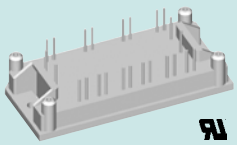


Type	V_{CES}	I_{C25} IGBT T_C = 25°C	I_{C80} IGBT T_C = 80°C	$V_{CE(sat)\ typ}$ IGBT T_J = 25°C	E_{off} IGBT T_J = 125°C	R_{thJC} IGBT	I_{F80} diode T_C = 80°C	NTC
➢ New	V	A	A	V	mJ	K/W	A	
1200 V NPT³ IGBT								
MWI 225-12E9	1200	355	250	2.10	20	0.090	205	•
MWI 300-12E9		530	375	2.00	30	0.060	300	•
MWI 450-12E9		640	440	2.20	45	0.057	450	•
1700 V NPT³ IGBT								
MWI 225-17E9	1700	335	235	2.50	54	0.085	200	•
MWI 300-17E9		500	350	2.30	80	0.057	290	•
1700 V SPT + IGBT								
➢ MWI 451-17E9	1700	580	475	2.25	90	0.057	450	•

IGBT Modules – Full Bridge & Six-Pack configuration

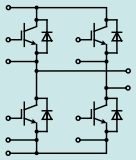
Full Bridge

IGBT Modules



X111 E1-Pack
Package style
Outline drawings on pages O-30...O-52

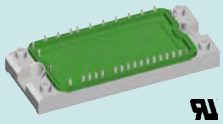
See data sheet for pin arrangement



Type ➢ New	V_{CES} V	I_{C25} IGBT T_C = 25°C A	I_{C80} IGBT T_C = 80°C A	$V_{CE(sat)\ typ}$ IGBT T_J = 25°C V	E_{off} IGBT T_J = 125°C mJ	R_{thJC} IGBT K/W	I_{F25} diode T_C = 25°C A	I_{F80} diode T_C = 80°C A	NTC
600 V Trench IGBT									
➢ **MKI 80-06T6K**	600	89	67	1.8	2.8	0.6	105	67	•

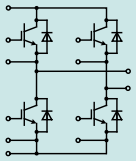
Full Bridge

IGBT Modules



X112 E2-Pack
Package style
Outline drawings on pages O-30...O-52

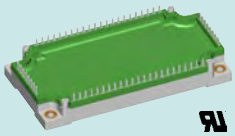
See data sheet for pin arrangement



600 V NPT IGBT									
MKI 50-06A7	600	72	50	1.9	1.7	0.55	72	45	
MKI 50-06A7T		72	50	1.9	1.7	0.55	72	45	•
MKI 65-06A7T		100	67	2.0	2.3	0.39	140	85	•
MKI 75-06A7		90	60	2.5	6.3	0.44	140	85	
MKI 75-06A7T		90	60	2.5	6.3	0.44	140	85	•
1200 V Fast NPT IGBT									
MKI 50-12F7	1200	65	45	3.2	2.5	0.35	110	70	
1200 V NPT³ IGBT									
MKI 50-12E7	1200	90	62	1.9	4.0	0.35	110	70	

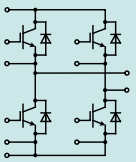
Full Bridge

IGBT Modules



X113 E3-Pack
Package style
Outline drawings on pages O-30...O-52

See data sheet for pin arrangement



1200 V Fast NPT IGBT									
MKI 100-12F8	1200	65	45	3.2	2.5	0.35	110	70	
1200 V NPT³ IGBT									
MKI 75-12E8	1200	130	90	2.0	7.5	0.25	150	100	
MKI 100-12E8		150	115	2.0	10.0	0.19	200	130	

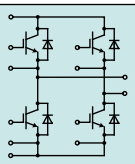
Full Bridge
Six-Pack

IGBT Modules

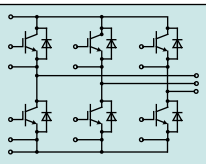
X102
Package style
Outline drawings on pages O-30...O-52

See data sheet for pin arrangement

VKI



VWI



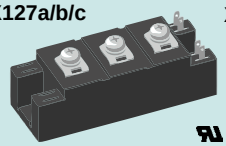
Full Bridge									
VKI 50-06P1	600	45	30	1.9	1.0	0.88	36	24	•
VKI 75-06P1	600	72	50	1.9	1.7	0.55	72	45	•
VKI 50-12P1	1200	50	35	2.5	2.8	0.55	50	35	•
Six-Pack									
VWI 20-06P1	600	19	14	1.9	0.30	1.7	21	14	•
VWI 35-06P1	600	35	25	1.9	0.68	1.0	35	24	
VWI 15-12P1	1200	18	14	2.3	1.10	1.2	12	8	•

IGBT Modules

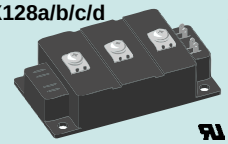
NPT

IGBT Modules

X127a/b/c



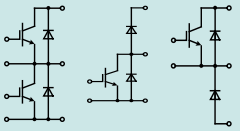
X128a/b/c/d



X130a/b/c

Outline drawings on pages O-30...O-52

See data sheet for pin arrangement

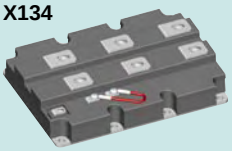


MII MID MDI

Type ➢ New	V_{CES} V	I_{C25} IGBT T_C = 25°C A	I_{C80} IGBT T_C = 80°C A	$V_{CE(sat)}$ typ IGBT T_J = 25°C V	E_{off} IGBT T_J = 125°C mJ	R_{thJC} IGBT K/W	I_{F25} diode T_C = 25°C A	I_{F80} diode T_C = 80°C A	Fig. No.
1200 V Half Bridge, NPT									
MII 75-12A3	1200	90	60	2.2	5.6	0.33	100	60	X127a
MII 100-12A3		135	90	2.2	10.5	0.22	150	100	
MII 145-12A3		160	110	2.2	15.0	0.18	150	100	
MII 150-12A4		180	120	2.2	11.5	0.17	200	130	X128a
MII 200-12A4		270	180	2.2	21.0	0.11	300	200	
MII 300-12A4		330	220	2.2	29.0	0.09	450	270	
1200 V Boost Chopper, NPT									
MID 75-12A3	1200	90	60	2.2	5.6	0.33	100	60	X127b
MID 100-12A3		135	90	2.2	10.5	0.22	150	100	
MID 145-12A3		160	110	2.2	15.0	0.18	150	100	
MID 150-12A4		180	120	2.2	11.5	0.17	200	130	X128b
MID 200-12A4		270	180	2.2	21.0	0.11	300	200	
MID 300-12A4		330	220	2.2	29.0	0.09	450	270	
MID 550-12A4		670	460	2.3	59.0	0.05	750	460	
1200 V Buck Chopper, NPT									
MDI 75-12A3	1200	90	60	2.2	5.6	0.33	100	60	X127c
MDI 100-12A3		135	90	2.2	10.5	0.22	150	100	
MDI 145-12A3		160	110	2.2	15.0	0.18	150	100	
MDI 150-12A4		180	120	2.2	11.5	0.17	200	130	X128c
MDI 200-12A4		270	180	2.2	21.0	0.11	300	200	
MDI 300-12A4		330	220	2.2	29.0	0.09	450	270	
MDI 550-12A4		670	460	2.3	59.0	0.05	750	460	
1200 V Half Bridge, NPT[3]									
➢ **MII 300-12E4**	1200	280	200	2.0	20.0	0.11	300	190	X130a
MII 400-12E4		420	300	2.2	30.0	0.08	450	290	
1200 V Boost Chopper, NPT[3]									
MID 400-12E4	1200	420	300	2.2	30.0	0.08	450	290	X130b
1200 V Buck Chopper, NPT[3]									
MDI 400-12E4	1200	420	300	2.2	30.0	0.08	450	290	X130c

High Power Single Switch

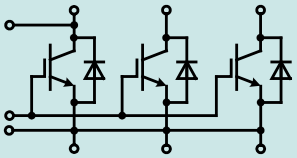
X134



X135

Package style

Outline drawings on pages O-30...O-52

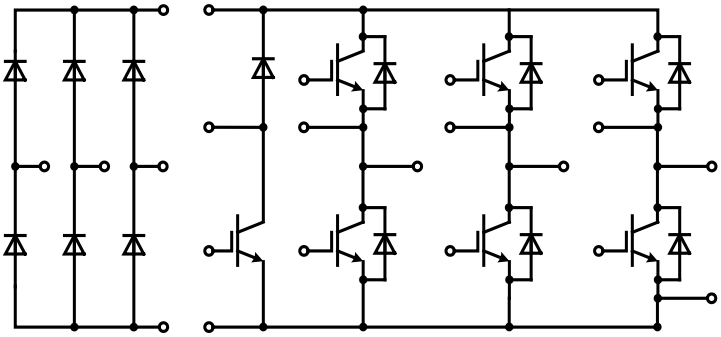


- low loss and smooth switching
- AlSiC base plate for high power cycling capacity
- AlN substrate for low thermal resistance

Type	V_{CES} V	I_{C25} IGBT T_C = 25°C A	I_{C80} IGBT T_C = 80°C A	$V_{CE(sat)\ typ}$ IGBT T_J = 25°C V	E_{off} IGBT T_J = 125°C mJ	R_{thJC} IGBT K/W	I_{F25} diode T_C = 25°C A	I_{F80} diode T_C = 80°C A	Fig. No.
MIO 1800-17E10	1700	2500	1800	2.3	670	0,009	tbd	1800	X134
MIO 2400-17E10	1700	3300	2400	2.3	980	0,007		2400	
MIO 1200-25E10	2500	1650	1200	2.5	1250	0,009		1200	
MIO 1500-25E10	2500	2100	1500	2.7	1450	0,008		1500	
MIO 1200-33E10	3300	1650	1200	3.1	1950	0,0085		1200	
High Voltage Package with enlarged strike and creepage distance									
MIO 1200-33E11	3300	1650	1200	3.1	2000	0,0085	tbd	1200	X135
MIO 600-65E11	6500	840	600	4.2	3500	0,011		600	

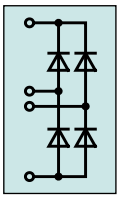
IGBT Modules – Building Blocks for your ideal Converter
ISOPLUS™ Technology

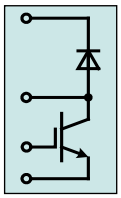
DCB base plate
- 2500 V electrical isolation
- low thermal resistance
- increased power & temperature cycling
- saves space
- replaces multiple discretes
- reduces parasitic inductance and capacitance
- reduces EMI
- heat spreading



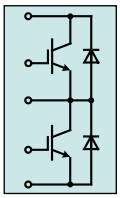
Rectifier **Brake** **Converter**

FBO 16-12N (line rectifier)
FBO 40-12N (line rectifier)
FBE 22-06N1 (HiPerFRED)



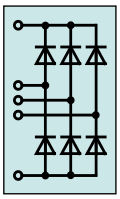


FID 60-06D

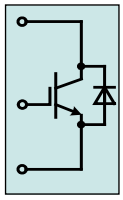


FII 30-06D
FII 40-06D
FII 30-12E
FII 50-12E

FUS 45-0045B (Schottky)
FUO 22-12N (line rectifier)
FUO 22-16N (line rectifier)
FUO 50-16N (line rectifier)
FUE 30-12N1 (HiPerFRED)



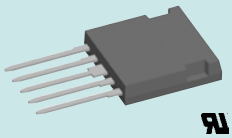
*** PT IGBT** available too (contact factory)



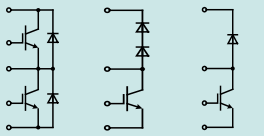
IXBF 9N160G (BIMOSFET)
IXBF 40N160 (BIMOSFET)
IXLF 19N250A (IGBT only)

ISOPLUS i4-PAC™

Package



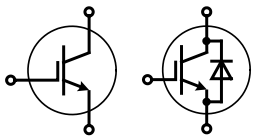
X024a Package style
Outline drawings on pages O-30...O-52



FII **FID** HiperDyn **FID** HiPerFRED

➢ **Type** **New**	**Configu-ration**	**Technology**	**V_{RRM} / V_{CES}** **V**	**I_{C25}** T_C = 25°C **A**	**I_{C80}** T_C = 90°C **A**	**$V_{CE(sat)}$** typ. T_C = 25°C **V**
FBO 16-12N	1~	Rectifier Bridge	1200			
FBO 40-12N	1~	Rectifier Bridge	1200			
FBE 22-06N1	1~	Rectifier Bridge	600			
FUS 45-0045B	3~	Schottky Rectifier Bridge	45			
FUO 22-12N	3~	Rectifier Bridge	1200			
FUO 22-16N	3~	Rectifier Bridge	1600			
FUO 50-16N	3~	Rectifier Bridge	1600			
FUE 30-12N1	3~	Rectifier Bridge	1200			
FID 60-06D	boost	NPT IGBT & HiPerFRED	600	65	40	1.6
FII 30-06D	phaseleg	NPT IGBT	600	30	18	1.9
FII 40-06D	phaseleg	NPT IGBT	600	40	25	1.8
FII 30-12E	phaseleg	NPT3 IGBT	1200	32	20	2.4
FII 50-12E	phaseleg	NPT3 IGBT	1200	50	32	2.0

Discrete XPT / NPT IGBT



XPT IGBT

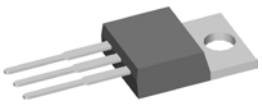
XPT IGBT = Xtreme light Punch Through, short-circuit rated IGBTs with paralleling capabilities

Type ➢ New	V_{CES} V	I_{C25} IGBT T_C = 25°C A	I_{C90} IGBT T_C = 90°C A	V_{CEsat} typ IGBT T_J = 25°C V	E_{off} IGBT T_J = 125°C mJ	R_{thJC} IGBT K/W	Diode	I_{F90} diode T_C = 90°C A	Fig. No.
1200 V XPT IGBT									
➢ **IXA12IF1200PB**	1200	21	12	1.8	1.1	1.50	●	22	X005a
➢ **IXA17IF1200HJ**		27	17	1.8	2.0	1.26	●	22	X016a
➢ **IXA20I1200PB**		32	20	1.8	2.6	0.95			X005a
➢ **IXA37IF1200HJ**		57	37	1.8	4.4	0.64	●	29	X016a
➢ **IXA45IF1200HB**		68	45	1.8	4.4	0.48	●	29	X014a
➢ **IXA55I1200HJ**		84	55	1.8	6.0	0.43			X016a

Package style

Outline drawings on pages O-30...O-52

X005a **TO-220AB**
Weight = 4 g



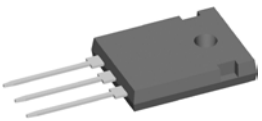
NPT IGBT

NPT IGBT = Non-Punch Through insulated gate bipolar transistor, square RBSOA, short circuit rated

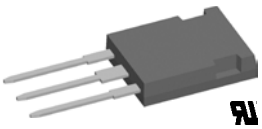
Type ➢ New	V_{CES} V	I_{C25} IGBT T_C = 25°C A	I_{C90} IGBT T_C = 90°C A	V_{CEsat} typ IGBT T_J = 25°C V	E_{off} IGBT T_J = 125°C mJ	R_{thJC} IGBT K/W	Diode	I_{F90} diode T_C = 90°C A	Fig. No.
IXDP 20N60B	600	32	20	2.2	0.4	0.90			X005a
IXDP 20N60BD1		32	20	2.2	0.4	0.90	●	14	X005a
IXDP 35N60B		60	35	2.1	0.8	0.50			X005a
IXDH 35N60B		60	35	2.1	0.8	0.50			X014a
IXDH 35N60BD1		60	35	2.1	0.8	0.50	●	21	X014a
IXDR 35N60BD1		60	24	2.1	0.8	1.00	●	18	X016a
IXDA 20N120AS	1200	34	25	2.8	2.4	0.63			X011b
IXDH 20N120		38	25	2.4	2.4	0.63			X014a
IXDH 20N120D1		38	25	2.4	2.4	0.63	●	20	X014a
IXDH 30N120		60	38	2.4	3.4	0.42			X014a
IXDH 30N120D1		60	38	2.4	3.4	0.42	●	35	X014a
IXDR 30N120		50	30	2.4	3.4	0.60			X016a
IXDR 30N120D1		50	30	2.4	3.4	0.60	●	27	X016a
IXDN 55N120D1		100	62	2.3	6.2	0.28	●	60	X027a
IXDN 75N120		150	95	2.2	10.5	0.19			X027a

X011b **TO-263AB**
Weight = 2 g

X014a **TO-247AD**
Weight = 6 g



X016a **ISOPLUS247™**
Weight = 5 g



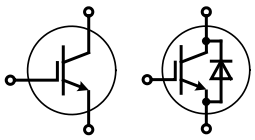
3rd Generation NPT³ IGBT lower V_{CEsat}

➢ **IXER 20N120**	1200	29	19	2.4	1.5	0.96			X016a
➢ **IXER 20N120D1**		29	19	2.4	1.5	0.96	●	15	X016a
IXEH 25N120		36	24	2.6	2.5	0.63			X014a
IXEH 25N120D1		36	24	2.6	2.5	0.63	●	20	X014a
IXER 35N120D1		50	32	2.2	2.6	0.60	●	25	X016a
IXEH 40N120		60	40	2.4	3.0	0.42			X014a
IXEH 40N120D1		60	40	2.4	3.0	0.42	●	35	X014a
IXER 60N120		95	60	2.1	4.8	0.33			X016a
IXEN 60N120		100	65	2.1	4.8	0.28			X027a
IXEN 60N120D1		100	65	2.1	4.8	0.28	●	60	X027a

X027a **SOT-227B**
Weight = 30 g **miniBLOC**

S Series IGBTs with SCSOA Capability

Medium speed (1 kHz to 20 kHz) Single IGBT

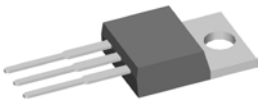


Part Number ➢ New	V_{CES} V	I_{C25} T_C = 25°C A	I_{C110} T_C = 110°C A	$V_{CE(sat)}$ T_C = 25°C V	t_{fi} typ. T_J = 25°C ns	E_{off} typ. T_J = 125°C mJ	R_{thJC} K/W	Diode	I_{F110} Diode T_C = 110°C A	R_{thJC} Diode K/W	P_C W	Fig. No.
IXSA 10N60B2D1	600	20	10	2.50	270	0.43	1.25	•	11	2.50	100	X011b
IXSH 10N60B2D1		20	10	2.50	165	0.79	1.25	•	11	2.50	100	X014a
IXSP 10N60B2D1		20	10	2.50	270	0.43	1.25	•	11	2.50	100	X005a
IXSQ 10N60B2D1		20	10	2.50	165	0.79	1.25	•	11	2.50	100	X017a
IXSA 20N60B2D1		35	20	2.50	126	0.97	0.66	•	11	2.50	190	X011b
IXSH 20N60B2D1		35	20	2.50	126	0.97	0.21	•	21	1.60	190	X014a
IXSP 20N60B2		35	20	2.50	126	0.97	0.66				190	X005a
IXSP 20N60B2D1		35	20	2.50	126	0.97	0.66	•	11	2.50	190	X005a
IXSQ 20N60B2D1		35	20	2.50	126	0.97	0.21	•	21	1.60	190	X017a
IXSH 30N60B2D1		48	30	2.50	140	1.18	0.50	•	28	0.90	250	X014a
IXST 30N60B2D1		48	30	2.50	234	1.18	0.50	•	28	0.90	250	X019
IXSH 40N60B2D1		75		2.20	120	2.60	0.48	•		0.75	280	X014a
IXST 40N60B2D1		75		2.20	120			•		0.75		X019

Package Style

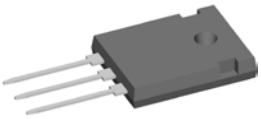
Outline drawings on pages O-30...O-52

X005a **TO-220AB**
Weight = 4 g

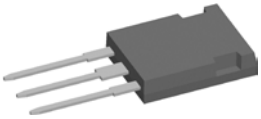


X011b **TO-263AB**
Weight = 2 g

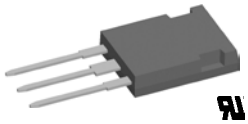
X014a **TO-247AD**
Weight = 6 g



X015a **PLUS247**
Weight = 5 g



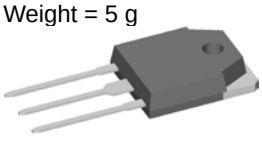
X016a **ISOPLUS247™**
Weight = 5 g



xxxAxx = low V_{CEsat} type=, xxxBxx = medium speed type

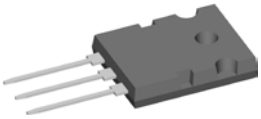
IXSH 24N60B	600	48	24	2.50	170	2.40	0.83				150	X014a
IXSH 24N60BD1		48	24	2.50	170	2.40	0.83	•		0.90	150	X014a
IXSP 24N60B		48	24	2.50	170	2.40	0.83				150	X005a
IXST 24N60B		48	24	2.50	170	2.40	0.83				150	X019
IXSH 30N60B		55	30	2.00	140	2.50	0.62				200	X014a
IXSH 30N60BD1		55	30	2.70	140	2.50	0.62	•		0.09	200	X014a
IXST 30N60B		55	30	2.00	270	1.50	0.62				200	X019
IXSH 30N60C		55	30	2.00	140	2.50	0.62				200	X014a
IXSH 40N60B		75	40	2.20	120	1.80	0.45				280	X014a
IXST 40N60B		75	40	2.20	120	2.00	0.45				280	X019
IXSH 50N60B		75	50	2.50	150	4.80	0.50				250	X014a
IXSK 80N60B		160	80	2.50	180		0.26				500	X020a
IXSX 80N60B		160	80	2.50	180		0.26				500	X015a
IXSH 15N120B	1200	30	15	3.40	126	3.10	0.83				150	X014a
IXST 35N120B		70	35	3.60	180	9.00	0.42					X019
IXSR 35N120BD1		70	30	3.60	180	9.00	0.50	•		0.83	250	X016a
IXSX 35N120BD1		70	35	3.60	180	9.00	0.42	•		0.65	300	X015a
IXSH 45N120B		75	45	3.00	380	22.00	0.42				300	X014a
IXST 45N120B		75	45	3.00	380	22.00	0.42				300	X019
IXSH 35N140A	1400	70	35	4.00	200	9.50	0.42				300	X014a

X017a **TO-3P**
Weight = 5 g



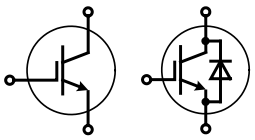
X019 **TO-268AA**
Weight = 5 g

X020a **TO-264**
Weight = 10 g



Discrete IGBT G series 2nd Generation

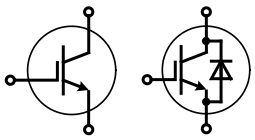
xxxA2xx = low V_{CEsat} type, xxxB2xx = medium speed type, xxxC2xx = high speed type



➢ New / Part Type	V_{CES} V	I_C T_C = 25°C A	I_C T_C = 90°C A	$V_{CE(sat)}$ T_C = 25°C V	t_{fi} typ T_J = 25°C ns	E_{off} typ T_J = 125°C mJ	R_{thJC} K/W	Diode	I_{F110} Diode T_C = 110°C A	R_{thJC} Diode K/W	P_C W	Fig. No.	Package Style (Outline drawings on pages O-30...O-52)
IXGA 16N60B2	600	40		2.30	104	0.35	0.83				150	X011b	
IXGA 16N60B2D1		40		2.30	104	0.35	0.83	•	10	2.50	150	X011b	X005a **TO-220AB** Weight = 4 g
IXGA 16N60C2		40		3.00	35	0.15	0.83				150	X011b	
IXGA 16N60C2D1		40		3.00	35	0.15	0.83	•	10	2.50	150	X011b	
IXGC 16N60B2		28		2.50	104	0.35	2.00				63	X010a	
IXGC 16N60B2D1		28		2.50	104	0.35	2.00	•	10	2.50	63	X010a	
IXGC 16N60C2		28		3.00	35	0.15	2.00				63	X010a	
IXGC 16N60C2D1		28		3.00	35	0.15	2.00	•	10	2.50	63	X010a	
IXGH 16N60B2D1		40		2.30	104	0.35	0.83	•	10	2.50	150	X014a	X010a **ISOPLUS220™** Weight = 3 g
IXGH 16N60C2D1		40		3.00	35	0.15	0.83	•	10	2.50	150	X014a	
IXGP 16N60B2		40		2.30	104	0.35	0.83				150	X005a	
IXGP 16N60B2D1		40		2.30	104	0.35	0.83	•	10	2.50	150	X005a	
IXGP 16N60C2		40		3.00	35	0.15	0.83				150	X005a	
IXGP 16N60C2D1		40		3.00	35	0.15	0.83	•	10	2.50	150	X005a	
IXGH 30N60B2		70		1.80	82	0.90	0.65				190	X014a	
IXGH 30N60B2D1		70		1.80	82	0.90	0.65	•	30	0.90	190	X014a	X011b **TO-263AB** Weight = 2 g
IXGH 30N60C2		70		2.70	60	0.59	0.65				190	X014a	
IXGH 30N60C2D1		70		2.70	60	0.59	0.65	•	30	0.90	190	X014a	
IXGH 30N60C2D4		70		2.70	60	0.59	0.65	•		1.60	190	X014a	
IXGP 30N60B2		70		1.80	82	0.90	0.65				190	X005a	
IXGP 30N60C2		70		2.70	60	0.59	0.65				190	X005a	
IXGT 30N60B2		70		1.80	82	0.90	0.65				190	X019	X014a **TO-247AD** Weight = 6 g
IXGT 30N60B2D1		70		1.80	82	0.90	0.65	•	30	0.90	190	X019	
IXGT 30N60C2		70		2.70	60	0.59	0.65				190	X019	
IXGT 30N60C2D1		70		2.70	60	0.59	0.65	•	30	0.90	190	X019	
IXGH 40N60B2		75		1.70	82	1.10	0.42				300	X014a	
IXGH 40N60B2D1		75		1.70	82	1.10	0.42	•	30	0.90	300	X014a	
IXGH 40N60C2		75		2.70	32	0.50	0.42				300	X014a	X015a **PLUS247** Weight = 5 g
IXGH 40N60C2D1		75		2.70	32	0.50	0.42	•	30	0.90	300	X014a	
IXGR 40N60B2		60		1.90	82	1.10	0.75				167	X016a	
IXGR 40N60B2D1		60		1.90	82	1.10	0.75	•	30	1.10	167	X016a	
IXGR 40N60C2		56		2.70	32	0.50	0.74				170	X016a	
IXGR 40N60C2D1		56		2.70	32	0.50	0.74	•	30	1.50	170	X016a	
IXGT 40N60B2		75		1.70	82	1.10	0.42				300	X019	
IXGT 40N60B2D1		75		1.70	82	1.10	0.42	•	30	0.90	300	X019	X016a **ISOPLUS247™** Weight = 5 g
IXGT 40N60C2		75		2.70	32	0.50	0.42				300	X019	
IXGT 40N60C2D1		75		2.70	32	0.50	0.42	•	30	0.90	300	X019	
IXGH 50N60B2		75		2.00	65	1.55	0.31				400	X014a	
IXGH 50N60C2		75		2.70	48	0.74	0.31				400	X014a	
IXGK 50N60B2D1		75		2.00	65	1.55	0.31	•	60	0.65	400	X020a	
IXGK 50N60C2D1		75		2.50	48	0.74	0.31	•	60	0.65	480	X020a	X019 **TO-268AA** Weight = 5 g
IXGR 50N60B2		68		2.20	65	1.55	0.62				200	X016a	
IXGR 50N60B2D1		68		2.20	65	1.55	0.62	•	60	0.85	200	X016a	
IXGR 50N60C2		75		2.70	48	0.74	0.62				200	X016a	
IXGR 50N60C2D1		75		2.70	48	0.74	0.62	•	60	0.85	200	X016a	
IXGT 50N60B2		75		2.00	65	1.55	0.31				400	X019	
IXGT 50N60C2		75		2.70	48	0.74	0.31				400	X019	X020a **TO-264** Weight = 10 g
IXGX 50N60B2D1		75		2.00	65	1.55	0.31	•	60	0.65	400	X015a	
IXGX 50N60C2D1		75		2.50	48	0.74	0.31	•	60	0.65	480	X015a	
IXGH 60N60B2		75		1.80	100	2.80	0.25				500	X014a	
IXGH 60N60C2		75		2.50	35	1.20	0.26				480	X014a	
IXGK 60N60B2D1		75		1.80	100	2.80	0.25	•	60	0.85	500	X020a	

Discrete IGBT G series 2nd Generation

xxxA2xx = low V_{CEsat} type, xxxB2xx = medium speed type, xxxC2xx = high speed type

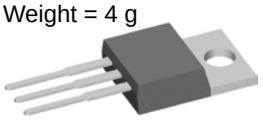


Part Type ➢ New	V_{CES} V	I_C T_C = 25°C A	I_C T_C = 90°C A	$V_{CE(sat)}$ T_C = 25°C V	t_{fi} typ T_J = 25°C ns	E_{off} typ T_J = 125°C mJ	R_{thJC} K/W	Diode	I_{F110} Diode T_C = 110°C A	R_{thJC} Diode K/W	P_C W	Fig. No.
IXGK 60N60C2D1	600	75		2.50	35	1.20	0.26	•	60	0.85	480	X020a
IXGN 60N60C2		100		2.50	35	1.20	0.26				480	X027a
IXGN 60N60C2D1		100		2.50	35	1.20	0.26	•	60	0.85	480	X027a
IXGR 60N60B2		75		2.00	100	2.80	0.50				250	X016a
IXGR 60N60B2D1		75		2.00	100	2.80	0.50	•	60	0.85	250	X016a
IXGR 60N60C2		75		2.70	35	0.92	0.50				250	X016a
IXGR 60N60C2D1		75		2.70	35	0.92	0.50	•	60	0.85	250	X016a
IXGR 60N60C2G1		75		2.70	35	0.92	0.25	•	12	1.75	250	X016a
IXGT 60N60B2		75		1.80	100	2.80	0.25				500	X019
IXGT 60N60C2		75		2.50	35	1.20	0.26				480	X019
IXGT 60N60C2D1		75		2.50	35	1.20	0.26	•		0.85	480	X019
IXGX 60N60B2D1		75		1.80	100	2.80	0.25	•	60	0.85	500	X015a
IXGX 60N60C2D1		75		2.50	35	1.20	0.26	•	60	0.85	480	X015a
IXGK 120N60C2		75		2.50	45	1.50	0.15				830	X020a
IXGR 120N60C2		75		2.70	45	1.50	0.42				300	X016a
IXGX 120N60C2		75		2.50	45	1.50	0.15				830	X015a
IXGH 32N90B2	900	64		2.70	150	5.75	0.42				300	X014a
IXGH 32N90B2D1		64		2.70	150	5.75	0.42	•	27	0.90	300	X014a
IXGR 32N90B2D1		47		2.90	150	5.75	0.80	•	22	1.10	160	X016a
IXGT 32N90B2		64		2.70	150	5.75	0.42				300	X019
IXGT 32N90B2D1		64		2.70	150	5.75	0.42	•	27	0.90	300	X019
IXGH 50N90B2		75		2.70	200	8.70	0.31				400	X014a
IXGH 50N90B2D1		75		2.70	200	8.70	0.31	•	30	0.90	400	X014a
IXGK 50N90B2D1		75		2.70	200	8.70	0.31	•	30	0.90	400	X020a
IXGR 50N90B2D1		40		2.90	200	8.70	1.25	•	22	1.10	100	X016a
IXGT 50N90B2		75		2.70	200	8.70	0.31				400	X019
IXGT 50N90B2D1		75		2.70	200	8.70	0.31	•	30	0.90	400	X019
IXGA 12N120A2	1200	24	12	2.40	650	7.70	1.66				75	X011b
IXGP 12N120A2		24	12	2.40	650	7.70	1.66				75	X005a
IXGA 15N120B2		30	15	3.50	137	2.80	0.75				170	X011b
IXGH 15N120B2D1		30	15	3.30	137	2.80	0.75	•		1.60	192	X014a
IXGP 15N120B2		30	15	3.50	137	2.80	0.75				170	X005a
IXGH 40N120A2		75		2.00	800	35.00	0.35				360	X014a
IXGH 40N120B2D1		75		3.50	140	8.30	0.35	•	30	0.90	360	X014a
IXGT 40N120A2		75		2.00	800	35.00	0.35				360	X019
IXGT 40N120B2D1		75		3.50	140	8.30	0.35	•	30	0.90	360	X019

Package Style

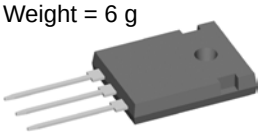
Outline drawings on pages O-30...O-52

X005a **TO-220AB**
Weight = 4 g

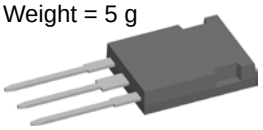


X011b **TO-263AB**
Weight = 2 g

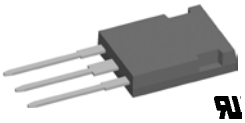
X014a **TO-247AD**
Weight = 6 g



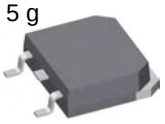
X015a **PLUS247**
Weight = 5 g



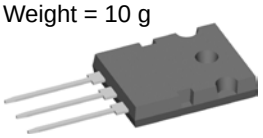
X016a **ISOPLUS247™**
Weight = 5 g



X019 **TO-268AA**
Weight = 5 g



X020a **TO-264**
Weight = 10 g



Discrete IGBT G series

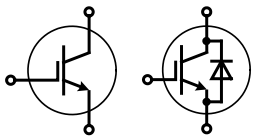
xxxB = medium speed type, xxxC = high speed type,

IXGA 7N60B	600	14		2.10	120	0.33	2.30				54	X011b
IXGP 7N60B		14		2.10	120	0.33	2.30				54	X005a
IXGA 7N60C		14	7	2.70	45	0.22	2.30				54	X011b
IXGP 7N60C		14	7	2.70	45	0.22	2.30				54	X005a
IXGH 35N120B	1200	70			160	8.00	0.42					X014a
IXGK 35N120B		70	35	3.30	160	8.00	0.35				350	X020a
IXGT 35N120B		70	35		250	10.80	0.35				360	X019

X027a **SOT-227B**
Weight = 30 g **miniBLOC**

Discrete IGBT G series 3rd Generation

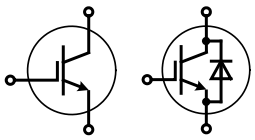
xxxA3xx = low V_{CEsat} type, xxxB3xx = medium speed type, xxxC3xx = high speed type



Part Number ➢ New	V_{CES} V	I_{C25} T_C = 25°C A	I_{C90} T_C = 90°C A	$V_{CE(sat)}$ T_C = 25°C V	t_{fi} typ. T_J = 25°C ns	E_{off} typ. T_J = 125°C mJ	R_{thJC} K/W	Diode	I_{F110} Diode T_C = 110°C A	R_{thJC} Diode K/W	P_C W	Fig. No.	Package Style Outline drawings on pages O-30...O-52
IXGH 42N30C3	300			1.80	65	0.28	0.56				223	X014a	X005a **TO-220AB** Weight = 4 g
IXGH 60N30C3		75		1.80	101	0.40	0.42				300	X014a	
IXGH 85N30C3		75		1.90	70		0.38				333	X014a	
IXGH 100N30C3		75		1.85	94	0.75	0.27				460	X014a	
IXGH 120N30B3		75	120	1.80			0.23				540	X014a	
IXGH 120N30C3		75		2.10	86	0.88	0.23				540	X014a	X011b **TO-263AB** Weight = 2 g
IXGN 400N30A3		400		1.15	315		0.17					X027a	
IXGX 400N30A3		400		1.15	315		0.13				1000	X015a	
IXGH 28N60B3	600	66		1.80	100	1.00	0.66					X014a	
IXGH 28N60B3D1		66		1.80	100	1.00	0.66	•	10	1.00	190	X014a	X014a **TO-247AD** Weight = 6 g
IXGH 36N60A3D4		75		1.50	325	5.30	0.56	•	10	2.50	220	X014a	
IXGH 36N60B3D1		75		1.80	100	1.50	0.50	•	10	0.90	250	X014a	
IXGH 36N60B3D4		75		1.80	100	1.50	0.56	•	10	2.50	220	X014a	
IXGA 48N60B3		75		1.80	116	1.29	0.42				300	X011b	
IXGA 48N60C3		75		2.50	38	1.57	0.48				300	X011b	X015a **PLUS247** Weight = 5 g
IXGH 48N60A3		75		1.35	224	5.60	0.42				300	X014a	
IXGH 48N60A3D1		75		1.35	224	5.60	0.42	•		0.90	300	X014a	
IXGH 48N60B3		75		1.80	116	1.29	0.42				300	X014a	
IXGH 48N60B3D1		75		1.80	116	1.29	0.42	•				X014a	
IXGH 48N60C3		75		2.50	38	0.57	0.48				300	X014a	X016a **ISOPLUS247™** Weight = 5 g
IXGH 48N60C3D1		75		2.50	38	0.57	0.42	•		0.90	300	X014a	
IXGP 48N60B3		75		1.80	116	1.29	0.42				300	X005a	
IXGP 48N60C3		75		2.50	38	0.57	0.48				300	X005a	
IXGR 48N60B3		60		2.10	116	1.30	0.83					X016a	
IXGR 48N60B3D1		60		2.10	116	1.30	0.83	•	27	1.50	150	X016a	
IXGR 48N60C3D1		56		2.70	38	0.57	1.00	•		1.50	125	X016a	X019 **TO-268AA** Weight = 5 g
IXGH 56N60B3D1		75		1.80	95	2.20	0.23	•		1.50	333	X014a	
IXGH 60N60C3		75		2.50	55	0.90	0.33				380	X014a	
IXGK 64N60B3D1		75		1.80	88	1.95	0.27	•		0.85	460	X020a	
IXGX 64N60B3D1		75		1.80	88	1.95	0.27	•		0.85	460	X015a	
IXGH 72N60A3		75		1.35	250	6.50	0.23				540	X014a	X020a **TO-264** Weight = 10 g
IXGH 72N60B3		75		1.80	90	2.20	0.23				540	X014a	
XGH 72N60C3				2.50	55	0.48	0.23				540	X014a	
IXGK 72N60B3H1		75		1.80	92	2.20	0.23	•		0.30	540	X020a	
IXGN 72N60A3		150		1.30	300	9.00	0.42				300	X027a	
IXGR 72N60A3				1.35	253	3.50	0.62				200	X016a	X021a **PLUS264** Weight = 10 g
IXGR 72N60A3U1				1.35	253	6.50	0.62			0.65	200	X016a	
IXGR 72N60B3H1		75		1.80	92	2.20	0.62	•		0.80	200	X016a	
IXGT 72N60A3		75		1.35	250	6.50	0.23				540	X019	
IXGT 72N60B3		75		1.80	90	2.20	0.23				540	X019	
IXGX 72N60B3H1		75		1.80	92	2.20	0.23	•		0.30	540	X015a	X022a **ISOPLUS264™** Weight = 10 g
IXGK 120N60A3		200		1.35	260	6.60	0.16				780	X020a	
IXGX 120N60A3		200		1.35	260	6.60	0.16				780	X015a	
IXGN 120N60A3		200		1.35	260	6.60	0.21				595	X027a	
IXGN 120N60A3D1		200		1.35	260	6.60	0.21			1.60	595	X027a	
IXGB 200N60B3		75		1.50	183	4.20	0.10				1250	X021a	X027a **SOT-227B** Weight = 30 g **miniBLOC**
IXGL 200N60B3		150		1.50	183	2.90	0.31				400	X022a	
IXGN 200N60B3		300		1.50	183	4.20	0.15				830	X027a	
IXGK 320N60A3		320		1.25	740		0.13				1000	X020a	
IXGN 320N60A3		320		1.25	740		0.17				735	X027a	
IXGX 320N60A3		320		1.25	740		0.13				1000	X015a	
IXGN 400N60A3		400		1.25	740		0.15				830	X027a	

Discrete IGBT G series 3rd Generation

xxxA3xx = low V_{CEsat} type, xxxB3xx = medium speed type, xxxC3xx = high speed type

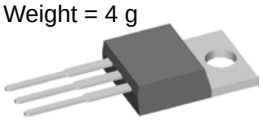


Part Number ➢ New	V_{CES} V	I_{C25} T_C = 25°C A	I_{C90} T_C = 90°C A	$V_{CE(sat)}$ T_C = 25°C V	t_{fi} typ. T_J = 25°C ns	E_{off} typ. T_J = 125°C mJ	R_{thJC} K/W	Diode	I_{F110} Diode T_C = 110°C A	R_{thJC} Diode K/W	P_C W	Fig. No.
IXGA 24N120C3	1200	48		4.20	110	2.00	0.50				250	X011b
IXGH 24N120C3H1		48		4.20	110	1.18	0.50	•		0.90	250	X014a
IXGH 24N120C3		48		4.20	110	2.00	0.50				250	X014a
IXGP 24N120C3		48		4.20	110	2.00	0.50				250	X005a
IXGR 24N120C3D1		48		4.20	110	2.00	1.00	•		1.50	200	X016a
IXGA 30N120B3												X011b
IXGH 30N120B3D1		50		3.50		4.60	0.50			0.90	250	X014a
IXGP 30N120B3		60		3.50	160	4.60	0.42					X005a
IXGT 30N120B3D1		50		3.50		4.60	0.50	•		0.90	250	X019
IXGH 32N120A3		75		2.35	1240		0.42				300	X014a
IXGT 32N120A3		75		2.35	1240		0.42				300	X019
IXGH 28N140B3H1	1400	60		3.60	360	6.50	0.42	•	15	0.90	300	X014a
IXGK 28N140B3H1		60		3.60	360	6.50	0.42	•	15	0.90	300	X020a
IXGX 28N140B3H1		60		3.60	360	6.50	0.42	•	15	0.90	300	X015a

Package Style

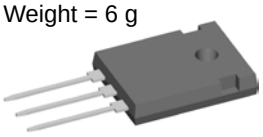
Outline drawings on pages O-30...O-52

X005a **TO-220AB**
Weight = 4 g

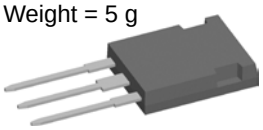


X011b **TO-263AB**
Weight = 2 g

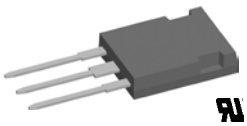
X014a **TO-247AD**
Weight = 6 g



X015 **PLUS247**
Weight = 5 g



X016a **ISOPLUS247™**
Weight = 5 g

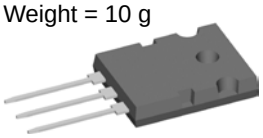


Discrete IGBT G series Legacy

Part Number ➢ New	V_{CES} V	I_{C25} T_C = 25°C A	I_{C90} T_C = 90°C A	$V_{CE(sat)}$ T_C = 25°C V	t_{fi} typ. T_J = 25°C ns	E_{off} typ. T_J = 125°C mJ	R_{thJC} K/W	Diode	I_{F110} Diode T_C = 110°C A	R_{thJC} Diode K/W	P_C W	Fig. No.
IXGN 60N60	600	100	60	1.70	360		0.50				250	X027a
IXGA 8N100	1000	16	8	2.70	390	3.70	2.30				54	X011b
IXGP 8N100		16	8	2.70	390	3.70	2.30				54	X005a
IXGA 12N100		24	12	3.50	800	6.00	1.25				100	X011b
IXGH 12N100		24	12	3.50	800	3.50	1.25				100	X014a
IXGP 12N100		24	12	3.50	800	6.00	1.25				100	X005a
IXGA 20N100		40	20		280	3.50	0.83					X011b
IXGH 20N100		40	20		280	3.50	0.83					X014a
IXGP 20N100		40	20		280	3.50	0.83					X005a
IXGA 20N120	1200	40	20		280	6.50	0.83					X011b
IXGH 20N120		40	20		280	6.50	0.83					X014a
IXGP 20N120		40	20		280	6.50	0.83					X005a
IXGT 20N120		40	20		280	6.50	0.83				150	X019
IXGH 45N120		75	45	2.50	390	25.00	0.42				300	X014a
IXGR 45N120												X016a
IXGT 45N120		75	45	2.50	390	25.00	0.42				300	X019

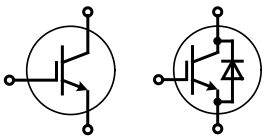
X019 **TO-268AA**
Weight = 5 g

X020a **TO-264**
Weight = 10 g



X027a **SOT-227B**
Weight = 30 g **miniBLOC**

1600 / 1700 V IGBT



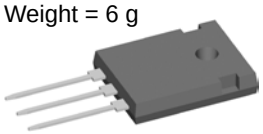
Low saturation voltage Types

Part Type ➢ New	V_{CES} V	I_{C25} T_C = 25°C A	I_{C90} T_C = 90°C A	$V_{CE(sat)}$ T_C = 25°C V	E_{off} typ T_J = 125°C mJ	R_{thJC} K/W	Diode	Fig. No.
IXGH 25N160	1600	75		2.7		0.42		X014a
IXGT 25N160		75		2.7		0.42		X019
IXGH 6N170	1700	12	6	4.0	2.0	1.65		X014a
IXGT 6N170		12	6	4.0	2.0	1.65		X019
IXGH 10N170		20	10	4.0	4.7	1.10		X014a
IXGT 10N170		20	10	4.0	4.7	1.10		X019
IXGH 16N170		32	16	3.5	10.0	0.65		X014a
IXGT 16N170		32	16	3.5	11.2	0.65		X019
IXGH 24N170		50	24	3.3	12.0	0.50		X014a
IXGT 24N170		50	24	3.3	12.0	0.50		X019
IXGF 32N170		26	14	3.5	13.5	0.65		X024c
IXGH 32N170		55	32	5.0	13.6	0.35		X014a
IXGT 32N170		55	32	5.0	13.6	0.35		X019
IXGR 32N170H1		38	20	3.5	13.6	0.65	●	X016a
IXGX 32N170H1		75	32	3.3	14.0	0.35	●	X015a

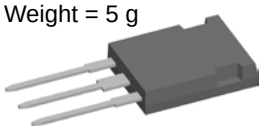
Package style

Outline drawings on pages O-30...O-52

X014a **TO-247AD**
Weight = 6 g



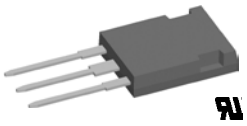
X015a **PLUS247**
Weight = 5 g



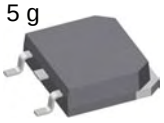
High Speed IGBTs

Part Type ➢ New	V_{CES} V	I_{C25} T_C = 25°C A	I_{C90} T_C = 90°C A	$V_{CE(sat)}$ T_C = 25°C V	t_{fi} typ. T_J = 25°C ns	E_{off} typ. T_J = 125°C mJ	R_{thJC} IGBT K/W	Diode	I_{F90} Diode T_C = 90°C A	R_{thJC} Diode K/W	Fig. No.
IXGN 100N160A	1600	100	50	6.0			0.21				X027a
IXGH 6N170A	1700	6	3	7.0	32	0.26	0.25				X014a
IXGT 6N170A		6	3	7.0	32	0.26	0.25				X019
IXGH 10N170A		10	5	6.0	35	0.6	0.89				X014a
IXGT 10N170A		10	5	6.0	35	0.6	0.89				X019
IXGH 16N170A		16	11	5.0	70	2.0	0.65				X014a
IXGT 16N170A		16	11	5.0	70	2.0	0.65				X019
IXGH 24N170A		24	16	6.0	45	1.7	0.50				X014a
IXGT 24N170A		24	16	6.0	45	1.7	0.50				X019
IXGH 32N170A		32	21	5.0	50	2.4	0.35				X014a
IXGT 32N170A		32	21	5.0	50	2.4	0.35				X019
IXGH 16N170AH1		16	11	5.0	70	2.0	0.65	•	17	0.90	X014a
IXGR 16N170AH1		16	8	5.0	40	1.1	1.04	•	15	1.50	X016a
IXGT 16N170AH1		60	11	5.0	70	2.0	0.65	•	17	0.90	X019
IXGH 24N170AH1		24	16	6.0	45	1.7	0.50	•	17	0.90	X014a
IXGT 24N170AH1		24	16	6.0	45	1.7	0.50	•	17	0.90	X019
IXGH 32N170AH1		32	21	5.0	50	3.0	0.35	•	25	0.90	X014a
IXGR 32N170AH1		26	17	5.2	50	2.4	0.65	•	14	1.50	X016a
IXGT 32N170AH1		32	21	5.0	50	3.0	0.35	•	25	0.90	X019
IXGX 32N170AH1		32	21	5.0	50	1.7	0.35	•	55	0.35	X015a

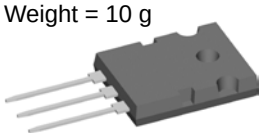
X016a **ISOPLUS247™**
Weight = 5 g



X019 **TO-268AA**
Weight = 5 g



X020a **TO-264**
Weight = 10 g

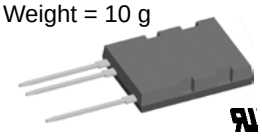


Very High Voltage IGBTs

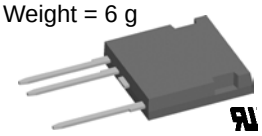
Low saturation voltage Types

Part Type ➢ New	V_{CES} V	I_{C25} T_C = 25°C A	I_{C90} T_C = 90°C A	$V_{CE(sat)}$ T_C = 25°C V	t_{fi} typ T_J = 25°C ns	E_{off} typ T_J = 125°C mJ	R_{thJC} IGBT K/W	P_C W	Fig. No.
IXLF 19N250A	2500	32	19	3.9	250	30	0.5	250	X024c
IXGF 25N250		30		2.9	200		1.1	114	X024c
IXGT 25N250		60		2.9	200		0.5	250	X019
IXGK 75N250		180		2.3	175		0.17	735	X020a
IXGL 75N250		120	60	2.5	180		0.31	400	X024c
IXGX 75N250		180		2.3	175		0.17	735	X015a
IXGF 36N300	3000	in development							X024c
IXGF 30N400	4000								
IXEL 40N400	4000	62	40	4	450	220	0.33	380	X022e

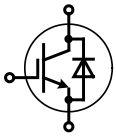
X022e **ISOPLUS264™**
Weight = 10 g



X024c **ISOPLUS i4-PAC™**
Weight = 6 g



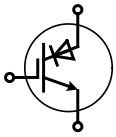
BiMOSFET™



High Voltage Types

Type ➢ New	V_{CES} V	I_{C25} T_C = 25°C A	I_{C90} T_C = 90°C A	$V_{CE(sat)}$ typ T_C = 25°C V	Gate drive V	t_f typ T_C = 125°C ns	R_{thJC} max. K/W	Fig. No.	Package style Outline drawings on pages O-30...O-52
1600 V Low $V_{CE(sat)}$									
IXBP 5N160G	1600	5.7	3.5	4.9	10	70	1.75	X005a	X005a **TO-220AB** Weight = 4 g
IXBH 5N160G		5.7	3.5	4.9	10	70	1.75	X014a	
IXBF 9N160G		7.0	5.0	4.9	10	70	1.75	X024c	
IXBH 9N160G		9.0	5.0	4.9	10	70	1.25	X014a	
IXBF 40N160		28	16	6.2	15	40	0.50	X024c	
IXBH 40N160		33	20	6.2	15	40	0.35	X014a	
1700 V High Speed									
IXBH 16N170A	1700	16.0	10.0	4.7	15	50	0.83	X014a	
IXBT 16N170A		16.0	10.0	4.7	15	50	0.83	X019	
IXBH 24N170A		24.0	16.0	4.5		55	0.50	X014a	X011a **TO-263AB** Weight = 2 g
IXBT 24N170A		24.0	16.0	4.5		55	0.50	X019	
IXBH 28N170A		30.0	14.0	6.0		150	0.42	X014a	
IXBT 28N170A		30.0	14.0	6.0		150	0.42	X019	
IXBH 42N170A		30.0	21.0	6.0		50	0.35	X014a	
IXBT 42N170A		42.0	21.0	6.0	15	50	0.35	X019	
1700 V Low $V_{CE(sat)}$									
IXBH 6N170	1700	10.0	6.0	2.3	15	1200	1.80	X014a	
IXBT 6N170		10.0	6.0	2.3	15	1200	1.80	X019	
IXBH 10N170		16.0	10.0	2.3	15	1200	1.25	X014a	
IXBT 10N170		16.0	10.0	2.3	15	1200	1.25	X019	X014a **TO-247AD** Weight = 6 g
IXBH 16N170		25.0	16.0	2.3	15	1200	0.83	X014a	
IXBT 16N170		25.0	16.0	2.3	15	1200	0.83	X019	
IXBH 24N170		50.0	24.0	3.3		360	0.50	X014a	
IXBT 24N170		50.0	24.0	3.3		360	0.50	X019	
IXBH 42N170		70.0	42.0	2.3	15	1200	0.35	X014a	
IXBT 42N170		70.0	42.0	2.3	15	1200	0.35	X019	
2500 V									
IXBK 64N250	2500	75.0		3.0		175	0.15	X020a	
IXBX 64N250		75.0		3.0		175	0.15	X015a	X016a **ISOPLUS247™** Weight = 5 g

RIGBT



IGBT with Reverse Blocking Capability

- Applications: lighting control, AC motor control, matrix converters
- No extra on state losses for reverse blocking feature

Part Type ➢ New	Configuration	V_{CES} max V	I_{C25} T_C = 25°C A	I_{C90} T_C = 90°C A	V_{CEsat} typ T_C = 25°C V	t_{rr} typ T_C = 125°C µs	t_f typ T_C = 125°C ns	Fig. No.
➢ **IXRA 15N120**	single RIGBT	1200	25	15	2.5	0.3	46	X011a
IXRP 15N120	single RIGBT		25	15	2.5	0.3	46	X005a
IXRH 40N120	single RIGBT		55	35	2.2	1.6	46	X014a
IXRR 40N120	single RIGBT		45	28	2.2	1.6	46	X016a

X019 **TO-268AA** Weight = 5 g

X024c **ISOPLUS i4-PAC™** Weight = 6 g

Trench Power MOSFET

IXYS Trench Power MOSFETs are ideally suited for low voltage, high current applications. These MOSFETs feature an exceedingly low $R_{DS(on)}$, thus guaranteeing very low power dissipation in low voltage, high current power switching applications.

This combined with wide ranging operating junction temperature from -40°C to 175°C make them suitable candidates for automobile applications and other similar demanding applications in harsh environments.

IXYS has currently a wide portfolio of Trench Gate MOSFETs with ratings from 55V to 300V and 42A to 220A. By optimization of several parameters, IXYS Corporation has created a special higher voltage rated Trench Gate MOSFET for critical applications. Likewise, special Trench Gate MOSFET modules find variety of applications in very demanding automotive segments.

TrenchT2™ Power MOSFET

IXYS' next generation TrenchT2™ Power MOSFETs are designed and optimized to meet the thermal and electrical demands of today's power management systems with low energy losses.

Utilizing IXYS' advanced trench technology, these TrenchT2™ Power MOSFETs feature an exceedingly low on-state resistance $R_{DS(on)}$, thus guaranteeing very low power dissipation. In addition, they provide for very low conduction and switching losses, thereby making them highly efficient devices. These robust devices are rugged in unclamped inductive switching (UIS) applications and provide excellent avalanche capabilities. Additional features include fast switching speeds, low package inductance, and a 175°C junction operating temperature.

IXYS' TrenchT2™ Power MOSFETs provide designers low voltage, high current solutions for improved efficiency in automotive electronics, electrical vehicles and power management systems. Common applications include battery chargers, synchronous rectification, DC/DC converters, power train management, off-line SMPS and UPS, primary switches for 24V/48V systems, distributed power architecture, power amplifiers and brushless motor control.

Polar™ MOSFET

Polar™ MOSFETs feature a proprietary cell design and process that has resulted in a MOSFET with 30% reduction in $R_{DS(on)}$ per unit area along with a decrease in gate charge. IXYS has also reduced the wafer thickness, which substantially reduces thermal resistance. The combination of lower $R_{DS(on)}$, lower gate charge Q_g and higher power dissipation capability has resulted in a new family of MOSFETs, which will increase the cost effectiveness in switch mode power supply (SMPS) applications.

IXYS' Polar™ HiPerFET

IXYS' Polar™ HiPerFETs combine the strengths of the Polar family with a faster body diode, whose reverse recovery time (t_{rr}) is reduced to make them suitable for phase-shift bridges, motor control and uninterruptible power supply applications (UPS). This family of HiPerFETs bring to the table a win-win situation with lowest $R_{DS(on)}$, low R_{thJC}, low Q_g, and a faster body diode.

Legacy (Standard) MOSFET

Legacy (Standard) MOSFETs are designed to provide superior performance and ruggedness in high voltage switching applications. Major improvements are continuing to be made using high-cell density designs processed on thin silicon wafers for lower thermal resistance. These Power MOSFETs provide significantly higher power handling capability than industry standard MOSFETs.

Legacy HiPerFET™

IXYS' family of HiPerFET™ Power MOSFETs are optimized to provide superior intrinsic rectifier dv/dt ruggedness while eliminating the need for discrete, fast recovery "freewheeling" diodes in a broad range of power conversion and control applications.

This class of Power MOSFETs uses IXYS' HDMOSII™ process, improving the ruggedness of the FET while reducing the reverse recovery time of the intrinsic rectifier to less than 200ns. The performance of the intrinsic rectifier is comparable to discrete high voltage fast recovery rectifiers, and is tailored to minimize power dissipation and switching stress in the MOSFET.

These devices have an improved stress withstand capability in applications where the intrinsic rectifier is used as a free-wheeling diode. Both static and commutating dV/dt has been improved significantly to typically 60 V/ns and 20 V/ns, respectively. This offers a significant margin of safety in the high stress conditions found in many types of inductive power switching applications.

Q-Class Power MOSFET

Q-Class Power MOSFETs (identified by the suffix letter Q) feature a significantly low Gate Charge (Q_g) and Miller Capacitance (C_{rss}). This combination allow for a faster switching device that requires less energy for switching.

Q-Class HiPerFET™

Q-Class HiPerFET™ Power MOSFETs (identified by the suffix letter Q) are upgraded versions of the HiPerFET™ Power MOSFETs family. This Q-Class family of HiPerFETs feature a significantly reduced gate charge (Q_g) and Miller capacitance (C_{rss}) thus enabling improved switching performance of the device. Therefore, these devices have the same applications as HiPerFET™ and allow higher frequency operation. These devices are rugged in unclamped inductive switching applications and provide excellent avalanche characteristics.

Q2-Class HiPerFET™ MOSFETs (identified by the suffix letter Q2) are the result of a revolutionary new chip design, which decreases the MOSFETs total gate charge (Q_g) and the Miller capacitance (C_{rss}), while maintaining the ruggedness and fast switching intrinsic diode of the company's current HiPerFET™ product line. The result is a MOSFET with dramatically improved switching efficiencies and thus enabling higher frequency operation and smaller power supplies.

Linear Power MOSFET

IXYS Linear Power MOSFETs incorporate a proprietary cell design that significantly improves ruggedness and power dissipation capabilities. Optimizations were made to the fundamental planar cell design in order to maximize the power dissipation capabilities of this Linear Power MOSFET family. The forward Bias Safe Operating Area (FBSOA) characteristics is one such targeted parameter that was optimized, which essentially allowed for a larger operating "window" as dictated by the power limitations of the device. This extended power window translates to improved ruggedness and power dissipation capabilities during the high thermal stress conditions posed by the linear operating environment.

Depletion-Mode MOSFET

Fabricated using low on-resistance HDMOS™ process these Depletion-Mode Power MOSFETs operate in a 'normally-on' mode, not requiring energy or gate voltage for turn on. Unlike the regular enhancement type MOSFETs these Depletion-Mode MOSFETs require a negative gate bias to turn off. Consequently they remain on at or above zero gate bias voltage but otherwise have similar MOSFET characteristics. The operating mode, with internal diode and enhanced linear operating capability make them ideal for dynamic load applications, current control: current sources and current regulators, and biasing off the high voltage DC line in power systems.

Legacy (Standard) P-Channel MOSFET

For applications requiring load to be connected to ground/common, it is very convenient to use P-Channel MOSFETs. IXYS has a wide range of high current, high voltage P-Channel MOSFETs which find variety of applications in complementary output stage of totem pole output stages, buck converters and those configurations, in which load must be connected between source of a MOSFET and ground/common terminals.

PolarP™ P-Channel MOSFET

IXYS' Polar technology platform employed in our PolarP™ P-Channel MOSFETs utilizes a proprietary cell design that improves overall device efficiency and performance. This technology platform reduces on-state resistance by as much as 30% and gate charge by 40% compared to legacy counterparts. With such low on-state resistances, these devices offer low conduction and switching losses while maintaining a low input capacitance. The combination of low $R_{DS(on)}$ and gate charge allow for improved energy efficiency.

These P-Channel MOSFETs are dynamic dV/dt and avalanche rated making them extremely rugged in demanding operating environments and can easily be paralleled due to an on-state resistance with a positive temperature coefficient. They are ideal for 'high side' switching where a simple drive circuit referenced to ground can be used, circumventing additional 'high side' driver circuitry commonly involved when using an N-Channel MOSFET. This will help designers to reduce component count and improve reliability. Furthermore it allows for the design of a complementary power output stage, with a corresponding IXYS N-Channel MOSFET, for a power half bridge stage with a simple drive circuit.

TrenchP™ P-Channel MOSFET

This new family of P-Channel devices benefit from technological advances derived from IXYS' robust Trench cell design commonly implemented in their wide portfolio of industry recognized power devices. They feature an ultra low $R_{DS(on)}$, minimizing conduction losses, and promoting improved operating and thermal efficiencies.

These TrenchP™ P-Channel MOSFETs are suitable for 'high side' switching where a simple drive circuit referenced to ground can be employed, circumventing additional 'high side' driver circuitry commonly involved when using an N-Channel MOSFET. This enables designers to reduce component count, there by improving drive circuit simplicity and cost structure. Furthermore it allows for the design of a complementary power output stage, with a corresponding IXYS N-Channel MOSFET, for a power half bridge stage with a simple drive circuit.

Common applications that will greatly benefit from these devices include high side switching, high current regulators, DC Choppers, CMOS high power amplifiers, push-pull amplifiers, and power solid state relays.

CoolMOS™ * Power MOSFET

The specific resistance of a conventional designed MOSFET increases by more than the square of its blocking voltage. For CoolMOS™ FETs, this relation can be reduced to a linear function making it possible to achieve extremely low on-resistances at high breakdown voltages and small chip sizes. IXYS offers CoolMOS™ performance in the industry standard SOT-227 package as well as the isolated packages: ISOPLUS247™, ISOPLUS220™ and ISOPLUS i4-PAC™. These isolated packages are also available in many MOSFET types affording greater convenience and safety.

Due to their internal DCB isolation, these devices simplify assembly and provide lower thermal resistance from junction to heatsink compared to external isolation materials. Together with the low $R_{DS(on)}$, the junction temperature could be significantly reduced, improving efficiency and reliability. At the same case temperature, the die can control higher currents, saving space and costs by utilizing a smaller number of components. CoolMOS™ devices are avalanche rated, guaranteeing rugged operation.

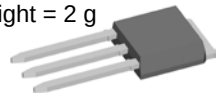
* CoolMOS™ is a trademark of Infineon Technologies

Trench Gate Power MOSFETs

Very Low $R_{DS(on)}$

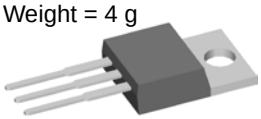
Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_C = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-30...O-52
IXTP 64N055T	55	64	0.013	1420	37	31	1.15	130	X005a	
IXTY 64N055T		64	0.013	1420	37	31	1.15	130	X004	
➢ **IXTC 220N055T**		130	0.004	7200	158	47	1.00	150	X010a	
IXTC 240N055T		132	0.004	7600	170	50	1.00	150	X010a	
IXTC 280N055T		145	0.004	9800	200	54	0.96	160	X010a	
➢ **IXTF 280N055T**		160	0.004	9800	200	54	0.75	200	X024d	
IXTA 220N055T		220	0.004	7200	158	47	0.35	430	X011b	
IXTA 220N055T7		220	0.004	7200	158	47	0.35	430	X012c	
➢ **IXTH 220N055T**		220	0.004	7200	158	47	0.35	430	X014a	
IXTP 220N055T		220	0.004	7200	158	47	0.35	430	X005a	
IXTQ 220N055T		220	0.004	7200	158	47	0.35	430	X017a	
IXTA 240N055T		240	0.004	7600	170	50	0.31	480	X011b	
IXTA 240N055T7		240	0.004	7600	170	50	0.31	480	X012c	
➢ **IXTH 240N055T**		240	0.004	7600	170	50	0.31	480	X014a	
IXTP 240N055T		240	0.004	7600	170	50	0.31	480	X005a	
IXTQ 240N055T		240	0.004	7600	170	50	0.31	480	X017a	
IXTH 280N055T		280	0.003	9800	200	54	0.27	550	X014a	
IXTQ 280N055T		280	0.003	9800	200	54	0.27	550	X017a	
IXTV 280N055T		280	0.003	9800	200	54	0.27	550	X009a	
IXTV 280N055TS		280	0.003	9800	200	54	0.27	550	X013	
IXTU 12N06T	60	12	0.0085	256	3.4	30	4.50	33	X003	
IXTY 12N06T		12	0.0085	256	3.4	30	4.50	33	X004	
IXTP 55N075T	75	55	0.020	1400	33	51	1.15	130	X005a	
IXTY 55N075T		55	0.020	1400	33	51	1.15	130	X004	
➢ **IXTC 200N075T**		110	0.006	6800	160	61	1.00	150	X010a	
IXTC 220N075T		115	0.005	7700	165	62	1.00	150	X010a	
IXTC 250N075T		128	0.004	9900	200	65	0.96	160	X010a	
➢ **IXTF 250N075T**		140	0.004	9900	200	65	0.75	200	X024d	
IXTA 200N075T		200	0.005	6800	160	61	0.35	430	X011b	
IXTA 200N075T7		200	0.005	6800	160	61	0.35	430	X012c	
➢ **IXTH 200N075T**		200	0.005	6800	160	61	0.35	430	X014a	
IXTP 200N075T		200	0.005	6800	160	61	0.35	430	X005a	
IXTQ 200N075T		200	0.005	6800	160	61	0.35	430	X017a	
IXTA 220N075T		220	0.005	7700	165	62	0.31	480	X011b	
IXTA 220N075T7		220	0.005	7700	165	62	0.31	480	X012c	
➢ **IXTH 220N075T**		220	0.005	7700	165	62	0.31	480	X014a	
IXTP 220N075T		220	0.005	7700	165	62	0.31	480	X005a	
IXTQ 220N075T		220	0.005	7700	165	62	0.31	480	X017a	
IXTH 250N075T		250	0.004	9900	200	65	0.27	550	X014a	
IXTQ 250N075T		250	0.004	9900	200	65	0.27	550	X017a	
IXTV 250N075T		250	0.004	9900	200	65	0.27	550	X009a	
IXTV 250N075TS		250	0.004	9900	200	65	0.27	550	X013	
IXTP 50N085T	85	50	0.023	1460	34	55	1.15	130	X005a	
IXTY 50N085T		50	0.023	1460	34	55	1.15	130	X004	
➢ **IXTA 70N085T**		70	0.014	2570	59	56	0.85	176	X011b	
IXTP 70N085T		70	0.014	2570	59	56	0.85	176	X005a	
IXTA 88N085T		88	0.011	3140	69	57	0.65	230	X011b	
IXTA 88N085T7		88	0.011	3140	69	57	0.65	230	X012c	
IXTP 88N085T		88	0.011	3140	69	57	0.65	230	X005a	
➢ **IXTC 180N085T**		110	0.006	7500	170	63	1.00	150	X010a	
IXTC 200N085T		110	0.006	7600	160	64	1.00	150	X010a	
IXTC 230N085T		120	0.005	9900	187	66	0.96	160	X010a	
➢ **IXTF 230N085T**		130	0.005	9900	187	66	0.75	200	X024d	
IXTA 152N085T		152	0.007	5500	114	61	0.42	360	X011b	
IXTA 152N085T7		152	0.007	5500	114	61	0.42	360	X012c	
➢ **IXTH 152N085T**		152	0.007	5500	114	61	0.42	360	X014a	
IXTP 152N085T		152	0.007	5500	114	61	0.42	360	X005a	
IXTQ 152N085T		152	0.007	5500	114	61	0.42	360	X017a	
IXTA 180N085T		180	0.006	7500	170	63	0.35	430	X011b	
IXTA 180N085T7		180	0.006	7500	170	63	0.35	430	X012c	
➢ **IXTH 180N085T**		180	0.006	7500	170	63	0.35	430	X014a	
IXTP 180N085T		180	0.006	7500	170	63	0.35	430	X005a	
IXTQ 180N085T		180	0.006	7500	170	63	0.35	430	X017a	
IXTA 200N085T		200	0.005	7600	152	64	0.31	480	X011b	
IXTA 200N085T7		200	0.005	7600	152	64	0.31	480	X012c	
➢ **IXTH 200N085T**		200	0.005	7600	152	64	0.31	480	X014a	
IXTP 200N085T		200	0.005	7600	152	64	0.31	480	X005a	
IXTQ 200N085T		200	0.005	7600	152	64	0.31	480	X017a	
IXTH 230N085T		230	0.004	9900	187	66	0.27	550	X014a	
IXTQ 230N085T		230	0.004	9900	187	66	0.27	550	X017a	
IXTV 230N085T		230	0.004	9900	187	66	0.27	550	X009a	
➢ **IXTV 230N085TS**		230	0.004	9900	187	66	0.27	550	X013	

X003 **TO-251AA**
Weight = 2 g

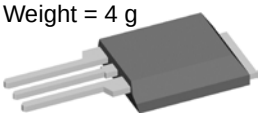


X004 **TO-252AA**
Weight = 0.3 g

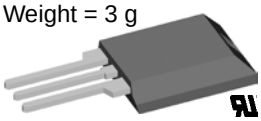
X005a **TO-220AB**
Weight = 4 g



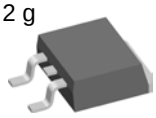
X009a **PLUS220**
Weight = 4 g



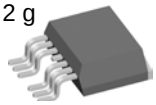
X010a **ISOPLUS220™**
Weight = 3 g



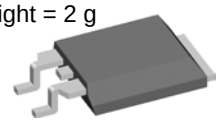
X011b **TO-263AB**
Weight = 2 g



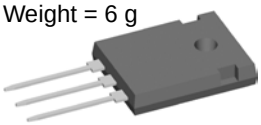
X012c **TO-263(6)**
Weight = 2 g



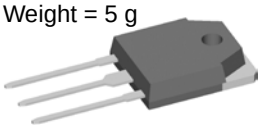
X013 **PLUS220SMD**
Weight = 2 g



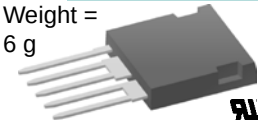
X014a **TO-247AD**
Weight = 6 g



X017a **TO-3P**
Weight = 5 g



X024d **ISOPLUS i4-PAC™**
Weight = 6 g



Trench Gate Power MOSFETs

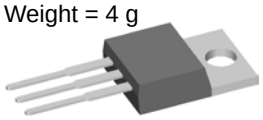
Very Low $R_{DS(on)}$

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_C = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
IXTP 44N10T	100	44	0.030	1262	33	57	1.15	130	X005a
IXTY 44N10T		44	0.030	1262	33	57	1.15	130	X004
➢ **IXTA 60N10T**		60	0.018	2520	49	59	0.85	176	X011b
IXTP 60N10T		60	0.018	2520	49	59	0.85	176	X005a
IXTA 80N10T		80	0.014	3040	60	61	0.65	230	X011b
IXTA 80N10T7		80	0.014	3040	60	61	0.65	230	X012c
IXTP 80N10T		80	0.014	3040	60	61	0.65	230	X005a
➢ **IXTC 160N10T**		83	0.008	6600	132	70	1.06	140	X010a
IXTC 180N10T		90	0.007	6900	151	72	1.00	150	X010a
IXTC 200N10T		101	0.006	7200	220	75	0.96	160	X010a
➢ **IXTF 200N10T**		120	0.006	8500	152	75	0.75	200	X024d
IXTA 130N10T		130	0.009	4800	104	69	0.42	360	X011b
IXTA 130N10T7		130	0.009	4800	104	69	0.42	360	X012c
➢ **IXTH 130N10T**		130	0.009	4800	104	69	0.42	360	X014a
IXTP 130N10T		130	0.009	4800	104	69	0.42	360	X005a
IXTQ 130N10T		130	0.009	4800	104	69	0.42	360	X017a
IXTA 160N10T		160	0.007	6600	132	70	0.35	430	X011b
IXTA 160N10T7		160	0.007	6600	132	70	0.35	430	X012c
➢ **IXTH 160N10T**		160	0.007	6600	132	70	0.35	430	X014a
IXTP 160N10T		160	0.007	6600	132	70	0.35	430	X005a
IXTQ 160N10T		160	0.007	6600	132	70	0.35	430	X017a
IXTA 180N10T		180	0.006	6900	151	72	0.31	480	X011b
IXTA 180N10T7		180	0.006	6900	151	72	0.31	480	X012c
➢ **IXTH 180N10T**		180	0.006	6900	151	72	0.31	480	X014a
IXTP 180N10T		180	0.006	6900	151	72	0.31	480	X005a
IXTQ 180N10T		180	0.006	6900	151	72	0.31	480	X017a
IXTH 200N10T		200	0.006	8500	152	75	0.27	550	X014a
➢ **IXTN 200N10T**		200	0.005	7200	220	75	0.30	500	X027a
IXTQ 200N10T		200	0.006	8500	152	75	0.27	550	X017a
IXTV 200N10T		200	0.006	8500	152	75	0.27	550	X009a
IXTV 200N10TS		200	0.006	8500	152	75	0.27	550	X013
➢ **IXTN 320N10T**		320	0.004	18000	325	85	0.17	880	X027a
IXUN 350N10		350	0.002	27000	640	100	0.18	965	X027a
➢ **IXTA 42N15T**	150	42	0.045	1730	21	100	0.75	200	X011b
➢ **IXTP 42N15T**		42	0.045	1730	21	100	0.75	200	X005a
➢ **IXTA 56N15T**		56	0.036	2250	34	100	0.50	300	X011b
➢ **IXTP 56N15T**		56	0.036	2250	34	100	0.50	300	X005a
➢ **IXTA 90N15T**		90	0.020	4100	80	110	0.33	455	X011b
➢ **IXTH 90N15T**		90	0.020	4100	80	110	0.33	455	X014a
➢ **IXTP 90N15T**		90	0.020	4100	80	110	0.33	455	X005a
➢ **IXTQ 90N15T**		90	0.020	4100	80	110	0.33	455	X017a
➢ **IXTA 102N15T**		102	0.018	4700	92	100	0.27	556	X011b
➢ **IXTH 102N15T**		102	0.018	4700	92	100	0.27	556	X014a
➢ **IXTP 102N15T**		102	0.018	4700	92	100	0.27	556	X005a
➢ **IXTQ 102N15T**		102	0.018	4700	92	100	0.27	556	X017a
➢ **IXTH 130N15T**		130	0.012	9800	113	100	0.20	750	X014a
➢ **IXTQ 130N15T**		130	0.012	9800	113	100	0.20	750	X017a
➢ **IXTV 130N15TS**		130	0.012	9800	113	100	0.20	750	X013
➢ **IXTH 160N15T**		160	0.010	8800	160	115	0.18	830	X014a
➢ **IXFH 150N17T**	170	150	0.012	8800	155	96	0.18	830	X014a
➢ **IXTH 150N17T**		150	0.012	8800	155	96	0.18	830	X014a
➢ **IXTA 32N20T**	200	32	0.072	1760	38	140	0.75	200	X011b
➢ **IXTP 32N20T**		32	0.072	1700	38	110	0.75	200	X005a
➢ **IXTA 48N20T**		48	0.050	3000	60	130	0.50	250	X011b
➢ **IXTH 48N20T**		48	0.050	3000	60	130	0.50	250	X014a
➢ **IXTP 48N20T**		48	0.050	3000	60	130	0.50	250	X005a
➢ **IXTQ 48N20T**		48	0.050	3000	60	130	0.50	250	X017a
➢ **IXTC 102N20T**		50	0.024	6800	114	130	0.85	176	X010a
➢ **IXTA 60N20T**		60	0.040	3700	90	140	0.37	400	X011b
➢ **IXTP 60N20T**		60	0.040	3700	90	140	0.37	400	X005a
➢ **IXTQ 60N20T**		60	0.040	3700	90	140	0.37	400	X017a
➢ **IXTA 86N20T**		86	0.029	4500	90	140	0.31	480	X011b
➢ **IXTH 86N20T**		86	0.029	4500	90	140	0.31	480	X014a
➢ **IXTP 86N20T**		86	0.029	4500	90	140	0.31	480	X005a

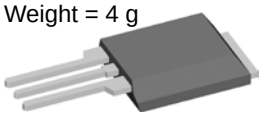
Package style
Outline drawings on pages O-30...O-52

X004 **TO-252AA**
Weight = 0.3 g

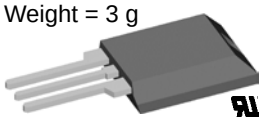
X005a **TO-220AB**
Weight = 4 g



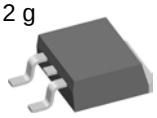
X009a **PLUS220**
Weight = 4 g



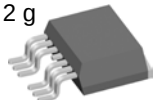
X010a **ISOPLUS220™**
Weight = 3 g



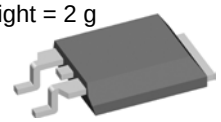
X011b **TO-263AB**
Weight = 2 g



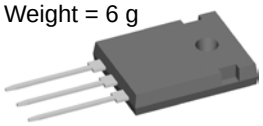
X012c **TO-263(6)**
Weight = 2 g



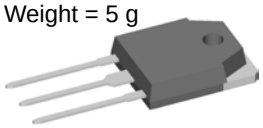
X013 **PLUS220SMD**
Weight = 2 g



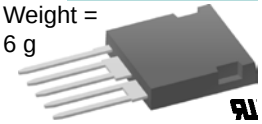
X014a **TO-247AD**
Weight = 6 g



X017a **TO-3P**
Weight = 5 g



X024d **ISOPLUS i4-PAC™**
Weight = 6 g



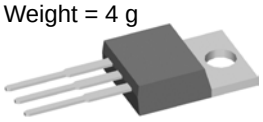
X027a **SOT-227B miniBLOC**
Weight = 30 g

Trench Gate Power MOSFETs

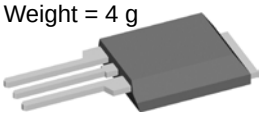
Very Low $R_{DS(on)}$

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_C = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
➢ **IXTQ 86N20T**	200	86	0.029	4500	90	140	0.31	480	X017a
➢ **IXTH 102N20T**		102	0.022	6800	114	130	0.20	750	X014a
➢ **IXTQ 102N20T**		102	0.022	6800	114	130	0.20	750	X017a
➢ **IXTV 102N20T**		102	0.022	6800	114	130	0.20	750	X009a
➢ **IXTV 102N20TS**		102	0.022	6800	114	130	0.20	750	X013
➢ **IXTH 130N20T**		130	0.016	8800	150	150	0.18	830	X014a
➢ **IXTV 130N20TS**		130	0.016	8800	150	150	0.15	530	X013
➢ **IXTA 50N25T**	250	50	0.050	4000	78	166	0.31	400	X011b
➢ **IXTH 50N25T**		50	0.050	4000	78	166	0.31	400	X014a
➢ **IXTP 50N25T**		50	0.050	4000	78	166	0.31	400	X005a
➢ **IXTQ 50N25T**		50	0.050	4000	78	166	0.31	400	X017a
➢ **IXTC 110N25T**		53	0.026	9300	152	200	0.69	180	X010a
➢ **IXTA 76N25T**		76	0.039	4500	92	148	0.27	460	X011b
➢ **IXTH 76N25T**		76	0.039	4500	92	148	0.27	460	X014a
➢ **IXTP 76N25T**		76	0.039	4500	92	148	0.27	460	X005a
➢ **IXTQ 76N25T**		76	0.039	4500	92	148	0.27	460	X017a
➢ **IXTH 86N25T**		86	0.036	5330	105	156	0.23	540	X014a
➢ **IXTQ 86N25T**		86	0.036	5330	105	156	0.23	540	X017a
➢ **IXTV 86N25T**		86	0.036	5330	105	156	0.23	540	X009a
➢ **IXTH 96N25T**		96	0.029	6100	114	158	0.20	625	X014a
➢ **IXTQ 96N25T**		96	0.029	6100	114	158	0.20	625	X017a
➢ **IXTV 96N25T**		96	0.029	6100	114	158	0.20	625	X009a
➢ **IXTH 110N25T**		110	0.024	8700	157	170	0.18	694	X014a
➢ **IXTV 110N25TS**		110	0.024	8700	157	170	0.18	694	X013
➢ **IXTA 50N28T**	280	50	0.060	4070	87	180	0.37	340	X011b
➢ **IXTQ 80N28T**		80	0.049	5000	115		0.25	500	X017a

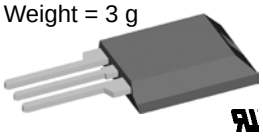
X005a **TO-220AB**
Weight = 4 g



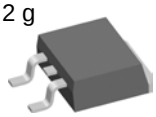
X009a **PLUS220**
Weight = 4 g



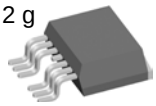
X010a **ISOPLUS220™**
Weight = 3 g



X011b **TO-263AB**
Weight = 2 g



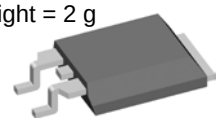
X012c **TO-263(6)**
Weight = 2 g



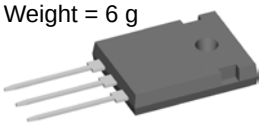
TrenchT2™ Power MOSFETs

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
➢ **IXTA 100N04T2**	40	100	0.0070	2690	25.5	34	1.00	150	X011b
➢ **IXTP 100N04T2**		100	0.0070	2690	25.5	34	1.00	150	X005a
➢ **IXTA 120N04T2**		120	0.0061	3240	58.0	35	0.75	200	X011b
➢ **IXTP 120N04T2**		120	0.0061	3240	58.0	35	0.75	200	X005a
➢ **IXTA 220N04T2**		220	0.0035	6500	112.0	45	0.42	360	X011b
➢ **IXTP 220N04T2**		220	0.0035	6500	112.0	45	0.42	360	X005a
➢ **IXTA 220N04T2-7**		220	0.0035	6820	112.0	45	0.42	360	X012c
➢ **IXTA 90N055T2**	55	90	0.0084	2670	42.0	37	1.00	150	X011b
➢ **IXTP 90N055T2**		90	0.0084	2670	42.0	37	1.00	150	X005a
➢ **IXTA 110N055T2**		110	0.0066	3060	57.0	38	0.82	180	X011b
➢ **IXTP 110N055T2**		110	0.0066	3060	57.0	38	0.82	180	X005a
➢ **IXTA 200N055T2**		200	0.0042	6800	109.0	49	0.42	360	X011b
➢ **IXTP 200N055T2**		200	0.0042	6800	109.0	49	0.42	360	X005a
➢ **IXTA 70N075T2**	75	70	0.012	2580	46.0	48	1.00	150	X011b
➢ **IXTP 70N075T2**		70	0.012	2580	46.0	48	1.00	150	X005a
➢ **IXTA 90N075T2**		90	0.010	3100	54.0	50	0.50	180	X011b
➢ **IXTP 90N075T2**		90	0.010	3100	54.0	50	0.50	180	X005a
➢ **IXTA 170N075T2**		170	0.0054	6500	110.0	52	0.42	360	X011b
➢ **IXTP 170N075T2**		170	0.0054	6500	110.0	52	0.42	360	X005a

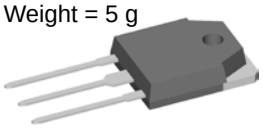
X013 **PLUS220SMD**
Weight = 2 g



X014a **TO-247AD**
Weight = 6 g



X017a **TO-3P**
Weight = 5 g



Polar ™ N-Channel Power MOSFETs

Low Voltage Types

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-30...O-52
IXTA 110N055P	55	110	0.014	2210	76.0	80	0.38	390	X011b	
IXTP 110N055P		110	0.014	2210	76.0	80	0.38	390	X005a	
IXTQ 110N055P		110	0.014	2210	76.0	80	0.38	390	X017a	X004 **TO-252AA** Weight = 0.3 g
IXTQ 150N06P	60	150	0.010	3000	118.0	90	0.31	480	X017a	
IXTQ 200N06P		200	0.006	5400	200.0	90	0.21	714	X017a	
IXTA 75N10P	100	75	0.025	2250	74.0	120	0.42	360	X011b	
IXTP 75N10P		75	0.025	2250	74.0	120	0.42	360	X005a	
IXTQ 75N10P		75	0.025	2250	74.0	120	0.42	360	X017a	
IXTQ 110N10P		110	0.015	3550	110.0	130	0.31	480	X017a	X005a **TO-220AB** Weight = 4 g
IXTT 110N10P		110	0.015	3550	110.0	130	0.31	480	X019	
IXTR 200N10P		120	0.008	7600	235.0	100	0.50	300	X016a	
IXTQ 140N10P		140	0.011	4700	155.0	120	0.25	600	X017a	
IXTT 140N10P		140	0.011	4700	155.0	120	0.25	600	X019	
IXTK 170N10P		170	0.009	6000	198.0	120	0.21	714	X020a	
IXTQ 170N10P		170	0.009	6000	198.0	120	0.21	714	X017a	
IXTT 170N10P		170	0.009	6000	198.0	120	0.21	714	X019	
IXTK 200N10P		200	0.008	7600	240.0	100	0.18	800	X020a	X007a **TO-220FPAB** Weight = 5 g
IXTA 62N15P	150	62	0.040	2250	70.0	150	0.42	350	X011b	
IXTP 62N15P		62	0.040	2250	70.0	150	0.42	350	X005a	
IXTQ 62N15P		62	0.040	2250	70.0	150	0.42	350	X017a	
IXTQ 96N15P		96	0.024	3500	110.0	150	0.31	480	X017a	
IXTT 96N15P		96	0.024	3500	110.0	150	0.31	480	X019	
IXTQ 120N15P		120	0.016	4900	150.0	150	0.25	600	X017a	
IXTT 120N15P		120	0.016	4900	150.0	150	0.25	600	X019	X011b **TO-263AB** Weight = 2 g
IXTK 150N15P		150	0.013	5800	190.0	150	0.21	714	X020a	
IXTQ 150N15P		150	0.013	5800	190.0	150	0.21	714	X017a	
IXTK 180N15P		180	0.010	7000	240.0	150	0.18	800	X020a	
IXTP 50N20PM	200	20	0.060	2250	70.0	150	2.00	90	X007a	
IXTA 50N20P		50	0.060	2250	70.0	150	0.42	360	X011b	
IXTP 50N20P		50	0.060	2250	70.0	150	0.42	360	X005a	
IXTQ 50N20P		50	0.060	2250	70.0	150	0.42	360	X017a	X014a **TO-247AD** Weight = 6 g
IXTQ 74N20P		74	0.034	3300	107.0	160	0.31	480	X017a	
IXTT 74N20P		74	0.034	3300	107.0	160	0.31	480	X019	
IXTH 96N20P		96	0.024	4800	145.0	160	0.25	600	X014a	
IXTQ 96N20P		96	0.024	4800	145.0	160	0.25	600	X017a	
IXTT 96N20P		96	0.024	4800	145.0	160	0.25	600	X019	
IXTK 120N20P		120	0.022	6000	152.0	180	0.21	714	X020a	
IXTQ 120N20P		120	0.022	6000	152.0	180	0.21	714	X017a	
IXTK 140N20P		140	0.018	7500	240.0	180	0.18	800	X020a	X016a **ISOPLUS247™** Weight = 5 g
IXTA 42N25P	250	42	0.084	2300	70.0	200	0.42	300	X011b	
IXTP 42N25P		42	0.084	2300	70.0	200	0.42	300	X005a	
IXTQ 42N25P		42	0.084	2300	70.0	200	0.42	300	X017a	
IXTQ 64N25P		64	0.049	3450	105.0	200	0.31	400	X017a	
IXTT 64N25P		64	0.049	3450	105.0	200	0.31	400	X019	
IXTK 82N25P		82	0.035	4800	142.0	200	0.25	500	X020a	
IXTQ 82N25P		82	0.035	4800	142.0	200	0.25	500	X017a	
IXTT 82N25P		82	0.035	4800	142.0	200	0.25	500	X019	X017a **TO-3P** Weight = 5 g
IXTK 100N25P		100	0.027	6300	185.0	200	0.21	600	X020a	
IXTQ 100N25P		100	0.027	6300	185.0	200	0.21	600	X017a	
IXTT 100N25P		100	0.027	6300	185.0	200	0.21	600	X019	
IXTK 120N25P		120	0.024	8000	185.0	200	0.18	700	X020a	
IXTA 36N30P	300	36	0.110	2250	70.0	250	0.42	300	X011b	
IXTP 36N30P		36	0.110	2250	70.0	250	0.42	300	X005a	
IXTQ 36N30P		36	0.110	2250	70.0	250	0.42	300	X017a	
IXTQ 52N30P		52	0.066	3490	110.0	250	0.31	400	X017a	
IXTT 52N30P		52	0.066	3490	110.0	250	0.31	400	X019	X019 **TO-268AA** Weight = 3 g
IXTQ 69N30P		69	0.049	4960	156.0	250	0.25	500	X017a	
IXTT 69N30P		69	0.049	4960	156.0	250	0.25	500	X019	
IXTH 88N30P		88	0.040	6300	180.0	250	0.21	600	X014a	
IXTK 88N30P		88	0.040	6300	180.0	250	0.21	600	X020a	
IXTQ 88N30P		88	0.040	6300	180.0	250	0.21	600	X017a	
IXTT 88N30P		88	0.040	6300	180.0	250	0.21	600	X019	
IXTK 102N30P		102	0.033	7500	224.0	250	0.18	700	X020a	X020a **TO-264** Weight = 10 g
IXTP 1R6N50P	500	1.6	6.500	140	3.9	400	2.90	43	X005a	
IXTY 1R6N50P		1.6	6.500	140	3.9	400	2.90	43	X004	
IXTP 2R4N50P		2.4	3.750	240	6.1	400	2.25	55	X005a	
IXTY 2R4N50P		2.4	3.750	240	6.1	400	2.25	55	X004	
IXTA 3N50P		3.6	2.000	409	9.3	400	1.80	70	X011b	

Polar™ N-Channel Power MOSFETs

High Voltage Types

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-30...O-52
IXTP 3N50P	500	3.6	2.000	409	9.3	400	1.80	70	X005a	X003 **TO-251AA** Weight = 2 g
IXTY 3N50P		3.6	2.000	409	9.3	400	1.80	70	X004	
IXTP 8N50PM		4.0	0.800	1050	20.0	400	3.00	41	X007a	
IXTA 5N50P		4.8	1.400	620	12.6	400	1.40	89	X011b	
IXTP 5N50P		4.8	1.400	620	12.6	400	1.40	89	X005a	
➢ **IXTU 5N50P**		4.8	1.400	620	12.6	400	1.40	89	X003	X004 **TO-252AA** Weight = 0.3 g
IXTY 5N50P		4.8	1.400	620	12.6	400	1.40	89	X004	
IXTA 6N50P		6.0	1.100	740	14.6	400	1.25	100	X011b	
IXTP 6N50P		6.0	1.100	740	14.6	400	1.25	100	X005a	
IXTP 12N50PM		6.0	0.500	1690	29.0	400	tbd	50	X007a	X005a **TO-220AB** Weight = 4 g
IXTA 8N50P		8.0	0.800	1050	20.0	400	0.83	150	X011b	
IXTP 8N50P		8.0	0.800	1050	20.0	400	0.83	150	X005a	
➢ **IXTA 12N50P**		12.0	0.500	1690	29.0	400	0.62	200	X011b	
IXTI 12N50P		12.0	0.500	1690	29.0	400	0.62	200	X008	
IXTP 12N50P		12.0	0.500	1690	29.0	400	0.62	200	X005a	
IXTC 26N50P		15.0	0.260	3600	65.0	400	0.95	130	X010a	X007a **TO-220FPAB** Weight = 5 g
IXTA 16N50P		16.0	0.400	2250	43.0	400	0.42	300	X011b	
IXTP 16N50P		16.0	0.400	2250	43.0	400	0.42	300	X005a	
➢ **IXTP 16N50PM**		16.0	0.400	2850	43.0	400	2.50	300	X007a	
IXTQ 16N50P		16.0	0.400	2250	43.0	400	0.42	300	X017a	
IXTH 22N50P		22.0	0.270	2630	50.0	400	0.35	350	X014a	X008 **TO-262 i2-Pac** Weight = 5 g
IXTQ 22N50P		22.0	0.270	2630	50.0	400	0.35	350	X017a	
IXTV 22N50P		22.0	0.270	2630	50.0	400	0.35	350	X009a	
IXTV 22N50PS		22.0	0.270	2630	50.0	400	0.35	350	X013	
IXTQ 26N50P		26.0	0.230	3600	65.0	300	0.31	400	X017a	
IXTT 26N50P		26.0	0.230	3600	65.0	300	0.31	400	X019	X009a **PLUS220** Weight = 4 g
IXTV 26N50P		26.0	0.230	3600	65.0	300	0.31	400	X009a	
IXTV 26N50PS		26.0	0.230	3600	65.0	300	0.31	400	X013	
IXTH 30N50P		30.0	0.200	4150	70.0	400	0.27	460	X014a	
IXTQ 30N50P		30.0	0.200	4150	70.0	400	0.27	460	X017a	
IXTT 30N50P		30.0	0.200	4150	70.0	400	0.27	460	X019	
IXTV 30N50P		30.0	0.200	4150	70.0	400	0.27	460	X009a	X010a **ISOPLUS220™** Weight = 3 g
IXTV 30N50PS		30.0	0.200	4150	70.0	400	0.27	460	X013	
IXTH 36N50P		36.0	0.170	5500	85.0	400	0.23	540	X014a	
IXTQ 36N50P		36.0	0.170	5500	85.0	400	0.23	540	X017a	
IXTT 36N50P		36.0	0.170	5500	85.0	400	0.23	540	X019	
IXTV 36N50P		36.0	0.170	5500	85.0	400	0.23	540	X009a	
IXTV 36N50PS		36.0	0.170	5500	85.0	400	0.23	540	X013	X011b **TO-263AB** Weight = 2 g
IXTQ 44N50P		44.0	0.140	5440	98.0	400	0.19	650	X017a	
IXTP 1R4N60P	600	1.4	0.009	140	5.2	500	2.50	50	X005a	
IXTU 1R4N60P		1.4	0.009	140	5.2	500	2.50	50	X003	
IXTY 1R4N60P		1.4	0.009	140	5.2	500	2.50	50	X004	
IXTP 2N60P		2.0	5.100	240	7.0	500	2.25	55	X005a	X013 **PLUS220SMD** Weight = 2 g
IXTY 2N60P		2.0	5.100	240	7.0	500	2.25	55	X004	
IXTA 3N60P		3.0	2.900	411	9.8	500	1.80	70	X011b	
IXTP 3N60P		3.0	2.900	411	9.8	500	1.80	70	X005a	
IXTY 3N60P		3.0	2.900	411	9.8	500	1.80	70	X004	
IXTA 4N60P		4.0	2.000	635	13.0	500	1.41	89	X011b	
IXTP 4N60P		4.0	2.000	635	13.0	500	1.41	89	X005a	X014a **TO-247AD** Weight = 6 g
➢ **IXTU 4N60P**		4.0	2.000	635	13.0	500	1.41	89	X003	
➢ **IXTY 4N60P**		4.0	2.000	635	13.0	500	1.41	89	X004	
➢ **IXTP 7N60PM**		4.0	1.100	1080	20.0	500	3.00	41	X007a	
IXTA 5N60P		5.0	1.700	750	14.2	500	1.25	100	X011b	
IXTP 5N60P		5.0	1.700	750	14.2	500	1.25	100	X005a	
IXTP 10N60PM		5.0	0.740	1610	32.0	500	2.50	50	X007a	X017a **TO-3P** Weight = 5 g
IXTA 7N60P		7.0	1.100	1080	20.0	500	0.83	150	X011b	
IXTP 7N60P		7.0	1.100	1080	20.0	500	0.83	150	X005a	
➢ **IXTP 18N60PM**		9.0	0.420	2500	49.0	500	2.00	90	X007a	
IXTA 10N60P		10	0.740	1610	32.0	500	0.62	200	X011b	
IXTI 10N60P		10	0.740	1610	32.0	500	0.62	200	X008	
IXTP 10N60P		10	0.740	1610	32.0	500	0.62	200	X005a	X019 **TO-268AA** Weight = 3 g
➢ **IXTP 14N60PM**		7.0	0.550	2300	36.0	500	2.30	75	X007a	
IXTA 14N60P		14.0	0.550	2300	36.0	500	0.42	300	X011b	
IXTP 14N60P		14	0.550	2300	36.0	500	0.42	300	X005a	
IXTQ 14N60P		14	0.550	2300	36.0	500	0.42	300	X017a	

Polar™ N-Channel Power MOSFETs

High Voltage Types

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-30...O-52
IXTQ 18N60P	600	18	0.420	2500	49.0	500	0.35	360	X017a	
➢ **IXTV 18N60P**		18	0.420	2500	49.0	500	0.35	360	X009a	X003 **TO-251AA** Weight = 2 g
IXTV 18N60PS		18	0.420	2500	49.0	500	0.35	360	X013	
IXTQ 22N60P		22	0.350	3600	62.0	500	0.31	400	X017a	
➢ **IXTV 22N60P**		22	0.350	3600	62.0	500	0.31	400	X009a	
IXTV 22N60PS		22	0.350	3600	62.0	500	0.31	400	X013	
IXTH 26N60P		26	0.270	4150	72.0	500	0.27	460	X014a	
IXTQ 26N60P		26	0.270	4150	72.0	500	0.27	460	X017a	X004 **TO-252AA** Weight = 0.3 g
IXTT 26N60P		26	0.270	4150	72.0	500	0.27	460	X019	
IXTV 26N60P		26	0.270	4150	72.0	500	0.27	460	X009a	
IXTV 26N60PS		26	0.270	4150	72.0	500	0.27	460	X013	
IXTH 30N60P		30	0.240	5050	82.0	500	0.23	540	X014a	
IXTQ 30N60P		30	0.240	5050	82.0	500	0.23	540	X017a	
IXTT 30N60P		30	0.240	5050	82.0	500	0.23	540	X019	X005a **TO-220AB** Weight = 4 g
IXTV 30N60P		30	0.240	5050	82.0	500	0.23	540	X009a	
IXTV 30N60PS		30	0.240	5050	82.0	500	0.23	540	X013	
IXTA 2N80P	800	2.0	6.000	450	8.0	600	1.80	70	X011b	
IXTP 2N80P		2.0	6.000	450	8.0	600	1.80	70	X005a	
➢ **IXTU 2N80P**		2.0	6.000	450	8.0	600	1.80	70	X003	
IXTY 2N80P		2.0	6.000	450	8.0	600	1.80	70	X004	X009a **PLUS220** Weight = 4 g
IXTA 4N80P		3.5	3.000	750	15.0	600	1.25	100	X011b	
IXTP 4N80P		3.5	3.000	750	15.0	600	1.25	100	X005a	
➢ **IXTA 08N100P**	1000	0.8	20.000	300	11.3	750	3.00	42	X011b	
➢ **IXTP 08N100P**		0.8	20.000	300	11.3	750	3.00	42	X005a	
➢ **IXTY 08N100P**		0.8	20.000	300	11.3	750	3.00	42	X004	
➢ **IXTA 1N100P**		1.0	15.000	400	15.5	750	2.50	50	X011b	
➢ **IXTP 1N100P**		1.0	15.000	400	15.5	750	2.50	50	X005a	X011b **TO-263AB** Weight = 2 g
➢ **IXTY 1N100P**		1.0	15.000	400	15.5	750	2.50	50	X004	
➢ **IXTA 1R4N100P**		1.4	11.000	500	17.8	750	2.00	63	X011b	
➢ **IXTP 1R4N100P**		1.4	11.000	500	17.8	750	2.00	63	X005a	
➢ **IXTY 1R4N100P**		1.4	11.000	500	17.8	750	2.00	63	X004	
➢ **IXTA 2N100P**		2.0	7.500	630	24.3	800	1.45	86	X011b	
➢ **IXTP 2N100P**		2.0	7.500	630	24.3	800	1.45	86	X005a	X013 **PLUS220SMD** Weight = 2 g
➢ **IXTY 2N100P**		2.0	7.500	630	24.3	800	1.45	86	X004	
➢ **IXTA 3N100P**		3.0	4.800	1220	39.0	820	1.00	125	X011b	
➢ **IXTH 3N100P**		3.0	4.800	1220	39.0	820	1.00	125	X014a	
➢ **IXTP 3N100P**		3.0	4.800	1220	39.0	820	1.00	125	X005a	
➢ **IXTA 06N120P**	1200	0.6	32.000	270	13.3	900	3.00	42	X011b	
➢ **IXTP 06N120P**		0.6	32.000	270	13.3	900	3.00	42	X005a	
➢ **IXTA 08N120P**		0.8	25.000	370	14.0	900	2.50	50	X011b	
➢ **IXTP 08N120P**		0.8	25.000	370	14.0	900	2.50	50	X005a	X014a **TO-247AD** Weight = 6 g
➢ **IXTA 1N120P**		1.0	20.000	550	17.6	900	2.00	63	X011b	
➢ **IXTP 1N120P**		1.0	20.000	550	17.6	900	2.00	63	X005a	
➢ **IXTA 1R4N120P**		1.4	13.000	725	24.8	900	1.45	86	X011b	
➢ **IXTP 1R4N120P**		1.4	13.000	725	24.8	900	1.45	86	X005a	
➢ **IXTA 2R4N120P**		2.4	7.500	1207	37.0	920	1.00	125	X011b	
➢ **IXTH 2R4N120P**		2.4	7.500	1207	37.0	920	1.00	125	X014a	X017a **TO-3P** Weight = 5 g
➢ **IXTP 2R4N120P**		2.4	7.500	1207	37.0	920	1.00	125	X005a	
										X019 **TO-268AA** Weight = 5 g

Polar™ N-Channel HiPerFET with Fast Intrinsic Diode

Low Voltage Types

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-30...O-52
IXFC 110N10P	100	60	0.017	3550	110.0	150	1.25	120	X010a	X009a **PLUS220** Weight = 4 g
IXFH 110N10P		110	0.015	3550	110.0	150	0.31	480	X014a	
IXFV 110N10P		110	0.015	3550	110.0	150	0.31	480	X009a	
IXFV 110N10PS		110	0.015	3550	110.0	150	0.31	480	X013	
IXFR 200N10P		133	0.009	7600	235.0	150	0.50	300	X016a	
IXFH 140N10P		140	0.011	4700	155.0	150	0.25	600	X014a	
IXFT 140N10P		140	0.011	4700	155.0	150	0.25	600	X019	X010a **ISOPLUS220™** Weight = 3 g
IXFH 170N10P		170	0.009	6000	198.0	150	0.21	714	X014a	
IXFK 170N10P		170	0.009	6000	198.0	150	0.21	714	X020a	
IXFK 200N10P		200	0.008	7600	235.0	150	0.18	830	X020a	
IXFN 200N10P		200	0.008	7600	235.0	150	0.22	680	X027a	
IXFX 200N10P		200	0.008	7600	235.0	150	0.18	830	X015a	
IXFC 96N15P	150	42	0.026	3500	110.0	200	1.25	120	X010a	X013 **PLUS220SMD** Weight = 2 g
IXFH 96N15P		96	0.024	3500	110.0	200	0.31	480	X014a	
IXFV 96N15P		96	0.024	3500	110.0	200	0.31	480	X009a	
IXFV 96N15PS		96	0.024	3500	110.0	200	0.31	480	X013	
IXFR 180N15P		100	0.013	7000	240.0	200	0.50	300	X016a	
IXFH 120N15P		120	0.016	4900	150.0	200	0.25	600	X014a	
IXFT 120N15P		120	0.016	4900	150.0	200	0.25	600	X019	X014a **TO-247AD** Weight = 6 g
IXFH 150N15P		150	0.013	5800	190.0	200	0.21	714	X014a	
IXFK 150N15P		150	0.013	5800	190.0	200	0.21	714	X020a	
IXFN 180N15P		150	0.011	7000	240.0	200	0.22	680	X027a	
IXFK 180N15P		180	0.011	7000	240.0	200	0.18	830	X020a	
IXFX 180N15P		180	0.011	7000	240.0	200	0.18	830	X015a	
IXFC 74N20P	200	35	0.036	3300	107.0	200	1.25	120	X010a	X015a **PLUS247** Weight = 5 g
IXFH 74N20P		74	0.034	3300	107.0	200	0.31	480	X014a	
IXFV 74N20P		74	0.034	3300	107.0	200	0.31	480	X009a	
IXFV 74N20PS		74	0.034	3300	107.0	200	0.31	480	X013	
IXFR 140N20P		90	0.022	7500	240.0	200	0.50	300	X016a	
IXFH 96N20P		96	0.024	4800	145.0	200	0.25	600	X014a	
IXFT 96N20P		96	0.024	4800	145.0	200	0.25	600	X019	X016a **ISOPLUS247™** Weight = 5 g
IXFV 96N20P		96	0.024	4800	145.0	200	0.25	600	X009a	
IXFN 140N20P		115	0.018	7500	240.0	200	0.22	680	X027a	
IXFH 120N20P		120	0.022	6000	152.0	200	0.21	714	X014a	
IXFK 120N20P		120	0.022	6000	152.0	200	0.21	714	X020a	
IXFK 140N20P		140	0.018	7500	240.0	200	0.18	830	X020a	
IXFH 100N25P	250	100	0.027	6300	185.0	200	0.21	600	X014a	X019 **TO-268AA** Weight = 5 g
IXFK 120N25P		120	0.024	8000	185.0	200	0.18	700	X020a	
IXFX 120N25P		120	0.024	8000	185.0	200	0.18	700	X015a	
IXFC 52N30P	300	24	0.075	3490	110.0	200	1.25	100	X010a	
IXFH 52N30P		52	0.066	3490	110.0	200	0.31	400	X014a	
IXFV 52N30P		52	0.066	3490	110.0	200	0.31	400	X009a	X020a **TO-264** Weight = 10 g
IXFV 52N30PS		52	0.066	3490	110.0	200	0.31	400	X013	
IXFR 102N30P		60	0.036	7500	224.0	200	0.50	250	X016a	
IXFH 69N30P		69	0.049	4960	156.0	200	0.25	500	X014a	
IXFT 69N30P		69	0.049	4960	156.0	200	0.25	500	X019	
IXFR 140N30P		70	0.026	14000	185.0	200	0.42	360	X016a	
IXFN 102N30P		86	0.033	7500	224.0	200	0.22	570	X027a	X027a **SOT-227B** Weight = 30 g **miniBLOC**
IXFH 88N30P		88	0.040	6300	180.0	200	0.21	600	X014a	
IXFK 88N30P		88	0.040	6300	180.0	200	0.21	600	X020a	
IXFK 102N30P		102	0.033	7500	224.0	200	0.18	700	X020a	
IXFN 140N30P		110	0.024	14000	185.0	200	0.18	700	X027a	
IXFK 140N30P		140	0.024	14000	185.0	200	0.12	1040	X020a	
IXFX 140N30P		140	0.024	14000	185.0	200	0.12	1040	X015a	

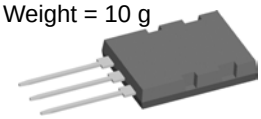
Polar™ N-Channel HiPerFET with Fast Intrinsic Diode

High Voltage Types

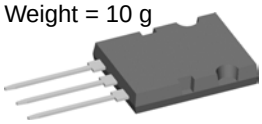
Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-30...O-52
IXFP 3N50PM	500	2.7	2.000	409	9.3	200	3.50	36	X007a	X005a **TO-220AB** Weight = 4 g
IXFP 5N50PM		3.2	1.400	620	12.6	200	3.30	38	X007a	
IXFP 8N50PM		4.4	0.800	1050	20.0	200	3.00	42	X007a	
IXFP 12N50PM		6	0.500	1690	29.0	200	2.50	50	X007a	
IXFC 16N50P		10	0.420	2250	43.0	200	1.00	125	X010a	
IXFA 12N50P		12	0.500	1690	29.0	200	0.62	200	X011b	
IXFP 12N50P		12	0.500	1690	29.0	200	0.62	200	X005a	X007a **TO-220FPAB** Weight = 5 g
IXFC 26N50P		15	0.260	3600	65.0	250	0.95	130	X010a	
IXFA 16N50P		16	0.400	2250	43.0	200	0.42	300	X011b	
IXFH 16N50P		16	0.400	2250	43.0	200	0.42	300	X014a	
IXFP 16N50P		16	0.400	2250	43.0	200	0.42	300	X005a	
IXFC 36N50P		19	0.190	5500	93.0	200	0.75	156	X010a	X009a **PLUS220** Weight = 4 g
IXFR 36N50P		19	0.190	5500	93.0	200	0.75	156	X016a	
IXFH 22N50P		22	0.270	2630	50.0	200	0.35	350	X014a	
IXFV 22N50P		22	0.270	2630	50.0	200	0.35	350	X009a	
IXFV 22N50PS		22	0.270	2630	50.0	200	0.35	350	X013	
IXFR 44N50P		24	0.150	5440	98.0	200	0.60	208	X016a	
IXFH 26N50P		26	0.230	3600	60.0	200	0.31	400	X014a	X010a **ISOPLUS220™** Weight = 3 g
IXFV 26N50P		26	0.230	3600	60.0	200	0.31	400	X009a	
IXFV 26N50PS		26	0.230	3600	60.0	200	0.31	400	X013	
IXFH 30N50P		30	0.200	4150	70.0	200	0.27	460	X014a	
IXFT 30N50P		30	0.200	4150	70.0	200	0.27	460	X019	
IXFV 30N50P		30	0.200	4150	70.0	200	0.27	460	X009a	
IXFV 30N50PS		30	0.200	4150	70.0	200	0.27	460	X013	
IXFR 64N50P		35	0.095	8700	150.0	200	0.42	300	X016a	X011b **TO-263AB** Weight = 2 g
IXFH 36N50P		36	0.170	5500	93.0	200	0.23	540	X014a	
IXFT 36N50P		36	0.170	5500	93.0	200	0.23	540	X019	
IXFV 36N50P		36	0.170	5500	93.0	200	0.23	540	X009a	
IXFV 36N50PS		36	0.170	5500	93.0	200	0.23	540	X013	
IXFH 44N50P		44	0.140	5440	98.0	200	0.19	650	X014a	X013 **PLUS220SMD** Weight = 2 g
IXFK 44N50P		44	0.140	5440	98.0	200	0.19	650	X020a	
IXFT 44N50P		44	0.140	5440	98.0	200	0.19	650	X019	
IXFR 80N50P		45	0.072	12700	197.0	200	0.35	360	X016a	
IXFN 64N50P		61	0.085	8700	150.0	200	0.18	700	X027a	X014a **TO-247AD** Weight = 6 g
IXFK 64N50P		64	0.085	8700	150.0	200	0.15	830	X020a	
IXFX 64N50P		64	0.085	8700	150.0	200	0.15	830	X015a	
IXFN 80N50P		66	0.065	12700	195.0	200	0.18	700	X027a	
IXFL 100N50P		70	0.052	20000	240.0	200	0.20	625	X022a	
IXFK 80N50P		80	0.065	12700	197.0	200	0.12	1040	X020a	
IXFX 80N50P		80	0.065	12700	197.0	200	0.12	1040	X015a	
IXFN 100N50P		90	0.049	20000	240.0	200	0.12	1040	X027a	
IXFB 100N50P		100	0.049	20000	240.0	200	0.10	1250	X021a	X015a **PLUS247** Weight = 5 g
IXFC 14N60P	600	8	0.630	2300	38.0	200	1.25	100	X010a	
IXFA 10N60P		10	0.740	1610	32.0	200	0.62	200	X011b	
IXFP 10N60P		10	0.740	1610	32.0	200	0.62	200	X005a	
IXFC 22N60P		12	0.360	4000	58.0	200	0.95	130	X010a	
IXFA 14N60P		14	0.550	2300	38.0	200	0.42	300	X011b	
IXFH 14N60P		14	0.550	2300	38.0	200	0.42	300	X014a	X016a **ISOPLUS247™** Weight = 5 g
IXFP 14N60P		14	0.550	2300	38.0	200	0.42	300	X005a	
IXFC 30N60P		15	0.250	3820	85.0	200	0.75	166	X010a	
IXFR 30N60P		15	0.250	3820	85.0	200	0.75	166	X016a	
IXFH 18N60P		18	0.400	2500	50.0	200	0.35	360	X014a	
IXFV 18N60P		18	0.400	2500	50.0	200	0.35	360	X009a	X019 **TO-268AA** Weight = 5 g
IXFV 18N60PS		18	0.400	2500	50.0	200	0.35	360	X013	
IXFR 36N60P		20	0.200	5800	102.0	200	0.60	208	X016a	
IXFH 22N60P		22	0.350	3600	58.0	200	0.31	400	X014a	

X027a **SOT-227B** Weight = 30 g **miniBLOC**

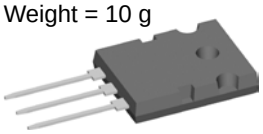
X022a **ISOPLUS264™** Weight = 10 g



X021a **PLUS264** Weight = 10 g



X020a **TO-264** Weight = 10 g



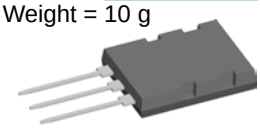
Polar™ N-Channel HiPerFET with Fast Intrinsic Diode

High Voltage Types

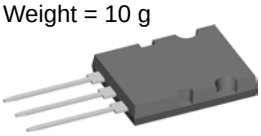
Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-30...O-52
IXFV 22N60P	600	22	0.350	3600	58.0	200	0.31	400	X009a	X005a **TO-220AB** Weight = 4 g
IXFV 22N60PS		22	0.350	3600	58.0	200	0.31	400	X013	
IXFH 26N60P		26	0.270	4150	72.0	200	0.27	460	X014a	
IXFT 26N60P		26	0.270	4150	72.0	200	0.27	460	X019	
IXFV 26N60P		26	0.270	4150	72.0	200	0.27	460	X009a	
IXFV 26N60PS		26	0.270	4150	72.0	200	0.27	460	X013	
IXFH 30N60P		30	0.240	4000	82.0	200	0.25	500	X014a	X007a **TO-220FPAB** Weight = 5 g
IXFT 30N60P		30	0.240	4000	82.0	200	0.25	500	X019	
IXFV 30N60P		30	0.240	4000	82.0	200	0.25	500	X009a	
IXFV 30N60PS		30	0.240	4000	82.0	200	0.25	500	X013	
IXFR 48N60P		32	0.150	8860	150.0	200	0.42	300	X016a	
IXFH 36N60P		36	0.190	5800	102.0	200	0.19	650	X014a	X008 **TO-262 i2-PAC** Weight = 3 g
IXFK 36N60P		36	0.190	5800	102.0	200	0.19	650	X020a	
IXFT 36N60P		36	0.190	5800	102.0	200	0.19	650	X019	
IXFR 64N60P		36	0.105	12000	200.0	200	0.35	360	X016a	
IXFN 48N60P		40	0.140	8860	150.0	200	0.20	625	X027a	
IXFK 48N60P		48	0.135	8860	150.0	200	0.15	830	X020a	
IXFX 48N60P		48	0.135	8860	150.0	200	0.15	830	X015a	X009a **PLUS220** Weight = 4 g
IXFN 64N60P		50	0.096	12000	200.0	200	0.18	700	X027a	
IXFK 64N60P		64	0.096	12000	200.0	200	0.12	1040	X020a	
IXFX 64N60P		64	0.096	12000	200.0	200	0.12	1040	X015a	
IXFB 82N60P		82	0.750	23000	240.0	200	0.10	1250	X021a	
IXFL 82N60P		82	0.780	23000	240.0	200	0.20	625	X022a	
IXFN 82N60P		82	0.750	23000	240.0	200	0.12	1040	X027a	X010a **ISOPLUS220™** Weight = 3 g
IXFP 7N80PM	800	4	1.400	1500	30.0	250	3.00	50	X007a	
IXFC 10N80P		5	1.200	2300	40.0	250	1.25	100	X010a	
IXFA 7N80P		7	1.400	1500	30.0	250	0.62	200	X011b	
IXFI 7N80P		7	1.400	1500	30.0	250	0.62	200	X008	
IXFP 7N80P		7	1.400	1500	30.0	250	0.62	200	X005a	
IXFC 12N80P		7	0.900	3000	50.0	250	1.05	120	X010a	X011b **TO-263AB** Weight = 2 g
IXFC 14N80P		8	0.750	3600	60.0	250	0.95	130	X010a	
IXFC 16N80P		9	0.650	4000	70.0	250	0.90	138	X010a	
IXFA 10N80P		10	1.100	2300	40.0	250	0.42	300	X011b	
IXFH 10N80P		10	1.100	2300	40.0	250	0.42	300	X014a	
IXFP 10N80P		10	1.100	2300	40.0	250	0.42	300	X005a	
IXFQ 10N80P		10	1.100	2300	40.0	250	0.42	300	X017a	
IXFC 20N80P		10	0.570	4685	86.0	250	0.80	160	X010a	X013 **PLUS220SMD** Weight = 2 g
IXFR 20N80P		10	0.570	4685	86.0	250	0.80	160	X016a	
IXFH 12N80P		12	0.850	3000	50.0	250	0.35	360	X014a	
IXFQ 12N80P		12	0.850	3000	50.0	250	0.35	360	X017a	
IXFV 12N80P		12	0.850	3000	50.0	250	0.35	360	X009a	
IXFV 12N80PS		12	0.850	3000	50.0	250	0.35	360	X013	
IXFH 14N80P		14	0.700	3600	60.0	250	0.31	400	X014a	X014a **TO-247AD** Weight = 6 g
IXFQ 14N80P		14	0.700	3600	60.0	250	0.31	400	X017a	
IXFR 24N80P		13	0.420	5800	100.0	250	0.60	208	X016a	
IXFT 14N80P		14	0.700	3600	60.0	250	0.31	400	X019	
IXFV 14N80P		14	0.700	3600	60.0	250	0.31	400	X009a	
IXFV 14N80PS		14	0.700	3600	60.0	250	0.31	400	X013	
IXFH 16N80P		16	0.600	4000	70.0	250	0.27	460	X014a	X015a **PLUS247** Weight = 6 g
IXFT 16N80P		16	0.600	4000	70.0	250	0.27	460	X019	
IXFV 16N80P		16	0.600	4000	70.0	250	0.27	460	X009a	
IXFV 16N80PS		16	0.600	4000	70.0	250	0.27	460	X013	
IXFH 20N80P		20	0.520	4685	86.0	250	0.25	500	X014a	
IXFT 20N80P		20	0.520	4685	86.0	250	0.25	500	X019	X016a **ISOPLUS247™** Weight = 5 g
IXFV 20N80P		20	0.520	4685	86.0	250	0.25	500	X009a	
IXFV 20N80PS		20	0.520	4685	86.0	250	0.25	500	X013	
IXFR 32N80P		20	0.290	8800	150.0	250	0.42	300	X016a	
IXFH 24N80P		24	0.400	5800	100.0	250	0.19	650	X014a	X017a **TO-3P** Weight = 5 g
IXFK 24N80P		24	0.400	5800	100.0	250	0.19	650	X020a	
IXFT 24N80P		24	0.400	5800	100.0	250	0.19	650	X019	
IXFR 44N80P		25	0.200	12000	200.0	250	0.42	300	X016a	
IXFN 32N80P		29	0.270	8820	135.0	250	0.20	625	X027a	
IXFK 32N80P		32	0.270	8800	150.0	250	0.15	830	X020a	

X027a **SOT-227B** Weight = 30 g **miniBLOC**

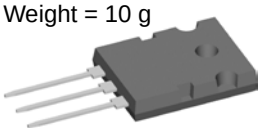
X022a **ISOPLUS264™** Weight = 10 g



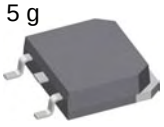
X021a **PLUS264** Weight = 10 g



X020a **TO-264** Weight = 10 g



X019 **TO-268AA** Weight = 5 g

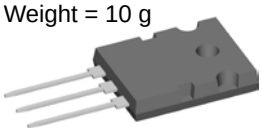


Polar™ N-Channel HiPerFET with Fast Intrinsic Diode

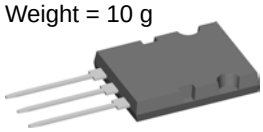
High Voltage Types

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} ns	R_{thJC} K/W	P_D W	Fig. No.	Package style Outline drawings on pages O-30...O-52
IXFX 32N80P	800	32	0.270	8800	150.0	250	0.15	830	X015a	
IXFN 44N80P		39	0.190	12000	200.0	250	0.18	694	X027a	X005a **TO-220AB** Weight = 4 g
IXFL 60N80P		40	0.150	18000	250.0	250	0.20	625	X022a	
IXFK 44N80P		44	0.190	12000	198.0	250	0.12	1040	X020a	
IXFX 44N80P		44	0.190	12000	198.0	250	0.12	1040	X015a	
IXFN 60N80P		53	0.140	18000	250.0	250	0.12	1040	X027a	
IXFB 60N80P		60	0.140	18000	250.0	250	0.10	1250	X021a	
➢ **IXFA 4N100P**	1000	4	3.000	1550	28.0	300	0.83	150	X011b	
➢ **IXFP 4N100P**		4	3.000	1550	28.0	300	0.83	150	X005a	
➢ **IXFA 5N100P**		5	2.500	1970	35.0	300	0.62	150	X011b	X009a **PLUS220** Weight = 4 g
➢ **IXFP 5N100P**		5	2.500	1970	35.0	300	0.62	150	X005a	
➢ **IXFA 7N100P**		7	1.800	2770	47.0	300	0.42	300	X011b	
➢ **IXFP 7N100P**		7	1.800	2770	47.0	300	0.42	300	X005a	
➢ **IXFR 15N100P**		9	0.830	6200	97.0	300	0.62	200	X016a	
➢ **IXFH 10N100P**		10	1.400	3420	58.0	300	0.33	380	X014a	
➢ **IXFV 10N100P**		10	1.400	3420	58.0	300	0.33	380	X009a	
➢ **IXFV 10N100PS**		10	1.400	3420	58.0	300	0.33	380	X013	
➢ **IXFR 20N100P**		11	0.640	8500	126.0	300	0.54	230	X016a	X011b **TO-263AB** Weight = 2 g
➢ **IXFH 12N100P**		12	1.050	4720	80.0	300	0.27	463	X014a	
➢ **IXFR 12N100P**		12	1.050	4000	150.0	1000	0.42	300	X016a	
➢ **IXFV 12N100P**		12	1.050	4720	80.0	300	0.27	463	X009a	
➢ **IXFV 12N100PS**		12	1.050	4720	80.0	300	0.27	463	X013	
➢ **IXFH 15N100P**		15	0.760	6200	97.0	300	0.23	543	X014a	
➢ **IXFV 15N100P**		15	0.760	6200	97.0	300	0.23	543	X009a	
➢ **IXFV 15N100PS**		15	0.760	6200	97.0	300	0.23	543	X013	
➢ **IXFR 26N100P**		15	0.430	14000	197.0	300	0.43	290	X016a	X013 **PLUS220SMD** Weight = 2 g
➢ **IXFR 32N100P**		18	0.340	17000	225.0	300	0.39	320	X016a	
➢ **IXFH 20N100P**		20	0.570	8500	126.0	300	0.19	660	X014a	
➢ **IXFT 20N100P**		20	0.570	8500	126.0	300	0.19	660	X019	
➢ **IXFN 26N100P**		23	0.390	14000	197.0	300	0.21	595	X027a	
➢ **IXFK 26N100P**		26	0.390	14000	197.0	300	0.16	780	X020a	
➢ **IXFX 26N100P**		26	0.390	14000	197.0	300	0.16	780	X015a	
➢ **IXFN 32N100P**		27	0.320	17000	225.0	300	0.18	690	X027a	
➢ **IXFL 38N100P**		29	0.230	26000	350.0	300	0.24	520	X022e	X014a **TO-247AD** Weight = 6 g
➢ **IXFK 32N100P**		32	0.320	17000	225.0	300	0.13	960	X020a	
➢ **IXFX 32N100P**		32	0.320	17000	225.0	300	0.13	960	X015a	
➢ **IXFL 44N100P**		37	0.240	22000	305.0	300	0.35	357	X022e	
➢ **IXFN 44N100P**		37	0.220	22000	305.0	300	0.14	890	X027a	
➢ **IXFN 38N100P**		38	0.210	26000	350.0	300	0.125	1000	X027a	
➢ **IXFB 44N100P**		44	0.220	22000	305.0	300	0.10	1250	X021a	
➢ **IXFR 30N110P**	1100	16	0.400	16000	235.0	300	0.39	320	X016a	
➢ **IXFL 40N110P**		21	0.280	22000	310.0	300	0.35	357	X022e	X015a **PLUS247** Weight = 6 g
➢ **IXFN 30N110P**		25	0.360	16000	235.0	300	0.18	695	X027a	
➢ **IXFL 36N110P**		26	0.260	27000	350.0	300	0.24	520	X022e	
➢ **IXFK 30N110P**		30	0.360	16000	235.0	300	0.13	960	X020a	
➢ **IXFX 30N110P**		30	0.360	16000	235.0	300	0.13	960	X015a	
➢ **IXFN 40N110P**		34	0.260	22000	310.0	300	0.14	890	X027a	
➢ **IXFN 36N110P**		36	0.240	27000	350.0	300	0.125	1000	X027a	
➢ **IXFB 40N110P**		40	0.260	22000	310.0	300	0.10	1250	X021a	
➢ **IXFR 16N120P**	1200	9	1.040	8000	120.0	300	0.54	230	X016a	
➢ **IXFH 12N120P**		12	1.350	6500	103.0	300	0.23	543	X014a	X016a **ISOPLUS247™** Weight = 5 g
➢ **IXFV 12N120P**		12	1.350	6500	103.0	300	0.23	543	X009a	
➢ **IXFV 12N120PS**		12	1.350	6500	103.0	300	0.23	543	X013	
➢ **IXFR 20N120P**		13	0.630	12900	193.0	300	0.43	290	X016a	
➢ **IXFR 26N120P**		15	0.500	16000	225.0	300	0.39	320	X016a	
➢ **IXFH 16N120P**		16	0.950	8000	120.0	300	0.19	660	X014a	
➢ **IXFT 16N120P**		16	0.950	8000	120.0	300	0.19	660	X019	
➢ **IXFL 30N120P**		18	0.380	22500	310.0	300	0.35	357	X022e	X019 **TO-268AA** Weight = 5 g
➢ **IXFK 20N120P**		20	0.570	12900	193.0	300	0.16	780	X020a	
➢ **IXFX 20N120P**		20	0.570	12900	193.0	300	0.16	780	X015a	
➢ **IXFN 20N120P**		20	0.570	12900	193.0	300	0.21	595	X027a	
➢ **IXFN 26N120P**		23	0.460	16000	225.0	300	0.18	695	X027a	
➢ **IXFL 32N120P**		24	0.340	27000	360.0	300	0.24	520	X022e	
➢ **IXFK 26N120P**		26	0.460	16000	225.0	300	0.13	960	X020a	
➢ **IXFX 26N120P**		26	0.460	16000	225.0	300	0.13	960	X015a	
➢ **IXFB 30N120P**		30	0.350	22500	310.0	300	0.10	1250	X021a	
➢ **IXFN 30N120P**		30	0.350	22500	310.0	300	0.14	890	X027a	
➢ **IXFN 32N120P**		32	0.310	27000	360.0	300	0.125	1000	X027a	X027a **SOT-227B** Weight = 30 g **miniBLOC**

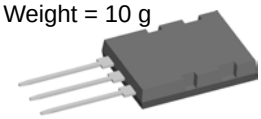
X020a **TO-264** Weight = 10 g



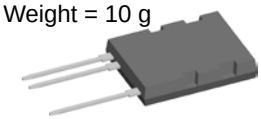
X021a **PLUS264** Weight = 10 g

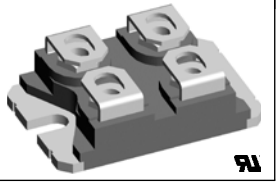


X022a **ISOPLUS264™** Weight = 10 g



X022e **ISOPLUS264™** Weight = 10 g



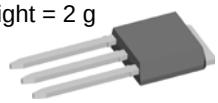


Legacy (Standard) N-Channel Power MOSFET

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. F	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
IXTA 1N80	800	1	11	220	8.5	710	3.10	40	X011b
IXTP 1N80		1	11	220	8.5	710	3.10	40	X005a
IXTY 1N80		1	11	220	8.5	710	3.10	40	X004
IXTA 2N80		2	6.2	440	22	510	2.30	54	X011b
IXTP 2N80		2	6.2	440	22	510	2.30	54	X005a
IXTU 01N100	1000	0.1	80	60	8	1500	3.00	25	X003
IXTY 01N100		0.1	80	60	8	1500	3.00	25	X004
IXTA 1N100		1.5	11	480	23	710	2.30	52	X011b
IXTH 1N100		1.5	11	480	23	710	2.30	60	X014a
IXTP 1N100		1.5	11	480	23	710	2.30	54	X005a
IXTT 1N100		1.5	11	480	23	710	2.30	60	X019
IXTP 2N100		2	7	825	40	1000	1.25	100	X005a
IXTA 05N100		0.75	15	220	8.5	710	3.10	40	X011b
IXTP 05N100		0.75	15	220	8.5	710	3.10	40	X005a
IXTA 3N120	1200	3	4.5	1050	39	700	0.80	150	X011b
IXTH 3N120		3	4.5	1100	42	700	0.62	200	X014a
IXTP 3N120		3	4.5	1050	39	700	0.80	150	X005a
IXTH 6N120		6	2.4	1950	56	850	0.42	300	X014a
IXTT 6N120		6	2.4	1950	56	850	0.42	300	X019
IXTH 12N120		12	1.4	3400	95	850	0.27	460	X014a

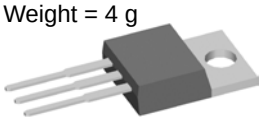
Package style
Outline drawings on pages O-30...O-52

X003 **TO-251AA**
Weight = 2 g

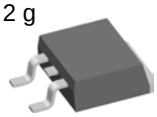


X004 **TO-252AA**
Weight = 0.3 g

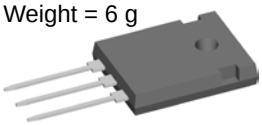
X005a **TO-220AB**
Weight = 4 g



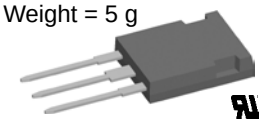
X011b **TO-263AB**
Weight = 2 g



X014a **TO-247AD**
Weight = 6 g



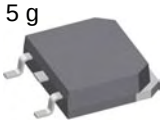
X016a **ISOPLUS247™**
Weight = 5 g



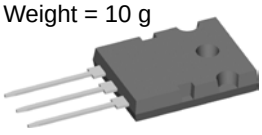
HiPerFET™ Power MOSFET
with Fast Intrinsic Diode

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. F	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
IXFK 180N07	70	180	0.006	9400	420	250	0.22	568	X020a
IXFN 180N07		180	0.007	9000	480	150	0.24	521	X027a
IXFX 180N07		180	0.006	9400	420	250	0.22	568	X015a
IXFN 340N07		340	0.004	12200	490	200	0.18	694	X027a
IXFK 180N10	100	180	0.008	9100	360	250	0.22	568	X020a
IXFN 180N10		180	0.008	9100	360	250	0.21	595	X027a
IXFX 180N10		180	0.008	9100	360	250	0.22	568	X015a
IXFN 230N10		230	0.007	21000	690	250	0.18	694	X027a
IXFK 44N60	600	44	0.13	8900	330	250	0.22	568	X020a
IXFN 44N60		44	0.13	8900	330	250	0.22	568	X027a
IXFR 44N60		38	0.13	8900	330	250	0.30	417	X016a
IXFX 44N60		44	0.13	8900	330	250	0.22	568	X015a
IXFK 24N100	1000	24	0.39	7000	250	250	0.22	568	X020a
IXFN 24N100		24	0.39	7000	250	250	0.21	595	X027a
IXFX 24N100		24	0.39	7000	250	250	0.22	568	X015a
IXFN 34N100		34	0.28	9200	380	180	0.18	694	X027a
IXFN 36N100		36	0.24	9200	380	180	0.18	694	X027a
IXFA 3N120	1200	3	4.5	1050	39	250	0.62	200	X011b
IXFP 3N120		3	4.5	1050	39	250	0.62	200	X005a

X019 **TO-268AA**
Weight = 5 g



X020a **TO-264**
Weight = 10 g



X027a **SOT-227B**
Weight = 30 g **miniBLOC**

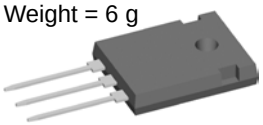
Q-Class HiPerFET™ with Fast Intrinsic Diode

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. F	Q_g typ. nC	t_{rr} ns	R_{thJC} K/W	P_D W	Fig. No.
IXFH 75N10Q	100	75.0	0.020	3700	140.0	200	0.42	298	X014a
IXFH 80N10Q		80.0	0.015	4500	180.0	200	0.35	357	X014a
IXFT 80N10Q		80.0	0.015	4500	180.0	200	0.35	357	X019
IXFH 58N20Q	200	58.0	0.040	3600	98.0	200	0.42	298	X014a
IXFR 58N20Q		58.0	0.040	3600	98.0	200	0.42	298	X016a
IXFT 58N20Q		58.0	0.040	3600	98.0	200	0.42	298	X019
IXFH 80N20Q		80.0	0.028	4600	180.0	200	0.35	357	X014a
IXFK 80N20Q		80.0	0.028	4600	180.0	200	0.35	357	X020a
IXFR 80N20Q		80.0	0.028	4600	180.0	200	0.40	313	X016a
IXFT 80N20Q		80.0	0.028	4600	180.0	200	0.35	357	X019
IXFH 40N30Q	300	40.0	0.080	3560	92.0	250	0.42	298	X014a
IXFT 40N30Q		40.0	0.080	3100	95.0	250	0.42	298	X019
IXFH 52N30Q		52.0	0.060	5300	150.0	250	0.35	357	X014a
IXFK 52N30Q		52.0	0.060	5300	150.0	250	0.35	357	X020a
IXFT 52N30Q		52.0	0.060	5300	150.0	250	0.35	357	X019
IXFE 73N30Q		66.0	0.046	6400	190.0	250	0.31	400	X028
IXFK 73N30Q		73.0	0.042	3400	190.0	250	0.26	481	X020a
IXFN 73N30Q		73.0	0.045	9000	360.0	200	0.25	500	X027a
IXFX 73N30Q		73.0	0.042	6400	190.0	250	0.26	481	X015a
IXFH 26N50Q	500	26.0	0.200	3900	95.0	250	0.50	250	X014a
IXFR 26N50Q		24.0	0.200	3900	95.0	250	0.42	298	X016a
IXFT 26N50Q		26.0	0.200	3900	95.0	250	0.42	298	X019
IXFH 28N50Q		26.0	0.200	4200	135.0	250	0.42	298	X019
IXFH 32N50Q		32.0	0.160	3950	153.0	250	0.35	357	X014a
IXFJ 32N50Q		32.0	0.160	3950	153.0	250	0.35	357	X018
IXFK 32N50Q		32.0	0.160	3950	150.0	250	0.30	417	X020a
IXFR 32N50Q		30.0	0.160	3950	150.0	250	0.40	313	X016a
IXFT 32N50Q		32.0	0.160	3950	153.0	250	0.35	357	X019
IXFX 32N50Q		32.0	0.160	3950	150.0	250	0.30	417	X015a
IXFE 48N50Q		41.0	0.110	6400	190.0	250	0.31	403	X028
IXFK 48N50Q		48.0	0.100	8000	190.0	250	0.26	481	X020a
IXFN 48N50Q		48.0	0.100	8000	190.0	250	0.26	481	X027a
IXFR 48N50Q		40.0	0.100	6400	190.0	250	0.40	313	X016a
IXFX 48N50Q		48.0	0.100	8000	190.0	250	0.26	481	X015a
IXFH 26N60Q	600	28.0	0.250	5100	150.0	250	0.35	357	X014a
IXFK 26N60Q		28.0	0.250	5100	150.0	250	0.35	357	X020a
IXFR 26N60Q		23.0	0.250	5100	150.0	250	0.40	313	X016a
IXFT 26N60Q		28.0	0.250	5100	150.0	250	0.35	357	X019
IXFH 15N80Q	800	15.0	0.600	4300	90.0	250	0.42	298	X014a
IXFR 15N80Q		13.0	0.600	4300	90.0	250	0.50	250	X016a
IXFT 15N80Q		15.0	0.600	4300	90.0	250	0.42	298	X019
IXFH 20N80Q		20.0	0.420	5100	150.0	250	0.35	357	X014a
IXFK 20N80Q		20.0	0.420	5100	150.0	250	0.35	357	X020a
IXFT 20N80Q		20.0	0.420	5100	150.0	250	0.35	357	X019
IXFK 27N80Q		27.0	0.320	7600	170.0	250	0.26	481	X020a
IXFN 27N80Q		27.0	0.320	7600	170.0	250	0.24	521	X027a
IXFX 27N80Q		27.0	0.320	7600	170.0	250	0.26	481	X015a
IXFH 12N90Q	900	12.0	0.900	2900	90.0	200	0.42	298	X014a
IXFM 12N90Q		12.0	0.900	2900	90.0	250	0.42	298	X203a
IXFT 12N90Q		12.0	0.900	2900	90.0	200	0.42	298	X019
IXFH 16N90Q		16.0	0.650	4000	133.0	250	0.35	357	X014a
IXFK 16N90Q		16.0	0.650	4000	133.0	250	0.35	357	X020a
IXFT 16N90Q		16.0	0.650	4000	133.0	250	0.35	357	X019

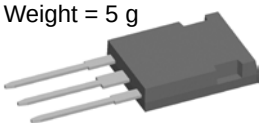
Package style

Outline drawings on pages O-30...O-52

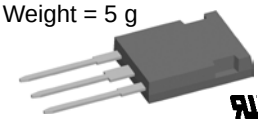
X014a **TO-247AD**
Weight = 6 g



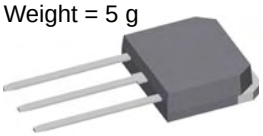
X015a **PLUS247**
Weight = 5 g



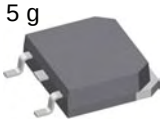
X016a **ISOPLUS247™**
Weight = 5 g



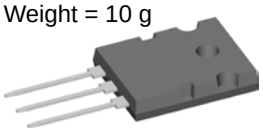
X018 **TO-268 i³PAK**
Weight = 5 g



X019 **TO-268AB**
Weight = 5 g

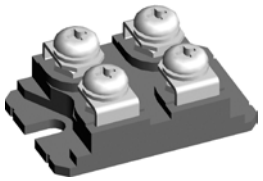


X020a **TO-264**
Weight = 10 g

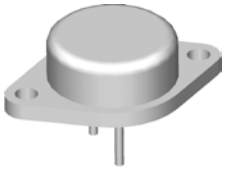


X027a **SOT-227B**
Weight = 30 g **miniBLOC**

X028 **ISOPLUS-227**
Weight = 19 g



X203a **TO-204**



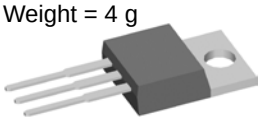
Q-Class HiPerFET™ with Fast Intrinsic Diode

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. F	Q_g typ. nC	t_{rr} ns	R_{thJC} K/W	P_D W	Fig. No.
IXFA 4N100Q	1000	4.0	3.000	1050	39.0	250	0.80	156	X011b
IXFH 4N100Q		4.0	3.000	1050	39.0	250	0.80	156	X014a
IXFP 4N100Q		4.0	3.000	1050	39.0	250	0.80	156	X005a
IXFR 4N100Q		3.5	3.000	1050	39.0	200	1.57	80	X016a
IXFT 4N100Q		4.0	3.000	1050	39.0	250	0.80	156	X019
IXFH 6N100Q		6.0	2.000	2200	48.0	250	1.90	66	X014a
IXFT 6N100Q		6.0	2.000	2200	48.0	250	1.90	66	X019
IXFH 12N100Q		12.0	1.050	2900	90.0	200	0.42	300	X014a
IXFR 12N100Q		12.0	1.050	2900	90.0	200	0.50	250	X016a
IXFT 12N100Q		12.0	1.050	2900	90.0	200	0.42	300	X019
IXFH 15N100Q		15.0	0.700	4500	130.0	250	0.35	357	X014a
IXFK 15N100Q		15.0	0.700	4500	130.0	250	0.35	357	X020a
IXFT 15N100Q		15.0	0.700	4500	130.0	250	0.35	357	X019
IXFK 21N100Q		21.0	0.500	5900	170.0	250	0.26	481	X020a
IXFN 21N100Q		21.0	0.500	5900	170.0	250	0.24	521	X027a
IXFR 21N100Q		18.0	0.500	5900	170.0	250	0.30	417	X016a
IXFX 21N100Q		21.0	0.500	5900	170.0	250	0.26	481	X015a

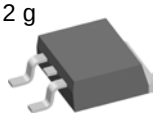
Package style

Outline drawings on pages O-30...O-52

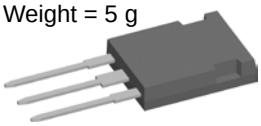
X005a **TO-220AB**
Weight = 4 g



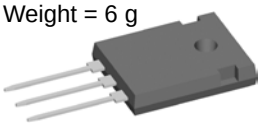
X011b **TO-263AB**
Weight = 2 g



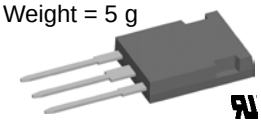
X015a **PLUS247**
Weight = 5 g



X014a **TO-247AD**
Weight = 6 g



X016a **ISOPLUS247™**
Weight = 5 g

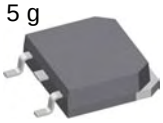


Q2-Class HiPerFET™ with Fast Intrinsic Diode

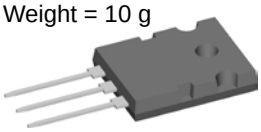
Very High Speed

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. F	Q_g typ. nC	t_{rr} ns	R_{thJC} K/W	P_D W	Fig. No.
IXFH 40N50Q2	500	40.0	0.160	4200	110.0	250	0.25	500	X014a
➢ **IXFK 40N50Q2**		40.0	0.160	4200	110.0	250	0.25	500	X020a
IXFR 40N50Q2		29.0	0.170	4200	110.0	250	0.39	320	X016a
IXFK 66N50Q2		66.0	0.074	6800	199.0	250	0.17	735	X020a
IXFN 66N50Q2		66.0	0.074	6800	199.0	250	0.17	735	X027a
IXFR 66N50Q2		50.0	0.074	6800	199.0	250	0.30	416	X016a
IXFX 66N50Q2		66.0	0.074	6800	199.0	250	0.17	735	X015a
IXFB 80N50Q2		80.0	0.060	10500	260.0	250	0.14	890	X021a
IXFF 80N50Q2		80.0	0.066	10500	260.0	250	0.33	380	X024d
IXFL 80N50Q2		66.0	0.066	10500	260.0	250	0.33	380	X022a
IXFN 80N50Q2		80.0	0.060	10500	260.0	250	0.14	890	X027a
IXFK 52N60Q2	600	52.0	0.115	6800	198.0	250	0.17	735	X020a
IXFX 52N60Q2		52.0	0.115	6800	198.0	250	0.17	735	X015a
IXFB 70N60Q2		70.0	0.080	7200	265.0	250	0.14	890	X021a
IXFN 70N60Q2		70.0	0.080	7200	265.0	250	0.14	890	X027a
IXFK 38N80Q2	800	38.0	0.220	8340	190.0	250	0.17	735	X020a
➢ **IXFN 38N80Q2**		38.0	0.220	8340	190.0	250	0.17	735	X027a
IXFR 38N80Q2		28.0	0.300	8340	190.0	250	0.30	416	X016a
IXFX 38N80Q2		38.0	0.220	8340	190.0	250	0.17	735	X015a
IXFB 50N80Q2		50.0	0.150	7200	260.0	300	0.14	890	X021a
IXFN 50N80Q2		50.0	0.150	7200	260.0	300	0.14	890	X027a
IXFH 14N100Q2	1000	14.0	0.900	2800	83.0	250	0.31	400	X014a
IXFR 14N100Q2		9.5	1.000	2700	83.0	250	0.62	200	X016a
IXFK 30N100Q2		30.0	0.400	8200	186.0	250	0.17	735	X020a
IXFX 30N100Q2		30.0	0.400	8200	186.0	250	0.17	735	X015a
IXFB 38N100Q2		38.0	0.280	12600	250.0	300	0.14	893	X021a
IXFL 38N100Q2		22.0	0.280	12600	250.0	300	0.33	380	X022a
IXFN 38N100Q2		38.0	0.250	12600	250.0	300	0.14	893	X027a

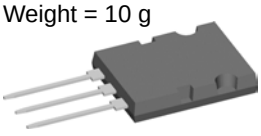
X019 **TO-268AA**
Weight = 5 g



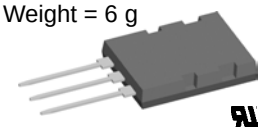
X020a **TO-264**
Weight = 10 g



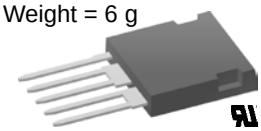
X021a **PLUS264**
Weight = 10 g



X022a **ISOPLUS264**
Weight = 6 g



X024d **ISOPLUS i4-PAC™**
Weight = 6 g



X027a **SOT-227B**
Weight = 30 g **miniBLOC**

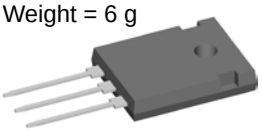
Linear Power MOSFETs

High Voltage SOA

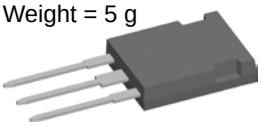
Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
➢ **IXTH 30N50L2**	500	30	0.20	10200	240	500	0.31	400	X014a
➢ **IXTQ 30N50L2**		30	0.20	10200	240	500	0.31	400	X017a
➢ **IXTT 30N50L2**		30	0.20	10200	240	500	0.31	400	X019
IXTH 24N50L		24	0.30	2500	160	500	0.31	400	X014a
IXTK 46N50L		46	0.16	7000	260	600	0.18	700	X020a
IXTN 46N50L		46	0.16	7000	260	600	0.18	700	X027a
IXTX 46N50L		46	0.16	7000	260	600	0.18	700	X015a
IXTB 62N50L		62	0.10	11500	550	500	0.156	800	X021a
IXTN 62N50L		62	0.10	11500	550	500	0.156	800	X027a
IXTH 12N100L	1000	12	1.30	2500	155	1000	0.31	400	X014a
IXTK 22N100L		22	0.60	7050	270	1000	0.18	700	X020a
IXTN 22N100L		22	0.60	7050	270	1000	0.18	700	X027a
IXTX 22N100L		22	0.60	7050	270	1000	0.18	700	X015a
IXTB 30N100L		30	0.45	13200	545	1000	0.156	800	X021a
IXTN 30N100L		30	0.45	13700	545	1000	0.156	800	X027a
➢ **IXTK 17N120L**	1200	17	0.99	8000	270	1350	0.18	700	X020a
➢ **IXTN 17N120L**		17	0.99	8000	270	1350	0.18	700	X027a
➢ **IXTN 8N150L**	1500	8	5.00	7900	250	790	0.18	700	X027a

Package style
Outline drawings on pages O-30...O-52

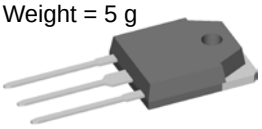
X014a **TO-247AD**
Weight = 6 g



X015a **PLUS247**
Weight = 5 g

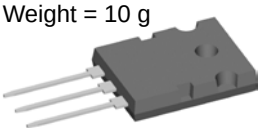


X017a **TO-3P**
Weight = 5 g

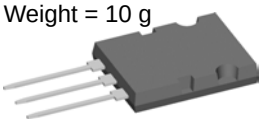


X019 **TO-268AA**
Weight = 5 g

X020a **TO-264**
Weight = 10 g



X021a **PLUS264**
Weight = 10 g



X027a **SOT-227B**
Weight = 30 g **miniBLOC**

Unlike “normal” MOSFET operation where the transistor functions like an on/off switch, linear applications will subject the transistor to high thermal stress due to the simultaneous occurrence of high drain voltage and current.
This is the reason that some types of MOSFETs are not recommended for use in linear applications. However, IXYS’ new Linear Power MOSFETs have been specifically designed to handle the types of tough “linear operating conditions” that are frequently being encountered in the consumer and industrial markets.
Some common applications include linear power supplies, class A amplifiers, electronic loads, programmable resistors and motor control. Optimizations were made to the fundamental planar cell design in order to maximize the power dissipation capabilities of this Linear Power MOSFET family.
The Forward Bias Safe Operating Area (FBSOA) characteristic is one such targeted parameter that was optimized, which essentially allowed for a larger operating „window“ as dictated by the power limitations of the device.
This extended power window translates to improved ruggedness and power dissipation capabilities during the high thermal stress conditions posed by the linear operating environment. IXYS provides a wide selection of Linear Power MOSFETs.
Voltages include 500 V, 1000 V and 1200V , while currents range from 17 A to 62 A. These Power MOSFETs are offered in a number of different packages including the standard TO-247 and a variety of „plus“ sizes.
These new devices are also compatible with IXYS ISOPLUS™ packages, which provide integral backside case isolation.

PolarP™ P-Channel Power MOSFETs

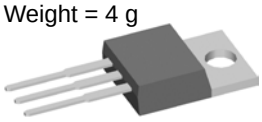
Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	C_{iss} typ. pF	Q_g typ. nC	t_{rr} typ. ns	R_{thJC} K/W	P_D W	Fig. No.
IXTA 52P10P	-100	-52.0	0.050	2845	60	120	0.42	300	X011b
IXTH 52P10P		-52.0	0.050	2845	60	120	0.42	300	X014a
IXTP 52P10P		-52.0	0.050	2845	60	120	0.42	300	X005a
IXTQ 52P10P		-52.0	0.050	2845	60	120	0.42	300	X017a
IXTH 90P10P		-90.0	In Development						X014a
IXTT 90P10P		-90.0							X019
IXTK 170P10P		* -170.0	0.012	1260	240	176	0.14	890	X020a
IXTN 170P10P		* -170.0	0.012	1260	240	176	0.14	890	X027a
IXTX 170P10P		* -170.0	0.012	1260	240	176	0.14	890	X015a
IXTA 36P15P	-150	-36.0	0.110	3100	55	228	0.42	300	X011b
IXTP 36P15P		-36.0	0.110	3100	55	228	0.42	300	X005a
IXTQ 36P15P		-36.0	0.110	3100	55	228	0.42	300	X017a
IXTA 26P20P	-200	-26.0	0.170	2740	56	240	0.42	300	X011b
IXTH 26P20P		-26.0	0.170	2740	56	240	0.42	300	X014a
IXTP 26P20P		-26.0	0.170	2740	56	240	0.42	300	X005a
IXTQ 26P20P		-26.0	0.170	2740	56	240	0.42	300	X017a
IXTH 48P20P		-48.0	In Development						X014a
IXTT 48P20P		-48.0							X019
IXTK 90P20P		-90.0	0.044	12000	205	315	0.14	890	X020a
IXTN 90P20P		-90.0	0.044	12000	205	315	0.14	890	X027a
IXTR 90P20P		-53.0	0.048	12000	205	315	0.40	312	X016a
IXTX 90P20P		-90.0	0.044	12000	205	315	0.14	890	X015a
IXTA 10P50P	-500	-10.0	1.000	2670	50	414	0.50	250	X011b
IXTH 10P50P		-10.0	1.000	2670	50	414	0.50	250	X014a
IXTP 10P50P		-10.0	1.000	2670	50	414	0.50	250	X005a
IXTQ 10P50P		-10.0	1.000	2670	50	414	0.50	250	X017a
IXTH 20P50P		-20.0	In Development						X014a
IXTT 20P50P		-20.0							X019
IXTK 40P50P		-40.0	0.230	11500	205	477	0.14	890	X020a
IXTN 40P50P		-40.0	0.230	11500	205	477	0.14	890	X027a
IXTR 40P50P		-22.0	0.260	11500	205	477	0.40	312	X016a
IXTX 40P50P		-40.0	0.230	11500	205	477	0.14	890	X015a
IXTH 16P60P	-600	-16.0	In Development						X014a
IXTT 16P60P		-16.0							X019
IXTK 32P60P		-32.0							X020a
IXTN 32P60P		-32.0							X027a
IXTX 32P60P		-32.0							X015a

* limited by leads

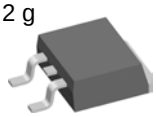
Package style

Outline drawings on pages O-30...O-52

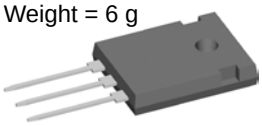
X005a **TO-220AB**
Weight = 4 g



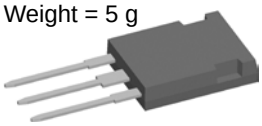
X011b **TO-263AB**
Weight = 2 g



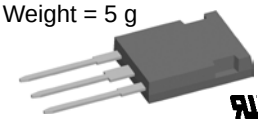
X014a **TO-247AD**
Weight = 6 g



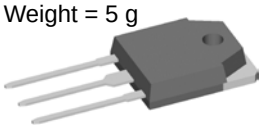
X015a **PLUS247**
Weight = 5 g



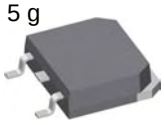
X016a **ISOPLUS247™**
Weight = 5 g



X017a **TO-3P**
Weight = 5 g



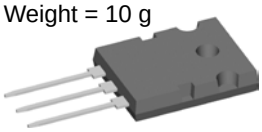
X019 **TO-268AA**
Weight = 5 g



TrenchP™ P-Channel Power MOSFETs

Part Number ➢ New	V_{DSS} V	I_D T_C = 25°C A	$R_{DS(on)}$ T_C = 25°C mΩ	C_{iss} typ. pF	Q_G typ. nC	t_{rr} typ. nS	R_{thJC} K/W	P_D W	Fig. No.
➢ **IXTA 32P05T**	-50	32	36	1975	46	26	1.5	83	X011b
➢ **IXTP 32P05T**		32	36	1975	46	26	1.5	83	X005a
➢ **IXTA 28P065T**	-65	28	45	2030	46	31	1.5	83	X011b
➢ **IXTP 28P065T**		28	45	2030	46	31	1.5	83	X005a
➢ **IXTA 24P085T**	-85	24	65	2090	41	40	1.5	83	X011b
➢ **IXTP 24P085T**		24	65	2090	41	40	1.5	83	X005a
➢ **IXTA 18P10T**	-100	18	120	2100	39	62	1.5	83	X011b
➢ **IXTP 18P10T**		18	120	2100	39	62	1.5	83	X005a

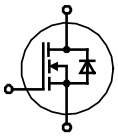
X020a **TO-264**
Weight = 10 g



X027a **SOT-227B**
Weight = 30 g **miniBLOC**

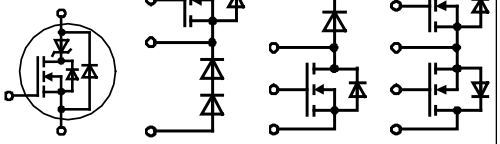
CoolMOS™ Power MOSFETs

CoolMOS™ is a trademark of Infineon Technologies



K Series - CoolMOS™

Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	Q_g typ. nC	R_{thJC} K/W	V_{ISOL} RMS V	Fig. No.
C3 Series							
IXKC 20N60C	600	14	0.19	80	1.00	2500	X010a
IXKC 40N60C		24	0.096	160	0.50	2500	X010a
IXKR 40N60C		38	0.07	250	0.45	2500	X016a
IXKN 40N60C		40	0.07	250	0.43	2500	X027a
IXKH 47N60C		47	0.07	250	0.30	-	X014a
IXKN 75N60C		75	0.036	500	0.22	2500	X027a
IXKK 85N60C		85*	0.036	540	0.18	-	X020a
IXKC 13N80C	800	13	0.29	85	0.96	2500	X010a
IXKC 25N80C		20	0.15	180	0.90	2500	X010a
IXKR 25N80C		25	0.15	170	0.50	2500	X016a
IXKN 45N80C		44	0.074	335	0.33	2500	X027a
C5 Series							
➢ **IXKP 10N60C5**	600	10	0.385	17	1.15	-	X005a
➢ **IXKP 10N60C5M**		5.4	0.385	17	3.95	-	X007a
➢ **IXKP 13N60C5**		13	0.3	22	0.95	-	X005a
➢ **IXKP 13N60C5M**		6.5	0.3	22	3.85	-	X007a
➢ **IXKP 20N60C5**		20	0.2	32	0.60	-	X005a
➢ **IXKP 20N60C5M**		7.6	0.2	32	3.75	-	X007a
➢ **IXKH 20N60C5**		20	0.2	32	0.60	-	X014a
➢ **IXKC 15N60C5**		15	0.165	40	1.10	2500	X010a
➢ **IXKP 24N60C5**		24	0.165	40	0.50	-	X005a
➢ **IXKP 24N60C5M**		8.5	0.165	40	3.65	-	X007a
➢ **IXKH 24N60C5**		24	0.165	40	0.50	-	X014a
➢ **IXKC 19N60C5**		19	0.125	53	0.95	2500	X010a
➢ **IXKH 30N60C5**		30	0.125	53	0.40		X014a
➢ **IXKC 23N60C5**		23	0.1	60	0.85	2500	X010a
IXKP 35N60C5		35	0.1	60	0.35	-	X005a
IXKH 35N60C5		35	0.1	60	0.35	-	X014a
➢ **IXKR 47N60C5**		47	0.045	150	0.45	2500	X016a
IXKH 70N60C5		70	0.045	150	0.20	-	X014a
➢ **IXKT 70N60C5**		66	0.045	150	0.23	-	X019



IXKF FDM FMD LKK

CoolMOS™ Configurations in i4-PAC™

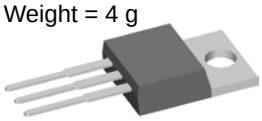
Part Type ➢ New	V_{DSS} V	$I_{D(cont)}$ T_C = 25°C A	$R_{DS(on)}$ T_J = 25°C Ω	Q_g typ. nC	R_{thJC} K/W	Config.	Fig. No.
IXKF 40N60SCD1	600	38	0.07	250	0.45	single	X024c
➢ **FMD 15-06KC5**		15	0.165	under development		boost	X024a
FMD 40-06KC		38	0.07	250	0.45	boost	
➢ **FMD 47-06KC5**		47	0.045	under development		boost	
➢ **FDM 15-06KC5**	600	15	0.165	under development		buck	
➢ **FDM 47-06KC5**		47	0.045			buck	

Configuration in ISOPLUS264™ Package

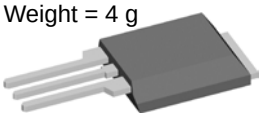
➢ **LKK 47-06C5**	600	2 x 47	0.045	150	0.45	dual	X022c

Package style
Outline drawings on pages O-30...O-52

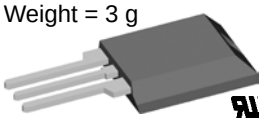
X005a **TO-220AB**
Weight = 4 g



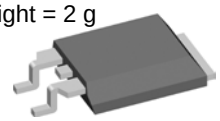
X009a **PLUS220**
Weight = 4 g



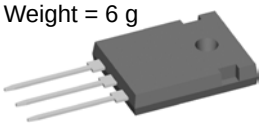
X010a **ISOPLUS220™**
Weight = 3 g



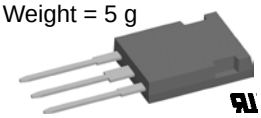
X013 **PLUS220SMD**
Weight = 2 g



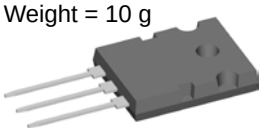
X014a **TO-247AD**
Weight = 6 g



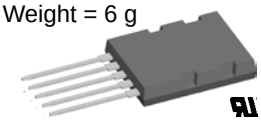
X016a **ISOPLUS247™**
Weight = 5 g



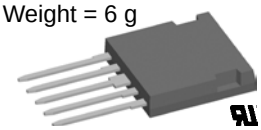
X020a **TO-264**
Weight = 10 g



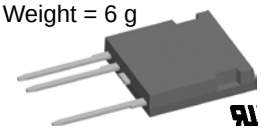
X022c **ISOPLUS264**
Weight = 6 g



X024a **ISOPLUS i4-PAC™**
Weight = 6 g

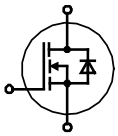


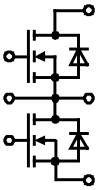
X024c **ISOPLUS i4-PAC™**
Weight = 6 g

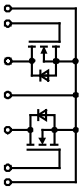


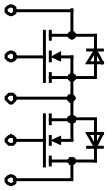
X027a **SOT-227B miniBLOC**
Weight = 30 g

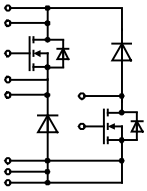
MOSFET Modules

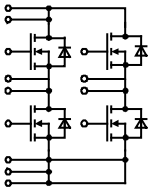

VMO Single Switch

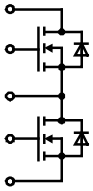

VMM Phase Leg

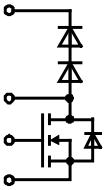

VMK Dual Switch

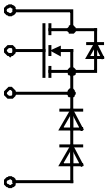

FMK Dual Switch


VHM H-Bridge


VKM H-Bridge


FMM Phase Leg


FMD Boost


FDM Buck

Suffix „F“ = HiPerFET™ Technology with Fast Intrinsic Diode

Part Type ➢ New	V_{DSS} V	I_{D25} T_C = 25°C A	I_{D80} T_C = 80°C A	R_{DSon} typ. T_J = 25°C mΩ	t_r ns	t_f ns	R_{thJC} K/W	NTC	Fig. No.	Package style Outline drawings on pages O-30...O-52
Single Switch Modules										X024a **ISOPLUS i4-PAC™**
VMO 550-01F	100	590	not recommended for new designs						X128d	Weight = 6 g
VMO 650-01F		690							X128d	
VMO 1200-01F		1245	930	1.35	200	500	0.039		X130d	
VMO 580-02F	200	580	not recommended for new designs						X130d	
VMO 1600-02P		1900	1600	1.40			0.03		X130d	
VMO 60-05F	500	60	not recommended for new designs						X125f	
Dual Switch Modules – Common Source Configuration										
VMK 165-007T	70	165	not recommended for new designs						X125a	
FMK 75-01F	100	75	50 / 90°C	21	60	60	0.5		X024a	
VMK 90-02T2	200	84	not recommended for new designs						X125a	
MOSFET Modules – Phase Leg Configuration										
FMM 75-01F	100	75	50 / 90°C	21	60	60	0.5		X024a	
VMM 650-01F		680	not recommended for new designs					•	X130e	
VMM 45-02F	200	45							X125g	
VMM 85-02F		84							X127a	
VMM 300-03F	300	290						•	X128a	
VMM 90-09F	900	85	65	76	140	180	0.08		X130e	
MOSFET Modules – H Bridge Configuration										
VHM 40-06P1*	600	38	25/90°C	70	10	95	0.45	•	X102	
VKM 60-01P1	100	75	60	25	60	60	0.5			
VKM 40-06P1*	600	38	25	70	10	95	0.45			
MOSFET Modules – Boost Configuration										
FMD 21-05QC	500	21	15 / 90°C	180	16	30	1.5		X024a	
FMD 40-06KC *	600	38	25 / 90°C	60	contact factory					
➢ **FMD 15-06KC5 ***		15		165						
➢ **FMD 47-06KC5 ***		47	32 / 90°C	40	under development					
MOSFET Modules – Buck Configuration										
➢ **FDM 15-06KC5 ***	600	15		165	under development				X024a	
➢ **FDM 47-06KC5 ***		47		45						

* CoolMOS™ is a trademark of Infineon Technologies

X102 **ECO-PAC2**
Weight = 24 g

X125a **TO-240AA**
Weight = 90 g

X125f **TO-240AA**
Weight = 90 g

X125g **TO-240AA**
Weight = 90 g

X127a **Y4-M5**
Weight = 150 g

X130d **Y3**
Weight = 250 g

X130e **Y3**
Weight = 250 g

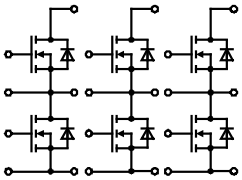
X128a **Y3**
Weight = 250 g

X128d **Y3**
Weight = 250 g

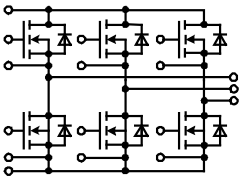
MOSFET Modules

Trench MOSFET Technology

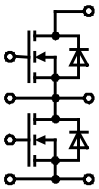
- very low R_{DSon}
- fast body diode



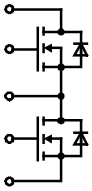
GMM
Six-Pack



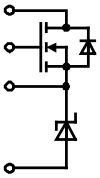
GWM / VWM
Six-Pack



VMM
Phase
Leg



FMM
Phase
Leg



FDM
Buck

Part Type ➢ New	V_{DSS} V	I_{D25} T_C = 25°C A	I_{D90} T_C = 90°C A	R_{DSon} typ. T_J = 25°C mΩ	t_r ns	t_f ns	R_{thJC} K/W	Fig. No.	Package style Outline drawings on pages O-30...O-52
Phase Leg Configuration									
FMM 150-0075P	75	150	120	4.7	60	60	0.60	X024a	X024a **ISOPLUS i4-PAC™**
VMM 1500-0075P	75	1500	1200 / 80°C	0.55	200	170	0.06	X130a	Weight = 6 g
FMM 75-01F	100	75	50	18	60	60	0.50	X024a	
VMM 1000-01P	100	1000	800 / 80°C	0.75	100	100	0.06	X130a	
FMM 65-015P	150	65	50	13	100	80	0.60	X024a	
ISOPLUS-DIL™									X026a
Six-Pack Configuration									Weight = 25 g
VWM 350-0075P	75	340	250 / 80°C	2.3	contact factory		0.26	X104	
VWM 200-01P	100	210	170 / 80°C	3.6	contact factory		0.26	X104	
GWM 220-004P3-SL	40	190	145	2.0	85	90	0.90	X026a	
GWM 220-004P3-SMD		190	145	2.0	85	90	0.90	X026c	
➢ **GWM 220-004X1-SL**		under development						X026a	
➢ **GWM 220-004X1-SMD**								X026c	
➢ **GWM 160-0055X1-SL**	55	160	120	2.7	125 *	120 *	0.90	X026a	X026c **ISOPLUS-DIL™**
➢ **GWM 160-0055X1-SMD**		160	120	2.7	125 *	120 *	0.90	X026c	Weight = 25 g
➢ **GWM 120-0075X1-SL**	75	under development						X026a	
➢ **GWM 120-0075X1-SMD**								X026c	
➢ **GWM 100-0085X1-SMD**	85	contact factory						X026c	
➢ **GWM 100-01X1-SL**	100	90	68	7.5	95 *	55 *	0.90	X026a	
➢ **GWM 100-01X1-SMD**		90	68	7.5	95 *	55 *	0.90	X026c	
* inductive load									X026d **ISOPLUS-DIL™**
➢ **GMM 3x160-0055X2-SMD**	55	under development						X026d	Weight = 25 g
➢ **GMM 3x120-0075X2-SMD**	75							X026d	
Buck Configuration									
FDM 100-0045SP Mosfet/Diode	55 / 45	100 / 110	80 / 80	5.7 **	115 **	155 **	1.00	X024a	
** only MOSFET data									X104 **V2-Pack**
									Weight = 80 g
									X130a **Y3**
									Weight = 250 g

Diodes for High Switching Frequencies

Fast Recovery Epitaxial Diodes (HiPerFRED, FRED) and FRD (SONIC)

Power switches (IGBT, MOSFET, BJT, GTO) for applications in electronics are only as good as their associated freewheeling diodes. At increasing switching frequencies, the proper functioning and efficiency of the power switch, aside from conduction losses, is determined by the turn-off behavior of the diode (characterized by Q_{rr}, I_{RM} and t_{rr} - Fig. 1). With optimized ultra-fast switching diodes, the development engineer has various possibilities: either higher pulse rate or higher current load or smaller heatsink or more conservative operation due to „cooler“ chips.

The reverse current characteristic following the peak reverse current I_{RM} is another very important property. The slope of the decaying reverse current di_{rr} /dt results from design parameters (technology and diffusion of the diode chips). In a circuit this current slope, in conjunction with parasitic inductances (e.g. connecting leads), causes overvoltage spikes and high frequency interference voltages. The higher the dirr/dt („hard recovery“ or „snap-off“ behavior) the higher is the resulting additional stress for both the diode and the paralleled switch. A slow decay of the reverse current („soft recovery“ behavior), is the most desirable characteristic, and this is designed into all diodes. The wide range of available blocking voltages makes it possible to apply these diodes as output rectifiers in switch-mode power supplies (SMPS) as well as protective and freewheeling diodes for power switches in inverters.

Diodes for General Purpose Applications

Rectifier Diodes

Diodes of the DS-series (anode on stud) and of the DSI-series (cathode on stud) are mainly used for rectifying 50 or 60 Hz mains currents. Discrete diodes in plastic and metal housings and also different diode bridges are available for standard line voltages (from 100 to 600 V).

Avalanche Diodes

Avalanche diodes or surge-voltage-proof rectifier diodes of the series DSA (anode on stud) and DSAI (cathode on stud) differ from standard diodes of the series DS and DSI in the following manner: the operation in avalanche breakdown above the normal reverse blocking voltage (V_{RRM}) can be tolerated as long as the power is within the specified maximum permissible non-repetitive reverse surge dissipation P_{RSM} at the specified pulse width. In order to have technologically good control of the avalanche breakdown, it is important to ensure homogeneous doping of the middle zone of the silicon chip and suitable junction termination and passivation at the edges where PN-junctions are exposed to the surface (high field strength at the edge). Because of this ruggedness against periodically occurring short-term voltage surges in the blocking direction, the user frequently can do without protective overvoltage net-works. In addition, if avalanche diodes are put in series for high voltage applications, the sharp avalanche breakdown of the blocking characteristic ensures static and dynamic voltage distribution uniformly across each device. Thus, in general, none of the series diodes will be overstressed by reverse voltages which are substantially above the avalanche voltage. All high voltage rectifier modules manufactured in quantity are assembled with avalanche diodes.

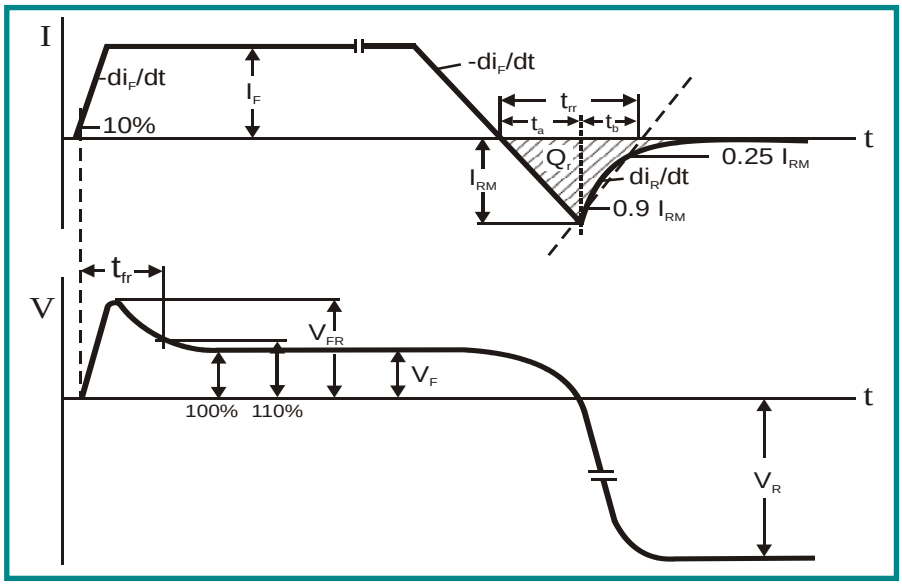


Fig. 1: Current and voltage during turn-on and turn-off switching of fast diodes

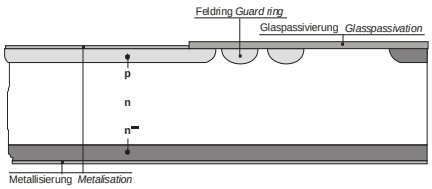


Fig. 2: Cross section of glassivated planar epitaxial diode chip with guard rings (type DWEP)

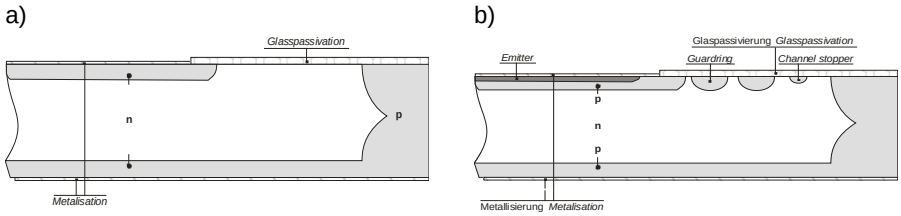
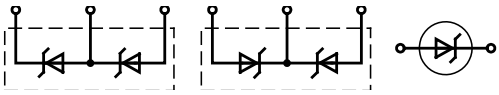


Fig. 3: Cross sections of glassivated planar diode chips with separation diffusion
a) type DWN with Anode on bottom
b) type DWP with Cathode on bottom

Gallium Arsenide Schottky Diodes



DGSS... DGSK... DGS...

No reverse recovery

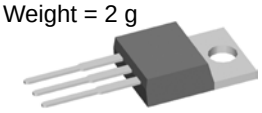
Type ○ Not for new designs ➢ New	V_{RRM} V	I_{DC} d = 0.5 A	@ T_C °C	V_F typ. @ I_F T_{VJ} = 125°C V	 A	C_J pF	R_{thJC} K/W	Fig. No.
○ **DGS 3-018AS**	180	5.0	90	0.85	2.0	8.8	8.50	X004
○ **DGS 20-018AS**	180	17.0	90	0.80	7.5	33.0	3.10	X011b
○ **DGS 10-025A**	250	9.0	90	1.30	5.0	18.0	4.40	X005b
○ **DGS 20-025A**	250	13.0	90	1.30	7.5	26.0	3.10	X005b
○ **DGS 20-025AS**	250	13.0	90	1.30	7.5	26.0	3.10	X011b
○ **DGS 3-030AS**	300	3.5	90	1.60	2.0	3.7	8.50	X004
○ **DGSK 20-018A**	180	11.0	90	0.80	5.0	22.0	4.40	X005a
○ **DGSK 40-025A**	250	13.0	90	1.30	7.5	26.0	3.10	X005a

Package style

Outline drawings on pages O-30...O-52

X004 **TO-252AA**
Weight = 0.3 g

X005a **TO-220AB**
Weight = 2 g

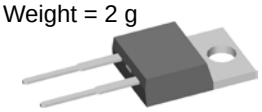


Low leakage current

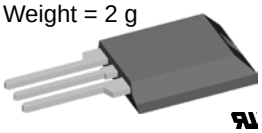
Second generation

Type ○ Not for new designs ➢ New	V_{RRM} V	I_{DC} d = 0.5 A	@ T_C °C	V_F typ. @ I_F T_{VJ} = 125°C V	 A	C_J pF	R_{thJC} K/W	Fig. No.
○ **DGS 17-03CS**	300	17.5	90	1.10	7.5	10.7	4.40	X004
○ **DGSK 28-025CS**	250	14.0	90	1.20	7.5	15.0	4.40	X011b
○ **DGSK 40-025CS**		20.0	90	1.10	10.0	24.0	3.10	
○ **DGSK 36-03CS**	300	17.5	90	1.10	7.5	10.7	4.40	
○ **DGSS 10-06CC**	2x 300	15.0	90	1.20	10.0	10.7	5.20	X010a
○ **DGSS 20-06CC**		23.0	90	1.20	20.0	16.0	3.50	

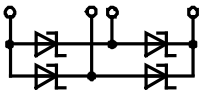
X005b **TO-220AC**
Weight = 2 g



X010a **ISOPLUS220™**
Weight = 2 g



Silicon Carbide Schottky Diodes

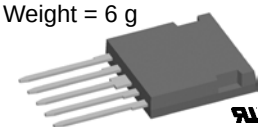


No reverse recovery

Type ➢ New	V_{RRM} V	I_{DC} d = 0.5 A	@ T_C °C	V_F typ. @ I_F T_{VJ} = 125°C V	 A	C_J pF	R_{thJC} K/W	Fig. No.
FBS 10-0 6SC	600	3.0	90	1.70	4.0	9.0	8.00	X024a
FBS 16-06SC		5.0	90	1.50	6.0	21.0	5.60	

X011b **TO-263AB**
Weight = 2 g

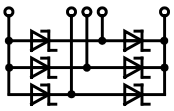
X024a **ISOPLUS i4-PAC™**
Weight = 6 g

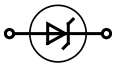


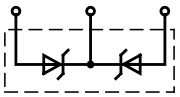
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

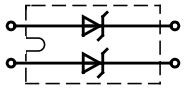
Schottky Diodes

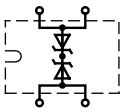
I_{FAV} = 6 - 2x 200 A


FUS...


DSS...


DSSK...


DSS 2x...


DSS 2x...

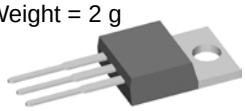
Type ➢ New	V_{RRM} V	I_{FAV} @ T_C d = 0.5 A °C	V_F @ I_F T_{VJ} = 125°C V A	E_{AS} mJ	I_{AR} A	T_{VJM} °C	R_{thJC} K/W	Fig. No.
DSS 40-0008D	8	40 135	0.23 40	80	4.0	150	0.80	X014a
DSSK 80-0008D		2x 40 135	0.23 40	80	4.0	150	0.80	X014a
DSS 2x200-0008D①		2x 200 100	0.15 100	80	4.0	150	0.40	X027b
DSS 20-0015B	15	20 135	0.33 20	tbd	tbd	150	1.40	X005b
DSSK 40-0015B		2x 20 135	0.32 20	tbd	tbd	150	1.40	X014a
DSSK 70-0015B		2x 35 130	0.33 35	61	2.5	150	1.10	X014a
DSS 6-0025BS	25	6 140	0,30 6	tbd	tbd	150	3.00	X004
DSS 25-0025B		25 125	0.44 25	tbd	tbd	150	1.40	X005b
DSSK 18-0025BS		2x 10 140	0.37 10	tbd	tbd	150	1.70	X011b
DSSK 38-0025B		2x 20 130	0.40 20	tbd	tbd	150	1.40	X005a
DSSK 38-0025BS		2x 20 130	0.40 20	tbd	tbd	150	1.40	X011b
DSSK 48-0025B		2x 25 130	0.35 20	tbd	tbd	150	1.20	X005a
DSSK 50-0025B		2x 25 125	0.42 25	tbd	tbd	150	1.40	X014a
DSSK 80-0025B		2x 40 130	0.39 40	10	6.0	150	0.80	X014a
DSSK 48-003B	30	2x 25 130	0.35 20	tbd	tbd	150	1.20	X005a
DSSK 48-003BS		2x 25 130	0.35 20	tbd	tbd	150	1.20	X011b
DSSK 70-003B		2x 35 125	0.39 35	tbd	tbd	150	1.10	X014a
DSSK 80-003B		2x 40 130	0.39 40	10	6.0	150	0.80	X014a
DSS 6-0045AS	45	6 165	0.50 6	24	1.3	175	3.00	X004
DSS 10-0045B		10 135	0.46 10	24	1.3	150	1.70	X005b
DSS 16-0045A		16 160	0.56 16	32	1.5	175	1.40	X005b
DSS 16-0045AS		16 160	0.56 16	32	1.5	175	1.40	X011b
DSS 25-0045A		25 155	0.56 25	46	1.8	175	1.10	X005b
DSS 60-0045B		60 100	0.57 60	57	2.0	150	0.80	X014b
DSSK 20-0045AM		2x 10 145	0.56 10	11	1.5	175	4.30	X007a
DSSK 20-0045B		2x 10 135	0.45 10	24	1.3	150	1.70	X005a
DSSK 28-0045BS		2x 15 135	0.43 15	32	1.5	150	1.40	X011b
DSSK 60-0045A		2x 30 150	0.60 30	46	1.8	175	1.10	X014a
DSSK 60-0045B		2x 30 120	0.44 30	46	1.8	150	1.10	X014a
DSSK 80-0045B		2x 40 125	0.45 40	57	2.0	150	0.80	X014a
DSS 2x61-0045A		2x 60 105	0.65 60	57	2.0	150	0.80	X027a
DSS 2x81-0045B		2x 80 75	0.64 80	57	2.0	150	0.80	X027a
DSS 2x121-0045B		2x 120 100	0.59 120	112	2.8	150	0.40	X027a
DSS 2x160-0045A①		2x 160 100	0.73 160	112	2.8	150	0.30	X027b
FUS 45-0045B		45 90	typ. 0.5 15	tbd	tbd	150	3.10	X024a
DSS 10-006A	60	10 160	0.62 10	0.05	0.1	175	1.60	X005b
DSSK 28-006BS		2x 15 135	0.52 15	5	1.0	150	1.40	X011b
DSSK 40-006B		2x 20 130	0.46 20	20	2.0	150	1.10	X014a
DSSK 80-006B		2x 40 120	0.51 40	20	2.0	150	0.80	X014a
DSSK 80-006BR		2x 40 120	0.51 40	20	2.0	150	0.80	X016a

① non isolated base plate

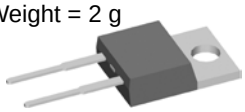
Package style
Outline drawings
on pages O-30...O-52

X004 **TO-252AA**
Weight = 0.3 g

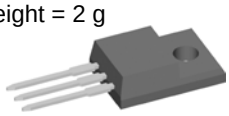
X005a **TO-220AB**
Weight = 2 g



X005b **TO-220AC**
Weight = 2 g

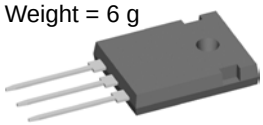


X007a **TO-220ABFP**
Weight = 2 g

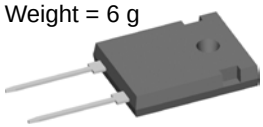


X011b **TO-263AB**
Weight = 2 g

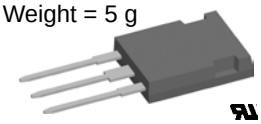
X014a **TO-247AD**
Weight = 6 g



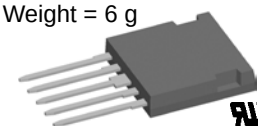
X014b **TO-247AD**
Weight = 6 g



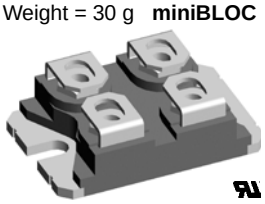
X016a **ISOPLUS247™**
Weight = 5 g



X024a **ISOPLUS i4-PAC™**
Weight = 6 g



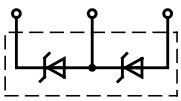
X027a/b **SOT-227B/UI**
Weight = 30 g **miniBLOC**

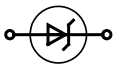


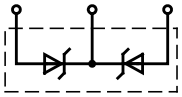
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

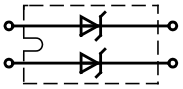
Schottky Diodes

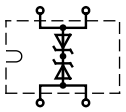
I_{FAV} = 6 - 2x 160 A


DSSS...


DSS...


DSSK...


DSS 2x...


DSS 2x...

Type ➢ New	V_{RRM} V	I_{FAV} d = 0.5 A	@ T_C °C	V_F T_{VJ} = 125°C V	@ I_F A	E_{AS} mJ	I_{AR} A	T_{VJM} °C	R_{thJC} K/W	Fig. No.
DSSK 40-008B	80	2x 20	130	0.52	20	20.0	2.0	150	1.10	X014a
DSSS 35-008AR	2x 80	35	150	0.68	35	60.0	2.0	175	0.80	X016a
DSSK 70-008A		2x 35	150	0.64	35	tbd	tbd	175	0.80	X014a
DSSK 70-008AR		2x 35	150	0.64	35	61.0	3.5	175	0.80	X016a
DSS 2x111-008A		2x 110	105	0.72	100	19.0	1.4	150	0.40	X027a
DSS 10-01A	100	10	160	0.66	10	1.3	0.8	175	1.70	X005b
DSS 10-01AS		10	160	0.66	10	1.3	0.8	175	1.70	X011b
DSS 16-01A		16	155	0.65	16	5.0	1.0	175	1.40	X005b
DSS 16-01AS		16	155	0.65	16	5.0	1.0	175	1.40	X011b
DSS 20-01AC		20	140	0.76	20	7.0	0.8	175	1.70	X010b
DSSS 30-01AR	2x 100	30	155	0.63	30	11.0	1.5	175	0.80	X016a
DSSK 16-01A		2x 8	165	0.63	8	1.3	0.8	175	1.70	X005a
DSSK 16-01AS		2x 8	165	0.63	8	1.3	0.8	175	1.70	X011b
DSSK 28-01A		2x 15	160	0.64	15	5.0	1.0	175	1.40	X005a
DSSK 28-01AS		2x 15	160	0.64	15	5.0	1.0	175	1.40	X011b
DSSK 30-01A		2x 15	160	0.63	15	5.0	1.0	175	1.40	X014a
DSSK 50-01A		2x 25	155	0.64	25	5.0	1.0	175	1.10	X014a
DSS 2x41-01A		2x 40	110	0.70	40	5.0	1.0	150	1.10	X027a
DSS 2x61-01A		2x 60	105	0.74	60	11.0	1.5	150	0.80	X027a
DSS 2x160-01A ①		2x 160	95	0.81	160	11.0	1.5	150	0.30	X027b
DSS 6-015AS	150	6	160	0.62	6	0.05	0.1	175	3.00	X004
DSSK 20-015A		2x 10	165	0.65	10	0.2	0.2	175	1.40	X005a
DSSK 50-015A		2x 25	150	0.68	25	tbd	tbd	175	1.10	X014a
DSSK 60-015A		2x 30	155	0.66	30	0.8	0.4	175	0.80	X014a
DSSK 60-015AR		2x 30	155	0.66	30	0.8	0.4	175	0.80	X016a
DSS 2x101-015A		2x 100	110	0.77	100	0.8	0.4	150	0.40	X027a
DSSK 10-018A	180	2x 5	165	0.62	5	tbd	tbd	175	1.70	X005a
DSSK 30-018A		2x 15	150	0.72	15	tbd	tbd	175	1.70	X014a
DSSK 60-02A	200	2x 30	155	0.70	30	0.8	0.4	175	0.80	X014a
DSSK 60-02AR		2x 30	155	0.70	30	0.8	0.4	175	0.80	X016a
DSS 2x101-02A		2x 100	105	0.84	100	tbd	tbd	150	0.40	X027a

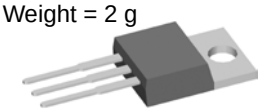
Data per diode unless otherwise specified

① non isolated base plate

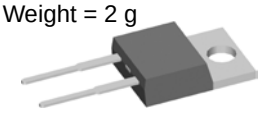
Package style
Outline drawings
on pages O-30...O-52

X004 **TO-252AA**
Weight = 0.3 g

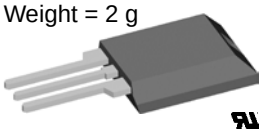
X005a **TO-220AB**
Weight = 2 g



X005b **TO-220AC**
Weight = 2 g

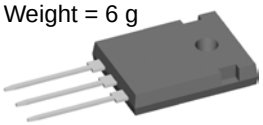


X010a **ISOPLUS220™**
Weight = 2 g

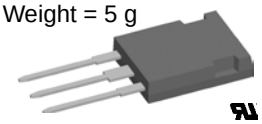


X011b **TO-263AB**
Weight = 2 g

X014a **TO-247AD**
Weight = 6 g



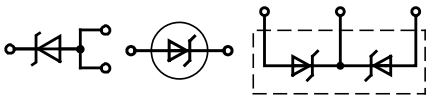
X016a **ISOPLUS247™**
Weight = 5 g



X027a/b **SOT-227B/UI**
Weight = 30 g **miniBLOC**

Schottky Gen² Diodes

I_{FAV} = 1 - 2x 60 A



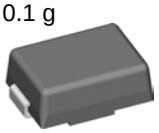
DS...IM... DS...I... DS...C...

Type ➢ New	V_{RRM} V	I_{FAV} @ T_C d = 0.5 A °C	V_F @ I_F T_{VJ} = 125°C V A	T_{VJM} °C	R_{thJC} K/W	Fig. No.
DSB 20I15PA	15	20 130	0.39 20	150	1.75	X005b
DSB 40C15PB		2x 20 130	0.39 20		1.75	X005a
DSB 30C30PB	30	2x 15 130	0.44 15	150	1.75	X005a
➢ **DSB 60C30PB**		2x 30 130	0.49 30		0.85	X005a
DSB 60C30HB		2x 30 125	0.47 30		0.95	X014a
DSB 1I40SA	40	1 125	0.40 1	150	R_{thJL}40	X001
DSB 2I40SB		2 125	0.42 2		R_{thJL}25	X002
DSB 10I45PM	45	10 115	0.53 10	150	4.50	X007b
DSA 20C45PB		2x 10 155	0.62 10	175	2.60	X005a
DSA 15I45PA		15 155	0.63 15	175	1.75	X005b
DSA 15IM45IB		15 155	0.63 15	175	1.75	X008
DSB 15IM45IB		15 125	0.55 15	150	1.75	X008
DSA 30C45PB		2x 15 155	0.63 15	175	1.75	X005a
DSB 30C45PB		2x 15 125	0.55 15	150	1.75	X005a
DSA 30C45HB		2x 15 155	0.62 15	175	1.75	X014a
DSB 30C45HB		2x 15 125	0.54 15	150	1.75	X014a
DSA 60C45PB		2x 30 150	0.67 30	175	0.85	X005a
DSB 60C45PB		2x 30 125	0.60 30	150	0.85	X005a
DSA 60C45HB		2x 30 150	0.66 30	175	0.95	X014a
DSB 60C45HB		2x 30 125	0.58 30	150	0.95	X014a
DSA 80C45HB		2x 40 150	0.67 40	175	0.70	X014a
DSB 80C45HB		2x 40 125	0.58 40	150	0.70	X014a
DSB 1I60SA	60	1 125	0.50 1	150	R_{thJL}40	X001
DSB 2I60SB		2 125	0.52 2	150	R_{thJL}25	X002
DSA 20C60PN		2x 10 140	0.68 10	175	4.50	X007a
DSB 20C60PN		2x 10 115	0.63 10	150	4.50	X007a
DSA 30C60PB		2x 15 150	0.70 15	175	1.75	X005a
DSB 30C60PB		2x 15 125	0.69 15	150	1.75	X005a
DSA 60C60PB		2x 30 150	0.74 30	175	0.85	X005a
DSB 60C60PB		2x 30 125	0.69 30	150	0.85	X005a
DSA 60C60HB		2x 30 150	0.72 30	175	0.95	X014a
DSB 60C60HB		2x 30 125	0.67 30	150	0.95	X014a
DSA 1I100SA	100	1 125	0.65 1	175	R_{thJL}40	X001
DSA 2I100SB		2 125	0.65 2	175	R_{thJL}25	X002
➢ **DSA 10I100PM**		10 140	0.72 10	175	4.50	X007b
DSA 20C100PB		2x 10 150	0.72 10	175	2.60	X005a
DSA 20C100PN		2x 10 140	0.72 10	175	4.50	X007a
DSA 30C100PB		2x 15 150	0.73 15	175	1.75	X005a
DSA 30C100PN		2x 15 120	0.73 15	175	4.20	X007a
➢ **DSA 30C100HB**		2x 15 150	0.72 15	175	1.75	X014a
DSA 30C100QB		2x 15 150	0.72 15	175	1.75	X017a
DSA 50C100HB		2x 25 155	0.72 25	175	0.95	X014a
DSA 50C100QB		2x 25 155	0.72 25	175	0.95	X017a
➢ **DSA 30I100PA**		30 150	0.78 30	175	0.85	X005b
DSA 60C100PB		2x 30 150	0.78 30	175	0.85	X005a
DSA 70C100HB		2x 35 150	0.74 35	175	0.70	X014a
DSA 80C100PB		2x 40 150	0.73 40	175	0.60	X005a
DSA 20C150PB	150	2x 10 150	0.74 10	175	2.60	X005a
DSA 20C150PN		2x 10 140	0.74 10	175	4.50	X007a
DSA 30C150PB		2x 15 150	0.75 15	175	1.75	X005a
➢ **DSA 30C150HB**		2x 15 150	0.74 15	175	1.75	X014a
DSA 50C150HB		2x 25 155	0.74 25	175	0.95	X014a
➢ **DSA 30I150PA**		30 150	0.80 30	175	0.85	X005b
DSA 70C150HB		2x 35 150	0.74 35	175	0.70	X014a
DSA 120C150QB		2x 60 150	0.80 60	175	0.40	X017a
➢ **DSA 30C200PB**	200	2x 15 150	0.88 15	175	1.75	X005a
DSA 90C200HB		2x 45 150	0.88 45	175	0.55	X014a

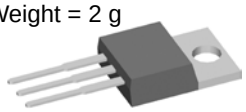
Package style
Outline drawings
on pages O-30...O-52

X001 **SMA (DO-214AC)**
Weight = 0.07 g

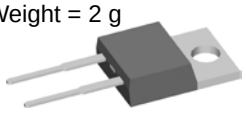
X002 **SMB (DO-214AA)**
Weight = 0.1 g



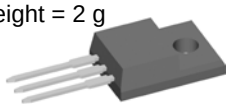
X005a **TO-220AB**
Weight = 2 g



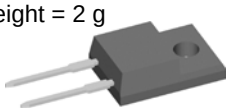
X005b **TO-220AC**
Weight = 2 g



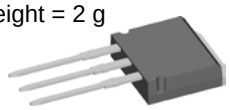
X007a **TO-220ABFP**
Weight = 2 g



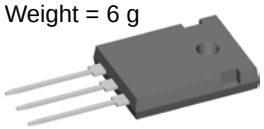
X007b **TO-220ACFP**
Weight = 2 g



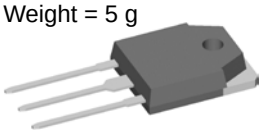
X008 **TO-262AA (i2-PAC)**
Weight = 2 g



X014a **TO-247AD**
Weight = 6 g



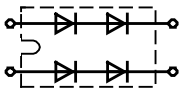
X017a **TO-3P**
Weight = 5 g



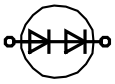
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

HiPerDyn™FRED

Series connected diodes for high switching frequencies;
packages isolated (2500 V_{RMS})



DSEP 2x...-....C

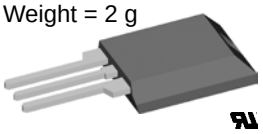


DPH...IS...
DSEP/DSS...-...C

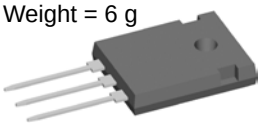
Type ➢ New	V_{RRM} V	I_{FAV} @ T_C d = 0.5 A	°C	V_F @ T_{VJ} I_F = I_{FAV} V	°C	t_{rr} typ. T_{VJ} = 25°C ns	I_{RM} typ. T_{VJ} = 100°C A	@ -di/dt A/µs	T_{VJM} °C	R_{thJC} K/W	Fig. No.	Package style Outline drawings on pages O-30...O-52
DSS 17-06CR *	600	17	95	2.71	125	45	4.0	100	175	1.40	X016b	
➢ **DPH 30IS600HI**		30	135	1.89	150	30	2.0	200	175	0.55		
DSEP 15-12CR	1200	15	130	2.67	150	20	4.0	100	175	1.00		
DSEP 30-12CR		30	115	3.10	150	20	4.0	100	175	0.60		
DSEP 2x25-12 C	1200	2x 25	90	3.00	125	20	3.0	100	150	0.60	X027a	

* series connected Schottky Diodes

X010a **ISOPLUS220™**
Weight = 2 g

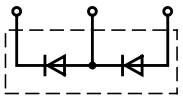


X014a **TO-247AD**
Weight = 6 g



Dual Ultrafast Diodes

Series connected diodes for high switching frequencies
with middle connection; packages isolated (2500 V_{RMS})

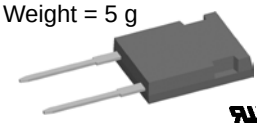


DSEE / DPG ...P..

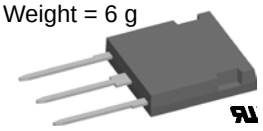
Type ○ Not for new designs ➢ New	V_{RRM} V	I_{FAV} @ T_C d = 0.5 A	°C	V_F @ T_{VJ} I_F = I_{FAV} V	°C	t_{rr} typ. T_{VJ} = 25°C ns	I_{RM} typ. T_{VJ} = 100°C A	@ -di/ dt A/µs	T_{VJM} °C	R_{thJC} K/W	Fig. No.
➢ **DPG 30P300PJ**	2x 300	30	135	0.98	150	35	3	200	175	1.05	X010a
➢ **DPG 10P400PJ**	2x 400	10	150	1.02	150	45	4	200	175	2.05	
○ **DSEE 8-08CC**		10	130	1.12	125	30	2.0	100	175	2.75	
DSEE 15-12CC	2x 600	15	100	1.50	125	35	4.0	100	175	1.60	
DSEE 29-12CC		30	90	1.75	125	30	4.0	100	175	0.90	
DSEE 30-12A ①		30	90	1.78	125	30	4.0	100	175	0.90	X014a
DSEE 55-24N1F	2x 1200	55	90	1.50	125	220 125°C	79.0 125°C	750	150	0.63	X024b

① Non isolated base plate

X016b **ISOPLUS247™**
Weight = 5 g



X024b **ISOPLUS i4-PAC™**
Weight = 6 g

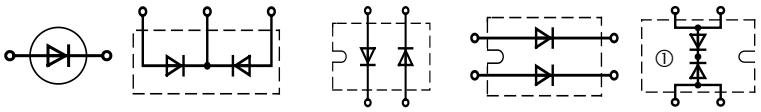


X027a **SOT-227B**
Weight = 30 g **miniBLOC**

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

HiPerFRED™ Diodes

I_{FAV} = 8 - 2x 120 A



DSEP... DSEC... DSEP 2x...0-... DSEP 2x...1-... DSEC

Type ○ Not for new designs ➢ New	V_{RRM} V	I_{FAV} d = 0.5 A	T_C °C	I_{FSM} 10 ms 45°C A	V_F T_{VJ} = 150°C V	@ I_F A	t_{rr} T_{VJ} = 25°C ns	I_{RM} typ. T_{VJ} = 100°C A	-di/dt typ. A/µs	T_{VJM} °C	R_{thJC} K/W	Fig. No.
○ **DSEP 8-03AS**	300	8	152	60	1.13	8	30	2.4	100	175	2.50	X004
➢ **DSEP 30-03AS**		30	135	300	1.02	30	35	3.0	200	175	0.85	X011b
➢ **DSEP 40-03AS**		40	120	300	1.11	40	35	3.5	200	175	0.85	X011b
DSEP 6-06AS	600	6	152	40	1.33	6	20	4.4	200	175	2.80	X004
➢ **DSEP 6-06BS**		6	140	40	1.74	6	15	4.4	200	175	2.80	X004
DSEP 8-06A		10	135	50	1.42	10	35	4.4	100	175	2.50	X005b
DSEP 8-06B		10	125	50	1.66	10	30	2.4	100	175	2.50	X005b
DSEP 15-06A		15	140	110	1.35	15	35	4.9	100	175	1.60	X005b
DSEP 15-06B		15	130	110	1.55	15	25	2.6	100	175	1.60	X005b
DSEP 29-06A		30	135	250	1.26	30	35	6.0	100	175	0.90	X005b
DSEP 29-06AS		30	135	250	1.26	30	35	6.0	100	175	0.90	X011b
DSEP 29-06B		30	125	200	1.58	30	30	4.0	100	175	0.90	X005b
DSEP 30-06A		30	135	250	1.25	30	35	6.0	100	175	0.90	X014b
DSEP 30-06B		30	125	250	1.56	30	30	4.0	100	175	0.90	X014b
DSEP 30-06BR		30	115	250	1.56	30	30	4.0	100	175	1.10	X016b
DSEP 60-06A		60	110	600	1.39	60	35	8.3	100	175	0.65	X014b
DSEP 60-06AT		60	110	600	1.39	60	35	8.3	100	175	0.65	X019
DSEP 8-12A	1200	10	115	40	1.96	10	40	4.0	100	175	2.50	X005b
DSEP 12-12A		15	125	90	1.79	15	40	4.5	100	175	1.60	X005b
DSEP 12-12B		15	125	90	2.20	15	35	3.7	100	175	1.60	X005b
DSEP 29-12A		30	115	200	1.81	30	40	8.5	100	175	0.90	X005b
DSEP 30-12A		30	115	200	1.79	30	40	8.5	100	175	0.90	X014b
DSEP 30-12AR		30	110	200	1.79	30	40	8.5	100	175	1.10	X016b
DSEP 60-12A		60	90	500	1.74	60	40	8.5	100	175	0.65	X014b
DSEP 60-12AR		60	85	500	1.74	60	40	8.5	100	175	0.65	X016b
DSEC 16-06A	600	2x 10	135	50	1.42	10	35	3.5	100	175	2.50	X005a
DSEC 16-06AC		2x 8	85	50	1.20	10	35	3.5	100	175	3.00	X010a
DSEC 29-06AC		2x 15	140	110	1.34	15	35	4.0	100	175	1.60	X010a
DSEC 30-06A		2x 15	140	110	1.34	15	35	4.0	100	175	1.60	X014a
DSEC 30-06B		2x 15	125	110	1.59	15	25	2.0	100	175	1.60	X014a
DSEC 59-06BC		2x 30	105	200	1.56	30	30	4.0	100	175	1.10	X010a
DSEC 60-06A		2x 30	135	250	1.25	30	35	6.0	100	175	0.90	X014a
DSEC 60-06B		2x 30	125	250	1.56	30	30	4.0	100	175	0.90	X014a
DSEC 16-12A	1200	2x 10	115	40	1.96	10	40	4.0	100	175	2.50	X005a
➢ **DSEC 16-12AS**		2x 10	115	40	1.96	10	40	4.0	100	175	2.50	X011b
DSEC 30-12A		2x 15	125	90	1.78	15	40	4.5	100	175	1.60	X014a
DSEC 60-12A		2x 30	115	200	1.78	30	40	8.5	100	175	0.90	X014a
DSEC 120-12AK		2x 60	90	500	1.74	60	40	7.0	100	175	0.65	X020a
○ **DSEP 2x31-03A**	300	2x 30	110	300	0.96 125°C	30	30	4.5	100	150	1.15	X027a
○ **DSEP 2x61-03A**		2x 60	75	600	1.26	60	30	4.0	100	150	0.85	
○ **DSEP 2x91-03A**		2x 90	65	1000	1.30	90	30	4.5	100	150	0.60	
○ **DSEP 2x31-04A**	400	2x 30	105	280	1.15	30	30	5.5	100	150	1.15	
DSEP 2x31-06A	600	2x 30	95	250	1.30	30	35	6.0	100	150	1.15	
DSEP 2x31-06B		2x 30	85	250	1.73	30	30	4.0	100	150	1.15	
DSEP 2x61-06A		2x 60	65	600	1.48	60	35	6.5	100	150	0.85	
DSEP 2x91-06A		2x 90	55	1000	1.52	90	35	6.0	100	150	0.60	
DSEP 2x31-12A	1200	2x 30	70	200	1.96	30	40	8.5	100	150	1.15	
DSEP 2x60-12A		2x 60	80	800	1.70	60	40	8.0	100	150	0.60	
DSEP 2x61-12A		2x 60	80	800	1.70	60	40	8.0	100	150	0.60	
○ **DSEP 2x101-04A**	400	2x 100	60	1000	1.24	125	30	5.5	100	150	0.60	
○ **DSEC 240-04A** ①		2x 120	115	2000	1.07	120	30	5.5	100	150	0.20	X027b
DSEC 240-06A ①	600	2x 120	105	2000	1.39	120	35	6.0	100	150	0.20	

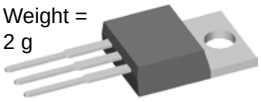
① Non isolated base plate

Package style

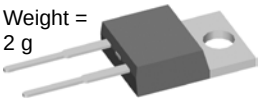
Outline drawings on pages O-30...O-52

X004 **TO-252AA**
Weight = 0.3 g

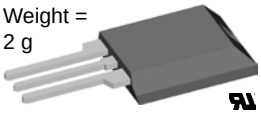
X005a **TO-220AB**
Weight = 2 g



X005b **TO-220AC**
Weight = 2 g

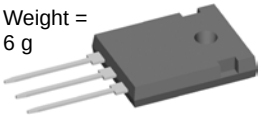


X010a **ISOPLUS220™**
Weight = 2 g

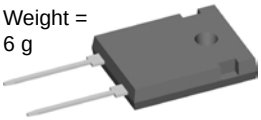


X011b **TO-263AB**
Weight = 2 g

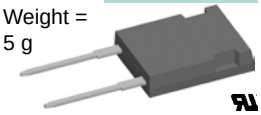
X014a **TO-247AD**
Weight = 6 g



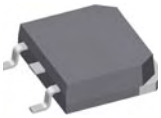
X014b **TO-247AD**
Weight = 6 g



X016b **ISOPLUS247™**
Weight = 5 g



X019 **TO-268AA**
Weight = 5 g

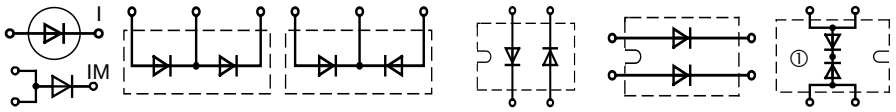


X027a/b **SOT-227B/UI**
Weight = 30 g **miniBLOC**

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

HiPerFRED² Diodes

I_{FAV} = 10 - 2x 200 A



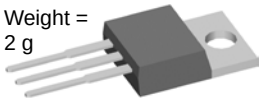
DPF/G/H...I*... DPG...P... DPF/G...C... DPF...XA... DPF...X... DPF...C...

Type	V_{RRM}	I_{FAV}	@ T_C	I_{FSM}	V_F	@ I_F	t_{rr}	I_{RM}	-di/dt	T_{VJM}	R_{thJC}	Fig. No.	Package style
		d = 0.5		10 ms 45°C	T_{VJ} = 150°C		T_{VJ} = 25°C	typ. T_{VJ} = 25°C	typ.				Outline drawings on pages O-30...O-52
➢ New	V	A	°C	A	V	A	ns	A	A/µs	°C	K/W		
DPG 10I200PA	200	10	145	100	0.98	10	35	3.0	200	175	2.30	X005b	
DPG 10I200PM		10	125	100	0.98	10	35	3.0	200	175	4.40	X007b	
DPG 20C200PB		2x 10	145	100	0.98	10	35	3.0	200	175	2.30	X005a	
DPG 20C200PN		2x 10	125	100	0.98	10	35	3.0	200	175	4.40	X007a	
DPG 15I200PA		15	140	150	1.01	15	35	3.0	200	175	1.70	X005b	
DPG 30C200PB		2x 15	140	150	1.01	15	35	3.0	200	175	1.70	X005a	
➢ DPG 30C200PC		2x 15	140	150	1.01	15	35	3.0	200	175	1.70	X011b	
DPG 30C200HB		2x 15	140	150	1.00	15	35	3.0	200	175	1.70	X014a	
➢ DPF 60C200HB		2x 30	tbd	tbd	tbd	30	tbd	tbd	200	175	0.95	X014a	
➢ DPG 60C200HB		2x 30	135	300	1.06	30	35	3.0	200	175	0.95	X014a	
DPG 60C200QB		2x 30	135	300	1.06	30	35	3.0	200	175	0.95	X017a	
➢ DPF 60I200HA		60	tbd	tbd	tbd	60	tbd	tbd	200	175	0.55	X014b	
➢ DPF 120X200NA		2x 60	tbd	tbd	tbd	60	tbd	tbd	200	175	0.60	X027a	
➢ DPF 240X200NA		2x 120	tbd	tbd	tbd	120	tbd	tbd	200	175	0.45	X027a	
DPG 10I300PA	300	10	140	100	0.98	10	35	3.0	200	175	2.30	X005b	
➢ DPG 10IM300UC		10	150	100	0.98	10	35	3.0	200	175	2.30	X004	
DPG 20C300PB		2x 10	145	100	0.98	10	35	3.0	200	175	2.30	X005a	
DPG 20C300PN		2x 10	125	100	0.98	10	35	3.0	200	175	4.40	X007a	
DPG 15I300PA		15	140	150	1.00	15	35	3.0	200	175	1.70	X005b	
DPG 30C300PB		2x 15	140	150	1.00	15	35	3.0	200	175	1.70	X005a	
DPG 30C300PC		2x 15	140	150	1.00	15	35	3.0	200	175	1.70	X011b	
DPG 30C300HB		2x 15	140	150	1.00	15	35	3.0	200	175	1.70	X014a	
➢ DPG 30I300HA		30	135	300	1.06	30	35	3.0	200	175	0.95	X014b	
➢ DPG 30I300PA		30	140	300	1.08	30	35	3.0	200	175	0.85	X005b	
➢ DPG 30P300PJ	2x 300	30	135	450	0.98	30	35	3.0	200	175	1.50	X010a	
DPG 60C300HB		2x 30	135	300	1.06	30	35	3.0	200	175	0.95	X014a	
➢ DPG 60C300HJ		2x 30	140	450	0.96	30	35	3.0	200	175	1.05	X016a	
➢ DPG 60C300PC		2x 30	140	150	1.06	30	35	3.0	200	175	0.85	X011b	
DPG 60C300QB		2x 30	135	300	1.06	30	35	3.0	200	175	0.95	X017a	
➢ DPG 80C300HB		2x 40	135	450	1.07	40	35	3.0	200	175	0.70	X014a	
➢ DPG 60I300HA		60	125	550	1.10	60	35	3.0	200	175	0.55	X014b	
DPG 60IM300PC		60	135	550	1.10	60	35	3.0	200	175	0.45	X011b	
DPG 120C300QB		2x 60	125	550	1.10	60	35	3.0	200	175	0.55	X017a	
DPG 10I400PA	400	10	145	100	1.04	10	45	4.0	200	175	2.30	X005b	
DPG 10I400PM		10	120	100	1.04	10	45	4.0	200	175	4.40	X007b	
➢ DPG 10P400PJ	2x 400	10	150	130	1.02	10	45	4.0	200	175	2.05	X010a	
DPG 20C400PB		2x 10	145	100	1.04	10	45	4.0	200	175	2.30	X005a	
➢ DPG 20C400PN		2x 10	120	100	1.04	10	45	4.0	200	175	4.40	X007a	
➢ DPG 15I400PM		15	130	130	1.08	15	45	4.0	200	175	4.20	X007b	
➢ DPG 30C400PB		2x 15	140	150	1.08	15	45	4.0	200	175	1.70	X005a	
DPG 30C400HB		2x 15	140	150	1.07	15	45	4.0	200	175	1.70	X014a	
➢ DPG 30I400HA		30	135	300	1.13	30	45	4.0	200	175	0.95	X014b	
➢ DPF 60XA400NA		2x 30	tbd	tbd	tbd	30	60	6.0	200	175	1.15	X027a	
➢ DPG 60C400HB		2x 30	135	300	1.13	30	45	4.0	200	175	0.95	X014a	
DPG 60C400QB		2x 30	135	300	1.13	30	45	4.0	200	175	0.95	X017a	
➢ DPG 80C400HB		2x 40	135	450	1.14	40	45	4.0	200	175	0.70	X014a	
DPG 60I400HA		60	120	600	1.22	60	45	4.0	200	175	0.55	X014b	
➢ DPF 60IM400HB		60	130	600	1.09	60	60	6.0	200	175	0.55	X014a	
DPG 60IM400QB		60	120	600	1.22	60	45	4.0	200	175	0.55	X017a	
➢ DPF 120X400NA		2x 60	tbd	tbd	tbd	60	60	6.0	200	175	0.60	X027a	
➢ DPF 240X400NA		2x 120	tbd	tbd	tbd	120	60	6.0	200	175	0.45	X027a	
➢ DPF 400C400NB①		2x 200	tbd	tbd	tbd	200	60	6.0	200	175	tbd	X027b	
➢ DPH 30IS600HI	600	30	135	140	1.89	30	30	2.0	200	175	0.55	X016b	

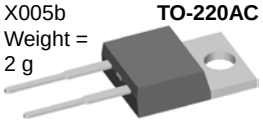
① Non isolated base plate

X004 **TO-252AA**
Weight = 0.3 g

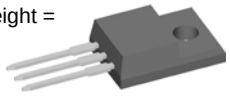
X005a **TO-220AB**
Weight = 2 g



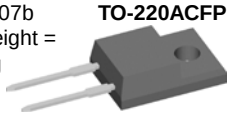
X005b **TO-220AC**
Weight = 2 g



X007a **TO-220ABFP**
Weight = 2 g

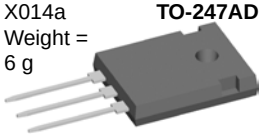


X007b **TO-220ACFP**
Weight = 2 g

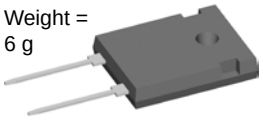


X011b **TO-263AB**
Weight = 2 g

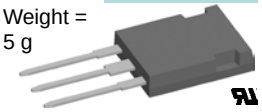
X014a **TO-247AD**
Weight = 6 g



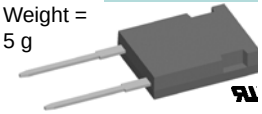
X014b **TO-247AD**
Weight = 6 g



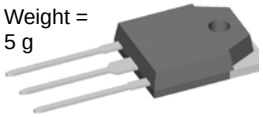
X016a **ISOPLUS247™**
Weight = 5 g



X016b **ISOPLUS247™**
Weight = 5 g

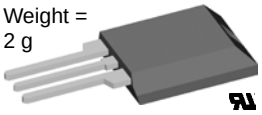


X017a **TO-3P**
Weight = 5 g



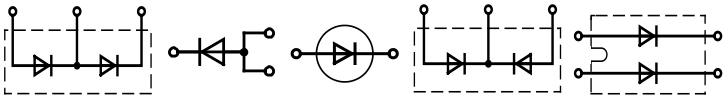
X027a/b **SOT-227B/UI**
Weight = 30 g **miniBLOC**

X010a **ISOPLUS220™**
Weight = 2 g



SONIC-FRD™ Diodes

I_{FAV} = 5 - 2x 60 A
- ultrasoft and fast recovery
- very low temperature dependence



DHH... DHG...IM... DHG... I... DHG... C... DHG... X...

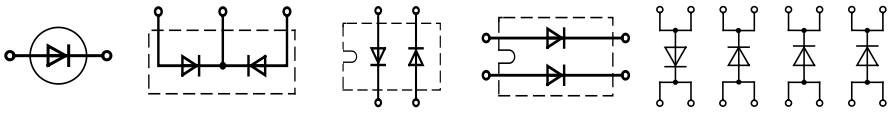
Type	V_{RRM}	I_{FAV}	@ T_C	I_{FSM}	V_F	@ I_F	t_{rr}	I_{RM}	-di/dt	T_{VJM}	R_{thJC}	Fig. No.	Package style
		d = 0.5		10 ms 45°C	T_{VJ} = 150°C		T_{VJ} = 25°C	typ. T_{VJ} = 25°C	typ.				Outline drawings on pages O-30...O-52
➢ New	V	A	°C	A	V	A	ns	A	A/µs	°C	K/W		
➢ **DHG 5I600PA**	600	5	105	40	2.09	5	35	2.0	100	150	3.15	X005b	X005a **TO-220AB** Weight = 2 g
➢ **DHG 5I600PM**		5	90	40	2.09	5		2.0	100		4.20	X007b	
➢ **DHG 10C600PB**		2x 5	105	40	2.09	5		2.0	100		3.15	X005a	
DHG 10I600PA		10	95	100	2.21	10		4.0	200		1.80	X005b	
DHG 10I600PM		10	30	100	2.21	10		4.0	200		4.00	X007b	
➢ **DHG 20C600PB**		2x 10	95	100	2.21	10		4.0	200		1.80	X005a	X005b **TO-220AC** Weight = 2 g
DHG 20C600QB		2x 10	100	100	2.20	10		4.0	200		1.80	X017a	
➢ **DHG 20I600PA**		20	100	150	2.15	20		8.0	400		0.80	X005b	
➢ **DHG 20I600HA**		20	100	150	2.14	20		8.0	400		0.90	X014b	
➢ **DHG 40C600PB**		2x 20	100	150	2.15	20		8.0	400		0.80	X005a	X007b **TO-220ACFP** Weight = 2 g
➢ **DHG 40C600HB**		2x 20	100	150	2.14	20		8.0	400		0.90	X014a	
➢ **DHG 50X600NA**		2x 25	70	200	2.03	25		12.0	600		1.20	X027a	
DHG 30I600PA		30	95	200	2.22	30		12.0	600		0.60	X005b	
➢ **DHG 30IM600PC**		30	95	200	2.20	30		12.0	600		0.60	X011b	X011b **TO-263AB** Weight = 2 g
DHG 30I600HA		30	85	200	2.20	30		12.0	600		0.70	X014b	
DHG 60C600HB		2x 30	85	200	2.20	30		12.0	600		0.70	X014a	
➢ **DHG 100X600NA**		2x 50	80	430	2.00	50		20.0	1200		0.60	X027a	
➢ **DHG 60I600HA**		60	95	430	2.10	60		24.0	1200		0.30	X014b	
➢ **DHG 10I1200PA**	1200	10	95	70	2.37	10	75	8.5	350	150	1.80	X005b	X014a **TO-247AD** Weight = 6 g
➢ **DHG 10I1200PM**		10	30	70	2.37	10		8.5	350		4.00	X007b	
➢ **DHG 20C1200PB**		2x 10	95	70	2.37	10		8.5	350		1.80	X005a	
➢ **DHG 20I1200PA**		20	100	135	2.31	20		19.0	750		0.80	X005b	
➢ **DHG 20I1200HA**		20	95	135	2.30	20		19.0	750		0.90	X014b	
➢ **DHG 40C1200HB**		2x 20	95	135	2.30	20		19.0	750		0.90	X014a	X014b **TO-247AD** Weight = 6 g
➢ **DHG 50X1200NA**		2x 25	65	180	2.24	25		25.0	1000		1.20	X027a	
DHG 30I1200HA		30	85	180	2.40	30		25.0	1000		0.70	X014b	
➢ **DHG 100X1200NA**		2x 50	70	430	2.20	50		50.0	2500		0.60	X027a	
➢ **DHG 60I1200HA**		60	95	430	2.29	60		50.0	2500		0.30	X014b	
DH 20-18A	1800	20	80	150	2.94	20	150	16.0	200	150	0.90	X014b	X024a **ISOPLUS i4-PAC™** Weight = 6 g
DH 40-18A	1800	40	85	350	2.69	40		33.0	400		0.45	X014b	
DH 60-14A	1400	60	80	650	2.65	60		50.0	600		0.30	X014b	
DH 60-16A	1600	60	80	650	2.65	60		50.0	600		0.30	X014b	
DH 60-18A	1800	60	80	650	2.65	60		50.0	600		0.30	X014b	
DHH 55-36N1F	2x 1800	60	80	650	2.65	60		50.0	600		0.30	X024b	X017a **TO-3P** Weight = 5 g
DH 2x61-18A	1800	2x 60	25	650	2.61	60		50.0	600		0.60	X027a	X027a **SOT-227B** Weight = 30 g **miniBLOC**

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

FRED Diodes

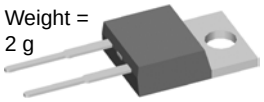
Fast Recovery Epitaxial Diodes

I_{FAV} = 8 - 2x 165 A

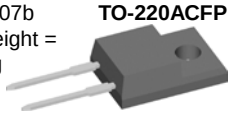


Type	V_{RRM}	I_{FAV}	@ T_C	I_{FRMS}	I_{FSM}	V_F	@ I_F	t_{rr} typ.	I_{RM} typ.	-di/dt typ.	R_{thJC}	Fig. No.	Package style
		d = 0.5			10 ms 45°C	T_{VJ} = 150°C		T_{VJ} = 25°C	T_{VJ} = 100°C				Outline drawings on pages O-30...O-52
➢ New	V	A	°C	A	A	V	A	ns	A	A/µs	K/W		
DSEI 8-06A	600	8	115	16	100	1.30	8	35	2.5	64	2.50	X005b	
DSEI 8-06AS	600	8	115	16	100	1.30	8	35	2.5	64	2.50	X011b	
➢ **DFE 10I600PM**	600	10	100	16	100	1.30	10	35	2.5	64	4.20	X007b	
DSEI 12-06A	600	14	100	25	100	1.50	16	35	4.0	100	2.00	X005b	
DSEI 12-10A	1000	12	100	25	75	2.10	12	50	6.5	100	1.60		
DSEI 12-12A	1200	11	100	25	75	2.20	12	50	6.5	100	1.60		
DSEI 20-12A	1200	17	85	70	130	1.87	12	40	7.0	100	1.60	X005b	
DSEI 19-06AS	600	20	65	25	100	1.50	16	35	4.0	100	2.00	X011b	
DSEI 36-06AS	600	37	85	70	300	1.40	37	35	10.0	240	1.00	X011b	
DSEI 30-06A	600	37	85	70	300	1.40	37	35	10.0	240	1.00	X014b	
DSEI 30-10A	1000	30	85	70	200	2.00	36	35	16.0	240	0.90		
DSEI 30-10AR	1000	30	85	70	200	2.00	36	35	16.0	240	0.90	X016b	
DSEI 30-12A	1200	26	85	70	200	2.20	30	40	16.0	240	0.90	X014b	
DSEI 60-02A	200	69	85	98	600	0.88	60	35	8.0	200	0.75	X014b	
DSEI 60-06A	600	60	70	100	550	1.50	70	35	19.0	480	0.75		
DSEI 60-10A	1000	60	60	100	500	1.80	60	35	32.0	480	0.66		
DSEI 60-12A	1200	52	60	100	500	2.00	60	40	32.0	480	0.66		
DSEI 120-06A	600	126	70	100	600	1.12	70	35	17.0	200	0.35	X014b	
DSEI 120-12A	1200	109	60	100	600	1.55	70	40	25.0	200	0.35		
DSEK 60-02A	200	2x 34	115	50	325	0.85	30	35	4.0	100	1.00	X014a	
DSEK 60-02AR	200	2x 34	115	50	325	0.85	30	35	4.0	100	1.00	X016a	
DSEK 60-06A	600	2x 30	85	50	300	1.40	37	35	10.0	240	1.00	X014a	
DSEK 60-12A	1200	2x 26	85	50	200	2.20	30	40	16.0	240	0.90		
DSEI 2x30-04C	400	2x 30	85	70	300	1.40	30	35	10.0	240	1.25	X027a	
DSEI 2x30-06C	600	2x 30	85	70	300	1.40	30	35	10.0	240	1.25		
DSEI 2x30-10B	1000	2x 30	50	70	200	2.00	30	35	16.0	240	1.25		
DSEI 2x30-12B	1200	2x 28	50	70	200	2.20	30	40	16.0	240	1.25		
DSEI 2x31-06P	600	2x 30	85	70	300	1.40	30	35	10.0	240	1.25	X101	
DSEI 2x31-10P	1000	2x 30	50	70	200	2.00	30	35	16.0	240	1.25		
DSEI 2x31-12P	1200	2x 28	50	70	200	2.20	30	40	16.0	240	1.25		
DSEI 2x31-04C	400	2x 30	85	70	300	1.40	30	35	10.0	240	1.25	X027a	
DSEI 2x31-06C	600	2x 30	85	70	300	1.40	30	35	10.0	240	1.25		
DSEI 2x31-10B	1000	2x 30	50	70	200	2.00	30	35	16.0	240	1.25		
DSEI 2x31-12B	1200	2x 28	50	70	200	2.20	30	40	16.0	240	1.25		
DSEI 2x61-06P	600	2x 60	70	100	550	1.50	60	35	19.0	480	0.70	X101	
DSEI 2x61-10P	1000	2x 60	50	100	500	1.80	60	35	32.0	480	0.70		
DSEI 2x61-12P	1200	2x 52	50	100	450	2.15	60	40	32.0	540	0.70		
DSEI 2x61-02A	200	2x 71	85	100	950	0.88	60	35	8.0	200	0.80	X027a	
DSEI 2x61-04C	400	2x 60	70	100	550	1.50	60	35	19.0	480	0.70		
DSEI 2x61-06C	600	2x 60	70	100	550	1.50	60	35	19.0	480	0.70		
DSEI 2x61-10B	1000	2x 60	50	100	500	1.80	60	35	32.0	480	0.70		
DSEI 2x61-12B	1200	2x 52	50	100	450	2.15	60	40	32.0	480	0.70		
DSEI 2x121-02A	200	2x 123	70	150	1200	0.95	120	35	12.0	200	0.50	X027a	
DSEI 2x101-06P	600	2x 96	70	150	1200	1.17	100	40	19.0	200	0.50	X102	
DSEI 2x101-12P	1200	2x 91	50	130	900	1.61	100	40	24.0	200	0.50		
DSEI 2x101-06A	600	2x 96	70	150	1200	1.17	100	35	19.0	200	0.50	X027a	
DSEI 2x101-12A	1200	2x 91	50	130	900	1.61	100	40	24.0	200	0.50		
DSEI 2x161-02P	200	2x 165	70	270	1200	1.05	200	35	20.0	200	0.29	X102	
DSEI 2x161-06P	600	2x 147	70	270	1200	1.40	200	35	45.0	200	0.29		
DSEI 2x161-12P	1200	2x 128	70	270	1200	1.75	200	40	48.0	200	0.29		

X005b **TO-220AC**
Weight = 2 g

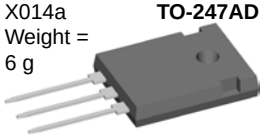


X007b **TO-220ACFP**
Weight = 2 g

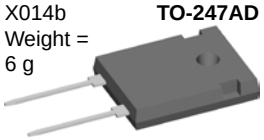


X011b **TO-263AB**
Weight = 2 g

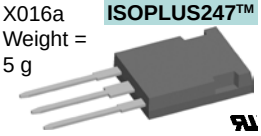
X014a **TO-247AD**
Weight = 6 g



X014b **TO-247AD**
Weight = 6 g

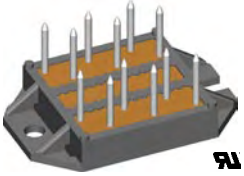


X016a **ISOPLUS247™**
Weight = 5 g



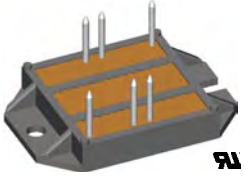
X027a **SOT-227B miniBLOC**
Weight = 30 g

X101 **ECO-PAC 1**
Weight = 19 g



See data sheet for pin arrangement

X102 **ECO-PAC 2**
Weight = 24 g



See data sheet for pin arrangement

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

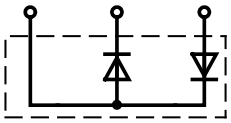
FRED & HiPerFRED™ Modules

I_{FAV} = 75 - 582 A

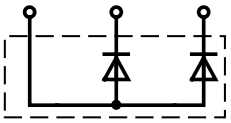
Type ➢ New	V_{RRM} V	I_{FAV} d = 0.5 A	@ T_C °C	I_{FRMS} A	I_{FSM} 10 ms 45°C A	V_F T_{VJ} = 125°C V	@ I_F A	t_{rr} typ. T_{VJ} = 25°C ns	I_{RM} T_{VJ} = 100°C A	-di/dt A/µs	R_{thJC} K/W	P_{tot} W	Fig. No.	Package style Outline drawings on pages O-30...O-52
FRED														X125e **TO-240** Weight = 90 g
MEO 550-02DA	200	582	75	822	4800	1.08	520	150	15	200	0.071	1750	X126d	
MEO 500-06DA	600	514	75	726		1.41	520	250	132	800		1750		
MEO 450-12DA	1200	453	75	640		1.76	520	450	165	800		1750		
MEK 75-12DA	1200	2x 75	75	107	1200	1.85	100	250	33	200	0.45	280	X125e	
MEA 75-12DA	1200	2x 75	75											
MEE 75-12DA	2x 1200	75	75											
MEK 95-06DA	600	2x 95	75	142	1200	1.36	100	250	21	200	0.45	280		X126c **Y4** Weight = 150 g
MEA 95-06DA	600	2x 95	75											
MEE 95-06DA	2x 600	95	75											
MEK 350-02DA	200	2x 356	75	503	2400	0.92	260	150	15	200	0.143	875	X126c	
MEK 300-06DA	600	2x 304	75	430		1.19	260	250	66	400				
MEK 250-12DA	1200	2x 260	75	367		1.54	260	450	83	400				
MEE 300-06DA	2x 600	304	75	430	2400	1.19	260	250	66	400	0.143	875		
MEE 250-12DA	2x 1200	260	75	367		1.54	260	450	83	400				
MEA 300-06DA	600	2x 304	75	430	2400	1.19	260	250	66	400	0.143	875		X126d **Y4** Weight = 150 g
MEA 250-12DA	1200	2x 260	75	367		1.54	260	450	83	400				
HiPerFRED														
MEK 150-04DA	400	2x 150	100	200	1200	1.40*	300	300	typ. 11	100	0.35	360	X125e	
MEK 600-04DA	400	2x 575	80	800	3000	1.10	400	220	typ. 80	900	0.11	1100	X126c	
MPK 95-06DA	600	2x 95	110	200	1200	1.40	100	35	5.5	100	0.575	215	X125e	

* T_{VJM} = 150°C

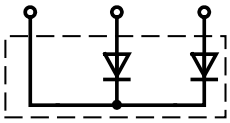
Diode connections for Fig. X125 (TO-240)



MEE

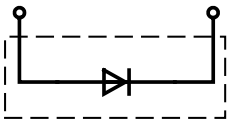


MEA

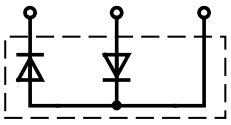


MEK / MPK

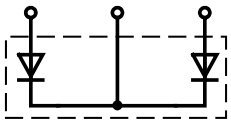
Diode connections for Fig. X126 (Y-4: 34 mm package)



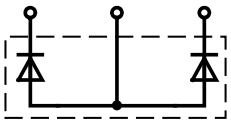
MEO



MEE



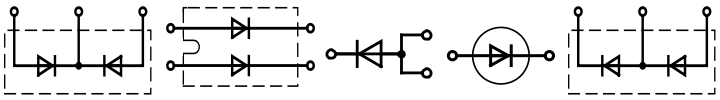
MEK



MEA

Rectifier Diodes

I_{FAV} = 2 - 2x 56 A,
Std. (DS..,DLA..) & Avalanche Diodes (DSA..)



DSIK DSI 2x... DLA...IM... DS/DSA/DSI... DSP

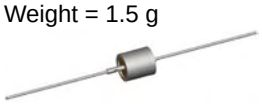
Type ➢ New	V_{RRM} V	I_{FAV} T_C = 100°C A	P_{RSM} kW	I_{FRMS} A	I_{FSM} 10 ms 45°C A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W		Fig. No.
DS 1-12D	1200	2.3 T_{amb} = 45°C	-	7	110	0.80	67	150	R_{thJA} = 80			X201
DSA 1-12D	1200		1.6	7	110	0.80	67	150				
DSA 1-16D	1600											
DSA 1-18D	1800											
DS 2-08A	800	3.6 T_{amb} = 45°C	-	7	120	0.85	43	180	R_{thJA} = 30			X200
DS 2-12A	1200											
DSA 2-12A	1200		2.5	7	120	0.85	43	180				
DSA 2-16A	1600											
DSA 2-18A	1800											
DSP 8-08S	2x 800	11	-	17	100	0.80	40	180	3.50	0.60		X011b
DSP 8-12S	2x 1200											
DSP 8-08A	2x 800	11	-	17	100	0.80	40	180	3.50	0.60		X005a
DSP 8-12A	2x 1200											
DSP 8-08AS	2x 800	11	-	17	100	0.80	40	180	3.50	0.60		X011a
DSP 8-12AS	2x 1200											
DSP 8-12AC ①	2x 1200	11	-	17	100	0.80	41	150	1.80	0.60		X010a
DSP 25-12A	2x 1200	28	-	43	300	0.80	15	180	1.50	0.40		X014a
DSP 25-16A	2x 1600											
DSP 25-16AR ①	2x 1600	28	-	43	300	0.80	15	180	1.50	0.40		X016a
DSP 25-12AT	2x 1200	28	-	43	300	0.80	15	180	1.50	0.40		X019
DSP 25-16AT	2x 1600											
DSP 45-12A	2x 1200	45 T_C = 130°C	-	70	480	0.80	11	180	0.55	0.20		X014a
DSP 45-16A	2x 1600											
DSP 45-16AR ①	2x 1600	2x43	-	70	480	0.80	11	150	0.70	0.20		X016a
➢ **DLA 10IM800UC**	800	10		16	80	0.80	22	150	3.15	0.50		X004
➢ **DLA 20IM800PC**	800	20		31	200	0.80	19	150	1.80	0.25		X011b
DSI 30-08A	800	30 T_C = 125°C	-	-	300	0.85	13	150	1.00	0.50		X005b
DSI 30-12A	1200											
DSI 30-16A	1600											
DSI 30-08AS	800	30	-	-	300	0.85	13	150	1.00	0.50		X011b
DSI 30-12AS	1200											
DSI 30-16AS	1600											
DSI 30-08AC ①	800		-	-	200	0.80	15	150	1.10	0.60		X010b
DSI 30-12AC ①	800											
DSI 45-08A	800	48 T_C = 105°C	-	-	475	0.80	8	150	0.55	0.20		X014b
DSI 45-12A	1200											
DSI 45-16A	1600											
DSI 45-16AR ①	1600											X016b
DSIK 45-16AR ①	1600	2x 45							0.65			X016a
DSI 2x55-12A	1200	2x 56 T_C = 80°C	-	120	650	0.80	8	150	0.65	0.10		X027a
DSI 2x55-16A	1600											

① Isolated 2500 V_{RMS}

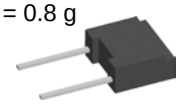
Package style

Outline drawings on pages O-30...O-52

X200 **Metal-can**
Weight = 1.5 g

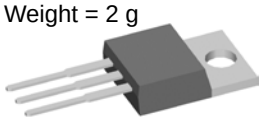


X201
Weight = 0.8 g

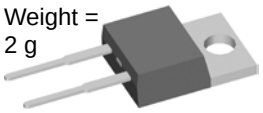


X004 **TO-252AA**
Weight = 0.3 g

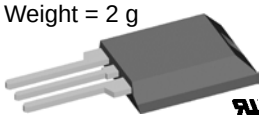
X005a **TO-220AB**
Weight = 2 g



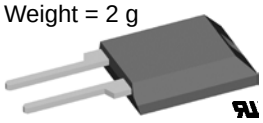
X005b **TO-220AC**
Weight = 2 g



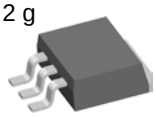
X010a **ISOPLUS220™**
Weight = 2 g



X010b **ISOPLUS220™**
Weight = 2 g

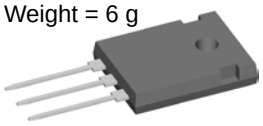


X011a **TO-263AA**
Weight = 2 g

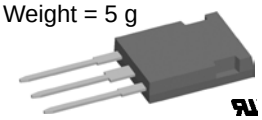


X011b **TO-263AB**
Weight = 2 g

X014a **TO-247AD**
Weight = 6 g

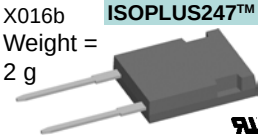


X016a **ISOPLUS247™**
Weight = 5 g

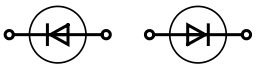


X027a **SOT-227B**
Weight = 30 g **miniBLOC**

X016b **ISOPLUS247™**
Weight = 2 g



Rectifier Diodes



DSI/DSAI.. DS/DSA..

I_{FAV} = 11 - 110 A, Standard Diodes (DS..), Avalanche Diodes (DSA..)

Type ➢ New	V_{RRM} V	I_{FAV} T_C = 100°C A	P_{RSM} kW	I_{FRMS} A	I_{FSM} 10 ms 45°C A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Symbol	Fig. No.	Package style Outline drawings on pages O-30...O-52
DS 9-08F	800	11	-	18	250	0.85	15.0	180	2.00	1.00		X204	
DS 9-12F	1200												X204 **DO-203AA (DO-4)** M5 Weight = 5 g
DSA 9-12F	1200	11	4.5	18	250	0.85	15.0	180	2.00	1.00			
DSA 9-16F	1600												
DSA 9-18F	1800												
DS 17-08A	800	25	-	40	370	0.85	8.0	180	1.50	0.60		X205	
DS 17-12A	1200	T_C = 125°C	7	40	370	0.85	8.0	180	1.50	0.60			
DSA 17-12A	1200												
DSA 17-16A	1600	25 T_C = 125°C											X205 **DO-203AA (DO-4)** 10-32 UNF Weight = 6 g
DSA 17-18A	1800												
DSI 17-08A	800	25	-	40	370	0.85	8.0	180	1.50	0.60		X205	
DSI 17-12A	1200	T_C = 125°C											
DSAI 17-12A	1200	25	7	40	370	0.85	8.0	180	1.50	0.60			
DSAI 17-16A	1600												
DSAI 17-18A	1800												
DS 35-08A	800	49	-	80	650	0.85	4.5	180	1.05	0.20		X206a	
DS 35-12A	1200												X206a **DO-203AB (DO-5)** Weight = 15 g
DSA 35-12A	1200	49	11	80	650	0.85	4.5	180	1.05	0.20			
DSA 35-16A	1600												
DSA 35-18A	1800												
DSI 35-08A	800	49	-	80	650	0.85	4.5	180	1.05	0.20		X206a	
DSI 35-12A	1200												
DSAI 35-12A	1200	49	11	80	650	0.85	4.5	180	1.05	0.20			
DSAI 35-16A	1600												
DSAI 35-18A	1800												
DS 75-08B	800	110	-	160	1400	0.75	2.0	180	0.50	0.40		X207	
DS 75-12B	1200												X207 **DO-203AB (DO-5)** Weight = 21 g
DSA 75-12B	1200	110	20	160	1400	0.75	2.0	180	0.50	0.40			
DSA 75-16B	1600												
DSA 75-18B	1800												
DSI 75-08B	800	110	-	160	1400	0.75	2.0	180	0.50	0.40			
DSI 75-12B	1200												
DSAI 75-12B	1200	110	20	160	1400	0.75	2.0	180	0.50	0.40			
DSAI 75-16B	1600												
DSAI 75-18B	1800												

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Thyristors, SCRs

(SCR = Silicon Controlled Rectifier)

Phase Control Thyristors

Thyristors are very rugged devices. Compared to all other controlled semi-conductor components, they feature the highest current capacity per chip area, especially at high voltage. They are mainly used as control devices in 50 and 60 Hz AC mains equipment. Principal applications are static converter circuits for speed control of DC-drives, or switching and control functions for temperature, lighting, soft-start, etc. in single-phase and three-phase AC switch configurations. Phase control thyristors are designed for optimal forward conduction and reverse blocking characteristics, due to only moderate requirements for turn-on and turn-off parameters.

Phase Control Thyristors

I_{TAV} = 13 - 63 A

Type ➢ New	V_{RRM} V_{DRM} V	I_{TAV} T_C = 85°C A	$I_{T(RMS)}$ A	I_{TSM} 45°C 10 ms A	$(dv/dt)_{cr}$ V/µs	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} K/W	R_{thCH} K/W	Fig. No.
CS 8-08 io2	800	16	25	250	1000	1.00	18.0	125	1.50	1.00	X208
CS 8-12 io2	1200										
CS 19-08 ho1	800	19	29	160	500	0.85	27.0	125	1.00	0.25	X005a
CS 19-12 ho1	1200										
CS 19-08 ho1S	800	19	29	160	500	0.85	27.0	125	1.00	0.25	X011b
CS 19-12 ho1S	1200										
CS 19-08 ho1C ①	800	13	35	100	500	0.87	29.0	125	1.70	0.60	X010a
CS 19-12 ho1C ①	1200										
CS 20-12 io1	1200	19	30	200	1000	1.10	40.0	125	0.62	0.20	X014a
CS 20-14 io1	1400										
CS 20-16 io1	1600										
CS 20-22 moF1 ①	2200	18		200	2500			125	0.92	0.15	X024c
➢ **CS 20-25 mo1F** ①	2500	18		200	2500			125	0.92	0.15	X024c
CS 22-08 io1M	800	22	30	300	500	0.90	18.0	150	2.50	0.50	X007a
CS 22-12 io1M	1200										
CS 23-08 io2	800	25	50	450	1000	1.00	10.0	125	1.00	0.60	X209
CS 23-12 io2	1200										
CS 23-16 io2	1600										
CS 29-08 io1C ①	800	23	35	200	1000	0.82	16.5	150	1.20	0.60	X010a
CS 29-12 io1C ①	1200	T_C = 95°C									
➢ **CMA 30E1600PB**	1600	30 T_C = 115°C	50	260	500	0.92	18.0	150	0.75	0.50	X005a
➢ **CMA 30E1600PN**	1600	30 T_C = 40°C							2.50		X007a
➢ **CMA 30P1600FC**	1600	30 T_C = 90°C	47	300	1000	0.90	13.8	150	1.05	0.25	X024a
CS 30-12 io1	1200	31	49	300	1000	0.90	15.0	125	0.62	0.20	X014a
CS 30-14 io1	1400										
CS 30-16 io1	1600										
CS 35-08 io4	800	63	120	1200	1000	0.85	3.5	125	0.40	0.20	X210
CS 35-12 io4	1200										
CS 35-14 io4	1400										
CS 45-08 io1	800	48	75	520	1000	0.85	11.0	140	0.62	0.20	X014a
CS 45-12 io1	1200	T_C = 75°C									
CS 45-16 io1	1600										
CS 45-16 io1R ①	1600										X016a
➢ **CLA 50E1200HB**	1200	50	75	550	1000	0.92	7.8	150	0.40	0.25	X014a
➢ **CLA 50E1200TC**		T_C = 125°C									X019
➢ **CMA 50P1600FC**	1600	50 T_C = 90°C	79	800	1000	0.92	6.3	150	0.65	0.25	X024a
CS 60-12 io1	1200	48	75	1500	1000	0.85	3.7	140	0.32	0.15	X015a
CS 60-14 io1	1400	T_C = 105°C									
CS 60-16 io1	1600										

① Isolated 2500 V_{RMS}

X210 **TO-208AC (TO-65)**
Weight = 20 g

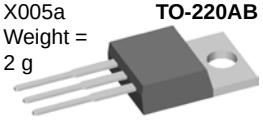
X209 **TO-208AC (TO-48)**
Weight = 12 g

X208 **TO-64**
Weight = 6 g

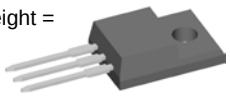
Package style

Outline drawings on pages O-30...O-52

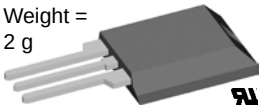
X005a **TO-220AB**
Weight = 2 g



X007a **TO-220ABFP**
Weight = 2 g

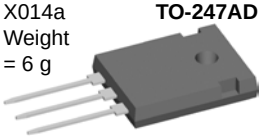


X010a **ISOPLUS220™**
Weight = 2 g

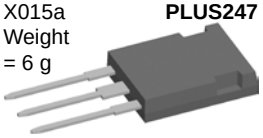


X011b **TO-263AB**
Weight = 2 g

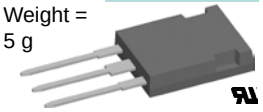
X014a **TO-247AD**
Weight = 6 g



X015a **PLUS247**
Weight = 6 g

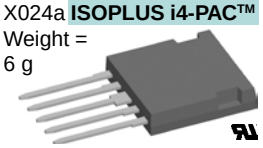


X016a **ISOPLUS247™**
Weight = 5 g

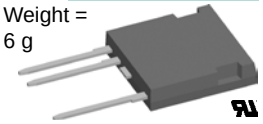


X019 **TO-268AA**
Weight = 5 g

X024a **ISOPLUS i4-PAC™**
Weight = 6 g



X024c **ISOPLUS i4-PAC™**
Weight = 6 g



One of the essential advantages of power semiconductor modules compared to discrete designs is the electrical isolation between the baseplate of the module and the parts subject to voltage (3.6 kV_{RMS} tested). This makes possible the mount-down of any number of the same or different modules on a common heatsink. It is feasible to use standard housings with appropriate accessories for designing compact power converter operating from AC mains up to 690 V.

Plastic Housing with DCB Substrate

IXYS has succeeded in simplifying the conventional multilayer module construction by the DCB (Direct Copper Bonding) technique.

Other features are:

- top-side electrical terminals with captured nuts;
- series-connected diode/diode, thyristor/diode and thyristor/thyristor modules;
- easy assembly.

All thyristor modules with DCB ceramic base contacts are available in volume with two standardized twin plugs (2.8 mm x 0.8 mm) for gate and auxiliary cathode control terminals (version 1). Modules in TO-240 housing of the version 8 are delivered with gate plugs only (without auxiliary cathode terminal; mounting srews available on request). The module housing is designed for adequate clearance and creepage distance resulting in recognition by Underwriters Laboratories, Inc., USA for all types.

New Generation Silicon Chips

The figures 1 a-c show cross sections of the used thyristor and diode chips in the passivation area. All chips are designed by applying separation diffusion processes such that the zones responsible for the surface field strength are located at the upper chip side. This results in the capability of soldering the entire chip area onto the DCB ceramic substrate without a molybdenum strain buffer, which in turn leads to good stability of the chips as well as to large area heat dissipation if a load is applied. All zones at the edges which are decisive for the blocking stability are coated with passivation glasses the coefficient of expansion of which match that of silicon. Silicon chips increasingly use planar technology with guard rings and channel stoppers to reduce electrical surface fields. This chip design supercedes the design of thyristor chips which were fabricated with passivation moats so that modules of the new series designed with the updated state-of-the-art utilize planar passivated chips processed by separation diffusion techniques. The contact areas of the chips possess physical vapor deposited metal layers. For the user the improved properties are:

- Excellent long-term stability of blocking currents and blocking voltages,
- increased life time of the internal soldered connections,
- high power cycling capability (≥ 50 000).

The thyristor/diode chips have been optimized with regard to their turn-off parameters: decreasing the carrier lifetime results in reduced stored charges QS, which in turn significantly reduces requirements for RC-snubbers for overvoltage protection. Cost reduction and improved efficiency are the benefits of these characteristics. By re-developing the silicon chips, improvements of the firing characteristics were achieved by speci-fying a higher „gate current not to fire“ IGD resulting in substantially less suscepibility to misfiring. This leads to greater safety of operation and higher reliability of the equipment.

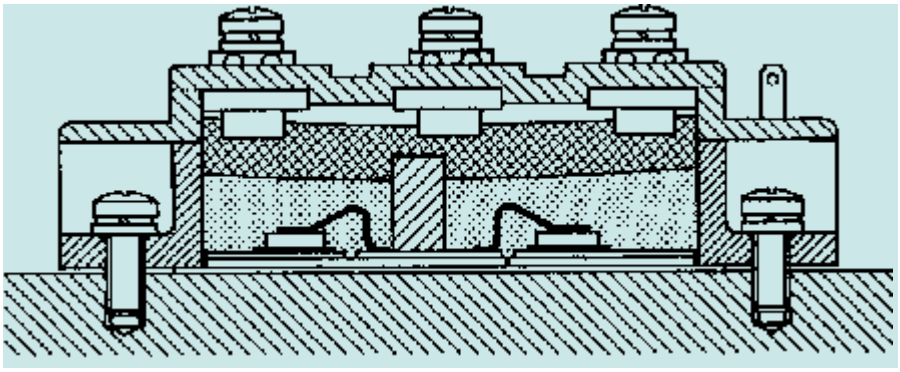
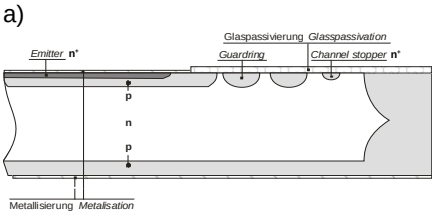
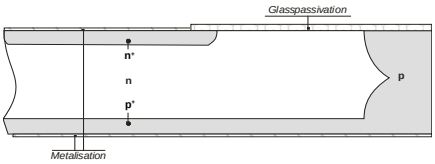


Fig. 2: Principal cross section of an IXYS module with DCB technology

a)



b)



c)

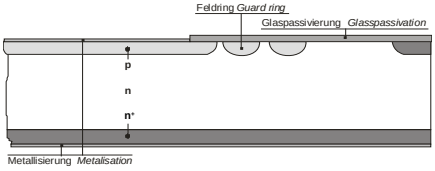


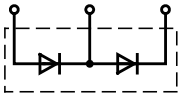
Fig. 1a-c: Cross sections of thyristor and diode chips in the passivation area

a) glassivated planar thyristor chip with separation diffusion, type CWP
b) glassivated planar diode chip with separation diffusion, type DWN
c) glassivated planar diode chip, type DWP (reverse polarity of DWN chips)

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Diode Modules, Dual

I_{FAV} = 36 - 224 A



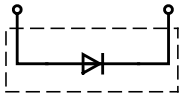
MDD...

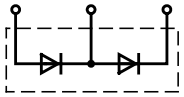
Type ➢ New	V_{RRM} V	I_{FAV} A	T_C °C	$I_{F(RMS)}$ A	I_{FSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thCH} per Chip K/W	Fig. No.	Package style Outline drawings on pages O-30...O-52
MDD 26-08N1B	800	36	100	60	650	0.80	6.10	150	1.00	0.20	X125e	X125e **TO-240AA** Weight = 90 g
MDD 26-12N1B	1200											
MDD 26-14N1B	1400											
MDD 26-16N1B	1600											
MDD 26-18N1B	1800											
MDD 44-08N1B	800	59	100	100	1150	0.80	4.30	150	0.59	0.20		
MDD 44-12N1B	1200											
MDD 44-14N1B	1400											
MDD 44-16N1B	1600											
MDD 44-18N1B	1800											
MDD 56-08N1B	800	71	100	150	1400	0.80	3.00	150	0.51	0.20		
MDD 56-12N1B	1200											
MDD 56-14N1B	1400											
MDD 56-16N1B	1600											
MDD 56-18N1B	1800											
MDD 72-08N1B	800	99	100	180	1700	0.80	2.30	150	0.35	0.20		
MDD 72-12N1B	1200											
MDD 72-14N1B	1400											
MDD 72-16N1B	1600											
MDD 72-18N1B	1800											
MDD 95-08N1B	800	120	105	180	2800	0.75	1.95	150	0.26	0.20		
MDD 95-12N1B	1200											
MDD 95-14N1B	1400											
MDD 95-16N1B	1600											
MDD 95-18N1B	1800											
MDD 95-20N1B	2000											
MDD 95-22N1B	2200											
MDD 142-08N1	800	165	100	300	4700	0.80	1.30	150	0.21	0.10	X126c	
MDD 142-12N1	1200											
MDD 142-14N1	1400											
MDD 142-16N1	1600											
MDD 142-18N1	1800											
MDD 172-08N1	800	190	100	300	6600	0.80	0.80	150	0.21	0.10		X126c **Y4** Weight = 150 g
MDD 172-12N1	1200											
MDD 172-14N1	1400											
MDD 172-16N1	1600											
MDD 172-18N1	1800											
MDD 200-14N1	1400	224	100	350	10500	0.80	0.60	150	0.13	0.10		
MDD 200-16N1	1600											
MDD 200-18N1	1800											
MDD 200-22N1	2200											

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Diode Modules, Single and Dual

I_{FAV} = 270 - 950 A


MDO...


MDD...

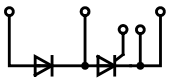
Type ➢ New	V_{RRM} V	I_{FAV} A	T_C °C	$I_{F(RMS)}$ A	I_{FSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thCH} per Chip K/W	Fig. No.	Package style Outline drawings on pages O-30...O-52
➢ **MDD 175-28N1**	2800	175	100	450	4500	0.90	1.80	150	0.14	0.07	X131c	X129c **Y2** Weight = 210 g
➢ **MDD 175-34N1**	3400											
MDD 220-08N1	800	270	100	450	8500	0.75	0.90	150	0.129	0.04	X129c	
MDD 220-12N1	1200											
MDD 220-14N1	1400											
MDD 220-16N1	1600											
MDD 220-18N1	1800											
MDD 250-08N1	800	290	100	450	11000	0.75	0.75	150	0.129	0.04		
MDD 250-12N1	1200											X131c **Y1** Weight = 750 g
MDD 250-14N1	1400											
MDD 250-16N1	1600											
MDD 255-12N1	1200	270	100	450	9500	0.80	0.60	150	0.14	0.04	X131c	
MDD 255-14N1	1400											
MDD 255-16N1	1600											
MDD 255-18N1	1800											
MDD 255-20N1	2000											
MDD 255-22N1	2200											
MDD 310-08N1	800	305	100	480	11500	0.75	0.63	150	0.129	0.04	X129c	X132b **Y1** Weight = 730 g
MDD 310-12N1	1200											
MDD 310-14N1	1400											
MDD 310-16N1	1600											
MDD 310-18N1	1800											
MDD 310-20N1	2000											
MDD 310-22N1	2200											
MDD 312-12N1	1200	310	100	520	10500	0.80	0.60	150	0.12	0.04	X131c	
MDD 312-14N1	1400											
MDD 312-16N1	1600											
MDD 312-18N1	1800											
MDD 312-20N1	2000											
MDD 312-22N1	2200											
MDD 600-12N1*	1200	600	111	1818	24000 150°C	0.75	0.20	150	0.062	0.02	X136d	X136d **WC-500** Weight = 1550 g
MDD 600-16N1	1600											
MDD 600-18N1	1800											
MDD 600-22N1	2200											
MDD 950-12N1W*	1200	950	T_W = 45°C	1773	2400 150°C	0.75	0.20	150	R_{thJW} = 0.09	-	X137d	
MDD 950-16N1W	1600											
MDD 950-18N1W	1800											X137d **WC-500** Weight = 2100 g
MDD 950-22N1W	2200											
MDO 500-12N1	1200	560	85	880	15000	0.80	0.38	140	0.072	0.024	X132b	
MDO 500-14N1	1400											
MDO 500-16N1	1600											
MDO 500-18N1	1800											
MDO 500-20N1	2000											
MDO 500-22N1	2200											
➢ **MDO 1200-20N1**	2000	1200	102	3557	40000	0.87	0.11	160	0.04	0.01	X140b	X140b **WC-800** Weight = 2200 g
➢ **MDO 1200-22N1**	2200											

* for other configurations please contact factory

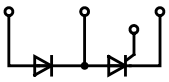
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Thyristor / Diode Modules

I_{TAV} = 27 - 116 A



MCD...io1



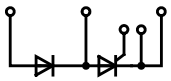
MCD...io8/...io6

Type ➢ New	V_{RRM} V_{DRM} V	I_{FAV} A	T_C °C	$I_{T(RMS)}$ A	I_{FSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thCH} per Chip K/W	Fig. No.	Package style Outline drawings on pages O-30...O-52
MCD 26-08io1B	800	27	85	50	520	0.85	11.0	125	0.88	0.2	X125b	
MCD 26-12io1B	1200											
MCD 26-14io1B	1400											
MCD 26-16io1B	1600											X027a **SOT-227B** Weight = 30 g **miniBLOC**
MCD 26-08io8B	800	27	85	50	520	0.85	11.0	125	0.88	0.2	X125d	
MCD 26-12io8B	1200											
MCD 26-14io8B	1400											
MCD 26-16io8B	1600											
MCD 40-12io6	1200	38	85	60	500	0.85	9.5	125	0.60	0.1	X027a	
MCD 40-16io6	1600											
MCD 44-08io1B	800	49	85	80	1150	0.85	5.3	125	0.53	0.2	X125b	
MCD 44-12io1B	1200											
MCD 44-14io1B	1400											
MCD 44-16io1B	1200											
MCD 44-18io1B	1600											
MCD 44-08io8B	800	49	85	80	1150	0.85	5.3	125	0.53	0.2	X125d	X125b **TO-240AA** Weight = 90 g
MCD 44-12io8B	1200											
MCD 44-14io8B	1400											
MCD 44-16io8B	1600											
MCD 44-18io8B	1800											
MCD 56-08io1B	800	60	85	100	1500	0.85	3.7	125	0.45	0.2	X125b	
MCD 56-12io1B	1200											
MCD 56-14io1B	1400											
MCD 56-16io1B	1600											
MCD 56-18io1B	1800											
MCD 56-08io8B	800	60	85	100	1500	0.85	3.7	125	0.45	0.2	X125d	
MCD 56-12io8B	1200											
MCD 56-14io8B	1400											X125d **TO-240** Weight = 90 g
MCD 56-16io8B	1600											
MCD 56-18io8B	1800											
MCD 72-08io1B	800	85	85	180	1700	0.85	3.2	125	0.30	0.2	X125b	
MCD 72-12io1B	1200											
MCD 72-14io1B	1400											
MCD 72-16io1B	1600											
MCD 72-18io1B	1800											
MCD 72-08io8B	800	85	85	180	1700	0.85	3.2	125	0.30	0.2	X125d	
MCD 72-12io8B	1200											
MCD 72-14io8B	1400											
MCD 72-16io8B	1600											
MCD 72-18io8B	1800											
MCD 94-20io1B	2000	104	85	180	1700	0.85	3.2	125	0.22	0.2	X125b	
MCD 94-22io1B	2200											
MCD 95-08io1B	800	116	85	180	2250	0.80	2.4	125	0.22	0.2		
MCD 95-12io1B	1200											
MCD 95-14io1B	1400											
MCD 95-16io1B	1600											
MCD 95-18io1B	1800											
MCD 95-08io8B	800	116	85	180	2250	0.80	2.4	125	0.22	0.2	X125d	
MCD 95-12io8B	1200											
MCD 95-14io8B	1400											
MCD 95-16io8B	1600											
MCD 95-18io8B	1800											

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Thyristor / Diode Modules

I_{TAV} = 130 - 700 A



MCD...io1

Type ➢ New	V_{RRM} V_{DRM} V	I_{FAV} A	T_C °C	$I_{T(RMS)}$ A	I_{FSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thCH} per Chip K/W	Fig. No.
MCD 132-08io1	800	130	85	300	4750	0.80	1.50	125	0.230	0.10	X126b
MCD 132-12io1	1200										
MCD 132-14io1	1400										
MCD 132-16io1	1600										
MCD 132-18io1	1800										
MCD 161-20io1	2000	165	85	300	6000	0.80	1.60	125	0.155	0.07	
MCD 161-22io1	2200										
MCD 162-08io1	800	181	85	300	6000	0.88	1.15	125	0.155	0.07	X126b
MCD 162-12io1	1200										
MCD 162-14io1	1400										
MCD 162-16io1	1600										
MCD 162-18io1	1800										
MCD 200-14io1	1400	216	85	340	8000	0.80	1.00	125	0.130	0.05	
MCD 200-16io1	1600										
MCD 200-18io1	1800										
MCD 224-20io1	2000	240	85	400	8000	0.80	0.76	130	0.139	0.04	X131b
MCD 224-22io1	2200										
MCD 220-08io1	800	250	85	400	8500	0.90	1.00	140	0.139	0.04	X129b
MCD 220-12io1	1200										
MCD 220-14io1	1400										
MCD 220-16io1	1600										
MCD 225-12io1	1200	221	85	400	8000	0.80	0.76	130	0.157	0.04	X131b
MCD 225-14io1	1400										
MCD 225-16io1	1600										
MCD 225-18io1	1800										
MCD 250-08io1	800	287	85	450	9000	0.85	0.82	140	0.129	0.04	X129b
MCD 250-12io1	1200										
MCD 250-14io1	1400										
MCD 250-16io1	1600										
MCD 250-18io1	1800										
MCD 255-12io1	1200	250	85	450	9000	0.80	0.68	130	0.140	0.04	X131b
MCD 255-14io1	1400										
MCD 255-16io1	1600										
MCD 255-18io1	1800										
MCD 310-08io1	800	320	85	500	9200	0.80	0.82	140	0.112	0.04	X129b
MCD 310-12io1	1200										
MCD 310-14io1	1400										
MCD 310-16io1	1600										
MCD 310-18io1	1800										
MCD 310-20io1	2000	320	85	500	8000	0.80	0.82	140	0.112	0.04	X129b
MCD 310-22io1	2200										
MCD 312-12io1	1200	320	85	520	9200	0.80	0.68	140	0.120	0.04	X131b
MCD 312-14io1	1400										
MCD 312-16io1	1600										
MCD 312-18io1	1800										
MCD 500-12io1*	1200	500	89	1294	18200	0.85	0.27	125	0.062	0.02	X136b
MCD 500-16io1	1600				125°C						
MCD 500-18io1	1800										
MCD 500-22io1	2200	500	80	1071	15400	0.88	0.46	125	0.062	0.02	
					125°C						
MCD 501-12io1*	1200	503	85	1195	16000	0.85	0.30	125	0.062	0.02	X138b
MCD 501-14io1	1400				125°C						
MCD 501-16io1	1600										
MCD 501-18io1	1800										
MCD 700-12io1W*	1200	700	T_W =	1331	18200	0.85	0.27	125	0.062	R_{thJW} =	X137b
MCD 700-16io1W	1600		42°C		125°C					0.09	
MCD 700-18io1W	1800										

* for other configurations please contact factory

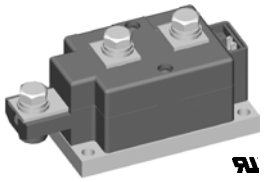
Package style

Outline drawings on pages O-30...O-52

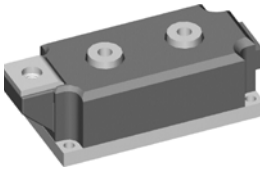
X126b **Y4**
Weight = 150 g

X129b **Y2**
Weight = 210 g

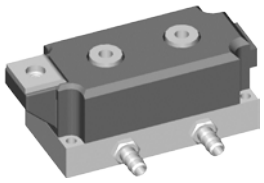
X131b **Y1**
Weight = 750 g



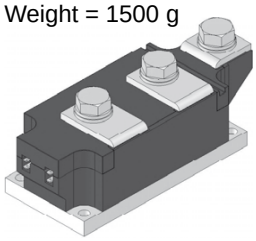
X136b **WC-500**
Weight = 1550 g



X137b **WC-500**
Weight = 2100 g



X138b **WC-501**
Weight = 1500 g



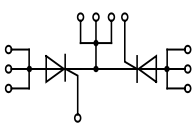
Thyristor Modules

I_{TAV} = 105 - 180 A

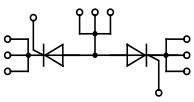
Type ➢ New	V_{RRM} V_{DRM} V	I_{FAV} A	T_C °C	$I_{T(RMS)}$ A	I_{FSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thCH} per Chip K/W	Fig. No.	Package style Outline drawings on pages O-30...O-52
VCK 105-08io7	800	105	85	180	2250	0.80	2.40	125	0.26	0.20	X102	
VCK 105-12io7	1200											
VCK 105-14io7	1400											
VCK 105-16io7	1600											
VCK 105-18io7	1800											
VCA 105-08io7	800	105	85	180	2250	0.80	2.40	125	0.26	0.20		
VCA 105-12io7	1200											
VCA 105-14io7	1400											
VCA 105-16io7	1600											
VCA 105-18io7	1800											
VCD 105-08io7	800	105	85	180	2250	0.80	2.40	125	0.26	0.20		
VCD 105-12io7	1200											
VCD 105-14io7	1400											
VCD 105-16io7	1600											
VCD 105-18io7	1800											
VCC 105-08io7	800	105	85	180	2250	0.80	2.40	125	0.26	0.20		
VCC 105-12io7	1200											
VCC 105-14io7	1400											
VCC 105-16io7	1600											
VCC 105-18io7	1800											
VCC 2x105-08io7	800	105	85	180	2250	0.80	2.40	125	0.26	0.20		
VCC 2x105-12io7	1200											
VCC 2x105-14io7	1400											
VCC 2x105-16io7	1600											
VCC 2x105-18io7	1800											
VCO 132-08io7	800	130	85	200	3600	0.80	1.65	150	0.25	0.10		
VCO 132-12io7	1200											
VCO 132-14io7	1400											
VCO 132-16io7	1600											
VCO 132-18io7	1800											
VCO 180-08io7	800	180	90	280	4500	0.75	1.23	150	0.17	0.06		
VCO 180-12io7	1200											
VCO 180-14io7	1400											
VCO 180-16io7	1600											
VCO 180-18io7	1800											

X102 **ECO-PAC 2**
Weight = 24 g

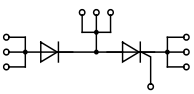
See data sheet for pin arrangement



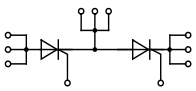
VCK...



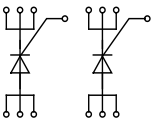
VCA...



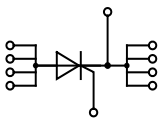
VCD...



VCC...



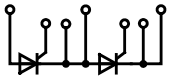
VCC... 2x105



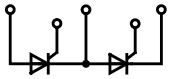
VCO...

Thyristor Modules, Dual

I_{TAV} = 18 - 116 A



MCC...io1B



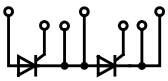
MCC...io8B

Type ➢ New	V_{RRM} V_{DRM} V	I_{FAV} A	T_C °C	$I_{T(RMS)}$ A	I_{FSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thCH} per Chip K/W	Fig. No.	Package style Outline drawings on pages O-30...O-52
MCC 19-08io1B	800	18	85	40	400	0.85	18.0	125	1.30	0.2	X125a	
MCC 19-12io1B	1200											
MCC 19-14io1B	1400											
MCC 19-16io1B	1600											
MCC 19-08io8B	800	18	85	40	400	0.85	18.0	125	1.30	0.2	X125c	
MCC 19-12io8B	1200											
MCC 19-14io8B	1400											X125a **TO-240AA**
MCC 19-16io8B	1600											Weight = 90 g
MCC 21-08io8B	800	21	85	33	320	0.85	15.0	125	1.10	0.2	X125c	
MCC 21-12io8B	1200											
MCC 21-14io8B	1400											
MCC 21-16io8B	1600											
MCC 26-08io1B	800	27	85	50	520	0.85	11.0	125	0.88	0.2	X125a	
MCC 26-12io1B	1200											
MCC 26-14io1B	1400											
MCC 26-16io1B	1600											
MCC 26-08io8B	800	27	85	50	520	0.85	11.0	125	0.88	0.2	X125c	
MCC 26-12io8B	1200											
MCC 26-14io8B	1400											
MCC 26-16io8B	1600											
MCC 44-08io1B	800	49	85	80	1150	0.85	5.3	125	0.53	0.2	X125a	
MCC 44-12io1B	1200											
MCC 44-14io1B	1400											
MCC 44-16io1B	1600											X125c **TO-240**
MCC 44-18io1B	1800											Weight = 90 g
MCC 44-08io8B	800	49	85	80	1150	0.85	5.3	125	0.53	0.2	X125c	
MCC 44-12io8B	1200											
MCC 44-14io8B	1400											
MCC 44-16io8B	1600											
MCC 44-18io8B	1800											
MCC 56-08io1B	800	60	85	100	1500	0.85	3.7	125	0.45	0.2	X125a	
MCC 56-12io1B	1200											
MCC 56-14io1B	1400											
MCC 56-16io1B	1600											
MCC 56-18io1B	1800											
MCC 56-08io8B	800	60	85	100	1500	0.85	3.7	125	0.45	0.2	X125c	
MCC 56-12io8B	1200											
MCC 56-14io8B	1400											
MCC 56-16io8B	1600											
MCC 56-18io8B	1800											
MCC 72-08io1B	800	85	85	180	1700	0.85	3.2	125	0.30	0.2	X125a	
MCC 72-12io1B	1200											
MCC 72-14io1B	1400											
MCC 72-16io1B	1600											
MCC 72-18io1B	1800											
MCC 72-08io8B	800	85	85	180	1700	0.85	3.2	125	0.30	0.2	X125c	
MCC 72-12io8B	1200											
MCC 72-14io8B	1400											
MCC 72-16io8B	1600											
MCC 72-18io8B	1800											
MCC 94-20io1B	2000	104	85	180	1700	0.85	3.2	125	0.22	0.2	X125a	
MCC 94-22io1B	2200											
MCC 95-08io1B	800	116	85	180	2250	0.80	2.4	125	0.22	0.2	X125a	
MCC 95-12io1B	1200											
MCC 95-14io1B	1400											
MCC 95-16io1B	1600											
MCC 95-18io1B	1800											
MCC 95-08io8B	800	116	85	180	2250	0.80	2.4	125	0.22	0.2	X125c	
MCC 95-12io8B	1200											
MCC 95-14io8B	1400											
MCC 95-16io8B	1600											
MCC 95-18io8B	1800											

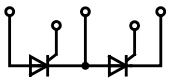
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Thyristor Modules, *Dual*

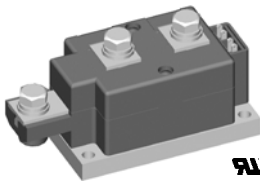
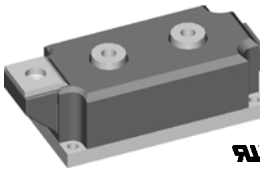
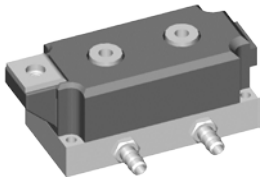
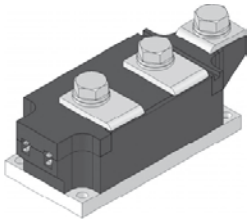
I_{TAV} = 130 - 700 A



MCC...io1B



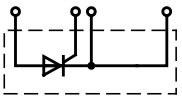
MCC...io8B

Type ➢ New	V_{RRM} V_{DRM} V	I_{FAV} A	T_C °C	$I_{T(RMS)}$ A	I_{FSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thCH} per Chip K/W	Fig. No.	Package style Outline drawings on pages O-30...O-52
MCC 132-08io1	800	130	85	300	4750	0.80	1.50	125	0.230	0.10	X126a	
MCC 132-12io1	1200											X126a **Y4**
MCC 132-14io1	1400											Weight = 150 g
MCC 132-16io1	1600											
MCC 132-18io1	1800											
MCC 161-20io1	2000	165	85	300	6000	0.80	1.60	125	0.155	0.07		
MCC 161-22io1	2200											
MCC 162-08io1	800	181	85	300	6000	0.88	1.15	125	0.155	0.07		
MCC 162-12io1	1200											
MCC 162-14io1	1400											
MCC 162-16io1	1600											
MCC 162-18io1	1800											X129a **Y2**
MCC 200-14io1	1400	216	85	340	8000	0.80	1.00	125	0.130	0.05	X126a	Weight = 750 g
MCC 200-16io1	1600											
MCC 200-18io1	1800											
MCC 220-08io1	800	250	85	400	8500	0.90	1.00	140	0.139	0.04	X129a	
MCC 220-12io1	1200											
MCC 220-14io1	1400											
MCC 220-16io1	1600											
MCC 220-18io1	1800											
MCC 224-20io1	2000	240	85	400	8000	0.80	0.76	130	0.139	0.04	X131a	X131a **Y1**
MCC 224-22io1	2200											Weight = 750 g
MCC 225-12io1	1200	221	85	400	8000	0.80	0.76	130	0.157	0.04		
MCC 225-14io1	1400											
MCC 225-16io1	1600											
MCC 225-18io1	1800											
MCC 250-08io1	800	287	85	450	9000	0.85	0.82	140	0.129	0.04	X129a	
MCC 250-12io1	1200											
MCC 250-14io1	1400											
MCC 250-16io1	1600											
MCC 250-18io1	1800											
MCC 255-12io1	1200	250	85	450	9000	0.80	0.68	130	0.140	0.04	X131a	X136a **WC-500**
MCC 255-14io1	1400											Weight = 1550 g
MCC 255-16io1	1600											
MCC 255-18io1	1800											
MCC 310-08io1	800	320	85	500	9200	0.80	0.82	140	0.112	0.04	X129a	
MCC 310-12io1	1200											
MCC 310-14io1	1400											
MCC 310-16io1	1600											
MCC 310-18io1	1800											
MCC 312-12io1	1200	320	85	520	9200	0.80	0.68	140	0.120	0.04	X131a	X137a **WC-500**
MCC 312-14io1	1400											Weight = 2100 g
MCC 312-16io1	1600											
MCC 312-18io1	1800											
MCC 500-12io1*	1200	500	89	785	18200	0.85	0.27	125	0.062	0.02	X136a	
MCC 500-14io1	1400				125°C							
MCC 500-16io1	1600											
MCC 500-18io1	1800											
MCC 500-22io1*	2200		80	1071	15400	0.88 125°C	0.46	125	0.062	0.02		
MCC 501-12io1*	1200	503	85	1195	16000	0.85	0.30	125	0.062	0.02	X138a	X138a **WC-501**
MCC 501-14io1	1400				125°C							Weight = 1500 g
MCC 501-16io1	1600											
MCC 501-18io1	1800											
MCC 700-12io1W	1200	700	T_W =	1331	18200	0.85	0.27	125	0.062	R_{thJW} =	X137a	
MCC 700-16io1W	1600		42°C		125°C					0.09		
MCC 700-18io1W	1800											

* for other configurations please contact factory

Thyristor Modules, *Single*

I_{TAV} = 31 - 800 A

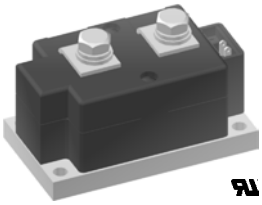


MCO

Type ➢ New	V_{RRM} V_{DRM} V	I_{FAV} A	T_C °C	$I_{T(RMS)}$ A	I_{FSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thCH} per Chip K/W	Fig. No.	Package style Outline drawings on pages O-30...O-52
MCO 25-12io1	1200	31	80	49	370	0.85	14.00	150	1.10	0.50	X027a	
MCO 25-16io1	1600											
MCO 50-12io1	1200	54	80	85	740	0.90	5.80	150	0.72	0.40		
MCO 50-16io1	1600											
➢ **MCO 75-12io1**	1200	77	80	121	1070	0.85	5.50	150	0.45	0.20		
➢ **MCO 75-16io1**	1600											
MCO 100-12io1	1200	99	80	156	1400	0.85	4.50	150	0.35	0.15		
MCO 100-16io1	1600											
MCO 150-12io1	1200	149	80	234	2000	0.80	3.80	150	0.20	0.10		
MCO 150-16io1	1600											
MCO 450-20io1	2000	464	85	750	15000	0.77	0.42	130	0.072	0.024	X132a	
MCO 450-22io1	2200											
MCO 500-12io1	1200	560	85	880	17000	0.80	0.38	140	0.072	0.024		
MCO 500-14io1	1400											
MCO 500-16io1	1600											
MCO 500-18io1	1800											
MCO 600-16io1	1600	600	85	928	15000	0.77	0.42	140	0.065	0.02		
MCO 600-18io1	1800											
MCO 600-20io1	2000											
MCO 600-22io1	2200											
MCO 740-20io1	2000	740	88	2389	36000	0.833	0.210	125	0.04	0.01	X140a	
MCO 740-22io1	2200											
MCO 800-16io1	1600	800	88	2564	36000	0.890	0.154	125	0.04	0.01		
MCO 800-18io1	1800											

X027a **SOT-227B**
Weight = 30 g **miniBLOC**

X132a **Y1**
Weight = 730 g



X140a **WC-800**
Weight = 2200 g

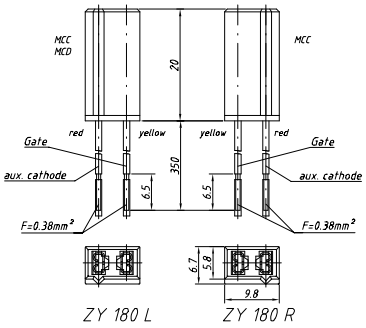
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Optional Accessories for Thyristor / Diode Modules

For module-types MCC 19, 26, 44, 56, 72, 94 and 95 version 1:
Keyed Gate Cathode twin plugs with wire length = 350 mm;
gate = yellow, cathode = red

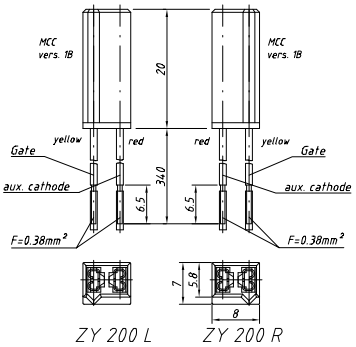
Type **ZY 200 L** (L = Left for pin pair 4/5)
Type **ZY 200 R** (R = Right for pin pair 6/7)

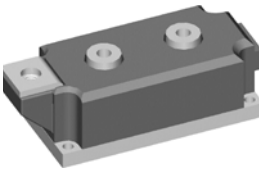
For ZY 180 and ZY 200: UL Styles 1385



For module types MCC/MCD/MCO 132, 161, 162, 200, 220, 224, 225, 250, 255, 310, 312, 500 and MII 400 (for MCD/MCO only L-type):
Keyed Gate Cathode twin plugs
with wire length = 350 mm
gate = yellow, cathode = red

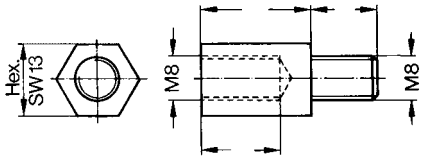
Type **ZY 180 L** (L = Left for pin pair 4/5)
Type **ZY 180 R** (R = Right for pin pair 6/7)





For module types
MCC/MCD/MDD 220, 250, 310
Threaded spacer for higher Anode / Cathode construction:

Type **ZY 250** (material brass)



Design Information

For Thyristors, Diodes, Thyristor / Diode Modules and Rectifier Bridges

Surge current

The 60 Hz value of I_{TSM} is 10% higher than the 50 Hz value
The I_{TSM} value at T_{VJM} is 10% to 15% lower than the 45°C value

Limiting I^2t

50 Hz: I^2t [A^2s] = I_{TSM} [A] • I_{TSM} [A] • 0.005 [s]; use rated I_{TSM} value (10 ms)
60 Hz: I^2t [A^2s] = I_{TSM} [A] • I_{TSM} [A] • 0.0042 [s]; use 60-Hz-value of I_{TSM}

Forward current

The average current ratings in tables are mostly specified for temperature conditions of: T_A = 45°C, T_C = 85°C or T_C = 100°C.
For other temperature conditions, the current ratings can be calculated using the following formulas, applicable up to 400 Hz.

$$I_{TAV} = \frac{-V_{T0} + \sqrt{V_{T02} + 4 \bullet k^2 \bullet r_T \bullet P}}{2 \bullet k^2 \bullet r_T} \quad \text{where} \quad P = \frac{T_{VJM} - T_C}{R_{thJC}} \quad \text{or} \quad P = \frac{T_{VJM} - T_A}{R_{thJA}}$$

I_{TAV} [A], P [W]; V_{TO} [V]; r_T [W], T_{VJM} [°C], T_C [°C], T_A [°C]
R_{thJC} [K/W], R_{thJA} [K/W]

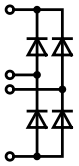
k^2 = 1 for DC current
k^2 = 2.5 for sinusoidal half wave current
k^2 = 3 for 120° rectangular current
k^2 = 6 for 60° rectangular current

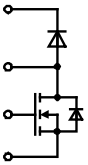
The average forward current is limited by the RMS current value $I_{T(RMS)}$. When the **calculated** value I_{TAV} is higher than $I_{T(RMS)}$ / k, replace it by $I_{TAV} = I_{T(RMS)}$ / k.

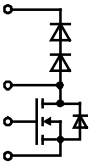
Rectifier Bridges for Power Factor Correction

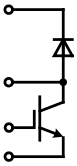
Power Stage for Boost Converters (Power Factor Correction)

1-phase PFC


A)
1~ Bridge

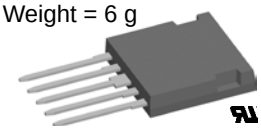

B)
MOSFET Boost


C)
MOS+HiPerDyn


D)
IGBT Boost

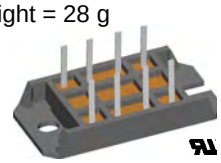
Type ➢ New	Circuit	V_{DSS} max V	I_D T_C = 25°C A	$R_{DS(on)}$ max Ω	V_{RRM} Boost Diode V	V_{RRM} Rectifier Diodes V	Fig. No.	Package style Outline drawings on pages O-30...O52
MOSFET								
FMD 21-05QC	C	500	21	0.220	600	-	X024a	
➢ **FMD 15-06KC5**	C, CoolMOS™ 1)	600	15	0.165	under development			
FMD 40-06KC	C, CoolMOS™ 1)	600	38	0.070	contact factory			
➢ **FMD 47-06KC5**	C, CoolMOS™ 1)	600	47	0.045	600	-		
VUM 24-05N	A + B	500	35	0.120	600	800	X105b	
VUM 33-05N	A + B	500	47	0.120	600	800		

X024a **ISOPLUS i4-PAC™**
Weight = 6 g



Type ➢ New	Circuit	V_{CES} max V	I_D T_C = 25°C A	V_{CEsat} @ Ic V	 A	V_{RRM} Boost Diode V	V_{RRM} Rectifier Diodes V	
IGBT								
FID 60-06D	D	600	65	1.6	30	600	-	X024a

X105b **V1-B-Pack**
Weight = 28 g



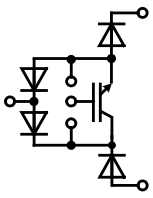
Type ➢ New	Circuit	V_{RRM} V	I_{DAV} A	@ T_C °C	
Rectifier					
FBO 16-12N *	A	1200	22	90	X024a
FBO 40-12N *	A	1200	40	90	

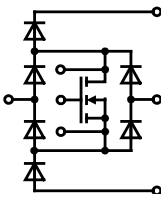
* Recommended in combination with types FMD and FID

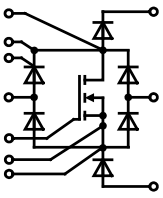
1) CoolMOS™ is a trademark of Infineon Technologies

3-phase PFC

"Vienna Rectifier" circuit
- wide input voltage range
- sinusoidal mains input currents in phase with mains
- boost converter operation:
  - input: three phase AC mains without neutral conductor
  - output: stabilized DC link with center point
- one module used per phase


VUI 30


VUM 25

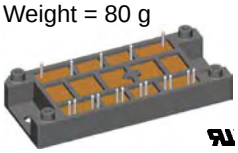

VUM 85

Type ➢ New	PN / kW 3 ~ 400V T_C = 80°C	Configuration	Fig. No.	Package style Outline drawings on pages O-30...O-52
VUM 25-05E ①	10	Vienna rectifier current	X103	
VUM 85-05A ①	30	Vienna rectifier current	X104	
VUI 30-12N1 ①	15	IGBT stage for buck @ boost PWM converter	X103	

① contact factory

X103 **V1-A-Pack**
Weight = 35 g

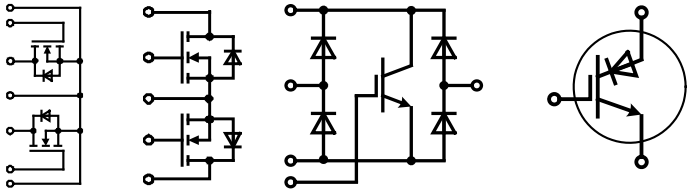
X104 **V2-Pack**
Weight = 80 g



Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

MOS / IGBT AC Switch

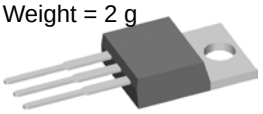
- Fast AC switch
- Easy to turn-off like a MOSFET or IGBT
- Applications
  - lighting control
  - AC motor control
  - matrix inverter

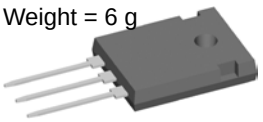


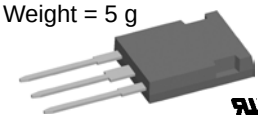
Type ○ Not for new designs ➢ New	Configuration	B_V voltage ± V	Rated current T_C = 25°C A	Circuit	Fig. No.	Package style Outline drawings on pages O-30...O-52
○ **VMK 165-007T**	MOSFET in common source	70	165	A	X125a	X005a **TO-220AB** Weight = 2 g
FMK 75-01F	MOSFET in common source	100	75	B	X024a	
VMK 90-02T2 ①	MOSFET in common source	200	83	A	X125a	
➢ **IXRA 15N120**	single RIGBT *	1200	25	D	X011a	X014a **TO-247AD** Weight = 6 g
IXRP 15N120	single RIGBT *	1200	25	D	X005a	
IXRH 40N120	single RIGBT *	1200	55	D	X014a	
IXRR 40N120	single RIGBT *	1200	45	D	X016a	X016a **ISOPLUS247™** Weight = 5 g
FIO 50-12BD	IGBT and Diode Bridge	1200	50	C	X024a	X024a **ISOPLUS i4-PAC™** Weight = 6 g
					X125a	X125a **TO-240AA** Weight = 90 g

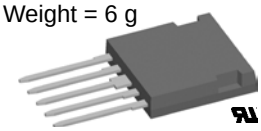
* Single IGBT die with reverse blocking capability

① contact factory

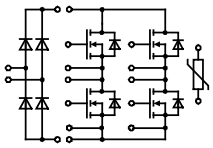




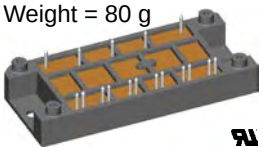




Module with HiPerFET™ H-Bridge and Single Phase Mains Rectifier Bridge

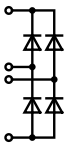


Type ➢ New	V_{DSS} V	I_D T_C = 25°C A	I_D T_C = 80°C A	R_{DSon} max T_C = 25°C mΩ	V_{DRM} rectifier diode V	I_{DAVM} A	@ T_C °C	Fig. No.	Package style Outline drawings on pages O-30...O-52
VBH 40-05B	500	40	30	116	1200	33	80	X104	X104 **V2-Pack** Weight = 80 g



Rectifier Bridges with Fast Diodes

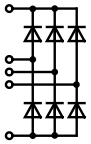
Rectifier Bridges with **Superfast Recovery Diodes**



1-phase, B2U

Type ➢ New	V_{RRM} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thCH} typ K/W	Fig. No.
VBE 17-06NO7	600	27	85	50	1.18	22.0	150	2.50	0.30	X101
VBE 17-12NO7	1200	19	85	40	1.32	30.0	150	2.50	0.30	
VBE 20-20NO1	2000	20	65	75	3.30	93.0	150	1.70	0.30	X103
VBE 26-06NO7	600	44	85	110	1.13	13.0	150	1.60	0.30	X101
VBE 26-12NO7	1200	32	85	90	1.32	30.0	150	1.60	0.30	
VBE 55-06NO7	600	68	100	250	0.98	8.0	150	0.90	0.30	
VBE 55-12NO7	1200	59	85	200	1.31	15.0	150	0.90	0.30	
VBE 60-06A	600	60	90	250	0.98	6.8	150	1.15	0.10	X027a
FBE 22-06N1	600	20	90	40	-	-	150	3.50	0.15	X024a
VBE 100-06NO7	600	100	85	600	1.09	4.3	150	0.80	0.20	X102
VBE 100-12NO7	1200	100	70	500	1.07	8.2	150	0.80	0.20	
FBS 10-06SC*	600	6.6	90	12	-	-	175	8.00	3.50	X024a
FBS 16-06SC*	600	11	90	20	-	-	175	5.60	3.00	

* SiC-Diodes



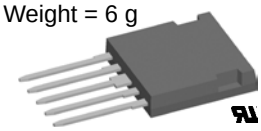
3-phase, B6U

FUS 45-0045B	45	20	90	150	-	-	150	3.10	0.15	X024a
VUE 50-12NO1	1200	50	85	200	1.65	18.2	150	1.20	0.30	X103
VUE 30-20NO1	2000	30	65	75	3.30	93.0	150	1.70	0.30	
VUE 22-06NO7	600	34	85	50	1.18	22.0	150	2.50	0.30	X101
VUE 22-12NO7	1200	24	85	40	1.39	55.0	150	2.50	0.30	
VUE 35-06NO7	600	56	85	110	1.13	13.0	150	1.60	0.30	
VUE 35-12NO7	1200	40	85	90	1.32	30.0	150	1.60	0.30	
VUE 75-06NO7	600	86	100	250	0.98	8.0	150	0.90	0.30	
VUE 75-12NO7	1200	74	85	200	1.31	15.0	150	0.90	0.30	
FUE 30-12N1	1200	30	90	80	-	-	150	2.30	0.15	X024a
VUE 130-06NO7	600	130	85	600	1.09	4.3	150	0.80	0.20	X102
VUE 130-12NO7	1200	130	70	500	1.07	8.2	150	0.80	0.20	

Package style

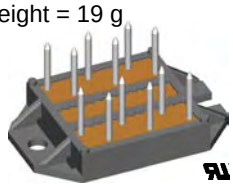
Outline drawings on pages O-30...O-52

X024a **ISOPLUS i4-PAC™**
Weight = 6 g



X027a **SOT-227B**
Weight = 30 g **miniBLOC**

X101 **ECO-PAC 1**
Weight = 19 g



See data sheet for pin arrangement

X102 **ECO-PAC 2**
Weight = 24 g

See data sheet for pin arrangement

X103 **V1-A-Pack**
Weight = 35 g

Rectifier Bridges incorporating Fast Diodes

Power switching semiconductors are used in inverter systems with DC-Link. Due to high switching frequencies, harmonics and line distortion may be generated. It is important that the new designs reduce these influences and fulfill the EMI filtering requirements according to EMI/EMC VDE 0871 and other.

The noise level can be reduced by up to **10dB** when the input rectifier is equipped with semi-fast diodes and is therefore optimised for turn off; resulting in a lower peak recovery current compared to non-optimised and normal rectifier diodes.

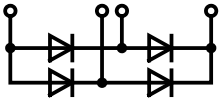
The noise level can be further reduced approximetely by another **5dB** when using rectifier bridges equipped with Fast Recovery Epitaxial Diodes (FRED) like module types VBE (single phase bridge) or VUE (three phase bridge). However these are more expensive but may be necessary in some applications to fulfill the VDE or other standards.

This behaviour has a direct influence on the design of the EMI filter networks with its capacitors and inductors of which the size and costs can be reduced.

More detailed information is available in the IXYS application note D98005E „Input Rectifiers with Semi-fast Diodes for DC Link“ on www.ixys.com.

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

1~ Rectifier Bridges



1~ Rectifier Bridges with Avalanche Diodes, B2U

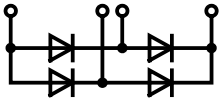
Type ○ Not for new designs ➢ New	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	P_{RSM} per Chip kW	Fig. No.	Package style Outline drawings on pages O-30...O-52
VBO 13-12AO2	1200	400	18	85	220	0.85	17.0	150	5.60	6.00	2.5	X115	X024a **ISOPLUS i4-PAC™** Weight = 6 g
VBO 13-14AO2	1400	500											
VBO 13-16AO2	1600	500											
VBO 20-12AO2	1200	400	31	85	300	0.85	14.0	150	3.00	3.40	3.4		
VBO 20-14AO2	1400	440											
VBO 20-16AO2	1600	500											
VBO 25-12AO2	1200	400	38	85	370	0.85	8.0	150	2.80	3.20	3.4		X025a **GBFP** Weight = 7 g
VBO 25-14AO2	1400	440											
VBO 25-16AO2	1600	500											

1~ Rectifier Bridges with Standard Diodes, B2U

VBO 13-08NO2	800	250	18	85	220	0.85	17.0	150	5.60	6.00	-	X115	X027a **SOT-227B** Weight = 30 g **miniBLOC**
VBO 13-12NO2	1200	400											
VBO 13-14NO2	1200	400											
VBO 13-16NO2	1600	500											
FBO 16-12N	1200	400	22	90	100	0.83	28.0	150	4.00	5.00	-	X024a	
○ **VBO 19-08NO7**	800	250	21	100	100	0.80	40.0	150	2.30	2.80	-	X100	
○ **VBO 19-12NO7**	1200	400											
VBO 20-08NO2	800	250	31	85	300	0.85	14.0	150	3.00	3.40	-	X115	
VBO 20-12NO2	1200	400											
VBO 20-14NO2	1400	440											
VBO 20-16NO2	1600	500											
VBO 21-08NO7	800	250	21	100	100	0.80	40.0	150	2.30	2.80		X101	X100 **Slim-Pack** Weight = 17 g
VBO 21-12NO7	1200	400											See data sheet for pin arrangement
VBO 22-08NO8	800	250	17	85	380	0.85	12.0	150	8.20	9.40	-	X116b	
VBO 22-12NO8	1200	400											
VBO 22-14NO8	1400	440											
VBO 22-16NO8	1600	500											
VBO 22-18NO8	1800	575											
GBO 25-12NO1	1200	400	25	80	370	0.89	12.2	150	4.30	4.80	-	X025a	X101 **ECO-PAC 1** Weight = 19 g
GBO 25-16NO1	1600	500											See data sheet for pin arrangement
VBO 25-08NO2	800	250	38	85	370	0.85	8.0	150	2.80	3.20	-	X115	
VBO 25-12NO2	1200	400											
VBO 25-14NO2	1400	440											
VBO 25-16NO2	1600	500											
VBO 30-08NO7	800	250	35	85	400	0.85	12.0	150	2.80	3.40	-	X119b	X115 FO-A Weight = 15 g
VBO 30-12NO7	1200	400											
VBO 30-14NO7	1400	440											
VBO 30-16NO7	1600	500											
VBO 30-18NO7	1800	575											
VBO 36-08NO8	800	250	23	85	550	0.80	5.8	150	6.20	7.40	-	X116b	X116b FO-B Weight = 22 g
VBO 36-12NO8	1200	400											
VBO 36-14NO8	1400	440											
VBO 36-16NO8	1600	500											
VBO 36-18NO8	1800	575											
FBO 40-12N	1200	400	40	90	250	0.83	10.0	150	2.30	2.90	-	X024a	
VBO 40-08NO6	800	250	40	100	300	0.80	13.0	150	1.70	2.00	-	X027a	X118h **FO-T-A** Weight = 100 g
VBO 40-12NO6	1200	400											
VBO 40-16NO6	1600	500											
○ **VBO 45-08NO7**	800	250	45	100	550	0.80	8.0	150	1.45	1.90	-	X118h	
○ **VBO 45-12NO7**	1200	400											
○ **VBO 45-14NO7**	1400	440											
○ **VBO 45-16NO7**	1600	500											
○ **VBO 45-18NO7**	1800	575											X119b **PWS-A** Weight = 135 g

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

1~ Rectifier Bridges



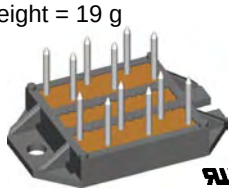
1~ Rectifier Bridges with Avalanche Diodes, B2U

Type ○ Not for new design ➢ New	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	Fig. No.
VBO 50-08NO7	800	250	50	64	750	0.85	8.0	150	2.60	2.84	X120b
VBO 50-12NO7	1200	400									
VBO 50-14NO7	1400	440									
VBO 50-16NO7	1600	500									
VBO 50-18NO7	1800	575									
VBO 52-08NO7	800	250	52	100	550	0.80	8.0	150	1.45	1.87	X122b
VBO 52-12NO7	1200	400									
VBO 52-14NO7	1400	440									
VBO 52-16NO7	1600	500									
VBO 52-18NO7	1800	575									
VBO 54-08NO7	800	250	54	100	300	0.80	13.0	150	1.10	1.60	X101
VBO 54-12NO7	1200	400									
VBO 54-14NO7	1400	440									
VBO 54-16NO7	1600	500									
○ **VBO 65-08NO7**	800	250	65	100	1000	0.80	5.0	150	1.12	1.50	X118h
○ **VBO 65-12NO7**	1200	400									
○ **VBO 65-14NO7**	1400	440									
○ **VBO 65-16NO7**	1600	500									
○ **VBO 65-18NO7**	1800	575									
VBO 68-08NO7	800	250	68	90	530	0.80	7.5	150	1.20	1.50	X101
VBO 68-12NO7	1200	400									
VBO 68-14NO7	1400	440									
VBO 68-16NO7	1600	500									
VBO 72-08NO7	800	250	72	100	750	0.80	5.0	150	1.10	1.52	X122b
VBO 72-12NO7	1200	400									
VBO 72-14NO7	1400	440									
VBO 72-16NO7	1600	500									
VBO 72-18NO7	1800	575									
VBO 78-08NO7	800	250	78	100	750	0.80	6.0	150	1.20	1.50	X102
VBO 78-12NO7	1200	400									
VBO 78-14NO7	1400	440									
VBO 78-16NO7	1600	500									
VBO 78-18NO7	1800	575									
VBO 88-08NO7	800	250	92	100	900	0.80	4.0	150	0.85	1.15	X102
VBO 88-12NO7	1200	400									
VBO 88-14NO7	1400	440									
VBO 88-16NO7	1600	500									
VBO 88-18NO7	1800	575									
VBO 105-08NO7	800	250	107	85	1500	0.80	5.0	150	0.83	1.13	X121b
VBO 105-12NO7	1200	400									
VBO 105-14NO7	1400	440									
VBO 105-16NO7	1600	500									
VBO 105-18NO7	1800	575									
VBO 125-08NO7	800	250	124	85	1800	0.80	3.0	150	0.83	1.13	X121b
VBO 125-12NO7	1200	400									
VBO 125-14NO7	1400	440									
VBO 125-16NO7	1600	500									
VBO 125-18NO7	1800	575									
VBO 130-08NO7	800	250	122	100	1800	0.80	3.0	150	0.65	0.83	X123e
VBO 130-12NO7	1200	400									
VBO 130-14NO7	1400	440									
VBO 130-16NO7	1600	500									
VBO 130-18NO7	1800	575									
VBO 160-08NO7	800	250	174	100	2800	0.80	2.2	150	0.45	0.60	X123e
VBO 160-12NO7	1200	400									
VBO 160-14NO7	1400	440									
VBO 160-16NO7	1600	500									
VBO 160-18NO7	1800	575									

Package style

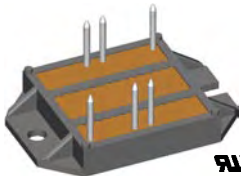
Outline drawings on pages O-30...O-52

X101 **ECO-PAC 1**
Weight = 19 g



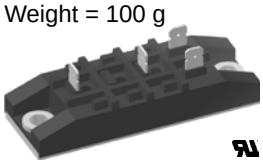
See data sheet for pin arrangement

X102 **ECO-PAC 2**
Weight = 24 g

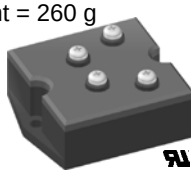


See data sheet for pin arrangement

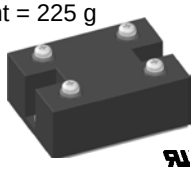
X118h **FO-T-A**
Weight = 100 g



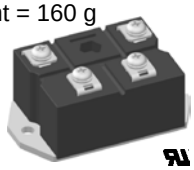
X120b **PWS-B**
Weight = 260 g



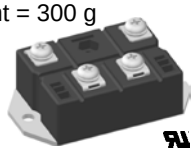
X121b **PWS-C**
Weight = 225 g



X122b **PWS-D**
Weight = 160 g

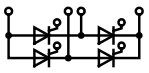
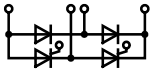
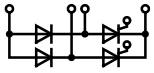


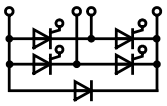
X123e **PWS-E**
Weight = 300 g

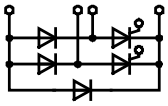


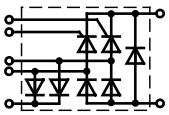
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

1~ Rectifier Bridges

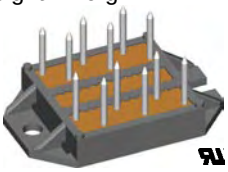
VKO  VGO  VHO 

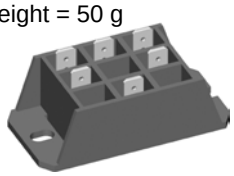

VKF

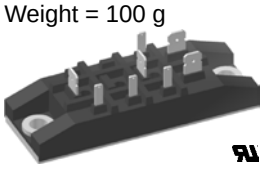

VHF

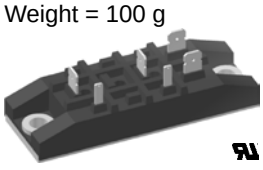

VHFD

Type ○ Not for new design ➢ New	V_{RRM} V	V_{VRMS} V	I_{dAV} @ T_H A °C	I_{FSM} 45°C A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	Fig. No.	Package style Outline drawings on pages O-30...O-52
1~ Half Controlled Rectifier Bridges with free wheeling diode, B2HKF											
VHF 15-08io5	800	250	15 85	190	1.00	40.0	125	2.40	3.00	X117a	X101 **ECO-PAC 1** Weight = 19 g
VHF 15-12io5	1200	400									
VHF 15-14io5	1400	440									
VHF 15-16io5	1600	500									
VHF 25-08io7	800	250	32 T_C = 85°C	200	0.85	27.0	125	1.30	1.80	X101	
VHF 25-12io7	1200	400									
VHF 28-08io5	800	250	28 85	300	0.90	15.0	125	1.40	2.00	X117a	
VHF 28-12io5	1200	400									
VHF 28-14io5	1400	440									
VHF 28-16io5	1600	500									
VHF 36-08io5	800	250	36 85	320	0.85	13.0	125	1.15	1.55	X117a	X103 **V1-A-Pack** Weight = 35 g
VHF 36-12io5	1200	400									
VHF 36-14io5	1400	440									
VHF 36-16io5	1600	500									
VHF 55-08io7	800	250	53 85	550	0.85	11.0	125	0.90	1.10	X118g	
VHF 55-12io7	1200	400									
VHF 55-14io7	1400	440									
VHF 55-16io7	1600	500									
VHF 85-12io7	1200	400	82 85	1150	0.85	6.0	125	0.65	0.80	X123d	
VHF 85-14io7	1400	440									
VHF 125-12io7	1200	400	123 85	1500	0.85	3.5	125	0.46	0.55	X123d	X117a **FO-F-A** Weight = 50 g
VHF 125-14io7	1400	440									
VHF 125-16io7	1600	500									
VHFD 16-08io1	800	250	16 85	150	1.00	40.0	125	2.40	3.00	X103	
VHFD 16-12io1	1200	400									
VHFD 16-14io1	1400	440									
VHFD 16-16io1	1600	500									
VHFD 29-08io1	800	250	28 85	300	0.90	15.0	125	1.40	2.00	X103	
VHFD 29-12io1	1200	400									
VHFD 29-14io1	1400	440									
VHFD 29-16io1	1600	500									
VHFD 37-08io1	800	250	36 85	320	0.85	13.0	125	1.20	1.55	X103	X118e **FO-T-A** Weight = 100 g
VHFD 37-12io1	1200	400									
VHFD 37-14io1	1400	440									
VHFD 37-16io1	1600	500									
1~ Half Controlled Rectifier Bridge, B2HK											
○ **VHO 55-08io7**	800	250	53 85	550	0.85	11.0	125	0.90	1.10	X118g	
○ **VHO 55-12io7**	1200	400									
○ **VHO 55-14io7**	1400	440									
○ **VHO 55-16io7**	1600	500									X118g **FO-T-A** Weight = 100 g
1~ Full Controlled Rectifier Bridge, B2C											
○ **VKO 55-08io7**	800	250	53 85	550	0.85	11.0	125	0.90	1.10	X118e	
○ **VKO 55-12io7**	1200	400									
○ **VKO 55-14io7**	1400	440									
○ **VKO 55-16io7**	1600	500									
1~ Full Controlled Rectifier Bridge, B2CF											
○ **VKF 55-08io7**	800	250	53 85	550	0.85	11.0	125	0.90	1.10	X118e	X123d **PWS-E** Weight = 300 g
○ **VKF 55-12io7**	1200	400									
○ **VKF 55-14io7**	1400	440									
○ **VKF 55-16io7**	1600	500									
1~ Half Controlled Rectifier Bridge, B2HZ											
VGO 36-08io7	800	250	36 85	320	0.85	13.0	125	1.40	2.00	X101	
VGO 36-12io7	1200	400									
VGO 36-14io7	1400	440									
VGO 36-16io7	1600	500									


See data sheet for pin arrangement

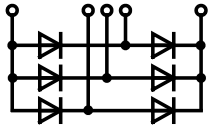






Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

3~ Rectifier Bridges, B6U

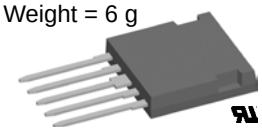


Type ○ Not for new design ➢ New	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	Fig. No.
VUO 16-08NO1	800	250	15		100	0.80	50.0	130	-	4.50	X103
VUO 16-12NO1	1200	400									
VUO 16-14NO1	1400	440	T_H = 90°C								
VUO 16-16NO1	1600	500									
VUO 16-18NO1	1800	575									
FUO 22-12N	1200	400	27	90	100	0.83	28.0	150	4.00	5.00	X024a
FUO 22-16N	1600	500									
VUO 22-08NO1	800	250	22		100	0.80	40.0	130	-	3.10	X103
VUO 22-12NO1	1200	400									
VUO 22-14NO1	1400	440	T_H = 90°C								
VUO 22-16NO1	1600	500									
VUO 22-18NO1	1800	575									
VUO 25-08NO8	800	250	20	85	380	0.85	12.0	150	9.30	10.20	X116a
VUO 25-12NO8	1200	400									
VUO 25-14NO8	1400	440									
VUO 25-16NO8	1600	500									
VUO 25-18NO8	1800	575									
○ **VUO 27-08NO7**	800	250	28	100	100	0.80	40.0	150	2.30	2.80	X100
○ **VUO 27-12NO7**	1200	400									
VUO 28-08NO7	800	250	28	100	100	0.80	40.0	150	2.30	2.80	X101
VUO 28-12NO7	1200	400									
VUO 36-08NO8	800	250	27	85	550	0.80	7.4	150	7.50	8.40	X116a
VUO 36-12NO8	1200	400									
VUO 36-14NO8	1400	440									
VUO 36-16NO8	1600	500									
VUO 36-18NO8	1800	575									
VUO 34-08NO1	800	250	36		300	0.80	15.0	130	-	2.50	X103
VUO 34-12NO1	1200	400									
VUO 34-14NO1	1400	440	T_H = 90°C								
VUO 34-16NO1	1600	500									
VUO 34-18NO1	1800	575									
VUO 30-08NO3	800	250	37	85	300	0.90	11.0	125	2.40	3.00	X117b
VUO 30-12NO3	1200	400									
VUO 30-14NO3	1400	440									
VUO 30-16NO3	1600	500									
VUO 30-18NO3	1800	575									
VUO 35-08NO7	800	250	38	85	400	0.85	12.0	150	4.20	4.80	X119a
VUO 35-12NO7	1200	400									
VUO 35-14NO7	1400	440									
VUO 35-16NO7	1600	500									
VUO 35-18NO7	1800	575									
➢ **GUO 40-08NO1**	800	250	40	85	370	0.86	12.9	175	4.30	5.00	X025b
➢ **GUO 40-12NO1**	1200	400									
➢ **GUO 40-16NO1**	1600	500									
FUO 50-16N	1600	500	50	90	200	0.86	14.8	150	2.10	3.20	X024a
VUO 52-08NO1	800	250	54		350	0.80	12.5	130	-	1.50	X103
VUO 52-12NO1	1200	400									
VUO 52-14NO1	1400	440	T_H = 90°C								
VUO 52-16NO1	1600	500									
VUO 52-18NO1	1600	500									
VUO 52-20NO1	1800	575									
VUO 50-08NO3	800	250	58	85	500	0.90	6.0	125	1.62	2.22	X117b
VUO 50-12NO3	1200	400									
VUO 50-14NO3	1400	440									
VUO 50-16NO3	1600	500									
VUO 50-18NO3	1800	575									
VUO 55-12NO7	1200	400	58	85	750	0.85	8.0	150	2.70	3.06	X120a
VUO 55-14NO7	1400	440									
VUO 55-16NO7	1600	500									
VUO 55-18NO7	1800	575									
VUO 60-12NO3	800	250	72	85	600	0.80	6.5	125	1.20	1.60	X117b
VUO 60-14NO3	1400	440									
VUO 60-16NO3	1600	500									
VUO 60-18NO3	1800	575									

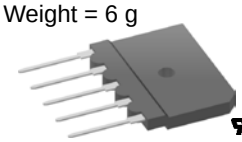
Package style

Outline drawings on pages O-30...O-52

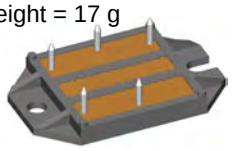
X024a **ISOPLUS i4-PAC™**
Weight = 6 g



X025b **GUFP**
Weight = 6 g

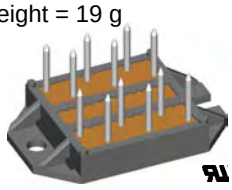


X100 **Slim-Pack**
Weight = 17 g



See data sheet for pin arrangement

X101 **ECO-PAC 1**
Weight = 19 g

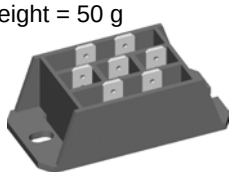


See data sheet for pin arrangement

X103 **V1-A-Pack**
Weight = 35 g

X116a **FO-B**
Weight = 22 g

X117b **FO-F-B**
Weight = 50 g

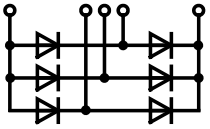


X119a **PWS-A**
Weight = 135 g

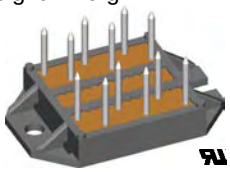
X120a **PWS-B**
Weight = 260 g

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

3~ Rectifier Bridges, B6U



Type ○ Not for new design ➢ New	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	Fig. No.	Package style Outline drawings on pages O-30...O-52
VUO 62-08NO7	800	250	63	110	550	0.80	8.0	150	1.45	1.87	X122a	X101 **ECO-PAC 1** Weight = 19 g
VUO 62-12NO7	1200	400										
VUO 62-14NO7	1400	440										
VUO 62-16NO7	1600	500										
VUO 62-18NO7	1800	575										
VUO 68-08NO7	800	250	68	100	300	0.80	13.0	150	1.10	1.60	X101	
VUO 68-12NO7	1200	400										
VUO 68-14NO7	1400	440										
VUO 68-16NO7	1600	500										
VUO 70-08NO7	800	250	70	100	550	0.80	8.0	150	1.45	1.90	X118d	
VUO 70-12NO7	1200	400										
VUO 70-14NO7	1400	440										
VUO 70-16NO7	1600	500										
VUO 80-08NO1	800	250	82		600	0.80	7.5	150	-	1.42	X103	
VUO 80-12NO1	1200	400	T_H = 90°C									
VUO 80-14NO1	1400	440										
VUO 80-16NO1	1600	500										
VUO 80-18NO1	1800	575										
VUO 82-08NO7	800	250	88	110	750	0.80	5.0	150	1.10	1.52	X122a	
VUO 82-12NO7	1200	400										
VUO 82-14NO7	1400	440										
VUO 82-16NO7	1600	500										
VUO 82-18NO7	1800	575										
○ **VUO 85-08NO7**	800	250	85	100	750	0.80	6.0	150	1.30	1.60	X118d	
○ **VUO 85-12NO7**	1200	400										
○ **VUO 85-14NO7**	1400	440										
○ **VUO 85-16NO7**	1600	500										
VUO 86-08NO7	600	125	86	90	530	0.80	7.5	150	1.20	1.50	X101	
VUO 86-12NO7	1200	400										
VUO 86-14NO7	1400	440										
VUO 86-16NO7	1600	500										
VUO 98-08NO7	800	250	95	85	750	0.80	6.0	150	1.20	1.50	X102	
VUO 98-12NO7	1200	400										
VUO 98-14NO7	1400	440										
VUO 98-16NO7	1600	500										
○ **VUO 100-08NO7**	800	250	100	100	1000	0.80	5.0	150	1.12	1.50	X118d	
○ **VUO 100-12NO7**	1200	400										
○ **VUO 100-14NO7**	1400	440										
○ **VUO 100-16NO7**	1600	500										
VUO 105-12NO7	1200	400	140	85	1500	0.80	5.0	150	0.83	1.13	X121a	
VUO 105-14NO7	1400	440										
VUO 105-16NO7	1600	500										
VUO 105-18NO7	1800	575										
VUO 110-08NO7	800	250	127	110	1200	0.80	4.0	150	0.90	1.08	X123c	
VUO 110-12NO7	1200	400										
VUO 110-14NO7	1400	440										
VUO 110-16NO7	1600	500										
VUO 110-18NO7	1800	575										



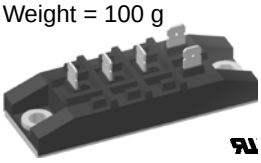
See data sheet for pin arrangement

X102 **ECO-PAC 2**
Weight = 24 g

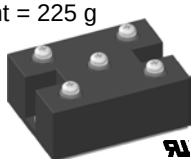
See data sheet for pin arrangement

X103 **V1-A-Pack**
Weight = 35 g

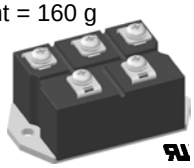
X118d **FO-T-A**
Weight = 100 g



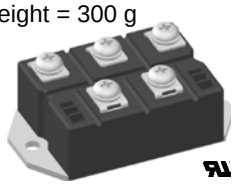
X121a **PWS-C**
Weight = 225 g



X122a **PWS-D**
Weight = 160 g

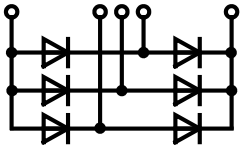


X123c **PWS-E**
Weight = 300 g



Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

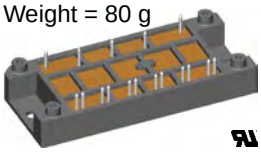
3~ Rectifier Bridges, B6U



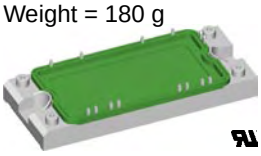
Type ➢ New	V_{RRM} V	V_{vRMS} V	I_{dAV} A	@ T_C °C	I_{FSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	Fig. No.	Package style Outline drawings on pages O-30...O-52
VUO 120-12NO1	1200	1200	121	75	650	0.80	6.1	150	1.00	1.30	X104	X102 **ECO-PAC 2** Weight = 24 g
VUO 120-16NO1	1600	1600										
VUO 121-16NO1	1600	575	118	100	650	0.80	5.0	150	0.80	0.90	X112	
VUO 122-08NO7	800	250	117	100	900	0.80	4.0	150	0.85	1.15	X102	
VUO 122-12NO7	1200	400										
VUO 122-14NO7	1400	440										
VUO 122-16NO7	1600	500										
VUO 122-18NO7	1800	575										
VUO 155-12NO1	1200	1200	157	75	850	0.75	4.6	150	0.80	1.10	X104	
VUO 155-16NO1	1600	1600										
VUO 160-08NO7	800	250	175	90	1800	0.80	3.0	150	0.65	0.83	X123c	
VUO 160-12NO7	1200	400										
VUO 160-14NO7	1400	440										
VUO 160-16NO7	1600	500										
VUO 160-18NO7	1800	575										
VUO 125-12NO7	1200	400	166	85	1800	0.80	3.0	150	0.83	1.13	X121a	
VUO 125-14NO7	1400	440										
VUO 125-16NO7	1600	500										
VUO 125-18NO7	1800	575										
VUO 190-08NO7	800	250	248	110	2800	0.80	2.2	150	0.45	0.60	X123c	
VUO 190-12NO7	1200	400										
VUO 190-14NO7	1400	440										
VUO 190-16NO7	1600	500										
VUO 190-18NO7	1800	575										

See data sheet for pin arrangement

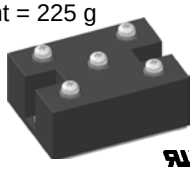
X104 **V2-Pack**
Weight = 80 g



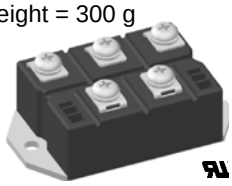
X112 **E2-Pack**
Weight = 180 g



X121a **PWS-C**
Weight = 225 g



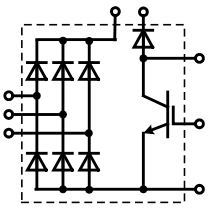
X123c **PWS-E**
Weight = 300 g



Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

3~ Rectifier Bridges

with IGBT and Fast Diode for Brake Unit



Type ➢ New	Rectifier V_{RRM} V	 I_{dAV} A	 @ T_C °C	IGBT V_{CES} V	 I_{C80} A	Fast Diode V_{RRM} V	 $I_{F(AV)}$ A	 t_{rr} ns	Fig. No.
VUB 50-12PO1	1200	56	100	1200	14	1200	10	110	X102
VUB 50-16PO1	1600								
VUB 72-12NO1	1200	110	80	1200	35	1200	15	130	X103
VUB 72-16NO1	1600								
VUB 116-16NO1	1600	116	100	1200	67	1200	27	40	X112
VUB 120-12NO2	1200	188	80	1200	100	1200	34	40	X104
VUB 120-16NO2	1600								
VUB 135-22NO1	2200	135	100	1700	50	1800	50	40	X112
VUB 145-16NO1	1600	145	100	1200	100	1200	27	40	
VUB 160-12NO2	1200	188	80	1200	125	1200	34	40	X104
VUB 160-16NO2	1600								

Package style
Outline drawings
on pages O-30...O-52

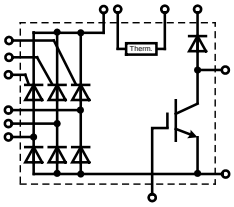
X102 **ECO-PAC 2**
Weight = 24 g

See data sheet for pin arrangement

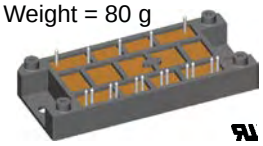
X103 **V1-A-Pack**
Weight = 35 g

3~ Half Controlled Rectifier Bridges

with IGBT and Fast Diode for Brake Unit

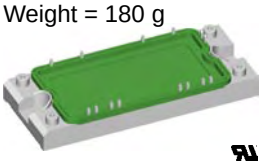


X104 **V2-Pack**
Weight = 80 g



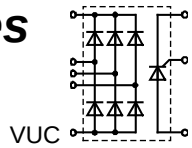
Type ➢ New	Rectifier V_{RRM} V	 I_{dAV} A	 @ T_C °C	IGBT V_{CES} V	 I_{C80} A	Fast Diode V_{RRM} V	 $I_{F(AV)}$ A	 t_{rr} ns	Fig. No.
VVZB 120-12io2	1200	120	80	1200	100	1200	27	40	X104
VVZB 120-16io2	1600								
VVZB 135-16NO1	1600	135	85	1200	67	1200	27	40	X112
VVZB 170-16NO1	1600	170	85	1200	100	1200	27	40	

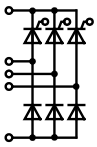
X112 **E2-Pack**
Weight = 180 g

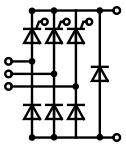


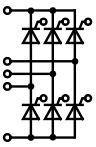
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

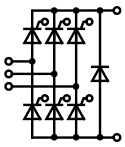
3~ Rectifier Bridges


VUC


VVZ

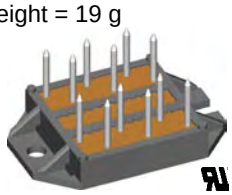

VVZF


VTO


VTOF

Type ○ Not for new design ➢ New	V_{RRM} V	V_{vRMS} V	I_{dAVM} A	@ T_H °C		I_{FSM} 45°C A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	Fig. No.
3~ Rectifier Bridges with Fast Diodes (t_{rr} = 1.5 ms) & Integrated Softstart Thyristor												
VUC 25-12go2	1200	400	25	85	Dio.	300	1.20	18.0	125	2.30	2.90	X105a
VUC 25-14go2	1400	440			Thyr.	330	1.10	11.0	125	0.90	1.10	
VUC 25-16go2	1600	500										
VUC 36-12go2	1200	400	34	85	Dio.	300	1.20	16.0	125	1.40	2.00	
VUC 36-14go2	1400	440			Thyr.	400	0.85	10.0	125	0.90	1.10	
VUC 36-16go2	1600	500										

X101 **ECO-PAC 1**
Weight = 19 g

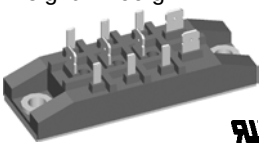


See data sheet for pin arrangement

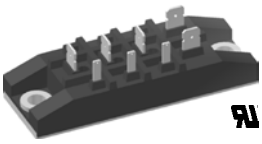
Type ○ Not for new design ➢ New	V_{RRM} V	V_{vRMS} V	I_{dAV} T_C = 85°C A	I_{FSM} 45°C A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	Fig. No.
3~ Half Controlled Rectifier Bridges, B6HK										
VVZ 12-12io1	1200	400	15	110	1.10	30.0	125	2.50	3.10	X105a
VVZ 12-14io1	1400	440	T_H = 100°C							
VVZ 12-16io1	1600	500								
VVZ 24-12io1	1200	400	21	300	1.00	16.0	125	2.10	2.70	
VVZ 24-14io1	1400	440	T_H = 100°C							
VVZ 24-16io1	1600	500								
VVZ 39-08ho7	800	250	39	200	0.85	27.0	125	1.30	1.80	X101
VVZ 39-12ho7	1200	400								
VVZ 40-12io1	1200	400	34	320	0.85	15.0	125	1.00	1.60	X105a
VVZ 40-14io1	1400	440	T_H = 100°C							
VVZ 40-16io1	1600	500								
VVZ 70-08io7	800	250	70	550	0.85	11.0	125	0.90	1.10	X118c
VVZ 70-12io7	1200	400								
VVZ 70-14io7	1400	440								
VVZ 70-16io7	1600	500								
VVZ 110-12io7	1200	400	110	1150	0.85	6.0	125	0.65	0.80	X123b
VVZ 110-14io7	1400	440								
VVZ 175-12io7	1200	400	167	1500	0.85	3.5	125	0.46	0.55	
VVZ 175-14io7	1400	440								
VVZ 175-16io7	1600	500								
3~ Half Controlled Rectifier Bridges with free wheeling diode, B6HKF										
VVZF 70-08io7	800	250	70	550	0.85	11.0	125	0.90	1.10	X118c
VVZF 70-12io7	1200	400								
VVZF 70-14io7	1400	440								
VVZF 70-16io7	1600	500								
3~ Full Controlled Rectifier Bridges, B6C										
VTO 39-08ho7	800	250	39	200	0.85	27.0	125	1.30	1.80	X101
VTO 39-12ho7	1200	400								
○ **VTO 70-08io7**	800	250	70	550	0.85	11.0	125	0.90	1.10	X118a
○ **VTO 70-12io7**	1200	400								
○ **VTO 70-14io7**	1400	440								
○ **VTO 70-16io7**	1600	500								
VTO 110-12io7	1200	400	110	1150	0.85	6.0	125	0.65	0 .80	X123a
VTO 110-14io7	1400	440	T_C = 100°C							
VTO 175-12io7	1200	400	167	1500	0.85	3.5	125	0.46	0.55	
VTO 175-14io7	1400	440	T_C = 100°C							
VTO 175-16io7	1600	500								
3~ Full Controlled Rectifier Bridge with free wheeling diode, B6CF										
○ **VTOF 70-08io7**	800	250	70	550	0.85	11.0	125	0.90	1.10	X118a
○ **VTOF 70-12io7**	1200	400	T_C = 85°C							
○ **VTOF 70-14io7**	1400	440								
○ **VTOF 70-16io7**	1600	500								

X105a **V1-B-Pack**
Weight = 28 g

X118a **FO-T-A**
Weight = 100 g



X118c **FO-T-A**
Weight = 100 g



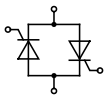
X123a **PWS-E**
Weight = 300 g

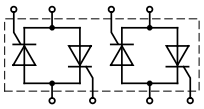
X123b **PWS-E**
Weight = 160 g

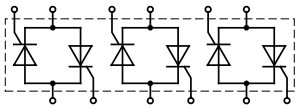
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

AC Controller 1~ / 2~ / 3~

I_{RMS} = 30 - 230 A


MMO


VW 2x...

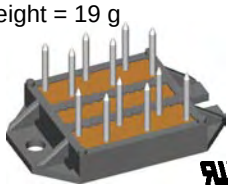

VWO

	Type ➢ New	V_{RRM} V	V_{vRMS} V	I_{dAV} T_C = 85°C A	I_{FSM} 45°C A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thJH} per Chip K/W	Fig. No.
1~	**MMO 62-12io6**	1200	400	54	400	0.85	12.0	125	0.91	1.01	X027a
	MMO 62-16io6	1600	500	T_C = 110°C							
	MMO 74-12io6	1200	400	74	600	0.85	8.4	150	0.71	0.81	
	MMO 74-16io6	1600	500	T_C = 110°C							
	MMO 90-12io6	1200	400	90	800	0.90	5.8	150	0.60	0.70	
	MMO 90-14io6	1400	440	T_C = 110°C							
	MMO 90-16io6	1600	500								
	MMO 110-08io7	800	250	112	1000	0.85	5.6	150	0.80	0.92	X101
	MMO 110-12io7	1200	400								
	MMO 110-14io7	1400	440								
	MMO 140-08io7	800	250	130	1150	0.85	5.2	150	0.70	0.82	
	MMO 140-12io7	1200	400								
	MMO 140-16io7	1600	500								
	MMO 175-08io7	800	250	175	1500	0.85	3.7	150	0.50	0.62	
	MMO 175-12io7	1200	400								
	MMO 175-16io7	1600	500								
	MMO 230-08io7	800	250	230	2250	0.80	2.4	125	0.26	0.46	X102
	MMO 230-12io7	1200	400								
	MMO 230-14io7	1400	440								
	MMO 230-16io7	1600	500								
	MMO 230-18io7	1800	575								
2~	**VW 2x30-12io1**	1200	400	2x 30	200	0.80	25.0	125	1.70	2.00	X103
	VW 2x30-14io1	1400	440								
	VW 2x30-16io1	1600	500								
	VW 2x45-12io1	1200	400	2x 45	300	0.85	15.0	125	1.25	1.55	
	VW 2x45-14io1	1400	440								
	VW 2x45-16io1	1600	500								
	VW 2x60-12io1	1200	400	2x 60	520	0.85	11.0	125	0.92	1.22	
	VW 2x60-14io1	1400	440								
	VW 2x60-16io1	1600	500								
3~	**VWO 35-08ho7**	800	250	3x 35	200	0.85	27.0	125	1.30	1.80	X101
	VWO 35-12ho7	1200	400								
	VWO 36-12io7	1200	400	3x 39	320	0.85	13.0	125	1.30	1.50	X118b
	VWO 36-14io7	1400	440	T_H = 85°C							
	VWO 36-16io7	1600	500								
	VWO 40-12io7	1200	400	3x 40	400	0.85	15.0	125	1.43	1.53	X124
	VWO 40-14io7	1400	440								
	VWO 40-16io7	1600	500								
	VWO 50-12io7	1200	400	3x 50	520	0.85	11.0	125	1.20	1.31	X124
	VWO 50-14io7	1400	440								
	VWO 50-16io7	1600	500								
	VWO 60-12io7	1200	400	3x 60	550	0.85	11.0	125	0.90	1.10	X118b
	VWO 60-14io7	1400	440	T_H = 85°C							
	VWO 60-16io7	1600	500								
	VWO 85-12io1	1200	400	3x 83	520	0.85	11.0	150	0.92	1.22	X104
	VWO 85-14io1	1400	440								
	VWO 85-16io1	1600	500								
	VWO 80-12io7	1200	400	3x 82	1000	0.85	5.2	125	0.81	1.00	X124
	VWO 80-14io7	1400	440								
	VWO 95-12io7	1200	400	3x 96	1150	0.85	4.8	125	0.66	0.93	
	VWO 95-14io7	1400	440								
	VWO 140-12io1	1200	400	3x 143	1150	0.85	5.2	150	0.60	0.70	X104
	VWO 140-14io1	1400	440								
	VWO 140-16io1	1600	500								

Package style
Outline drawings
on pages O-30...O-52

X027a **SOT-227B**
Weight = 30 g **miniBLOC**

X101 **ECO-PAC 1**
Weight = 19 g



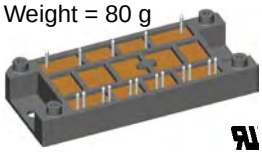
See data sheet for pin arrangement

X102 **ECO-PAC 2**
Weight = 24 g

See data sheet for pin arrangement

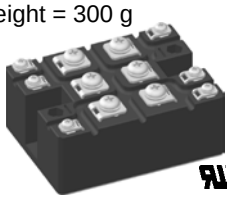
X103 **V1-A-Pack**
Weight = 35 g

X104 **V2-Pack**
Weight = 80 g



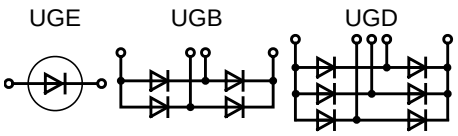
X118b **FO-T-A**
Weight = 100 g

X124 **PWS-F**
Weight = 300 g



Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

1~ / 3~ High Voltage Rectifier Modules



Type ➢ New	V_{RRM} V	I_{dAV} ① / ② A	I_{FSM} 45°C 10 ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJA1} ① K/W	R_{thJA2} ② K/W	Fig. No.	Package style Outline drawings on pages O-30...O-52
UGE 0421 AY4	3200	23 / 7.4	300	1.70	16	150	1.9	7.1	X251	
UGE 0221 AY4	4800	10 / 3.8	180	2.55	90	150	1.7	8.0		
UGE 1112 AY4	8000	4.2 / 2.0	120	4.25	215	150	4.2	10.0		
UGE 3126 AY4	24000	2.0 / 0.8	70	12.00	1800	150	2.7	8.7		
UGB 3132 AD	4800	1.3	60	-	-	150	-	-	X252	
UGB 6124 AG	10500	1.0	50	-	-	150	-	-	X253	
UGD 6123 AG	7200	1.8	50	-	-	150	-	-		
UGD 8124 AG	10500	1.2	50	-	-	150	-	-		

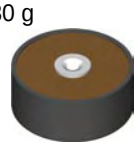
Data according to IEC 60747-2/6

① for oil-cooling with cooling plate, T_A = 35°C
② for natural air cooling without cooling plate, T_A = 45°C

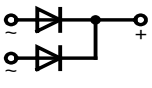
X253 **UGD**
Weight = 300 g

X252 **UGB**
Weight = 150g

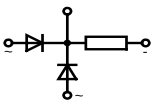
X251 **UGE**
Weight = 130 g



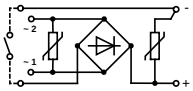
Braking Rectifier Assemblies



VGF 0136 AH



VGF 0136 AB

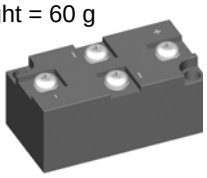


VGB 0124 AY7

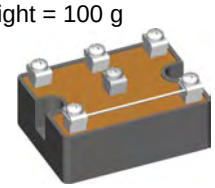
Type ➢ New	V_{vRMS} typ. V	V_{dAV} typ. V	I_{dAVM} typ. A	I_{dAVM} max. A	V_{RRM} max. V	I_{FSM} max. A	I^2t max. A^2s	Fig. No.	Package style Outline drawings on pages O-30...O-52
VGB 0124 AY7a	380	340	1.0	1.0	1400	60	28	X254	
VGF 0136 AB	1000	440	1.2	1.5	2800	80	40	X255	
VGF 0136 AH	1000	440	0.6	1.1	1400	60	28	X256	

X256 **VG-C**
Weight = 50 g

X255 **VG-B**
Weight = 60 g



X254 **VG-A**
Weight = 100 g



Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Break-Over Diodes

Version R

Version RD

Type ➢ New	V_{BO} V	I_{BO} T_{VJ} = 25 °C mA	I_D T_{VJ} = 125 °C µA	I_H T_{VJ} = 25 °C mA	V_H T_{VJ} = 25 °C V	I_{AVM} ① T_{amb} = 50 °C A	I_{SM} T_{amb} = 50 °C A	dv/dt V/µs	R_{thJA} K/W	Fig. No.	Package style Outline drawings on pages O-30...O-52
IXBOD 1-06	600 ±50	< 15	20	30	4-8	0.90	200	>1000	60	X201	
IXBOD 1-07	700										
IXBOD 1-08	800		0.8 x VBO								
IXBOD 1-09	900										
IXBOD 1-10	1000										
IXBOD 1-12 R	1200 ±50	< 15	100	30	4-8	1.25	200	>1000	20	X202	X201 **FP-Case** (oil proof) Weight = 0.8 g
IXBOD 1-12 RD											
IXBOD 1-13 R	1300										
IXBOD 1-13 RD											
IXBOD 1-14 R	1400		0.8 x VBO								
IXBOD 1-14 RD											
IXBOD 1-15 R	1500										
IXBOD 1-15 RD											
IXBOD 1-16 R	1600 ±50	< 15	100	30	4-8	1.25	200	>1500	20		
IXBOD 1-16 RD											
IXBOD 1-17 R	1700										
IXBOD 1-17 RD											
IXBOD 1-18 R	1800										X202 **BOD-Package** Weight = 14 g
IXBOD 1-18 RD											
IXBOD 1-19 R	1900										
IXBOD 1-19 RD											
IXBOD 1-20 R	2000 ±50	< 15	100	30	4-8	0.90	200	>1500	20		
IXBOD 1-20 RD											
IXBOD 1-21 R	2100 ±50	< 15	100	30	4-8	0.90	200	>2000	20		
IXBOD 1-21 RD											
IXBOD 1-22 R	2200										
IXBOD 1-22 RD											
IXBOD 1-23 R	2300										
IXBOD 1-23 RD											
IXBOD 1-24 R	2400										
IXBOD 1-24 RD											
IXBOD 1-25 R	2500										
IXBOD 1-25 RD											
IXBOD 1-26 R	2600 ±100	< 15	100	30	4-8	0.70	200	>2500	20		
IXBOD 1-26 RD											
IXBOD 1-28 R	2800										
IXBOD 1-28 RD											
IXBOD 1-30 R	3000										
IXBOD 1-30 RD											
IXBOD 1-32 R	3200 ±100	< 15	100	30	4-8	0.70	200	>3000	20		
IXBOD 1-32 RD											
IXBOD 1-34 R	3400										
IXBOD 1-36 R	3600 ±100	< 15	100	30	4-8	0.70	200	>3500	20		
IXBOD 1-38 R	3800										
IXBOD 1-40 R	4000										
IXBOD 1-42 R	4200										

① Leads soldered on PCB board, T_{stg} and T_{VJ} = -40 ... +125°C

Break-Over-Diodes Sets

We deliver also:
- Special selection of more than 2 pcs IXBOD1-... for every break down voltage of VBO > 2000 V
- Example

type designation IXBOD Set SA05/00
VBO = 4700 V ±100 V
(we deliver 5 pcs single selected IXBOD1-... in one plastic bag)
Customers use these products on PCB connected in series with parallel resistor R = 10 MΩ across each IXBOD

Integrated Circuits

Ultra-fast Power MOSFET / IGBT Drivers

These ultra-fast high current drivers are optimized for high efficiency performance in the motor drive and power conversion applications. They are designed to switch largest MOSFETs and IGBTs with minimum switching times at frequencies to 10 MHz. These MOSFET / IGBT drivers are manufactured in industry standard outlines, which include TO-263, TO-220 and many IC packages offering superior thermal performance.

Features

- Wide operating voltage range from 4.5 V to 35 V
- Rated for -55°C to +125°C operation
- Very Low output impedance
- No internal cross conduction which allows operating frequency to 10 MHz
- Latch-up protected to rated reverse current
- Output Current - up to 30 A peak
- Very low thermal impedance for TO-263 and TO-220 packages
- Matched rise and fall times
- ENABLE pin for emergency shutdown
- TTL or CMOS input signals
- Grounded base tab in 8-Pin SOIC-CT, 14-Pin SOIC-CT, 16-PIN SOIC-CT and 28 Pin SOIC-CT packages for PC board cooling.

Applications

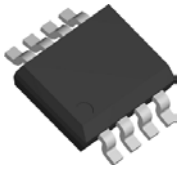
- Inverters
- SMPS Class D Amplifiers
- Power Factor Correction
- Motor drives
- Line drivers
- Traction
- Radiology and laser technology

Low Side MOSFET / IGBT Gate Driver Selection Guide

Part Number	Output Type	I_{PK} T_C = 25°C A	Output Resistance Ω	Logic Configuration	Enable Function	Package	Fig. No.	Outline drawings on pages O-30...O-52
IXDF 402SI	Dual	2	4	Non-Inverting & Inverting		8-pin SOIC-CT	X512a	
IXDF 402SI-16				Non-Inverting & Inverting		16-pin SOIC-CT(W)	X515a	
IXDF 402SIA-16				Non-Inverting & Inverting		16-pin SOIC(W)	X515	
IXDF 502D1				Non-Inverting & Inverting		6-pin DFN 4x5	X531	
IXDF 502PI				Non-Inverting & Inverting		8-pin DIP	X502	
IXDF 502SIA				Non-Inverting & Inverting		8-pin SOIC	X512	
IXDI 402SI				Inverting		8-pin SOIC-CT	X512a	
IXDI 402SI-16				Inverting		16-pin SOIC-CT(W)	X515a	
IXDI 402SIA-16				Inverting		16-pin SOIC(W)	X515	
IXDI 502D1				Inverting		6-pin DFN 4x5	X531	
IXDI 502PI				Inverting		8-pin DIP	X502	
IXDI 502SIA				Inverting		8-pin SOIC	X512	
IXDN 402SI				Non-Inverting		8-pin SOIC-CT	X512a	
IXDN 402SI-16				Non-Inverting		16-pin SOIC-CT(W)	X515a	
IXDN4 02SIA-16				Non-Inverting		16-pin SOIC(W)	X515	
IXDN 502D1				Non-Inverting		6-pin DFN	X531	
IXDN 502PI				Non-Inverting		8-pin DIP	X502	
IXDN 502SIA				Non-Inverting		8-pin SOIC	X512	
IXDR 502D1B	Single	2	4	Inverting		6-pin DFN 2x2	X530	
IXDS 502D1B				Non-Inverting OR Inverting		6-pin DFN 2x2	X530	
IXDD 404SI	Dual	4	2.5	Non-Inverting	●	8-pin SOIC-CT	X512a	
IXDD 404SI-16				Non-Inverting	●	16-pin SOP-CT(W)	X515a	
IXDD 404SIA-16				Non-Inverting	●	16-pin SOP(W)	X515	
IXDD 504D2				Non-Inverting	●	8-pin DFN 4x5	X532	
IXDD 504PI				Non-Inverting	●	8-pin DIP	X502	
IXDD 504SIA				Non-Inverting	●	8-pin SOIC	X512	
IXDE 504D2				Inverting	●	8-pin DFN 4x5	X532	
IXDE 504PI				Inverting	●	8-pin DIP	X502	
IXDE 504SIA				Inverting	●	8-pin SOIC	X512	
IXDF 404SI				Non-Inverting & Inverting		8-pin SOIC-CT	X512a	
IXDF 404SI-16				Non-Inverting & Inverting		16-pin SOIC-CT(W)	X515a	
IXDF 404SIA-16				Non-Inverting & Inverting		16-pin SOIC(W)	X515	
IXDF 504D1				Non-Inverting & Inverting		6-pin DFN 4x5	X531	
IXDF 504PI				Non-Inverting & Inverting		8-pin DIP	X502	

X502 8-pin DIP

X512(a) 8-pin SOIC



X515(a) 16-pin SOIC-CT(W)

Integrated Circuits

Ultra-fast Power MOSFET / IGBT Drivers

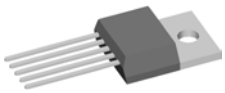
Part Number	Output Type	I_{PK} T_C = 25°C A	Output Resis-tance Ω	Logic Configuration	Enable Function	Package	Fig. No.	Outline drawings on pages O-30...O-52
IXDF 504SIA	Dual	4	2.5	Non-Inverting & Inverting		8-pin SOIC	X512	
IXDI 404SI				Inverting		8-pin SOIC-CT	X512a	
IXDI 404SI-16				Inverting		16-pin SOIC-CT(W)	X515a	
IXDI 404SIA-16				Inverting		16-pin SOIC(W)	X515	**X006 TO-220**
IXDI 504D1				Inverting		6-pin DFN 4x5	X531	
IXDI 504PI				Inverting		8-pin DIP	X502	
IXDI 504SIA				Inverting		8-pin SOIC	X512	
IXDN 404SI				Non-Inverting		8-pin SOIC-CT	X512a	
IXDN 404SI-16				Non-Inverting		16-pin SOIC-CT(W)	X515a	
IXDN 404SIA-16				Non-Inverting		16-pin SOIC(W)	X515	
IXDN 504D1				Non-Inverting		6-pin DFN 4x5	X531	
IXDN 504PI				Non-Inverting		8-pin DIP	X502	
IXDN 504SIA				Non-Inverting		8-pin SOIC	X512	**X012a TO-263**
IXDD 408CI	Single	8	1.5	Non-Inverting	●	5-pin TO-220	X006	
IXDD 408PI				Non-Inverting	●	8-pin DIP	X502	
IXDD 408SI				Non-Inverting	●	8-pin SIOC	X512	
IXDD 408YI				Non-Inverting	●	5-pin TO-263	X012a	
IXDD 509D1	Single	9	1	Non-Inverting	●	6-pin DFN 4x5	X531	
IXDD 509PI			1	Non-Inverting	●	8-pin DIP	X502	
IXDD 509SIA			1	Non-Inverting	●	8-pin SOIC	X512	
IXDE 509D1			1	Inverting	●	6-pin DFN	X531	
IXDE 509PI			1	Inverting	●	8-pin DIP	X502	**X502 8-pin DIP**
IXDE 509SIA			1	Inverting	●	8-pin SOIC	X512	
IXDI 409CI			1.5	Inverting		5-pin TO-220	X006	
IXDI 409SI			1.5	Inverting		8-pin SOIC	X512	
IXDI 409YI			1.5	Inverting		5-pin TO-263	X012a	
IXDI 509D1			1	Inverting		6-pin DFN 4x5	X531	
IXDI 509PI			1	Inverting		8-pin DIP	X502	
IXDI 509SIA			1	Inverting		8-pin SOIC	X512	
IXDN 409CI			1.5	Non-Inverting		5-pin TO-220	X006	
IXDN 409SI			1.5	Non-Inverting		8-pin SOIC	X512	
IXDN 409YI			1.5	Non-Inverting		5-pin TO-263	X012a	**X512(a) 8-pin SOP/SOIC(-CT)**
IXDN 509D1			1	Non-Inverting		6-pin DFN 4x5	X531	
IXDN 509PI			1	Non-Inverting		8-pin DIP	X502	
IXDN 509SIA			1	Non-Inverting		8-pin SOIC	X512	
IXDD 414CI	Single	14	1	Non-Inverting	●	5-pin TO-220	X006	
IXDD 414SI				Non-Inverting	●	14-pin SOIC	X514	
IXDD 414YI				Non-Inverting	●	5-pin TO-263	X012a	
IXDD 514D1				Non-Inverting	●	6-pin DFN 4x5	X531	
IXDD 514PI				Non-Inverting	●	8-pin DIP	X502	
IXDD 514SIA				Non-Inverting	●	8-pin SOIC	X512	
IXDE 514D1				Inverting	●	6-pin DFN 4x5	X531	
IXDE 514PI				Inverting	●	8-pin DIP	X502	**X515(a) 16-pin SPO/SOIC(-CT)**
IXDE 514SIA				Inverting	●	8-pin SOIC	X512	
IXDI 414CI				Inverting		5-pin TO-220	X006	
IXDI 414SI				Inverting		14-pin SOIC	X514	
IXDI 414YI				Inverting		5-pin TO-263	X012a	
IXDI 514D1				Inverting		6-pin DFN 4x5	X531	
IXDI 514PI				Inverting		8-pin DIP	X502	
IXDI 514SIA				Inverting		8-pin SOIC	X512	
IXDN 414CI				Non-Inverting		5-pin TO-220	X006	

Ultra-fast Power MOSFET / IGBT Drivers

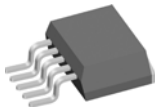
Part Number	Output Type	I_{PK} T_C = 25°C A	Output Resis-tance Ω	Logic Configuration	Enable Function	Package	Fig. No.
IXDN 414SI	Single	14	1	Non-Inverting		14-pin SOIC	X514
IXDN 414YI				Non-Inverting		5-pin TO-263	X012a
IXDN 514D1				Non-Inverting		6-pin DFN 4x5	X531
IXDN 514PI				Non-Inverting		8-pin DIP	X502
IXDN 514SIA				Non-Inverting		8-pin SOIC	X512
IXDD 415SI	Dual	15	1	Non-Inverting	●	28-pin SOIC-CT(W)	X529a
IXDD 430CI	Single	30	0.4	Non-Inverting	●	5-pin TO-220	X006
IXDD 430MCI	Single			Non-Inverting	●	5-pin TO-220	X006
IXDD 430MYI	Single			Non-Inverting	●	5-pin TO-263	X012a
IXDD 430YI	Single			Non-Inverting	●	5-pin TO-263	X012a
IXDI 430CI	Single			Inverting	●	5-pin TO-220	X006
IXDI 430MCI	Single			Inverting	●	5-pin TO-220	X006
IXDI 430MYI	Single			Inverting	●	5-pin TO-263	X012a
IXDI 430YI	Single			Inverting	●	5-pin TO-263	X012a
IXDN 430CI	Single			Non-Inverting	●	5-pin TO-220	X006
IXDN 430MCI	Single			Non-Inverting	●	5-pin TO-220	X006
IXDN 430MYI	Single			Non-Inverting	●	5-pin TO-263	X012a
IXDN 430YI	Single			Non-Inverting	●	5-pin TO-263	X012a
IXDS 430SI	Single			Non-Inverting OR Inverting	●	28-pin SOIC-CT(W)	X529a

Outline drawings on pages O-30...O-52

X006 **TO-220**

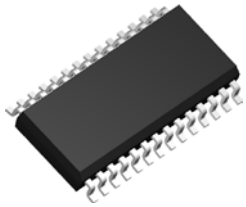


X012a **TO-263**



X502 **8-pin DIP**

X529 **28-pin SOIC-CT(W)**



Ultra-fast Power MOSFET / IGBT Drivers

Drivers from 0.6 A to 6.0 A with Superior Noise Immunity and Higher Power Handling Capability for Critical applications.

IXYS 600V Half-Bridge Driver IC Product Line is a family of surface mount and leaded ICs optimized for gate drive applications up to 600 V. This family provides a complete spectrum of solutions with 0.6 A peak to 6.0 A peak output drive current capability for applications ranging from 1 kHz to 1MHz. These Drivers draw upon a newly optimized architecture first introduced with the IX6R11, building on and enhancing the superior performance and high-end current handling capability of the IX6R11. As with the original IX6R11, IXYS 600 V Driver IC Family gives better matching of propagation delays, enhanced fault tolerance and reliability, with improved efficiency and cooler operation.

This Half-Bridge Driver Family provides compatibility with similar Drivers from other suppliers, while offering the superior performance of our architecture. The Family also provides unique Customer options in packaging and configurations. Several Drivers are offered in packages that offer small size (16-Pin SOIC, 48-Pin SSLGA) or thermal advantages (18-Pin SOIC-CT). A unique product configuration is the IX6S11, offered for split-rail circuit configurations (+300V/-200V), with control logic ground referenced.

Performance advantages common to IXYS Half-Bridge Driver ICs include 50 V/ns dV/dt noise immunity and 200V negative voltage transient immunity, 8 times that of competiting Half-Bridge Drivers. Noise immunity is further enhanced by the use of non-latching level translation. IXYS level translation technique exhibits lower power dissipation versus techniques using high-voltage transistors typical of competiting Half-Bridge Drivers. Lower dissipation enables the use of IXYS Drivers for larger loads, at higher bus voltages, and for higher switching frequencies. Lower dissipation means also that IXYS Drivers can be pushed to higher temperatures.

This Family of Drivers offers a wide mix of user options for input logic types, output current ratings and packages. The high peak current capability of the IX6R11 enables one to drive larger MOSFET and IGBT die sizes at higher frequency without additional discrete transistors and components. 600 mA Drivers, such as the IXD611, are used in lower power/lower frequency applications such as small power tools. Other user options covered by this Family include fixed and programmable delays, shutdown options, protection features, as well as high and low side under voltage protection. Other performance advantages include extended voltage range operation, and extended temperature operation from –40°C to +125°C.

IXYS is a global leader in Power Semiconductors, Gate Drive ICs and RF Power Devices. With over 20 years experience, IXYS products are designed to meet the demands of the power market for best-in- class Performance, Quality and Reliability.

Applications

- Welding
- Power Factor Correction
- Offline Power Conversion
- UPS
- Appliance
- Battery Chargers
- Automotive
- Motor Drive

Features

- Floating High Side Driver with bootstrap Power supply along with a Low Side Driver.
- I_{PK} = 0.6 A to 6 A
- Full operation to 600 V BUS
- ± 50 V/ns dV/dt noise immunity
- Gate drive voltage range of 10 V to 35 V
- Non-latching level translation
- -200 V high side drive signal negative transient immunity (8x greater than competitor)
- Versions including undervoltage protection, enable / shutdown functions, fixed and programmable delays, cross-conduction prevention and prorammable current limits
- Heat-sinkable versions, such as the 18-Pin SOIC-CT, R_{thJC} = 3°C/W
- High Density SMD and Hybrid Package Options
- Extended temperature: -40°C to +125°C
- Rail to rail gate drive voltage swing
- Immune to negative voltage transients
- Separate Logic power supply range: 3.3 V to V_{CL}

Benefits

- Higher switching frequency with larger devices
- Replaces multiple ICs and discrete components
- Full operation to 600V BUS
- Fault tolerant due to non-latching architecture

MOSFET / IGBT Half-Bridge Gate Drivers

Outline drawings
on pages O-30...O-52

Part Number ○ Not for new design ➢ New	Closet I_R Cross	I_{PK} T_C = 25°C A	Shutdown	Inputs / Keying	Protection Features	Deadtime	Package (Note 1)	Fig. No.
○ **IXA 611P7** ②	IR2112		Yes (High)	Dual/In Phase	No		14-pin PDIP	X504
○ **IXA 611S3** ②	IR2112S		Yes (High)	Dual/In Phase	No		16-pin SOP(W)	X525
○ **IXB 611P1** ②	IR2103		No	Dual/High-In Phase/Low-Inv	Cross-Conduct		8-pin PDIP	X502
○ **IXB 611S1** ②	IR2103S		No	Dual/High-In Phase/Low-Inv	Cross-Conduct		8-pin SOP	X512
○ **IXC 611P1** ②	IR2111		No	Single/High Side	Cross-Conduct		8-pin PDIP	X502
○ **IXC 611S1** ②	IR2111S		No	Single/High Side	Cross-Conduct		8-pin SOP	X512
○ **IXD 611P1** ②	IR2106		No	Dual/In Phase	No		8-pin PDIP	X502
○ **IXD 611P7** ②	IR2106		No	Dual/In Phase	No		14-pin PDIP	X504
○ **IXD 611S1** ②	IR2106S		No	Dual/In Phase	No		8-pin SOP	X512
○ **IXD 611S7** ②	IR2106S		No	Dual/In Phase	No		14-pin SOP	X514
○ **IXE 611P1** ③	IR2301	0.6	No	Dual/In Phase	No		8-pin PDIP	X502
○ **IXE 611S1** ③	IR2301S		No	Dual/In Phase	No		8-pin SOP	X512
○ **IXF 611P1** ③	IR2302		Yes (Low)	Single/High Side	Cross-Conduct		8-pin PDIP	X502
○ **IXF 611S1** ③	IR2302S		Yes (Low)	Single/High Side	Cross-Conduct		8-pin SOP	X512
○ **IXG 611P1** ②	IR2304		No	Dual/In Phase	Cross-Conduct		8-pin PDIP	X502
○ **IXG 611S1** ②	IR2304S		No	Dual/In Phase	Cross-Conduct		8-pin SOP	X512
○ **IXH 611P1** ②	IR2308		No	Dual/In Phase	Cross-Conduct		8-pin PDIP	X502
○ **IXH 611S1** ②	IR2308S		No	Dual/In Phase	Cross-Conduct		8-pin SOP	X512
○ **IXJ 611P1** ②	IR2101		No	Dual/In Phase	No		8-pin PDIP	X502
○ **IXJ 611S1** ②	IR2101S		No	Dual/In Phase	No		8-pin SOP	X512
○ **IXK 611P1** ②	IR2102		No	Dual/Out of Phase	No		8-pin PDIP	X502
○ **IXK 611S1** ②	IR2102S		No	Dual/Out of Phase	No		8-pin SOP	X512
○ **IX 2A11P1** ②	IR2184		Yes (Low)	Single/High Side	Cross-Conduct		8-pin PDIP	X502
○ **IX 2A11S1** ②	IR2184S		Yes (Low)	Single/High Side	Cross-Conduct		8-pin SOP	X512
○ **IX 2B11P7** ②	IR21844		Yes (Low)	Single/High Side	Cross-Conduct		14-pin PDIP	X504
○ **IX 2B11S7** ②	IR21844S		Yes (Low)	Single/High Side	Cross-Conduct		14-pin SOP	X514
○ **IX 2C11P1** ②	IR2181	2	No	Dual/In Phase	No		8-pin PDIP	X502
○ **IX 2C11S1** ②	IR2181S		No	Dual/In Phase	No		8-pin SOP	X512
○ **IX 2D11P7** ②	IR21814		No	Dual/In Phase	No		14-pin PDIP	X504
○ **IX 2D11S7** ②	IR21814S		No	Dual/In Phase	No		14-pin SOP	X514
○ **IX 2R11P7** ②	IR2113		Yes (High)	Dual/In Phase	No		14-pin PDIP	X504
○ **IX 2R11S3** ②	IR2113S		Yes (High)	Dual/In Phase	No		16-pin SOP(W)	X525
○ **IX 4R11P7** ②	IR2113	4	Yes (High)	Dual/In Phase	No		14-pin PDIP	X504
○ **IX 4R11S3** ②	IR2113S			Dual/In Phase			16-pin SOP(W)	X525
○ **IX 6S11S6** ②	None	6	No	Dual/In Phase	No		18-pin SOIC-CT(W)	X526a
IX 6R11P7 ②	IR2113		Yes (High)	Dual/In Phase			14-pin PDIP	X504
IX 6R11S3 ②	IR2113S	6	Yes (High)	Dual/In Phase	No	No	16-pin SOP(W)	X525
IX 6R11S6 ②	IR2113S		Yes (High)	Dual/In Phase			18-pin SOIC-CT(W)	X526a

Not for new design

② UVLO Level for MOSFETs
③ UVLO Level for Logic

Note 1: SOIC packages with suffix letter 'CT' have a grounded base solder tab.

X504 **14-pin PDIP**

X512 **8-pin SOP/SOIC**

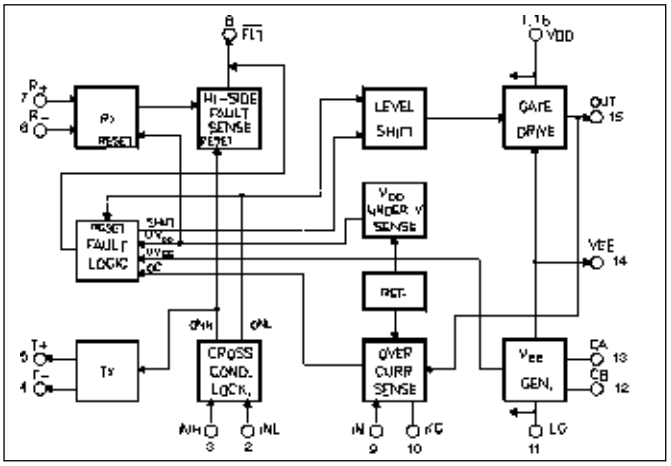
ISOSMART® Half Bridge Driver Chipset: IXBD4410/4411 and TX02-4400 Pulse Transformer

Features

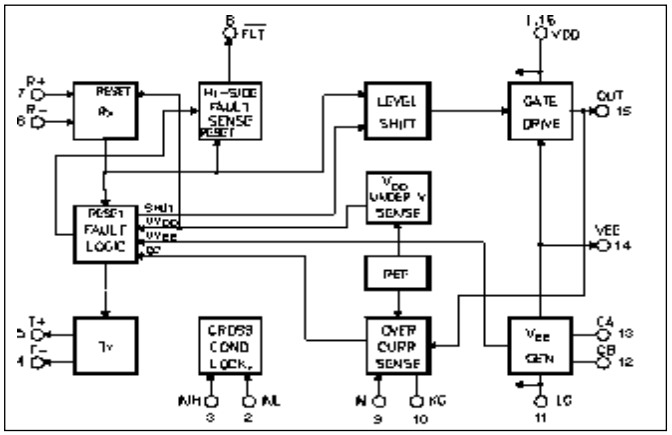
- 1200 V or greater low- to high-side isolation
- Drives power systems operating from industrial AC mains
- dv/dt immunity of greater than 50 V/ns
- Proprietary low- to high-side level-translation & communication
- On-chip negative gate-drive supply to ensure power MOSFET or IGBT turn-off under all conditions
- 5 V logic compatible HCMOS input logic with hysteresis
- 20 ns switching time with 1000 pF load: 100 ns switching time with 10 000 pF load
- 100 ns propagation delay time
- 2 A peak output drive capability
- Self shut-down of output in reponse to over-current or short-circuit
- Under-voltage lockout protection
- Protection from cross conduction of the half bridge
- Logic compatible fault indication from both low and high side driver

Applications

- 1-, 2- or 3-phase motor control
- Switch mode power supplies (SMPS)
- 1- or 3-phase UPS systems
- Induction heating and welding
- Switching amplifiers
- General power conversion circuits



Block diagram IXBD4410



Block diagram IXBD 4411

These chipsets are intended to drive the gates of a pair of power MOSFETs or IGBTs connected in the totem-pole (phase leg) configuration used in PWM inverter bridges for variable speed AC motor drives, or in any other application requiring half bridge power circuits.

Each chipset consists of a pair of DIP ICs interconnected by two TX02-4400 signal pulse transformers. Proprietary voltage trans-lation techniques permit the transmission of ground (0-Volt) referenced gate-control signals for both the upper half of the phase leg with its high-side floating source/emitter, and to the 0-Volt referenced low-side.

The chipset is noise immunized to commutation dv/dts of 50 V/ns between the two halves. The IXBD4410/11 outputs an on-chip generated negative gate voltage to inhibit possible Miller-induced IGBT turn on created by free-wheel diode commutations. This version also features a 0-Volt referenced fault-signal flag monitoring both high and low side drivers for sophisticated system protection. Both models incorporate shut-down circuitry to disable gate driver signals when an overcurrent is detected, either through desaturation of the driven power switch or by direct measurement of the switch current. Simultaneous conduction of upper and lower signal input logic. C-MOS technology reduces stand-by currents drawn from the single external power supply to low levels, and chipset operation to over 20 kHz is possible. The EVBD4400 evaluation board is also available to facilitate design-in activity.

Type	Descirption	Package	Temperature Range	Outline drawings on pages O-30...O-52
IXBD 4410PI **IXBD 4411PI**	Full-Feature Low-Side Driver Full-Feature High-Side Driver	16-pin PDIP	-40 to +85°C	X505
IXBD 4410SI **IXBD 4411SI**	Full-Feature Low-Side Driver Full-Feature High-Side Driver	16-pin SOP-CT(W)	-40 to +85°C	X525a
TX 02-4400JI **TX 02-4400PI**	Isolation transformer	8-pin PDIP-SM 8-pin PDIP	-55 to -125°C	X502b X502

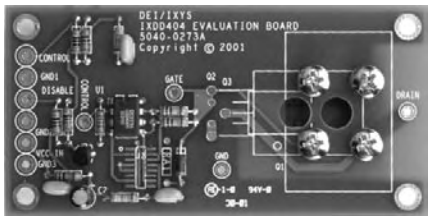
Gate Drive Evaluation Boards

MOSFET/IGBT Gate Drive Modules/Gate Drive IC Evaluation Boards

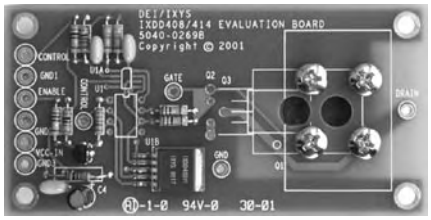
The EV-Series MOSFET Gate Drive Modules are general purpose gate drive circuits designed to drive the DE-Series RF POWER MOSFETs, as well as industry-standard MOSFETs and IGBTs. Designed using IXYS/Colorado gate drive ICs, they serve as a system development tool for the design engineer, and as a convenient platform for the evaluation of the DE-Series RF MOSFET transistors. The EVDD415 and EVIC420 are designed to drive DE-Series RF MOSFETs. The EVDI402, EVDD404, EVDD409, EVDI409 and EVDD414 gate drive modules are designed to drive MOSFETs or IGBTs in various package types, including TO-220, TO-247, TO-264 or SOT-227 packages.

The evaluation board design allows the MOSFET or IGBT to be attached to a heat sink, and in so doing the board assembly can be used as a ground referenced, low side power switch for both single-ended and push-pull configurations. They may be used as pulse width agile, high power switching modules in pulse generators, RF generators, pulsed laser diode drivers and other high voltage, high speed applications.

By utilizing design techniques developed by DEI, the EVDD 415 and EVIC 420 gate drive modules can drive DE-Series MOSFET transistors at frequencies up to 45 MHz, provide continuously variable output pulse widths from ~5 ns to DC, and rise times of <3 ns (actual performance is dependent upon the specific gate drive module and the MOSFET device used).



EVDD404 with IXDD404PI *

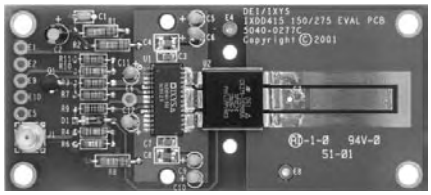


EVDD409 with IXDD409YI *

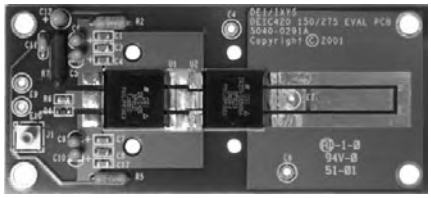
Gate Drive Module / Evaluation Board Selection Guide

➢ Gate Drive Module New	Installed Device	Connectable Package *
EVDD 430CI	**IXDD 430CI**	TO-247, TO-268, SOT-227
EVDD 430MCI	**IXDD 430MCI**	TO-247, TO-268, SOT-227
EVDD 430YI	**IXDD 430YI**	TO-247, TO-268, SOT-227
EVDD 430MYI	**IXDD 430MYI**	TO-247, TO-268, SOT-227
EVDI 430CI	**IXDI 430CI**	TO-247, TO-268, SOT-227
EVDI 430MCI	**IXDI 430MCI**	TO-247, TO-268, SOT-227
EVDI 430YI	**IXDI 430YI**	TO-247, TO-268, SOT-227
EVDI 430MYI	**IXDI 430MYI**	TO-247, TO-268, SOT-227
EVDN 430CI	**IXDN 430CI**	TO-247, TO-268, SOT-227
EVDN 430MCI	**IXDN 430MCI**	TO-247, TO-268, SOT-227
EVDN 430YI	**IXDN 430YI**	TO-247, TO-268, SOT-227
EVDN 430MYI	**IXDN 430MYI**	TO-247, TO-268, SOT-227
EVDS 430SI	**IXDS 430SI**	TO-247, TO-268, SOT-227
EVBD 4400	**IXBD 4400 Chip Set**	TO-247, TO-264
EVDI 402	**IXDI 402PI**	TO-220, TO-247, TO-264, SOT-227
EVD N402	**IXDN 402PI**	TO-220, TO-247, TO-264, SOT-227
EVDD 404	**IXDD 404PI**	TO-220, TO-247, TO-264, SOT-227
EVDI 404	**IXDI 404PI**	TO-220, TO-247, TO-264, SOT-227
EVDN 404	**IXDN 404PI**	TO-220, TO-247, TO-264, SOT-227
EVDI 409	**IXDI 409YI**	TO-220, TO-247, TO-264, SOT-227
EVDN 409	**IXDN 409YI**	TO-220, TO-247, TO-264, SOT-227
EVDD 414	**IXDD 414YI**	TO-220, TO-247, TO-264, SOT-227
EVDI 414	**IXDI 414YI**	TO-220, TO-247, TO-264, SOT-227
EVDN 414	**IXDN 414YI**	TO-220, TO-247, TO-264, SOT-227
EVDD 415	**IXDD 415SI**	DEI DE-150, DEI DE-275
EVIC 420A	**DEIC 420**	DEI DE-150, DEI DE-275
EVIC 420B	**DEIC 420**	DEI DE-375, DEI DE-475
EV 6R11S3	**IX 6R11S3**	TO-247,TO-264
EV 6R11S7	**IX 6R11S7**	TO-247,TO-264

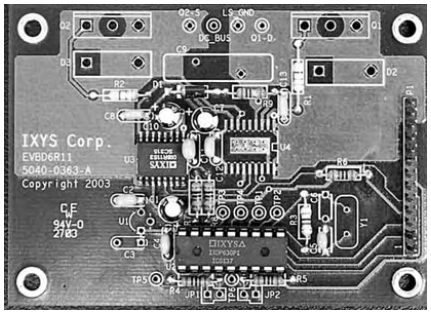
* Connectable Power MOSFET or IGBT is not included



EVDD415 with IXDD415SI *



EVIC420A with DEIC420 *



EV6R11 with IX6R11S3 *

High Voltage Current Regulators

Features

- Extremely stable current characteristics 50 ppm/K
- Minimum of 450 V breakdown
- 40 W continuous dissipation

Applications

- Start-up circuits for SMPS
- PABX current sources
- Telephone line terminations
- Surge limiters and protection
- Waveform synthesizers
- Soft start-up circuits

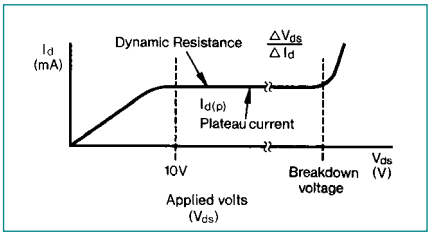
Non-switchable Regulators

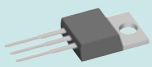
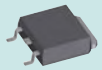
This is a family of extremely stable, 450 Volt (min.) current regulators. Temperature stability is based on a threshold compensation technique and uses IXYS' most recently developed high voltage process. Some specific applications include PABX current sources and line terminations, high stability voltage sources, surge limiters, fast reacting non-destruct fuses and start-up circuits. These regulators also replace power resistors in house-keeping supplies derived from the AC mains, dramatically reducing power consumption while permitting universal use from 110 - 240 V AC without part changes.

Switchable Regulators

The IXCP 10M45S is an enhanced version of IXYS' family of high voltage current regulators. It is similar in all respects to the standard product, except that it can be switched off by applying a negative voltage to its control pin. Minimum breakdown voltage is in-creased to 450 V. For additional versatility, output current may be programmed by inserting a resistor between the negative output and control pins. A prime applica-tion to the switchable regulator is in house-keeping power supplies for switch-mode-power-supplies (SMPS), where shutting the regulator down once the SMPS is up and running reduces standby power consumption virtually to zero.

Characteristic



Current regulator	BV_{DS} min. V	$I_{D(P)}$ typ. mA	X005a TO-220 AB 	X004 TO-252 AA 
DC Non-switchable	450	60	**IXCP 60M45**	**IXCY 60M45**
		50	**IXCP 50M45**	**IXCY 50M45**
		40	**IXCP 40M45**	**IXCY 30M45**
		20	**IXCP 20M45**	**IXCY 20M45**
		11	**IXCP 10M45**	**IXCY 10M45**
		2.2	**IXCP 02M45**	**IXCY 02M45**
Switchable	450	10	**IXCP 10M45S**	**IXCY 10M45S**
Gate Controlled	900	10	**IXCP 10M90S**	**IXCY 10M90S**

Outline drawings on pages O-30...O-52

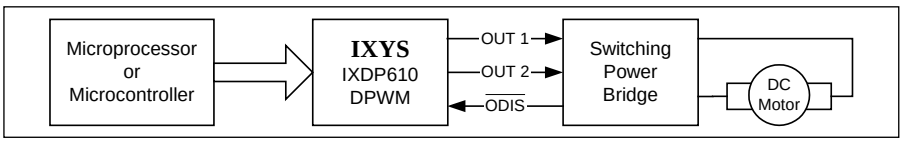
Bus compatible Digital PWM Controller, IXDP610IXDP610 / IGBT Half-Bridge Gate Drivers

Features

- Microcomputer bus compatible
- Two complementary outputs for direct control of switching power bridge
- Dynamically programmable pulse width ranges from 0 to 100%
- Two modules of operation: 7-bit or 8-bit resolution
- Switching frequency range up to 300 kHz
- Programmable Dead-time Counter prevents switching overlap
- Cycle-by-cycle disable input to protect against over-current,over-temperture, etc.
- Outputs may be disabled under soft ware control
- Special locking bit prevents damage to the power stage in the event of a software failure

The IXDP610 Digital Pulse Width Modulator (DPWM) is a programmable CMOS LSI device which accepts digital pulse width data from a microprocessor and generates two complementary non-overlapping pulse width modulated signals for direct digital control of a switching power bridge. The DPWM is designed to be operated under the direct control of a microprocessor and interfaces easily with most standard microprocessor and microcomputer buses. The PWM waveform generated by the IXDP610 results from comparing the output of the Pulse Width Counter to the number stored in the Pulse Width Latch. A programmable ‚dead-time' is incorporated into the PWM waveform. The Dead-time Logic disables both outputs on each transition of the Comparator output for the required dead-time interval. The output stage provides complemen-tary PWM output signals capable of sinking and sourcing 20 mA at TTL voltage levels. The Output Disable Logic can be activated either by software or hardware. The facilitates cycle-by-cycle current-limit, short-circuit, overtemperature, and desaturation protection schemes. The IXDP610 is capable of operating at PWM frequencies from zero to 300 kHz, the dead-time is programmable from zero to 14 clock cycles (0 to 11 % of the PWM cycle), which allows operation with fast power MOSFETs, MOSIGBTs, and bipolar power transistors. A trade-off between PWM frequency and resolution is provided by selecting the counter resolution to be 7-bit or 8-bit. The 20 mA output drive makes the IXDP 610 capable of directly driving opto isolators and Smart-power devices. The fast response to pulse width commands is achieved by instantaneous change of the outputs to correspond to the new command. This eliminates the one-cycle delay usually associated with digital PWM implementations.

Basis system Configuration



Type	Package	Temperature Range °C	Package Outline drawings on pages O-30...O-52
IXDP 610PI	18-pin PDIP	-40 to 85	X506

Digital Deadtime Generator, IXDP630 / 631

Features

- 5 Volt HCMOS logic implementation maintains low power at high speed
- Schmitt trigger inputs and CMOS logic levels improve noise immunity
- Simultaneously injects equal deadtime in up to three output phases
- Replaces 10-12 standard SSI/MSI logic devices
- Allows a wide range of PWM modulati on strategies
- Directly drives high speed optocouplers

This 5 Volt HCMOS integrated circuit is intended primarily for application in three-phase sinusoidally commutated brushless motor, induction motor, AC servomotor or UPS PWM modulator control systems. It injects the required deadtime to convert a single phase leg PWM command the two separate logic signals required to drive the upper and lower semiconductor switches in a PWM inverter. It also provides facilities for output disable, fast overcurrent, and fault condition shutdown.

In the IXDP630 the dead time is set by controlling frequency of the internal oscillator using an external R.C. network. In the IXDP631 the dead time is achieved by use of an external crystal oscillator. An alternative programming means for both the IXDP630/631 is by an externally provided clock signal.
Because of its flexibility, the IXDP630/631 is easily utilized in a variety of brushed DC, trapezoidally commutated brushless DC, hybrid and VR step, or other more exotic PWM motor drive power and control circuit designs.

Type	Configuration	Package	Temperature Range °C	Package Outline drawings on pages O-30...O-52
IXDP 630PI	RC Oscillator	18-pin PDIP	-40 to 85	X506
IXDP 631PI	Crystal Oscillator			

XS839 / IXS839A / IXS839B
Synchronous Buck MOSFET Driver
(MOSFET Driver for High Efficiency DC to DC Power Converter Applications)

The IXS839 / IXS839A / IXS839B are 2 A source / 4 A sink synchronous buck MOSFET drivers. These synchronous buck MOSFET drivers are specifically designed to drive two N-channel power MOSFETs in a synchronous buck converter. The high side driver is powered via a bootstrapped power connection. The driver is capable of 20 ns high-side output, and 18 ns low-side output transition times driving a 3000 pF load. The IXS839 and IXS839B incorporate an under voltage lockout to prevent unintentional gate drive output during low voltage conditions. The IXS83A/B includes external shutdown and low-side drive shutdown features. Simultaneous shutdown of both outputs prevents rapid output capacitor discharge. The high-side turn-on delay is adjustable with an external capacitor added at the DLY pin. The IXS839 / 839A / 839B are designed to operate over a temperature range of -40°C to +85°C. The IXS839 is available in an 8-lead SOIC, the IXS839A and the IXS839B in a 10-pin QFN.

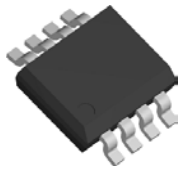
Features
- Logic level gate drive compatible
- 2 A source, 4 A sink peak drive current
- Programmable high-side driver turn-on delay
- Supports floating voltage for top driver up to 24 V
- IXS839 / 839B: under voltage sockout
- IXS839A/B: output shutdown, low side shutdown inputs
- 10 µA shut down current
- 2 mA quiescent current (non-switching)
- Bootstrapped high side driver
- Cross-conduction protection

Applications
- Multiphase desktop CPU supplies
- Mobile CPU core voltage supplies
- High current / low voltage DC/DC synchronous Buck Converters

Synchronous Buck Gate

Part Number ➢ New	Analog Supply Voltage V	I_{PK} Source A	I_{PK} Sink A	Floating Supply Voltage V	Under Voltage Lockout	Shutdown	Protection Features	Delay	Package Outlines on O-30...O-52	Fig. No.
IXS 839S1	5.5	2	4	24	Yes		Over Lap, Cross Conduction Protection	Programmable High-Side Driver Turn-on Delay	8-pin SOP	X512
IXS 839AQ2	5.5	2	4	24		Driver Shut-down & Low Side Shutdown			10-pin QFN	X543
IXS 839BQ2	5.5	2	4	24	Yes				10-pin QFN	X543

X512 **8-pin SOP**



MX841 White LED Step-Up Converter

The MX841 is a fixed frequency, constant current source step-up DC/DC converter. The output current is directly regulated making the MX841 ideal for driving series connected white light emitting diodes (LED's) in backlight applications. The MX841 powers up to 3 series white LED's at 1.1 V, and 20 series / parallel white LED's at 5.0 V. The MX841 features a 1.0 MHz switching frequency to accommodate the use of small capacitors and a small inductors necessary in size sensitive portable applications. Light intensity and shutdown are conveniently controlled by a single analog voltage. Power efficiency and battery life are extended through the use of a high voltage, low $R_{DS(ON)}$ N-channel MOSFET switch. The MX841 is designed to operate over a temperature range of -40°C to +85°C, and is available in an SOIC-8 Package, with or without an Exposed Pad in Tube or on Tape and Reel. (Alternate package types available upon request).

Features
- 1.1 V to 5.5 V Input Range
- 2 Amp Peak Switch Current
- High Efficiency > 80%
- 20 V Maximum Output with Over-Voltage Protection
- LED Intensity Control
- 1.0 MHz Fixed Frequency Switching
- 8 Lead SOIC Package

Applications
- White LED Display Backlighting
  - Low Voltage: Mobile Phones, PDA's, MP3 Players, Digital Cameras
  - High Drive Current: Vehicle Instrumentation Panels

LED Driver

Part Number ➢ New	Supply Voltage V	Switch Current Peak A	f_{osc} typ MHz	Duty Cycle %	Switching Voltage Range V_{DD} - $V_{SCHOTTKY}$ V	Package Outlines on O-30...O-52	Fig. No.
MX 841	5.5	2	1	72.5	20	8-Pin SOP	X512

IXI858 / IXI859
Gate Driver with VReg and Charge Pump Regulator

The IXI858 and IXI859 Gate Driver / Regulator ICs are part of IXYS growing family of interface products. These ICs are designed to provide the needed analog functions required by microcontrollers to implement offline digital power supply control, such as in Power Factor Correction (PFC).

The IXI858 / 859 combine a power gate drive, low voltage linear regulator and a charge pump function for drive voltage generation as needed in these applications. These features make the IXI858 / 859 invaluable for implementing microcontroller based PFC systems. The IXI858 / 859 can be used in combination with a Depletion-Mode Power MOSFET such as IXTY02N50D, which can be used to create a constant current source to provide offline standby power at lower cost with lower high line power consumption.

The IXI858 is designed to support 5.0 V digital systems with an on board 5.0 V linear regulator, while the IXI859 features a 3.3 V linear regulator for lower voltage systems. In addition, both versions feature logic level input signal compatibility, 60 mA source and 120 mA sink gate drive output and a charge pump section meant to generate 13 V gate drive voltage.

The growing trend of digital power management, with the use of standard microcontroller in motor control, power supply, and PFC circuits require the interface, voltage gain and drive of the IXI858 / 859 for the digital power management. The IXI858 / 859 were optimized for cost and efficiency to support high volume applications such as dimmable ballast, non-dimmable ballast and High Intensity Discharge (HID) lighting systems.

The IXI858 / 859 are offered in a small 8-Lead SOIC surface mount package, with rated operation of –25°C to +125°C.

Features

- Logic Level Gate Drive Compatible
- 60 mA Source / 120 mA Sink Minimum Gate Drive
- 5.0 V or 3.3 V Voltage Regulator
- Charge Pump Regulator Stabilizes VCC Power Supply at 13 V
- UVLO Protection

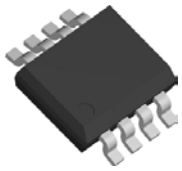
Applications

- µController based off-line applications

Gate Driver with VReg

Part Number ➢ New	V_{CC} V	I_{peak} +/- A	V_{in} V	$V_{out, Reg.}$ V	V_{CPRon} turn-on level V	V_{CPRoff} turn-off level V	I_{SINK} min V_{Gate} = 6 V mA	I_{SRC} min V_{Gate} = 3 V mA	t_{MINPW} C_{Gate} = 10 pF ns	t_{PD} C_{Gate} = 10 pF ns	Package Outlines on O-30...O-52	Fig. No.
IXI 858S1	20	1	6	3.3	13.15	12.85	120	60	80	200	8-pin SOP	X512
IXI 859S1	20	1	6	5	13.15	12.85	120	60	80	200	8-pin SOP	X512

X512 **8-pin SOP**



IXI848 / IXI848A
High-Side Current Monitor

The IXI848 / IXI848A is precision high side current sense monitor. High side power-line monitoring offers the advantage of allowing the ground plane to remain undisturbed when sensing load currents.

An external sense resistor sets the range of the amplified ground-referenced output monitoring voltage. The output voltage is amplified by a selectable fixed gain of either 10 or 50. With an input voltage range up to 40 V for IXI848 and 60 V for IXI848A, and output gain of up to 50, the IXI848 / IXI848A are designed to address a wide variety of current sense applications.

The IXI848 / IXI848A operates over a temperature range of -40°C to +85°C. The IXI848 / IXI848A are available in an 8-Lead SOIC package.

Features

- High-Side Current Sense Amplifier
- IXI848: 2.7 V to 40 V Input Range
- IXI848A: 2.7 V to 60 V Input Range
- 0.7% Typical Full Scale Accuracy
- Scalable Output Voltage
- SOIC Package

Applications

- Power Management Systems
- Smart Battery Packs
- Battery Chargers
- Battery Powered Portable Equipment
- DC Motor Control

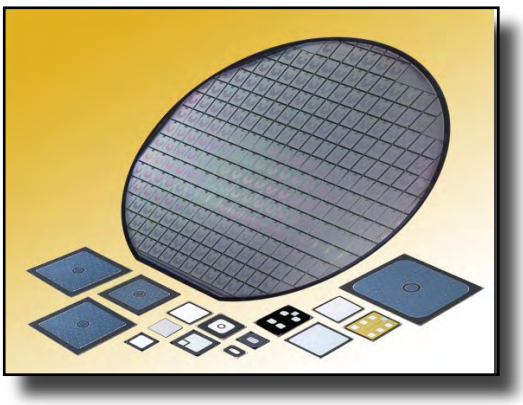
High-Side Current Monitor

Part Number ➢ New	V_{IN} V	I_{IN} mA	V_{SENSE} typ. mV	Full Scale Accuracy %	Input Offset Voltage, typ. V	Gain Accuracy %	Temp. Range min. °C	Temp. Range max. °C	Package Outlines on O-30...O-52	Fig. No.
IXI 848S1	40	0.13	150	±0.7	±0.5	±0.5	-40	85	8-Pin SOP	X512
IXI 848AS1	60	0.13	150	±0.7	±0.5	±0.5	-40	85	8-Pin SOP	X512

Power Semiconductor Chips

IXYS offers a wide range of dice for a multitude of applications.

IGBT Chips	V_{CES}	I_C	$V_{CE(sat)}$
G series, Low $V_{CE(sat)}$ type	300 - 1200 V	10 - 60 A	1.6 - 3.5 V
G series, High Speed type	300 - 1200 V	10 - 100 A	2.5 - 4.0 V
S series, Low $V_{CE(sat)}$ type	600 - 1200 V	20 - 45 A	2.5 - 3.5 V
S series, High Speed type	600 - 1400 V	20 - 40 A	2.7 - 4.0 V
MOSFET Chips	V_{DSS}	$R_{DS(on)}$	t_{rr}
HiPerFET™ Power MOSFET	70 - 1200 V	0.005 - 4.5 W	150 - 250 ns
Standard Power MOSFET	55 - 1100 V	0.013 - 4.5 W	-
Fast Recovery Diodes, Rectifier Diodes and Thyristor Chips in Planar Design			
Bipolar Chips	V_{RRM} / V_{DRM}	$I_{F(AV)M}$ / $I_{T(AV)M}$	t_{rr}
Ultrafast FRED Chips	200 - 1200 V	8 - 162 A	35 - 50 ns
Low Leakage ultrafast **FRED Chips**	200 - 1200 V	15 - 143 A	-
Fast Recovery Diode Chips	1200 - 1600 V	17 - 48 A	35 - 40 ns
Rectifier Diodes	1200 - 1800 V	15 - 400 A	-
Phase Control Thyristors	800 - 2200 V	19 - 250 A	-
Schottky Diodes	8 - 180 V	10 - 200 A	-
GaAs Diodes		Contact Factory	
Silicon Chip Resistors	1 - 10 Ω		
Sonic Fast Recovery Diode Chips	600 - 1800 V	15 - 90 A	tbd



The most important features of planar technology are:

- no PN junction termination in the underside or to the edges; thus non-critical handling and simplified mounting
- fabricated using isolation diffusion with guard rings, channel stoppers and thick glass passivation to assure high electrical reliability and stability
- important electrical parameters 100% tested on the chips
- thyristor chips with center or corner gate construction
- chips with solderable or bondable metallization
- new standard 125 mm (5 inch) diameter wafers

IXYS can ship chips as follows:

Chips in wafer form, unsawed, electrically tested, rejects are inked

Chips in sawed wafer on foil, electrically tested, rejects are inked

Chips in tray (Waffle Pack), electrically tested

IXOLAR™ High Efficiency Solar Cells
Technical Information

Description

IXOLAR™ Solar Cells are IXYS' monocrystalline, high efficiency solar cell technology products incorporating an enhanced light trapping surface. There are 4 different standard cell sizes available: 36 mm², 120 mm², 342 mm², and 676 mm².

The IXOLAR™ Solar Cells are ideal for charging various battery powered and handheld consumer products such as mobile phones, cameras, PDAs, MP3-Players and toys. They are also suitable for industrial applications such as wireless sensors, portable instrumentation and for charging emergency backup batteries.

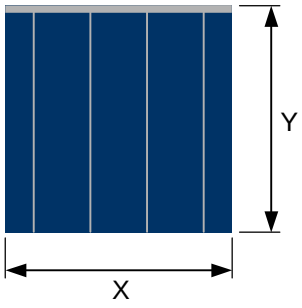
With an efficiency of typically 17%, these solar cells give the ability to extend run time even in „low light" conditions and increase battery life and run time in a small footprint, which can be easily accommodated in the design of Portable Products.

IXOLAR™ products have a very good response over a wide wavelength range and therefore can be used in both indoor and outdoor applications.

Product and Ordering Information

Part Number	X [mm]	Y [mm]	Open Circuit Voltage [mV]	Short Circuit Current [mA]	Peak Power [mW]
XOD17-04B	6	6	630	12	6
XOD17-12B	6	20	630	42	20
XOD17-34B	18.5	18.5	630	120	56
XOD17-68B	26	26	630	236	112

B-suffix: wire bondable front-side metallization (non solderable)



Front-side contact (–)
Back-side contact (+)

Electrical Characteristics

Symbol	Cell Parameter	Typical Ratings *)	Units
V_{oc}	open circuit voltage	630	mV
J_{sc}	short circuit current density	35	mA/cm²
V_{mpp}	voltage at max. power point	505	mV
J_{mpp}	current density at max. power point	32.5	mA/cm²
P_{mpp}	maximum peak power	16.6	mW/cm²
FF	fill factor	> 75	%
ç	efficiency	17	%
$\Delta V_{oc}/\Delta T$	open circuit voltage temp. coefficient	-2.1	mV/K
$\Delta J_{sc}/\Delta T$	short circuit current temp. coefficient	0.12	mA/(cm²K)
t	cell thickness	250	µm

*) All values measured at Standard Condition: 1 sun (= 100 mW/cm²), Air Mass 1.5, 25°C

Features

- Monocrystalline silicon technology
- High efficiency
- Enhanced light trapping surface texturization

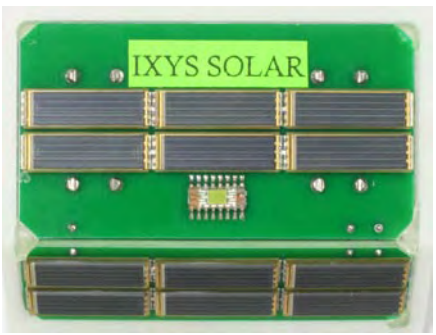
Applications

- Battery chargers for portables such as cell phones, PDAs, GPS-Systems, …
- „Green" electricity generation
- Power backup for UPS, Sensors, Wearables

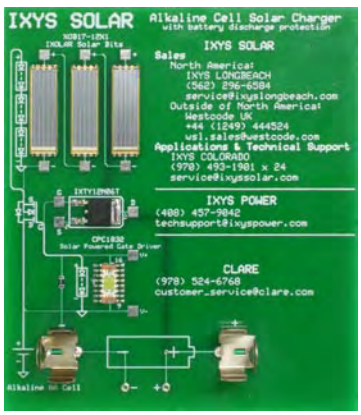
Advantages

- Long life and stable output
- Solderable back-side metallization
- Bondable front-side metallization
- Available in die and wafer form

Prototype Solar Battery Charger for AA batteries
„IXOLAR Charger 1" IXSC-1AA



IXOLAR



Solar Charger reference design for AA batteries

„EVXOBA-12XI"

IXOLAR™ High Efficiency Solar Bits

Description

IXOLAR™ Solar Bits are IXYS' product line of coated monocrystalline, high efficiency solar cell products using IXYS' XOD17 bondable solar cell dies. Solar Bits have reflow solderable surface mount packages, they are available in tape and reel packages and can be automatically pick and place mounted. There are 2 different Solar Bits available with different voltage and current output.

The IXOLAR™ Solar Bits are ideal for charging various battery powered and handheld consumer products such as mobile phones, cameras, PDAs, MP3-Players and toys. They are also suitable for industrial applications such as wireless sensors, portable instrumentation and for charging emergency backup batteries.

With a cell efficiency of typically 17%, Solar Bits give the ability to extend run time even in „low light" conditions and increase battery life and run time in a small footprint, which can be easily accommodated in the design of Portable Products. The design allows to flexibly connect Solar Bits in series and/or parallel to perfectly meet the application's power requirements.

IXOLAR™ products have a very good response over a wide wavelength range and therefore can be used in both indoor and outdoor applications.

Product and Ordering Information

Part Number ➢ New	Open Circuit Voltage [V]	Short Circuit Current [mA]	Typ. Voltage @ P_{mpp} [V]	Typ. Current @ P_{mpp} [mA]
➢ **XOB17-12 x 1**	0.63	42	0.51	39
➢ **XOB17-04 x 3**	1.89	12.6	1.53	11.7

(all parameters given are typical values)

Dimensions (L x W x H): 22 x 7 x 1.4 [mm]

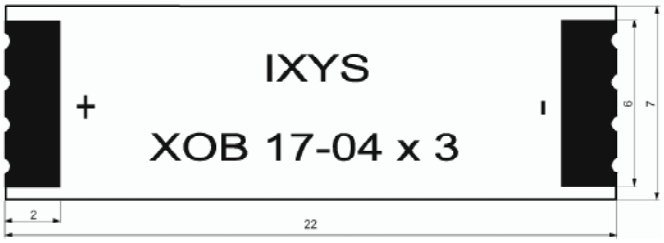
Solar Bit Weight: 0.5 grams

Solar Bits are compliant to the RoHS Norm.

Solar Cell Electrical Characteristics

Symbol	Cell Parameter	TypicalRatings *)	Units
V_{OC}	open circuit voltage	630	mV
J_{SC}	short circuit current density	35	mA/cm²
V_{mpp}	voltage at max. power point	505	mV
J_{mpp}	current density at max. power point	32.5	mA/cm²
P_{mpp}	maximum peak power	16.6	mW/cm²
FF	fill factor	> 75	%
h	efficiency	17	%
$\Delta V_{OC}/\Delta T$	open circuit voltage temp. coefficient	-2.1	mV/K
$\Delta J_{SC}/\Delta T$	short circuit current temp. coefficient	0.12	mA/(cm²K)

*) All values measured at Standard Condition: 1 sun (= 1000 W/m²), Air Mass 1.5, 25°C



Features

- Monocrystalline silicon technology
- High efficiency outdoor and indoor
- Long life and stable output
- Sealed Package
- Surface Mount Package
- Reflow Solderable
- Very high mechanical robustness

Applications

- Battery chargers for portables such as cell phones, PDAs, GPS-Systems, …
- "Green" electricity generation
- Power backup for UPS, Sensors, Wearables

Advantages

- Automatic Pick & Place Mounting
- One Product for Multiple Applications
- Flexible Integration into the Application

Direct Copper Bonded Ceramic Substrates

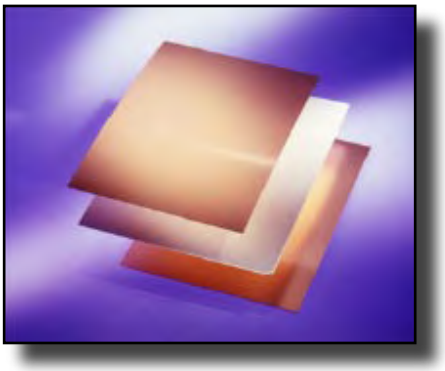
DCB Ceramic Substrates (Al_2O_3 or AlN)

IXYS manufactures Direct Copper Bonded substrates on aluminum oxide (Al_2O_3) or aluminum nitride (AlN) base. DCB ceramic substrates form the basis for new product ideas and electronic developments with a high degree of integration.

Standard bonded DCB panel dimensions are:

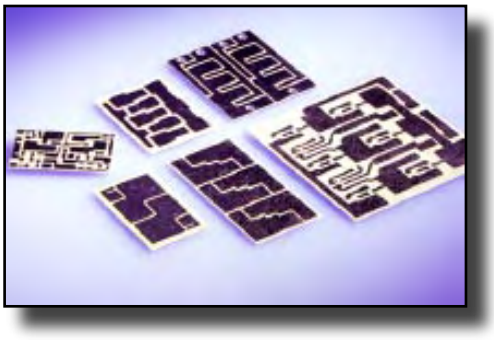
Unclad aluminum oxide ceramic			
Al_2O_3 content		> 96	%
dimensions		128 x 210, 138 x 190.5, 115 x 165*	mm
usable area	max.	130 x 180, 130 x 200, 107 x 156*	mm
thickness		1.00, 0.63, 0.38, 0.25	mm
arc through voltage		10	kV
thermal conductivity		> 24	W/m · K
Conduction layers - both sides			
copper thickness		0.3 (< 0.3 on request)	mm
conductor width	min.	0.3 + / - 0.2	mm
conductor spacing	min.	0.4 + / - 0.2	mm
spacing conductor/edge of ceramic	min.	0.35 + / - 0.2	mm
surface finishes available		bare copper; nickel plated; nickel + gold plated	
peel-off resistance (DIN 532282)	min.	9	N/mm
DCB ceramic substrate			
application temperature range		-55...+850	°C
resistant to hydrogen	max. up to	400	°C
thermal expansion coefficient	typical	7.4 x 10-6	K-1
dimensions according to customer specific drawing			

DCB parts are available as:
- bonded plate
- bonded and patterned plate
- prelasered, unbroken plate
- individuale substrates



ALN - DCB on request

* = (for 0.25 mm thk.)



Patterned DCB substrates can be manufactured to customers‘ drawings.

DCB ceramic substrates fulfill several functions:

- carriers for the semiconductor chips and connection clips
- circuits similar to that on a PC board
- electrical isolator for separating the „current paths“ from the „heat paths“
- transfer medium for the heat dissipation from the active parts into the heat sink.

Available from www.westcode.com

- Application dependent gate trigger requirements of GTO thyristors
- The implementation of gate turn-off thyristors as high voltage turn-on switches for pulse power applications
- Improved semiconductor switches for pulse power applications
- Integrated 30 kV Solid-State Switch for Pulse Power Applications
- Press-Pack IGBTs, Semiconductor Switches for Pulse Power
- The application of pressure contact IGBTs in pulse power
- Design concepts of a bondless pressure-contact IGBT
- Electromechanical characteristics of a bondless pressure contact IGBT
- Pressure Contacted IGBTs
- Pressure contact IGBT, the ideal switch for high power applications
- Pressure contact IGBT, testing for reliability
- New high current press-pack IGBTs
- Magazine Feature: Positive Development in high reliability completely bond free pressure contact IGBTs
- Application of Press-pack IGBTs in Traction Refurbishment
- New 5.2 kV Extra Fast Recovery Diodes for IGBT and IGCT Applications
- New family of 4.5 kV Press-Pack IGBTs
- New Extra Fast Soft Recovery Diodes and their Applications
- Managing power semiconductor obsolescence by press-pack IGBT substitution
- Westcode Product Nomenclatures (Capsules, Studs, and Pulse Thyristors)
- Terms & Symbols
- Mounting Instructions
- Press Releases

Rectifier Diodes - Stud Types

WESTCODE

Type		V_{RRM}	I_{FAV}	I_{FSM}	I^2t	V_{T0}	r_T	T_{JM}	R_{thJC}		Fig. No.	Package style
			T_C =	10 ms ½ sine		@T_{JM}			d.c.	120°		Outlines on
Part No. ➢ New	Old Part No.	V	55°C A	$V_R \leq 60\%\ V_{RRM}$ A	A^2s	V	mΩ	°C	180° sine K/W	Rect. K/W		pages O-01...O-24
➢ W0428RE250	WX171RE250	2500	428	5500	151 x 10^3	0.926	0.739	150	0.13	0.15	W39	
➢ W0428RE280	WX171RE280	2800	428	5500	151 x 10^3	0.926	0.739	150	0.13	0.15	W39	
➢ W0428RE320	WX171RE320	3200	428	5500	151 x 10^3	0.926	0.739	150	0.13	0.15	W39	
➢ W0428RF250	WX171RF250	2500	428	5500	151 x 10^3	0.926	0.739	150	0.13	0.15	W24	
➢ W0428RF280	WX171RF280	2800	428	5500	151 x 10^3	0.926	0.739	150	0.13	0.15	W24	
➢ W0428RF320	WX171RF320	3200	428	5500	151 x 10^3	0.926	0.739	150	0.13	0.15	W24	
➢ W0428SE250	WX171SE250	2500	428	5500	151 x 10^3	0.926	0.739	150	0.13	0.15	W39	
➢ W0428SE280	WX171SE280	2800	428	5500	151 x 10^3	0.926	0.739	150	0.13	0.15	W39	
➢ W0428SE320	WX171SE320	3200	428	5500	151 x 10^3	0.926	0.739	150	0.13	0.15	W39	
➢ W0428SF250	WX171SF250	2500	428	5500	151 x 10^3	0.926	0.739	150	0.13	0.15	W24	
➢ W0428SF280	WX171SF280	2800	428	5500	151 x 10^3	0.926	0.739	150	0.13	0.15	W24	
➢ W0428SF320	WX171SF320	3200	428	5500	151 x 10^3	0.926	0.739	150	0.13	0.15	W24	
W0438RC160	SW16PHR320	1600	438	4000	80 x 10^3	1.000	0.830	180	0.15	0.16	W24	
W0438RC200	SW20PHR320	2000	438	4000	80 x 10^3	1.000	0.830	180	0.15	0.16	W24	
W0438RC240	SW24PHR320	2400	438	4000	80 x 10^3	1.000	0.830	180	0.15	0.16	W24	
W0438SC160	SW16PHN320	1600	438	4000	80 x 10^3	1.000	0.830	180	0.15	0.16	W24	
W0438SC200	SW20PHN320	2000	438	4000	80 x 10^3	1.000	0.830	180	0.15	0.16	W24	
W0438SC240	SW24PHN320	2400	438	4000	80 x 10^3	1.000	0.830	180	0.15	0.16	W24	
W0438RD160	SW16HHR320	1600	438	4000	80 x 10^3	1.000	0.830	180	0.15	0.16	W26	
W0438RD200	SW20HHR320	2000	438	4000	80 x 10^3	1.000	0.830	180	0.15	0.16	W26	
W0438RD240	SW24HHR320	2400	438	4000	80 x 10^3	1.000	0.830	180	0.15	0.16	W26	
W0438SD160	SW16HHN320	1600	438	4000	80 x 10^3	1.000	0.830	180	0.15	0.16	W26	
W0438SD200	SW20HHN320	2000	438	4000	80 x 10^3	1.000	0.830	180	0.15	0.16	W26	
W0438SD240	SW24HHN320	2400	438	4000	80 x 10^3	1.000	0.830	180	0.15	0.16	W26	
W0503RC160	SW16PHR380	1600	503	5500	151 x 10^3	0.990	0.740	180	0.13	0.14	W24	
W0503RC200	SW20PHR380	2000	503	5500	151 x 10^3	0.990	0.740	180	0.13	0.14	W24	
W0503RC240	SW24PHR380	2400	503	5500	151 x 10^3	0.990	0.740	180	0.13	0.14	W24	
W0503SC160	SW16PHN380	1600	503	5500	151 x 10^3	0.990	0.740	180	0.13	0.14	W24	
W0503SC200	SW20PHN380	2000	503	5500	151 x 10^3	0.990	0.740	180	0.13	0.14	W24	
W0503SC240	SW24PHN380	2400	503	5500	151 x 10^3	0.990	0.740	180	0.13	0.14	W24	
W0503RD160	SW16HHR380	1600	503	5500	151 x 10^3	0.990	0.740	180	0.13	0.14	W26	
W0503RD200	SW20HHR380	2000	503	5500	151 x 10^3	0.990	0.740	180	0.13	0.14	W26	
W0503RD240	SW24HHR380	2400	503	5500	151 x 10^3	0.990	0.740	180	0.13	0.14	W26	
W0503SD160	SW16HHN380	1600	503	5500	151 x 10^3	0.990	0.740	180	0.13	0.14	W26	
W0503SD200	SW20HHN380	2000	503	5500	151 x 10^3	0.990	0.740	180	0.13	0.14	W26	
W0503SD240	SW24HHN380	2400	503	5500	151 x 10^3	0.990	0.740	180	0.13	0.14	W26	
W0508RA040	SW04PHR300	400	508	5500	151 x 10^3	0.950	0.750	180	0.13	0.14	W23	
W0508RA120	SW12PHR300	1200	508	5500	151 x 10^3	0.950	0.750	180	0.13	0.14	W23	
W0508RA150	SW15PHR300	1500	508	5500	151 x 10^3	0.950	0.750	180	0.13	0.14	W23	
W0508SA040	SW04PHN300	400	508	5500	151 x 10^3	0.950	0.750	180	0.13	0.14	W23	
W0508SA120	SW12PHN300	1200	508	5500	151 x 10^3	0.950	0.750	180	0.13	0.14	W23	
W0508SA150	SW15PHN300	1500	508	5500	151 x 10^3	0.950	0.750	180	0.13	0.14	W23	
W0508RB040	SW04HHR300	400	508	5500	151 x 10^3	0.950	0.750	180	0.13	0.14	W27	
W0508RB120	SW12HHR300	1200	508	5500	151 x 10^3	0.950	0.750	180	0.13	0.14	W27	
W0508RB150	SW15HHR300	1500	508	5500	151 x 10^3	0.950	0.750	180	0.13	0.14	W27	
W0508SB040	SW04HHN300	400	508	5500	151 x 10^3	0.950	0.750	180	0.13	0.14	W27	
W0508SB120	SW12HHN300	1200	508	5500	151 x 10^3	0.950	0.750	180	0.13	0.14	W27	
W0508SB150	SW15HHN300	1500	508	5500	151 x 10^3	0.950	0.750	180	0.13	0.14	W27	
W0628RA040	SW04PHR400	400	628	7500	280 x 10^3	0.800	0.550	190	0.13	0.14	W23	
W0628RA120	SW12PHR400	1200	628	7500	280 x 10^3	0.800	0.550	190	0.13	0.14	W23	
W0628RA150	SW15PHR400	1500	628	7500	280 x 10^3	0.800	0.550	190	0.13	0.14	W23	
W0628SA040	SW04PHN400	400	628	7500	280 x 10^3	0.800	0.550	190	0.13	0.14	W23	
W0628SA120	SW12PHN400	1200	628	7500	280 x 10^3	0.800	0.550	190	0.13	0.14	W23	
W0628SA150	SW15PHN400	1500	628	7500	280 x 10^3	0.800	0.550	190	0.13	0.14	W23	
W0628RB040	SW04HHR400	400	628	7500	280 x 10^3	0.800	0.550	190	0.13	0.14	W27	
W0628RB120	SW12HHR400	1200	628	7500	280 x 10^3	0.800	0.550	190	0.13	0.14	W27	
W0628RB150	SW15HHR400	1500	628	7500	280 x 10^3	0.800	0.550	190	0.13	0.14	W27	
W0628SB040	SW04HHN400	400	628	7500	280 x 10^3	0.800	0.550	190	0.13	0.14	W27	
W0628SB120	SW12HHN400	1200	628	7500	280 x 10^3	0.800	0.550	190	0.13	0.14	W27	
W0628SB150	SW15HHN400	1500	628	7500	280 x 10^3	0.800	0.550	190	0.13	0.14	W27	
W0735RA040	SW04PHR470	400	735	9000	405 x 10^3	0.790	0.342	190	0.13	0.14	W23	
W0735RA120	SW12PHR470	1200	735	9000	405 x 10^3	0.790	0.342	190	0.13	0.14	W23	
W0735RA150	SW15PHR470	1500	735	9000	405 x 10^3	0.790	0.342	190	0.13	0.14	W23	
W0735SA040	SW04PHN470	400	735	9000	405 x 10^3	0.790	0.342	190	0.13	0.14	W23	
W0735SA120	SW12PHN470	1200	735	9000	405 x 10^3	0.790	0.342	190	0.13	0.14	W23	
W0735SA150	SW15PHN470	1500	735	9000	405 x 10^3	0.790	0.342	190	0.13	0.14	W23	
W0735RB040	SW04HHR470	400	735	9000	405 x 10^3	0.790	0.342	190	0.13	0.14	W27	
W0735RB120	SW12HHR470	1200	735	9000	405 x 10^3	0.790	0.342	190	0.13	0.14	W27	
W0735RB150	SW15HHR470	1500	735	9000	405 x 10^3	0.790	0.342	190	0.13	0.14	W27	
W0735SB040	SW04HHN470	400	735	9000	405 x 10^3	0.790	0.342	190	0.13	0.14	W27	
W0735SB120	SW12HHN470	1200	735	9000	405 x 10^3	0.790	0.342	190	0.13	0.14	W27	
W0735SB150	SW15HHN470	1500	735	9000	405 x 10^3	0.790	0.342	190	0.13	0.14	W27	

S R

W23 Weight 250 g

W24 Weight 250 g

W26 Weight 200 g

W27 Weight 200 g

W39 Weight 250 g

Rectifier Diodes - Capsule Types

WESTCODE

Our comprehensive range of rectifier diodes offers class leading performance and reliability. Devices with blocking voltages from 400V up to 6kV are available making them ideal for applications with line voltages up to 2 kV. Optimised to offer low conduction losses, these devices are ideally suited to line frequency applications including input rectifiers for variable speed drives, traction converters, trackside substations, welding and DC power supplies. Featuring compression bonded, alloyed Silicon wafer construction, these devices feature low thermal impedance and high overload capacity and are designed to survive even the most arduous applications.

The latest additions to the Westcode Rectifier Diode family are two new 56 mm Ø Si Rectifier Diodes. The new package designs have proven alloyed technology for better transient thermal and surge ratings. Two new products have been launched offering approximately 40% more current rating than existing products in the same space envelope; 4.8 kV device W2899MC480 and 2.8 kV device W3842MC280.

Type		V_{RRM}	I_{FAV}	I_{FSM}	I^2t	V_{T0}	r_T	T_{JM}	R_{thJK}		Fig. No.	Package style
			T_K = 55°C	10 ms ½ sine $V_R \leq 60\%\ V_{RRM}$		@T_{JM}			180° Sine	120° Rect.		Outlines on pages O-01...O-24
Part No. ➢ New	Old Part No.	V	A	A	A^2s	V	mΩ	°C	K/W	K/W		
W0507YH360	SW36HXC270	3600	507	7600	289 x 10^3	0.970	0.880	160	0.100	0.117	W3	
W0507YH450	SW45HXC270	4500	507	7600	289 x 10^3	0.970	0.880	160	0.100	0.117	W3	
W0614WC160	SW16CXC320	1600	614	4000	80 x 10^3	1.000	0.830	180	0.090	0.098	W1	
W0614WC200	SW20CXC320	2000	614	4000	80 x 10^3	1.000	0.830	180	0.090	0.098	W1	
W0614WC240	SW24CXC320	2400	614	4000	80 x 10^3	1.000	0.830	180	0.090	0.098	W1	
W0642WC160	SW16CXC380	1600	680	5500	151 x 10^3	0.990	0.740	180	0.090	0.098	W1	
W0642WC200	SW20CXC380	2000	680	5500	151 x 10^3	0.990	0.740	180	0.090	0.098	W1	
W0642WC240	SW24CXC380	2400	680	5500	151 x 10^3	0.990	0.740	180	0.090	0.098	W1	
W0646WC060	SW06CXC300	600	646	5500	151 x 10^3	1.070	0.676	190	0.090	0.098	W1	
W0646WC120	SW12CXC300	1200	646	5500	151 x 10^3	1.070	0.676	190	0.090	0.098	W1	
W0646WC150	SW15CXC300	1500	646	5500	151 x 10^3	1.070	0.676	190	0.090	0.098	W1	
W0797WC040	SW04CXC400	400	797	7500	281 x 10^3	0.800	0.550	190	0.090	0.098	W1	
W0797WC120	SW12CXC400	1200	797	7500	281 x 10^3	0.800	0.550	190	0.090	0.098	W1	
W0797WC150	SW15CXC400	1500	797	7500	281 x 10^3	0.800	0.550	190	0.090	0.098	W1	
W0944WC040	SW04CXC470	400	944	9000	405 x 10^3	0.790	0.342	190	0.090	0.098	W1	
W0944WC120	SW12CXC470	1200	944	9000	405 x 10^3	0.790	0.342	190	0.090	0.098	W1	
W0944WC150	SW15CXC470	1500	944	9000	405 x 10^3	0.790	0.342	190	0.090	0.098	W1	
W1032LC500	SW50CXC350	5000	1032	7200	259 x 10^3	1.000	0.702	150	0.033	0.040	W4	
W1032LC560	SW56CXC350	5600	1032	7200	259 x 10^3	1.000	0.702	150	0.033	0.040	W4	
W1032LC600	N/A	6000	1032	7200	259 x 10^3	1.000	0.702	150	0.033	0.040	W4	
W1074YC200	SW20CXC445	2000	1074	10800	583 x 10^3	0.920	0.390	160	0.050	0.061	W2	
W1074YC320	SW32CXC445	3200	1074	10800	583 x 10^3	0.920	0.390	160	0.050	0.061	W2	
W1074YH200	SW20HXC445	2000	1074	10800	583 x 10^3	0.920	0.390	160	0.050	0.061	W3	
W1074YH320	SW32HXC445	3200	1074	10800	583 x 10^3	0.920	0.390	160	0.050	0.061	W3	
W1185LC300	SW30CXC515	3000	1185	9200	423 x 10^3	1.000	0.575	160	0.033	0.040	W4	
W1185LC380	SW38CXC515	3800	1185	9200	423 x 10^3	1.000	0.575	160	0.033	0.040	W4	
W1185LC450	SW45CXC515	4500	1185	9200	423 x 10^3	1.000	0.575	160	0.033	0.040	W4	
W1263YC160	SW16CXC565	1600	1263	11700	684 x 10^3	0.870	0.330	175	0.050	0.061	W2	
W1263YC200	SW20CXC565	2000	1263	11700	684 x 10^3	0.870	0.330	175	0.050	0.061	W2	
W1263YC250	SW25CXC565	2500	1263	11700	684 x 10^3	0.870	0.330	175	0.050	0.061	W2	
W1263YH160	SW16HXC565	1600	1263	11700	684 x 10^3	0.870	0.330	175	0.050	0.061	W3	
W1263YH200	SW20HXC565	2000	1263	11700	684 x 10^3	0.870	0.330	175	0.050	0.061	W3	
W1263YH250	SW25HXC565	2500	1263	11700	684 x 10^3	0.870	0.330	175	0.050	0.061	W3	
W1294NC500	SW50CXC500	5000	1294	10000	500 x 10^3	1.150	0.684	150	0.022	0.026	W5*	
W1294NC600	SW60CXC500	6000	1294	10000	500 x 10^3	1.150	0.684	150	0.022	0.026	W5*	
W1294ND500	SW50DXC500	5000	1294	10000	500 x 10^3	1.150	0.684	150	0.022	0.026	W37	
W1294ND600	SW60DXC500	6000	1294	10000	500 x 10^3	1.150	0.684	150	0.022	0.026	W37	
W1411LC300	SW30CXC595	3000	1411	10600	562 x 10^3	0.900	0.388	160	0.033	0.040	W4	
W1411LC360	SW36CXC595	3600	1411	10600	562 x 10^3	0.900	0.388	160	0.033	0.040	W4	
W1520NC500	SW50CXC620	5000	1478	12000	720 x 10^3	0.904	0.552	150	0.022	0.026	W5*	
W1520NC600	SW60CXC620	6000	1478	12000	720 x 10^3	0.904	0.552	150	0.022	0.026	W5*	
W1524LC240	SW24CXC635	2400	1524	12700	810 x 10^3	0.870	0.323	160	0.033	0.040	W4	
W1524LC300	SW30CXC635	3000	1524	12700	810 x 10^3	0.870	0.323	160	0.033	0.040	W4	
W1608NC400	SW40CXC680	4000	1608	13000	845 x 10^3	0.975	0.501	160	0.022	0.026	W5*	
W1608NC500	SW50CXC680	5000	1608	13000	845 x 10^3	0.975	0.501	160	0.022	0.026	W5*	
W1748LC080	SW08CXC805	800	1748	15400	1.19 x 10^6	0.870	0.280	175	0.033	0.040	W4	
W1748LC180	SW18CXC805	1800	1748	15400	1.19 x 10^6	0.870	0.280	175	0.033	0.040	W4	
W1748LC220	SW22CXC805	2200	1748	15400	1.19 x 10^6	0.870	0.280	175	0.033	0.040	W4	
W1748LC250	SW25CXC805	2500	1748	15400	1.19 x 10^6	0.870	0.280	175	0.033	0.040	W4	
W1856NC400	SW40CXC815	4000	1856	16000	1.28 x 10^6	0.975	0.348	160	0.022	0.026	W5*	
W1856NC500	SW50CXC815	5000	1856	16000	1.28 x 10^6	0.975	0.348	160	0.022	0.026	W5*	
W2020NC360	SW36CXC818	3600	2020	18000	1.62 x 10^6	1.000	0.320	160	0.020	0.022	W5*	
W2020NC450	SW45CXC818	4500	2020	18000	1.62 x 10^6	1.000	0.320	160	0.020	0.022	W5*	
W2052NC300	SW30CXC820	3000	2052	19500	1.90 x 10^6	0.865	0.288	160	0.022	0.026	W5*	
W2052NC400	SW40CXC820	4000	2052	19500	1.90 x 10^6	0.865	0.288	160	0.022	0.026	W5*	
W2054NC360	SW36CXC920	3600	2054	19000	1.81 x 10^6	0.800	0.300	160	0.022	0.026	W5*	
W2054NC450	SW45CXC920	4500	2054	19000	1.81 x 10^6	0.800	0.300	160	0.022	0.026	W5*	
W2058LC020	SW02CXC935	200	2058	19500	1.90 x 10^6	0.790	0.192	175	0.033	0.040	W4	
W2058LC100	SW10CXC935	1000	2058	19500	1.90 x 10^6	0.790	0.192	175	0.033	0.040	W4	
W2058LC120	SW12CXC935	1200	2058	19500	1.90 x 10^6	0.790	0.192	175	0.033	0.040	W4	
W2058LC140	SW14CXC935	1400	2058	19500	1.90 x 10^6	0.790	0.192	175	0.033	0.040	W4	
W2134NC300	SW30CXC930	3000	2134	20000	2.00 x 10^6	0.865	0.260	160	0.022	0.026	W5*	
W2134NC400	SW40CXC930	4000	2134	20000	2.00 x 10^6	0.865	0.260	160	0.022	0.026	W5*	

W1 Weight 70 g

W2 Weight 80 g

W3 Weight 140 g

W4 Weight 340 g

W5 Weight 510 g

**Not recommended for new design*

W37 Weight 510 g

Rectifier Diodes - Capsule Types

WESTCODE

Type		V_{RRM}	I_{FAV}	I_{FSM}	I^2t	V_{T0}	r_T	T_{JM}	R_{thJK}		Fig. No.	Package style
			T_K = 55°C	10 ms ½ sine $V_R \leq 60\%\ V_{RRM}$		@T_{JM}			180° Sine	120° Rect.		Outlines on pages O-01...O-24
Part No. ➢ New	Old Part No.	V	A	A	A^2s	V	mΩ	°C	K/W	K/W		
W2416NC160	SW16CXC950	1600	2416	25500	3.25×10^6	0.780	0.200	160	0.022	0.026	W5*	
W2416NC200	SW20CXC950	2000	2416	25500	3.25×10^6	0.780	0.200	160	0.022	0.026	W5*	
W2416NC250	SW25CXC950	2500	2416	25500	3.25×10^6	0.780	0.200	160	0.022	0.026	W5*	
W2624NC160	SW16CXC11C	1600	2624	28000	3.92×10^6	0.780	0.160	160	0.022	0.026	W5*	
W2624NC200	SW20CXC11C	2000	2624	28000	3.92×10^6	0.780	0.160	160	0.022	0.026	W5*	
W2624NC250	SW25CXC11C	2500	2624	28000	3.92×10^6	0.780	0.160	160	0.022	0.026	W5*	
W2664NC300	SW30CXC1170	3000	2664	26500	3.51×10^6	0.824	0.174	160	0.020	0.022	W5*	
W2664NC400	SW40CXC1170	4000	2664	26500	3.51×10^6	0.824	0.174	160	0.020	0.022	W5*	
W2820VC360	SW36CXC1100	3600	2820	26200	3.43×10^6	1.300	0.147	160	0.016	0.018	W6	
W2820VC450	SW45CXC1100	4500	2820	26200	3.43×10^6	1.300	0.147	160	0.016	0.018	W6	
W2820VF360	SW36FXC1100	3600	2820	26200	3.43×10^6	1.300	0.147	160	0.016	0.018	W43	
W2820VF450	SW45FXC1100	4500	2820	26200	3.43×10^6	1.300	0.147	160	0.016	0.018	W43	
➢ **W2899MC320**	WX166MC320	3200	2899	25400	3.23×10^6	0.996	0.222	160	0.014	0.016	W54	
➢ **W2899MC360**	WX166MC360	3600	2899	25400	3.23×10^6	0.996	0.222	160	0.014	0.016	W54	
➢ **W2899MC400**	WX166MC400	4000	2899	25400	3.23×10^6	0.996	0.222	160	0.014	0.016	W54	
➢ **W2899MC420**	WX166MC420	4200	2899	25400	3.23×10^6	0.996	0.222	160	0.014	0.016	W54	
➢ **W2899MC480**	WX166MC480	4800	2899	25400	3.23×10^6	0.996	0.222	160	0.014	0.016	W54	
W2958NC280	SW28CXC12C	2800	2958	28000	3.92×10^6	0.807	0.167	175	0.020	0.022	W5*	
W2958NC350	SW35CXC12C	3500	2958	28000	3.92×10^6	0.807	0.167	175	0.020	0.022	W5*	
➢ **W3082MC420**	WX253MC420	4200	3082	TBA	TBA	0.947	0.195	160	0.014	0.016	W54	
➢ **W3082MC450**	WX253MC450	4500	3082	TBA	TBA	0.947	0.195	160	0.014	0.016	W54	
W3128VC300	SW30CXC13C	3000	3128	30000	4.50×10^6	0.875	0.158	160	0.016	0.018	W6	
W3128VC400	SW40CXC13C	4000	3128	30000	4.50×10^6	0.875	0.158	160	0.016	0.018	W6	
W3128VF300	SW30FXC13C	3000	3128	30000	4.50×10^6	0.875	0.158	160	0.016	0.018	W43	
W3128VF400	SW40FXC13C	4000	3128	30000	4.50×10^6	0.875	0.158	160	0.016	0.018	W43	
W3270NC080	SW08CXC14C	800	3270	30400	4.62×10^6	0.826	0.104	175	0.022	0.026	W5*	
W3270NC160	SW16CXC14C	1600	3270	30400	4.62×10^6	0.826	0.104	175	0.022	0.026	W5*	
W3270NC200	SW20CXC14C	2000	3270	30400	4.62×10^6	0.826	0.104	175	0.022	0.026	W5*	
W3270NC220	SW22CXC14C	2200	3270	30400	4.62×10^6	0.826	0.104	175	0.022	0.026	W5*	
➢ **W3477MC360**	WX252MC360	3600	3477	TBA	TBA	0.918	0.144	160	0.014	0.016	W54	
➢ **W3477MC400**	WX252MC400	4000	3477	TBA	TBA	0.918	0.144	160	0.014	0.016	W54	
W3697VC160	SW16CXC16C	1600	3697	40000	8.00×10^6	0.860	0.100	160	0.016	0.018	W6	
W3697VC220	SW22CXC16C	2200	3697	40000	8.00×10^6	0.860	0.100	160	0.016	0.018	W6	
W3697VC280	SW28CXC16C	2800	3697	40000	8.00×10^6	0.860	0.100	160	0.016	0.018	W6	
W3697VF160	SW16FXC16C	1600	3697	40000	8.00×10^6	0.860	0.100	160	0.016	0.018	W43	
W3697VF220	SW22FXC16C	2200	3697	40000	8.00×10^6	0.860	0.100	160	0.016	0.018	W43	
W3697VF280	SW28FXC16C	2800	3697	40000	8.00×10^6	0.860	0.100	160	0.016	0.018	W43	
➢ **W3708MC320**	WX251MC320	3200	3708	TBA	TBA	0.894	0.123	160	0.014	0.016	W54	
➢ **W3708MC350**	WX251MC350	3500	3708	TBA	TBA	0.894	0.123	160	0.014	0.016	W54	
W3743ZC400	SW40CXC15C	4000	3743	35000	6.13×10^6	0.976	0.170	160	0.011	0.012	W7	
W3743ZC450	SW45CXC15C	4500	3743	35000	6.13×10^6	0.976	0.170	160	0.011	0.012	W7	
W3743ZC500	SW50CXC15C	5000	3743	35000	6.13×10^6	0.976	0.170	160	0.011	0.012	W7	
W3743ZD400	SW40DXC15C	4000	3743	35000	6.13×10^6	0.976	0.170	160	0.011	0.012	W42	
W3743ZD450	SW45DXC15C	4500	3743	35000	6.13×10^6	0.976	0.170	160	0.011	0.012	W42	
W3743ZD500	SW50DXC15C	5000	3743	35000	6.13×10^6	0.976	0.170	160	0.011	0.012	W42	
W3841VC300	SW30CXC17C	3000	3841	39800	7.92×10^6	0.860	0.115	175	0.016	0.018	W6	
W3841VC340	SW34CXC17C	3400	3841	39800	7.92×10^6	0.860	0.115	175	0.016	0.018	W6	
W3841VF300	SW30FXC17C	3000	3841	39800	7.92×10^6	0.860	0.115	175	0.016	0.018	W43	
W3841VF340	SW34FXC17C	3400	3841	39800	7.92×10^6	0.860	0.115	175	0.016	0.018	W43	
➢ **W3842MC160**	WX199MC160	1600	3842	35100	6.16×10^6	0.831	0.118	160	0.014	0.016	W54	
➢ **W3842MC200**	WX199MC200	2000	3842	35100	6.16×10^6	0.831	0.118	160	0.014	0.016	W54	
➢ **W3842MC240**	WX199MC240	2400	3842	35100	6.16×10^6	0.831	0.118	160	0.014	0.016	W54	
➢ **W3842MC280**	WX199MC280	2800	3842	35100	6.16×10^6	0.831	0.118	160	0.014	0.016	W54	
W4096ZC340	SW34CXC1870	3400	4096	41700	8.70×10^6	0.730	0.158	160	0.011	0.012	W7	
W4096ZC450	SW45CXC1870	4500	4096	41700	8.70×10^6	0.730	0.158	160	0.011	0.012	W7	
W4096ZD340	SW34DXC1870	3400	4096	41700	8.70×10^6	0.730	0.158	160	0.011	0.012	W42	
W4096ZD450	SW45DXC1870	4500	4096	41700	8.70×10^6	0.730	0.158	160	0.011	0.012	W42	
W4307ZC200	SW20CXC20C	2000	4307	55000	15.1×10^6	0.800	0.133	160	0.011	0.012	W7	
W4307ZC240	SW24CXC20C	2400	4307	55000	$15.1x\ 10^6$	0.800	0.133	160	0.011	0.012	W7	
W4307ZC300	SW30CXC20C	3000	4307	55000	15.1×10^6	0.800	0.133	160	0.011	0.012	W7	
W4307ZD200	SW20DXC20C	2000	4307	55000	15.1×10^6	0.800	0.133	160	0.011	0.012	W42	
W4307ZD240	SW24DXC20C	2400	4307	55000	15.1×10^6	0.800	0.133	160	0.011	0.012	W42	
W4307ZD300	SW30DXC20C	3000	4307	55000	15.1×10^6	0.800	0.133	160	0.011	0.012	W42	
W4534NC020	SW02CXC19C	200	4543	40000	8.00×10^6	0.765	0.052	190	0.022	0.026	W5*	
W4534NC060	SW06CXC19C	600	4543	40000	8.00×10^6	0.765	0.052	190	0.022	0.026	W5*	
➢ **W4534ND020**	SW02DXC19C	200	4543	40000	8.00×10^6	0.765	0.052	190	0.022	0.026	W37	
➢ **W4534ND060**	SW06DXC19C	600	4543	40000	8.00×10^6	0.765	0.052	190	0.022	0.026	W37	
W5092ZC240	SW24CXC18C	2400	5092	58000	16.8×10^6	0.874	0.079	160	0.011	0.012	W7	
W5092ZC280	SW28CXC18C	2800	5092	58000	16.8×10^6	0.874	0.079	160	0.011	0.012	W7	
W5092ZC320	SW32CXC18C	3200	5092	58000	16.8×10^6	0.874	0.079	160	0.011	0.012	W7	

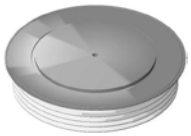
W5 Weight 510 g

**Not recommended for new design*

W6 Weight 1000 g

W7 Weight 1700 g

W37 Weight 510 g



W42 Weight 1200 g

W43 Weight 800 g

W54 Weight 530 g

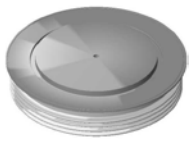
Rectifier Diodes - Capsule Types

WESTCODE

Type		V_{RRM}	I_{FAV}	I_{FSM}	I^2t	V_{T0}	r_T	T_{JM}	R_{thJK}		Fig. No.	Package style Outlines on pages O-01...O-24
Part No. ➢ New	Old Part No.		T_K = 55°C	10ms ½ sine $V_R \leq 60\%\ V_{RRM}$		@T_{JM}			180° Sine	120° Rect.		
		V	A	A	A^2s	V	mΩ	°C	K/W	K/W		
W5092ZC350	SW35CXC18C	3500	5092	58000	16.8×10^6	0.874	0.079	160	0.011	0.012	W7	
W5092ZD240	SW24DXC18C	2400	5092	58000	16.8×10^6	0.874	0.079	160	0.011	0.012	W42	
W5092ZD280	SW28DXC18C	2800	5092	58000	16.8×10^6	0.874	0.079	160	0.011	0.012	W42	
W5092ZD320	SW32DXC18C	3200	5092	58000	16.8×10^6	0.874	0.079	160	0.011	0.012	W42	
W5092ZD350	SW35DXC18C	3500	5092	58000	16.8×10^6	0.874	0.079	160	0.011	0.012	W42	
W5282ZC200	SW20CXC21C	2000	5282	60000	18.0×10^6	0.970	0.064	160	0.011	0.012	W7	
W5282ZC240	SW24CXC21C	2400	5282	60000	18.0×10^6	0.970	0.064	160	0.011	0.012	W7	
W5282ZC300	SW30CXC21C	3000	5282	60000	18.0×10^6	0.970	0.064	160	0.011	0.012	W7	
W5282ZD200	SW20DXC21C	2000	5282	60000	18.0×10^6	0.970	0.064	160	0.011	0.012	W42	
W5282ZD240	SW24DXC21C	2400	5282	60000	18.0×10^6	0.970	0.064	160	0.011	0.012	W42	
W5282ZD300	SW30DXC21C	3000	5282	60000	18.0×10^6	0.970	0.064	160	0.011	0.012	W42	
W5292TC500	WX043TC500	5000	5292	52700	13.9×10^6	1.027	0.111	160	0.008	0.009	W28	
W5292TC560	WX043TC560	5600	5292	52700	13.9×10^6	1.027	0.111	160	0.008	0.009	W28	
W5292TD500	WX043TD500	5000	5292	52700	13.9×10^6	1.027	0.111	160	0.008	0.009	W29	
W5292TD560	WX043TD560	5600	5292	52700	13.9×10^6	1.027	0.111	160	0.008	0.009	W29	
W5439VC020	SW02CXC22C	200	5439	52000	13.5×10^6	0.650	0.067	190	0.016	0.018	W6	
W5439VC100	SW10CXC22C	1000	5439	52000	13.5×10^6	0.650	0.067	190	0.016	0.018	W6	
W5439VC140	SW14CXC22C	1400	5439	52000	13.5×10^6	0.650	0.067	190	0.016	0.018	W6	
W5439VF020	SW02FXC22C	200	5439	52000	13.5×10^6	0.650	0.067	190	0.016	0.018	W43	
W5439VF100	SW10FXC22C	1000	5439	52000	13.5×10^6	0.650	0.067	190	0.016	0.018	W43	
W5439VF140	SW14FXC22C	1400	5439	52000	13.5×10^6	0.650	0.067	190	0.016	0.018	W43	
W5696VC020	SW02CXC27C	200	5696	53000	14.0×10^6	0.650	0.059	190	0.016	0.018	W6	
W5696VC100	SW10CXC27C	1000	5696	53000	14.0×10^6	0.650	0.059	190	0.016	0.018	W6	
W5696VC140	SW14CXC27C	1400	5696	53000	14.0×10^6	0.650	0.059	190	0.016	0.018	W6	
W5696VF020	SW02FXC27C	200	5696	53000	14.0×10^6	0.650	0.059	190	0.016	0.018	W43	
W5696VF100	SW10FXC27C	1000	5696	53000	14.0×10^6	0.650	0.059	190	0.016	0.018	W43	
W5696VF140	SW14FXC27C	1400	5696	53000	14.0×10^6	0.650	0.059	190	0.016	0.018	W43	
W5838ZC120	SW12CXC26C	1200	5838	64000	20.5×10^6	0.800	0.074	175	0.011	0.012	W7	
W5838ZC180	SW18CXC26C	1800	5838	64000	20.5×10^6	0.800	0.074	175	0.011	0.012	W7	
W5838ZC220	SW22CXC26C	2200	5838	64000	20.5×10^6	0.800	0.074	175	0.011	0.012	W7	
W5838ZD120	SW12DXC26C	1200	5838	64000	20.5×10^6	0.800	0.074	175	0.011	0.012	W42	
W5838ZD180	SW18DXC26C	1800	5838	64000	20.5×10^6	0.800	0.074	175	0.011	0.012	W42	
W5838ZD220	SW22DXC26C	2200	5838	64000	20.5×10^6	0.800	0.074	175	0.011	0.012	W42	
W6262ZC120	SW12CXC2850	1200	6262	67000	22.4×10^6	0.740	0.065	175	0.011	0.012	W7	
W6262ZC200	SW20CXC2850	2000	6262	67000	22.4×10^6	0.740	0.065	175	0.011	0.012	W7	
W6262ZC240	SW24CXC2850	2400	6262	67000	22.4×10^6	0.740	0.065	175	0.011	0.012	W7	
W6262ZD120	SW12DXC2850	1200	6262	67000	22.4×10^6	0.740	0.065	175	0.011	0.012	W42	
W6262ZD200	SW20DXC2850	2000	6262	67000	22.4×10^6	0.740	0.065	175	0.011	0.012	W42	
W6262ZD240	SW24DXC2850	2400	6262	67000	22.4×10^6	0.740	0.065	175	0.011	0.012	W42	
W6908FC450	N/A	4500	6908	70000	24.5×10^6	0.767	0.092	160	0.0065	0.0069	W52	
W6908FC500	N/A	5000	6908	70000	24.5×10^6	0.767	0.092	160	0.0065	0.0069	W52	
W6908FD450	N/A	4500	6908	70000	24.5×10^6	0.767	0.092	160	0.0065	0.0069	W59	
W6908FD500	N/A	5000	6908	70000	24.5×10^6	0.767	0.092	160	0.0065	0.0069	W59	
W7675ZC020	SW02CXC30C	200	7675	68000	23.1×10^6	0.650	0.050	190	0.011	0.012	W7	
W7675ZC100	SW10CXC30C	1000	7675	68000	23.1×10^6	0.650	0.050	190	0.011	0.012	W7	
W7675ZC140	SW14CXC30C	1400	7675	68000	23.1×10^6	0.650	0.050	190	0.011	0.012	W7	
W7675ZD020	SW02DXC30C	200	7675	68000	23.1×10^6	0.650	0.050	190	0.011	0.012	W42	
W7675ZD100	SW10DXC30C	1000	7675	68000	23.1×10^6	0.650	0.050	190	0.011	0.012	W42	
W7675ZD140	SW14DXC30C	1400	7675	68000	23.1×10^6	0.650	0.050	190	0.011	0.012	W42	
W8405ZC020	SW02CXC32C	200	8405	72000	25.9×10^6	0.670	0.038	190	0.011	0.012	W7	
W8405ZC100	SW10CXC32C	1000	8405	72000	25.9×10^6	0.670	0.038	190	0.011	0.012	W7	
W8405ZC140	SW14CXC32C	1400	8405	72000	25.9×10^6	0.670	0.038	190	0.011	0.012	W7	
W8405ZD020	SW02DXC32C	200	8405	72000	25.9×10^6	0.670	0.038	190	0.011	0.012	W42	
W8405ZD100	SW10DXC32C	1000	8405	72000	25.9×10^6	0.670	0.038	190	0.011	0.012	W42	
W8405ZD140	SW14DXC32C	1400	8405	72000	25.9×10^6	0.670	0.038	190	0.011	0.012	W42	
W104CFC200 **	N/A	2000	10434	83700	35.0×10^6	0.711	0.041	175	0.0065	0.0069	W52	
W104CFC220 **	N/A	2200	10434	83700	35.0×10^6	0.711	0.041	175	0.0065	0.0069	W52	
W104CFD200 **	N/A	2000	10434	83700	35.0×10^6	0.711	0.041	175	0.0065	0.0069	W59	
W104CFD220 **	N/A	2200	10434	83700	35.0×10^6	0.711	0.041	175	0.0065	0.0069	W59	
WX248MC030	N/A	300	New Products in development, refer to Chippenham Factory						0.014	0.016	W54	
WX248MC060	N/A	600							0.014	0.016	W54	
WX249MC120	N/A	1200							0.014	0.016	W54	
WX249MC150	N/A	1500							0.014	0.016	W54	
WX250MC180	N/A	1800							0.014	0.016	W54	
WX250MC220	N/A	2200							0.014	0.016	W54	
WX254MC520	N/A	5200							0.014	0.016	W54	
WX254MC600	N/A	6000							0.014	0.016	W54	

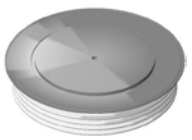
W6 Weight 1000 g

W7 Weight 1700 g



W28 Weight 1230 g

W29 Weight 1700 g

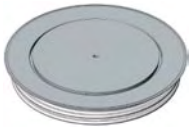


W42 Weight 1200 g

W43 Weight 800 g

W52 Weight 2800 g

W54 Weight 530 g



W52 Weight 2000 g

* Outline reference W5 is not recommended for new designs as new improved products are in development. Please refer to Chippenham Factory for further advice.

** For current ratings greater than 9999 amperes, a current multiplier replaces the fifth digit of the part number. I.e. C = x 100, D = x 1000 and E = x 10000.

Rectifier Diodes - Capsule Types

Welding Diodes

Using ground-breaking new silicon technology, Westcode has launched a new Welding Diode that offers a low voltage rating of 200 V.

The new 8 mm thick, 44.4 mm pole face Ø diode is a fully hermetic, press-pack ceramic walled package and is mechanically compatible with industry standard outlines.

Samples and data sheet for the first 200 V device, W7023DB200, are available now with new larger 200 V and 400 V versions currently in development.

Type		V_{RRM}	I_{FAV}	I_{FSM}	I^2t	V_{T0}	r_T	T_{JM}	R_{thJK}		Fig. No.	Package style
Part No. ➢ New	Old Part No.	V	T_K = 55°C	10 ms ½ sine $V_R \leq 60\%\ V_{RRM}$		@T_{JM}			180° Sine	120° Rect.		Outlines on pages O-01...O-24
			A	A	A^2s	V	mΩ	°C	K/W	K/W		
➢ **W7032DB008**	WX173DB008	80	7032	50000	12.5×10^6	0.807	0.027	170	0.013	0.016	W49	W38 in development
➢ **W7032DB012**	WX173DB012	120	7032	50000	12.5×10^6	0.807	0.027	170	0.013	0.016	W49	
➢ **W7032DB020**	WX173DB020	200	7032	50000	12.5×10^6	0.807	0.027	170	0.013	0.016	W49	
➢ **WX198PB008**	N/A	80	New Products in Development, refer to Chippenham Factory								W38	
➢ **WX198PB012**	N/A	120									W38	
➢ **WX198PB020**	N/A	200									W38	

W49 Weight 120 g

Introducing a new range of Rectifier Diodes using the innovative slimline WESPACK housing to provide devices with the maximum power rating for weight and volume without compromising on quality and reliability.

Two of the new devices are available in 38 mm pole face diameter housings, and one in a 50 mm pole face diameter housing, mounted in a low profile 14 mm cold weld capsule. WESPACK Rectifier Diodes have a maximum voltage rating of 2.8 kV or 3.5 kV and will be available in the four outlines currently offered in our Phase Control Thyristor WESPACK range.

Typical applications include: input rectifiers and bridges, Welding, DC power supplies, chemical power supplies, battery charges, etc.

Type		V_{RRM}	I_{FAV}	I_{FSM}	I^2t	V_{T0}	r_T	T_{JM}	R_{thJK}		Fig. No.	Package style
Part No. ➢ New	Old Part No.		T_K = 55°C	10 ms ½ sine $V_R \leq 60\%\ V_{RRM}$		@T_{JM}			180° Sine	120° Rect.		Outlines on pages O-01...O-24
		V	A	A	A^2s	V	mΩ	°C	K/W	K/W		
TBA	N/A	TBA	FUTURE DEVELOPMENT					TBA	TBA	TBA	WD1 WD1	WD1 in development
➢ **W3455QK200**	WX181QK200	2000	3455	20000	2.0×10^6	0.940	0.139	180	0.017	0.021	WD2	
➢ **W3455QK220**	WX181QK220	2200	3455	20000	2.0×10^6	0.940	0.139	180	0.017	0.021	WD2	
➢ **W4693QK050**	WX183QK050	500	4693	31500	4.98×10^6	0.904	0.057	180	0.017	0.021	WD2	
➢ **W4693QK080**	WX183QK080	800	4693	31500	4.98×10^6	0.904	0.057	180	0.017	0.021	WD2	
➢ **W4713HL300**	WX207HL300	3000	4713	56000	15.7×10^6	0.807	0.090	160	0.012	0.013	WD5	
➢ **W4713HL350**	WX207HL350	3500	4713	56000	15.7×10^6	0.807	0.090	160	0.012	0.013	WD5	
➢ **W4713HM300**	WX207HM300	3000	4713	56000	15.7×10^6	0.807	0.090	160	0.012	0.013	WD6	
➢ **W4713HM350**	WX207HM350	3500	4713	56000	15.7×10^6	0.807	0.090	160	0.012	0.013	WD6	
➢ **W5334MK200**	W4987MK200	2000	5334	46800	10.95×10^6	0.892	0.069	180	0.013	0.015	WD3	
➢ **W5334MK220**	W4987MK220	2200	5334	46800	10.95×10^6	0.892	0.069	180	0.013	0.015	WD3	
WX210MK050	N/A	500	IN DEVELOPMENT					180	0.013	0.015	WD3	
WX210MK080	N/A	800						180	0.013	0.015	WD3	
TBA	N/A	TBA	FUTURE DEVELOPMENT					TBA	TBA	TBA	WD4 WD4	

For additional voltages, please contact the Chippenham Factory.

WD2 Weight 200 g

WD3 Weight 270 g

WD4 Weight 550 g

WD5 Weight 1200 g

WD6 Weight 1500 g

Fast Recovery Diodes - Stud Types

WESTCODE

Fast Recovery Diodes are an essential complement to any switching device and are more often than not the limiting factor in the design and performance of modern power converters. To address the needs of our customers, we have developed an unparalleled range of Fast Recovery Diodes.

These diodes are available with blocking voltages up to 6 kV making them suitable for operation with DC link voltages up to 3.3 kV and average current ratings to 4 kA depending upon type. The devices utilise compression bonding along with both alloyed and floating silicon technologies to deliver robust devices that you can rely on in demanding applications.

This range has been re-classified as follows to aid appropriate device selection; ***Fast Recovery, Soft Recovery, Extra Fast Recovery Diodes and HP Sonic-FRDs™***.

Fast Recovery Diodes: These parts are particularly suitable for use as anti-parallel diodes in Gate Turn-Off thyristors and Fast Thyristor inverters, and as series and freewheel diodes for choppers.

Type		V_{RRM}	I_{FAV}	I_{FSM}	I^2t	Typ. Reverse Recovery Parameters				V_{T0}	r_T	T_{JM}	R_{thJC}	Fig. No.
			T_C = 55°C	10 ms ½ sine $V_R \leq 60\%\ V_{RRM}$		T_{JM} (50% Chord)				@T_{JM}			d.c. 180° sine	
Part No. ➢ New	Old Part No.	V	A	A	A^2s	t_{rr} µs	Q_{ra} µC	@I_{FM} A	@-di_F/dt A/µs	V	mΩ	°C	K/W	
M0130RL200	SM20MCR094	2000	130	2240	25×10^3	2.60	240	1000	150	1.290	1.540	125	0.300	W20
M0130RL250	SM25MCR094	2500	130	2240	25×10^3	2.60	240	1000	150	1.290	1.540	125	0.300	W20
M0130SL200	SM20MCN094	2000	130	2240	25×10^3	2.60	240	1000	150	1.290	1.540	125	0.300	W20
M0130SL250	SM25MCN094	2500	130	2240	25×10^3	2.60	240	1000	150	1.290	1.540	125	0.300	W20
M0130RM200	N/A	2000	130	2240	25×10^3	2.60	240	1000	150	1.290	1.540	125	0.300	W21
M0130RM250	N/A	2500	130	2240	25×10^3	2.60	240	1000	150	1.290	1.540	125	0.300	W21
M0130SM200	N/A	2000	130	2240	25×10^3	2.60	240	1000	150	1.290	1.540	125	0.300	W21
M0130SM250	N/A	2500	130	2240	25×10^3	2.60	240	1000	150	1.290	1.540	125	0.300	W21
M0139RL120	N/A	1200	139	2450	30×10^3	1.00	70	1000	100	1.240	1.280	125	0.300	W20
M0139RL180	N/A	1800	139	2450	30×10^3	1.00	70	1000	100	1.240	1.280	125	0.300	W20
M0139SL120	N/A	1200	139	2450	30×10^3	1.00	70	1000	100	1.240	1.280	125	0.300	W20
M0139SL180	N/A	1800	139	2450	30×10^3	1.00	70	1000	100	1.240	1.280	125	0.300	W20
M0139RM120	SM12PHR100	1200	139	2450	30×10^3	1.00	70	1000	100	1.240	1.280	125	0.300	W21
M0139RM180	SM18PHR100	1800	139	2450	30×10^3	1.00	70	1000	100	1.240	1.280	125	0.300	W21
M0139SM120	SM12PHN100	1200	139	2450	30×10^3	1.00	70	1000	100	1.240	1.280	125	0.300	W21
M0139SM180	SM18PHN100	1800	139	2450	30×10^3	1.00	70	1000	100	1.240	1.280	125	0.300	W21
M0268RC200	SM20PHR134	2000	268	4250	90.3×10^3	2.80	230	1000	150	1.210	1.200	125	0.130	W24
M0268RC250	SM25PHR134	2500	268	4250	90.3×10^3	2.80	230	1000	150	1.210	1.200	125	0.130	W24
M0268SC200	SM20PHN134	2000	268	4250	90.3×10^3	2.80	230	1000	150	1.210	1.200	125	0.130	W24
M0268SC250	SM25PHN134	2500	268	4250	90.3×10^3	2.80	230	1000	150	1.210	1.200	125	0.130	W24
M0268RJ200	SM20PCR134	2000	268	4250	90.3×10^3	2.80	230	1000	150	1.210	1.200	125	0.130	W22
M0268RJ250	SM25PCR134	2500	268	4250	90.3×10^3	2.80	230	1000	150	1.210	1.200	125	0.130	W22
M0268SJ200	SM20PCN134	2000	268	4250	90.3×10^3	2.80	230	1000	150	1.210	1.200	125	0.130	W22
M0268SJ250	SM25PCN134	2500	268	4250	90.3×10^3	2.80	230	1000	150	1.210	1.200	125	0.130	W22
M0280RC200	SM20PHR144	2000	280	4500	100×10^3	2.80	342	1000	150	1.280	0.920	125	0.130	W24
M0280RC250	SM25PHR144	2500	280	4500	100×10^3	2.80	342	1000	150	1.280	0.920	125	0.130	W24
M0280SC200	SM20PHN144	2000	280	4500	100×10^3	2.80	342	1000	150	1.280	0.920	125	0.130	W24
M0280SC250	SM25PHN144	2500	280	4500	100×10^3	2.80	342	1000	150	1.280	0.920	125	0.130	W24
M0280RJ200	SM20PCR144	2000	280	4500	100×10^3	2.80	342	1000	150	1.280	0.920	125	0.130	W22
M0280RJ250	SM25PCR144	2500	280	4500	100×10^3	2.80	342	1000	150	1.280	0.920	125	0.130	W22
M0280SJ200	SM20PCN144	2000	280	4500	100×10^3	2.80	342	1000	150	1.280	0.920	125	0.130	W22
M0280SJ250	SM25PCN144	2500	280	4500	100×10^3	2.80	342	1000	150	1.280	0.920	125	0.130	W22
M0334RC120	SM12PHR174	1200	334	4500	101×10^3	3.50	160	550	40	1.000	0.740	125	0.130	W24
M0334RC200	SM20PHR174	2000	334	4500	101×10^3	3.50	160	550	40	1.000	0.740	125	0.130	W24
M0334SC120	SM12PHN174	1200	334	4500	101×10^3	3.50	160	550	40	1.000	0.740	125	0.130	W24
M0334SC200	SM20PHN174	2000	334	4500	101×10^3	3.50	160	550	40	1.000	0.740	125	0.130	W24
M0334RJ120	N/A	1200	334	4500	101×10^3	3.50	160	550	40	1.000	0.740	125	0.130	W22
M0334RJ200	N/A	2000	334	4500	101×10^3	3.50	160	550	40	1.000	0.740	125	0.130	W22
M0334SJ120	N/A	1200	334	4500	101×10^3	3.50	160	550	40	1.000	0.740	125	0.130	W22
M0334SJ200	N/A	2000	334	4500	101×10^3	3.50	160	550	40	1.000	0.740	125	0.130	W22
M0336RA120	SM12PHR170	1200	336	4500	101×10^3	3.00	75	550	40	1.020	0.700	125	0.130	W23
M0336RA140	SM14PHR170	1400	336	4500	101×10^3	3.00	75	550	40	1.020	0.700	125	0.130	W23
M0336SA120	SM12PHN170	1200	336	4500	101×10^3	3.00	75	550	40	1.020	0.700	125	0.130	W23
M0336SA140	SM14PHN170	1400	336	4500	101×10^3	3.00	75	550	40	1.020	0.700	125	0.130	W23

S R

Outlines on pages O-01...O-24

W20 - 85 g

W21 - min. 85 g

W22 - 200 g

W23 - 250 g

W24 - 250 g

Fast Recovery Diodes - Capsule Types

WESTCODE

Fast Recovery Diodes are an essential partner to all fast switching devices. Our soft recovery diodes are available with a range of reverse recovery characteristics tailored to meet the requirements of both freewheeling and snubber applications. These devices are available with blocking voltages up to 6 kV and average currents up to 3770 A. 38 mm - 75 mm diameter silicon slices.

Outlines on pages O-01...O-24

Type		V_{RRM}	I_{FAV}	I_{FSM}	I^2t	Typ. Reverse Recovery Parameters T_{JM} (50% Chord)				V_{T0}	r_T	T_{JM}	R_{thJK}	Fig. No.
			T_K = 55°C	10 ms ½ sine $V_R \leq 60\%\ V_{RRM}$		t_{rr}	Q_{ra}	@I_{FM}	@-di_F/dt	@T_{JM}			d.c. 180° sine	
➢ Part No. New	Old Part No.	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	°C	K/W	
M0588LC400	SM40CXC344	4000	588	3955	78.2×10^3	3.5	200	1000	60	2.320	1.770	150	0.033	W4
M0588LC450	SM45CXC344	4500	588	3955	78.2×10^3	3.5	200	1000	60	2.320	1.770	150	0.033	W4
M0790YC200	SM20CXC294	2000	790	9000	405×10^3	4.0	300	1000	60	1.272	0.584	150	0.050	W2
M0790YC250	SM25CXC294	2500	790	9000	405×10^3	4.0	300	1000	60	1.272	0.584	150	0.050	W2
M0790YH200	N/A	2000	790	9000	405×10^3	4.0	300	1000	60	1.272	0.584	150	0.050	W3
M0790YH250	N/A	2500	790	9000	405×10^3	4.0	300	1000	60	1.272	0.584	150	0.050	W3
M0914LC200	SM20CXC804	2000	914	8500	361×10^3	3.2	170	1000	60	1.768	0.653	150	0.032	W4
M0914LC250	SM25CXC804	2500	914	8500	361×10^3	3.2	170	1000	60	1.768	0.653	150	0.032	W4
M1010NC400	SM40CXC604	4000	1010	9600	461×10^3	3.2	700	1000	200	1.700	1.030	150	0.022	W5
M1010NC450	SM45CXC604	4500	1010	9600	461×10^3	3.2	700	1000	200	1.700	1.030	150	0.022	W5
M1163NC400	SM40CXC614	4000	1163	10800	583×10^3	6.4	700	1000	60	1.500	0.770	150	0.022	W5
M1163NC450	SM45CXC614	4500	1163	10800	583×10^3	6.4	700	1000	60	1.500	0.770	150	0.022	W5
M1502NC200	SM20CXC334	2000	1502	17000	1.45×10^6	3.5	220	1000	60	1.240	0.440	150	0.022	W5
M1502NC250	SM25CXC334	2500	1502	17000	1.45×10^6	3.5	220	1000	60	1.240	0.440	150	0.022	W5
➢ M1502ND200	N/A	2000	1502	17000	1.45×10^6	3.5	220	1000	60	1.240	0.440	150	0.022	W37
➢ M1502ND250	N/A	2500	1502	17000	1.45×10^6	3.5	220	1000	60	1.240	0.440	150	0.022	W37
M1583VC400	SM40CXC864	4000	1583	24800	3.08×10^6	5.0	1100	1000	200	1.693	0.525	150	0.016	W6
M1583VC450	SM45CXC864	4500	1583	24800	3.08×10^6	5.0	1100	1000	200	1.693	0.525	150	0.016	W6
M1583VF400	SM40FXC864	4000	1583	24800	3.08×10^6	5.0	1100	1000	200	1.693	0.525	150	0.016	W43
M1583VF450	SM45FXC864	4500	1583	24800	3.08×10^6	5.0	1100	1000	200	1.693	0.525	150	0.016	W43
M1609NC200	SM20CXC915	2000	1609	17500	1.53×10^6	3.2	600	1000	200	1.310	0.345	150	0.022	W5
M1609NC260	SM26CXC915	2600	1609	17500	1.53×10^6	3.2	600	1000	200	1.310	0.345	150	0.022	W5
M2273VC300	N/A	3000	2273	28000	3.92×10^6	8.5	1300	1000	60	1.239	0.244	150	0.016	W6
M2273VC360	N/A	3600	2273	28000	3.92×10^6	8.5	1300	1000	60	1.239	0.244	150	0.016	W6
M2273VF300	N/A	3000	2273	28000	3.92×10^6	8.5	1300	1000	60	1.239	0.244	150	0.016	W43
M2273VF360	N/A	3600	2273	28000	3.92×10^6	8.5	1300	1000	60	1.239	0.244	150	0.016	W43
M2408NC020	SM02CXC504	200	2408	24000	2.88×10^6	1.9	160	1000	200	1.065	0.122	150	0.022	W5
M2408NC060	SM06CXC504	600	2408	24000	2.88×10^6	1.9	160	1000	200	1.065	0.122	150	0.022	W5
➢ M2408ND020	N/A	200	2408	24000	2.88×10^6	1.9	160	1000	200	1.065	0.122	150	0.022	W37
➢ M2408ND060	N/A	600	2408	24000	2.88×10^6	1.9	160	1000	200	1.065	0.122	150	0.022	W37
M2639ZC360	SM36CXC954	3600	2639	27520	3.79×10^6	8.5	1200	1000	60	1.380	0.290	150	0.011	W7
M2639ZC420	SM42CXC954	4200	2639	27520	3.79×10^6	8.5	1200	1000	60	1.380	0.290	150	0.011	W7
➢ M2639ZC450	SM45CXC954	4500	2639	27520	3.79×10^6	8.5	1200	1000	60	1.380	0.290	150	0.011	W7
M2639ZD360	SM36DXC954	3600	2639	27520	3.79×10^6	8.5	1200	1000	60	1.380	0.290	150	0.011	W42
M2639ZD420	SM42DXC954	4200	2639	27520	3.79×10^6	8.5	1200	1000	60	1.380	0.290	150	0.011	W42
➢ M2639ZD450	SM45DXC954	4500	2639	27520	3.79×10^6	8.5	1200	1000	60	1.380	0.290	150	0.011	W42
M2698ZC250	SM25CXC964	2500	2698	27800	3.86×10^6	6.2	620	1000	60	1.000	0.330	150	0.011	W7
M2698ZC280	SM28CXC964	2800	2698	27800	3.86×10^6	6.2	620	1000	60	1.000	0.330	150	0.011	W7
M2698ZC350	SM35CXC964	3500	2698	27800	3.86×10^6	6.2	620	1000	60	1.000	0.330	150	0.011	W7
M2698ZD250	SM25DXC964	2500	2698	27800	3.86×10^6	6.2	620	1000	60	1.000	0.330	150	0.011	W42
M2698ZD280	SM28DXC964	2800	2698	27800	3.86×10^6	6.2	620	1000	60	1.000	0.330	150	0.011	W42
M2698ZD350	SM35DXC964	3500	2698	27800	3.86×10^6	6.2	620	1000	60	1.000	0.330	150	0.011	W42
M2837VC180	SM18CXC968	1800	2837	31800	5.1×10^6	7.0	1100	1000	60	0.900	0.170	150	0.016	W6
M2837VC250	SM25CXC968	2500	2837	31800	5.1×10^6	7.0	1100	1000	60	0.900	0.170	150	0.016	W6
M2837VF180	SM18FXC968	1800	2837	31800	5.1×10^6	7.0	1100	1000	60	0.900	0.170	150	0.016	W43
M2837VF250	SM25FXC968	2500	2837	31800	5.1×10^6	7.0	1100	1000	60	0.900	0.170	150	0.016	W43
M3770ZC200	SM20CXC974	2000	3770	44000	9.68×10^6	7.0	1100	1000	60	1.190	1.180	150	0.011	W7
M3770ZC240	SM24CXC974	2400	3770	44000	9.68×10^6	7.0	1100	1000	60	1.190	1.180	150	0.011	W7
M3770ZC300	SM30CXC974	3000	3770	44000	9.68×10^6	7.0	1100	1000	60	1.190	1.180	150	0.011	W7
M3770ZD200	SM20DXC974	2000	3770	44000	9.68×10^6	7.0	1100	1000	60	1.190	1.180	150	0.011	W42
M3770ZD240	SM24DXC974	2400	3770	44000	9.68×10^6	7.0	1100	1000	60	1.190	1.180	150	0.011	W42
M3770ZD300	SM30DXC974	3000	3770	44000	9.68×10^6	7.0	1100	1000	60	1.190	1.180	150	0.011	W42

W2 Weight 80 g

W3 Weight 140 g

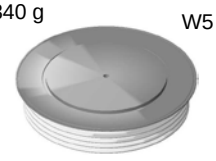
W4 Weight 340 g

W5 Weight 510 g

W6 Weight 1000 g

W7 Weight 1700 g

W37 Weight 510 g



W42 Weight 1200 g

W43 Weight 800 g

Soft Recovery Diodes - Capsule Types

WESTCODE

These parts are particularly suitable where soft recovery is required, such as RCD snubbers, voltage clamping and snubberless applications.

Type		V_{RRM}	I_{FAV}	I_{FSM}	I^2t	Typ. Reverse Recovery Parameters T_{JM} (50% Chord)				V_{T0}	r_T	T_{JM}	R_{thJK}	Fig. No.
			T_K = 55°C	10 ms ½ sine $V_R \leq 60\%\ V_{RRM}$		t_{rr}	Q_{ra}	$@I_{FM}$	$@-di_F/dt$	@T_{JM}			d.c. 180° sine	
Part No. ➢ New	Old Part No.	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	°C	K/W	
M0225YH300	SM30HXC084	3000	225	2000	20×10^3	3.00	100	550	40	1.900	4.160	150	0.100	W3
M0225YH360	SM36HXC084	3600	225	2000	20×10^3	3.00	100	550	40	1.900	4.160	150	0.100	W3
M0225YH450	SM45HXC084	4500	225	2000	20×10^3	3.00	100	550	40	1.900	4.160	150	0.100	W3
M0310YH300	SM30HXC103	3000	310	4590	105×10^3	2.80	210	1000	100	1.490	2.060	150	0.100	W3
M0310YH350	SM35HXC103	3500	310	4590	105×10^3	2.80	210	1000	100	1.490	2.060	150	0.100	W3
M0347WC160	SM16CXC134	1600	347	4250	90.3×10^3	2.80	60	550	40	1.210	1.200	125	0.090	W1
M0347WC200	SM20CXC134	2000	347	4250	90.3×10^3	2.80	60	550	40	1.210	1.200	125	0.090	W1
M0347WC250	SM25CXC134	2500	347	4250	90.3×10^3	2.80	60	550	40	1.210	1.200	125	0.090	W1
M0358WC120	SM12CXC100	1200	358	2450	30×10^3	1.40	65	1000	100	1.460	0.800	125	0.090	W1
M0358WC180	SM18CXC100	1800	358	2450	30×10^3	1.40	65	1000	100	1.460	0.800	125	0.090	W1
M0367WC140	SM14CXC144	1400	367	4500	101×10^3	3.30	120	550	40	1.280	0.920	125	0.090	W1
M0367WC220	SM22CXC144	2200	367	4500	101×10^3	3.30	120	550	40	1.280	0.920	125	0.090	W1
M0367WC280	SM28CXC144	2800	367	4500	101×10^3	3.30	120	550	40	1.280	0.920	125	0.090	W1
M0371YH350	SM35HXC164	3500	371	4900	120×10^3	3.20	625	1000	200	1.050	1.650	150	0.100	W3
M0371YH450	SM45HXC164	4500	371	4900	120×10^3	3.20	625	1000	200	1.050	1.650	150	0.100	W3
M0433WC120	SM12CXC174	1200	433	4500	101×10^3	3.50	120	550	40	1.000	0.740	125	0.090	W1
M0433WC160	SM16CXC174	1600	433	4500	101×10^3	3.50	120	550	40	1.000	0.740	125	0.090	W1
M0433WC200	SM20CXC174	2000	433	4500	101×10^3	3.50	120	550	40	1.000	0.740	125	0.090	W1
M0437WC080	SM08CXC170	800	437	4500	101×10^3	3.00	75	550	40	1.020	0.700	125	0.090	W1
M0437WC140	SM14CXC170	1400	437	4500	101×10^3	3.00	75	550	40	1.020	0.700	125	0.090	W1
M0451YC120	SM12CXC176	1200	451	4500	101×10^3	2.80	120	550	40	1.000	0.740	125	0.085	W2
M0451YC160	SM16CXC176	1600	451	4500	101×10^3	2.80	120	550	40	1.000	0.740	125	0.085	W2
M0451YC200	SM20CXC176	2000	451	4500	101×10^3	2.80	120	550	40	1.000	0.740	125	0.085	W2
M0451YH120	N/A	1200	451	4500	101×10^3	2.80	120	550	40	1.000	0.740	125	0.085	W3
M0451YH160	N/A	1600	451	4500	101×10^3	2.80	120	550	40	1.000	0.740	125	0.085	W3
M0451YH200	N/A	2000	451	4500	101×10^3	2.80	120	550	40	1.000	0.740	125	0.085	W3
M0659LC400	SM40CXC364	4000	659	7620	290×10^3	4.20	270	1000	60	1.710	0.925	125	0.033	W4
M0659LC450	SM45CXC364	4500	659	7620	290×10^3	4.20	270	1000	60	1.710	0.925	125	0.033	W4
M0710LC560	SM56CXC274	5600	710	8400	353×10^3	4.00	1000	1000	200	1.450	0.875	125	0.033	W4
M0710LC600	SM60CXC274	6000	710	8400	353×10^3	4.00	1000	1000	200	1.450	0.875	125	0.033	W4
M0736LC400	SM40CXC374	4000	736	9000	405×10^3	5.20	450	1000	60	1.606	0.700	125	0.033	W4
M0736LC450	SM45CXC374	4500	736	9000	405×10^3	5.20	450	1000	60	1.606	0.700	125	0.033	W4
M0759YC040	SM04CXC190	400	759	9500	450×10^3	2.00	45	550	50	1.130	0.380	125	0.050	W2
M0759YC120	SM12CXC190	1200	759	9500	450×10^3	2.00	45	550	50	1.130	0.380	125	0.050	W2
M0759YC160	SM16CXC190	1600	759	9500	450×10^3	2.00	45	550	50	1.130	0.380	125	0.050	W2
M0759YH040	N/A	400	759	9500	450×10^3	2.00	45	550	50	1.130	0.380	125	0.050	W3
M0759YH120	N/A	1200	759	9500	450×10^3	2.00	45	550	50	1.130	0.380	125	0.050	W3
M0759YH160	N/A	1600	759	9500	450×10^3	2.00	45	550	50	1.130	0.380	125	0.050	W3
M0859LC140	SM14CXC220	1400	859	10000	500×10^3	3.00	110	800	50	1.170	0.320	125	0.044	W4
M0859LC160	SM16CXC220	1600	859	10000	500×10^3	3.00	110	800	50	1.170	0.320	125	0.044	W4
M0863LC260	SM26CXC474	2600	863	10000	500×10^3	4.80	370	1000	60	1.308	0.538	125	0.033	W4
M0863LC300	SM30CXC474	3000	863	10000	500×10^3	4.80	370	1000	60	1.308	0.538	125	0.033	W4
M0863LC360	SM36CXC474	3600	863	10000	500×10^3	4.80	370	1000	60	1.308	0.538	125	0.033	W4
M0872LC140	SM14CXC224	1400	872	10000	500×10^3	4.00	280	1000	60	1.090	0.340	125	0.044	W4
M0872LC180	SM18CXC224	1800	872	10000	500×10^3	4.00	280	1000	60	1.090	0.340	125	0.044	W4
M0872LC210	SM21CXC224	2100	872	10000	500×10^3	4.00	280	1000	60	1.090	0.340	125	0.044	W4

W1 Weight 70 g

W2 Weight 80 g

W3 Weight 140 g

W4 Weight 340 g

Outlines on pages O-01...O-24

Type		V_{RRM}	I_{FAV}	I_{FSM}	I^2t	Typ. Reverse Recovery Parameters T_{JM} (50% Chord)				V_{T0}	r_T	T_{JM}	R_{thJK}	Fig. No.
			T_K = 55°C	10 ms ½ sine $V_R \leq 60\%\ V_{RRM}$						@T_{JM}			d.c. 180° sine	
Part No. ➢ New	Old Part No.	V	A	A	A^2s	µs	µC	@I_{FM} A	@-di_F/dt A/µs	V	mΩ	°C	K/W	
M0955LC200	SM20CXC524	2000	955	11700	684×10^3	3.40	175	1000	60	1.440	0.330	125	0.033	W4
M0955LC250	SM25CXC524	2500	955	11700	684×10^3	3.40	175	1000	60	1.440	0.330	125	0.033	W4
M1022LC120	SM12CXC724	1200	1022	14000	980×10^3	3.00	140	1000	60	1.240	0.330	125	0.033	W4
M1022LC160	SM16CXC724	1600	1022	14000	980×10^3	3.00	140	1000	60	1.240	0.330	125	0.033	W4
M1022LC200	SM20CXC724	2000	1022	14000	980×10^3	3.00	140	1000	60	1.240	0.330	125	0.033	W4
M1080LC100	SM10CXC314	1000	1080	13500	910×10^3	1.90	50	1000	60	1.125	0.314	125	0.033	W4
M1080LC120	SM12CXC314	1200	1080	13500	910×10^3	1.90	50	1000	60	1.125	0.314	125	0.033	W4
M1102NC500	SM50CXC574	5000	1102	13000	845×10^3	5.50	1500	1000	200	1.360	0.557	125	0.022	W5
M1102NC600	SM60CXC574	6000	1102	13000	845×10^3	5.50	1500	1000	200	1.360	0.557	125	0.022	W5
M1104NC400	SM40CXC624	4000	1104	13000	845×10^3	6.00	800	1000	60	1.370	0.553	125	0.022	W5
M1104NC450	SM45CXC624	4500	1104	13000	845×10^3	6.00	800	1000	60	1.370	0.553	125	0.022	W5
M1242NC260	SM26CXC824	2600	1242	16400	1.34×10^6	6.00	600	1000	60	1.270	0.420	125	0.022	W5
M1242NC360	SM36CXC824	3600	1242	16400	1.34×10^6	6.00	600	1000	60	1.270	0.420	125	0.022	W5
M1242ND260	SM26CXC824	2600	1242	16400	1.34×10^6	6.00	600	1000	60	1.270	0.420	125	0.022	W37
M1242ND360	SM36CXC824	3600	1242	16400	1.34×10^6	6.00	600	1000	60	1.270	0.420	125	0.022	W37
M1494NC160	SM16CXC924	1600	1494	19600	1.92×10^6	3.90	275	1000	60	1.150	0.265	125	0.022	W5
M1494NC250	SM25CXC924	2500	1494	19600	1.92×10^6	3.90	275	1000	60	1.150	0.265	125	0.022	W5
M1565VC400	SM40CXC394	4000	1565	19700	1.94×10^6	5.00	1550	1000	200	1.090	0.360	125	0.018	W6
M1565VC450	SM45CXC394	4500	1565	19700	1.94×10^6	5.00	1550	1000	200	1.090	0.360	125	0.018	W6
M1565VF400	SM40FXC394	4000	1565	19700	1.94×10^6	5.00	1550	1000	200	1.090	0.360	125	0.018	W43
M1565VF450	SM45FXC394	4500	1565	19700	1.94×10^6	5.00	1550	1000	200	1.090	0.360	125	0.018	W43
M1858NC120	SM12CXC514	1200	1858	25000	3.25×10^6	2.50	50	1000	60	1.127	0.127	125	0.022	W5
M1858NC160	SM16CXC514	1600	1858	25000	3.25×10^6	2.50	50	1000	60	1.127	0.127	125	0.022	W5
M2322ZC300	SM30CXC384	3000	2322	23000	2.64×10^6	6.50	1450	1000	150	1.670	0.186	125	0.011	W7
M2322ZC400	SM40CXC384	4000	2322	23000	2.64×10^6	6.50	1450	1000	150	1.670	0.186	125	0.011	W7
M2322ZD300	SM30DXC384	3000	2322	23000	2.64×10^6	6.50	1450	1000	150	1.670	0.186	125	0.011	W42
M2322ZD400	SM40DXC384	4000	2322	23000	2.64×10^6	6.50	1450	1000	150	1.670	0.186	125	0.011	W42
M2413VC200	MX070VC200	2000	2413	32000	5.12×10^6	5.00	1275	1000	200	1.090	0.121	125	0.016	W6
M2413VC250	MX070VC250	2500	2413	32000	5.12×10^6	5.00	1275	1000	200	1.090	0.121	125	0.016	W6
M2413VF200	N/A	2000	2413	32000	5.12×10^6	5.00	1275	1000	200	1.090	0.121	125	0.016	W43
M2413VF250	N/A	2500	2413	32000	5.12×10^6	5.00	1275	1000	200	1.090	0.121	125	0.016	W43

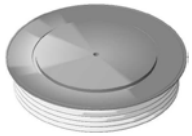
W4 Weight 340 g

W5 Weight 510 g

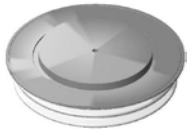
W6 Weight 1000 g

W7 Weight 1700 g

W37 Weight 510 g



W42 Weight 1200 g



W43 Weight 800 g

Outlines on pages O-01...O-24

Extra Fast Recovery Diodes - Capsule Types

WESTCODE

Featuring a combination of the latest developments in lifetime engineering technologies. These products are designed to offer the lowest practical values of reverse recovery current whilst offering wide safe operating area and high di/dt capability required by modern switching components such as IGBT's and GCT's as well as pulsed power applications. Next generation parts currently in development will be released shortly.

Type		V_{RRM}	I_{FAV}	I_{FSM}	I^2t	Typ. Reverse Recovery Parameters T_{JM} (50% Chord)					V_{T0}	r_T	T_{JM}	R_{thJK}	Fig. No.
			T_K = 55°C	10 ms ½ sine $V_R \leq 60\%\ V_{RRM}$							@T_{JM}			d.c. 180° sine	
Part No. ➢ New	Old Part No.	V	A	A	A^2s	I_{rm} A	t_{rr} µs	Q_{ra} µC	@I_{FM} A	@-di_F/dt A/µs	V	mΩ	°C	K/W	
F0240YC250	N/A	2500	240	3100	48.1×10^3	40	2.0	40	550	40	2.271	2.853	150	0.100	W3
F0240YC300	N/A	3000	240	3100	48.1×10^3	40	2.0	40	550	40	2.271	2.853	150	0.100	W3
F0240YH250	N/A	2500	240	3100	48.1×10^3	40	2.0	40	550	40	2.271	2.853	150	0.100	W2
F0240YH300	N/A	3000	240	3100	48.1×10^3	40	2.0	40	550	40	2.271	2.853	150	0.100	W2
F0300WC140	F0258WC140	1400	240	2700	36.5×10^3	530	0.3	75	300	2000	1.760	2.210	125	0.095	W1
F0300WC180	F0258WC180	1800	240	2700	36.5×10^3	530	0.3	75	300	2000	1.760	2.210	125	0.095	W1
F0800LC140	F0400LC140	1400	775	7630	291×10^3	380	1.1	200	800	1000	1.494	0.692	125	0.032	W4
F0800LC180	F0400LC180	1800	775	7630	291×10^3	380	1.1	200	800	1000	1.494	0.692	125	0.032	W4
F0900VC450	FX055VC450	4500	816	10450	546×10^3	3000	1.4	2000	900	2000	2.024	1.274	115	0.016	W6
F0900VC520	FX055VC520	5200	816	10450	546×10^3	3000	1.4	2000	900	2000	2.024	1.274	115	0.016	W6
F0900VF450	FX055VF450	4500	816	10450	546×10^3	3000	1.4	2000	900	2000	2.024	1.274	115	0.016	W43
F0900VF520	FX055VF520	5200	816	10450	546×10^3	3000	1.4	2000	900	2000	2.024	1.274	115	0.016	W43
F1000LC080	F0500LC080	800	826	8500	361×10^3	320	1.6	250	1000	800	1.530	0.547	125	0.032	W4
F1000LC120	F0500LC120	1200	826	8500	361×10^3	320	1.6	250	1000	800	1.530	0.547	125	0.032	W4
➢ **F1300NC45P**	N/A	4500	1346	20800	2.16×10^6	470	4.3	1010	1000	200	1.569	0.318	140	0.024	W5
➢ **F1300NC50P**	N/A	5000	1346	20800	2.16×10^6	470	4.3	1010	1000	200	1.569	0.318	140	0.024	W5
➢ **F1300NC55P**	N/A	5500	1346	20800	2.16×10^6	470	4.3	1010	1000	200	1.569	0.318	140	0.024	W5
F1400NC140	FX004NC140	1400	1093	17250	1.49×10^6	800	1.5	600	1400	1000	1.618	0.388	125	0.024	W5
F1400NC180	FX004NC180	1800	1093	17250	1.49×10^6	800	1.5	600	1400	1000	1.618	0.388	125	0.024	W5
F1500NC200	FX056NC200	2000	1054	13750	950×10^3	1065	1.5	800	1500	2000	1.372	0.535	125	0.024	W5
F1500NC250	FX056NC250	2500	1054	13750	950×10^3	1065	1.5	800	1500	2000	1.372	0.535	125	0.024	W5
F1600NC080	FX021NC080	800	1326	20000	2.0×10^6	480	2.3	550	1600	800	1.320	0.268	125	0.024	W5
F1600NC120	FX021NC120	1200	1326	20000	2.0×10^6	480	2.3	550	1600	800	1.320	0.268	125	0.024	W5

W1 Weight 70 g

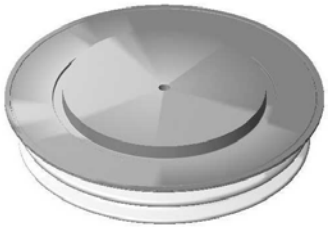
W2 Weight 80 g

W3 Weight 140 g

W4 Weight 340 g

W5 Weight 510 g

W6 Weight 1000 g



W43 Weight 800 g

Outlines on pages O-01...O-24

HP Sonic-FRDs - Capsule Types

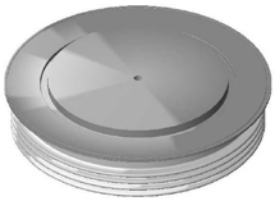
WESTCODE

Introducing a world-leading class of ultra fast and ultra soft recovery diode available from 1.7 kV to 4.5 kV in current ratings from 300 A to 2500 A. These diodes incorporate a unique manufacturing process and lifetime control to offer a class leading trade-off between conduction and switching loses. The wide safe operating area (SOA) makes them ideal as freewheeling diodes for snubberless IGBT and IGCT applications. In fact, any application which requires a fast, low loss diode. For example, traction, medium voltage drives, induction heating and pulsed power applications.

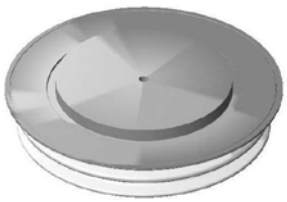
Type Part No. ➢ New	V_{RRM} V	I_{FAV} T_K = 55°C A	I_{FSM} 10 ms ½ sine $V_R \leq 60\% V_{RRM}$ A	I^2t A²s	Typ. Reverse Recovery Parameters T_{JM} (50% Chord) I_{rm} A	t_{rr} µs	Q_{ra} µC	@I_{FM} A	@-di_F/dt A/µs	V_{T0} @T_{JM} V	r_T @T_{JM} mΩ	T_{JM} °C	R_{thJK} 180° Sine K/W	Fig. No.
E0300YH400	4000	277	2630	34.6×10^3	605	0.75	245	300	2000	2.170	3.800	150	0.073	W3
E0300YH450	4500	277	2630	34.6×10^3	605	0.75	245	300	2000	2.170	3.800	150	0.073	W3
E0400YH200	2000	348	3550	63.0×10^3	570	0.75	175	400	1500	1.768	2.286	150	0.073	W3
E0400YH250	2500	348	3550	63.0×10^3	570	0.75	175	400	1500	1.768	2.286	150	0.073	W3
E0900NC400	4000	969	15270	1.17×10^6	1340	2.20	1440	900	2000	2.140	1.150	150	0.020	W5
E0900NC450	4500	969	15270	1.17×10^6	1340	2.20	1440	900	2000	2.140	1.150	150	0.020	W5
➢ **E0900NH400**	4000	969	15270	1.17×10^6	1340	2.20	1440	900	2000	2.140	1.150	150	0.020	W47
➢ **E0900NH450**	4500	969	15270	1.17×10^6	1340	2.20	1440	900	2000	2.140	1.150	150	0.020	W47
E1500NC200	2000	1557	15180	1.15×10^6	1450	2.30	1550	1500	2000	1.670	0.358	150	0.020	W5
E1500NC250	2500	1557	15180	1.15×10^6	1450	2.30	1550	1500	2000	1.670	0.358	150	0.020	W5
➢ **E1500NH200**	2000	1557	15180	1.15×10^6	1450	2.30	1550	1500	2000	1.670	0.358	150	0.020	W47
➢ **E1500NH250**	2500	1557	15180	1.15×10^6	1450	2.30	1550	1500	2000	1.670	0.358	150	0.020	W47
E1500VF400	4000	1918	23600	2.78×10^6	1550	2.50	1940	1500	2000	2.491	0.277	150	0.013	W43
E1500VF450	4500	1918	23600	2.78×10^6	1550	2.50	1940	1500	2000	2.491	0.277	150	0.013	W43
➢ **E1500NC36P**	3600	1280	17050	1.45×10^6	1425	2.80	1880	1000	1000	1.417	0.656	140	0.019	W5
➢ **E1500NC42P**	4200	1280	17050	1.45×10^6	1425	2.80	1880	1000	1000	1.417	0.656	140	0.019	W5
➢ **E1500NC48P**	4800	1280	17050	1.45×10^6	1425	2.80	1880	1000	1000	1.417	0.656	140	0.019	W5
➢ **E1500NH36P**	3600	1280	17050	1.45×10^6	1425	2.80	1880	1000	1000	1.417	0.656	140	0.019	W47
➢ **E1500NH42P**	4200	1280	17050	1.45×10^6	1425	2.80	1880	1000	1000	1.417	0.656	140	0.019	W47
➢ **E1500NH48P**	4800	1280	17050	1.45×10^6	1425	2.80	1880	1000	1000	1.417	0.656	140	0.019	W47
E2000NC140	1400	1568	15000	1.13×10^6	1870	1.00	935	2000	4000	1.770	0.350	150	0.020	W5
E2000NC170	1700	1568	15000	1.13×10^6	1870	1.00	935	2000	4000	1.770	0.350	150	0.020	W5
➢ **E2000NH140**	1400	1568	15000	1.13×10^6	1870	1.00	935	2000	4000	1.770	0.350	150	0.020	W47
➢ **E2000NH170**	1700	1568	15000	1.13×10^6	1870	1.00	935	2000	4000	1.770	0.350	150	0.020	W47
E2400TC400	4000	2227	25600	3.29×10^6	2400	1.12	1330	2400	4000	2.039	0.598	150	0.008	W28
E2400TC450	4500	2227	25600	3.29×10^6	2400	1.12	1330	2400	4000	2.039	0.598	150	0.008	W28
E2500VF200	2000	2516	28600	4.10×10^6	1750	1.40	1350	2500	3000	1.628	0.205	150	0.013	W43
E2500VF250	2500	2516	28600	4.10×10^6	1750	1.40	1350	2500	3000	1.628	0.205	150	0.013	W43

W3 Weight 140 g

W5 Weight 510 g



W28 Weight 1230 g



W43 Weight 800 g

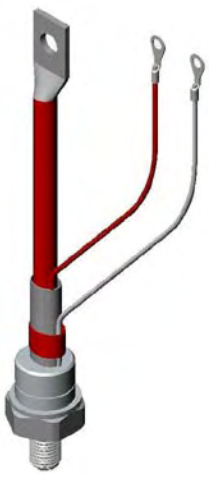
W47 Weight 250 g

Outlines on pages O-01...O-24

Type		V_{DRM} V_{RRM}	I_{TAV} T_C = 55°C	I_{TSM} 10 ms ½ sine $V_R \leq 60\% V_{RRM}$	I^2t	V_{T0} @T_{JM}	r_T @T_{JM}	T_{JM}	R_{thJC} d.c. 180° sine	R_{thJC} 120° Rect.	Fig. No.
Part No. ➢ New	Old Part No.	V	A	A	A^2s	V	mΩ	°C	K/W	K/W	
N0131SH120	N086PH12	1200	131	1700	14.5×10^3	1.570	2.290	125	0.230	0.280	W17
N0131SH160	N086PH16	1600	131	1700	14.5×10^3	1.570	2.290	125	0.230	0.280	W17
N0131SJ120	N086RH12	1200	131	1700	14.5×10^3	1.570	2.290	125	0.230	0.280	W16
N0131SJ160	N086RH16	1600	131	1700	14.5×10^3	1.570	2.290	125	0.230	0.280	W16
N0180SH120	N105PH12	1200	180	2450	30×10^3	0.900	1.790	125	0.230	0.280	W17
N0180SH160	N105PH16	1600	180	2450	30×10^3	0.900	1.790	125	0.230	0.280	W17
N0180SJ120	N105RH12	1200	180	2450	30×10^3	0.900	1.790	125	0.230	0.280	W16
N0180SJ160	N105RH16	1600	180	2450	30×10^3	0.900	1.790	125	0.230	0.280	W16
N0290SC120	N170PH12	1200	290	4200	88.2×10^3	1.080	1.300	125	0.120	0.140	W18
N0290SC160	N170PH16	1600	290	4200	88.2×10^3	1.080	1.300	125	0.120	0.140	W18
N0290SD120	N/A	1200	290	4200	88.2×10^3	1.080	1.300	125	0.120	0.140	W19
N0290SD160	N/A	1600	290	4200	88.2×10^3	1.080	1.300	125	0.120	0.140	W19
N0290SG120	N/A	1200	290	4200	88.2×10^3	1.080	1.300	125	0.120	0.140	W25
N0290SG160	N/A	1600	290	4200	88.2×10^3	1.080	1.300	125	0.120	0.140	W25
N0335SC120	N195PH12	1200	335	4650	108×10^3	0.920	0.990	125	0.120	0.140	W18
N0335SC160	N195PH16	1600	335	4650	108×10^3	0.920	0.990	125	0.120	0.140	W18
N0335SD120	N/A	1200	335	4650	108×10^3	0.920	0.990	125	0.120	0.140	W19
N0335SD160	N/A	1600	335	4650	108×10^3	0.920	0.990	125	0.120	0.140	W19
N0335SG120	N/A	1200	335	4650	108×10^3	0.920	0.990	125	0.120	0.140	W25
N0335SG160	N/A	1600	335	4650	108×10^3	0.920	0.990	125	0.120	0.140	W25
N0416SC020	N275PH02	200	416	6000	180×10^3	0.850	0.535	125	0.120	0.140	W18
N0416SC080	N275PH08	800	416	6000	180×10^3	0.850	0.535	125	0.120	0.140	W18
N0416SD020	N/A	200	416	6000	180×10^3	0.850	0.535	125	0.120	0.140	W19
N0416SD080	N/A	800	416	6000	180×10^3	0.850	0.535	125	0.120	0.140	W19
N0416SG020	N/A	200	416	6000	180×10^3	0.850	0.535	125	0.120	0.140	W25
N0416SG080	N/A	800	416	6000	180×10^3	0.850	0.535	125	0.120	0.140	W25

Outlines on pages O-01...O-24

W16 - 100 g



W17 - 130 g

W18 - 280 g

W19 - 209 g

W25 - 220 g

Phase Control Thyristors - Capsule Types

WESTCODE

We provide one of the most comprehensive ranges of standard phase control thyristors in the industry.
Device with voltage ranges from 600 V to 4500 V are available, making them suitable for applications with line voltages from 230 V to over 1000 V (higher voltage applications are now served by our range of Medium Voltage Thyristors). Westcode is a leading supplier of phase control products into demanding markets such as industrial DC drives, induction melting, marine/rail propulsion systems, wind power converters, electrochemical power supplies and soft starters. These devices are optimised to give low conduction losses and are primarily intended for applications with line frequencies up to 400 Hz.

Outlines on pages O-01...O-24

Type ➢ Part No. New	Old Part No.	V_{DRM} V_{RRM}	I_{TAV} T_K = 55°C	I_{TSM} 10 ms ½ sine $V_R \leq 60\%\ V_{RRM}$	I^2t	V_{T0} @T_{JM}	r_T @T_{JM}	T_{JM}	R_{thJK} 180° Sine	R_{thJK} 120° Rect.	Fig. No.
		V	A	A	A^2s	V	mΩ	°C	K/W	K/W	
N0194WC120	N086CH12	1200	194	1700	14.5×10^3	1.570	2.290	125	0.135	0.190	W8
N0194WC160	N086CH16	1600	194	1700	14.5×10^3	1.570	2.290	125	0.135	0.190	W8
N0255WC120	N105CH12	1200	255	2450	30.0×10^3	0.900	1.790	125	0.135	0.190	W8
N0255WC160	N105CH16	1600	255	2450	30.0×10^3	0.900	1.790	125	0.135	0.190	W8
N0339WC120	N170CH12	1200	339	4200	88.2×10^3	1.080	1.300	125	0.095	0.110	W8
N0339WC160	N170CH16	1600	339	4200	88.2×10^3	1.080	1.300	125	0.095	0.110	W8
N0392WC120	N195CH12	1200	392	4650	108×10^3	0.920	0.990	125	0.095	0.110	W8
N0392WC160	N195CH16	1600	392	4650	108×10^3	0.920	0.990	125	0.095	0.110	W8
N0491WC020	N275CH02	200	491	6000	180×10^3	0.850	0.535	125	0.095	0.110	W8
N0491WC080	N275CH08	800	491	6000	180×10^3	0.850	0.535	125	0.095	0.110	W8
N0606YS200	N282SH20	2000	606	7100	252×10^3	1.103	0.804	125	0.050	0.058	W9
N0606YS250	N/A	2500	606	7100	252×10^3	1.103	0.804	125	0.050	0.058	W9
N0616LC400	N255CH40	4000	616	5250	138×10^3	1.220	1.530	125	0.032	0.040	W10
N0616LC450	N255CH45	4500	616	5250	138×10^3	1.220	1.530	125	0.032	0.040	W10
N0634LC380	N257CH38	3800	634	7000	245×10^3	1.100	1.500	125	0.032	0.040	W10
N0634LC420	N257CH42	4200	634	7000	245×10^3	1.100	1.500	125	0.032	0.040	W10
N0646LC300	N260CH30	3000	646	5700	162×10^3	1.210	1.360	125	0.032	0.040	W10
N0646LC360	N260CH36	3600	646	5700	162×10^3	1.210	1.360	125	0.032	0.040	W10
N0676YS120	N281SH12	1200	676	7500	281×10^3	1.090	0.587	125	0.050	0.058	W9
N0676YS180	N281SH18	1800	676	7500	281×10^3	1.090	0.587	125	0.050	0.058	W9
N0734YS120	N280SH12	1200	734	8400	353×10^3	1.030	0.483	125	0.050	0.058	W9
N0734YS160	N280SH16	1600	734	8400	353×10^3	1.030	0.483	125	0.050	0.058	W9
N0782YS120	N283SH12	1200	782	9420	444×10^3	0.920	0.450	125	0.050	0.058	W9
N0782YS160	N283SH16	1600	782	9420	444×10^3	0.920	0.450	125	0.050	0.058	W9
N0882NC400	N320CH40	4000	882	7700	296×10^3	1.300	0.920	125	0.024	0.030	W11
N0882NC450	N320CH45	4500	882	7700	296×10^3	1.300	0.920	125	0.024	0.030	W11
N0910LS200	N330SH20	2000	910	9200	423×10^3	1.040	0.606	125	0.032	0.040	W60
N0910LS260	N330SH26	2600	910	9200	423×10^3	1.040	0.606	125	0.032	0.040	W60
N0992YS020	N310SH02	200	992	11000	605×10^3	0.820	0.240	125	0.050	0.058	W9
N0992YS060	N310SH06	600	992	11000	605×10^3	0.820	0.240	125	0.050	0.058	W9
N1010NC300	N360CH30	3000	1010	12100	732×10^3	1.170	0.687	125	0.024	0.030	W11
N1010NC380	N360CH38	3800	1010	12100	732×10^3	1.170	0.687	125	0.024	0.030	W11
N1042LS120	N350SH12	1200	1042	11500	661×10^3	1.080	0.395	125	0.032	0.040	W60
N1042LS180	N350SH18	1800	1042	11500	661×10^3	1.080	0.395	125	0.032	0.040	W60
N1114LS120	N370SH12	1200	1114	12700	806×10^3	1.000	0.349	125	0.032	0.040	W60
N1114LS180	N370SH18	1800	1114	12700	806×10^3	1.000	0.349	125	0.032	0.040	W60
N1132NC300	N390CH30	3000	1132	14300	1.02×10^6	1.150	0.510	125	0.024	0.030	W11
N1132NC320	N390CH32	3200	1132	14300	1.02×10^6	1.150	0.510	125	0.024	0.030	W11
N1159NC380	N500CH38	3800	1159	14500	1.05×10^6	1.100	0.574	125	0.022	0.027	W11
N1159NC420	N500CH42	4200	1159	14500	1.05×10^6	1.100	0.574	125	0.022	0.027	W11
N1265LS120	N520SH12	1200	1226	15000	1.125×10^6	0.883	0.297	125	0.032	0.039	W60
N1265LS160	N520SH16	1600	1226	15000	1.125×10^6	0.883	0.297	125	0.032	0.039	W60
N1297NS200	N450SH20	2000	1297	17600	1.55×10^6	1.030	0.380	125	0.024	0.030	W61
N1297NS260	N450SH26	2600	1297	17600	1.55×10^6	1.030	0.380	125	0.024	0.030	W61
N1314NC300	N570CH30	3000	1314	16600	1.38×10^6	1.000	0.437	125	0.024	0.030	W11
N1314NC360	N570CH36	3600	1314	16600	1.38×10^6	1.000	0.437	125	0.024	0.030	W11
N1351VC400	N560CH40	4000	1351	17500	1.53×10^6	1.200	0.553	125	0.017	0.020	W12
N1351VC450	N560CH45	4500	1351	17500	1.53×10^6	1.200	0.553	125	0.017	0.020	W12
N1351VF400	N/A	4000	1351	17500	1.53×10^6	1.200	0.553	125	0.017	0.020	W62
N1351VF450	N/A	4500	1351	17500	1.53×10^6	1.200	0.553	125	0.017	0.020	W62
N1467NS200	N490SH20	2000	1467	21500	2.31×10^6	1.000	0.272	125	0.024	0.030	W61
N1467NS260	N490SH26	2600	1467	21500	2.31×10^6	1.000	0.272	125	0.024	0.030	W61
N1479NS240	N620SH24	2400	1436	21000	2.21×10^6	1.000	0.342	125	0.022	0.026	W61
N1479NS300	N620SH30	3000	1436	21000	2.21×10^6	1.000	0.342	125	0.022	0.026	W61
N1547NS160	N510SH16	1600	1547	23300	2.71×10^6	0.920	0.252	125	0.024	0.030	W61
N1547NS200	N510SH20	2000	1547	23300	2.71×10^6	0.920	0.252	125	0.024	0.030	W61
N1588NS200	N680SH20	2000	1588	22500	2.53×10^6	0.951	0.268	125	0.022	0.027	W61
N1588NS260	N680SH26	2600	1588	22500	2.53×10^6	0.951	0.268	125	0.022	0.027	W61

Phase Control Thyristors - Capsule Types

WESTCODE

Type		V_{DRM} V_{RRM}	I_{TAV} T_K = 55°C	I_{TSM} 10 ms ½ sine $V_R \leq 60\%\ V_{RRM}$	I^2t	V_{T0} @T_{JM}	r_T @T_{JM}	T_{JM}	R_{thJK} 180° Sine	R_{thJK} 120° Rect.	Fig. No.
Part No. ➢ New	Old Part No.	V	A	A	A^2s	V	mΩ	°C	K/W	K/W	
N1661VC300	N630CH30	3000	1661	23000	2.65×10^6	1.040	0.350	125	0.017	0.020	W12
N1661VC360	N630CH36	3600	1661	23000	2.65×10^6	1.040	0.350	125	0.017	0.020	W12
N1661VF300	N/A	3000	1661	23000	2.65×10^6	1.040	0.350	125	0.017	0.020	W62
N1661VF360	N/A	3600	1661	23000	2.65×10^6	1.040	0.350	125	0.017	0.020	W62
N1712VC240	N640CH24	2400	1712	24500	3.00×10^6	1.050	0.320	125	0.017	0.020	W12
N1712VC300	N640CH30	3000	1712	24500	3.00×10^6	1.050	0.320	125	0.017	0.020	W12
N1712VF240	N/A	2400	1712	24500	3.00×10^6	1.050	0.320	125	0.017	0.020	W62
N1712VF300	N/A	3000	1712	24500	3.00×10^6	1.050	0.320	125	0.017	0.020	W62
N1718NS120	N540SH12	1200	1718	27200	3.70×10^6	0.979	0.169	125	0.024	0.030	W61
N1718NS180	N540SH18	1800	1718	27200	3.70×10^6	0.979	0.169	125	0.024	0.030	W61
N1718NS200	N/A	2000	1718	27200	3.70×10^6	0.979	0.169	125	0.024	0.030	W61
N1802NS120	N600SH12	1200	1802	29600	4.38×10^6	0.855	0.171	125	0.024	0.030	W61
N1802NS160	N600SH16	1600	1802	29600	4.38×10^6	0.855	0.171	125	0.024	0.030	W61
N2046NS120	N740SH12	1200	2046	29200	4.26×10^6	0.980	0.114	125	0.022	0.026	W61
N2046NS160	N740SH16	1600	2046	29200	4.26×10^6	0.980	0.114	125	0.022	0.026	W61
N2086NS060	N610SH06	600	2086	35000	6.13×10^6	0.840	0.108	125	0.024	0.030	W61
N2086NS100	N610SH10	1000	2086	35000	6.13×10^6	0.840	0.108	125	0.024	0.030	W61
N2172ZC400	N750CH40	4000	2172	28000	3.92×10^6	1.350	0.294	125	0.011	0.012	W13
N2172ZC450	N750CH45	4500	2172	28000	3.92×10^6	1.350	0.294	125	0.011	0.012	W13
N2172ZD400	N750DH40	4000	2172	28000	3.92×10^6	1.350	0.294	125	0.011	0.012	W46
N2172ZD450	N750DH45	4500	2172	28000	3.92×10^6	1.350	0.294	125	0.011	0.012	W46
N2293VC180	N760CH18	1800	2293	33800	5.71×10^6	0.956	0.148	125	0.017	0.020	W12
N2293VC220	N760CH22	2200	2293	33800	5.71×10^6	0.956	0.148	125	0.017	0.020	W12
N2293VF180	N/A	1800	2293	33800	5.71×10^6	0.956	0.148	125	0.017	0.020	W62
N2293VF220	N/A	2200	2293	33800	5.71×10^6	0.956	0.148	125	0.017	0.020	W62
N2418ZC300	N850CH30	3000	2418	30000	4.50×10^6	1.160	0.246	125	0.011	0.012	W13
N2418ZC360	N850CH36	3600	2418	30000	4.50×10^6	1.160	0.246	125	0.011	0.012	W13
N2418ZD300	N/A	3000	2418	30000	4.50×10^6	1.160	0.246	125	0.011	0.012	W46
N2418ZD360	N/A	3600	2418	30000	4.50×10^6	1.160	0.246	125	0.011	0.012	W46
N2500VC120	N990CH12	1200	2500	37000	6.85×10^6	0.880	0.124	125	0.017	0.020	W12
N2500VC160	N990CH16	1600	2500	37000	6.85×10^6	0.880	0.124	125	0.017	0.020	W12
N2500VF120	N/A	1200	2500	37000	6.85×10^6	0.880	0.124	125	0.017	0.020	W62
N2500VF160	N/A	1600	2500	37000	6.85×10^6	0.880	0.124	125	0.017	0.020	W62
N2543ZC240	N880CH24	2400	2543	32000	5.12×10^6	0.780	0.274	125	0.011	0.012	W13
N2543ZC300	N880CH30	3000	2543	32000	5.12×10^6	0.780	0.274	125	0.011	0.012	W13
N2543ZD240	N/A	2400	2543	32000	5.12×10^6	0.780	0.274	125	0.011	0.012	W46
N2543ZD300	N/A	3000	2543	32000	5.12×10^6	0.780	0.274	125	0.011	0.012	W46
N3012ZC200	N900CH20	2000	3012	45100	10.2×10^6	0.920	0.160	125	0.011	0.012	W13
N3012ZC260	N900CH26	2600	3012	45100	10.2×10^6	0.920	0.160	125	0.011	0.012	W13
N3012ZD200	N/A	2000	3012	45100	10.2×10^6	0.920	0.160	125	0.011	0.012	W46
N3012ZD260	N/A	2600	3012	45100	10.2×10^6	0.920	0.160	125	0.011	0.012	W46
➢ **N3022ZC160**	N980CH160	1600	3022	45600	10.40×10^6	0.977	0.151	125	0.011	0.012	W13
➢ **N3022ZC220**	N980CH220	2200	3022	45600	10.40×10^6	0.977	0.151	125	0.011	0.012	W13
➢ **N3022ZD160**	N/A	1600	3022	45600	10.40×10^6	0.977	0.151	125	0.011	0.012	W46
➢ **N3022ZD220**	N/A	2200	3022	45600	10.40×10^6	0.977	0.151	125	0.011	0.012	W46
➢ **N3029ZC240**	N/A	2400	3029	38200	7.30×10^6	0.947	0.154	125	0.011	0.012	W13
➢ **N3029ZC280**	N/A	2800	3029	38200	7.30×10^6	0.947	0.154	125	0.011	0.012	W13
➢ **N3029ZD240**	N/A	2400	3029	38200	7.30×10^6	0.947	0.154	125	0.011	0.012	W46
➢ **N3029ZD280**	N/A	2800	3029	38200	7.30×10^6	0.947	0.154	125	0.011	0.012	W46
N3476TC360	N1463CH36	3600	3476	46800	10.95×10^6	0.970	0.180	125	0.008	0.009	W14
N3476TC420	N1463CH42	4200	3476	46800	10.95×10^6	0.970	0.180	125	0.008	0.009	W14
N3476TD360	N1463DH36	3600	3476	46800	10.95×10^6	0.970	0.180	125	0.008	0.009	W51
N3476TD420	N1463DH42	4200	3476	46800	10.95×10^6	0.970	0.180	125	0.008	0.009	W51
N3533ZC140	N1400CH14	1400	3533	50000	12.50×10^6	0.970	0.095	125	0.011	0.012	W13
➢ **N3533ZC200**	N1400CH20	2000	3533	50000	12.50×10^6	0.970	0.095	125	0.011	0.012	W13
N3533ZC220	N1400CH22	2200	3533	50000	12.50×10^6	0.970	0.095	125	0.011	0.012	W13
N3533ZD140	N/A	1400	3533	50000	12.50×10^6	0.970	0.095	125	0.011	0.012	W46
➢ **N3533ZD200**	N/A	2000	3533	50000	12.50×10^6	0.970	0.095	125	0.011	0.012	W46
N3533ZD220	N/A	2200	3533	50000	12.50×10^6	0.970	0.095	125	0.011	0.012	W46
N3839TC300	N1663CH30	3000	3839	49500	12.25×10^6	0.950	0.140	125	0.008	0.012	W14
N3839TC350	N1663CH35	3500	3839	49500	12.25×10^6	0.950	0.140	125	0.008	0.012	W14
N3839TD300	N1663DH30	3000	3839	49500	12.25×10^6	0.950	0.140	125	0.008	0.012	W51
N3839TD350	N1663DH35	3500	3839	49500	12.25×10^6	0.950	0.140	125	0.008	0.012	W51
➢ **N3930ZC120**	NX188ZC120	1200	3930	54000	14.6×10^6	0.841	0.080	125	0.011	0.012	W13
➢ **N3930ZC160**	NX188ZC160	1600	3930	54000	14.6×10^6	0.841	0.080	125	0.011	0.012	W13
➢ **N3930ZD120**	NX188ZD120	1200	3930	54000	14.6×10^6	0.841	0.080	125	0.011	0.012	W46
➢ **N3930ZD160**	NX188ZD160	1600	3930	54000	14.6×10^6	0.841	0.080	125	0.011	0.012	W46

Phase Control Thyristors - Capsule Types

WESTCODE

Type		V_{DRM} V_{RRM}	I_{TAV} T_K = 55°C	I_{TSM} 10 ms ½ sine $V_R \leq 60\%\ V_{RRM}$	I^2t	V_{T0} @T_{JM}	r_T @T_{JM}	T_{JM}	R_{thJK} 180° Sine	R_{thJK} 120° Rect.	Fig. No.
Part No. ➢ New	Old Part No.	V	A	A	A^2s	V	mΩ	°C	K/W	K/W	
N4085ZC080	N1600CH08	800	4085	64000	20.5×10^6	0.850	0.070	125	0.011	0.012	W13
N4085ZC120	N1600CH12	1200	4085	64000	20.5×10^6	0.850	0.070	125	0.011	0.012	W13
N4085ZD080	N/A	800	4085	64000	20.5×10^6	0.850	0.070	125	0.011	0.012	W46
N4085ZD120	N/A	1200	4085	64000	20.5×10^6	0.850	0.070	125	0.011	0.012	W46
N4151FC360	N1483CH36	3600	4151	54000	14.6×10^6	0.850	0.170	125	0.0065	0.0070	W15
N4151FC420	N1483CH42	4200	4151	54000	14.6×10^6	0.850	0.170	125	0.0065	0.0070	W15
N4151FD360	N1483DH36	3600	4151	54000	14.6×10^6	0.850	0.170	125	TBA	TBA	W48
N4151FD420	N1483DH42	4200	4151	54000	14.6×10^6	0.850	0.170	125	TBA	TBA	W48
N4400TC120	N1863CH12	1200	4400	54000	14.6×10^6	0.900	0.100	125	0.008	0.009	W14
➢ **N4400TC220**	N1863CH22	2200	4400	54000	14.6×10^6	0.900	0.100	125	0.008	0.009	W14
N4400TC280	N1863CH28	2800	4400	54000	14.6×10^6	0.900	0.100	125	0.008	0.009	W14
N4400TD120	N1863DH12	1200	4400	54000	14.6×10^6	0.900	0.100	125	0.008	0.009	W51
➢ **N4400TD220**	N1863DH22	2200	4400	54000	14.6×10^6	0.900	0.100	125	0.008	0.009	W51
N4400TD280	N1863DH28	2800	4400	54000	14.6×10^6	0.900	0.100	125	0.008	0.009	W51
N4803FC300	N1683CH30	3000	4803	60000	18.0×10^6	0.920	0.110	125	0.0065	0.0070	W15
N4803FC350	N1683CH35	3500	4803	60000	18.0×10^6	0.920	0.110	125	0.0065	0.0070	W15
N4803FD300	N/A	3000	4803	60000	18.0×10^6	0.920	0.110	125	TBA	TBA	W48
N4803FD350	N/A	3500	4803	60000	18.0×10^6	0.920	0.110	125	TBA	TBA	W48
N5177FC200	N1883CH20	2000	5177	67500	22.8×10^6	0.800	0.100	125	0.0065	0.0070	W15
N5177FC280	N1883CH28	2800	5177	67500	22.8×10^6	0.800	0.100	125	0.0065	0.0070	W15
N5177FD200	N/A	2000	5177	67500	22.8×10^6	0.800	0.100	125	TBA	TBA	W48
N5177FD280	N/A	2800	5177	67500	22.8×10^6	0.800	0.100	125	TBA	TBA	W48
N5946FC180	N1983CH18	1800	5946	72000	25.9×10^6	0.855	0.065	125	0.0065	0.0070	W15
N5946FC220	N1983CH22	2200	5946	72000	25.9×10^6	0.855	0.065	125	0.0065	0.0070	W15
N5946FD180	N/A	1800	5946	72000	25.9×10^6	0.855	0.065	125	TBA	TBA	W48
N5946FD220	N/A	2200	5946	72000	25.9×10^6	0.855	0.065	125	TBA	TBA	W48
➢ **NX037VC200**	N/A	2000	2102	In Development							W12
➢ **NX037VC260**	N/A	2600	2102								W12
➢ **NX037VF200**	N/A	2000	2102								W62
➢ **NX037VF260**	N/A	2600	2102								W62

Outlines on pages O-01...O-24

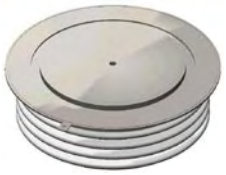
W8 Weight 70 g

W9 Weight 90 g

W10 Weight 340 g

W11 Weight 510 g

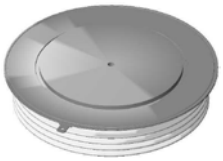
W12 Weight 1000 g



W13 Weight 1700 g

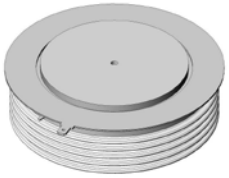
W14 Weight 1300 g

W15 Weight 2800 g



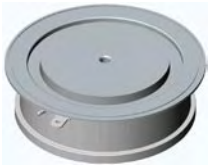
W46 Weight 1200 g

W48 Weight 2000 g

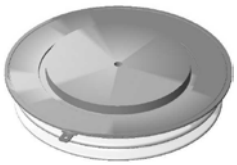


W51 Weight 1700 g

W60 Weight 340 g



W61 Weight 510 g



W62 Weight 1000 g

WESPACK ***Phase Control Thyristors***

WESTCODE

The Wespack outline is a new concept in phase control thyristors for applications requiring devices rated to 2200 V. It gives the maximum power rating for weight and volume without compromising on quality and reliability. It also gives the maximum current rating and lowest thermal resistance for the package size.

Type		V_{DRM} V_{RRM}	I_{TAV} T_K = 55°C	I_{TSM} 10ms ½ sine $V_R \leq 60\%\ V_{RRM}$	I^2t	V_{T0} @ T_{JM}	r_T @ T_{JM}	T_{JM}	R_{thJK} 180° sine	R_{thJK} 120° Rect.	Fig. No.
Part No. ➢ New	Old Part No.	V	A	A	A^2s	V	mΩ	°C	K/W	K/W	
➢ **N1174JK200**	NX159JK200	2000	1174	13200	870×10^3	1.000	0.416	125	0.0270	0.0314	WP1
➢ **N1174JK220**	NX159JK220	2200	1174	13200	870×10^3	1.000	0.416	125	0.0270	0.0314	WP1
➢ **N1263JK160**	NX159JK160	1600	1263	15000	1.13×10^6	1.015	0.332	125	0.0270	0.0314	WP1
➢ **N1263JK180**	NX159JK180	1800	1263	15000	1.13×10^6	1.015	0.332	125	0.0270	0.0314	WP1
➢ **N1366JK080**	NX159JK080	800	1366	15900	1.26×10^6	0.985	0.270	125	0.0270	0.0314	WP1
➢ **N1366JK120**	NX159JK120	1200	1366	15900	1.26×10^6	0.985	0.270	125	0.0270	0.0314	WP1
➢ **N1366JK140**	NX159JK140	1400	1366	15900	1.26×10^6	0.985	0.270	125	0.0270	0.0314	WP1
N1651QK200	NX058QK200	2000	1651	17300	1.50×10^6	1.060	0.317	125	0.0180	0.0217	WP2
N1651QK220	NX058QK220	2200	1651	17300	1.50×10^6	1.060	0.317	125	0.0180	0.0217	WP2
N1806QK160	NX058QK160	1600	1806	19100	1.82×10^6	1.022	0.253	125	0.0180	0.0217	WP2
N1806QK180	NX058QK180	1800	1806	19100	1.82×10^6	1.022	0.253	125	0.0180	0.0217	WP2
N2083QK080	N/A	800	2083	22000	2.42×10^6	0.955	0.177	125	0.0180	0.0217	WP2
N2083QK120	N/A	1200	2083	22000	2.42×10^6	0.955	0.177	125	0.0180	0.0217	WP2
N2083QK140	N/A	1400	2083	22000	2.42×10^6	0.955	0.177	125	0.0180	0.0217	WP2
N2154JK020	NX159JK020	200	2154	22700	2.58×10^6	0.890	0.107	140	0.0270	0.0314	WP1
➢ **N2154JK040**	NX159JK040	400	2154	22700	2.58×10^6	0.890	0.107	140	0.0270	0.0314	WP1
N2154JK060	NX159JK060	600	2154	22700	2.58×10^6	0.890	0.107	140	0.0270	0.0314	WP1
N2367MK200	NX149MK200	2000	2367	32400	5.25×10^6	0.883	0.210	125	0.0140	0.0157	WP3
N2367MK220	NX149MK220	2200	2367	32400	5.25×10^6	0.883	0.210	125	0.0140	0.0157	WP3
N2593MK160	NX149MK160	1600	2593	34500	5.95×10^6	0.940	0.154	125	0.0140	0.0157	WP3
N2593MK180	NX149MK180	1800	2593	34500	5.95×10^6	0.940	0.154	125	0.0140	0.0157	WP3
➢ **N3022MK040**	NX149MK040	400	3022	38200	7.30×10^6	0.981	0.090	125	0.0140	0.0157	WP3
➢ **N3022MK120**	NX149MK120	1200	3022	38200	7.30×10^6	0.981	0.090	125	0.0140	0.0157	WP3
➢ **N3022MK140**	NX149MK140	1400	3022	38200	7.30×10^6	0.981	0.090	125	0.0140	0.0157	WP3
N3229QK020	NX155QK020	200	3229	28000	3.92×10^6	0.926	0.067	140	0.0180	0.0217	WP2
➢ **N3229QK040**	NX155QK040	400	3229	28000	3.92×10^6	0.926	0.067	140	0.0180	0.0217	WP2
N3229QK060	NX155QK060	600	3229	28000	3.92×10^6	0.926	0.067	140	0.0180	0.0217	WP2
➢ **N3904HK200**	NX160HK200	2000	3904	50900	12.95×10^6	0.920	0.111	125	0.0090	0.0099	WP4
➢ **N3904HK220**	NX160HK220	2200	3904	50900	12.95×10^6	0.920	0.111	125	0.0090	0.0099	WP4
N4316MK020	N4004MK020	200	4316	45400	10.3×10^6	0.840	0.053	140	0.0140	0.0157	WP3
➢ **N4316MK040**	N4004MK040	400	4316	45400	10.3×10^6	0.840	0.053	140	0.0140	0.0157	WP3
N4316MK060	N/A	600	4316	45400	10.3×10^6	0.840	0.053	140	0.0140	0.0157	WP3
N4472HK160	N/A	1600	4472	59000	17.40×10^6	0.986	0.068	125	0.0090	0.0099	WP4
N4472HK180	N/A	1800	4472	59000	17.40×10^6	0.986	0.068	125	0.0090	0.0099	WP4
➢ **N6974HK020**	N/A	200	6974	65000	21.13×10^6	0.853	0.029	140	0.0090	0.0099	WP4
➢ **N6974HK040**	N/A	400	6974	65000	21.13×10^6	0.853	0.029	140	0.0090	0.0099	WP4
➢ **N6974HK060**	N/A	600	6974	65000	21.13×10^6	0.853	0.029	140	0.0090	0.0099	WP4
➢ **NX160HK080**	N/A	800	Product under development						0.0090	0.0099	WP4
➢ **NX160HK120**	N/A	1200							0.0090	0.0099	WP4
➢ **NX160HK140**	N/A	1400							0.0090	0.0099	WP4

Outlines on pages O-01...O-24

WP1 Weight 180 g

WP2 Weight 200 g

WP3 Weight 260 g

WP4 Weight 550 g

Medium Voltage Thyristors - Capsule Types

WESTCODE

Medium voltage applications place additional demands on phase controlled thyristors. To meet these demands we have developed a comprehensive range of thyristors optimised for medium voltage applications. As voltages increase, so do switching losses and turn-off time to a point where they become significant in line frequency applications. Our patented distributed gate architecture ensures excellent switching performance over a wide range of voltage, current and di/dt. Device lifetime is also engineered to achieve an optimum balance between conduction losses, commutation losses and turn-off time to give maximum power handling from line frequency to 400 Hz. This also gives significant benefits when series or parallel connection of devices is required. Medium voltage thyristors are available from 3.2 kV up to 6.5 kV with silicon diameters from 38 mm to 100 mm making them particularly suitable for high power converters such as medium voltage DC drives, medium voltage soft starts and utility applications such as HVDC, static VAr compensators, excitation and transfer switches.

We recognise the importance of reliability in these large, capital intensive applications and as a result we subject these parts to extended levels of both routine and type testing to ensure that your investment gives years of trouble free service.

Type		V_{DRM} V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recovery Charge			V_{T0}	r_T	T_{JM}	R_{thJK}		Fig. No.
			T_K = 55°C	10 ms ½ sine $V_R \leq 60\%\ V_{RRM}$		@ 200 V/µs	T_{JM}, 50% Chord			@ T_{JM}			180° Sine	120° Rect.	
Part No. ➢ New	Old Part No.	V	A	A	A^2s	µs	Q_{ra} µC	@ I_{TM} A	@-di/dt A/µs	V	mΩ	°C	K/W	K/W	
K0349LC600	P201CH60	6000	349	4800	115 x 10^3	900-1200	2100	1000	10	1.568	2.428	115	0.0470	0.0490	W10
K0349LC650	P201CH65	6500	349	4800	115 x 10^3	900-1200	2100	1000	10	1.568	2.428	115	0.0470	0.0490	W10
➢ **K0349LG600**	N/A	6000	349	4800	115 x 10^3	900-1200	2100	1000	10	1.568	2.428	115	0.0470	0.0490	W56
➢ **K0349LG650**	N/A	6500	349	4800	115 x 10^3	900-1200	2100	1000	10	1.568	2.428	115	0.0470	0.0490	W56
➢ **K0443LC600**	N/A	6000	443	4800	115 x 10^3	900-1200	2100	1000	10	1.568	2.428	115	0.0320	0.0388	W10
➢ **K0443LC650**	N/A	6500	443	4800	115 x 10^3	900-1200	2100	1000	10	1.568	2.428	115	0.0 320	0.0388	W10
➢ **K0443LG600**	N/A	6000	443	4800	115 x 10^3	900-1200	2100	1000	10	1.568	2.428	115	0.0320	0.0388	W56
➢ **K0443LG650**	N/A	6500	443	4800	115 x 10^3	900-1200	2100	1000	10	1.568	2.428	115	0.0320	0.0388	W56
➢ **K0682LC360**	KX190LC360	3600	682	6350	202 x 10^3	650-800	1050	1000	10	1.211	1.182	125	0.0320	0.0388	W10
➢ **K0682LC420**	KX190LC420	4200	682	6350	202 x 10^3	650-800	1050	1000	10	1.211	1.182	125	0.0320	0.0388	W10
➢ **K0682LG360**	N/A	3600	682	6350	202 x 10^3	650-800	1050	1000	10	1.211	1.182	125	0.0320	0.0388	W56
➢ **K0682LG420**	N/A	4200	682	6350	202 x 10^3	650-800	1050	1000	10	1.211	1.182	125	0.0320	0.0388	W56
K0769NC600	P410CH60	6000	769	8600	370 x 10^3	900-1200	2050	1000	10	1.566	1.172	115	0.0240	0.0290	W11
K0769NC650	P410CH65	6500	769	8600	370 x 10^3	900-1200	2050	1000	10	1.566	1.172	115	0.0240	0.0290	W11
➢ **K0769NG600**	N/A	6000	769	8600	370 x 10^3	900-1200	2050	1000	10	1.566	1.172	115	0.0240	0.0290	W57
➢ **K0769NG650**	N/A	6500	769	8600	370 x 10^3	900-1200	2050	1000	10	1.566	1.172	115	0.0240	0.0290	W57
K0890NC360	R295CH36	3600	890	10900	594 × 10^3	350-550	1500	1000	10	1.516	0.800	125	0.0240	0.0290	W11
K0890NC420	R295CH42	4200	890	10900	594 × 10^3	350-550	1500	1000	10	1.516	0.800	125	0.0240	0.0290	W11
➢ **K1120NC360**	KX192NC360	3600	1120	13500	911 x 10^3	650-1000	2600	1000	10	1.092	0.546	125	0.0240	0.0271	W11
➢ **K1120NC420**	KX192NC420	4200	1120	13500	911 x 10^3	650-1000	2600	1000	10	1.092	0.546	125	0.0240	0.0271	W11
➢ **K1120NG360**	N/A	3600	1120	13500	911 x 10^3	650-1000	2600	1000	10	1.092	0.546	125	0.0240	0.0271	W57
➢ **K1120NG420**	N/A	4200	1120	13500	911 x 10^3	650-1000	2600	1000	10	1.092	0.546	125	0.0240	0.0271	W57
K1121NC320	P440CH32	3200	1121	15000	1.13 x 10^6	400-500	1000	1000	10	1.098	0.542	125	0.0240	0.0290	W11
K1121NC360	P440CH36	3600	1121	15000	1.13 x 10^6	400-500	1000	1000	10	1.098	0.542	125	0.0240	0.0290	W11
K1197NC300	P480CH30	3000	1197	10646	567 x 10^3	200-300	1400	1000	10	1.210	0.430	125	0.0240	0.0290	W11
K1197NC320	P480CH32	3200	1197	10646	567 x 10^3	200-300	1400	1000	10	1.210	0.430	125	0.0240	0.0290	W11
K1351VC600	KX120VC600	6000	1351	14300	1.02 × 10^6	800-1500	4500	2000	10	1.410	0.600	115	0.0130	0.0145	W12
K1351VC650	KX120VC650	6500	1351	14300	1.02 × 10^6	800-1500	4500	2000	10	1.410	0.600	115	0.0130	0.0145	W12
K1351VF600	KX120VF600	6000	1351	14300	1.02 × 10^6	800-1500	4500	2000	10	1.410	0.600	115	0.0130	0.0145	W62
K1351VF650	KX120VF650	6500	1351	14300	1.02 × 10^6	800-1500	4500	2000	10	1.410	0.600	115	0.0130	0.0145	W62
K1947ZC400	P855CH40	4000	1947	25000	3.13 × 10^6	600-700	3500	1000	10	1.221	0.425	125	0.0110	0.0119	W13
K1947ZC440	P855CH44	4400	1947	25000	3.13 × 10^6	600-700	3500	1000	10	1.221	0.425	125	0.0110	0.0119	W13
K1947ZD400	P855DH40	4000	1947	25000	3.13 × 10^6	600-700	3500	1000	10	1.221	0.425	125	0.0110	0.0119	W46
K1947ZD440	P855DH44	4400	1947	25000	3.13 × 10^6	600-700	3500	1000	10	1.221	0.425	125	0.0110	0.0119	W46
➢ **K2065VC360**	KX162VC360	3600	2065	28000	3.92 x 10^6	400-700	4300	2000	10	1.121	0.291	125	0.0130	0.0145	W12
➢ **K2065VC420**	KX162VC420	4200	2065	28000	3.92 x 10^6	400-700	4300	2000	10	1.121	0.291	125	0.0130	0.0145	W12
➢ **K2065VF360**	KX162VF360	3600	2065	28000	3.92 x 10^6	400-700	4300	2000	10	1.121	0.291	125	0.0130	0.0145	W62
➢ **K2065VF420**	KX120VF650	4200	2065	28000	3.92 x 10^6	400-700	4300	2000	10	1.121	0.291	125	0.0130	0.0145	W62
K2095ZC360	P880CH36	3600	2095	18200	1.66 × 10^6	400-500	2400	2000	10	1.502	0.296	125	0.0110	0.0119	W13
K2095ZC420	P880CH42	4200	2095	18200	1.66 × 10^6	400-500	2400	2000	10	1.502	0.296	125	0.0110	0.0119	W13
K2095ZD360	P880DH36	3600	2095	18200	1.66 × 10^6	400-500	2400	2000	10	1.502	0.296	125	0.0110	0.0119	W46
K2095ZD420	P880DH42	4200	2095	18200	1.66 × 10^6	400-500	2400	2000	10	1.502	0.296	125	0.0110	0.0119	W46
K2359TC600	P1063CH60	6000	2359	27000	3.65 × 10^6	1100-1500	6800	2000	10	1.391	0.360	115	0.0085	0.0092	W14
K2359TC650	P1063CH65	6500	2359	27000	3.65 × 10^6	1100-1500	6800	2000	10	1.391	0.360	115	0.0085	0.0092	W14
K2359TD600	N/A	6000	2359	27000	3.65 × 10^6	1100-1500	6800	2000	10	1.391	0.360	115	0.0085	0.0092	W51
K2359TD650	N/A	6500	2359	27000	3.65 × 10^6	1100-1500	6800	2000	10	1.391	0.360	115	0.0085	0.0092	W51
K2623TC450	R1263CH45	4500	2623	27000	3.65 × 10^6	500-1000	2600	2000	10	1.421	0.295	125	0.0080	0.0089	W14
K2623TC480	R1263CH48	4800	2623	27000	3.65 × 10^6	500-1000	2600	2000	10	1.421	0.295	125	0.0080	0.0089	W14
K2623TC520	R1263CH52	5200	2623	27000	3.65 × 10^6	500-1000	2600	2000	10	1.421	0.295	125	0.0080	0.0089	W14
K2623TD450	N/A	4500	2623	27000	3.65 × 10^6	500-1000	2600	2000	10	1.421	0.295	125	0.0080	0.0089	W51
K2623TD480	N/A	4800	2623	27000	3.65 × 10^6	500-1000	2600	2000	10	1.421	0.295	125	0.0080	0.0089	W51
K2623TD520	N/A	5200	2623	27000	3.65 × 10^6	500-1000	2600	2000	10	1.421	0.295	125	0.0080	0.0089	W51

Medium Voltage Thyristors - Capsule Types

WESTCODE

Type		V_{DRM} V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recovery Charge			V_{T0}	r_T	T_{JM}	R_{thJK}		Fig. No.
			T_K =	10 ms ½ sine		@	T_{JM}, 50% Chord			@ T_{JM}			180°	120°	
Part No. ➢ New	Old Part No.	V	55°C A	$V_R \leq 60\%\ V_{RRM}$ A	A^2s	200 V/µs µs	Q_{ra} µC	@ I_{TM} A	@-di/dt A/µs	V	mΩ	°C	Sine K/W	Rect. K/W	
K2960TC450	N/A	4500	2960	32500	5.28×10^6	800-1600	11000	4000	10	1.229	0.212	125	0.0085	0.0092	W14
K2960TC480	N/A	4800	2960	32500	5.28×10^6	800-1600	11000	4000	10	1.229	0.212	125	0.0085	0.0092	W14
K2960TC520	N/A	5200	2960	32500	5.28×10^6	800-1600	11000	4000	10	1.229	0.212	125	0.0085	0.0092	W14
K2960TD450	N/A	4500	2960	32500	5.28×10^6	800-1600	11000	4000	10	1.229	0.212	125	0.0085	0.0092	W51
K2960TD480	N/A	4800	2960	32500	5.28×10^6	800-1600	11000	4000	10	1.229	0.212	125	0.0085	0.0092	W51
K2960TD520	N/A	5200	2960	32500	5.28×10^6	800-1600	11000	4000	10	1.229	0.212	125	0.0085	0.0092	W51
K2973FC600	N/A	6000	2973	35400	6.27×10^6	1100-1500	6200	4000	10	1.581	0.207	115	0.0065	0.0069	W15
K2973FC650	N/A	6500	2973	35400	6.27×10^6	1100-1500	6200	4000	10	1.581	0.207	115	0.0065	0.0069	W15
K2973FD600	N/A	6000	2973	35400	6.27×10^6	1100-1500	6200	4000	10	1.581	0.207	115	0.0065	0.0069	W48
K2973FD650	N/A	6500	2973	35400	6.27×10^6	1100-1500	6200	4000	10	1.581	0.207	115	0.0065	0.0069	W48
➢ **K3207EC450**	KX142EC450	4500	3207	32500	5.28×10^6	800-1600	11000	4000	10	1.229	0.212	125	0.0075	0.0080	W55
➢ **K3207EC480**	KX142EC480	4800	3207	32500	5.28×10^6	800-1600	11000	4000	10	1.229	0.212	125	0.0075	0.0080	W55
➢ **K3207EC520**	KX142EC520	5200	3207	32500	5.28×10^6	800-1600	11000	4000	10	1.229	0.212	125	0.0075	0.0080	W55
K3362TC360	N/A	3600	3362	39500	7.80×10^6	1000-2000	7400	4000	10	1.052	0.168	125	0.0085	0.0092	W14
K3362TC420	N/A	4200	3362	39500	7.80×10^6	1000-2000	7400	4000	10	1.052	0.168	125	0.0085	0.0092	W14
K3362TD360	N/A	3600	3362	39500	7.80×10^6	1000-2000	7400	4000	10	1.052	0.168	125	0.0085	0.0092	W51
K3362TD420	N/A	4200	3362	39500	7.80×10^6	1000-2000	7400	4000	10	1.052	0.168	125	0.0085	0.0092	W51
K3503FC450	KX094FC450	4500	3503	43200	9.33×10^6	900-1800	5500	4000	10	1.375	0.196	125	0.0065	0.0070	W15
K3503FC480	KX094FC480	4800	3503	43200	9.33×10^6	900-1800	5500	4000	10	1.375	0.196	125	0.0065	0.0070	W15
K3503FC520	KX094FC520	5200	3503	43200	9.33×10^6	900-1800	5500	4000	10	1.375	0.196	125	0.0065	0.0070	W15
K3503FD450	KX094FD450	4500	3503	43200	9.33×10^6	900-1800	5500	4000	10	1.375	0.196	125	0.0065	0.0070	W48
K3503FD480	KX094FD480	4800	3503	43200	9.33×10^6	900-1800	5500	4000	10	1.375	0.196	125	0.0065	0.0070	W48
K3503FD520	KX094FD520	5200	3503	43200	9.33×10^6	900-1800	5500	4000	10	1.375	0.196	125	0.0065	0.0070	W48
➢ **KX101FC360**	N/A	3600	Products under development									125	0.0065	0.0070	W15
➢ **KX101FC420**	N/A	4200										125	0.0065	0.0070	W15
➢ **KX101FD360**	N/A	3600										125	TBA	TBA	W48
➢ **KX101FD420**	N/A	4200										125	TBA	TBA	W48
➢ **KX163VC520**	N/A	5200										125	0.0130	0.0150	W12
➢ **KX163VF520**	N/A	5200										125	0.0130	0.0150	W62
➢ **KX191LC520**	N/A	5200										125	0.0320	0.0390	W10
➢ **KX191LG520**	N/A	5200										125	0.0320	0.0390	W56
➢ **KX193NC520**	N/A	5200										125	0.0240	0.0290	W11
➢ **KX193NG520**	N/A	5200										125	0.0240	0.0290	W57

Outlines on pages O-01...O-24

W10 Weight 340 g

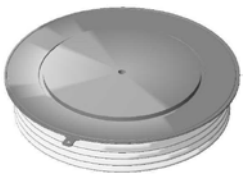
W11 Weight 510 g

W12 Weight 1000 g

W13 Weight 1700 g

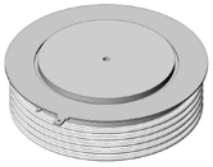
W14 Weight 1300 g

W15 Weight 2800 g



W46 Weight 1200 g

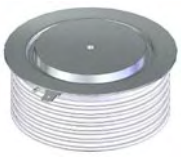
W48 Weight 2000 g



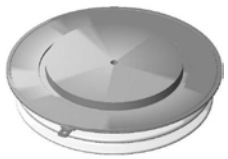
W51 Weight 1700 g

W55 Weight 1800 g

W56 Weight 271 g



W57 Weight 326 g



W62 Weight 1000 g

Fast Turn-Off Thyristors - Stud Types

WESTCODE

Westcode "P" series of fast switching thyristors have regenerative gate structure to ensure low switching losses and high di/dt performance. "P" Series devices are particularly attractive to; Inverter, DC chopper drives, UPS and Pulse Power applications. In addition to pressure contact technology these devices offer lower reverse recovery charge values, low forward switching losses and high reliability.

Type		V_{DRM} V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recovery Charge			V_{T0}	r_T	T_{JM}	R_{thJC}	Fig. No.
			T_C =	10 ms ½ sine		@	T_{JM}, 50% Chord			@ T_{JM}			180° sine	
Part No. ➢ New	Old Part No.	V	55°C A	$V_R \leq 60\%\ V_{RRM}$ A	A^2s	200 V/µs µs	Q_{ra} µC	@ I_{TM} A	@-di/dt A/µs	V	mΩ	°C	K/W	
➢ **P0128SH10C**	N/A	1000	128	1700	19×10^3	15	25	100	10	1.600	2.490	125	0.230	W17
P0128SH10D	N/A	1000	128	1700	19×10^3	20	25	100	10	1.600	2.490	125	0.230	W17
P0128SH10E	N/A	1000	128	1700	19×10^3	25	25	100	10	1.600	2.490	125	0.230	W17
P0128SH10F	N/A	1000	128	1700	19×10^3	30	25	100	10	1.600	2.490	125	0.230	W17
➢ **P0128SH12C**	N/A	1200	128	1700	19×10^3	15	25	100	10	1.600	2.490	125	0.230	W17
P0128SH12D	N/A	1200	128	1700	19×10^3	20	25	100	10	1.600	2.490	125	0.230	W17
P0128SH12E	N/A	1200	128	1700	19×10^3	25	25	100	10	1.600	2.490	125	0.230	W17
P0128SH12F	N/A	1200	128	1700	19×10^3	30	25	100	10	1.600	2.490	125	0.230	W17
➢ **P0128SJ10C**	N/A	1000	128	1700	19×10^3	15	25	100	10	1.600	2.490	125	0.230	W16
P0128SJ10D	N/A	1000	128	1700	19×10^3	20	25	100	10	1.600	2.490	125	0.230	W16
P0128SJ10E	N/A	1000	128	1700	19×10^3	25	25	100	10	1.600	2.490	125	0.230	W16
P0128SJ10F	N/A	1000	128	1700	19×10^3	30	25	100	10	1.600	2.490	125	0.230	W16
➢ **P0128SJ12C**	N/A	1200	128	1700	19×10^3	15	25	100	10	1.600	2.490	125	0.230	W16
P0128SJ12D	N/A	1200	128	1700	19×10^3	20	25	100	10	1.600	2.490	125	0.230	W16
P0128SJ12E	N/A	1200	128	1700	19×10^3	25	25	100	10	1.600	2.490	125	0.230	W16
P0128SJ12F	N/A	1200	128	1700	19×10^3	30	25	100	10	1.600	2.490	125	0.230	W16
P0248SC10D	P200PH10	1000	248	2700	36.5×10^3	20	25	300	20	1.600	1.230	125	0.120	W18
P0248SC10E	P200PH10	1000	248	2700	36.5×10^3	25	25	300	20	1.600	1.230	125	0.120	W18
P0248SC10F	P200PH10	1000	248	2700	36.5×10^3	30	25	300	20	1.600	1.230	125	0.120	W18
P0248SC12D	P200PH12	1200	248	2700	36.5×10^3	20	25	300	20	1.600	1.230	125	0.120	W18
P0248SC12E	P200PH12	1200	248	2700	36.5×10^3	25	25	300	20	1.600	1.230	125	0.120	W18
P0248SC12F	P200PH12	1200	248	2700	36.5×10^3	30	25	300	20	1.600	1.230	125	0.120	W18
P0248SD10D	N/A	1000	248	2700	36.5×10^3	20	25	300	20	1.600	1.230	125	0.120	W19
P0248SD10E	N/A	1000	248	2700	36.5×10^3	25	25	300	20	1.600	1.230	125	0.120	W19
P0248SD10F	N/A	1000	248	2700	36.5×10^3	30	25	300	20	1.600	1.230	125	0.120	W19
P0248SD12D	N/A	1200	248	2700	36.5×10^3	20	25	300	20	1.600	1.230	125	0.120	W19
P0248SD12E	N/A	1200	248	2700	36.5×10^3	25	25	300	20	1.600	1.230	125	0.120	W19
P0248SD12F	N/A	1200	248	2700	36.5×10^3	30	25	300	20	1.600	1.230	125	0.120	W19
P0248SG10D	N/A	1000	248	2700	36.5×10^3	20	25	300	20	1.600	1.230	125	0.120	W25
P0248SG10E	N/A	1000	248	2700	36.5×10^3	25	25	300	20	1.600	1.230	125	0.120	W25
P0248SG10F	N/A	1000	248	2700	36.5×10^3	30	25	300	20	1.600	1.230	125	0.120	W25
P0248SG12D	N/A	1200	248	2700	36.5×10^3	20	25	300	20	1.600	1.230	125	0.120	W25
P0248SG12E	N/A	1200	248	2700	36.5×10^3	25	25	300	20	1.600	1.230	125	0.120	W25
P0248SG12F	N/A	1200	248	2700	36.5×10^3	30	25	300	20	1.600	1.230	125	0.120	W25
P0273SC10D	P202PH10	1000	273	3250	52.8×10^3	20	45	300	20	1.550	0.870	125	0.120	W18
P0273SC10E	P202PH10	1000	273	3250	52.8×10^3	25	45	300	20	1.550	0.870	125	0.120	W18
P0273SC10F	P202PH10	1000	273	3250	52.8×10^3	30	45	300	20	1.550	0.870	125	0.120	W18
P0273SC12D	P202PH12	1200	273	3250	52.8×10^3	20	45	300	20	1.550	0.870	125	0.120	W18
P0273SC12E	P202PH12	1200	273	3250	52.8×10^3	25	45	300	20	1.550	0.870	125	0.120	W18
P0273SC12F	P202PH12	1200	273	3250	52.8×10^3	30	45	300	20	1.550	0.870	125	0.120	W18
P0273SD10D	N/A	1000	273	3250	52.8×10^3	20	45	300	20	1.550	0.870	125	0.120	W19
P0273SD10E	N/A	1000	273	3250	52.8×10^3	25	45	300	20	1.550	0.870	125	0.120	W19
P0273SD10F	N/A	1000	273	3250	52.8×10^3	30	45	300	20	1.550	0.870	125	0.120	W19
P0273SD12D	N/A	1200	273	3250	52.8×10^3	20	45	300	20	1.550	0.870	125	0.120	W19
P0273SD12E	N/A	1200	273	3250	52.8×10^3	25	45	300	20	1.550	0.870	125	0.120	W19
P0273SD12F	N/A	1200	273	3250	52.8×10^3	30	45	300	20	1.550	0.870	125	0.120	W19
P0273SG10D	N/A	1000	273	3250	52.8×10^3	20	45	300	20	1.550	0.870	125	0.120	W25
P0273SG10E	N/A	1000	273	3250	52.8×10^3	25	45	300	20	1.550	0.870	125	0.120	W25
P0273SG10F	N/A	1000	273	3250	52.8×10^3	30	45	300	20	1.550	0.870	125	0.120	W25
P0273SG12D	N/A	1200	273	3250	52.8×10^3	20	45	300	20	1.550	0.870	125	0.120	W25
P0273SG12E	N/A	1200	273	3250	52.8×10^3	25	45	300	20	1.550	0.870	125	0.120	W25
P0273SG12F	N/A	1200	273	3250	52.8×10^3	30	45	300	20	1.550	0.870	125	0.120	W25
P0306SC04A	P214PH04	400	306	4700	101×10^3	10	25	300	20	1.400	0.670	125	0.120	W18
P0306SC04B	P214PH04	400	306	4700	101×10^3	12	25	300	20	1.400	0.670	125	0.120	W18
P0306SC04C	P214PH04	400	306	4700	101×10^3	15	25	300	20	1.400	0.670	125	0.120	W18
P0306SC08A	P214PH08	800	306	4700	101×10^3	10	25	300	20	1.400	0.670	125	0.120	W18
P0306SC08B	P214PH08	800	306	4700	101×10^3	12	25	300	20	1.400	0.670	125	0.120	W18
P0306SC08C	P214PH08	800	306	4700	101×10^3	15	25	300	20	1.400	0.670	125	0.120	W18
P0306SD04A	N/A	400	306	4700	101×10^3	10	25	300	20	1.400	0.670	125	0.120	W19
P0306SD04B	N/A	400	306	4700	101×10^3	12	25	300	20	1.400	0.670	125	0.120	W19
P0306SD04C	N/A	400	306	4700	101×10^3	15	25	300	20	1.400	0.670	125	0.120	W19
P0306SD08A	N/A	800	306	4700	101×10^3	10	25	300	20	1.400	0.670	125	0.120	W19
P0306SD08B	N/A	800	306	4700	101×10^3	12	25	300	20	1.400	0.670	125	0.120	W19
P0306SD08C	N/A	800	306	4700	101×10^3	15	25	300	20	1.400	0.670	125	0.120	W19
P0306SG04A	N/A	400	306	4700	101×10^3	10	25	300	20	1.400	0.670	125	0.120	W25

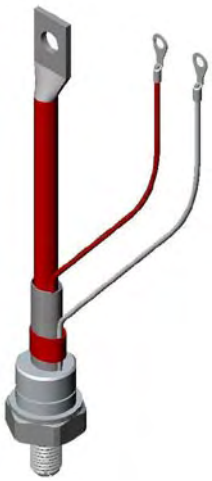
Fast Turn-Off Thyristors - Stud Types

WESTCODE

Type		V_{DRM} V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recovery Charge			V_{T0}	r_T	T_{JM}	R_{thJC}	Fig. No.
			T_C =	10 ms ½ sine		@	T_{JM}, 50% Chord			@ T_{JM}			180° sine	
Part No. ➢ New	Old Part No.		55°C	$V_R \leq 60\%\ V_{RRM}$		200 V/µs	Q_{ra}	@ I_{TM}	@-di/dt					
		V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	°C	K/W	
P0306SG04B	N/A	400	306	4700	101 x 10^3	12	25	300	20	1.400	0.670	125	0.120	W25
P0306SG04C	N/A	400	306	4700	101 x 10^3	15	25	300	20	1.400	0.670	125	0.120	W25
P0306SG08A	N/A	800	306	4700	101 x 10^3	10	25	300	20	1.400	0.670	125	0.120	W25
P0306SG08B	N/A	800	306	4700	101 x 10^3	12	25	300	20	1.400	0.670	125	0.120	W25
P0306SG08C	N/A	800	306	4700	101 x 10^3	15	25	300	20	1.400	0.670	125	0.120	W25
P0311SC10E	P205PH10	1000	311	3600	64.8 x 10^3	25	30	300	20	1.170	0.920	125	0.120	W18
P0311SC10F	P205PH10	1000	311	3600	64.8 x 10^3	30	30	300	20	1.170	0.920	125	0.120	W18
P0311SC10G	P205PH10	1000	311	3600	64.8 x 10^3	35	30	300	20	1.170	0.920	125	0.120	W18
P0311SC12E	P205PH12	1200	311	3600	64.8 x 10^3	25	30	300	20	1.170	0.920	125	0.120	W18
P0311SC12F	P205PH12	1200	311	3600	64.8 x 10^3	30	30	300	20	1.170	0.920	125	0.120	W18
P0311SC12G	P205PH12	1200	311	3600	64.8 x 10^3	35	30	300	20	1.170	0.920	125	0.120	W18
P0311SD10E	N/A	1000	311	3600	64.8 x 10^3	25	30	300	20	1.170	0.920	125	0.120	W19
P0311SD10F	N/A	1000	311	3600	64.8 x 10^3	30	30	300	20	1.170	0.920	125	0.120	W19
P0311SD10G	N/A	1000	311	3600	64.8 x 10^3	35	30	300	20	1.170	0.920	125	0.120	W19
P0311SD12E	N/A	1200	311	3600	64.8 x 10^3	25	30	300	20	1.170	0.920	125	0.120	W19
P0311SD12F	N/A	1200	311	3600	64.8 x 10^3	30	30	300	20	1.170	0.920	125	0.120	W19
P0311SD12G	N/A	1200	311	3600	64.8 x 10^3	35	30	300	20	1.170	0.920	125	0.120	W19
P0311SG10E	N/A	1000	311	3600	64.8 x 10^3	25	30	300	20	1.170	0.920	125	0.120	W25
P0311SG10F	N/A	1000	311	3600	64.8 x 10^3	30	30	300	20	1.170	0.920	125	0.120	W25
P0311SG10G	N/A	1000	311	3600	64.8 x 10^3	35	30	300	20	1.170	0.920	125	0.120	W25
P0311SG12E	N/A	1200	311	3600	64.8 x 10^3	25	30	300	20	1.170	0.920	125	0.120	W25
P0311SG12F	N/A	1200	311	3600	64.8 x 10^3	30	30	300	20	1.170	0.920	125	0.120	W25
P0311SG12G	N/A	1200	311	3600	64.8 x 10^3	35	30	300	20	1.170	0.920	125	0.120	W25
➢ **P0330SC04A**	P215PH04	400	330	5000	125 x 10^3	10	30	300	20	1.050	0.880	125	0.120	W18
P0330SC04C	P215PH04	400	330	5000	125 x 10^3	15	30	300	20	1.050	0.880	125	0.120	W18
P0330SC04D	P215PH04	400	330	5000	125 x 10^3	20	30	300	20	1.050	0.880	125	0.120	W18
➢ **P0330SC06A**	P215PH06	600	330	5000	125 x 10^3	10	30	300	20	1.050	0.880	125	0.120	W18
P0330SC06C	P215PH06	600	330	5000	125 x 10^3	20	30	300	20	1.050	0.880	125	0.120	W18
P0330SC06D	P215PH06	600	330	5000	125 x 10^3	20	30	300	20	1.050	0.880	125	0.120	W18
➢ **P0330SC08A**	P215PH08	800	330	5000	125 x 10^3	10	30	300	20	1.050	0.880	125	0.120	W18
P0330SC08C	P215PH08	800	330	5000	125 x 10^3	15	30	300	20	1.050	0.880	125	0.120	W18
P0330SC08D	P215PH08	800	330	5000	125 x 103	20	30	300	20	1.050	0.880	125	0.120	W18
P0330SD04C	N/A	400	330	5000	125 x 10^3	15	30	300	20	1.050	0.880	125	0.120	W19
P0330SD04D	N/A	400	330	5000	125 x 10^3	20	30	300	20	1.050	0.880	125	0.120	W19
P0330SD08C	N/A	800	330	5000	125 x 10^3	15	30	300	20	1.050	0.880	125	0.120	W19
P0330SD08D	N/A	800	330	5000	125 x 10^3	20	30	300	20	1.050	0.880	125	0.120	W19
P0330SG04C	N/A	400	330	5000	125 x 10^3	15	30	300	20	1.050	0.880	125	0.120	W25
P0330SG04D	N/A	400	330	5000	125 x 10^3	20	30	300	20	1.050	0.880	125	0.120	W25
P0330SG08C	N/A	800	330	5000	125 x 10^3	15	30	300	20	1.050	0.880	125	0.120	W25
P0330SG08D	N/A	800	330	5000	125 x 10^3	20	30	300	20	1.050	0.880	125	0.120	W25
P0431SC04C	P270PH04	400	431	6500	211 x 10^3	15	106	300	20	0.950	0.377	125	0.120	W18
P0431SC06C	P270PH06	600	431	6500	211 x 10^3	15	106	300	20	0.950	0.377	125	0.120	W18
P0431SD04C	N/A	400	431	6500	211 x 10^3	15	106	300	20	0.950	0.377	125	0.120	W19
P0431SD06C	N/A	600	431	6500	211 x 10^3	15	106	300	20	0.950	0.377	125	0.120	W19
P0431SG04C	N/A	400	431	6500	211 x 10^3	15	106	300	20	0.950	0.377	125	0.120	W25
P0431SG06C	N/A	600	431	6500	211 x 10^3	15	106	300	20	0.950	0.377	125	0.120	W25

Outlines on pages O-01...O-24

W16 - 100 g



W17 - 130 g

W18 - 280 g

W19 - 209 g

W25 - 220 g

Fast Turn-Off Thyristors - Capsule Types

WESTCODE

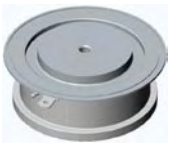
Westcode "P" series of fast switching thyristors have regenerative gate structure to ensure low switching losses and high di/dt performance. "P" Series devices are particularly attractive to; Inverter, DC chopper drives, UPS and Pulse Power applications. In additional to pressure contact technology these devices offer lower reverse recovery charge values, low forward switching losses and high reliability.

Type		V_{DRM} V_{RRM}	I_{TAV} T_K =	I_{TSM} I^2t 10 ms ½ sine $V_R \leq 60\%\ V_{RRM}$		t_q @	Typ. Reverse Recov. Charge T_{JM}, 50% Chord			V_{T0} r_T @T_{JM}		T_{JM}	R_{thJK} d.c.	Fig. No.
Part No. ➢ New	Old Part No.	V	55°C A	A	A^2s	200 V/µs µs	Q_{ra} µC	@I_{TM} A	@-di/dt A/µs	V	mΩ	°C	180° sine K/W	
P0295WC12D	P200CH12	1200	295	2700	36.5×10^3	20	25	300	20	1.600	1.230	125	0.095	W8
P0295WC12E	P200CH12	1200	295	2700	36.5×10^3	25	25	300	20	1.600	1.230	125	0.095	W8
P0295WC12F	P200CH12	1200	295	2700	36.5×10^3	30	25	300	20	1.600	1.230	125	0.095	W8
➢ **P0327WC08D**	P202CH08	800	327	3250	52.8×10^3	20	45	300	20	1.550	0.870	125	0.095	W8
➢ **P0327WC08E**	P202CH08	800	327	3250	52.8×10^3	25	45	300	20	1.550	0.870	125	0.095	W8
➢ **P0327WC08F**	P202CH08	800	327	3250	52.8×10^3	30	45	300	20	1.550	0.870	125	0.095	W8
➢ **P0327WC10D**	P202CH10	1000	327	3250	52.8×10^3	20	45	300	20	1.550	0.870	125	0.095	W8
➢ **P0327WC10E**	P202CH10	1000	327	3250	52.8×10^3	25	45	300	20	1.550	0.870	125	0.095	W8
➢ **P0327WC10F**	P202CH10	1000	327	3250	52.8×10^3	30	45	300	20	1.550	0.870	125	0.095	W8
P0327WC12D	P202CH12	1200	327	3250	52.8×10^3	20	45	300	20	1.550	0.870	125	0.095	W8
P0327WC12E	P202CH12	1200	327	3250	52.8×10^3	25	45	300	20	1.550	0.870	125	0.095	W8
P0327WC12F	P202CH12	1200	327	3250	52.8×10^3	30	45	300	20	1.550	0.870	125	0.095	W8
P0366WC04A	P214CH04	400	366	4700	110×10^3	10	20	300	20	1.400	0.670	125	0.095	W8
P0366WC04B	P214CH04	400	366	4700	110×10^3	12	20	300	20	1.400	0.670	125	0.095	W8
P0366WC04C	P214CH04	400	366	4700	110×10^3	15	20	300	20	1.400	0.670	125	0.095	W8
➢ **P0366WC04D**	P214CH04	400	366	4700	110×10^3	20	20	300	20	1.400	0.670	125	0.095	W8
P0366WC06A	P214CH06	600	366	4700	110×10^3	10	20	300	20	1.400	0.670	125	0.095	W8
P0366WC06B	P214CH06	600	366	4700	110×10^3	12	20	300	20	1.400	0.670	125	0.095	W8
P0366WC06C	P214CH06	600	366	4700	110×10^3	15	20	300	20	1.400	0.670	125	0.095	W8
➢ **P0366WC06D**	P214CH06	600	366	4700	110×10^3	20	20	300	20	1.400	0.670	125	0.095	W8
P0366WC08A	P214CH08	800	366	4700	110×10^3	10	20	300	20	1.400	0.670	125	0.095	W8
P0366WC08B	P214CH08	800	366	4700	110×10^3	12	20	300	20	1.400	0.670	125	0.095	W8
P0366WC08C	P214CH08	800	366	4700	110×10^3	15	20	300	20	1.400	0.670	125	0.095	W8
➢ **P0366WC08D**	P214CH08	800	366	4700	110×10^3	20	20	300	20	1.400	0.670	125	0.095	W8
P0367WC12E	P205CH12	1200	367	3600	64.8×10^3	25	45	300	20	1.170	0.920	125	0.095	W8
P0367WC12F	P205CH12	1200	367	3600	64.8×10^3	30	45	300	20	1.170	0.920	125	0.095	W8
P0367WC12G	P205CH12	1200	367	3600	64.8×10^3	35	45	300	20	1.170	0.920	125	0.095	W8
➢ **P0389WC04B**	P215CH04	400	389	5000	125×10^3	12	30	300	20	1.050	0.880	125	0.095	W8
P0389WC04C	P215CH04	400	389	5000	125×10^3	15	30	300	20	1.050	0.880	125	0.095	W8
P0389WC04D	P215CH04	400	389	5000	125×10^3	20	30	300	20	1.050	0.880	125	0.095	W8
➢ **P0389WC08B**	P215CH08	800	389	5000	125×10^3	12	30	300	20	1.050	0.880	125	0.095	W8
P0389WC08C	P215CH08	800	389	5000	125×10^3	15	30	300	20	1.050	0.880	125	0.095	W8
P0389WC08D	P215CH08	800	389	5000	125×10^3	20	30	300	20	1.050	0.880	125	0.095	W8
P0515WC04C	P270CH04	400	515	6500	211×10^3	15	100	300	20	0.950	0.377	125	0.095	W8
P0515WC04D	P270CH04	400	515	6500	211×10^3	20	100	300	20	0.950	0.377	125	0.095	W8
P0515WC06C	P270CH06	600	515	6500	211×10^3	15	100	300	20	0.950	0.377	125	0.095	W8
P0515WC06D	P270CH06	600	515	6500	211×10^3	20	100	300	20	0.950	0.377	125	0.095	W8
P0848YS04B	P280SH04	400	848	8750	383×10^3	12	80	550	40	1.010	0.305	125	0.050	W9
P0848YS04C	P280SH04	400	848	8750	383×10^3	15	80	550	40	1.010	0.305	125	0.050	W9
P0848YS04D	P280SH04	400	848	8750	383×10^3	20	80	550	40	1.010	0.305	125	0.050	W9
P0848YS06B	P280SH06	600	848	8750	383×10^3	12	80	550	40	1.010	0.305	125	0.050	W9
P0848YS06C	P280SH06	600	848	8750	383×10^3	15	80	550	40	1.010	0.305	125	0.050	W9
P0848YS06D	P280SH06	600	848	8750	383×10^3	20	80	550	40	1.010	0.305	125	0.050	W9
P1007LS08D	P300SH800	800	1007	9500	451×10^3	20	200	800	50	1.509	0.265	125	0.032	W60
P1007LS08E	P300SH800	800	1007	9500	451×10^3	25	200	800	50	1.509	0.265	125	0.032	W60
P1007LS08F	P300SH800	800	1007	9500	451×10^3	30	200	800	50	1.509	0.265	125	0.032	W60
P1007LS12D	P300SH12	1200	1007	9500	451×10^3	20	200	800	50	1.509	0.265	125	0.032	W60
P1007LS12E	P300SH12	1200	1007	9500	451×10^3	25	200	800	50	1.509	0.265	125	0.032	W60
P1007LS12F	P300SH12	1200	1007	9500	451×10^3	30	200	800	50	1.509	0.265	125	0.032	W60

Outlines on pages O-01...O-24

W8 Weight 70 g

W9 Weight 90 g



W60 Weight 340 g

Distributed Gate Thyristors - Capsule Types

WESTCODE

Westcode is recognised as the Worldwide leader in distributed gate technology. These devices are available with blocking voltages to 5.2 kV and currents to 3 kA, with t_q from 10 µs to 300 µs. The unique distributed gate design and lifetime control features give these devices both high di/dt capability and fast, low recovery turn-off, while maintaining a low on-state voltage drop. Ideally suited to application including: induction heating, power supplied, high frequency inverters/converters, UPS and pulse power.

Type		V_{DRM} V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recov. Charge			V_{T0}	r_T	T_{JM}	R_{thJK}	Fig. No.
			T_K =	10 ms ½ sine		@	T_{JM}, 50% Chord			@T_{JM}			180°	
Part No.	Old		55°C	$V_R \leq 60\%\ V_{RRM}$		200 V/µs	Q_{ra}	@ I_{TM}	@ -di/dt				Sine	
➢ New	Part No.	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	°C	K/W	
R0487YS10D	R210SH10	1000	487	4300	92.5 x 10^3	20	40	550	40	1.738	0.943	125	0.0500	W9
R0487YS10E	R210SH10	1000	487	4300	92.5 x 10^3	25	40	550	40	1.738	0.943	125	0.0500	W9
R0487YS10F	R210SH10	1000	487	4300	92.5 x 10^3	30	40	550	40	1.738	0.943	125	0.0500	W9
R0487YS12D	R210SH12	1200	487	4300	92.5 x 10^3	20	40	550	40	1.738	0.943	125	0.0500	W9
R0487YS12E	R210SH12	1200	487	4300	92.5 x 10^3	25	40	550	40	1.738	0.943	125	0.0500	W9
R0487YS12F	R210SH12	1200	487	4300	92.5 x 10^3	30	40	550	40	1.738	0.943	125	0.0500	W9
R0487YS14D	R210SH14	1400	487	4300	92.5 x 10^3	20	40	550	40	1.738	0.943	125	0.0500	W9
R0487YS14E	R210SH14	1400	487	4300	92.5 x 10^3	25	40	550	40	1.738	0.943	125	0.0500	W9
R0487YS14F	R210SH14	1400	487	4300	92.5 x 10^3	30	40	550	40	1.738	0.943	125	0.0500	W9
R0577YS08C	R185SH08	800	577	6000	180 x 10^3	15	85	550	40	1.510	0.640	125	0.0500	W9
R0577YS08D	R185SH08	800	577	6000	180 x 10^3	20	85	550	40	1.510	0.640	125	0.0500	W9
R0577YS08E	R185SH08	800	577	6000	180 x 10^3	25	85	550	40	1.510	0.640	125	0.0500	W9
R0577YS10C	R185SH10	1000	577	6000	180 x 10^3	15	85	550	40	1.510	0.640	125	0.0500	W9
R0577YS10D	R185SH10	1000	577	6000	180 x 10^3	20	85	550	40	1.510	0.640	125	0.0500	W9
R0577YS10E	R185SH10	1000	577	6000	180 x 10^3	25	85	550	40	1.510	0.640	125	0.0500	W9
R0577YS12C	R185SH12	1200	577	6000	180 x 10^3	15	85	550	40	1.510	0.640	125	0.0500	W9
R0577YS12D	R185SH12	1200	577	6000	180 x 10^3	20	85	550	40	1.510	0.640	125	0.0500	W9
R0577YS12E	R185SH12	1200	577	6000	180 x 10^3	25	85	550	40	1.510	0.640	125	0.0500	W9
R0633YS08D	R216SH08	800	633	6300	200 x 10^3	20	85	550	40	1.250	0.614	125	0.0500	W9
R0633YS08E	R216SH08	800	633	6300	200 x 10^3	25	85	550	40	1.250	0.614	125	0.0500	W9
R0633YS08F	R216SH08	800	633	6300	200 x 10^3	30	85	550	40	1.250	0.614	125	0.0500	W9
R0633YS10D	R216SH10	1000	633	6300	200 x 10^3	20	85	550	40	1.250	0.612	125	0.0500	W9
R0633YS10E	R216SH10	1000	633	6300	200 x 10^3	25	85	550	40	1.250	0.614	125	0.0500	W9
R0633YS10F	R216SH10	1000	633	6300	200 x 10^3	30	85	550	40	1.250	0.614	125	0.0500	W9
R0633YS12D	R216SH12	1200	633	6300	200 x 10^3	20	85	550	40	1.250	0.612	125	0.0500	W9
R0633YS12E	R216SH12	1200	633	6300	200 x 10^3	25	85	550	40	1.250	0.614	125	0.0500	W9
R0633YS12F	R216SH12	1200	633	6300	200 x 10^3	30	85	550	40	1.250	0.614	125	0.0500	W9
R0717LS14G	R181SH14	1400	717	7050	248.5 x 10^3	35	150	1000	60	1.752	0.732	125	0.0320	W60
R0717LS14H	R181SH14	1400	717	7050	248.5 x 10^3	40	150	1000	60	1.752	0.732	125	0.0320	W60
R0717LS14J	R181SH14	1400	717	7050	248.5 x 10^3	50	150	1000	60	1.752	0.732	125	0.0320	W60
R0717LS16G	R181SH16	1600	717	7050	248.5 x 10^3	35	150	1000	60	1.752	0.732	125	0.0320	W60
R0717LS16H	R181SH16	1600	717	7050	248.5 x 10^3	40	150	1000	60	1.752	0.732	125	0.0320	W60
R0717LS16J	R181SH16	1600	717	7050	248.5 x 10^3	50	150	1000	60	1.752	0.732	125	0.0320	W60
R0736LS20J	R175SH20	2000	736	6800	231 x 10^3	50	240	1000	60	1.842	0.619	125	0.0320	W60
R0736LS20K	R175SH20	2000	736	6800	231 x 10^3	60	240	1000	60	1.842	0.619	125	0.0320	W60
R0736LS20L	R175SH20	2000	736	6800	231 x 10^3	65	240	1000	60	1.842	0.619	125	0.0320	W60
R0736LS20M	R175SH20	2000	736	6800	231 x 10^3	70	240	1000	60	1.842	0.619	125	0.0320	W60
R0736LS22J	R175SH22	2200	736	6800	231 x 10^3	50	240	1000	60	1.842	0.619	125	0.0320	W60
R0736LS22K	R175SH22	2200	736	6800	231 x 10^3	60	240	1000	60	1.842	0.619	125	0.0320	W60
R0736LS22K	R175SH22	2200	736	6800	231 x 10^3	65	240	1000	60	1.842	0.619	125	0.0320	W60
R0736LS22M	R175SH22	2200	736	6800	231 x 10^3	70	240	1000	60	1.842	0.619	125	0.0320	W60
R0736LS25J	R175SH25	2500	736	6800	231 x 10^3	50	240	1000	60	1.842	0.619	125	0.0320	W60
R0736LS25K	R175SH25	2500	736	6800	231 x 10^3	60	240	1000	60	1.842	0.619	125	0.0320	W60
R0736LS25L	R175SH25	2500	736	6800	231 x 10^3	65	240	1000	60	1.842	0.619	125	0.0320	W60
R0736LS25M	R175SH25	2500	736	6800	231 x 10^3	70	240	1000	60	1.842	0.619	125	0.0320	W60
R0809LS06A	R180SH06	600	809	8000	320 x 10^3	10	50	1000	60	2.100	0.300	125	0.0320	W60
R0809LS06B	R180SH06	600	809	8000	320 x 10^3	12	50	1000	60	2.100	0.300	125	0.0320	W60
R0809LS06C	R180SH06	600	809	8000	320 x 10^3	15	50	1000	60	2.100	0.300	125	0.0320	W60
R0809LS10A	R180SH10	1000	809	8000	320 x 10^3	10	50	1000	60	2.100	0.300	125	0.0320	W60
R0809LS10B	R180SH10	1000	809	8000	320 x 10^3	12	50	1000	60	2.100	0.300	125	0.0320	W60
R0809LS10C	R180SH10	1000	809	8000	320 x 10^3	15	50	1000	60	2.100	0.300	125	0.0320	W60
R0830LS10D	R190SH10	1000	830	8500	361 x 10^3	20	110	1000	60	1.900	0.357	125	0.0320	W60
R0830LS10E	R190SH10	1000	830	8500	361 x 10^3	25	110	1000	60	1.900	0.357	125	0.0320	W60
R0830LS10F	R190SH10	1000	830	8500	361 x 10^3	30	110	1000	60	1.900	0.357	125	0.0320	W60
R0830LS10G	R190SH10	1000	830	8500	361 x 10^3	35	110	1000	60	1.900	0.357	125	0.0320	W60
R0830LS12D	R190SH12	1200	830	8500	361 x 10^3	20	110	1000	60	1.900	0.357	125	0.0320	W60
R0830LS12E	R190SH12	1200	830	8500	361 x 10^3	25	110	1000	60	1.900	0.357	125	0.0320	W60
R0830LS12F	R190SH12	1200	830	8500	361 x 10^3	30	110	1000	60	1.900	0.357	125	0.0320	W60
R0830LS12G	R190SH12	1200	830	8500	361 x 10^3	35	110	1000	60	1.900	0.357	125	0.0320	W60
R0830LS14D	R190SH14	1400	830	8500	361 x 10^3	20	110	1000	60	1.900	0.357	125	0.0320	W60
R0830LS14E	R190SH14	1400	830	8500	361 x 10^3	25	110	1000	60	1.900	0.357	125	0.0320	W60
R0830LS14F	R190SH14	1400	830	8500	361 x 10^3	30	110	1000	60	1.900	0.357	125	0.0320	W60
R0830LS14G	R190SH14	1400	830	8500	361 x 10^3	35	110	1000	60	1.900	0.357	125	0.0320	W60

Outlines on pages O-01...O-24

Type		V_{DRM} V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recov. Charge			V_{T0}	r_T	T_{JM}	R_{thJK}	Fig. No.
			T_K =	10 ms ½ sine		@	T_{JM}, 50% Chord			@T_{JM}			180°	
Part No.	Old		55°C	$V_R \leq 60\%\ V_{RRM}$		200 V/µs	Q_{ra}	@ I_{TM}	@ -di/dt				Sine	
➢ New	Part No.	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	°C	K/W	
R0878LS16K	R200SH16	1600	878	7500	281×10^3	60	350	1000	60	1.447	0.480	125	0.0320	W60
➢ **R0878LS16L**	R200SH16	1600	878	7500	281×10^3	65	350	1000	60	1.447	0.480	125	0.0320	W60
R0878LS16M	R200SH16	1600	878	7500	281×10^3	70	350	1000	60	1.447	0.480	125	0.0320	W60
R0878LS18K	R200SH18	1800	878	7500	281×10^3	60	350	1000	60	1.447	0.480	125	0.0320	W60
➢ **R0878LS18L**	R200SH18	1800	878	7500	281×10^3	65	350	1000	60	1.447	0.480	125	0.0320	W60
R0878LS18M	R200SH18	1800	878	7500	281×10^3	70	350	1000	60	1.447	0.480	125	0.0320	W60
R0878LS20K	R200SH20	[1] 2000	878	7500	281×10^3	60	350	1000	60	1.447	0.480	125	0.0320	W60
➢ **R0878LS20L**	R200SH20	[1] 2000	878	7500	281×10^3	65	350	1000	60	1.447	0.480	125	0.0320	W60
R0878LS20M	R200SH20	[1] 2000	878	7500	281×10^3	70	350	1000	60	1.447	0.480	125	0.0320	W60
R0878LS21K	R200SH21	[1] 2100	878	7500	281×10^3	60	350	1000	60	1.447	0.480	125	0.0320	W60
➢ **R0878LS21L**	R200SH21	[1] 2100	878	7500	281×10^3	65	350	1000	60	1.447	0.480	125	0.0320	W60
R0878LS21M	R200SH21	[1] 2100	878	7500	281×10^3	70	350	1000	60	1.447	0.480	125	0.0320	W60
➢ **R0929LS08A**	R219SH08	800	929	9000	405×10^3	10	85	1000	60	1.549	0.350	125	0.0320	W60
➢ **R0929LS08B**	R219SH08	800	929	9000	405×10^3	12	85	1000	60	1.549	0.350	125	0.0320	W60
R0929LS08C	R219SH08	800	929	9000	405×10^3	15	85	1000	60	1.549	0.350	125	0.0320	W60
R0929LS08D	R219SH08	800	929	9000	405×10^3	20	85	1000	60	1.549	0.350	125	0.0320	W60
R0929LS08E	R219SH08	800	929	9000	405×10^3	25	85	1000	60	1.549	0.350	125	0.0320	W60
➢ **R0929LS10A**	R219SH10	1000	929	9000	405×10^3	10	85	1000	60	1.549	0.350	125	0.0320	W60
➢ **R0929LS10B**	R219SH10	1000	929	9000	405×10^3	12	85	1000	60	1.549	0.350	125	0.0320	W60
R0929LS10C	R219SH10	1000	929	9000	405×10^3	15	85	1000	60	1.549	0.350	125	0.0320	W60
R0929LS10D	R219SH10	1000	929	9000	405×10^3	20	85	1000	60	1.549	0.350	125	0.0320	W60
R0929LS10E	R219SH10	1000	929	9000	405×10^3	25	85	1000	60	1.549	0.350	125	0.0320	W60
➢ **R0929LS12A**	R219SH12	1200	929	9000	405×10^3	10	85	1000	60	1.549	0.350	125	0.0320	W60
➢ **R0929LS12B**	R219SH12	1200	929	9000	405×10^3	12	85	1000	60	1.549	0.350	125	0.0320	W60
R0929LS12C	R219SH12	1200	929	9000	405×10^3	15	85	1000	60	1.549	0.350	125	0.0320	W60
R0929LS12D	R219SH12	1200	929	9000	405×10^3	20	85	1000	60	1.549	0.350	125	0.0320	W60
R0929LS12E	R219SH12	1200	929	9000	405×10^3	25	85	1000	60	1.549	0.350	125	0.0320	W60
R0964LS08C	R220SH08	800	964	9400	442×10^3	15	75	1000	60	1.530	0.309	125	0.0320	W60
R0964LS08D	R220SH08	800	964	9400	442×10^3	20	75	1000	60	1.530	0.309	125	0.0320	W60
R0964LS08E	R220SH08	800	964	9400	442×10^3	25	75	1000	60	1.530	0.309	125	0.0320	W60
R0964LS08F	R220SH08	800	964	9400	442×10^3	30	75	1000	60	1.530	0.309	125	0.0320	W60
R0964LS10C	R220SH10	1000	964	9400	442×10^3	15	75	1000	60	1.530	0.309	125	0.0320	W60
R0964LS10D	R220SH10	1000	964	9400	442×10^3	20	75	1000	60	1.530	0.309	125	0.0320	W60
R0964LS10E	R220SH10	1000	964	9400	442×10^3	25	75	1000	60	1.530	0.309	125	0.0320	W60
R0964LS10F	R220SH10	1000	964	9400	442×10^3	30	75	1000	60	1.530	0.309	125	0.0320	W60
R0964LS12C	R220SH12	1200	964	9400	442×10^3	15	75	1000	60	1.530	0.309	125	0.0320	W60
R0964LS12D	R220SH12	1200	964	9400	442×10^3	20	75	1000	60	1.530	0.309	125	0.0320	W60
R0964LS12E	R220SH12	1200	964	9400	442×10^3	25	75	1000	60	1.530	0.309	125	0.0320	W60
R0964LS12F	R220SH12	1200	964	9400	442×10^3	30	75	1000	60	1.530	0.309	125	0.0320	W60
R0990LS04A	R270SH08	400	990	11000	6.05×10^5	10	40	1000	60	1.350	0.350	125	0.0320	W60
R0990LS04B	R270SH08	400	990	11000	6.05×10^5	12	40	1000	60	1.350	0.350	125	0.0320	W60
R0990LS04C	R270SH08	400	990	11000	6.05×10^5	15	40	1000	60	1.350	0.350	125	0.0320	W60
R0990LS06A	R270SH06	600	990	11000	6.05×10^5	10	40	1000	60	1.350	0.350	125	0.0320	W60
R0990LS06B	R270SH06	600	990	11000	6.05×10^5	12	40	1000	60	1.350	0.350	125	0.0320	W60
R0990LS06C	R270SH06	600	990	11000	6.05×10^5	15	40	1000	60	1.350	0.350	125	0.0320	W60
R0990LS08A	R270SH08	800	990	11000	6.05×10^5	10	40	1000	60	1.350	0.350	125	0.0320	W60
R0990LS08B	R270SH08	800	990	11000	6.05×10^5	12	40	1000	60	1.350	0.350	125	0.0320	W60
R0990LS08C	R270SH08	800	990	11000	6.05×10^5	15	40	1000	60	1.350	0.350	125	0.0320	W60
➢ **R1124NS18J**	R305SH18	1800	1124	13500	0.91×10^6	50	400	1000	60	1.540	0.379	125	0.0240	W61
R1124NS18K	R305SH18	1800	1124	13500	0.91×10^6	60	400	1000	60	1.540	0.379	125	0.0240	W61
➢ **R1124NS18L**	R305SH18	1800	1124	13500	0.91×10^6	65	400	1000	60	1.540	0.379	125	0.0240	W61
R1124NS18M	R305SH18	1800	1124	13500	0.91×10^6	70	400	1000	60	1.540	0.379	125	0.0240	W61
➢ **R1124NS20J**	R305SH20	[1] 2000	1124	13500	0.91×10^6	50	400	1000	60	1.540	0.379	125	0.0240	W61
R1124NS20K	R305SH20	[1] 2000	1124	13500	0.91×10^6	60	400	1000	60	1.540	0.379	125	0.0240	W61
➢ **R1124NS20L**	R305SH20	[1] 2000	1124	13500	0.91×10^6	65	400	1000	60	1.540	0.379	125	0.0240	W61
R1124NS20M	R305SH20	[1] 2000	1124	13500	0.91×10^6	70	400	1000	60	1.540	0.379	125	0.0240	W61
➢ **R1124NS21J**	R305SH21	[1] 2100	1124	13500	0.91×10^6	50	400	1000	60	1.540	0.379	125	0.0240	W61
R1124NS21K	R305SH21	[1] 2100	1124	13500	0.91×10^6	60	400	1000	60	1.540	0.379	125	0.0240	W61
➢ **R1124NS21L**	R305SH21	[1] 2100	1124	13500	0.91×10^6	65	400	1000	60	1.540	0.379	125	0.0240	W61
R1124NS21M	R305SH21	[1] 2100	1124	13500	0.91×10^6	70	400	1000	60	1.540	0.379	125	0.0240	W61
➢ **R1127NC32P**	D315CH32	3200	1127	12800	819×10^3	120	1500	1000	60	1.500	0.474	125	0.0220	W11
R1127NC32R	D315CH32	3200	1127	12800	819×10^3	140	1500	1000	60	1.500	0.474	125	0.0220	W11
R1127NC32S	D315CH32	3200	1127	12800	819×10^3	160	1500	1000	60	1.500	0.474	125	0.0220	W11
R1127NC32T	D315CH32	3200	1127	12800	819×10^3	200	1500	1000	60	1.500	0.474	125	0.0220	W11
R1127NC34S	D315CH34	3400	1127	12800	819×10^3	160	1500	1000	60	1.500	0.474	125	0.0220	W11
R1127NC34T	D315CH34	3400	1127	12800	819×10^3	200	1500	1000	60	1.500	0.474	125	0.0220	W11
R1127NC36S	D315CH36	3600	1127	12800	819×10^3	160	1500	1000	60	1.500	0.474	125	0.0220	W11
R1127NC36T	D315CH36	3600	1127	12800	819×10^3	200	1500	1000	60	1.500	0.474	125	0.0220	W11

[1] V_{RRM} 1800 V max

Outlines on pages O-01...O-24

Distributed Gate Thyristors - Capsule Types

WESTCODE

Type		V_{DRM} V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recov. Charge			V_{T0}	r_T	T_{JM}	R_{thJK}	Fig. No.
			T_K =	10 ms ½ sine		@	T_{JM}, 50% Chord			@T_{JM}			180°	
			55°C	$V_R \leq 60\%\ V_{RRM}$		200 V/µs	Q_{ra}	@ I_{TM}	@ -di/dt				Sine	
Part No. ➢ New	Old Part No.	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	°C	K/W	
R1158NS24N	D350SH24	2400	1158	14500	1.05×10^6	100	900	1000	60	1.600	0.400	125	0.0220	W61
R1158NS24P	D350SH24	2400	1158	14500	1.05×10^6	120	900	1000	60	1.600	0.400	125	0.0220	W61
➢ **R1158NS24T**	D350SH24	2400	1158	14500	1.05×10^6	200	900	1000	60	1.600	0.400	125	0.0220	W61
R1158NS26N	D350SH26	2600	1158	14500	1.05×10^6	100	900	1000	60	1.600	0.400	125	0.0220	W61
R1158NS26P	D350SH26	2600	1158	14500	1.05×10^6	120	900	1000	60	1.600	0.400	125	0.0220	W61
➢ **R1158NS26T**	D350SH26	2600	1158	14500	1.05×10^6	200	900	1000	60	1.600	0.400	125	0.0220	W61
R1178NS10E	R325SH10	1000	1178	17000	1.45×10^6	25	170	1000	60	1.600	0.300	125	0.0240	W61
R1178NS10F	R325SH10	1000	1178	17000	1.45×10^6	30	170	1000	60	1.600	0.300	125	0.0240	W61
R1178NS10G	R325SH10	1000	1178	17000	1.45×10^6	35	170	1000	60	1.600	0.300	125	0.0240	W61
R1178NS12E	R325SH12	1200	1178	17000	1.45×10^6	25	170	1000	60	1.600	0.300	125	0.0240	W61
R1178NS12F	R325SH12	1200	1178	17000	1.45×10^6	30	170	1000	60	1.600	0.300	125	0.0240	W61
R1178NS12G	R325SH12	1200	1178	17000	1.45×10^6	35	170	1000	60	1.600	0.300	125	0.0240	W61
R1178NS14E	R325SH14	1400	1178	17000	1.45×10^6	25	170	1000	60	1.600	0.300	125	0.0240	W61
R1178NS14F	R325SH14	1400	1178	17000	1.45×10^6	30	170	1000	60	1.600	0.300	125	0.0240	W61
R1178NS14G	R325SH14	1400	1178	17000	1.45×10^6	35	170	1000	60	1.600	0.300	125	0.0240	W61
R1211NS08C	R350SH08	800	1211	17600	15.48×10^5	20	100	1000	60	1.720	0.230	125	0.0240	W61
R1211NS08D	R350SH08	800	1211	17600	15.48×10^5	20	100	1000	60	1.720	0.230	125	0.0240	W61
R1211NS08E	R350SH08	800	1211	17600	15.48×10^5	25	100	1000	60	1.720	0.230	125	0.0240	W61
R1211NS10C	R350SH10	1000	1211	17600	15.48×10^5	20	100	1000	60	1.720	0.230	125	0.0240	W61
R1211NS10D	R350SH10	1000	1211	17600	15.48×10^5	20	100	1000	60	1.720	0.230	125	0.0240	W61
R1211NS10E	R350SH10	1000	1211	17600	15.48×10^5	25	100	1000	60	1.720	0.230	125	0.0240	W61
R1211NS12C	R350SH12	1200	1211	17600	15.48×10^5	20	100	1000	60	1.720	0.230	125	0.0240	W61
R1211NS12D	R350SH12	1200	1211	17600	15.48×10^5	20	100	1000	60	1.720	0.230	125	0.0240	W61
R1211NS12E	R350SH12	1200	1211	17600	15.48×10^5	25	100	1000	60	1.720	0.230	125	0.0240	W61
➢ **R1271NS08C**	R355SH08	800	1271	18000	1.62×10^6	15	120	1000	60	1.547	0.237	125	0.0240	W61
R1271NS08D	R355SH08	800	1271	18000	1.62×10^6	20	120	1000	60	1.547	0.237	125	0.0240	W61
R1271NS08E	R355SH08	800	1271	18000	1.62×10^6	25	120	1000	60	1.547	0.237	125	0.0240	W61
R1271NS08G	R355SH08	800	1271	18000	1.62×10^6	35	120	1000	60	1.547	0.237	125	0.0240	W61
➢ **R1271NS10C**	R355SH10	1000	1271	18000	1.62×10^6	15	120	1000	60	1.547	0.237	125	0.0240	W61
R1271NS10D	R355SH10	1000	1271	18000	1.62×10^6	20	120	1000	60	1.547	0.237	125	0.0240	W61
R1271NS10E	R355SH10	1000	1271	18000	1.62×10^6	25	120	1000	60	1.547	0.237	125	0.0240	W61
R1271NS10G	R355SH10	1000	1271	18000	1.62×10^6	35	120	1000	60	1.547	0.237	125	0.0240	W61
R1271NS12B	R355SH12	1200	1271	18000	1.62×10^6	12	120	1000	60	1.547	0.237	125	0.0240	W61
➢ **R1271NS12C**	R355SH12	1200	1271	18000	1.62×10^6	15	120	1000	60	1.547	0.237	125	0.0240	W61
R1271NS12D	R355SH12	1200	1271	18000	1.62×10^6	20	120	1000	60	1.547	0.237	125	0.0240	W61
R1271NS12E	R355SH12	1200	1271	18000	1.62×10^6	25	120	1000	60	1.547	0.237	125	0.0240	W61
R1271NS12G	R355SH12	1200	1271	18000	1.62×10^6	35	120	1000	60	1.547	0.237	125	0.0240	W61
➢ **R1275NS14J**	R395SH14	1400	1275	15500	1.20×10^6	50	420	1000	60	1.207	0.342	125	0.0240	W61
➢ **R1275NS14K**	R395SH14	1400	1275	15500	1.20×10^6	60	420	1000	60	1.207	0.342	125	0.0240	W61
R1275NS14L	R395SH14	1400	1275	15500	1.20×10^6	65	420	1000	60	1.207	0.342	125	0.0240	W61
R1275NS14M	R395SH14	1400	1275	15500	1.20×10^6	70	420	1000	60	1.207	0.342	125	0.0240	W61
➢ **R1275NS18J**	R395SH18	1800	1275	15500	1.20×10^6	50	420	1000	60	1.207	0.342	125	0.0240	W61
➢ **R1275NS18K**	R395SH18	1800	1275	15500	1.20×10^6	60	420	1000	60	1.207	0.342	125	0.0240	W61
R1275NS18L	R395SH18	1800	1275	15500	1.20×10^6	65	420	1000	60	1.207	0.342	125	0.0240	W61
R1275NS18M	R395SH18	1800	1275	15500	1.20×10^6	70	420	1000	60	1.207	0.342	125	0.0240	W61
➢ **R1275NS20J**	R395SH20	[1] 2000	1275	15500	1.20×10^6	50	420	1000	60	1.207	0.342	125	0.0240	W61
➢ **R1275NS20K**	R395SH20	[1] 2000	1275	15500	1.20×10^6	60	420	1000	60	1.207	0.342	125	0.0240	W61
R1275NS20L	R395SH20	[1] 2000	1275	15500	1.20×10^6	65	420	1000	60	1.207	0.342	125	0.0240	W61
R1275NS20M	R395SH20	[1] 2000	1275	15500	1.20×10^6	70	420	1000	60	1.207	0.342	125	0.0240	W61
➢ **R1275NS21J**	R395SH21	[1] 2100	1275	15500	1.20×10^6	50	420	1000	60	1.207	0.342	125	0.0240	W61
➢ **R1275NS21K**	R395SH21	[1] 2100	1275	15500	1.20×10^6	60	420	1000	60	1.207	0.342	125	0.0240	W61
R1275NS21L	R395SH21	[1] 2100	1275	15500	1.20×10^6	65	420	1000	60	1.207	0.342	125	0.0240	W61
R1275NS21M	R395SH21	[1] 2100	1275	15500	1.20×10^6	70	420	1000	60	1.207	0.342	125	0.0240	W61
R1279NS22J	D391SH22	2200	1279	14800	1.10×10^6	50	700	1000	60	1.440	0.330	125	0.0220	W61
R1279NS22K	D391SH22	2200	1279	14800	1.10×10^6	60	700	1000	60	1.440	0.330	125	0.0220	W61
➢ **R1279NS22L**	D391SH22	2200	1279	14800	1.10×10^6	65	700	1000	60	1.440	0.330	125	0.0220	W61
R1279NS22M	D391SH22	2200	1279	14800	1.10×10^6	70	700	1000	60	1.440	0.330	125	0.0220	W61
R1279NS25J	D391SH25	2500	1279	14800	1.10×10^6	50	700	1000	60	1.440	0.330	125	0.0220	W61
R1279NS25K	D391SH25	2500	1279	14800	1.10×10^6	60	700	1000	60	1.440	0.330	125	0.0220	W61
➢ **R1279NS25L**	D391SH25	2500	1279	14800	1.10×10^6	65	700	1000	60	1.440	0.330	125	0.0220	W61
R1279NS25M	D391SH25	2500	1279	14800	1.10×10^6	70	700	1000	60	1.440	0.330	125	0.0220	W61

[1] V_{RRM} 1800 V max

Outlines on pages O-01...O-24

Type		V_{DRM} V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recov. Charge			V_{T0}	r_T	T_{JM}	R_{thJK}	Fig. No.
			T_K =	10 ms ½ sine		@	T_{JM}, 50% Chord			@T_{JM}			180°	
Part No.	Old		55°C	$V_R \leq 60\%\ V_{RRM}$		200 V/µs	Q_{ra}	@ I_{TM}	@ -di/dt				Sine	
➢ New	Part No.	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	°C	K/W	
R1280NS18K	D390SH18	1800	1280	14800	1.10×10^6	60	600	1000	60	1.440	0.330	125	0.0220	W61
➢ **R1280NS18L**	D390SH18	1800	1280	14800	1.10×10^6	65	600	1000	60	1.440	0.330	125	0.0220	W61
R1280NS18M	D390SH18	1800	1280	14800	1.10×10^6	70	600	1000	60	1.440	0.330	125	0.0220	W61
R1280NS21K	D390SH21	2100	1280	14800	1.10×10^6	60	600	1000	60	1.440	0.330	125	0.0220	W61
➢ **R1280NS21L**	D390SH21	2100	1280	14800	1.10×10^6	65	600	1000	60	1.440	0.330	125	0.0220	W61
R1280NS21M	D390SH21	2100	1280	14800	1.10×10^6	70	600	1000	60	1.440	0.330	125	0.0220	W61
R1280NS22K	D390SH22	[3] 2200	1280	14800	1.10×10^6	60	600	1000	60	1.440	0.330	125	0.0220	W61
➢ **R1280NS22L**	D390SH22	[3] 2200	1280	14800	1.10×10^6	65	600	1000	60	1.440	0.330	125	0.0220	W61
R1280NS22M	D390SH22	[3] 2200	1280	14800	1.10×10^6	70	600	1000	60	1.440	0.330	125	0.0220	W61
R1280NS25K	D390SH25	[3] 2500	1280	14800	1.10×10^6	60	600	1000	60	1.440	0.330	125	0.0220	W61
➢ **R1280NS25L**	D390SH25	[3] 2500	1280	14800	1.10×10^6	65	600	1000	60	1.440	0.330	125	0.0220	W61
R1280NS25M	D390SH25	[3] 2500	1280	14800	1.10×10^6	70	600	1000	60	1.440	0.330	125	0.0220	W61
R1331NS10B	D450SH10	1000	1331	18200	1.66×10^6	12	80	1000	60	1.450	0.285	125	0.0220	W61
R1331NS10C	D450SH10	1000	1331	18200	1.66×10^6	15	80	1000	60	1.450	0.285	125	0.0220	W61
R1331NS10D	D450SH10	1000	1331	18200	1.66×10^6	20	80	1000	60	1.450	0.285	125	0.0220	W61
R1331NS12B	D450SH12	1200	1331	18200	1.66×10^6	12	80	1000	60	1.450	0.285	125	0.0220	W61
R1331NS12C	D450SH12	1200	1331	18200	1.66×10^6	15	80	1000	60	1.450	0.285	125	0.0220	W61
R1331NS12D	D450SH12	1200	1331	18200	1.66×10^6	20	80	1000	60	1.450	0.285	125	0.0220	W61
➢ **R1446NS08C**	R400SH08	800	1446	19500	1.90×10^6	15	120	1000	60	1.304	0.200	125	0.0240	W61
R1446NS08E	R400SH08	800	1446	19500	1.90×10^6	20	120	1000	60	1.304	0.200	125	0.0240	W61
R1446NS08F	R400SH08	800	1446	19500	1.90×10^6	30	120	1000	60	1.304	0.200	125	0.0240	W61
R1446NS08G	R400SH08	800	1446	19500	1.90×10^6	35	120	1000	60	1.304	0.200	125	0.0240	W61
➢ **R1446NS10C**	R400SH10	1000	1446	19500	1.90×10^6	15	120	1000	60	1.304	0.199	125	0.0240	W61
R1446NS10E	R400SH10	1000	1446	19500	1.90×10^6	20	120	1000	60	1.304	0.199	125	0.0240	W61
R1446NS10F	R400SH10	1000	1446	19500	1.90×10^6	30	120	1000	60	1.304	0.199	125	0.0240	W61
R1446NS10G	R400SH10	1000	1446	19500	1.90×10^6	35	120	1000	60	1.304	0.199	125	0.0240	W61
➢ **R1446NS12C**	R400SH12	1200	1446	19500	1.90×10^6	15	120	1000	60	1.304	0.199	125	0.0240	W61
R1446NS12E	R400SH12	1200	1446	19500	1.90×10^6	20	120	1000	60	1.304	0.199	125	0.0240	W61
R1446NS12F	R400SH12	1200	1446	19500	1.90×10^6	30	120	1000	60	1.304	0.199	125	0.0240	W61
R1446NS12G	R400SH12	1200	1446	19500	1.90×10^6	35	120	1000	60	1.304	0.199	125	0.0240	W61
R1448NS14H	D405SH14	1400	1448	15500	1.20×10^6	40	500	1000	60	1.300	0.250	125	0.0220	W61
R1448NS14J	D405SH14	1400	1448	15500	1.20×10^6	50	500	1000	60	1.300	0.250	125	0.0220	W61
➢ **R1448NS14K**	D405SH14	1400	1448	15500	1.20×10^6	60	500	1000	60	1.300	0.250	125	0.0220	W61
R1448NS14L	D405SH14	1400	1448	15500	1.20×10^6	65	500	1000	60	1.300	0.250	125	0.0220	W61
➢ **R1448NS14M**	D405SH14	1400	1448	15500	1.20×10^6	70	500	1000	60	1.300	0.250	125	0.0220	W61
R1448NS18H	D405SH18	1800	1448	15500	1.20×10^6	40	500	1000	60	1.300	0.250	125	0.0220	W61
R1448NS18J	D405SH18	1800	1448	15500	1.20×10^6	50	500	1000	60	1.300	0.250	125	0.0220	W61
➢ **R1448NS18K**	D405SH18	1800	1448	15500	1.20×10^6	60	500	1000	60	1.300	0.250	125	0.0220	W61
R1448NS18L	D405SH18	1800	1448	15500	1.20×10^6	65	500	1000	60	1.300	0.250	125	0.0220	W61
➢ **R1448NS18M**	D405SH18	1800	1448	15500	1.20×10^6	70	500	1000	60	1.300	0.250	125	0.0220	W61
R1448NS20H	N/A	2000	1448	15500	1.20×10^6	40	500	1000	60	1.300	0.250	125	0.0220	W61
R1448NS20J	N/A	2000	1448	15500	1.20×10^6	50	500	1000	60	1.300	0.250	125	0.0220	W61
➢ **R1448NS20K**	N/A	2000	1448	15500	1.20×10^6	60	500	1000	60	1.300	0.250	125	0.0220	W61
R1448NS20L	N/A	2000	1448	15500	1.20×10^6	65	500	1000	60	1.300	0.250	125	0.0220	W61
➢ **R1448NS20M**	N/A	2000	1448	15500	1.20×10^6	70	500	1000	60	1.300	0.250	125	0.0220	W61
➢ **R2475ZC20M**	R500CH20	2000	2475	31000	4.81×10^6	70	1700	4000	60	1.504	0.174	125	0.0110	W13
R2475ZC20N	R500CH20	2000	2475	31000	4.81×10^6	100	1700	4000	60	1.504	0.174	125	0.0110	W13
➢ **R2475ZC20R**	R500CH20	2000	2475	31000	4.81×10^6	140	1700	4000	60	1.504	0.174	125	0.0110	W13
➢ **R2475ZC28M**	R500CH28	2800	2475	31000	4.81×10^6	70	1700	4000	60	1.504	0.174	125	0.0110	W13
R2475ZC28N	R500CH28	2800	2475	31000	4.81×10^6	100	1700	4000	60	1.504	0.174	125	0.0110	W13
➢ **R2475ZC28R**	R500CH28	2800	2475	31000	4.81×10^6	140	1700	4000	60	1.504	0.174	125	0.0110	W13
➢ **R2475ZD20M**	R500DH20	2000	2475	31000	4.81×10^6	70	1700	4000	60	1.504	0.174	125	0.0110	W46
R2475ZD20N	R500DH20	2000	2475	31000	4.81×10^6	100	1700	4000	60	1.504	0.174	125	0.0110	W46
➢ **R2475ZD20R**	R500DH20	2000	2475	31000	4.81×10^6	140	1700	4000	60	1.504	0.174	125	0.0110	W46
➢ **R2475ZD28M**	R500DH28	2800	2475	31000	4.81×10^6	70	1700	4000	60	1.504	0.174	125	0.0110	W46
R2475ZD28N	R500DH28	2800	2475	31000	4.81×10^6	100	1700	4000	60	1.504	0.174	125	0.0110	W46
➢ **R2475ZD28R**	R500DH28	2800	2475	31000	4.81×10^6	140	1700	4000	60	1.504	0.174	125	0.0110	W46
R2619ZC18J	R600CH18	1800	2619	33800	5.71×10^6	50	1100	4000	60	1.308	0.173	125	0.0110	W13
R2619ZC18K	R600CH18	1800	2619	33800	5.71×10^6	60	1100	4000	60	1.308	0.173	125	0.0110	W13
R2619ZC18L	R600CH18	1800	2619	33800	5.71×10^6	65	1100	4000	60	1.308	0.173	125	0.0110	W13
R2619ZC20J	R600CH20	2000	2619	33800	5.71×10^6	50	1100	4000	60	1.308	0.173	125	0.0110	W13
R2619ZC20K	R600CH20	2000	2619	33800	5.71×10^6	60	1100	4000	60	1.308	0.173	125	0.0110	W13
R2619ZC20L	R600CH20	2000	2619	33800	5.71×10^6	65	1100	4000	60	1.308	0.173	125	0.0110	W13
R2619ZC21J	R600CH21	2100	2619	33800	5.71×10^6	50	1100	4000	60	1.308	0.173	125	0.0110	W13
R2619ZC21K	R600CH21	2100	2619	33800	5.71×10^6	60	1100	4000	60	1.308	0.173	125	0.0110	W13

[3] V_{RRM} 2100 V max

Outlines on pages O-01...O-24

Distributed Gate Thyristors - Capsule Types

WESTCODE

Type		V_{DRM} V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recov. Charge			V_{T0}	r_T	T_{JM}	R_{thJK}	Fig. No.
			T_K =	10 ms ½ sine		@	T_{JM}, 50% Chord			@T_{JM}			180°	
			55°C	$V_R \leq 60\%\ V_{RRM}$		200 V/µs	Q_{ra}	@ I_{TM}	@ -di/dt				Sine	
Part No. ➢ New	Old Part No.	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	°C	K/W	
R2619ZC21L	R600CH21	2100	2619	33800	5.71×10^6	65	1100	4000	60	1.308	0.173	125	0.0110	W13
R2619ZC25J	R600CH25	[3] 2500	2619	33800	5.71×10^6	50	1100	4000	60	1.308	0.173	125	0.0110	W13
R2619ZC25K	R600CH25	[3] 2500	2619	33800	5.71×10^6	60	1100	4000	60	1.308	0.173	125	0.0110	W13
R2619ZC25L	R600CH25	[3] 2500	2619	33800	5.71×10^6	65	1100	4000	60	1.308	0.173	125	0.0110	W13
R2619ZD18J	N/A	1800	2619	33800	5.71×10^6	50	1100	4000	60	1.308	0.173	125	0.0110	W46
R2619ZD18K	N/A	1800	2619	33800	5.71×10^6	60	1100	4000	60	1.308	0.173	125	0.0110	W46
R2619ZD18L	N/A	1800	2619	33800	5.71×10^6	65	1100	4000	60	1.308	0.173	125	0.0110	W46
R2619ZD20J	N/A	2000	2619	33800	5.71×10^6	50	1100	4000	60	1.308	0.173	125	0.0110	W46
R2619ZD20K	N/A	2000	2619	33800	5.71×10^6	60	1100	4000	60	1.308	0.173	125	0.0110	W46
R2619ZD20L	N/A	2000	2619	33800	5.71×10^6	65	1100	4000	60	1.308	0.173	125	0.0110	W46
R2619ZD21J	N/A	[1] 2100	2619	33800	5.71×10^6	50	1100	4000	60	1.308	0.173	125	0.0110	W46
R2619ZD21K	N/A	[1] 2100	2619	33800	5.71×10^6	60	1100	4000	60	1.308	0.173	125	0.0110	W46
R2619ZD21L	N/A	[1] 2100	2619	33800	5.71×10^6	65	1100	4000	60	1.308	0.173	125	0.0110	W46
R2619ZD25J	N/A	[3] 2500	2619	33800	5.71×10^6	50	1100	4000	60	1.308	0.173	125	0.0110	W46
R2619ZD25K	N/A	[3] 2500	2619	33800	5.71×10^6	60	1100	4000	60	1.308	0.173	125	0.0110	W46
R2619ZD25L	N/A	[3] 2500	2619	33800	5.71×10^6	65	1100	4000	60	1.308	0.173	125	0.0110	W46
R2620ZC22J	R610CH22	2200	2620	33800	5.71×10^6	50	1200	4000	60	1.500	0.143	125	0.0110	W13
R2620ZC22K	R610CH22	2200	2620	33800	5.71×10^6	60	1200	4000	60	1.500	0.143	125	0.0110	W13
R2620ZC22L	R610CH22	2200	2620	33800	5.71×10^6	65	1200	4000	60	1.500	0.143	125	0.0110	W13
R2620ZC25J	R610CH25	2500	2620	33800	5.71×10^6	50	1200	4000	60	1.500	0.143	125	0.0110	W13
R2620ZC25K	R610CH25	2500	2620	33800	5.71×10^6	60	1200	4000	60	1.500	0.143	125	0.0110	W13
R2620ZC25L	R610CH25	2500	2620	33800	5.71×10^6	65	1200	4000	60	1.500	0.143	125	0.0110	W13
R2620ZD22J	N/A	2200	2620	33800	5.71×10^6	50	1200	4000	60	1.500	0.143	125	0.0110	W46
R2620ZD22K	N/A	2200	2620	33800	5.71×10^6	60	1200	4000	60	1.500	0.143	125	0.0110	W46
R2620ZD22L	N/A	2200	2620	33800	5.71×10^6	65	1200	4000	60	1.500	0.143	125	0.0110	W46
R2620ZD25J	N/A	2500	2620	33800	5.71×10^6	50	1200	4000	60	1.500	0.143	125	0.0110	W46
R2620ZD25K	N/A	2500	2620	33800	5.71×10^6	60	1200	4000	60	1.500	0.143	125	0.0110	W46
R2620ZD25L	N/A	2500	2620	33800	5.71×10^6	65	1200	4000	60	1.500	0.143	125	0.0110	W46
R2714ZC14H	R800CH14	1400	2714	35600	6.34×10^6	40	700	4000	60	1.250	0.163	125	0.0110	W13
R2714ZC14J	R800CH14	1400	2714	35600	6.34×10^6	50	700	4000	60	1.250	0.163	125	0.0110	W13
➢ **R2714ZC14K**	R800CH14	1400	2714	35600	6.34×10^6	60	700	4000	60	1.250	0.163	125	0.0110	W13
R2714ZC16H	R800CH16	1600	2714	35600	6.34×10^6	40	700	4000	60	1.250	0.163	125	0.0110	W13
R2714ZC16J	R800CH16	1600	2714	35600	6.34×10^6	50	700	4000	60	1.250	0.163	125	0.0110	W13
➢ **R2714ZC16K**	R800CH16	1600	2714	35600	6.34×10^6	60	700	4000	60	1.250	0.163	125	0.0110	W13
R2714ZC18H	R800CH18	1800	2714	35600	6.34×10^6	40	700	4000	60	1.250	0.163	125	0.0110	W13
R2714ZC18J	R800CH18	1800	2714	35600	6.34×10^6	50	700	4000	60	1.250	0.163	125	0.0110	W13
➢ **R2714ZC18K**	R800CH18	1800	2714	35600	6.34×10^6	60	700	4000	60	1.250	0.163	125	0.0110	W13
R2714ZD14H	R800CH14	1400	2714	35600	6.34×10^6	40	700	4000	60	1.250	0.163	125	0.0110	W13
R2714ZD14J	R800CH14	1400	2714	35600	6.34×10^6	50	700	4000	60	1.250	0.163	125	0.0110	W13
➢ **R2714ZD14K**	R800CH14	1400	2714	35600	6.34×10^6	60	700	4000	60	1.250	0.163	125	0.0110	W13
R2714ZD16H	N/A	1600	2714	35600	6.34×10^6	40	700	4000	60	1.250	0.163	125	0.0110	W46
R2714ZD16J	N/A	1600	2714	35600	6.34×10^6	50	700	4000	60	1.250	0.163	125	0.0110	W46
➢ **R2714ZD16K**	N/A	1600	2714	35600	6.34×10^6	60	700	4000	60	1.250	0.163	125	0.0110	W46
R2714ZD18H	N/A	1800	2714	35600	6.34×10^6	40	700	4000	60	1.250	0.163	125	0.0110	W46
R2714ZD18J	N/A	1800	2714	35600	6.34×10^6	50	700	4000	60	1.250	0.163	125	0.0110	W46
➢ **R2714ZD18K**	N/A	1800	2714	35600	6.34×10^6	60	700	4000	60	1.250	0.163	125	0.0110	W46
➢ **R3047TC24K**	R1863CH24	2400	3047	50000	12.5×10^6	60	1400	4000	60	1.580	0.170	125	0.0080	W14
➢ **R3047TC24L**	R1863CH24	2400	3047	50000	12.5×10^6	65	1400	4000	60	1.580	0.170	125	0.0080	W14
➢ **R3047TC24M**	R1863CH24	2400	3047	50000	12.5×10^6	70	1400	4000	60	1.580	0.170	125	0.0080	W14
R3047TC24N	R1863CH24	2400	3047	50000	12.5×10^6	100	1400	4000	60	1.580	0.170	125	0.0080	W14
R3047TC24R	R1863CH24	2400	3047	50000	12.5×10^6	140	1400	4000	60	1.580	0.170	125	0.0080	W14
R3047TC24T	R1863CH24	2400	3047	50000	12.5×10^6	200	1400	4000	60	1.580	0.170	125	0.0080	W14
➢ **R3047TC28K**	R1863CH28	2800	3047	50000	12.5×10^6	60	1400	4000	60	1.580	0.170	125	0.0080	W14
➢ **R3047TC28K**	R1863CH28	2800	3047	50000	12.5×10^6	65	1400	4000	60	1.580	0.170	125	0.0080	W14
➢ **R3047TC28M**	R1863CH28	2800	3047	50000	12.5×10^6	70	1400	4000	60	1.580	0.170	125	0.0080	W14
R3047TC28N	R1863CH28	2800	3047	50000	12.5×10^6	100	1400	4000	60	1.580	0.170	125	0.0080	W14
R3047TC28R	R1863CH28	2800	3047	50000	12.5×10^6	140	1400	4000	60	1.580	0.170	125	0.0080	W14
R3047TC28T	R1863CH28	2800	3047	50000	12.5×10^6	200	1400	4000	60	1.580	0.170	125	0.0080	W14
➢ **R3047TD24K**	R1863DH24	2400	3047	50000	12.5×10^6	60	1400	4000	60	1.580	0.170	125	0.0080	W51
➢ **R3047TD24K**	R1863DH24	2400	3047	50000	12.5×10^6	65	1400	4000	60	1.580	0.170	125	0.0080	W51
➢ **R3047TD24M**	R1863DH24	2400	3047	50000	12.5×10^6	70	1400	4000	60	1.580	0.170	125	0.0080	W51
R3047TD24N	R1863DH24	2400	3047	50000	12.5×10^6	100	1400	4000	60	1.580	0.170	125	0.0080	W51
R3047TD24R	R1863DH24	2400	3047	50000	12.5×10^6	140	1400	4000	60	1.580	0.170	125	0.0080	W51
R3047TD24T	R1863DH24	2400	3047	50000	12.5×10^6	200	1400	4000	60	1.580	0.170	125	0.0080	W51

[1] V_{RRM} 1800 V max; [3] V_{RRM} 2100 V max

Outlines on pages O-01...O-24

Type		V_{DRM} V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recov. Charge			V_{T0}	r_T	T_{JM}	R_{thJK}	Fig. No.
			T_K =	10 ms ½ sine		@	T_{JM}, 50% Chord			@T_{JM}			180°	
Part No.	Old		55°C	$V_R \leq 60\%\ V_{RRM}$		200 V/µs	Q_{ra}	@ I_{TM}	@ -di/dt				Sine	
➢ New	Part No.	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	°C	K/W	
➢ **R3047TD28K**	R1863DH28	2800	3047	50000	12.5×10^6	60	1400	4000	60	1.580	0.170	125	0.0080	W51
➢ **R3047TD28L**	R1863DH28	2800	3047	50000	12.5×10^6	65	1400	4000	60	1.580	0.170	125	0.0080	W51
➢ **R3047TD28M**	R1863DH28	2800	3047	50000	12.5×10^6	70	1400	4000	60	1.580	0.170	125	0.0080	W51
R3047TD28N	R1863DH28	2800	3047	50000	12.5×10^6	100	1400	4000	60	1.580	0.170	125	0.0080	W51
R3047TD28R	R1863DH28	2800	3047	50000	12.5×10^6	140	1400	4000	60	1.580	0.170	125	0.0080	W51
R3047TD28T	R1863DH28	2800	3047	50000	12.5×10^6	200	1400	4000	60	1.580	0.170	125	0.0080	W51
R3370ZC10C	R1200CH10	1000	3370	43900	9.64×10^6	15	240	4000	60	1.353	0.064	125	0.0110	W13
R3370ZC10D	R1200CH10	1000	3370	43900	9.64×10^6	20	240	4000	60	1.353	0.064	125	0.0110	W13
R3370ZC10E	R1200CH10	1000	3370	43900	9.64×10^6	25	240	4000	60	1.353	0.064	125	0.0110	W13
R3370ZC12C	R1200CH12	1200	3370	43900	9.64×10^6	15	240	4000	60	1.353	0.064	125	0.0110	W13
R3370ZC12D	R1200CH12	1200	3370	43900	9.64×10^6	20	240	4000	60	1.353	0.064	125	0.0110	W13
R3370ZC12E	R1200CH12	1200	3370	43900	9.64×10^6	25	240	4000	60	1.353	0.064	125	0.0110	W13
R3370ZD10C	N/A	1000	3370	43900	9.64×10^6	15	240	4000	60	1.353	0.064	125	0.0110	W46
R3370ZD10D	N/A	1000	3370	43900	9.64×10^6	20	240	4000	60	1.353	0.064	125	0.0110	W46
R3370ZD10E	N/A	1000	3370	43900	9.64×10^6	25	240	4000	60	1.353	0.064	125	0.0110	W46
R3370ZD12C	N/A	1200	3370	43900	9.64×10^6	15	240	4000	60	1.353	0.064	125	0.0110	W46
R3370ZD12D	N/A	1200	3370	43900	9.64×10^6	20	240	4000	60	1.353	0.064	125	0.0110	W46
R3370ZD12E	N/A	1200	3370	43900	9.64×10^6	25	240	4000	60	1.353	0.064	125	0.0110	W46
R3559TC16K	R1966CH16	1600	3559	38900	7.57×10^6	60	750	4000	60	1.173	0.155	125	0.0080	W14
➢ **R3559TC16M**	R1966CH16	1600	3559	38900	7.57×10^6	70	750	4000	60	1.173	0.155	125	0.0080	W14
R3559TC16N	R1966CH16	1600	3559	38900	7.57×10^6	100	750	4000	60	1.173	0.155	125	0.0080	W14
R3559TC16R	R1966CH16	1600	3559	38900	7.57×10^6	140	750	4000	60	1.173	0.155	125	0.0080	W14
R3559TC16T	R1966CH16	1600	3559	38900	7.57×10^6	200	750	4000	60	1.173	0.155	125	0.0080	W14
R3559TC20K	R1966CH20	2000	3559	38900	7.57×10^6	60	750	4000	60	1.173	0.155	125	0.0080	W14
➢ **R3559TC20M**	R1966CH20	2000	3559	38900	7.57×10^6	70	750	4000	60	1.173	0.155	125	0.0080	W14
R3559TC20N	R1966CH20	2000	3559	38900	7.57×10^6	100	750	4000	60	1.173	0.155	125	0.0080	W14
R3559TC20R	R1966CH20	2000	3559	38900	7.57×10^6	140	750	4000	60	1.173	0.155	125	0.0080	W14
R3559TC20T	R1966CH20	2000	3559	38900	7.57×10^6	200	750	4000	60	1.173	0.155	125	0.0080	W14
R3559TD16K	R1966DH16	1600	3559	38900	7.57×10^6	60	750	4000	60	1.173	0.155	125	0.0080	W51
➢ **R3559TD16M**	R1966DH16	1600	3559	38900	7.57×10^6	70	750	4000	60	1.173	0.155	125	0.0080	W51
R3559TD16N	R1966DH16	1600	3559	38900	7.57×10^6	100	750	4000	60	1.173	0.155	125	0.0080	W51
R3559TD16R	R1966DH16	1600	3559	38900	7.57×10^6	140	750	4000	60	1.173	0.155	125	0.0080	W51
R3559TD16T	R1966DH16	1600	3559	38900	7.57×10^6	200	750	4000	60	1.173	0.155	125	0.0080	W51
R3559TD20K	R1966DH20	2000	3559	38900	7.57×10^6	60	750	4000	60	1.173	0.155	125	0.0080	W51
➢ **R3559TD20M**	R1966DH20	2000	3559	38900	7.57×10^6	70	750	4000	60	1.173	0.155	125	0.0080	W51
R3559TD20N	R1966DH20	2000	3559	38900	7.57×10^6	100	750	4000	60	1.173	0.155	125	0.0080	W51
R3559TD20R	R1966DH20	2000	3559	38900	7.57×10^6	140	750	4000	60	1.173	0.155	125	0.0080	W51
R3559TD20T	R1966DH20	2000	3559	38900	7.57×10^6	200	750	4000	60	1.173	0.155	125	0.0080	W51
➢ **R3636EC16K**	N/A	1600	3636	38900	7.57×10^6	60	750	4000	60	1.173	0.155	125	0.0075	W57
➢ **R3636EC16M**	N/A	1600	3636	38900	7.57×10^6	70	750	4000	60	1.173	0.155	125	0.0075	W57
➢ **R3636EC16N**	N/A	1600	3636	38900	7.57×10^6	100	750	4000	60	1.173	0.155	125	0.0075	W57
➢ **R3636EC16R**	N/A	1600	3636	38900	7.57×10^6	140	750	4000	60	1.173	0.155	125	0.0075	W57
➢ **R3636EC16T**	N/A	1600	3636	38900	7.57×10^6	200	750	4000	60	1.173	0.155	125	0.0075	W57
➢ **R3636EC20K**	N/A	2000	3636	38900	7.57×10^6	60	750	4000	60	1.173	0.155	125	0.0075	W57
➢ **R3636EC20M**	N/A	2000	3636	38900	7.57×10^6	70	750	4000	60	1.173	0.155	125	0.0075	W57
➢ **R3636EC20N**	N/A	2000	3636	38900	7.57×10^6	100	750	4000	60	1.173	0.155	125	0.0075	W57
➢ **R3636EC20R**	N/A	2000	3636	38900	7.57×10^6	140	750	4000	60	1.173	0.155	125	0.0075	W57
➢ **R3636EC20T**	N/A	2000	3636	38900	7.57×10^6	200	750	4000	60	1.173	0.155	125	0.0075	W57
R3708FC40V	R1386CH40	[2] 4000	3708	50000	12.5×10^6	250	4000	4000	60	1.473	0.156	125	0.0065	W15
R3708FC40W	R1386CH40	[2] 4000	3708	50000	12.5×10^6	300	4000	4000	60	1.473	0.156	125	0.0065	W15
R3708FC45V	R1386CH45	[2] 4500	3708	50000	12.5×10^6	250	4000	4000	60	1.473	0.156	125	0.0065	W15
R3708FC45W	R1386CH45	[2] 4500	3708	50000	12.5×10^6	300	4000	4000	60	1.473	0.156	125	0.0065	W15
R3708FD40V	N/A	[2] 4000	3708	50000	12.5×10^6	250	4000	4000	60	1.473	0.156	125	0.0065	W48
R3708FD40W	N/A	[2] 4000	3708	50000	12.5×10^6	300	4000	4000	60	1.473	0.156	125	0.0065	W48
R3708FD45V	N/A	[2] 4500	3708	50000	12.5×10^6	250	4000	4000	60	1.473	0.156	125	0.0065	W48
R3708FD45W	N/A	[2] 4500	3708	50000	12.5×10^6	300	4000	4000	60	1.473	0.156	125	0.0065	W48
R3968FC20K	N/A	2000	3968	66000	21.78×10^6	60	1700	4000	60	1.398	1.398	125	0.0065	W15
R3968FC20L	N/A	2000	3968	66000	21.78×10^6	65	1700	4000	60	1.398	1.398	125	0.0065	W15
R3968FC20M	N/A	2000	3968	66000	21.78×10^6	70	1700	4000	60	1.398	1.398	125	0.0065	W15
R3968FC20N	N/A	2000	3968	66000	21.78×10^6	100	1700	4000	60	1.398	1.398	125	0.0065	W15
➢ **R3968FC20R**	N/A	2000	3968	66000	21.78×10^6	140	1700	4000	60	1.398	1.398	125	0.0065	W15
➢ **R3968FC20T**	N/A	2000	3968	66000	21.78×10^6	200	1700	4000	60	1.398	1.398	125	0.0065	W15

[2] V_{RRM} 3000 V max

Outlines on pages O-01...O-24

Distributed Gate Thyristors - Capsule Types

WESTCODE

Type		V_{DRM} V_{RRM}	I_{TAV}	I_{TSM}	I^2t	t_q	Typ. Reverse Recov. Charge			V_{T0}	r_T	T_{JM}	R_{thJK}	Fig. No.
			T_K =	10 ms ½ sine		@	T_{JM}, 50% Chord			@T_{JM}			180°	
			55°C	$V_R \leq 60\%\ V_{RRM}$		200 V/µs	Q_{ra}	@ I_{TM}	@ -di/dt				Sine	
Part No. ➢ New	Old Part No.	V	A	A	A^2s	µs	µC	A	A/µs	V	mΩ	°C	K/W	
R3968FC24K	RX075FC24K	2400	3968	66000	21.78×10^6	60	1700	4000	60	1.398	1.398	125	0.0065	W15
R3968FC24L	RX075FC24L	2400	3968	66000	21.78×10^6	65	1700	4000	60	1.398	1.398	125	0.0065	W15
R3968FC24M	RX075FC24M	2400	3968	66000	21.78×10^6	70	1700	4000	60	1.398	1.398	125	0.0065	W15
R3968FC24N	RX075FC24N	2400	3968	66000	21.78×10^6	100	1700	4000	60	1.398	1.398	125	0.0065	W15
➢ **R3968FC24R**	RX075FC24N	2400	3968	66000	21.78×10^6	140	1700	4000	60	1.398	1.398	125	0.0065	W15
➢ **R3968FC24T**	RX075FC24N	2400	3968	66000	21.78×10^6	200	1700	4000	60	1.398	1.398	125	0.0065	W15
R3968FC28K	RX075FC28K	2800	3968	66000	21.78×10^6	60	1700	4000	60	1.398	1.398	125	0.0065	W15
R3968FC28L	RX075FC28L	2800	3968	66000	21.78×10^6	65	1700	4000	60	1.398	1.398	125	0.0065	W15
R3968FC28M	RX075FC28M	2800	3968	66000	21.78×10^6	70	1700	4000	60	1.398	1.398	125	0.0065	W15
R3968FC28N	RX075FC28N	2800	3968	66000	21.78×10^6	100	1700	4000	60	1.398	1.398	125	0.0065	W15
➢ **R3968FC28R**	RX075FC28N	2800	3968	66000	21.78×10^6	140	1700	4000	60	1.398	1.398	125	0.0065	W15
➢ **R3968FC28T**	RX075FC28N	2800	3968	66000	21.78×10^6	200	1700	4000	60	1.398	1.398	125	0.0065	W15
R3968FD20K	N/A	2000	3968	66000	21.78×10^6	60	1700	4000	60	1.398	1.398	125	0.0065	W48
R3968FD20L	N/A	2000	3968	66000	21.78×10^6	65	1700	4000	60	1.398	1.398	125	0.0065	W48
R3968FD20M	N/A	2000	3968	66000	21.78×10^6	70	1700	4000	60	1.398	1.398	125	0.0065	W48
R3968FD20N	N/A	2000	3968	66000	21.78×10^6	100	1700	4000	60	1.398	1.398	125	0.0065	W48
➢ **R3968FD20R**	N/A	2000	3968	66000	21.78×10^6	140	1700	4000	60	1.398	1.398	125	0.0065	W48
➢ **R3968FD20T**	N/A	2000	3968	66000	21.78×10^6	200	1700	4000	60	1.398	1.398	125	0.0065	W48
R3968FD24K	RX075FD24K	2400	3968	66000	21.78×10^6	60	1700	4000	60	1.398	1.398	125	0.0065	W48
R3968FD24L	RX075FD24L	2400	3968	66000	21.78×10^6	65	1700	4000	60	1.398	1.398	125	0.0065	W48
R3968FD24M	RX075FD24M	2400	3968	66000	21.78×10^6	70	1700	4000	60	1.398	1.398	125	0.0065	W48
R3968FD24N	RX075FD24N	2400	3968	66000	21.78×10^6	100	1700	4000	60	1.398	1.398	125	0.0065	W48
➢ **R3968FD24R**	RX075FD24N	2400	3968	66000	21.78×10^6	140	1700	4000	60	1.398	1.398	125	0.0065	W48
➢ **R3968FD24T**	RX075FD24N	2400	3968	66000	21.78×10^6	200	1700	4000	60	1.398	1.398	125	0.0065	W48
R3968FD28K	RX075FD28K	2800	3968	66000	21.78×10^6	60	1700	4000	60	1.398	1.398	125	0.0065	W48
R3968FD28L	RX075FD28L	2800	3968	66000	21.78×10^6	65	1700	4000	60	1.398	1.398	125	0.0065	W48
R3968FD28M	RX075FD28M	2800	3968	66000	21.78×10^6	70	1700	4000	60	1.398	1.398	125	0.0065	W48
R3968FD28N	RX075FD28N	2800	3968	66000	21.78×10^6	100	1700	4000	60	1.398	1.398	125	0.0065	W48
➢ **R3968FD28R**	RX075FD28N	2800	3968	66000	21.78×10^6	140	1700	4000	60	1.398	1.398	125	0.0065	W48
➢ **R3968FD28T**	RX075FD28N	2800	3968	66000	21.78×10^6	200	1700	4000	60	1.398	1.398	125	0.0065	W48

[1] Denotes V_{RRM} 1800 V max.

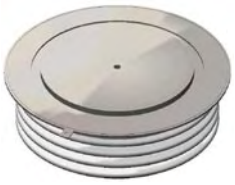
[2] Denotes V_{RRM} 3000 V max.

[3] Denotes V_{RRM} 2100 V max.

Outlines on pages O-01...O-24

W9 Weight 90 g

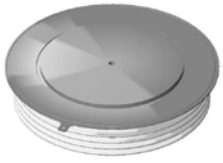
W11 Weight 510 g



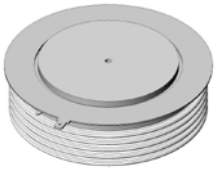
W13 Weight 1700 g

W14 Weight 1300 g

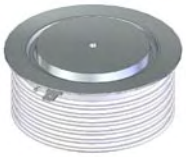
W15 Weight 2800 g



W46 Weight 1200 g



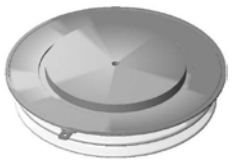
W51 Weight 1700 g



W57 Weight 1230 g

W60 Weight 340 g

W61 Weight 510 g



W62 Weight 1000 g

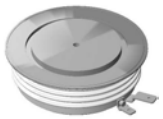
Gate Turn-Off Thyristors - Capsule Type

WESTCODE

We offer a broad range of high specification devices incorporating advanced features such as buffer layer, fine pattern and transparent emitter technologies. Devices with voltage ratings to 6 kV (3.8 kV DC link) and controllable current ratings of up to 4 kA are available to meet the toughest demands in applications such as traction propulsion and auxiliaries, AC industrial drives, FACT's and active VAr controllers. Offering both symmetrical devices for applications with a reverse blocking requirement e.g. current sourced inverters and anode shorted devices for applications where no reverse blocking requirement exists e.g. voltage sourced inverters. Gate Turn-off Thyristors are still the component of choice when it comes to very high power converters and we remain totally commited to this technology for the foreseeable future

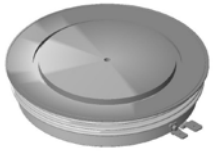
Type		V_{DRM}	V_{RRM}	I_{TGQM} @C_S		I_{TAV}	I_{TSM}	I^2t	Typ. Switching Times		V_T	T_{JM}	R_{thJK}	Fig.
		V_{GK} = -2 V				T_K = 55°C	10 ms ½ sine $V_R \leq 10$ V		t_{gt}	t_{gq}	I_T = I_{TGQM}		180° Sine	No.
Part No. ➢ New	Old Part No.	V	V	A	µF	A	kA	kA²s	µs	µs	V	°C	K/W	
S0500KC200	N/A	2000	2000	500	1.0	330	4.0	80 x 10^3	3.5	10	2.50	125	0.065	W34
S0500KC20Y	N/A	2000	100	500	1.0	330	4.0	80 x 10^3	3.5	10	2.50	125	0.065	W34
S0500KC25D	N/A	2500	2000	500	1.0	330	4.0	80 x 10^3	3.5	10	2.50	125	0.065	W34
S0500KC25Y	N/A	2500	100	500	1.0	330	4.0	80 x 10^3	3.5	10	2.50	125	0.065	W34
S0700KC140	N/A	1400	1400	700	1.5	430	5.0	125 × 10^3	3.0	10	2.20	125	0.065	W34
S0700KC14Y	N/A	1400	100	700	1.5	430	5.0	125 × 10^3	3.0	10	2.20	125	0.065	W34
S0700KC17D	N/A	1700	1360	700	1.5	430	5.0	125 × 10^3	3.0	10	2.20	125	0.065	W34
S0700KC17Y	N/A	1700	100	700	1.5	430	5.0	125 × 10^3	3.0	10	2.20	125	0.065	W34
➢ **S1000NC300**	N/A	3000	3000	1000	2.0	600	10.0	500 x 10^3	5.0	19	3.50	125	0.027	W36
➢ **S1000NC30Y**	N/A	3000	100	1000	2.0	600	10.0	500 x 10^3	5.0	19	3.50	125	0.027	W36
➢ **S1000NC36D**	N/A	3600	2880	1000	2.0	600	10.0	500 x 10^3	5.0	19	3.50	125	0.027	W36
➢ **S1000NC36Y**	N/A	3600	100	1000	2.0	600	10.0	500 x 10^3	5.0	19	3.50	125	0.027	W36
S1200NC200	N/A	2000	2000	1200	3.0	790	13.0	840 × 10^3	4.5	19	2.70	125	0.027	W36
S1200NC20Y	N/A	2000	100	1200	3.0	790	13.0	840 × 10^3	4.5	19	2.70	125	0.027	W36
S1200NC25D	N/A	2500	2000	1200	3.0	790	13.0	840 × 10^3	4.5	19	2.70	125	0.027	W36
S1200NC25Y	N/A	2500	100	1200	3.0	790	13.0	840 × 10^3	4.5	19	2.70	125	0.027	W36
H0500KC200	N/A	2000	2000	500	1.0	280	3.0	45 × 10^3	2.0	5	3.20	125	0.065	W34
H0500KC20Y	N/A	2000	100	500	1.0	280	3.0	45 × 10^3	2.0	5	3.20	125	0.065	W34
H0500KC25D	N/A	2500	2000	500	1.0	280	3.0	45 × 10^3	2.0	5	3.20	125	0.065	W34
H0500KC25Y	N/A	2500	100	500	1.0	280	3.0	45 × 10^3	2.0	5	3.20	125	0.065	W34
H0700KC140	N/A	1400	1360	700	1.5	360	4.0	80 × 10^3	3.0	5	2.75	125	0.065	W34
H0700KC14Y	N/A	1400	100	700	1.5	360	4.0	80 × 10^3	3.0	5	2.75	125	0.065	W34
H0700KC17D	N/A	1700	1360	700	1.5	360	4.0	80 × 10^3	3.0	5	2.75	125	0.065	W34
H0700KC17Y	N/A	1700	100	700	1.5	360	4.0	80 × 10^3	3.0	5	2.75	125	0.065	W34
H1200NC200	N/A	2000	2000	1200	3.0	670	10.5	550 × 10^3	3.0	12	3.30	125	0.027	W36
H1200NC20Y	N/A	2000	100	1200	3.0	670	10.5	550 × 10^3	3.0	12	3.30	125	0.027	W36
H1200NC25D	N/A	2500	2000	1200	3.0	670	10.5	550 × 10^3	3.0	12	3.30	125	0.027	W36
H1200NC25Y	N/A	2500	100	1200	3.0	670	10.5	550 × 10^3	3.0	12	3.30	125	0.027	W36
G1000NC450	N/A	4500	18	1000	2.0	545	8.0	320 x 10^3	4.5	14	4.00	125	0.027	W30
➢ **G1000QC400**	GX152QC400	4000	18	1000	1.0	443	6.5	211.25 x10^3	3.0	13	4.00	125	0.038	W35
➢ **G1000QC450**	GX152QC450	4500	18	1000	1.0	443	6.5	211.25 x10^3	3.0	13	4.00	125	0.038	W35
➢ **GX185QC250**	N/A	2500	18	1000	1.0	In Development						125	0.038	W35
G2000VC250	WG20025SN	2500	18	2000	4.0	1020	16.0	1.28 x 10^6	5.0	24	2.80	125	0.022	W31
G2000VC450	WG20045SN	4500	18	2000	4.0	870	13.0	845 x 10^3	8.0	25	3.50	125	0.022	W31
G3000TC250	WG30025SN	2500	18	3000	5.0	1640	30.0	4.50 x 10^6	3.0	25	2.50	125	0.015	W32
G3000TC450	WG30045SN	4500	18	3000	6.0	1180	24.0	2.88 x 10^6	9.0	28	4.00	125	0.015	W32
G3000TC600	WG30060SN	6000	18	3000	3.0	1100	24.0	2.88 x 10^6	7.5	28	3.50	110	0.015	W32
G4000EC450	WG40045SN	4500	18	4000	6.0	1270	25.0	3.13 x 10^6	7.5	28	4.40	125	0.014	W33

Outlines on pages O-01...O-24

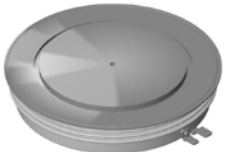


W30 Weight 600 g

W31 Weight 800 g



W32 Weight 1500 g



W33 Weight 1500 g

W34 Weight 120 g

W35 Weight 300 g

W36 Weight 500 g

Westcode has long since been at the forefront of solid state pulsed power technology, offering custom solutions to complex pulsed power problems. Pulse thyristors are, in essence, optimised Gate Turn-off Thyristors and as such we are able to offer a flexible range of parts depending on customer needs.

Devices with voltage ratings to 2.5 kV, pulsed currents to 150 kA peak and di/dt capabilities to over 30 kA/µs are available. A selection of preferred parts is shown here, for other parts and technical support please contact the factory.

Pulse Thyristors - Capsule Types

Type New Part No.	Old Part No.	V_{DRM} V_{GK} = -2 V V	V_{RRM} V	V_{DC} V_{GK} = -2 V V	I_{PULSE} kA	di/dt_{cr} kA/µs	V_{T0} @$T_{J\,max}$ V	r_T @$T_{J\,max}$ mΩ	$T_{J\,max}$ °C	R_{thJK} DC 180° sine K/W	Fig. No.
➢ **Y200CKC250**	Y2002KC250	2500	2000	1500	20	5	1.216	2.196	125	0.065	W34
➢ **Y500CKC250**	Y5002NC250	2500	2000	1500	50	11	1.755	1.122	125	0.027	W36

Outlines on pages O-01...O-24

W34 Weight 120 g

W36 Weight 500 g

Features:

- V_{DC} up to 30kV
- Vpeak up to 50kV
- Peak current up to 140kA
- Symmetric blocking, Asymmetric blocking and reverse conducting types
- Press-pack IGBT, Pulse Thyristor and Fast Thyristor based designs

Typical Applications:

- Laser, X-ray pulsers
- Ozone generators
- Electrostatic precipitators
- PUV and PEF Sterilisers
- Electromagnetic Launchers
- Metal Forming
- Medical
- Military
- Particle physics and accelerators

Integrated Switch Assembly

High Voltage IGBT Gate Drive Units C0030BG400

The C0030BG400 is a single channel 30 A peak rated gate drive unit (GDU), suitable for low and high side applications with DC link voltages of up to 3.5 kV (5 kV available on request) and with dv/dt immunity of over 100 kV/µs.

This GDU performs all of the necessary supervisory functions including under voltage lockout and SCSOA protection with user configurable response and feedback. The unit requires a simple 15 V DC power supply and features fibre optic command and feedback signals.
This GDU is capable of driving virtually all IGBTs including our range of press-pack devices at frequencies from DC up to 20 kHz with no duty cycle limitations.

Options include standard variants set up for use with each of Westcode's range of IGBTs (see table) and the core module for integration into end user PCBs. Additionally our application engineers can develop semi-custom solutions based around the standard core module.

IGBT Part No.	$R_{g(on)}$ Ω	$Rg_{(off)}$ Ω	GDU Part No.
T0360NA25A	33	18	C0030BG400SAA
T0500NA25E	22	15	C0030BG400SAB
T1200TA25A	4.7	6.8	C0030BG400SAC
T1500TA25E	3.3	6.8	C0030BG400SAD
T0160NA45A	15	8.2	C0030BG400SAK
T0240NA45E	10	8.2	C0030BG400SAL
T0600TA45A	5.6	3.3	C0030BG400SAM
T0800TA45E	4.7	3.3	C0030BG400SAN
T0900EA45A	4.7	2.7	C0030BG400SAP
T1200EA45E	3.3	2.2	C0030BG400SAR
T1800GA45A	3.3	2.2	C0030BG400SAS
T2400GA45E	2.2	1.5	C0030BG400SAT

Features

- 30 A peak drive current (500 ns rise time)
- 10 kV AC rms isolation test
- Partial discharge free up to 4 kV AC rms
- 100 kV/µs dv/dt immunity
- Temperature range -40°C up to +70°C (-55°C up to +80°C available)
- ±15 V gate drive voltage
- Standard HP Versatile Link™ Fibre Optic links
- Status feedback signal
- User configurable SCSOA protection

The launch of this new complementary product demonstrates our continued commitment to provide our customers with complete solutions for power electronics and further strengthens our assemblies' capability. This GDU also provides our customers with a rapid route to prototype with our range of high voltage press-pack IGBTs without having to solve the additional problems associated with high isolation voltage gate drives.

As a pioneer of Press-Pack IGBT technology, we are able to offer a range of class leading devices with voltage ratings of 1.7 kV (900 V DC link), 2.5 kV (1.25 kV DC link) and 4.5 kV (2.8 kV DC link). The construction of these devices is totally free from wire and solder bonds which all but eliminates the problems of mechanical fatigue associated with conventional modules. Internal stray inductance in both the gate connections and emitter connections is vastly reduced when compared to conventional modules leading to improved ruggedness and short circuit behavior, which is further enhanced by direct cooling of the emitter side of the chip

These devices are based on a state of the art punch through (PT) process, which yields exceptional values $V_{CE(sat)}$ and quiet switching behavior despite the high voltage ratings, yet the devices feature a positive temperature coefficient making them suitable for reliable parallel operation. Devices available with or without integral anti-parallel diode – a range of complimentary extra fast recovery diodes optimised for use with these IGBTs are available now with more based on exciting new technologies coming soon, please contact your representative for more information.

They exhibit exceptional power cycling performance – typically an order of magnitude better than modules – making them highly suited to applications such as induction heating and mass transits where there are repeated cyclic power demands.They are explosion rated making them a good choice in critical applications such as mining, the petro-chemica industry, and transportation applications. They have a stable short circuit failure mode which, as well as safety benefits, makes them an ideal choice for medium and high voltage applications where series connection is required. Press-pack construction is the obvious choice where series connection is needed and the short circuit failure mode allows for the design in of n+ redundancy.

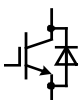
Typical examples include HVDC, Active VAr controllers and medium voltage drives. They are largely backwardly compatible with standard 2.5 kV and 4.5 kV GTOs in many applications such as AC drives. This makes these parts a simple and economical path to upgrade or refurbish equipment that previously used GTOs, such as locomotives or medium voltage drives.They are suitable for all cooling options including direct liquid immersion. Complementary gate drives, mounting clamps and passive components available.

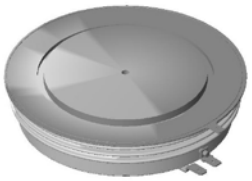
Press-Pack IGBTs - Capsule Types

Outlines on pages O-01...O-24

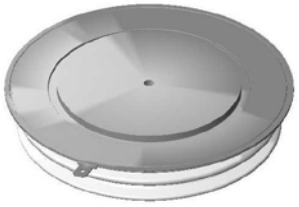
Type / Part No.	V_{CES}	I_C	I_{CM}	$V_{CE(sat)}$ $I_F = I_C$	IGBT Switching Typical E_{ON}	E_{OFF}	V_F $I_F = I_C$	Diode Recovery Typical I_{rm}	t_{rr}	Q_r	T_{JM}	R_{thJK} IGBT	Diode	Fig. No.
➢ New	V	A	A	V	J	J	V	A	µs	µC	°C	K/W	K/W	
T0160NA45A	4500	160	310	4.7	0.50	0.42	3.6	400	0.96	340	125	0.07	0.175	W40
T0240NA45E	4500	240	400	4.7	0.73	0.88	N/A	N/A	N/A	N/A	125	0.053	N/A	W40
➢ **T0340VA45G**	4500	340	570	4.7	In Development						125	0.035	0.058	W67
T0360NA25A	2500	360	720	3.6	0.75	0.34	2.5	250	0.93	285	125	0.054	0.087	W40
T0500NA25E	2500	500	1000	3.6	0.80	0.50	N/A	N/A	N/A	N/A	125	0.039	N/A	W40
➢ **T0500NC17A**	1700	500	1000	In Development							125	0.054	0.087	W40
➢ **T0510VA45E**	4500	510	850	4.7	In Development		N/A	N/A	N/A	N/A	125	0.023	N/A	W67
➢ **T0570VA25G**	2500	570	1140	3.6	In Development						125	0.034	0.044	W67
T0600TA45A	4500	600	1000	4.7	1.75	1.50	3.6	1400	0.92	650	125	0.021	0.044	W41
➢ **T0700NC17E**	1700	700	1400	In Development			N/A	N/A	N/A	N/A	125	0.039	N/A	W40
T0800TA45E	4500	800	1340	4.7	2.20	1.92	3.6	N/A	N/A	N/A	125	0.015	N/A	W41
➢ **T0800VC15G**	1700	800	1600	In Development							125	0.034	0.044	W67
➢ **T0850VA25E**	2500	850	1700	3.6	In Development						125	0.023	N/A	W67
T0900EA45A	4500	900	1500	4.7	2.80	2.60	3.6	1440	1.50	1900	125	0.014	0.029	W44
T1200EA45E	4500	1200	2100	4.7	3.50	4.00	N/A	N/A	N/A	N/A	125	0.010	N/A	W44
T1200TA25A	2500	1200	2400	3.6	2.50	1.40	2.5	670	1.50	830	125	0.017	0.035	W41
➢ **T1200VC17E**	1700	1200	2400	In Development			N/A	N/A	N/A	N/A	125	0.023	N/A	W67
T1500TA25E	2500	1500	3000	3.6	3.30	1.70	N/A	N/A	N/A	N/A	125	0.013	N/A	W41
➢ **T1600TC17A**	1700	1600	3200	In Development							125	0.017	0.029	W41
T1800GA45A	4500	1800	3000	4.7	5.6	6.4	2320	1.7	2.2	2720	125	0.007	0.014	W45
➢ **T2100TC17E**	1700	2100	4200	In Development			N/A	N/A	N/A	N/A	125	0.013	N/A	W41
T2400GA45E	4500	2400	4200	4.7	7.2	7.8	N/A	N/A	N/A	N/A	125	0.005	N/A	W45

OR



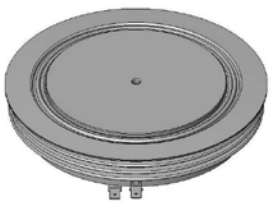


W41 Weight 1200 g

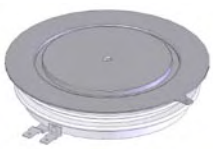


W45 Weight 2000 g

W40 Weight 500 g



W44 Weight 1200 g

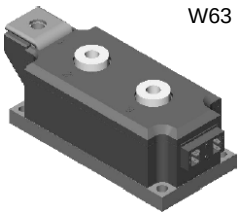


W67 Weight 680 g

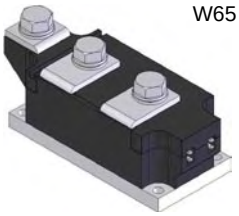
Dual Diode Modules

Type ➢ New	V_{RRM} V	I_{FAV} A	@ T_C °C	I_{FRMS} A	I_{FSM} 150°C 10ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thCK} per Chip K/W	Fig. No.	Config.
MDD600-12N1	1200	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	H
MDD600-14N1	1400	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	
MDD600-16N1	1600	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	
MDD600-18N1	1800	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	
MDD600-20N1	2000	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	
MDD600-22N1	2200	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	
MDA600-12N1	1200	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	F
MDA600-14N1	1400	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	
MDA600-16N1	1600	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	
MDA600-18N1	1800	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	
MDA600-20N1	2000	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	
MDA600-22N1	2200	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	
MDK600-12N1	1200	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	I
MDK600-14N1	1400	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	
MDK600-16N1	1600	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	
MDK600-18N1	1800	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	
MDK600-20N1	2000	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	
MDK600-22N1	2200	600	111	1818	21800	0.75	0.2	150	0.062	0.02	W63	
MDD 710-22N1	2200	708	85	1440	12750	0.80	0.35	150	0.062	0.02	W65	G
MDD 710-26N1	2600	708	85	1440	12750	0.80	0.35	150	0.062	0.02	W65	
MDA 710-22N1	2200	708	85	1440	12750	0.80	0.35	150	0.062	0.02	W65	F
MDA 710-26N1	2600	708	85	1440	12750	0.80	0.35	150	0.062	0.02	W65	
MDK 710-22N1	2200	708	85	1440	12750	0.80	0.35	150	0.062	0.02	W65	I
MDK 710-26N1	2600	708	85	1440	12750	0.80	0.35	150	0.062	0.02	W65	
MDD 810-12N1	1200	807	85	1661	17250	0.78	0.23	150	0.062	0.02	W65	H
MDD 810-16N1	1600	807	85	1661	17250	0.78	0.23	150	0.062	0.02	W65	
MDD 810-18N1	1800	807	85	1661	17250	0.78	0.23	150	0.062	0.02	W65	
MDA 810-12N1	1200	807	85	1661	17250	0.78	0.23	150	0.062	0.02	W65	F
MDA 810-16N1	1600	807	85	1661	17250	0.78	0.23	150	0.062	0.02	W65	
MDA 810-18N1	1800	807	85	1661	17250	0.78	0.23	150	0.062	0.02	W65	
MDK 810-12N1	1200	807	85	1661	17250	0.78	0.23	150	0.062	0.02	W65	I
MDK 810-16N1	1600	807	85	1661	17250	0.78	0.23	150	0.062	0.02	W65	
MDK 810-18N1	1800	807	85	1661	17250	0.78	0.23	150	0.062	0.02	W65	
MDO1200-14N1	1400	1200	111	1818	21800	0.75	0.2	150	0.062	0.02	W66	J
MDO1200-16N1	1600	1200	111	1818	21800	0.75	0.2	150	0.062	0.02	W66	
MDO1200-18N1	1800	1200	111	1818	21800	0.75	0.2	150	0.062	0.02	W66	
MDO1200-20N1	2000	1200	111	1818	21800	0.75	0.2	150	0.062	0.02	W66	
MDO1200-22N1	2200	1200	111	1818	21800	0.75	0.2	150	0.062	0.02	W66	

W63

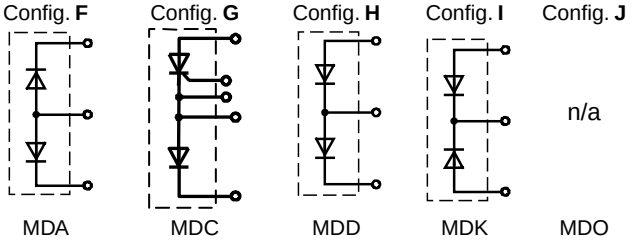


W65

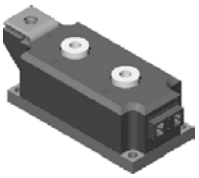


W66

Outlines on pages O-01...O-24



Type ➢ New	V_{RRM} V	I_{FAV} A	@ T_C °C	I_{FRMS} A	I_{FSM} 125°C 10ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJC} per Chip K/W	R_{thCK} per Chip K/W	Fig. No.	Config.	Package style Outline drawings on page O-01...O-24
MCD 431-22io1	2200	429	85	1020	10900	1.00	0.41	125	0.062	0.02	W65	C	
MCD 431-24io1	2400	429	85	1020	10900	1.00	0.41	125	0.062	0.02	W65		
MDC 431-22io1	2200	429	85	1020	10900	1.00	0.41	125	0.062	0.02	W65	G	
MDC 431-24io1	2400	429	85	1020	10900	1.00	0.41	125	0.062	0.02	W65		
MCD500-12io1	1200	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63	C	
MCD500-14io1	1400	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63		
MCD500-16io1	1600	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63		
MCD500-18io1	1800	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63		
MCD500-20io1	2000	500	80	1071	16500	0.82	0.87	125	0.062	0.02	W63		
MCD500-22io1	2200	500	80	1071	16500	0.82	0.87	125	0.062	0.02	W63		
MDC500-12io1	1200	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63	G	
MDC500-14io1	1400	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63		
MDC500-16io1	1600	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63		
MDC500-18io1	1800	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63		
MDC500-20io1	2000	500	80	1071	16500	0.82	0.87	125	0.062	0.02	W63		
MDC500-22io1	2200	500	80	1071	16500	0.82	0.87	125	0.062	0.02	W63		
MCD501-12io1	1200	503	85	1195	14500	0.85	0.30	125	0.062	0.02	W65	C	
MCD501-16io1	1600	503	85	1195	14500	0.85	0.30	125	0.062	0.02	W65		
MCD501-18io1	1800	503	85	1195	14500	0.85	0.30	125	0.062	0.02	W65		
MDC501-12io1	1200	503	85	1195	14500	0.85	0.30	125	0.062	0.02	W65	G	
MDC501-16io1	1600	503	85	1195	14500	0.85	0.30	125	0.062	0.02	W65		
MDC501-18io1	1800	503	85	1195	14500	0.85	0.30	125	0.062	0.02	W65		
MCO740-20io1	2000	740	88	2389	32700	0.833	0.210	125	0.0405	0.0100	W66	J	
MCO740-22io1	2200	740	88	2389	32700	0.833	0.210	125	0.0405	0.0100	W66		
MCO800-16io1	1600	800	86	2564	32700	0.890	0.154	125	0.0405	0.0100	W66	J	
MCO800-18io1	1800	800	86	2564	32700	0.890	0.154	125	0.0405	0.0100	W66		



W63

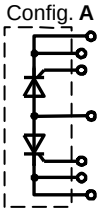
W65

W66

Dual Thyristor

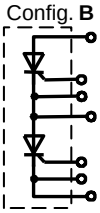
MCC 431-22io1	2200	429	85	1020	10900	1	0.41	125	0.062	0.02	W65	B
MCC 431-24io1	2400	429	85	1020	10900	1	0.41	125	0.062	0.02	W65	
MCA 431-22io1	2200	429	85	1020	10900	1	0.41	125	0.062	0.02	W65	A
MCA 431-24io1	2400	429	85	1020	10900	1	0.41	125	0.062	0.02	W65	
MCK 431-22io1	2200	429	85	1020	10900	1	0.41	125	0.062	0.02	W65	D
MCK 431-24io1	2400	429	85	1020	10900	1	0.41	125	0.062	0.02	W65	
MCC500-12io1	1200	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63	B
MCC500-14io1	1400	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63	
MCC500-16io1	1600	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63	
MCC500-18io1	1800	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63	
MCC500-20io1	2000	500	80	1071	16500	0.82	0.87	125	0.062	0.02	W63	
MCC500-22io1	2200	500	80	1071	16500	0.82	0.87	125	0.062	0.02	W63	
MCA500-14io1	1400	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63	A
MCA500-16io1	1600	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63	
MCA500-18io1	1800	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63	
MCA500-20io1	2000	500	80	1071	16500	0.82	0.87	125	0.062	0.02	W63	
MCA500-22io1	2200	500	80	1071	16500	0.82	0.87	125	0.062	0.02	W63	
MCK500-12io1	1200	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63	D
MCK500-14io1	1400	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63	
MCK500-16io1	1600	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63	
MCK500-18io1	1800	500	89	1294	16500	0.82	0.87	125	0.062	0.02	W63	
MCK500-20io1	2000	500	80	1071	16500	0.82	0.87	125	0.062	0.02	W63	
MCK500-22io1	2200	500	80	1071	16500	0.82	0.87	125	0.062	0.02	W63	
MCC 501-12io1	1200	503	85	1195	14500	0.85	0.30	125	0.062	0.02	W65	B
MCC 501-16io1	1600	503	85	1195	14500	0.85	0.30	125	0.062	0.02	W65	
MCC 501-18io1	1800	503	85	1195	14500	0.85	0.30	125	0.062	0.02	W65	
MCA 501-12io1	1200	503	85	1195	14500	0.85	0.30	125	0.062	0.02	W65	A
MCA 501-16io1	1600	503	85	1195	14500	0.85	0.30	125	0.062	0.02	W65	
MCA 501-18io1	1800	503	85	1195	14500	0.85	0.30	125	0.062	0.02	W65	
MCK 501-12io1	1200	503	85	1195	14500	0.85	0.30	125	0.062	0.02	W65	D
MCK 501-16io1	1600	503	85	1195	14500	0.85	0.30	125	0.062	0.02	W65	
MCK 501-18io1	1800	503	85	1195	14500	0.85	0.30	125	0.062	0.02	W65	

Config. **A**



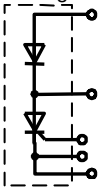
MCA

Config. **B**



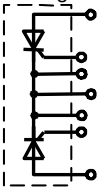
MCC

Config. **C**



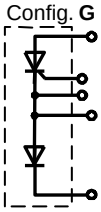
MCD

Config. **D**



MCK

Config. **G**



MDC

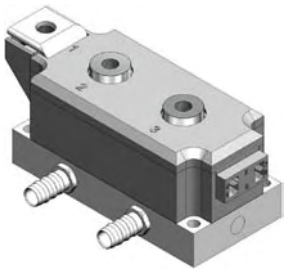
Config. **J**

n/a

MDO

Dual Diode Water Cooled Modules

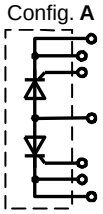
Type ➢ New	V_{RRM} V	I_{FAV} A	@ T_C °C	I_{FRMS} A	I_{FSM} 150°C 10ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJW} per Chip K/W	Fig. No.	Config.
MDD950-12N1W	1200	950	45	1773	21800	0.75	0.2	150	0.09	W64	G
MDD950-14N1W	1400	950	45	1773	21800	0.75	0.2	150	0.09	W64	
MDD950-16N1W	1600	950	45	1773	21800	0.75	0.2	150	0.09	W64	
MDD950-18N1W	1800	950	45	1773	21800	0.75	0.2	150	0.09	W64	
MDD950-20N1W	2000	950	45	1773	21800	0.75	0.2	150	0.09	W64	
MDD950-22N1W	2200	950	45	1773	21800	0.75	0.2	150	0.09	W64	
MDA950-12N1W	1200	950	45	1773	21800	0.75	0.2	150	0.09	W64	E
MDA950-14N1W	1400	950	45	1773	21800	0.75	0.2	150	0.09	W64	
MDA950-16N1W	1600	950	45	1773	21800	0.75	0.2	150	0.09	W64	
MDA950-18N1W	1800	950	45	1773	21800	0.75	0.2	150	0.09	W64	
MDA950-20N1W	2000	950	45	1773	21800	0.75	0.2	150	0.09	W64	
MDA950-22N1W	2200	950	45	1773	21800	0.75	0.2	150	0.09	W64	
MDK950-12N1W	1200	950	45	1773	21800	0.75	0.2	150	0.09	W64	H
MDK950-14N1W	1400	950	45	1773	21800	0.75	0.2	150	0.09	W64	
MDK950-16N1W	1600	950	45	1773	21800	0.75	0.2	150	0.09	W64	
MDK950-18N1W	1800	950	45	1773	21800	0.75	0.2	150	0.09	W64	
MDK950-20N1W	2000	950	45	1773	21800	0.75	0.2	150	0.09	W64	
MDK950-22N1W	2200	950	45	1773	21800	0.75	0.2	150	0.09	W64	



W64

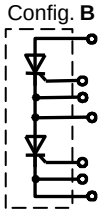
Outlines on pages
O-01...O-24

Config. **A**



MCA

Config. **B**

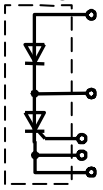


MCC

Water Cooled Thyristor/Diode Modules

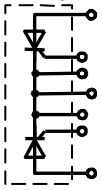
Type ➢ New	V_{RRM} V_{DRM} V	I_{TAV} A	@ T_C °C	I_{TRMS} A	I_{TSM} 125°C 10ms A	V_{T0} V	r_T mΩ	T_{VJM} °C	R_{thJW} per Chip K/W	Fig. No.	Config.
MCD700-12io1W	1200	700	42	1331	16500	0.85	0.27	125	0.09	W64	C
MCD700-14io1W	1400	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCD700-16io1W	1600	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCD700-18io1W	1800	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCD700-20io1W	2000	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCD700-22io1W	2200	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MDC700-12io1W	1200	700	42	1331	16500	0.85	0.27	125	0.09	W64	F
MDC700-14io1W	1400	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MDC700-16io1W	1600	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MDC700-18io1W	1800	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MDC700-20io1W	2000	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MDC700-22io1W	2200	700	42	1331	16500	0.85	0.27	125	0.09	W64	

Config. **C**



MCD

Config. **D**



MCK

Water Cooled Dual Thyristor Modules

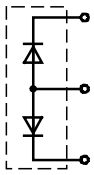
MCC700-12io1W	1200	700	42	1331	16500	0.85	0.27	125	0.09	W64	B
MCC700-14io1W	1400	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCC700-16io1W	1600	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCC700-18io1W	1800	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCC700-20io1W	2000	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCC700-22io1W	2200	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCA700-12io1W	1200	700	42	1331	16500	0.85	0.27	125	0.09	W64	A
MCA700-14io1W	1400	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCA700-16io1W	1600	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCA700-18io1W	1800	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCA700-20io1W	2000	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCA700-22io1W	2200	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCK700-12io1W	1200	700	42	1331	16500	0.85	0.27	125	0.09	W64	D
MCK700-14io1W	1400	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCK700-16io1W	1600	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCK700-18io1W	1800	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCK700-20io1W	2000	700	42	1331	16500	0.85	0.27	125	0.09	W64	
MCK700-22io1W	2200	700	42	1331	16500	0.85	0.27	125	0.09	W64	

Config. **E**

n/a

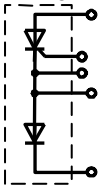
MCO

Config. **F**



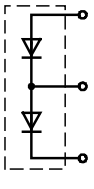
MCA

Config. **G**



MDC

Config. **H**



MDD

Power Semiconductor Assemblies from IXYS and Westcode

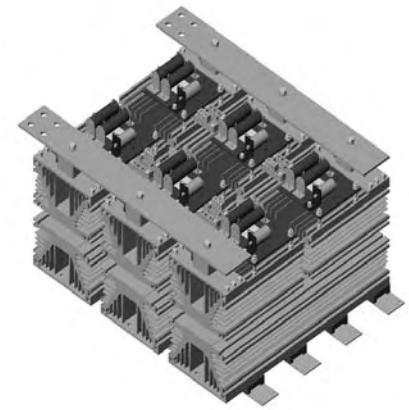
WESTCODE

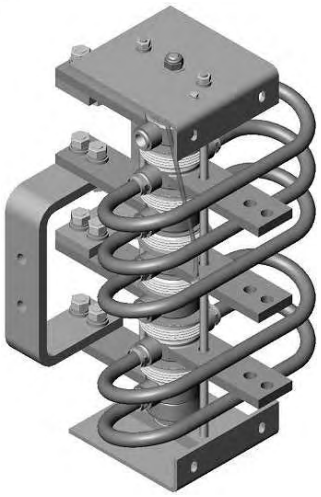
Power Semiconductor Assemblies

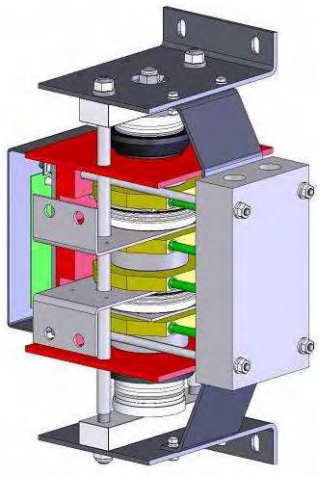
From discrete devices to complete assemblies, our customers can procure our products in whatever form suits their needs on a global basis. Supply management is critical to every manufacturer and reducing costs without compromising quality is essential. Our experienced, international, team of engineers is on hand to help our customers to get more from their products and keep at the forefront of technology in an increasingly competitive marketplace.

Standard Assemblies

We have a comprehensive range of standard assemblies for all of the common converter topologies utilising either natural air, forced air or liquid cooling. These well-proven designs provide an economical alternative to in house design and assembly of discrete parts. These assemblies are available on short lead-times to suit most common line voltages and current ratings from 35 A to 15 kA.







Custom Assemblies

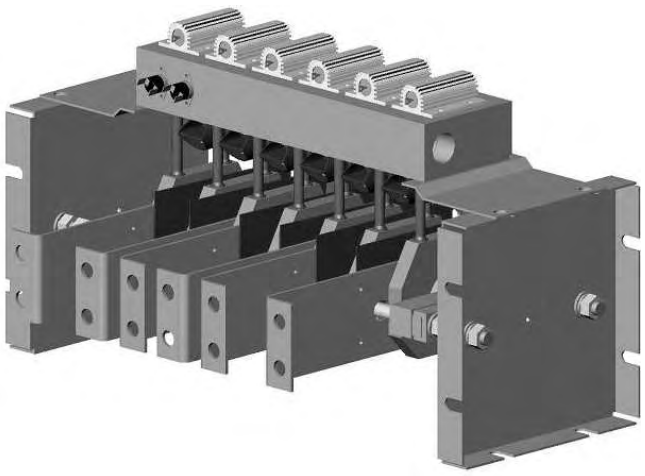
With over 70 years of experience in power circuit design and manufacture, our dedicated team of design engineers can deliver customs solutions for a whole range of design problems ranging from simple crowbar applications to complicated multi-megawatt power converters. Utilising the latest 3D modeling techniques, we can reduce the cycle time from concept to manufacture and ensure successful system level integration into our customers equipment.

Pulsed Power

As a pioneer in the development of solid state pulsed power components and systems, we able to deliver anything from discrete components to fully integrated energy transfer switches. With systems successfully delivering voltage ratings of over 50 kV and pulsed currents to 140 kA, we have wealth of experience to put at your disposal. Our modular design solutions based on either pulse thyristor or press-pack IGBT technology and integrating control and protection functions provide you with a flexible “black box” approach to energy transfer problems.

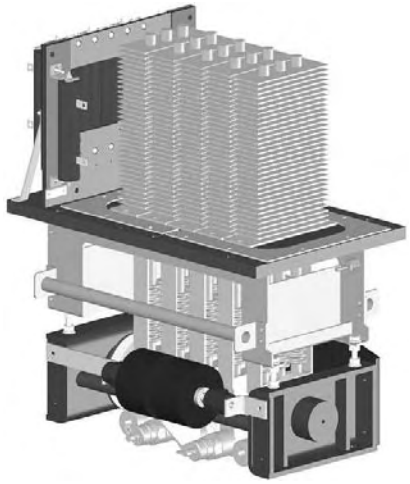
We are involved with pulsed power on global basis, working with prestigious research organisations such as CERN, Switzerland as well as medium volume manufacture for emerging commercial applications such as laser supplies, PUV and PEF sterilisation, magnetisation and metal forming.

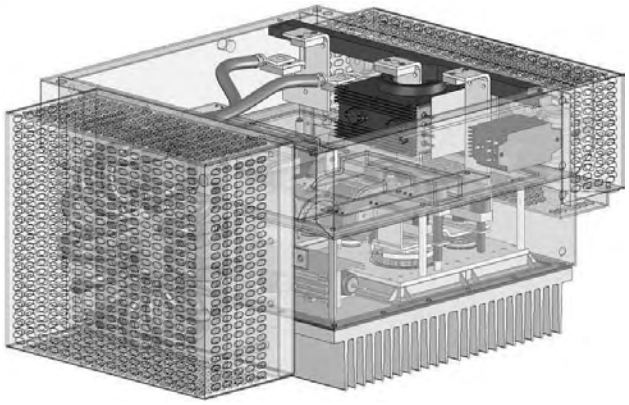
We have a philosophy of working closely with our customers to ensure that we deliver the right solution in the right time and right price – first time and every time.



Transportation

We have a long association with the railway industry and over the years have gained an enviable reputation within railway industry as a solution provider. Using our experience and wide ranging contacts within the industry, we are able to offer assistance in tackling issues such as component obsolescence, improving power equipment reliability, contract maintenance of power modules, refurbishment of power electronics and upgrades to existing systems.





Working systematically to the highest international standards, we can give your equipment a new lease of life and help protect your investment in these valuable assets. For larger projects, such as fleet wide re-fits, we are able to work within a consortium of specialist companies to ensure that you have the right skills to hand to deliver a turnkey solution to your requirements.

Silicon Assemblies

A wide range of units is available, incorporating international standard outline silicon semiconductors. Westcode products have gained a worldwide reputation for quality in military, industrial and domestic applications.

Standard extruded aluminium heatsink profiles are used for mounting discrete semiconductor devices in various configurations, for example:

- Single-phase diode bridges with current ratings from 70 to 5170 Amps DC
- Single-phase half or fully controlled bridges from 35 to 2200 Amps DC
- Three-phase diode bridges with current ratings from 100 to 7190 Amps DC
- Three-phase half or fully controlled bridges from 45 to 3790 Amps DC
- Hexaphase single way diode assemblies from 200 to 14380 Amps DC
- Hexaphase single way Thyristor assemblies from 90 to 7580 Amps DC
- AC Regulators, single and three phase, from 40 to 2940 Amps RMS

Water Cooled AC Regulators

Included in our standard range are solid state, water cooled AC Regulators for resistance welding, with ratings from 315 to 3020 Amps RMS.

Also available are water cooled, single and three phase assemblies from 1200 to 6000 Amps DC.

All the above range is suitable for 440 V_{RMS} 50Hz mains operation.

Beyond Semiconductors

Our flexible manufacturing facility is able to readily adapt to our customers needs. In additional to power semiconductor assembly, we can offer complementary sub-assemblies to our customer's requirements, such as fuse panels and capacitor banks as well as contract manufacture to your designs.

Application and Engineering Support

Our highly experienced technical team is on hand to provide our customers with first class support for everything from the application of our range of discrete devices to the design and development of complex systems. We can help you from concept through design to manufacture and test, working closely with you at every step of the way.

Components

We offer a full portfolio of components which are complementary to our range of power semiconductors including:

Heatsinks Coolers Mounting Clamps
Ultra Rapid Semiconductor Protection Fuses
Capacitors for Power Electronics
Gate Drive Units

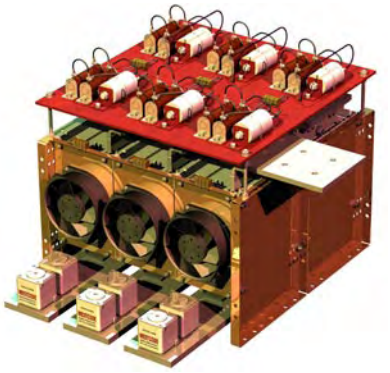
Westack - ***Modular Solutions***

WESTCODE

A standard assembly module provides the basic building block for this new range of assemblies.

Assembly modules can incorporate either single of dual devices and allow for the building of; single-phase diode and thyristor bridges, 3-phase diode and thyristor bridges, or 6-phase single way diode and thyristor assemblies.

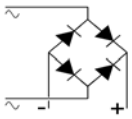
A custom built assembly can be provided when a standard solution is not suitable.



Westack - Modular Solutions

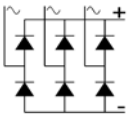
Single phase diode bridges — **Approx. total loss $2 \cdot I_{DC}$ @ 25°C**

Assembly Part Number	I_{DC} amps Air Forced 2.5m/s $T_a = 25°C$	$T_a = 35°C$	$T_a = 45°C$	I_{FSM} amps I_{TSM} amps	I^2t A^2s	Fig.	Dimensions mm W	H	D	Mass kg	Device Type and Quantity	Heat Sink Type
SXB1375B	1375	1303	1230	19500	1.9×10^6	1	382	325	405	20	W2058LC (4)	B(2x83,1x180)
SXB2096B	2096	1987	1874	33000	5.45×10^6	1	382	325	405	20	W3270NC (4)	B(2x83,1x180)
SXB3442B	3442	3277	3109	53000	13.5×10^6	2	382	593	405	40	W5696VC (4)	B(2x180)
SXB4264B	4264	4051	3835	72000	22.5×10^6	2	382	593	405	40	W8405ZC (4)	B(2x180)



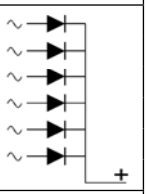
Three phase diode bridges — Approx. total loss $2.5 \cdot I_{DC}$ @ 25°C

Assembly Part Number	I_{DC} amps Air Forced 2.5m/s $T_a = 25°C$	$T_a = 35°C$	$T_a = 45°C$	I_{FSM} amps I_{TSM} amps	I^2t A^2s	Fig.	Dimensions mm W	H	D	Mass kg	Device Type and Quantity	Heat Sink Type
SXB1920G	1920	1822	1721	19500	1.9×10^6	3	548	325	405	30	W2058LC (6)	B(2x83,1x180)
SXB2939G	2939	2788	2634	33000	5.45×10^6	3	548	325	405	30	W3270NC (6)	B(2x83,1x180)
SXB4869G	4869	4640	4407	53000	13.5×10^6	4	548	593	405	60	W5696VC (6)	B(2x180)
SXB5993G	5993	5701	5402	72000	22.5×10^6	4	548	593	405	60	W8405ZC (6)	B(2x180)



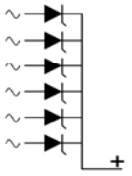
Six phase diode, single way with IPT — **Approx. total loss $1.25 \cdot I_{DC}$ @ 25°C**

Assembly Part Number	I_{DC} amps Air Forced 2.5m/s $T_a = 25°C$	$T_a = 35°C$	$T_a = 45°C$	I_{FSM} amps I_{TSM} amps	I^2t A^2s	Fig.	Dimensions mm W	H	D	Mass kg	Device Type and Quantity	Heat Sink Type
SXB3840HEX	3840	3644	3442	19500	1.9×10^6	5	548	325	395	30	W2058LC (6)	B(2x83,1x180)
SXB5877HEX	5877	5576	5268	33000	5.45×10^6	5	548	325	395	30	W3270NC (6)	B(2x83,1x180)
SXB9737HEX	9737	9281	8813	53000	13.5×10^6	6	548	593	395	60	W5696VC (6)	B(2x180)
SXB11987HEX	11987	11401	10804	72000	22.5×10^6	6	548	593	395	60	W8405ZC (6)	B(2x180)



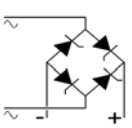
Six phase thyristor, single way with IPT — **Approx. total loss $1.5 \cdot I_{DC}$ @ 25°C**

Assembly Part Number	I_{DC} amps Air Forced 2.5m/s $T_a = 25°C$	$T_a = 35°C$	$T_a = 45°C$	I_{FSM} amps I_{TSM} amps	I^2t A^2s	Fig.	Dimensions mm W	H	D	Mass kg	Device Type and Quantity	Heat Sink Type
SXB2428HEXT	2428	2233	2030	15000	1.13×10^6	5	548	325	395	30	N1265LS (6)	B(2x83,1x180)
SXB3529HEXT	3529	3244	2949	29600	4.38×10^6	5	548	325	395	30	N1802NS (6)	B(2x83,1x180)
SXB4649HEXT	4649	4270	3878	37000	6.85×10^6	6	548	593	395	60	N2500VC (6)	B(2x180)
SXB6240HEXT	6240	5714	5173	64000	20.5×10^6	6	548	593	395	60	N4085ZC (6)	B(2x180)



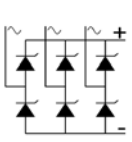
Single phase fully controlled bridges — **Approx. total loss $2.5 x I_{DC}$ @ 25°C**

Assembly Part Number	I_{DC} amps Air Forced 2.5m/s $T_a = 25°C$	$T_a = 35°C$	$T_a = 45°C$	I_{FSM} amps I_{TSM} amps	I^2t A^2s	Fig.	Dimensions mm W	H	D	Mass kg	Device Type and Quantity	Heat Sink Type
SXB868FB	868	797	724	15000	1.13×10^6	1	382	325	405	20	N1265LS (4)	B(2x83,1x180)
SXB1265FB	1265	1161	1054	29600	4.38×10^6	1	382	325	405	20	N1802NS (4)	B(2x83,1x180)
SXB1645FB	1645	1508	1367	37000	6.85×10^6	2	382	593	405	40	N2500VC (4)	B(2x180)
SXB2167FB	2167	1981	1790	64000	20.5×10^6	2	382	593	405	40	N4085ZC (4)	B(2x180)



Three phase fully controlled bridges — **Approx. total loss $3 \cdot I_{DC}$ @ 25°C**

Assembly Part Number	I_{DC} amps Air Forced 2.5m/s $T_a = 25°C$	$T_a = 35°C$	$T_a = 45°C$	I_{FSM} amps I_{TSM} amps	I^2t A^2s	Fig.	Dimensions mm W	H	D	Mass kg	Device Type and Quantity	Heat Sink Type
SXB1214FG	1214	1116	1015	15000	1.13×10^6	3	548	325	405	30	N1265LS (6)	B(2x83,1x180)
SXB1764FG	1764	1622	1475	29600	4.38×10^6	3	548	325	405	30	N1802NS (6)	B(2x83,1x180)
SXB2324FG	2324	2135	1939	37000	6.85×10^6	4	548	593	405	60	N2500VC (6)	B(2x180)
SXB3120FG	3120	2857	2586	64000	20.5×10^6	4	548	593	405	60	N4085ZC (6)	B(2x180)

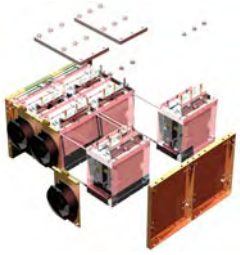
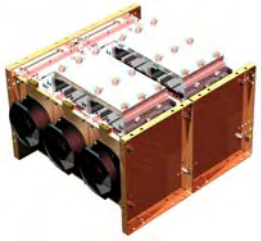
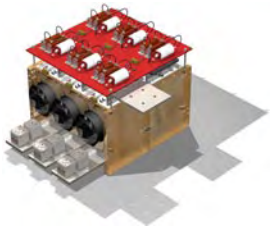


Cooling for each module section is provided by the use of a low noise 115/230 V ac fan which is protected against overloading by an integral thermal cut-out.

Surge suppression and fusing provides reliable and safe operation. Surge suppression (protecting the devices from voltage transients) and high speed fuses (to protect against short circuit) are available. Contact Westcode for details.

All plastic components are UL recognised and meet the requirements of the European Union Directive 2002/95/EC covering the restricted use of certain hazardous substances in electrical and electronic equipment.

ISO 9000 2000 provides the standard against which all our products and services are measured.

Westack - ***Modular Solutions are available in 6 standard configurations, others by request.***

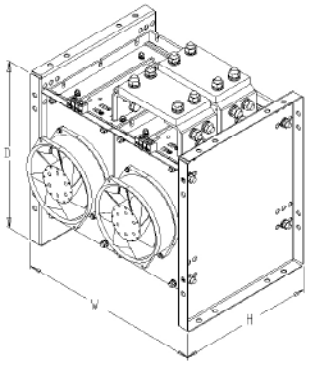


Figure 1
Weight 20 kg

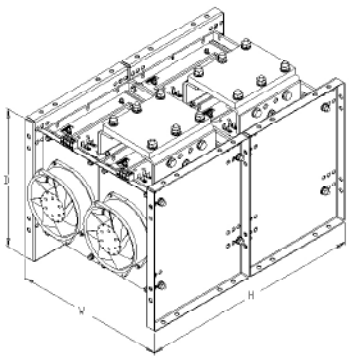


Figure 2
Weight 40 kg

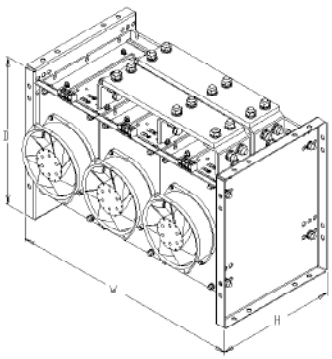


Figure 3
Weight 20 kg

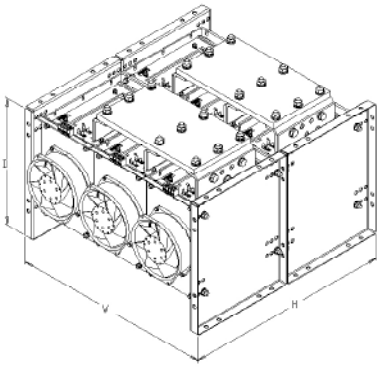


Figure 4
Weight 60 kg

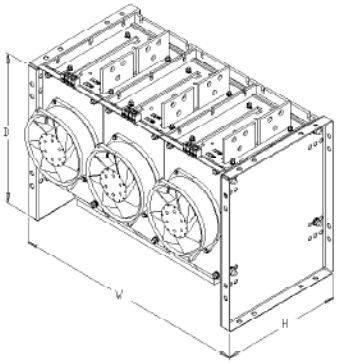


Figure 5
Weight 30 kg

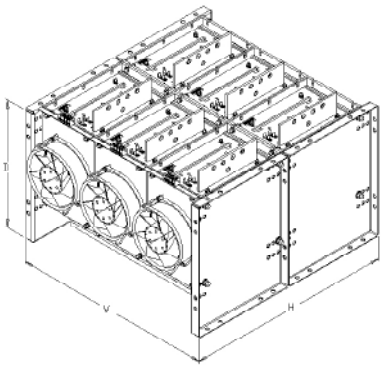


Figure 6
Weight 60 kg

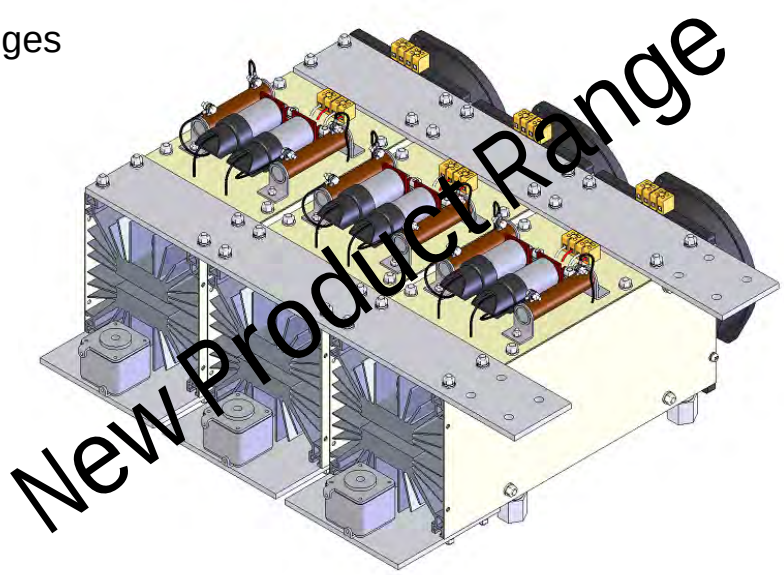
A simple but highly efficient range of stacks incorporating the new WESPACK range of phase control thyristors.

Currently available in 3 standard configurations:

AC voltage regulators

Single-phase bridges

Three-phase bridges



These stacks can easily be modified to meet individual customer requirements.

Fully dimensioned drawings are available upon request from the Chippenham Factory.

Features and Benefits

WESPACK devices provide the maximum power rating for weight and volume without compromising on quality and relaibilty.

Cooling is provided by means of a low noise dual voltage (230V/115 V) ac fan that is protected against overloading by an integral thermal cut-out.

Surge suppression and fusing can be added to protect the devices from voltage transients and short circuits.

ISO 9000 2000 provides the standard against which all our products and services are measured.

AC regulators

Approximate total loss 1.3 x I_{RMS}

Assembly Type / Part Number	I_{DC} amps Air Forced 5m/s T_a 25°C	T_a 35°C	T_a 45°C	I_{FSM} amps I_{TSM} amps	I^2t A^2S	Fig	Dimensions mm Width	Height	Depth	Weight Kgs	Device Type	No. of Devices	Heat Sink Type
SXC1195FR	1195	1098	997	19100	1.82 x 10^6	1	168	415	212	10	N1806QK	2	(2 x 150, 1 x 330)
SXC1464FR	1464	1348	1227	32400	5.25 x 10^6	1	168	415	212	10	N2367MK	2	(2 x 150, 1 x 330)
SXC1788FR	1788	1636	1480	50900	12.95 x 10^6	1	168	415	212	10	N3904HK	2	(2 x 150, 1 x 330)

Single phase fully controlled bridges

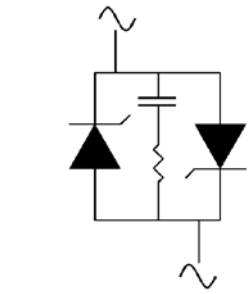
Approximate total loss 2.5 x ID_{DC}

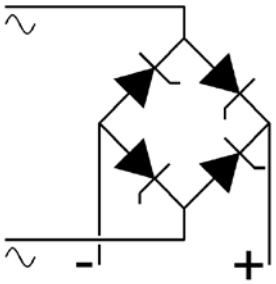
SXC1076FB	1076	988	897	19100	1.82 x 10^6	2	330	415	212	20	N1806QK	4	(2 x 150, 1 x 330)
SXC1318FB	1318	1213	1104	32400	5.25 x 10^6	2	330	415	212	20	N2367MK	4	(2 x 150, 1 x 330)
SXC1609FB	1609	1473	1332	50900	12.95 x 10^6	2	330	415	212	20	N3904HK	4	(2 x 150, 1 x 330)

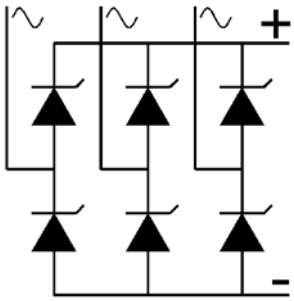
Three phase fully controlled bridges

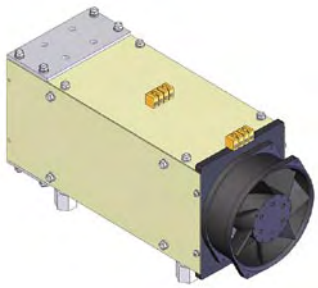
Approximate total loss 3 x ID_{DC}

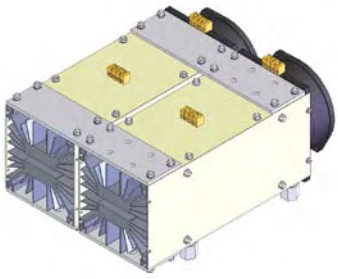
SXC1517FG	1517	1396	1270	19100	1.82 x 10^6	3	492	415	212	30	N1806QK	6	(2 x 150, 1 x 330)
SXC1871FG	1871	1725	1573	32400	5.25 x 10^6	3	492	415	212	30	N2367MK	6	(2 x 150, 1 x 330)
SXC2319FG	2319	2125	1926	50900	12.95 x 10^6	3	492	415	212	30	N3904HK	6	(2 x 150, 1 x 330)











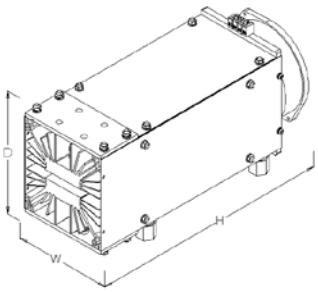


Figure 1
Weight 10 kg

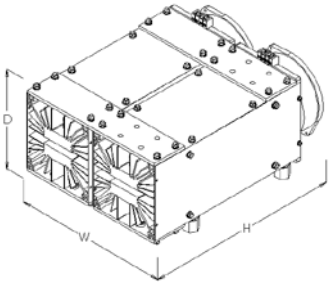


Figure 2
Weight 20 kg

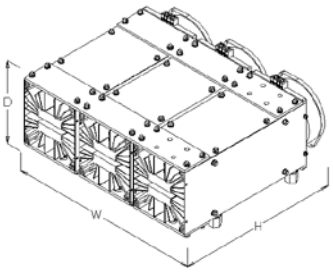


Figure 3
Weight 30 kg

Capsule Mounting Clamps

The Bar type clamp uses a two rod system with a straight bar spring that is bent over a central point to give the clamping force on the device. This force is achieved when the indicators, metal shims at each end of the clamp, become just trapped. (CMK 9000 uses a disc spring stack).

The Box type clamp uses a four bolt system with disc springs and the correct force on the device is achieved when the bottom of the box just touches the heatsink.

As the force indication is contained within these clamps, special equipment or torque spanners are not required. The clamps can therefore be reset to the correct force at any time, using only a box spanner.

Box clamps are suitable for devices with 19 mm, 25 mm or 34 mm diameter mounting surfaces and of 13.8 mm, 14.6 or 26.2 mm nominal thicknesses respectively.

Bar clamps are suitable for devices with 19 mm to 125 mm diameter mounting surfaces ad 450 kgf to 9000 kgf clamping forces.

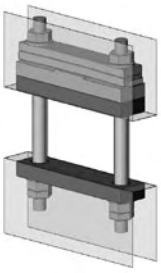
Bar Type	Fixing Centres mm	Rod Size	Capsule Device Outline	Mounting Surface Diameter mm	Nom. Thickness mm
CMK450S56M	65	M8	DO-200AA TO-200AB	19.0	13.8
CMK450D56M					
CMK450DT56M					
CMK550S56M	65	M8	GTO	29.5	16.0
CMK550D56M					
CMK900S56M	65	M8	Diode Thyristor	25.1	14.6
CMK900D56M					
CMK900DT56M					
CMK0600S74M	89	M10	Press-Pack IGBTs	47.0	27.0
CMK0600D74M					
CMK1000S74M	89	M10	Press-Pack IGBTs	47.0	27.0
CMK1000D74M					
CMK1100D76M	89	M10	DO-200AB TO-200AC	34.0	26.2
CMK1130S76M	89	M10	DO-200AB TO-200AC	34.0	26.2
CMK1130D76M					
CMK1130DT76M					
CMK1800S76M	89	M10	Wespack PCT	38.0	14.0
CMK1800D76M					
CMK1800DT76M					
CMK2100S76M*	89	M10	GTO	47.0	27.0
CMK2100D76M*					
CMK2140S76M*	89	M10	DO-200 Thyristor	47.0	26.8
CMK2140D76M*					
CMK2140DT76M*					
CMK2700S76M	89	M10	Wespack PCT	50.0	14.0
CMK2700D76M					
CMK2700DT76M					

Bar Type	Fixing Centres mm	Rod Size	Capsule Device Outline	Mounting Surface Diameter mm	Nom. Thickness mm
CMK2000S114M	132	M12	Press-Pack IGBTs	75.0	26.0
CMK2000D114M					
CMK2500S114M	132	M12	Press-Pack IGBTs	75.0	26.0
CMK2500D114M					
CMK2500S116M*	132	M12	GTO	63.0	26.0
CMK2500D116M*					
CMK3000S116M*	132	M12	DO-200AD Thyristor	63.0	33.0
CMK3000D116M*					
CMK3500S116M*	132	M12	GTO	75.0	26.0
CMK3500D116M*					
CMK4000S116M*	132	M12	Diode Thyristor	73.0	36.8
CMK4000D116M*					
CMK5000D128M*	146	M16	GTO	75.0	26.0
CMK7000D128M*	146	M16	Diode Thyristor	75.0	26.6
CMK3060S140ML	154	M12	Press-Pack IGBTs	85.1	26.0
CMK3060D140ML					
CMK9000S160M*	180	M16	Thyristor	99.3	35.8
CMK9000D160M*					
CMK6120S180ML	196	M16	Press-Pack IGBTs	125.0	26.0
CMK6120D180ML					

* M for T_J up to 190°C, ML for T_J 125°C.

Note: 1 Kgf = 9.8 Newtons

Outline drawings are available from pages O-01...O-24



CMK	XXXX	S, D or DT	XX	N
Capsule Mounting Kit	Nominal Clamping Force Kgf	S-Single side cooled (tapped heatsink) D-Double side cooled (through hole in heatsink) DT-Double side cooled (tapped heatsink)	Maximum Capsule Diameter mm	Metric Fixings M 8, 10 or 12

Bar Type	Fixing Centres mm	Rod Size	Capsule Device Outline	Mounting Surface Diameter mm	Nom. Thickness mm
CMK450B 19M	50 PCD	M5x50 Bolts	DO-200AA TO-200AB	19.0	13.8
CMK450B 25M			Diode Thyristor	25.1	14.6
CMK450B 25M	70 PCD	M6x50 Bolts	DO-200AB TO-200AC	34.0	26.2
Note: 1 Kgf = 9.8 Newtons					

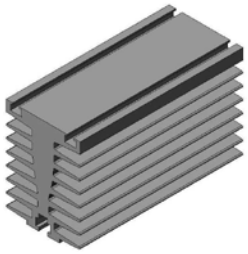
CMK	XXXX	B	XX	N
Capsule Mounting Kit	Nominal Clamping Force Kgf	Box Clamp	Capsule Mounting Surface Diameter 19, 25 or 34 mm	Metric Fixing Bolts (See Chart)

Heatsinks

A comprehensive range of heatsinks is offered, details available upon request.

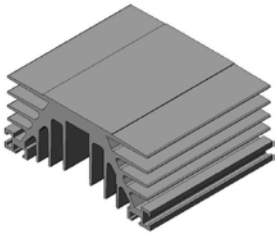
Heatsink Type	Weight Kg/m	Periphery mm	Area mm²	Fig. No.
G Fin	8.1	1059	2979	WH1
GA Fin	15.6	1682	5867	WH2
H Fin	12.7	1684	4655	WH3
T Fin	20.0	2065	7573	WH4
TB Fin	29.0	2467	10905	WH5
TC Fin	28.0	2544	10561	WH6
LP100 Fin (40 Vane)	30.0	6620	11172	WH7
WS46 Fin	20.0	2822	7411	WH8
WS30 Copper Fin	Dimensions 125 mm x 125 mm x 4 vanes			WH9

Outlines on pages O-01...O-24

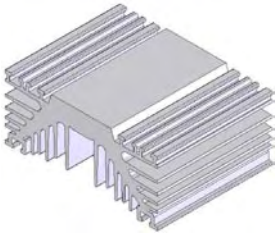


WH1 -G Fin

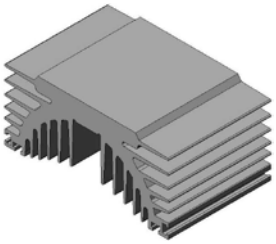
WH2 -GA Fin



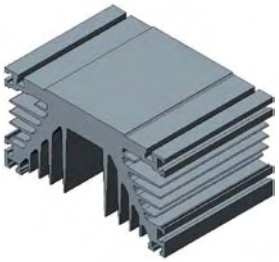
WH3 -H Fin



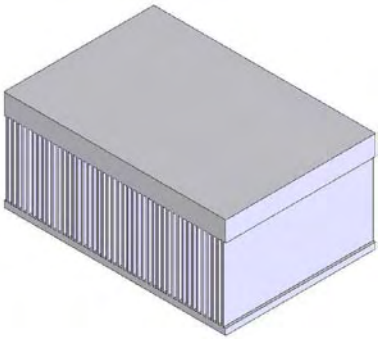
WH4 -T Fin



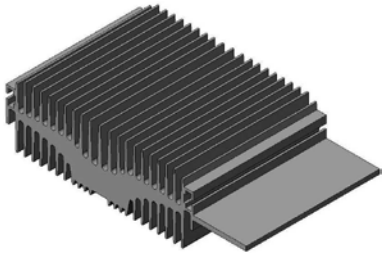
WH5 -TB Fin



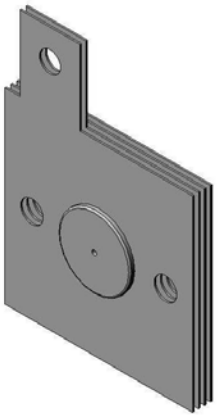
WH6 -TC Fin



WH7 -LP100 Fin



WH8 -WS46 Fin



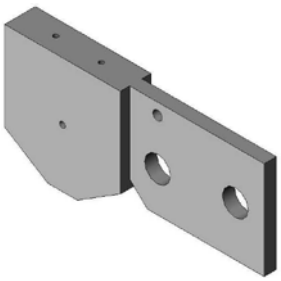
WH9 -WS30 Copper Fin

Coolers

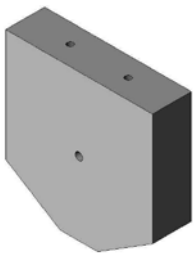
A comprehensive range of coolers is offered, details available upon request.

Outlines on pages O-01...O-24

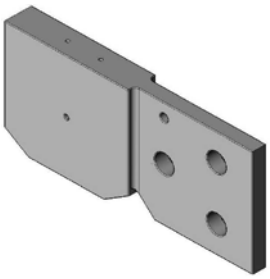
Cooler Type	Weight Kg	Cooler Thickness mm	Busbar Thickness mm	Fig. No.
LK	0.612	16	6.4	WCL1
LKA	0.148	16	n/a	WCL2
LKB	1.750	20	10	WCL3
LKC	1.300	20	n/a	WCL4
LKD	2.120	20	10	WCL5
LKE	4.520	25	10	WCL6
LKF	3.620	25	n/a	WCL7
WS27	0.375	15	n/a	WCL8
WS65	2.941	25	n/a	WCL9
WS69	4.682	34	n/a	WCL10
WS70	4.92	34	n/a	WCL11
WS71-1	0.581	16	6.35	WCL12
WS71-2	0.4	16	n/a	WCL13
WS72-1	1.672	20	10	WCL14
WS72-2	1.119	20	n/a	WCL15



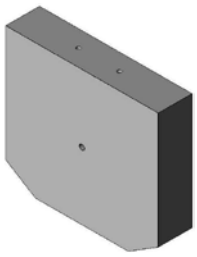
WCL1 -LK



WCL2 -LKA

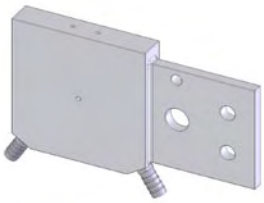


WCL3 -LKB



WCL4 -LKC

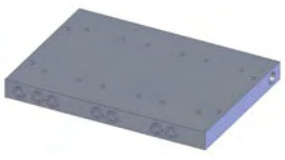
WCL5 -LKD



WCL6 -LKE

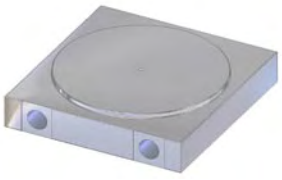
WCL7 -LKF

WCL8 -WS27

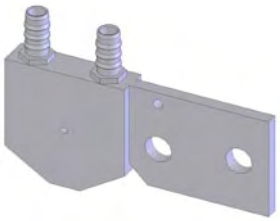


WCL9 -WS65

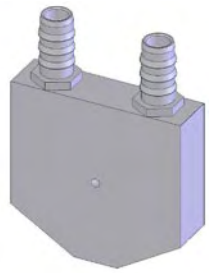
WCL10 -WS69



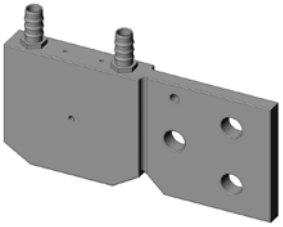
WCL11 -WS70



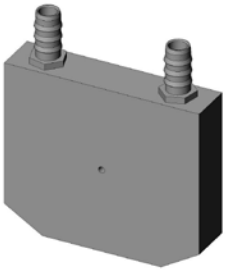
WCL12 -WS71-1



WCL13 -WS71-2



WCL14 -WS72-1

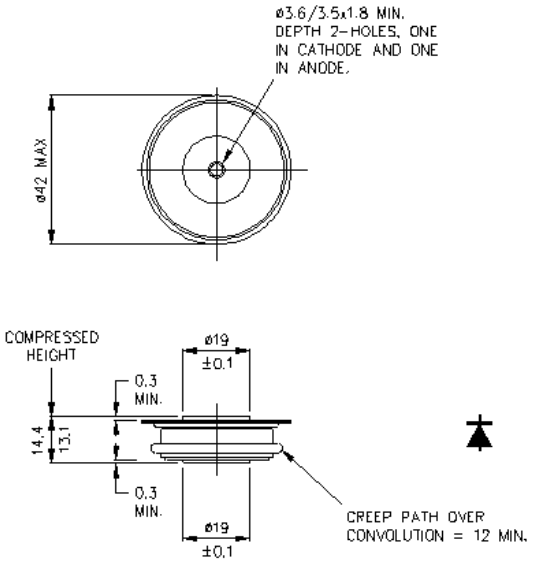


WCL15 -WS72-2

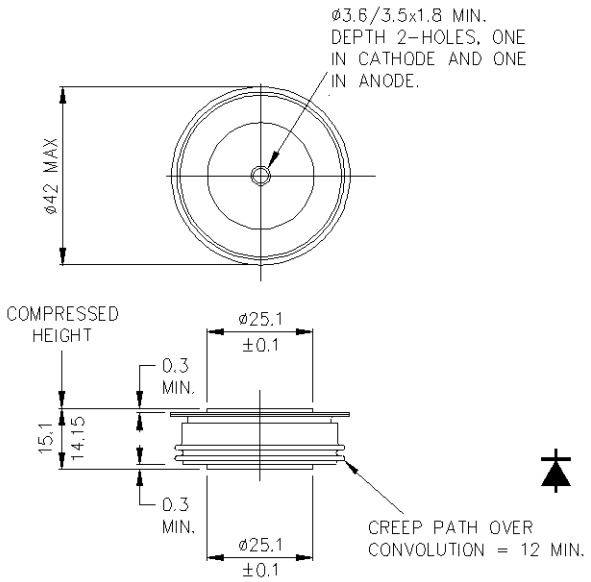
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

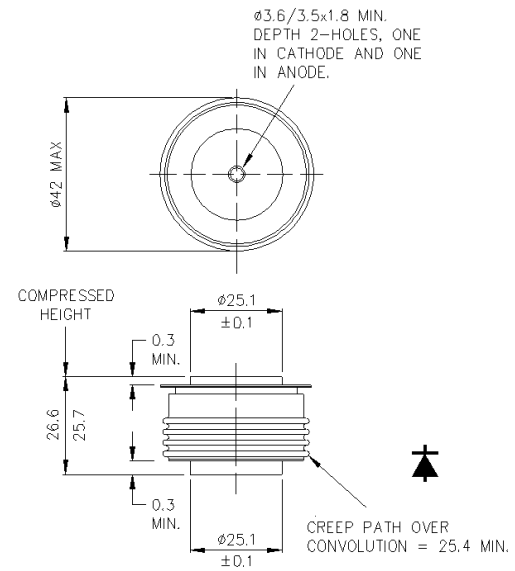
W1 - 100A241



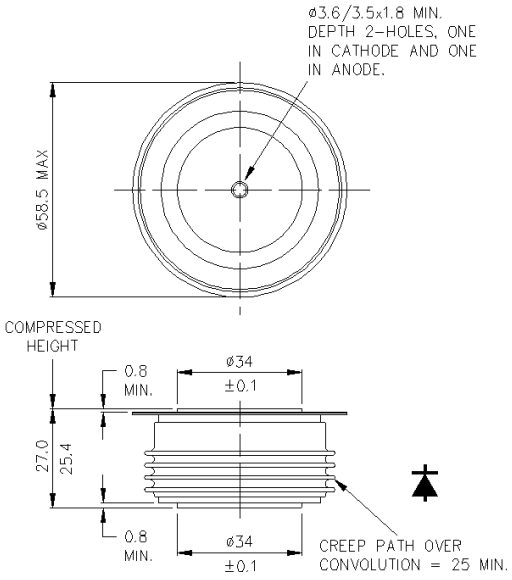
W2 - 100A291



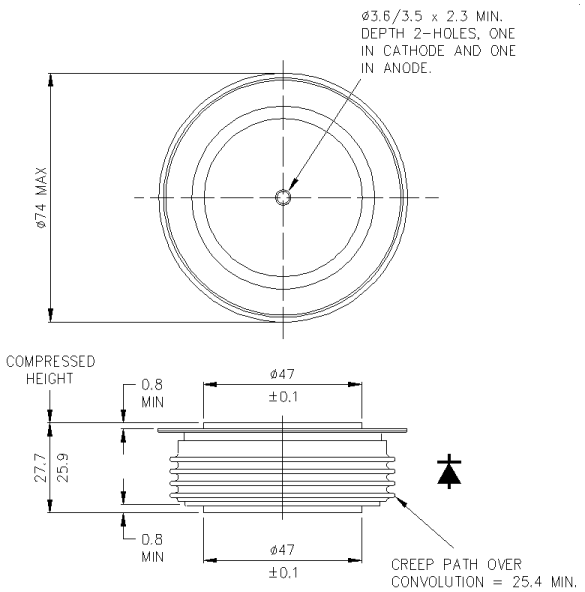
W3 - 100A317



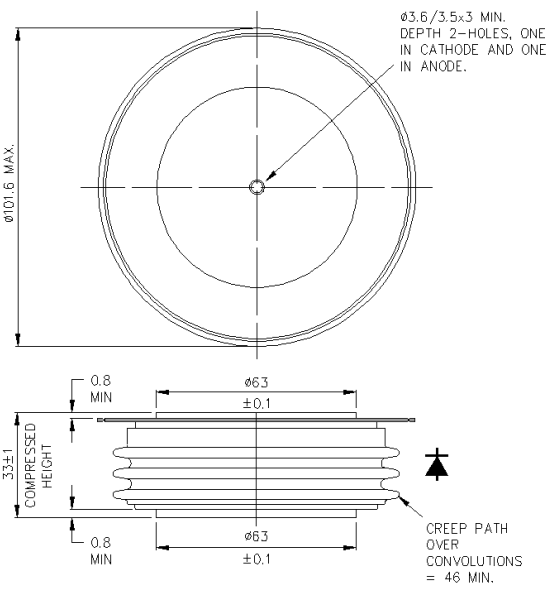
W4 - 100A243



W5 - 100A249



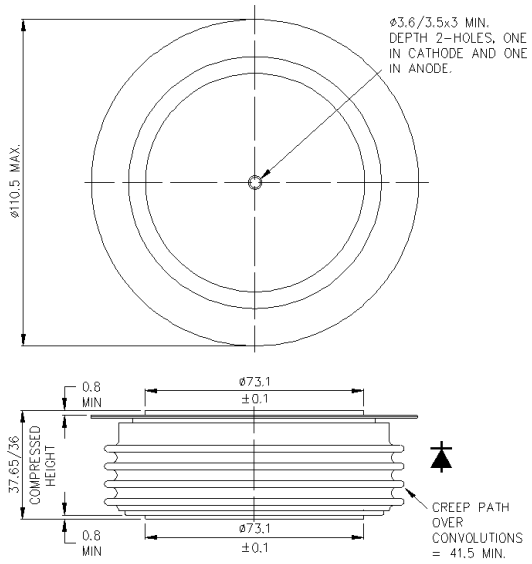
W6 - 100A270



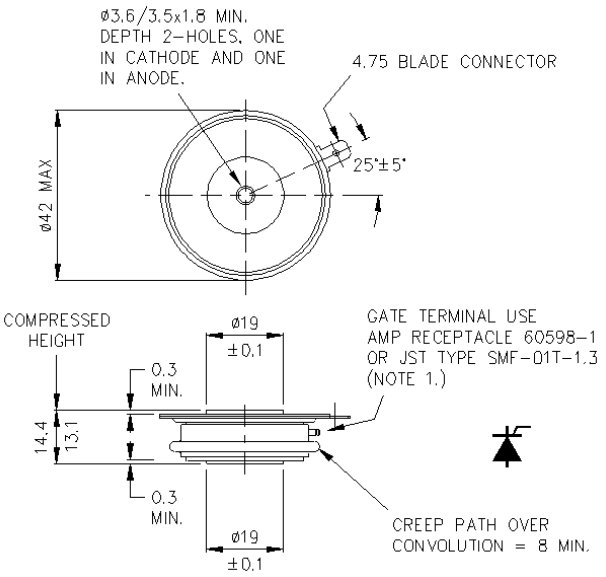
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

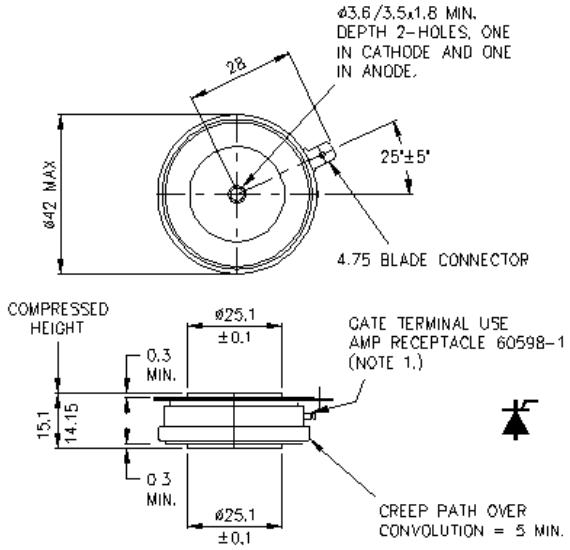
W7 - 100A293



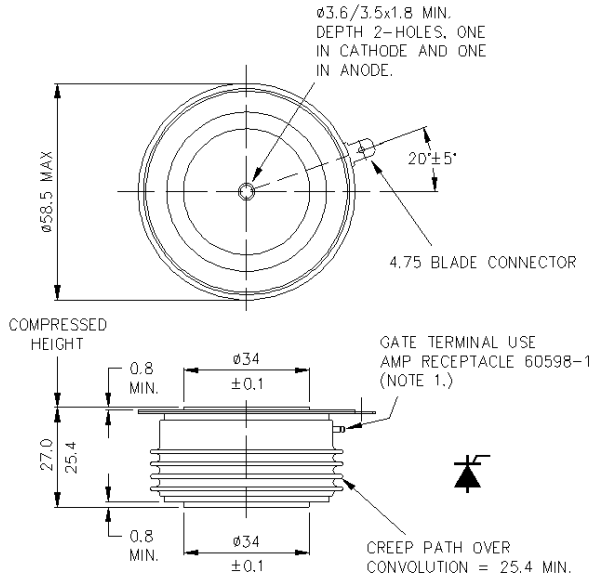
W8 - 101A212



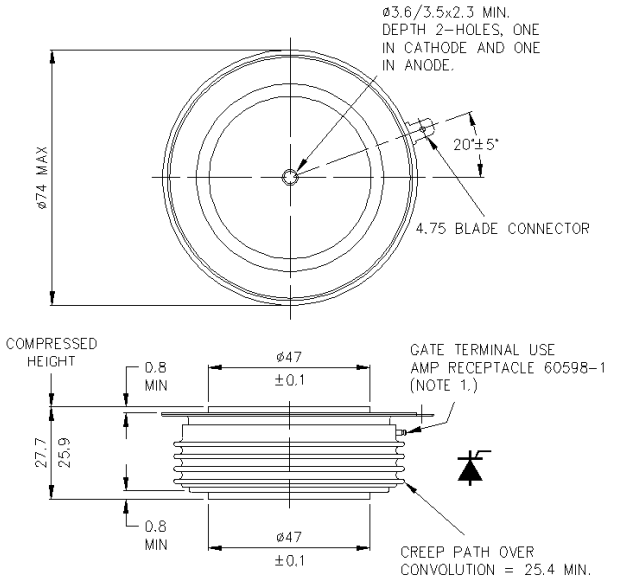
W9 - 101A335



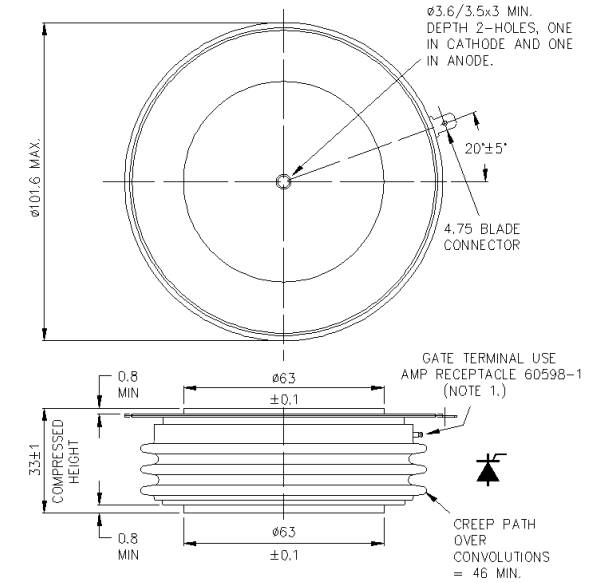
W10 - 101A216



W11 - 101A223



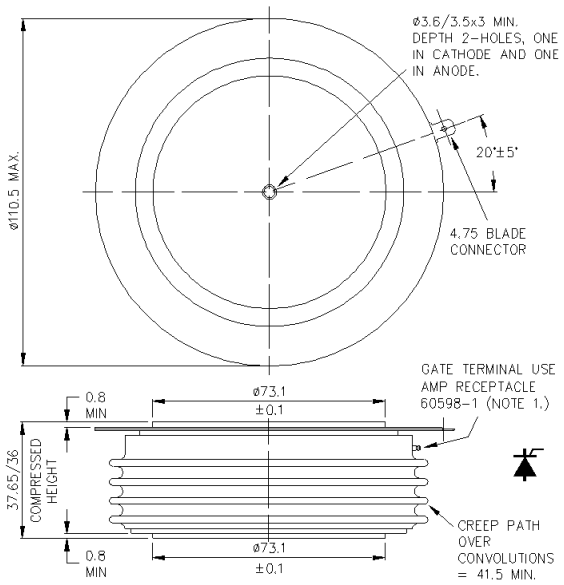
W12 - 101A232



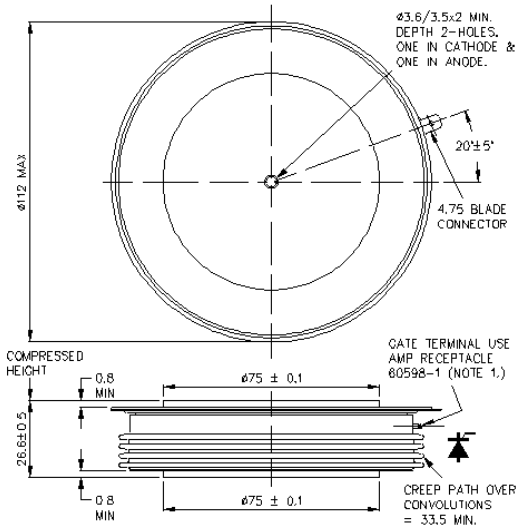
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

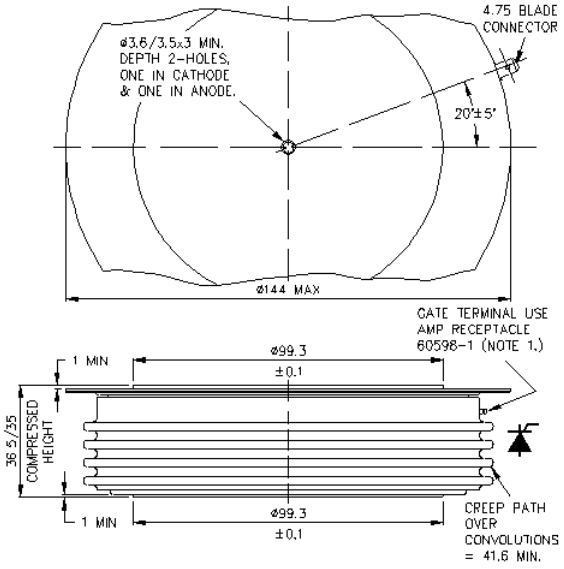
W13 - 101A281



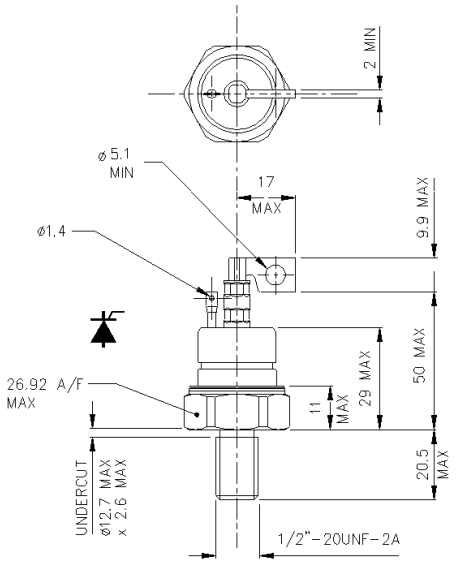
W14 - 101A325



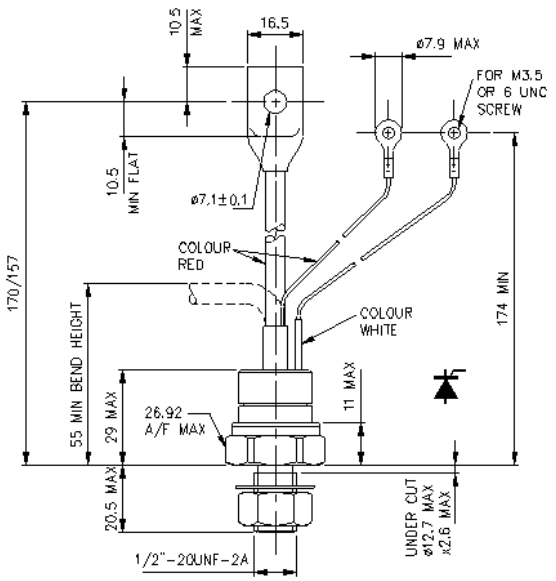
W15 - 101A322



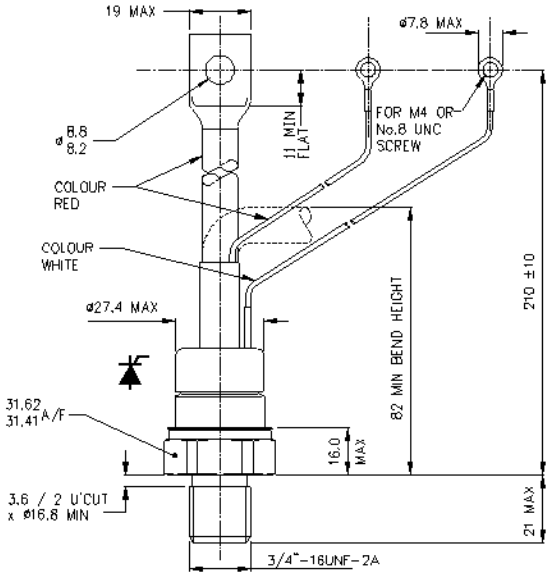
W16 - 101A235



W17 - 101A231



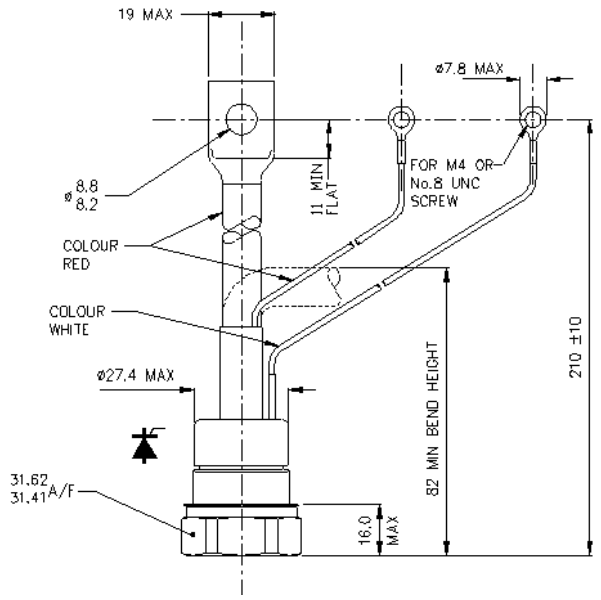
W18 - 101A225



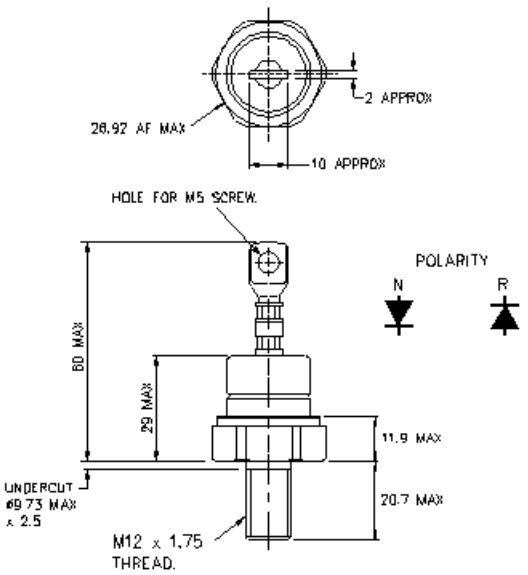
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

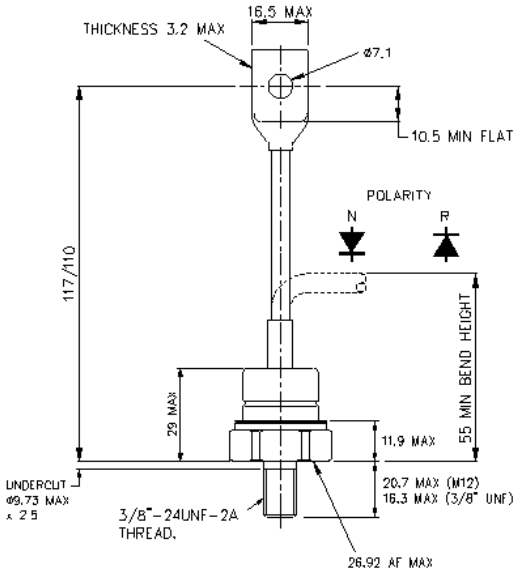
W19 - 101A321



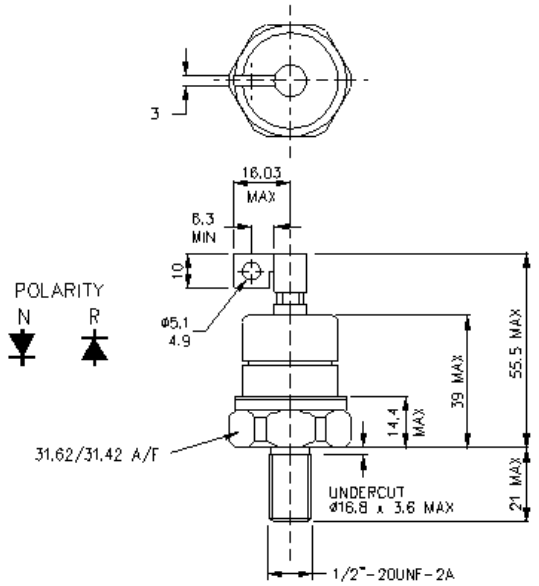
W20 - 100A303



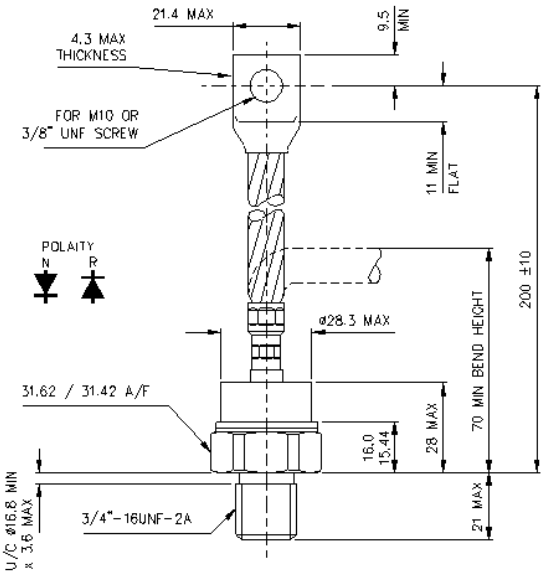
W21 - 100A294



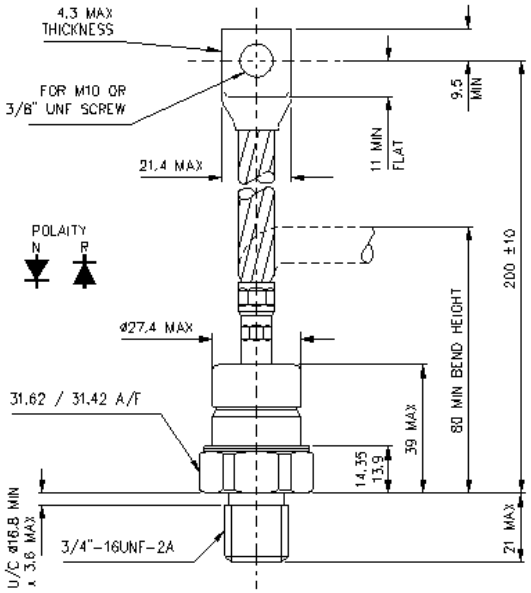
W22 - 100A297



W23 - 100A281



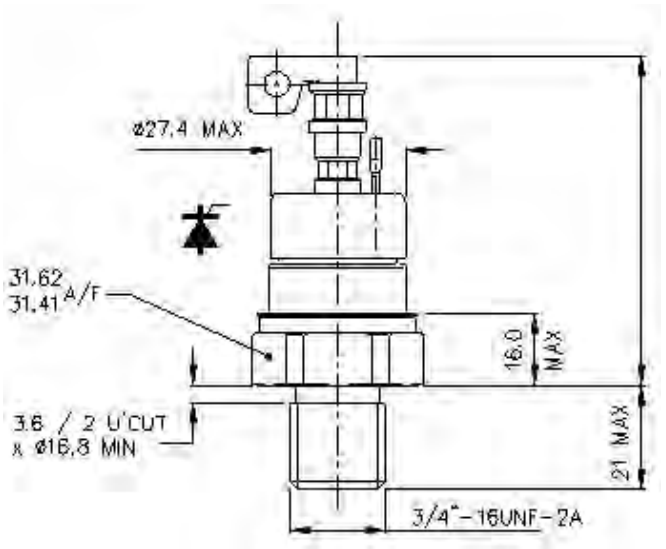
W24 - 100A280



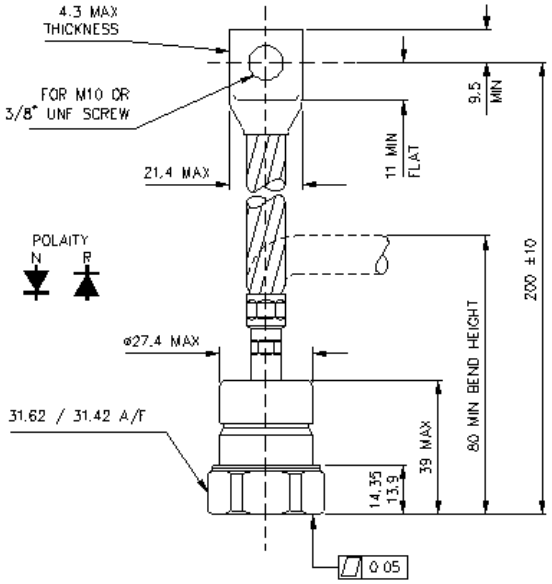
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

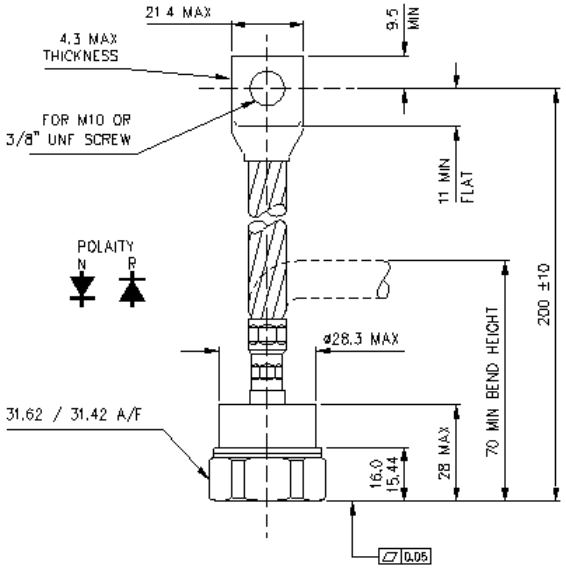
W25 - 101A362



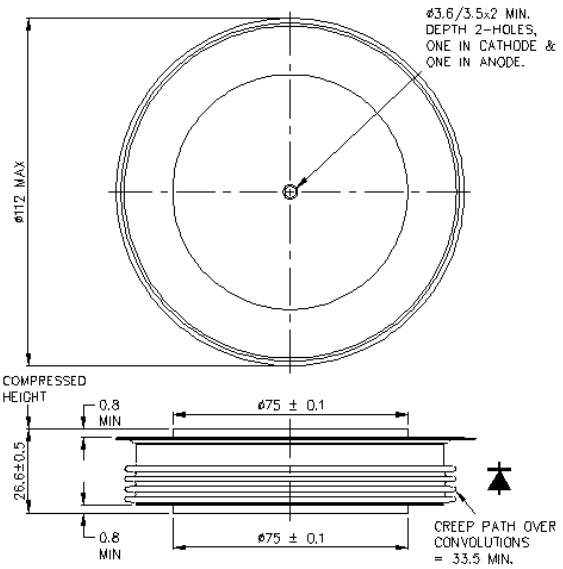
W26 - 100A283



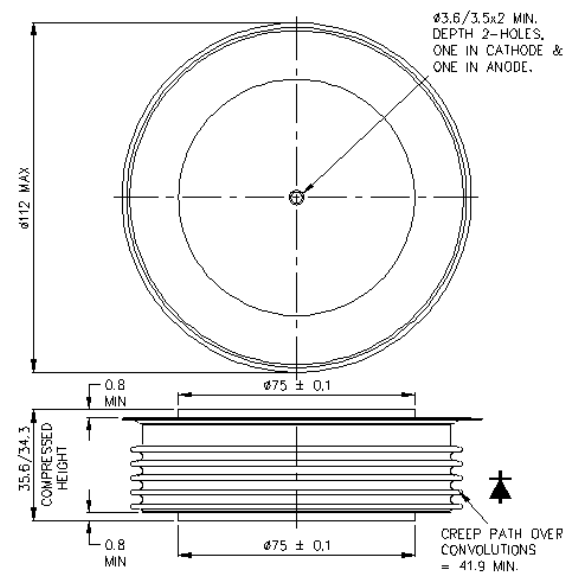
W27 - 100A284



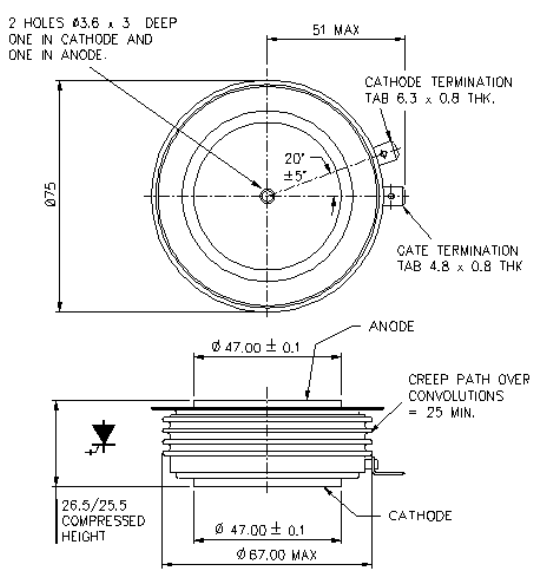
W28 - 100A330



W29 - 100A342



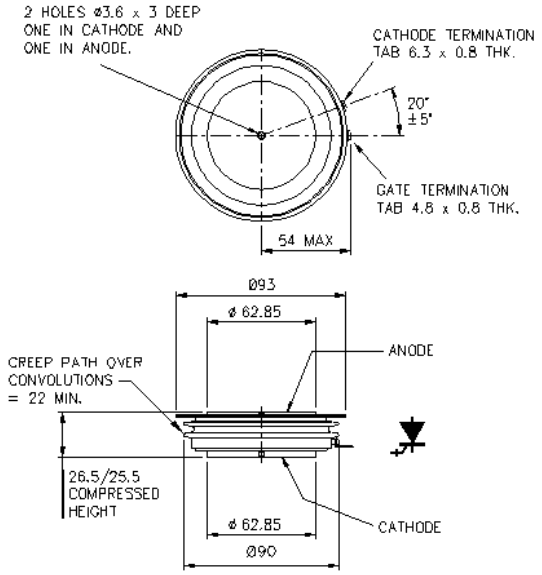
W30 - 101A343



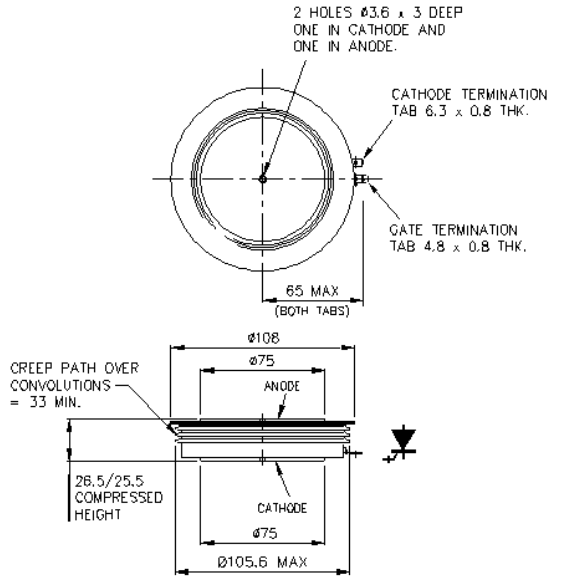
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

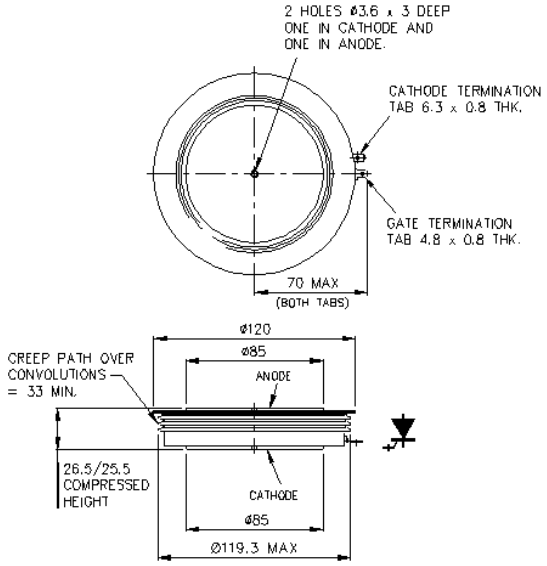
W31 - 101A344



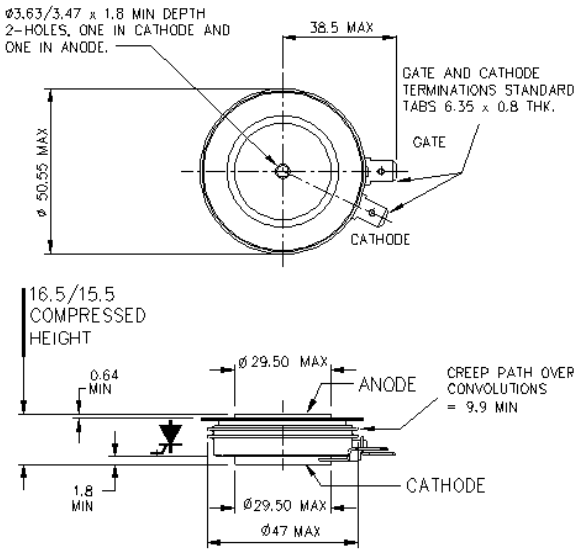
W32 - 101A345



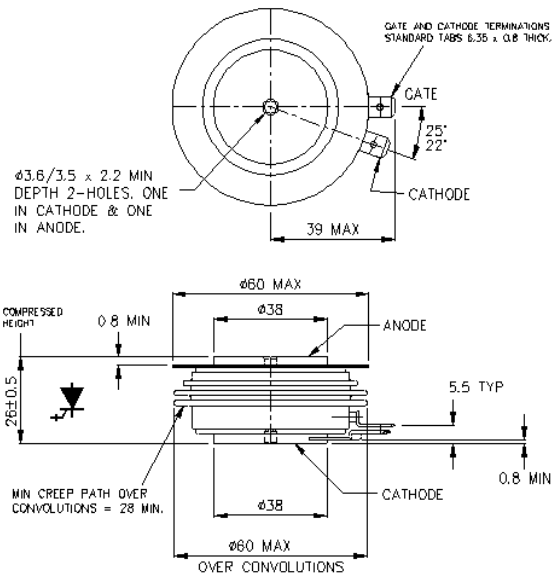
W33 - 101A346



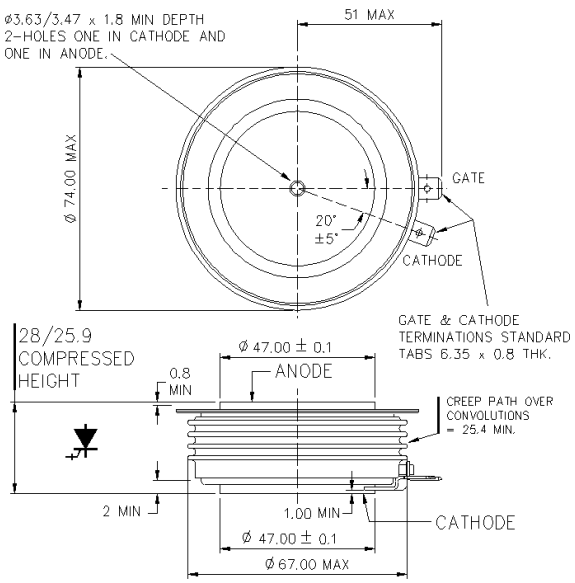
W34 - 101A287



W35 - 101A358



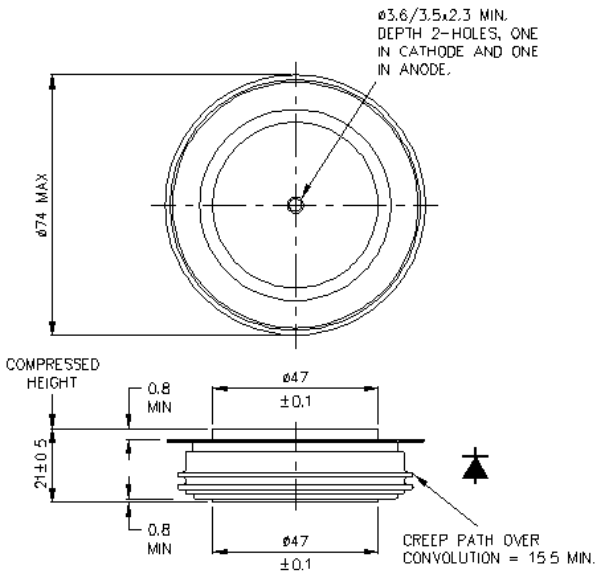
W36 - 101A288



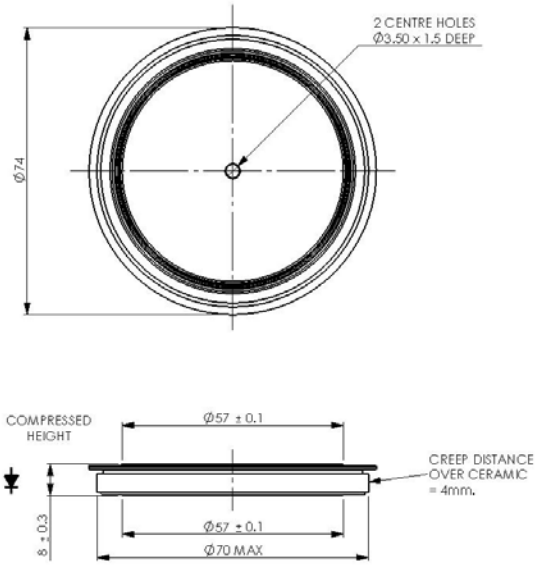
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

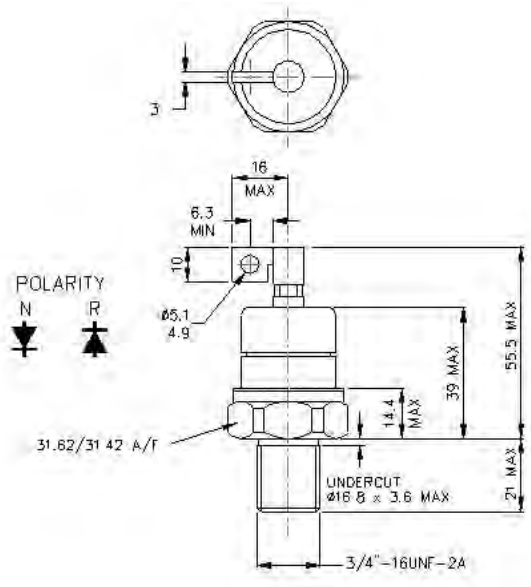
W37 - 100A325



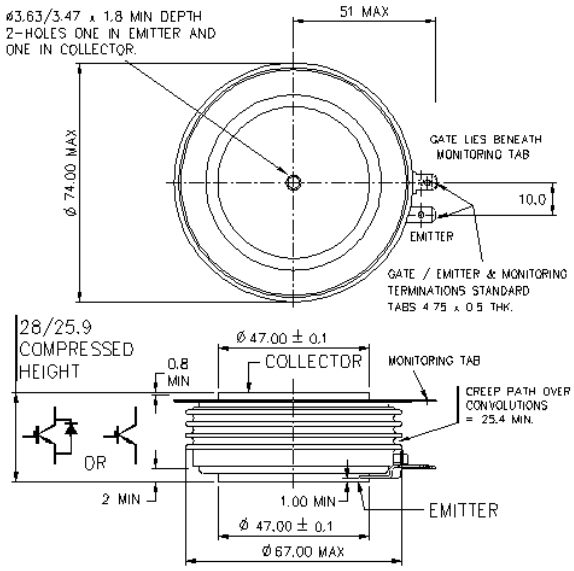
W38 - 100A365



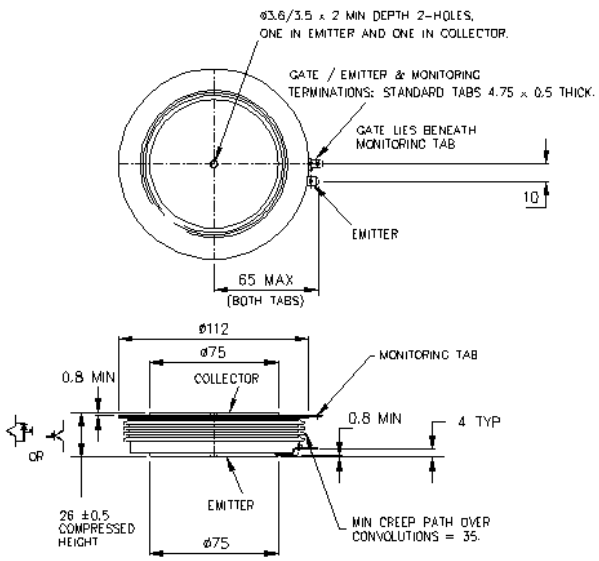
W39 - 100A338



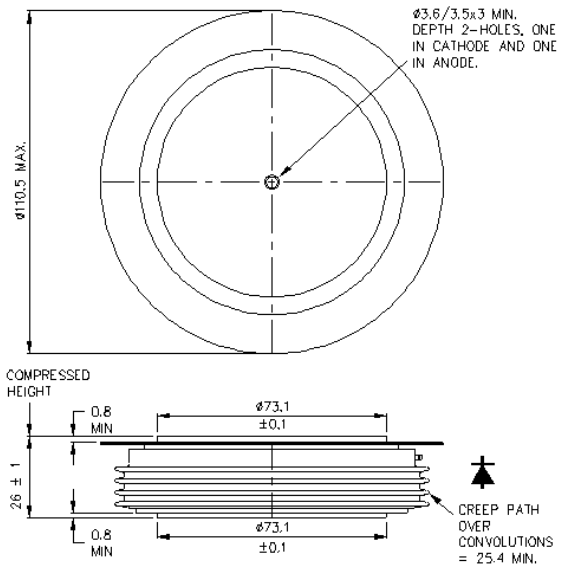
W40 - 171A107



W41 - 171A108



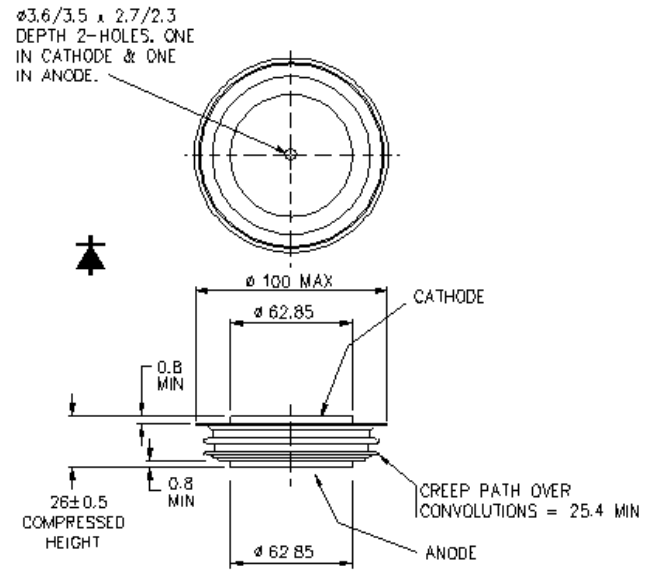
W42- 100A310



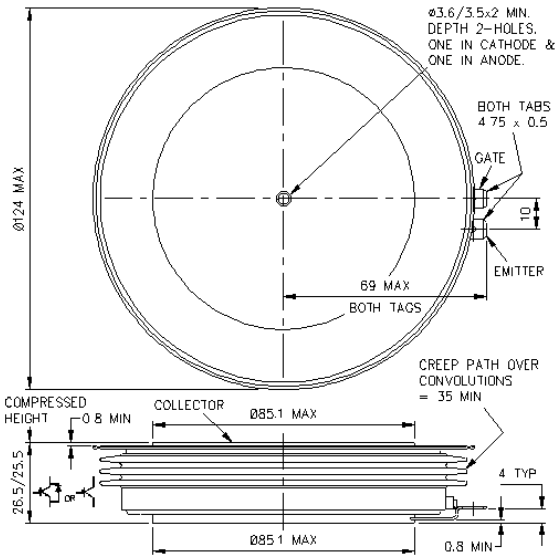
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

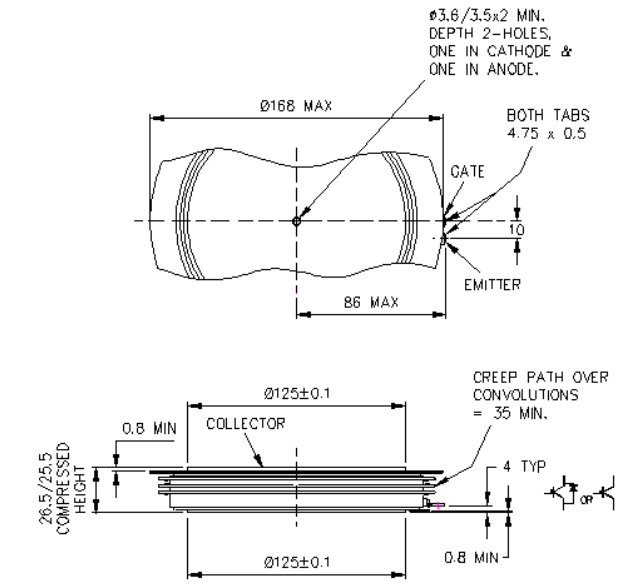
W43 - 100A320



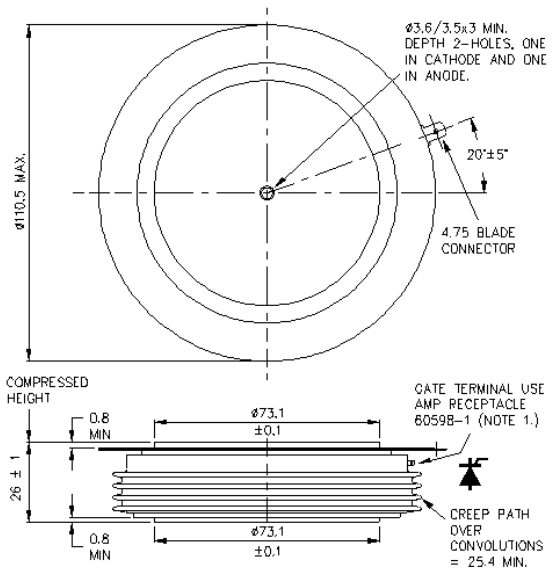
W44 - 101A340



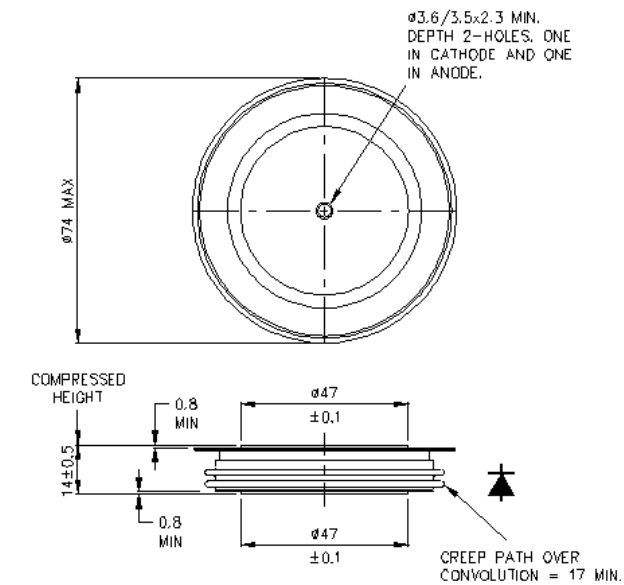
W45 - 101A359



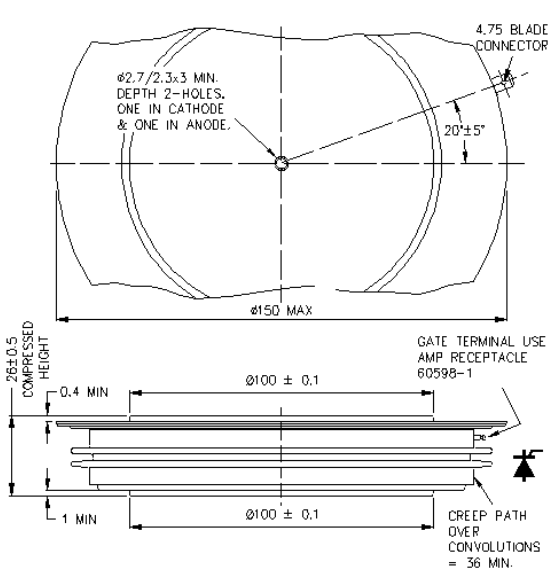
W46 - 101A305



W47 - 100A322



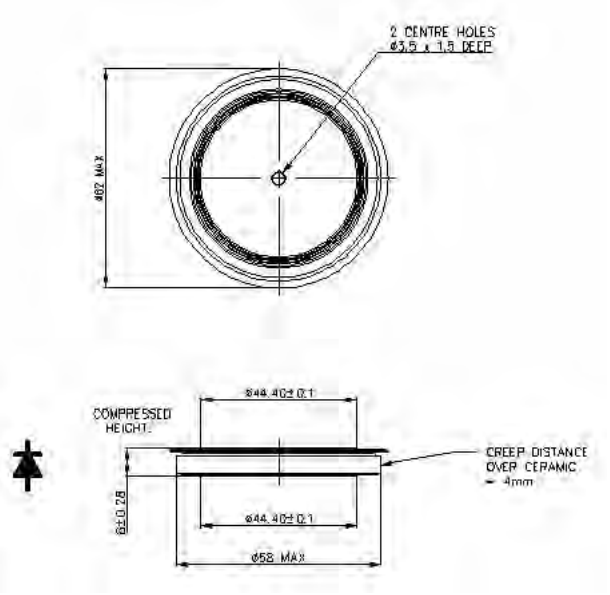
W48 - 101A347



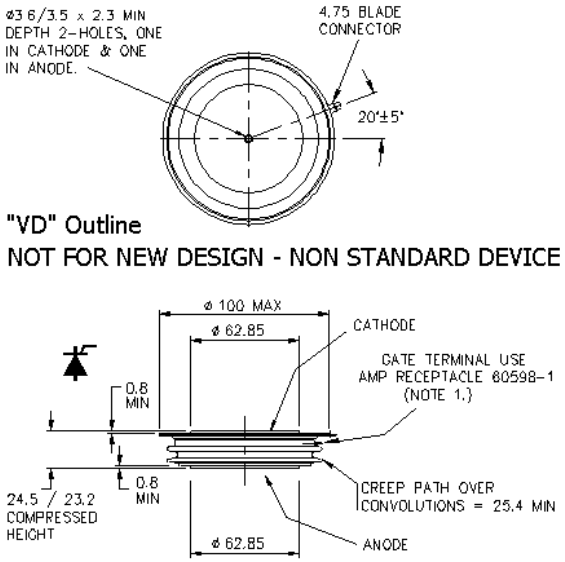
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

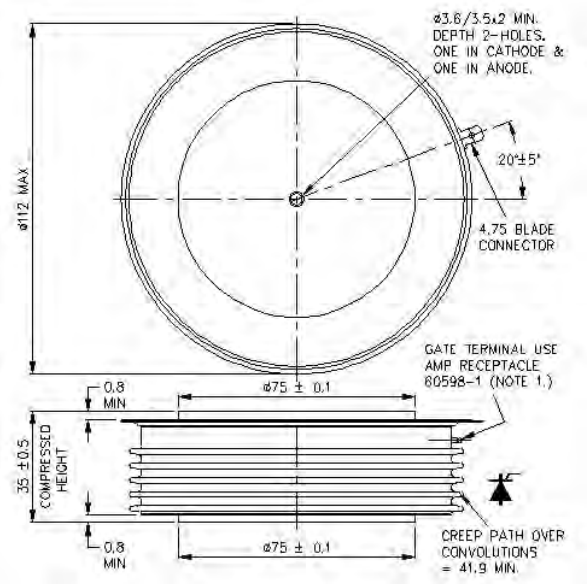
W49 - 100A354



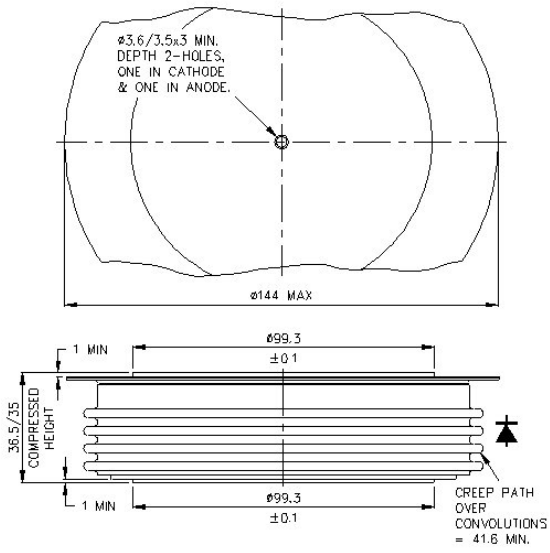
W50 - 101A309



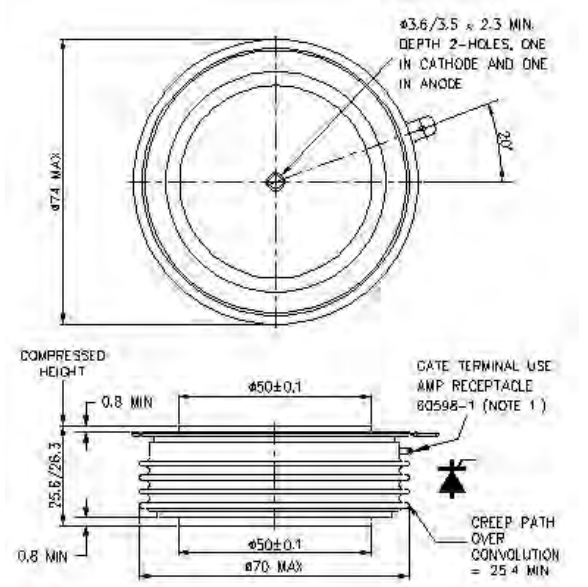
W51 - 101A334



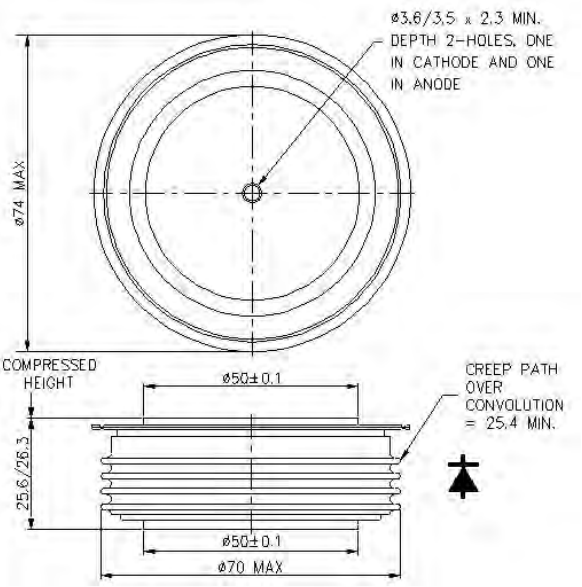
W52 - 100A328



W53 - 101A357



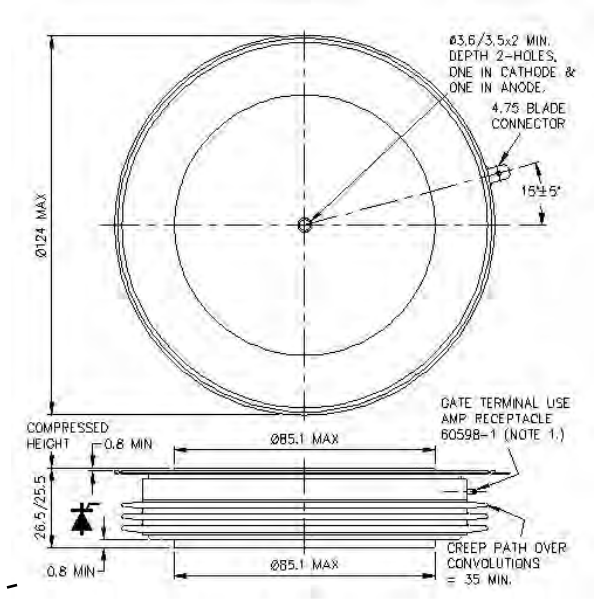
W54 - 100A353



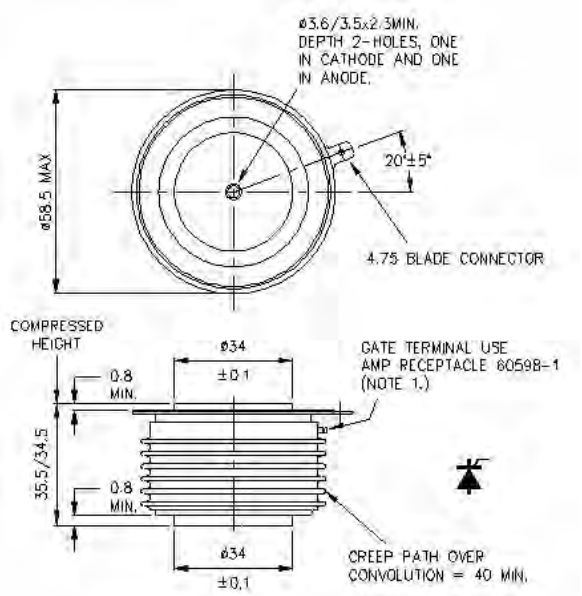
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

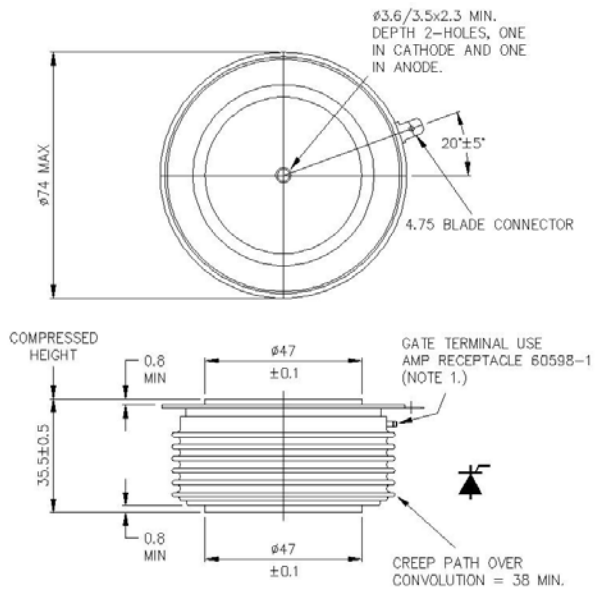
W55 - 101A352



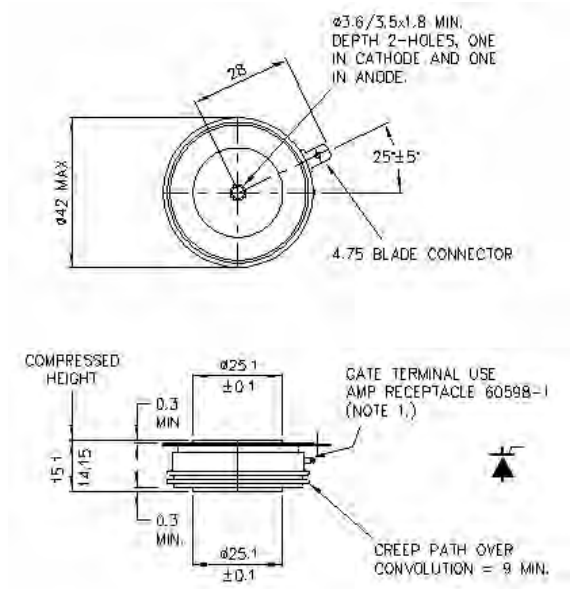
W56 - 101A365



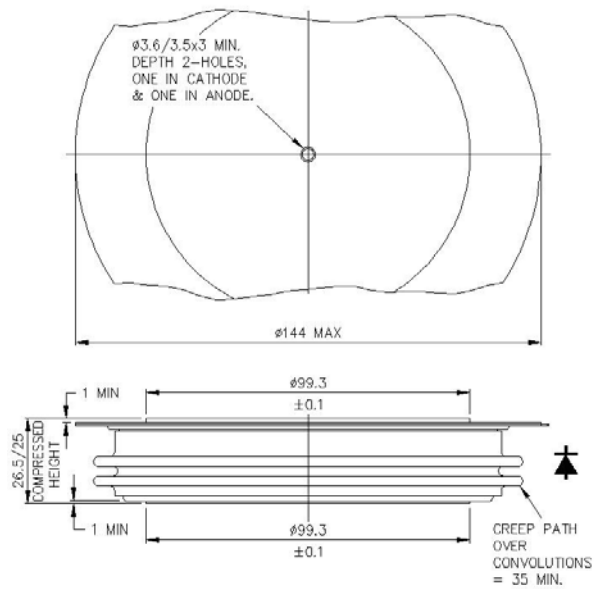
W57 - 101A363



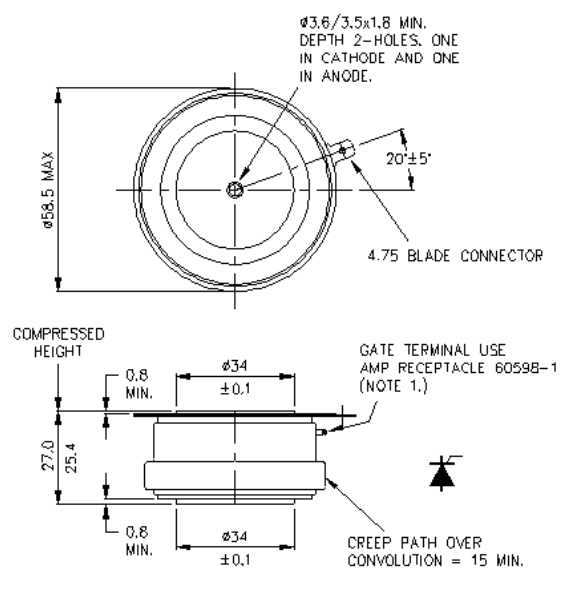
W58 - 101A237



W59 - 100A359



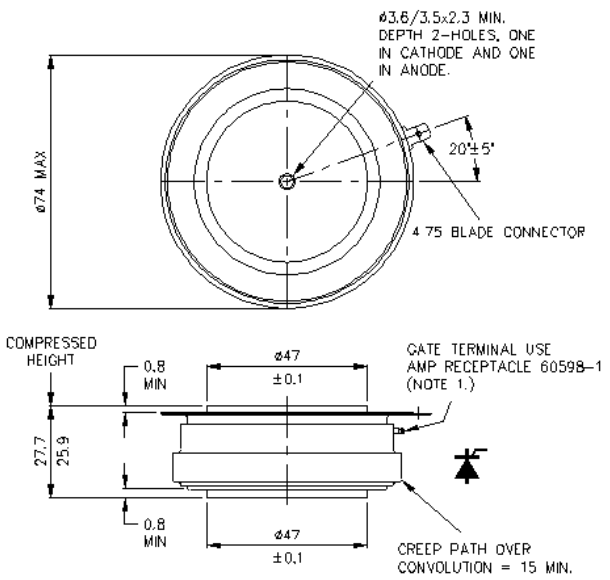
W60 - 101A336



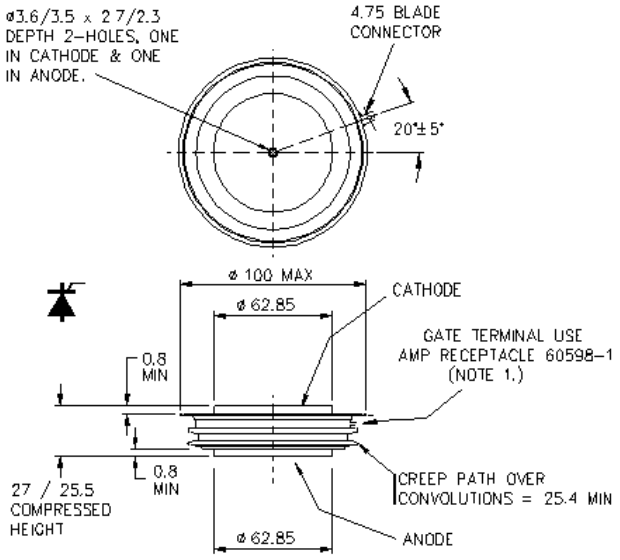
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

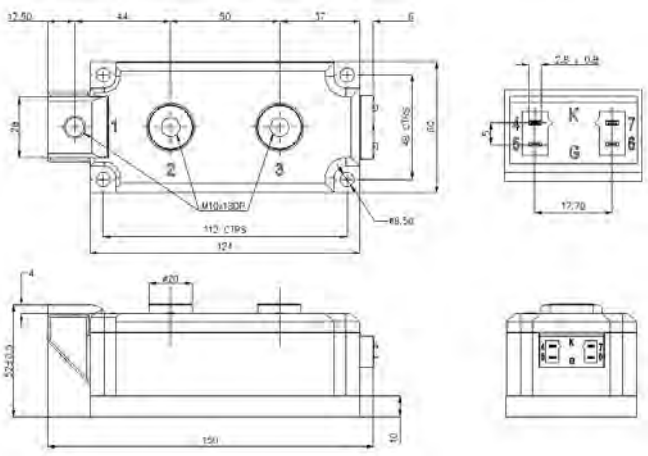
W61 - 101A337



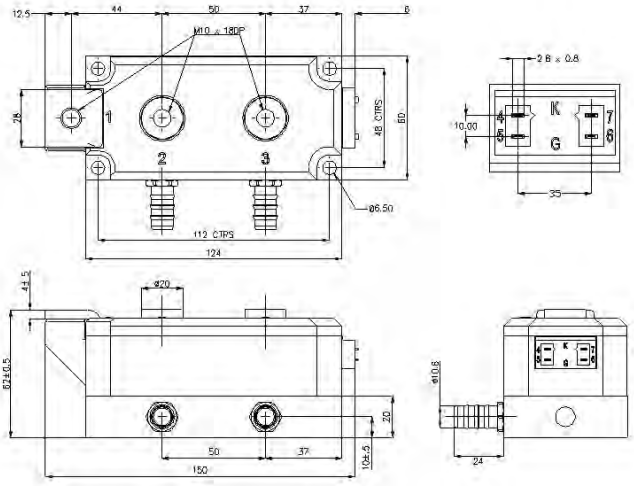
W62 - 101A314



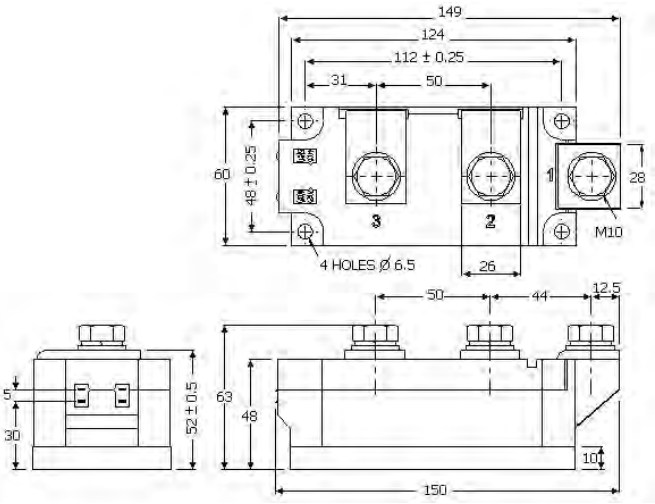
W63 - 150A111



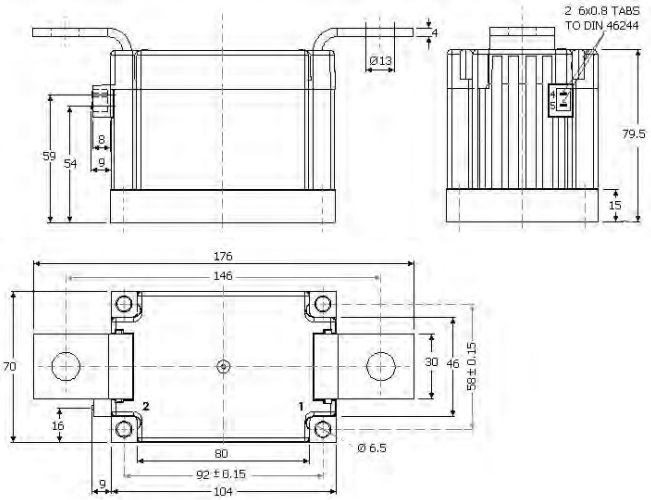
W64 - 150A113



W65 - 150A118



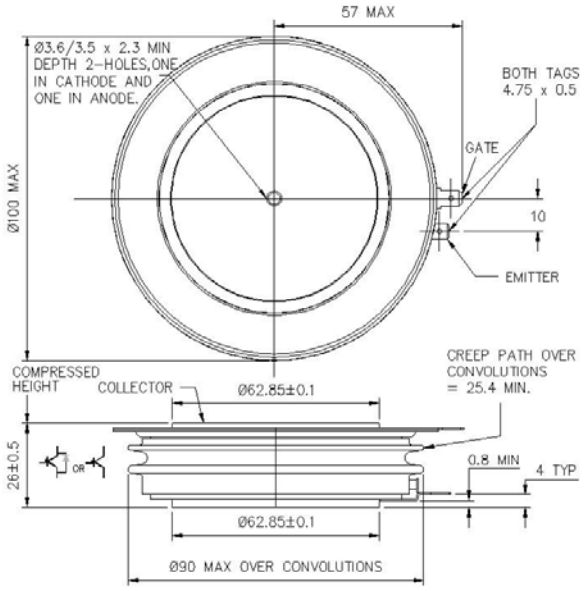
W66 - 150A115



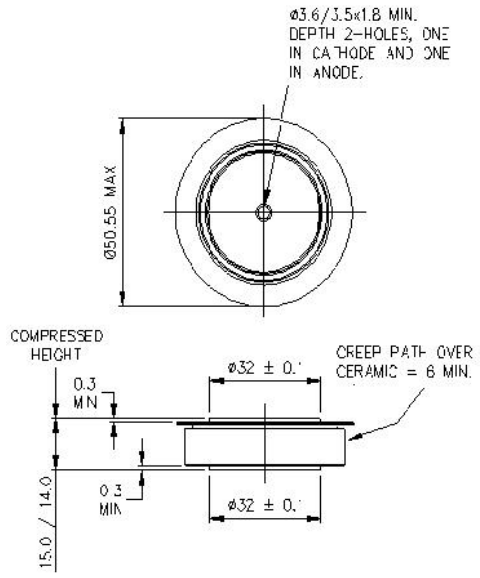
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

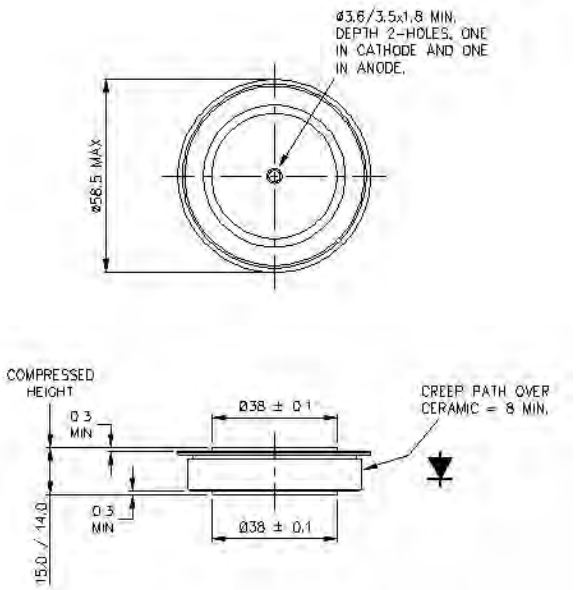
W67 - 101A366



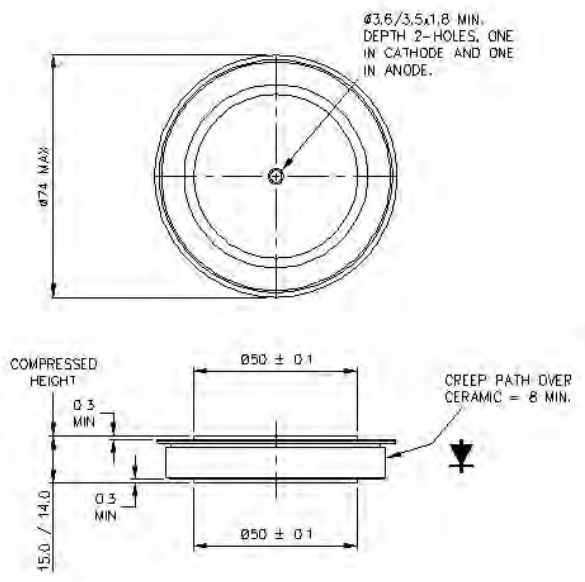
WD1 - 100A366



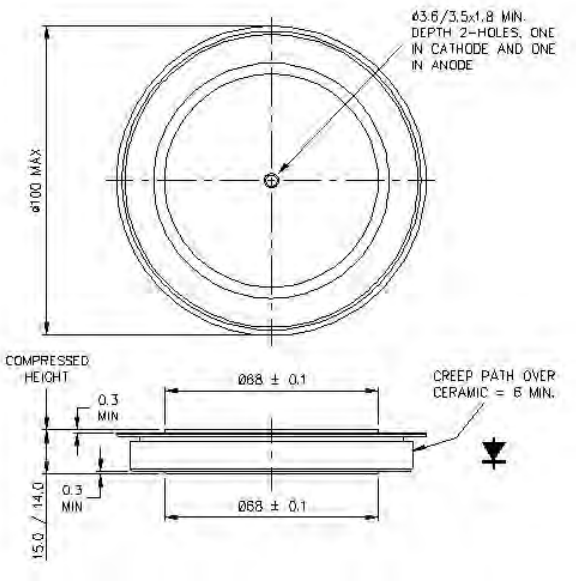
WD2 - 100A335



WD3 - 100A356



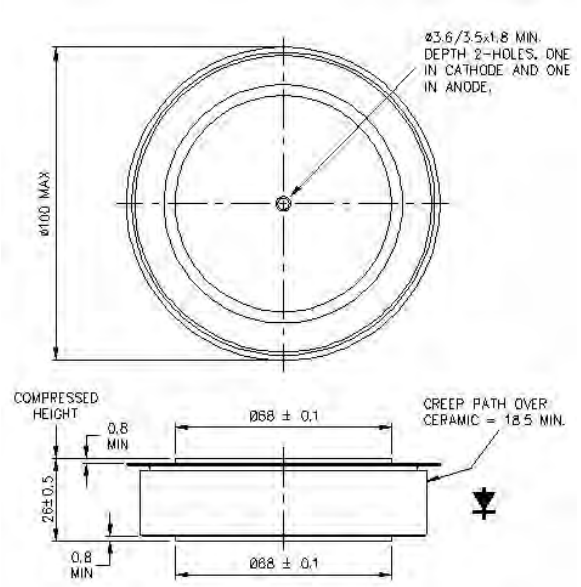
WD4 - 100A357



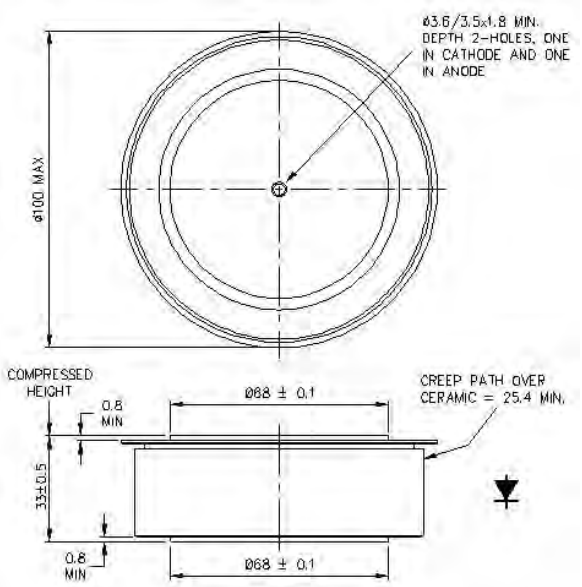
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

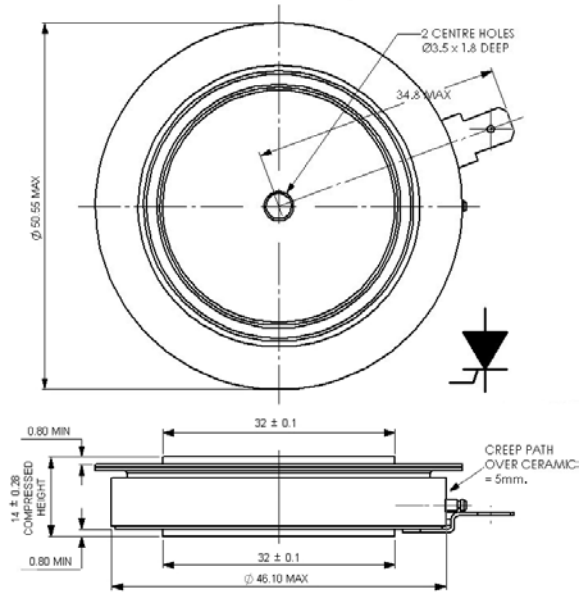
WD5 - 100A361 - 26 mm thick



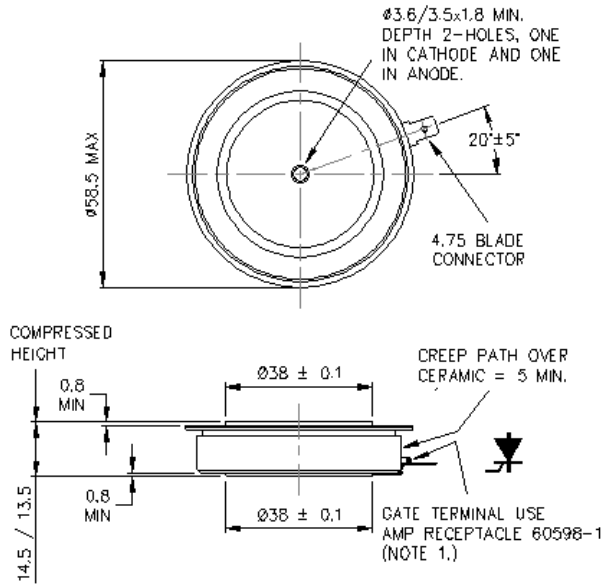
WD6 - 100A360 - 33 mm thick



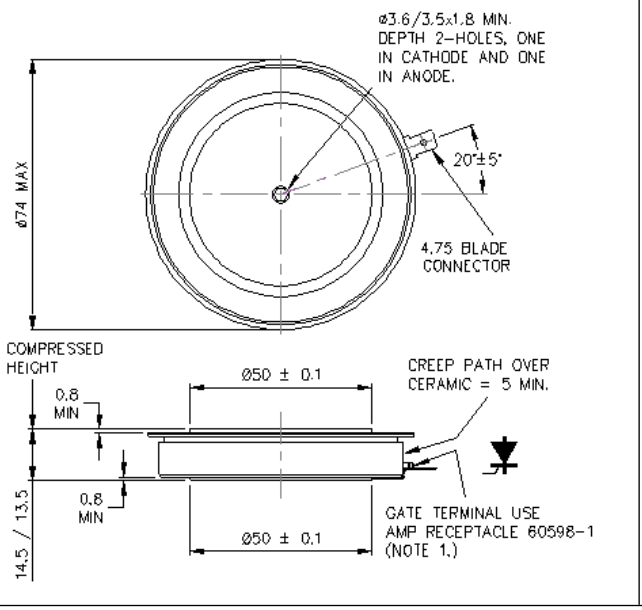
WP1 - 101A361



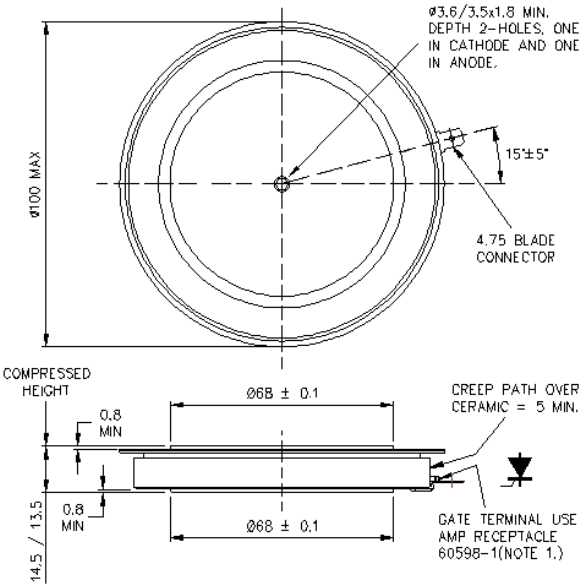
WP2 - 101A354



WP3 - 101A353



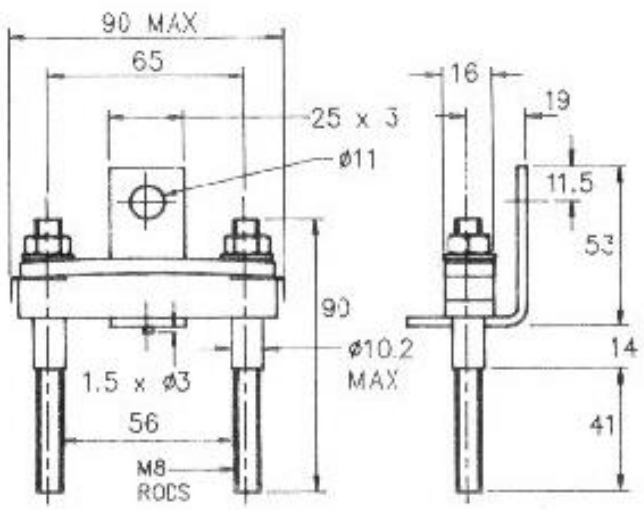
WP4 - 101A355



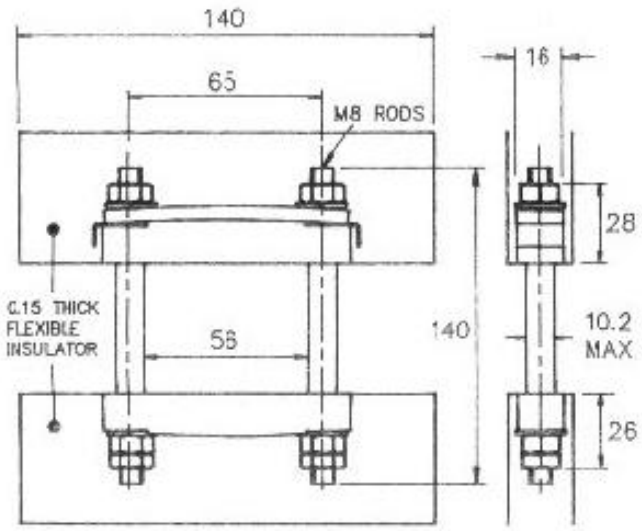
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

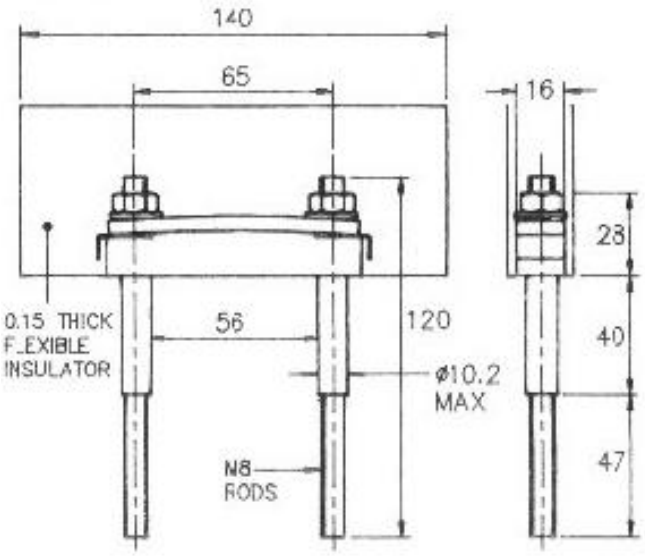
WC1 - CMK450S56M



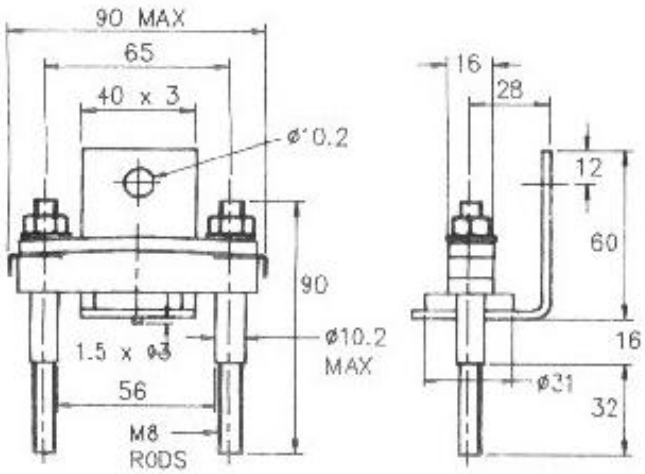
WC2 - CMK450D56M



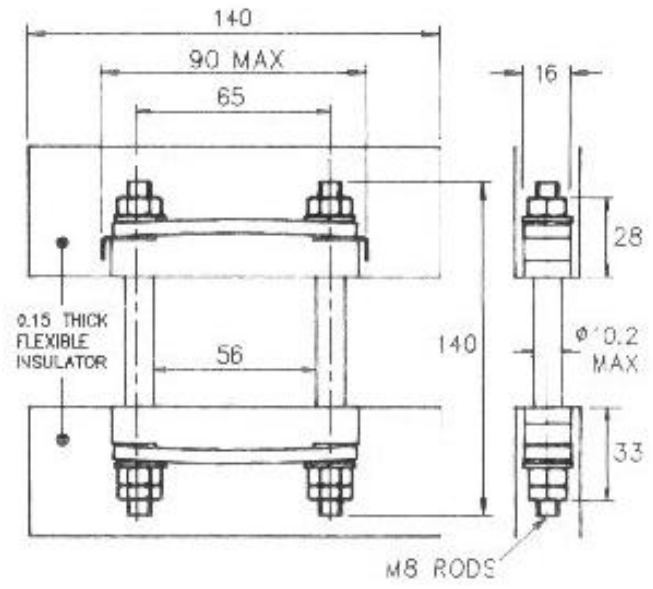
WC3 - CMK450DT56M



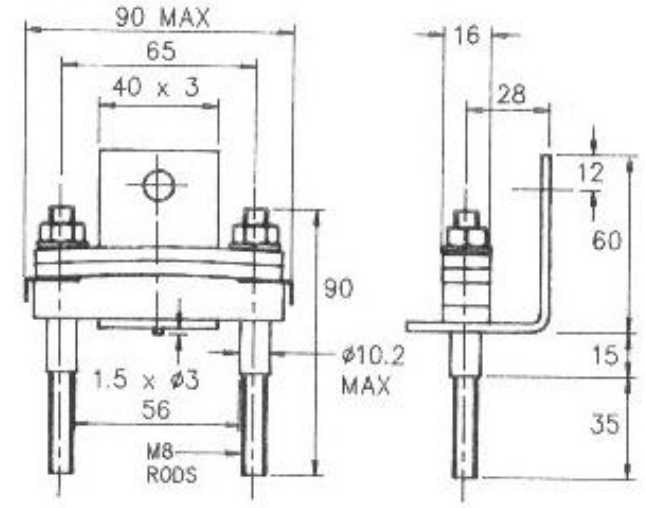
WC4 - CMK550S56M



WC5 - CMK550D56M



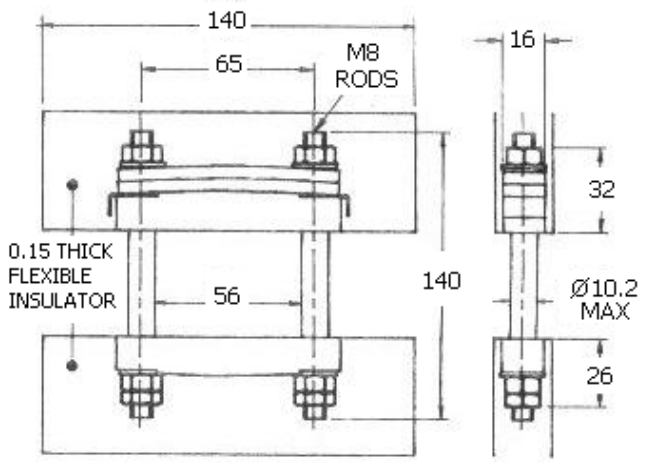
WC6 - CMK900S56M



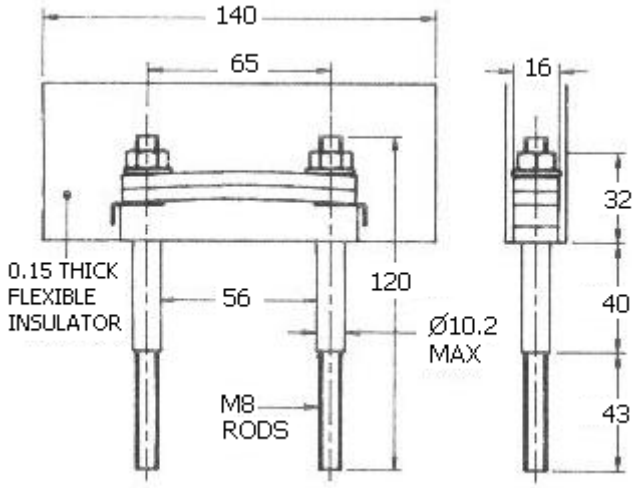
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

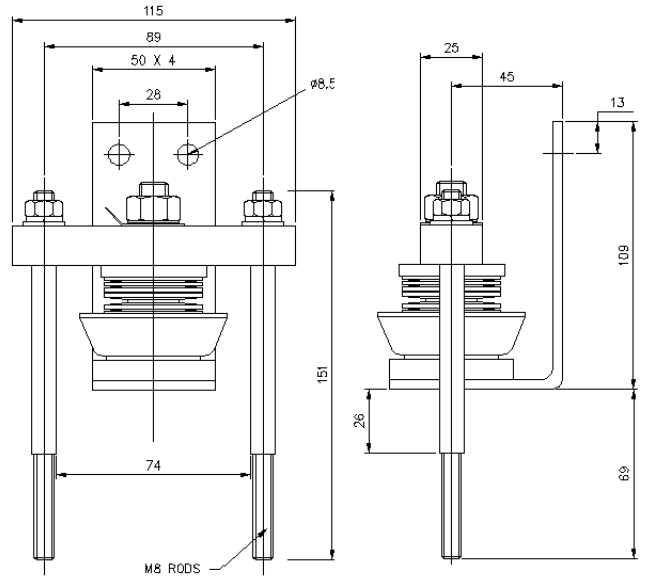
WC7 - CMK900D56M



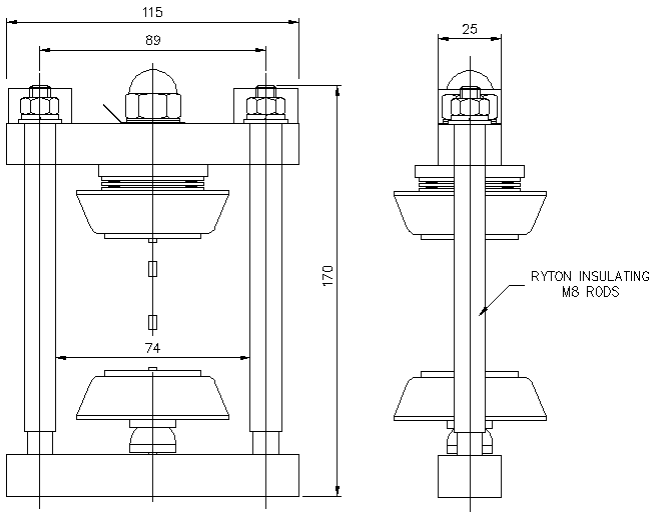
WC8 - CMK900DT56M



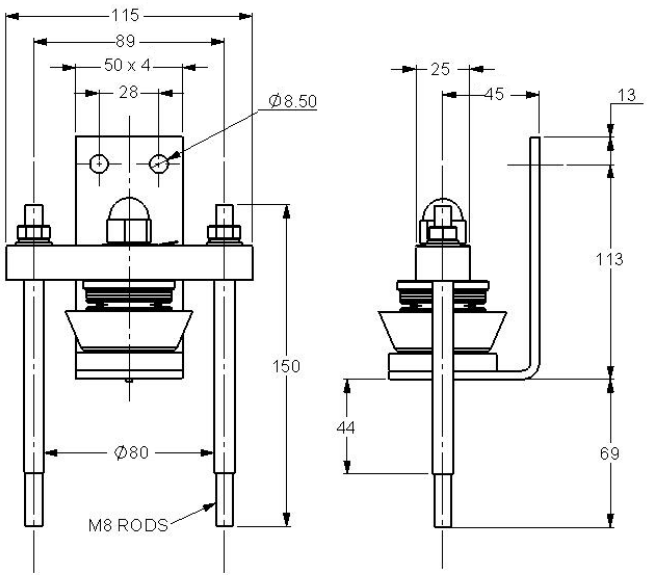
WC9 - CMK0600S74M



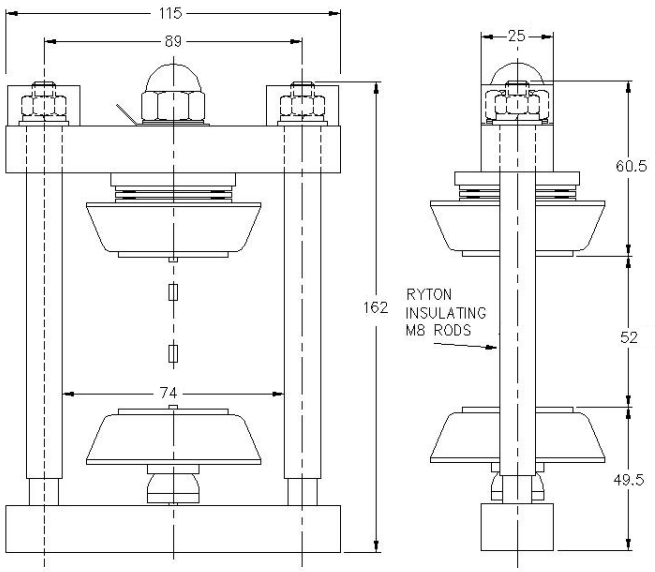
WC10 - CMK0600D74M



WC11 - CMK1000S74M



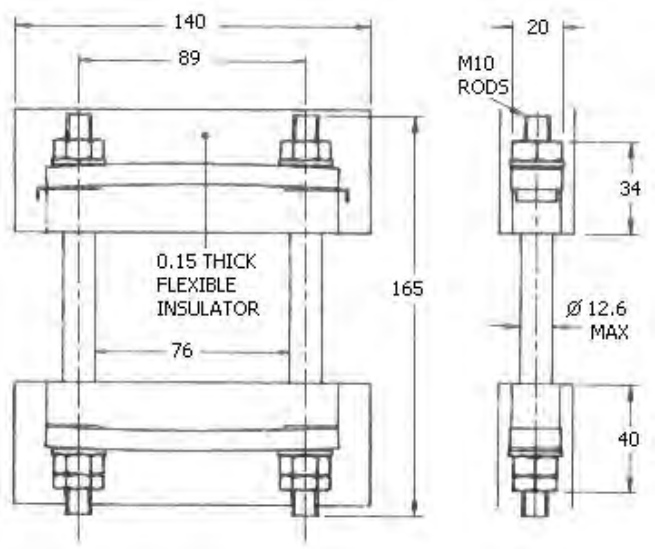
WC12 - CMK1000D74M



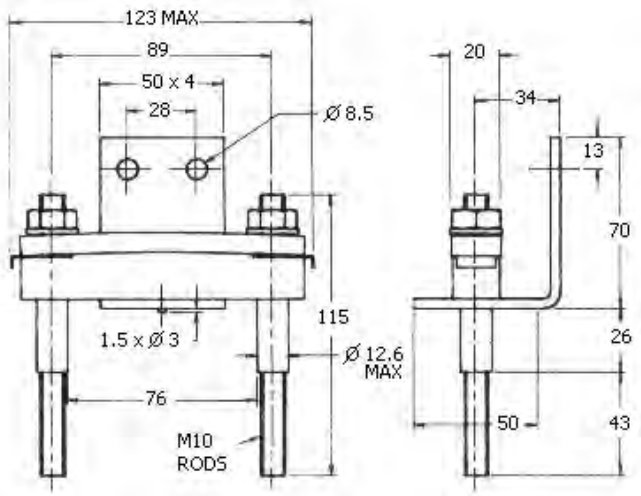
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

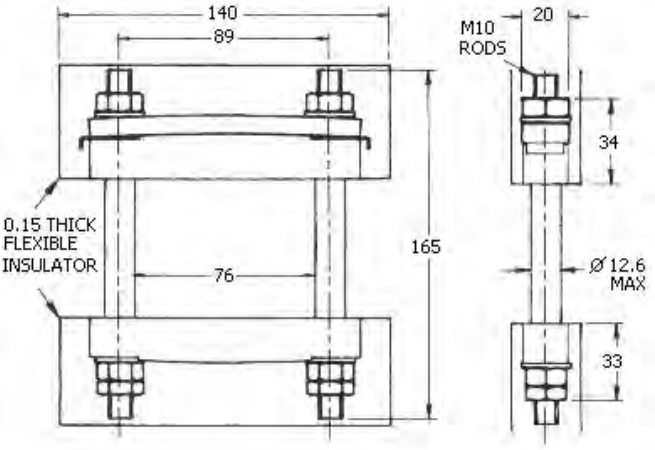
WC13 - CMK1100D76M



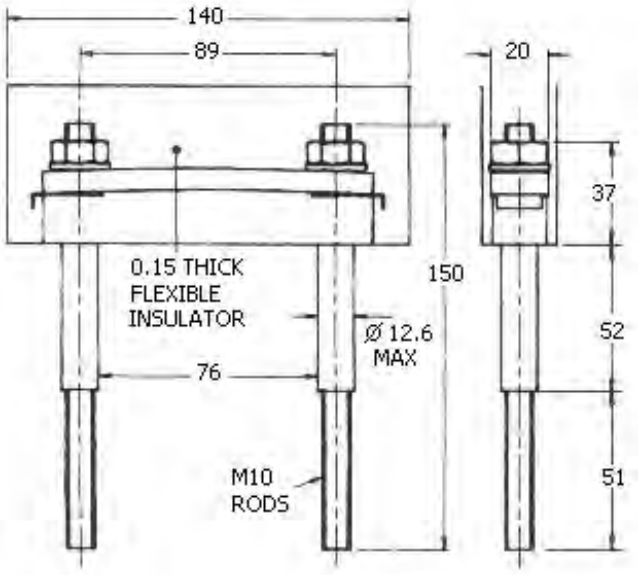
WC14 - CMK1130S76M



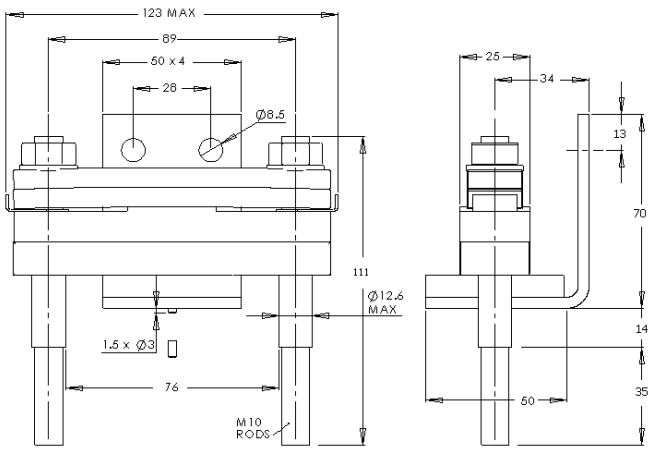
WC15 - CMK1130D76M



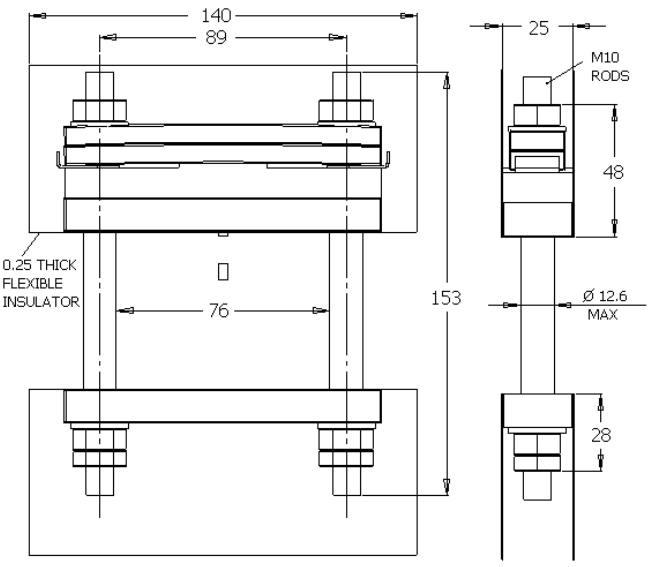
WC16 - CMK1130DT76M



WC17 - CMK1800S76M



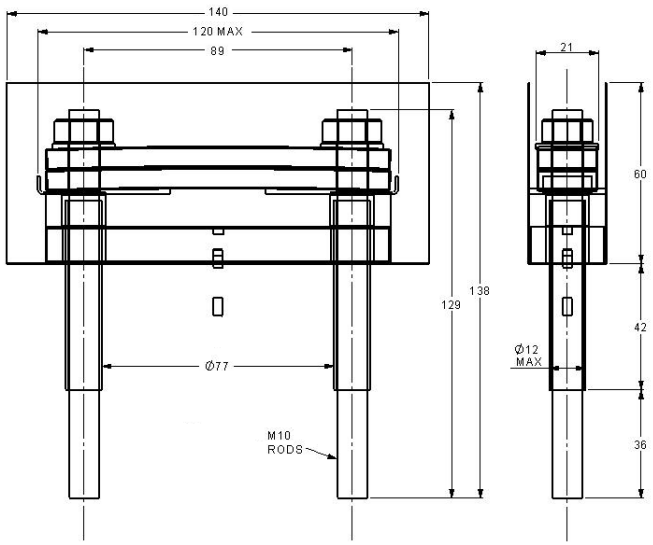
WC18 - CMK1800D76MM6



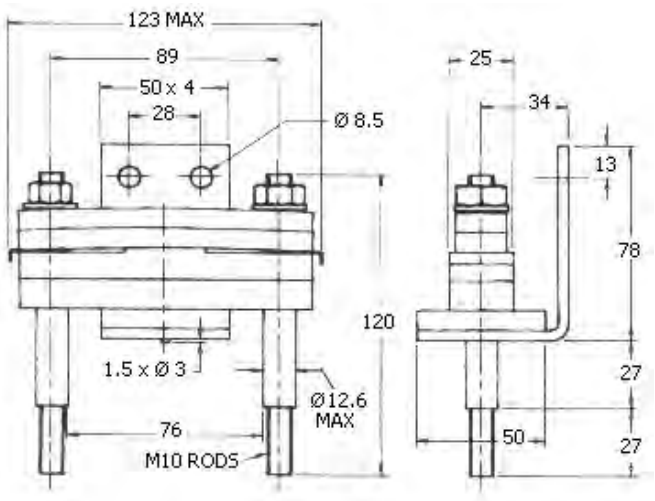
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

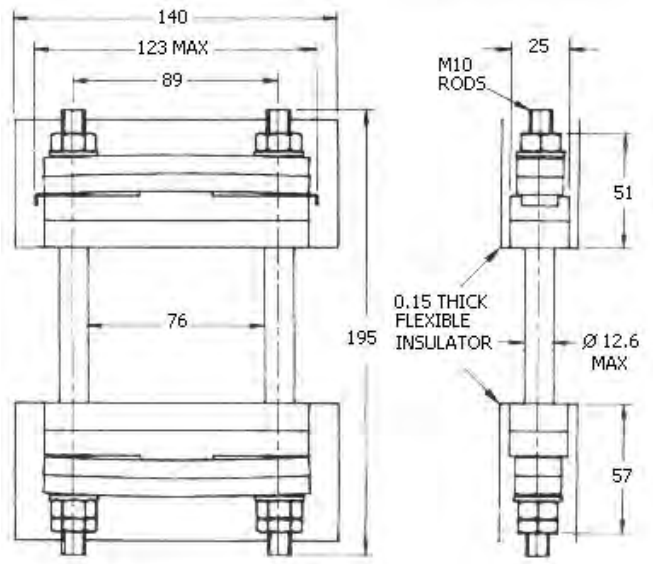
WC19 - CMK1800DT76M



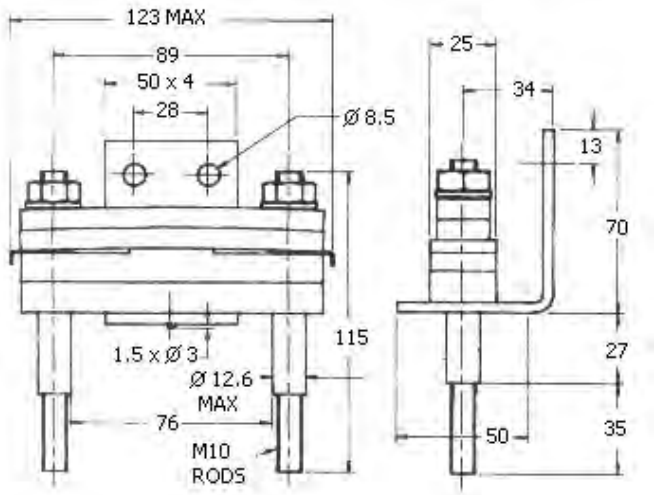
WC20 - CMK2100S76M



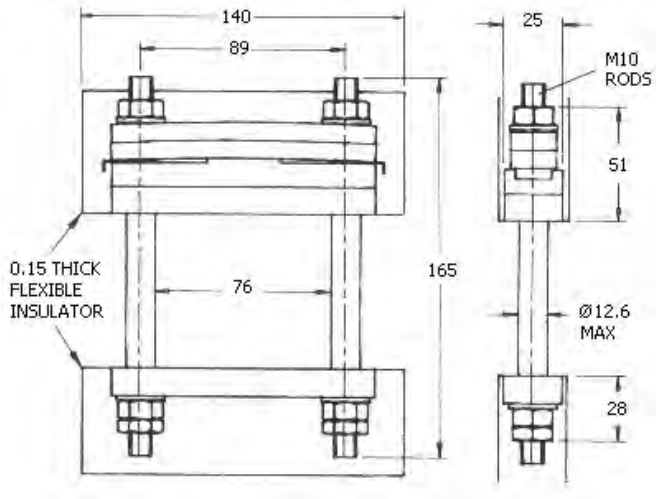
WC21 - CMK2100D76M



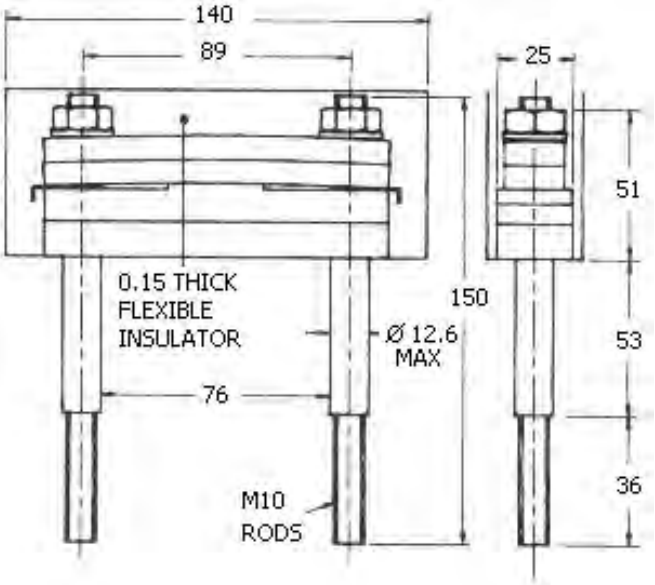
WC22 - CMK2140S76M



WC23 - CMK2140D76M



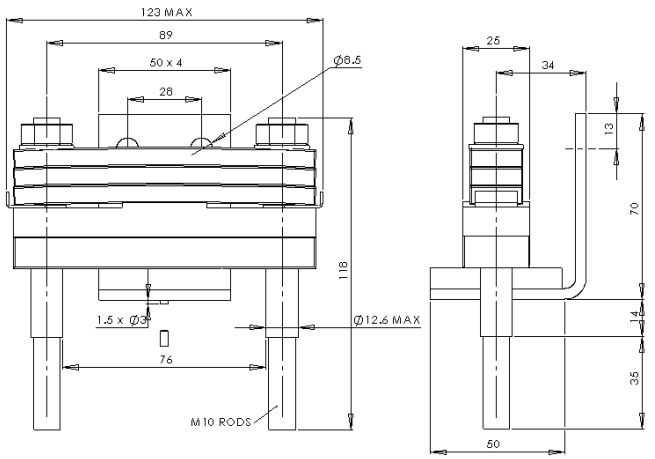
WC24 - CMK2140D76M



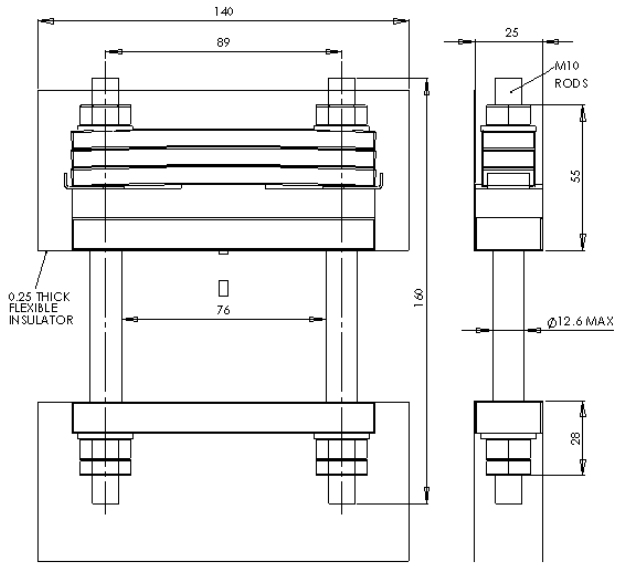
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

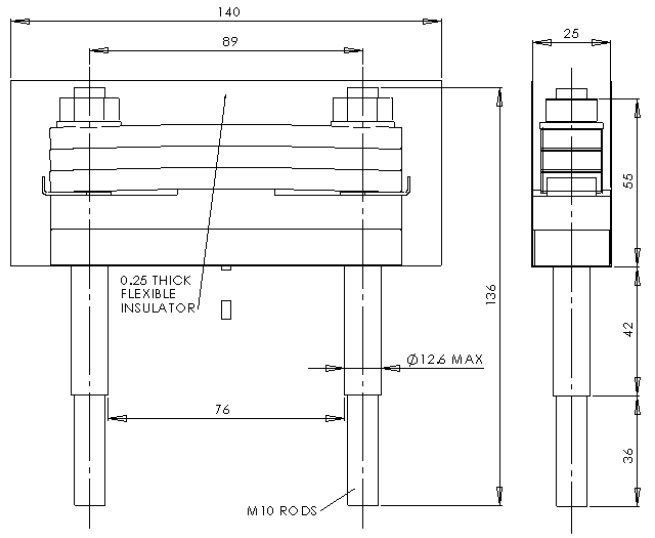
WC25 - CMK2700S76M



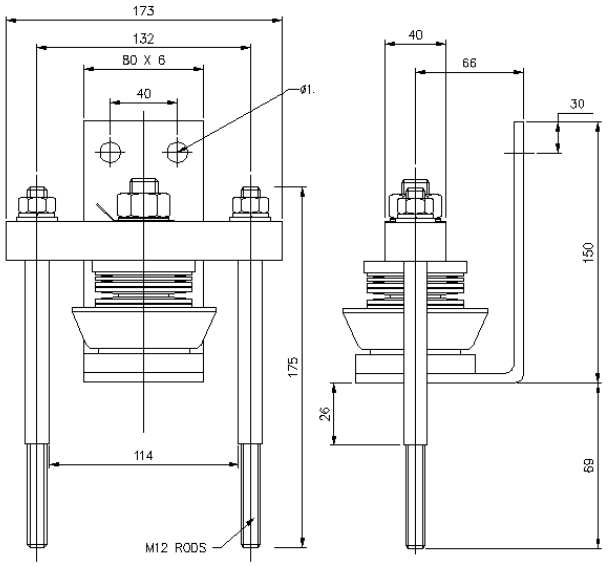
WC26 - CMK2700D76M



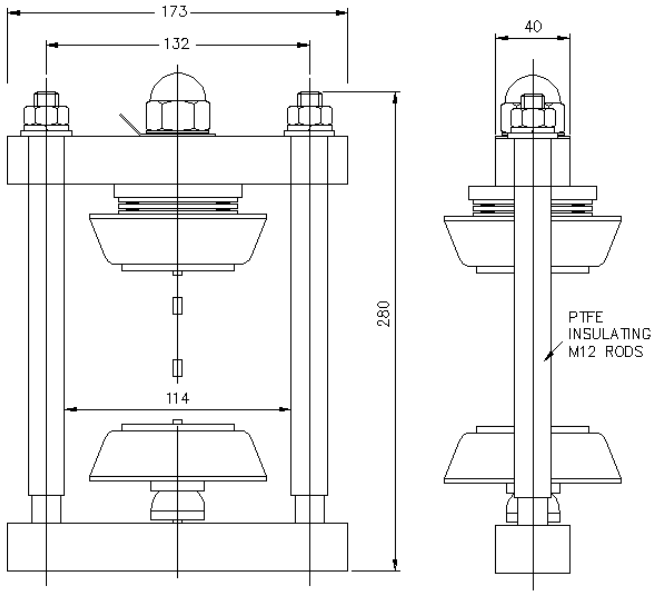
WC27 - CMK2700DT76M



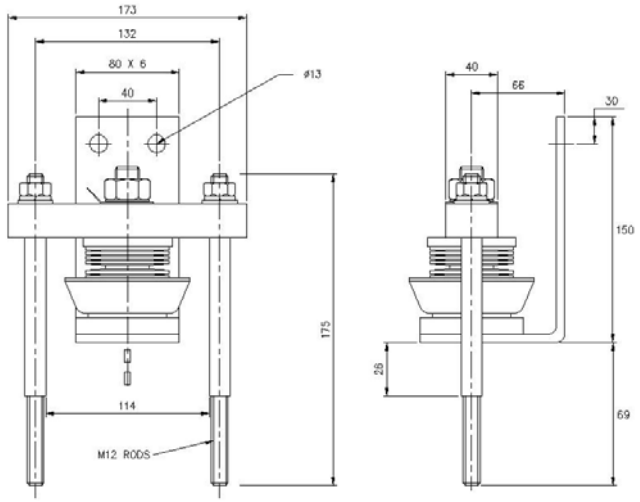
WC28 - CMK2000S114M



WC29 - CMK2000D114M



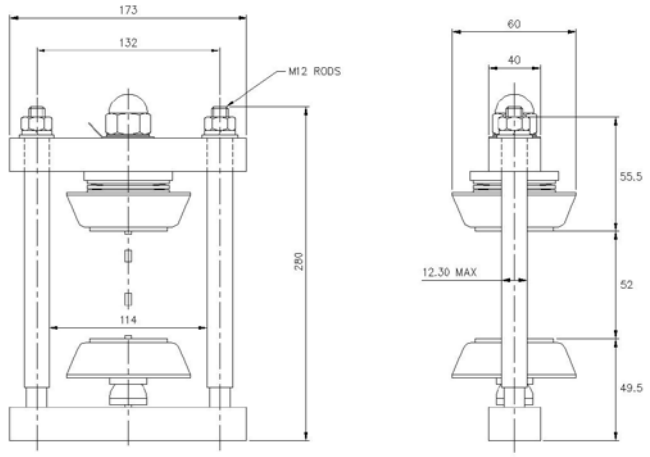
WC30 - CMK2500S114M



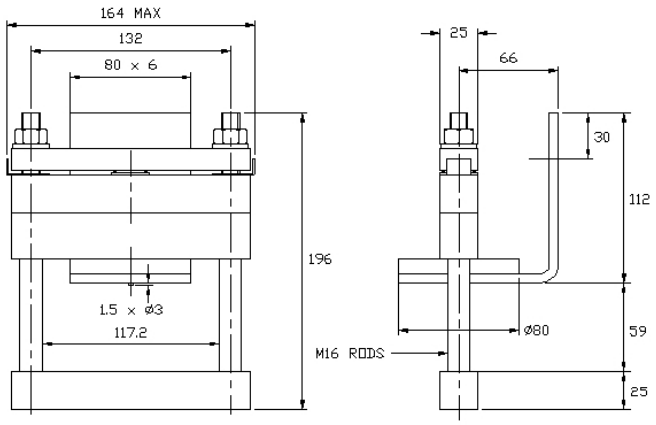
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

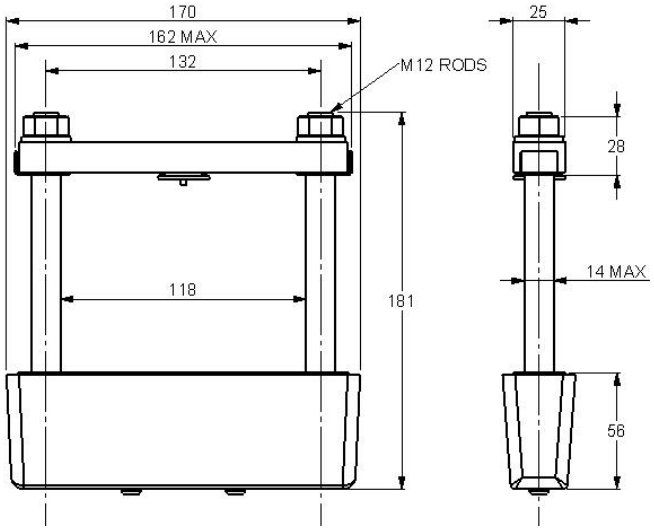
WC31 - CMK2500D114M



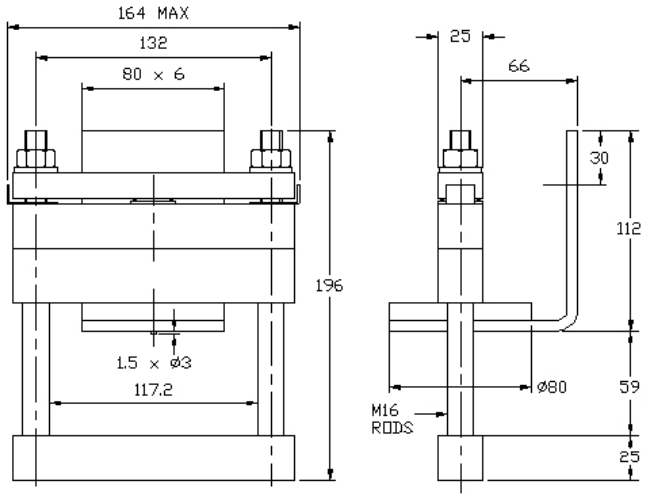
WC32 - CMK2500S116M



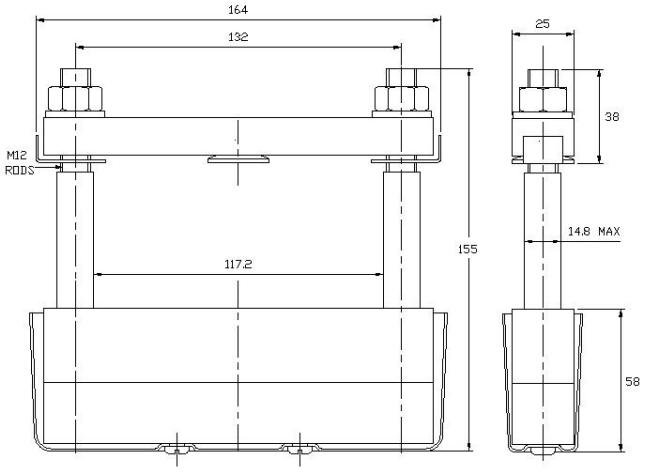
WC33 - CMK2500D116M



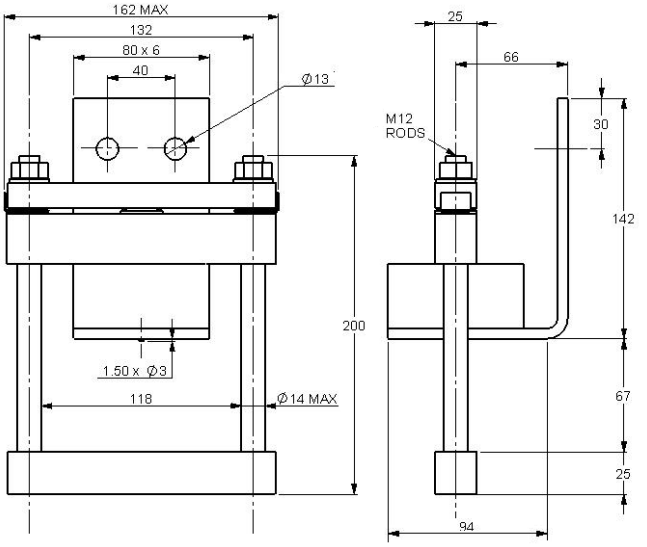
WC34 - CMK3000S116M



WC35 - CMK3000D116M



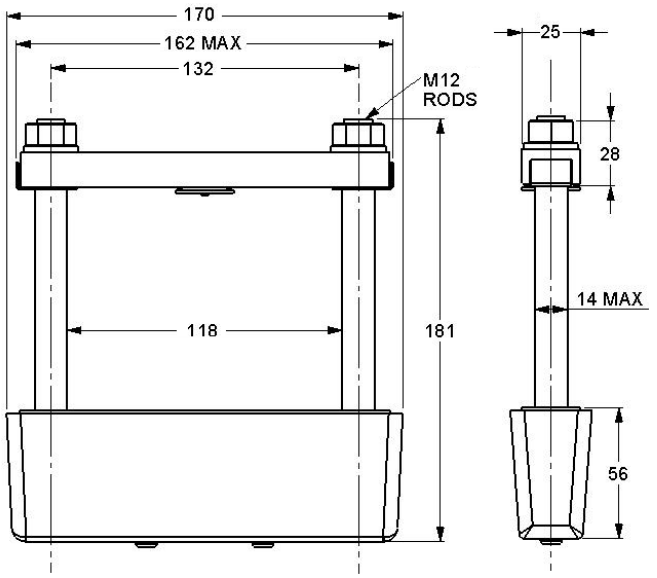
WC36 - CMK3500D116M



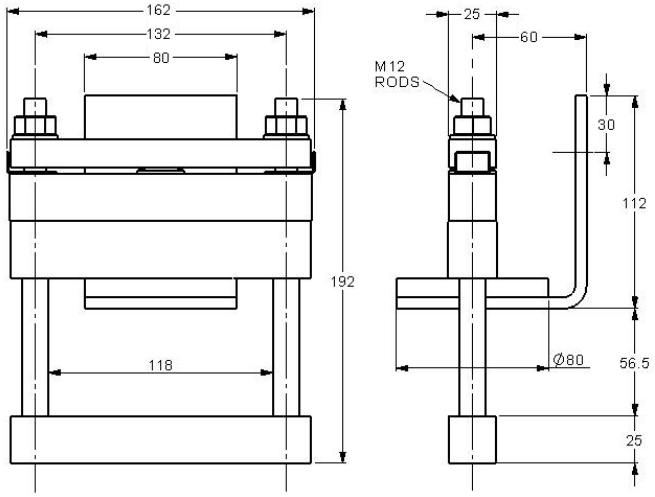
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

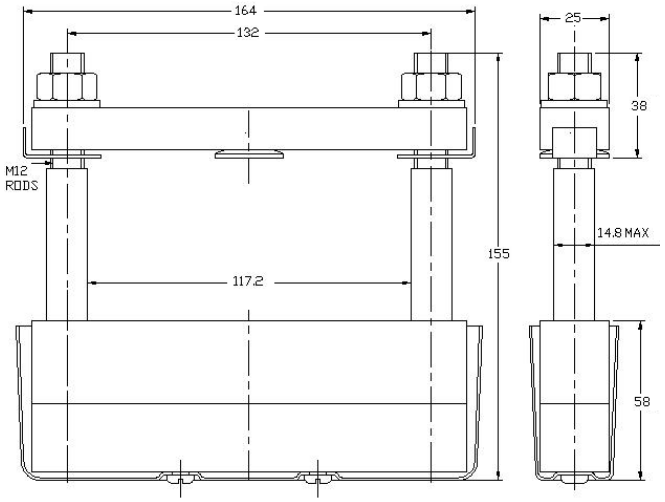
WC37 - CMK3500D116M



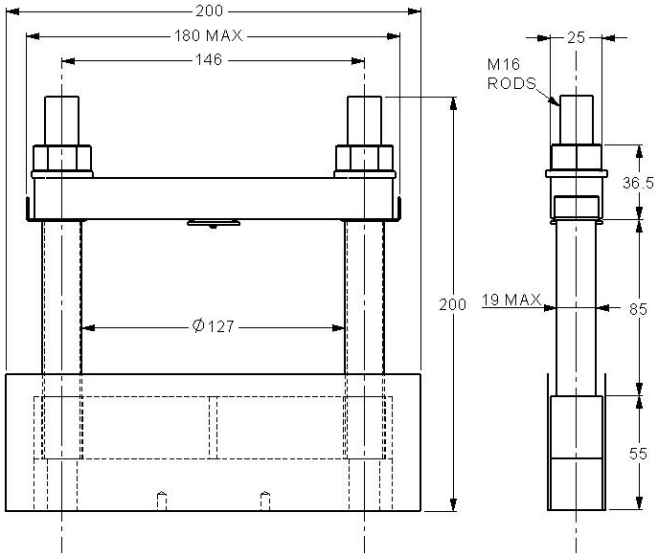
WC38 - CMK4000S116M



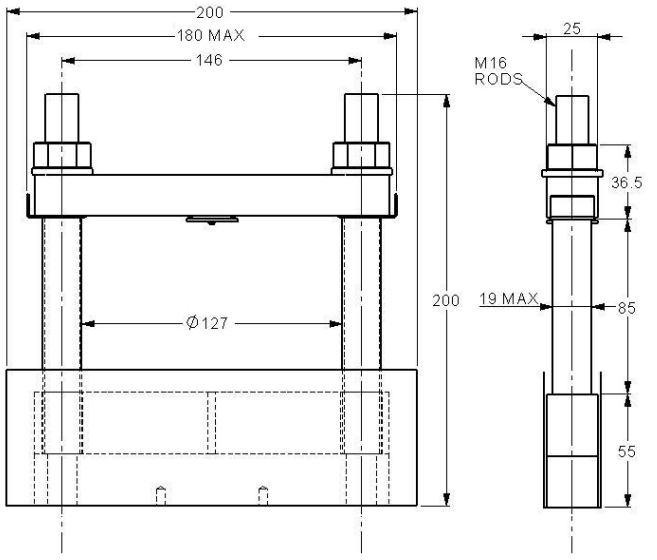
WC39 - CMK4000D116M



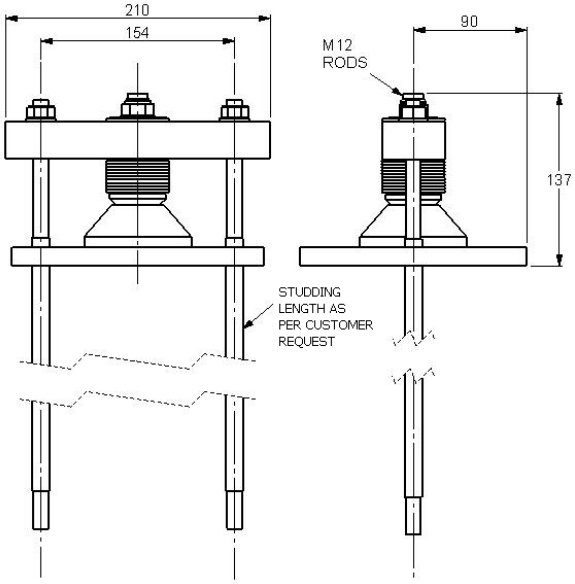
WC40 - CMK5000D128M



WC41 - CMK7000D128M



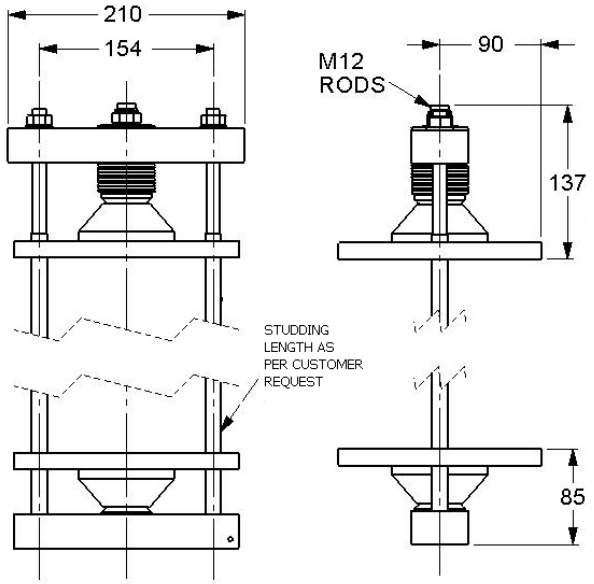
WC42 - CMK3060D140ML



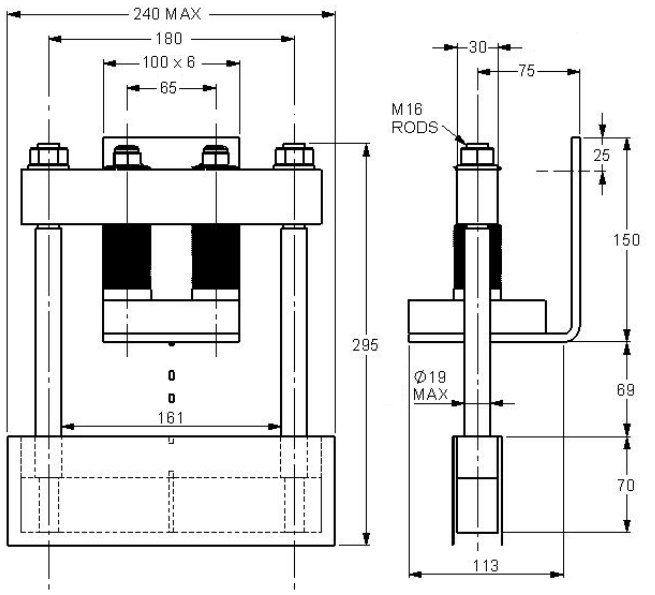
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

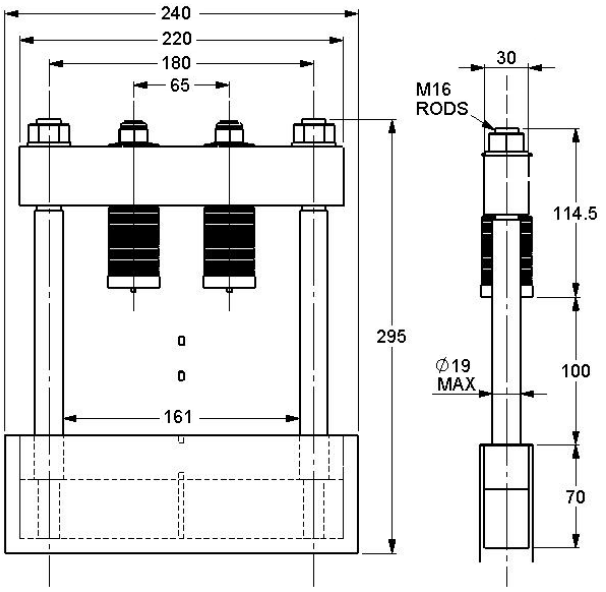
WC43 - CMK3060D140ML



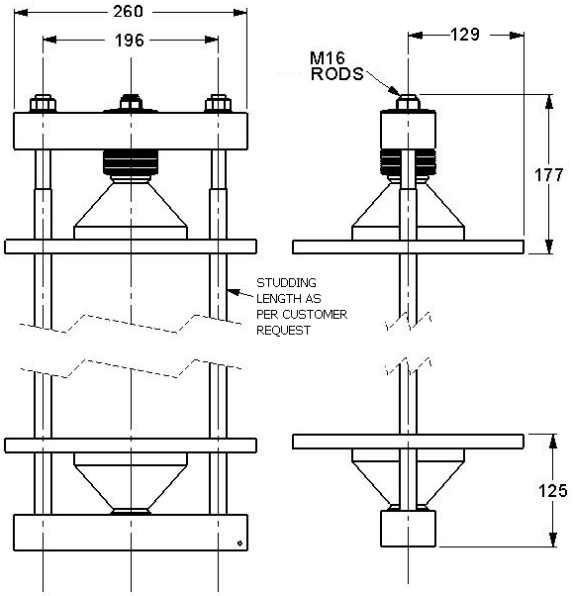
WC44 - CMK9000S160M



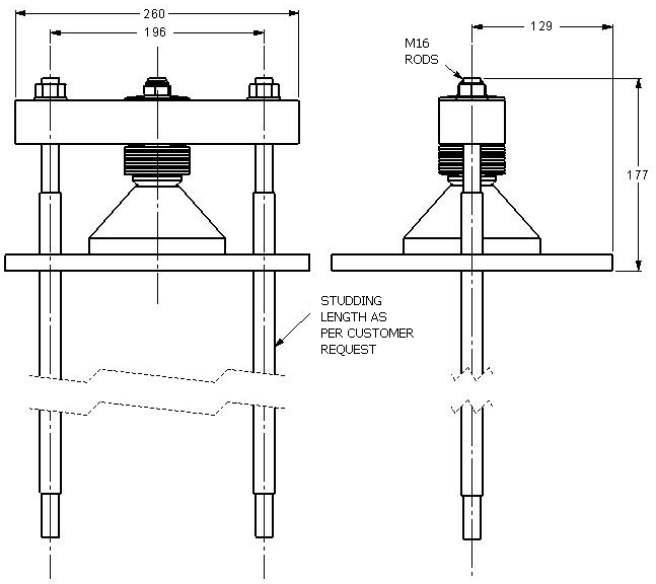
WC45 - CMK9000D160M



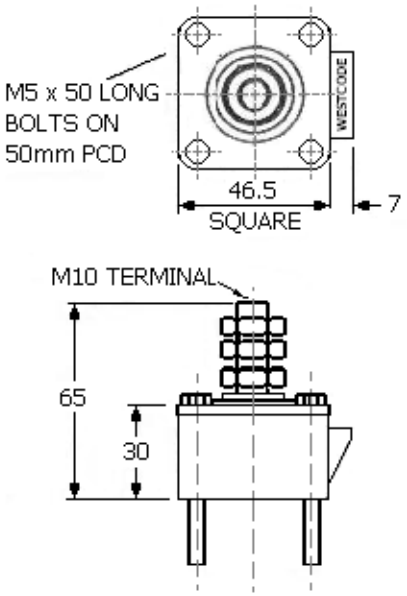
WC46 - CMK6120D180ML



WC47 - CMK6120S180ML



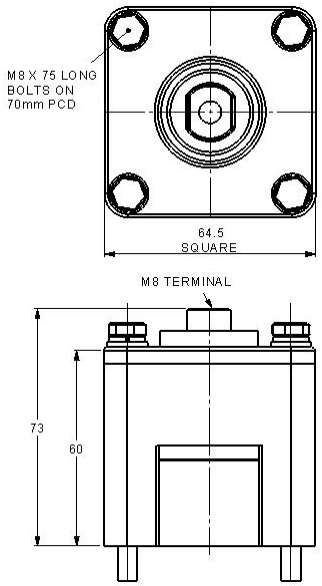
WC48 & WC49 - CMK450B17M



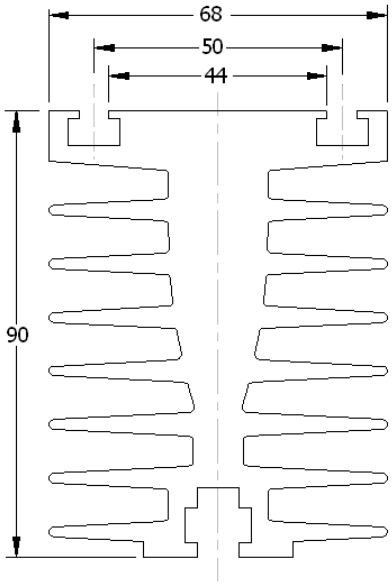
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

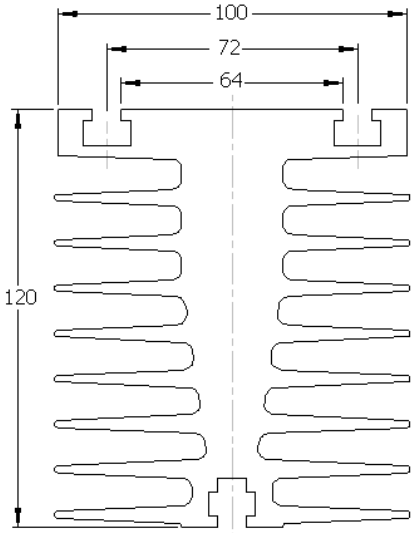
WC50 - CMK150B34M



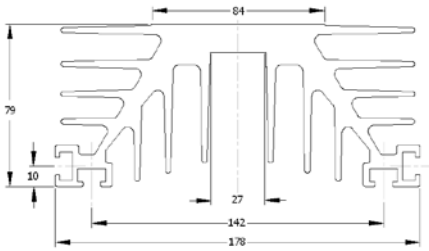
WH1 - G FIN



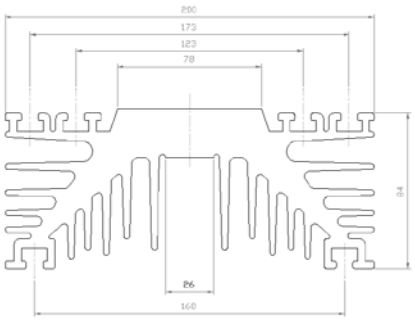
WH2 - GA FIN



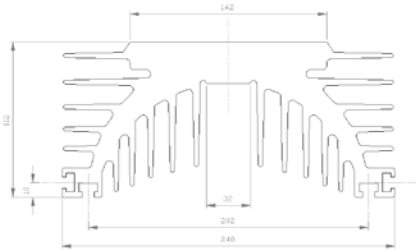
WH3 - H FIN



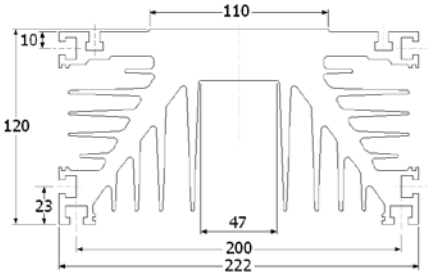
WH4 - T FIN



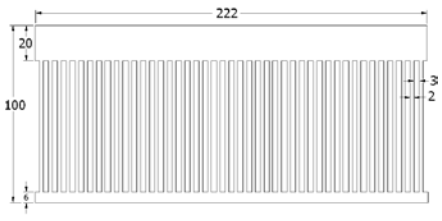
WH5 - TB FIN



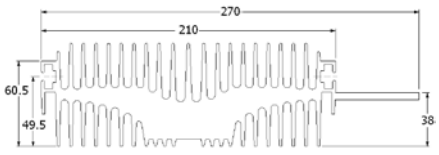
WH6 - TC FIN



WH7 - LP100



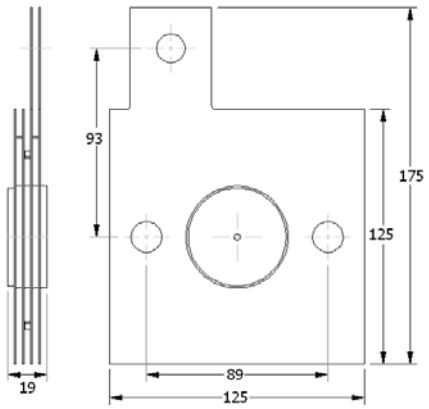
WH8 - WS46



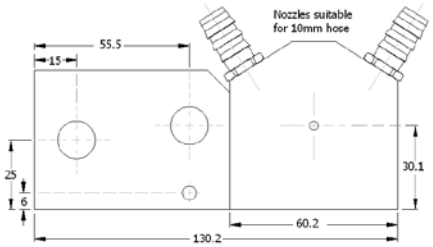
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

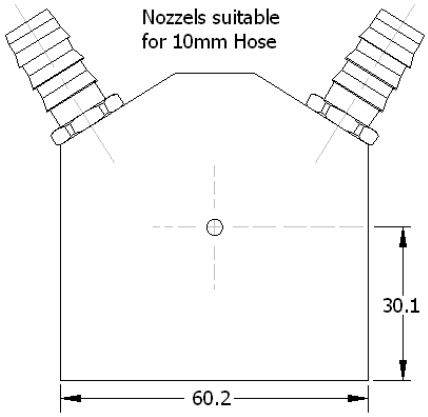
WH9 - WS30 - COPPER



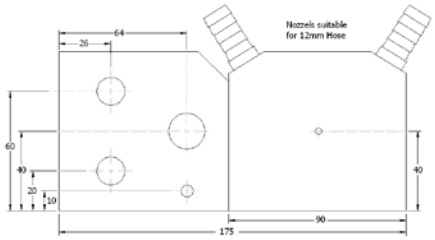
WCL1 - LK COOLER



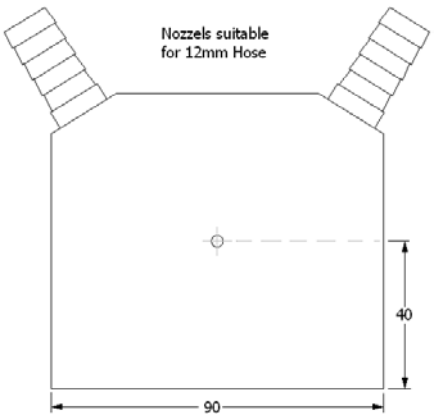
WCL2 - LKA COOLER



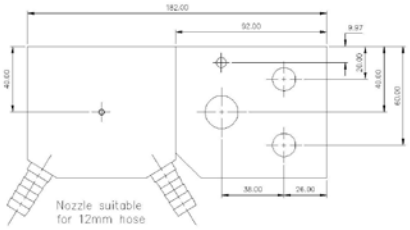
WCL3 - LKB COOLER



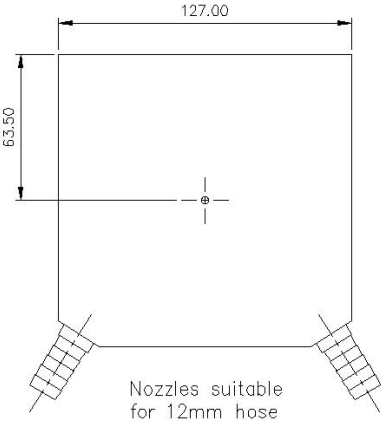
WCL4 - LKC COOLER



WCL5 - LKD COOLER



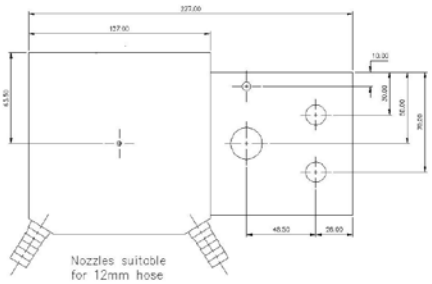
WCL6 - LKE COOLER



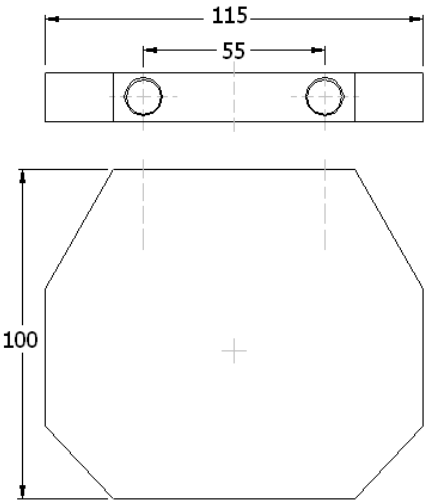
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

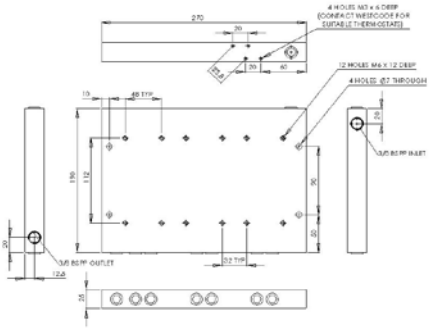
WCL7 LKF



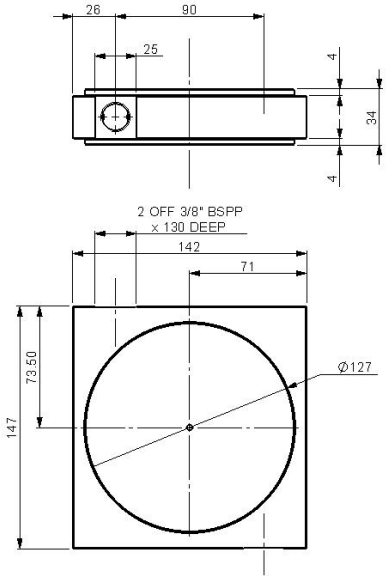
WCL8 WS27



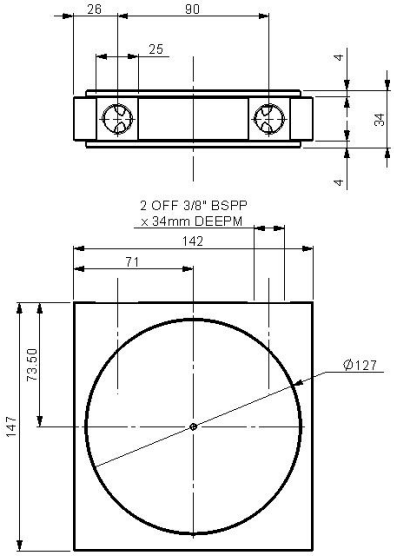
WCL9 - WS65 COOLER



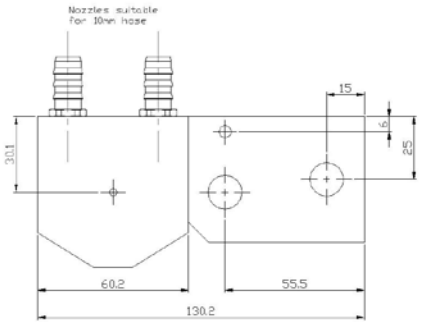
WCL10 - WS69 COOLER



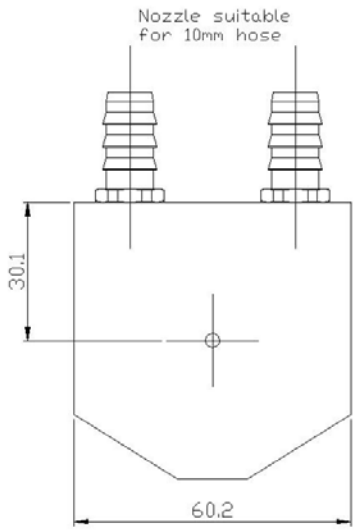
WCL11 - WS70 COOLER



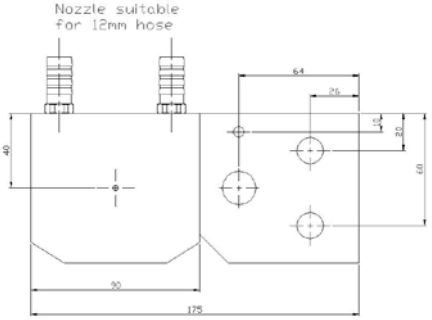
WCL12 - WS71-1 COOLER



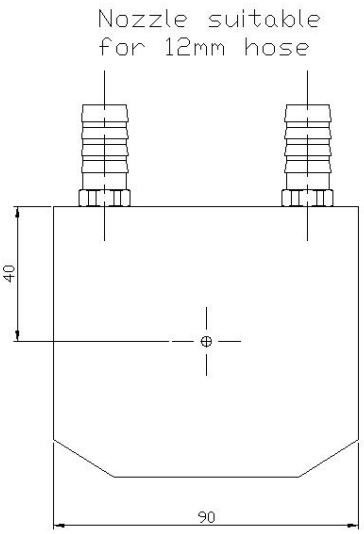
WCL13 - WS71-2 COOLER



WCL14 - WS72-1 COOLER



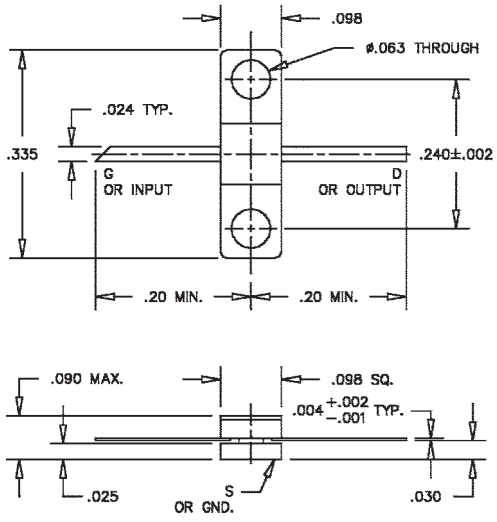
WCL15 - WS72-2 COOLER



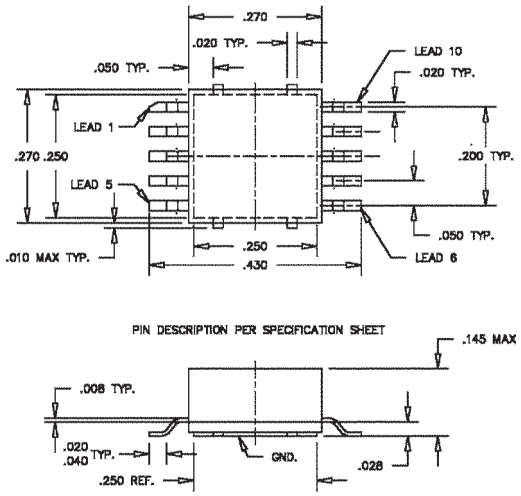
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394")

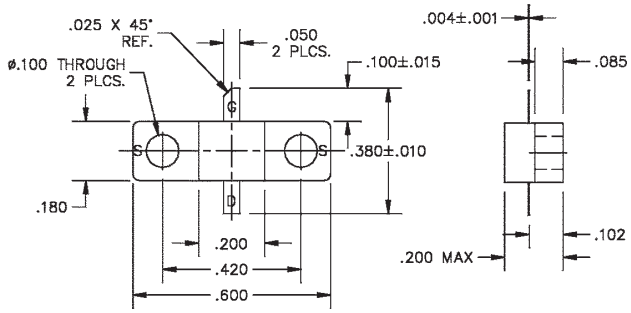
Package 81



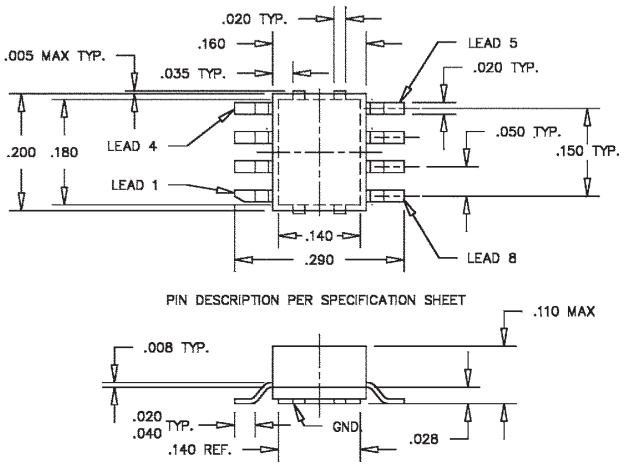
Package 82



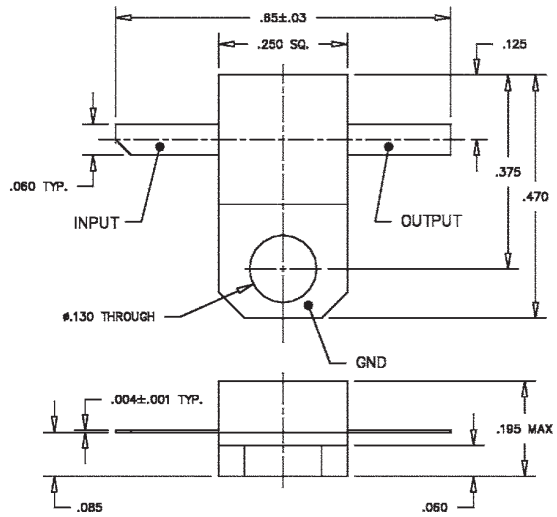
Package 83



Package 84



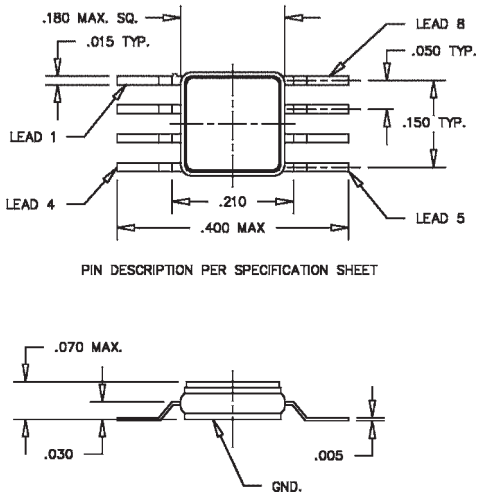
Package 85



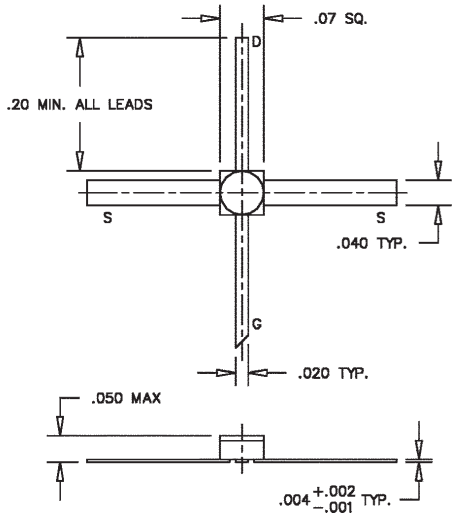
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394")

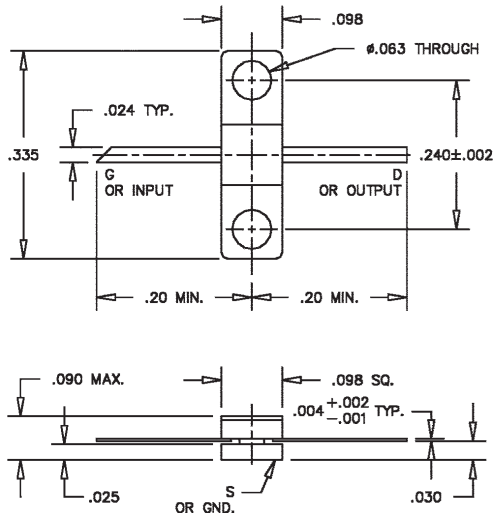
Package 87



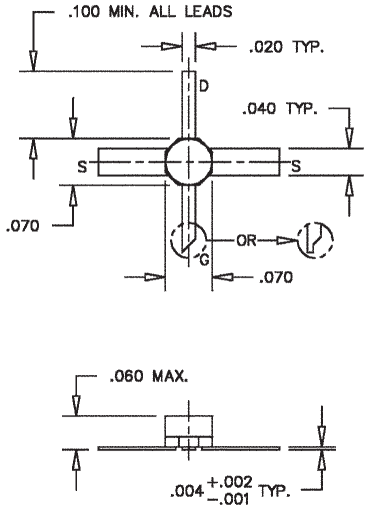
Package 70



Package 71



Package 73

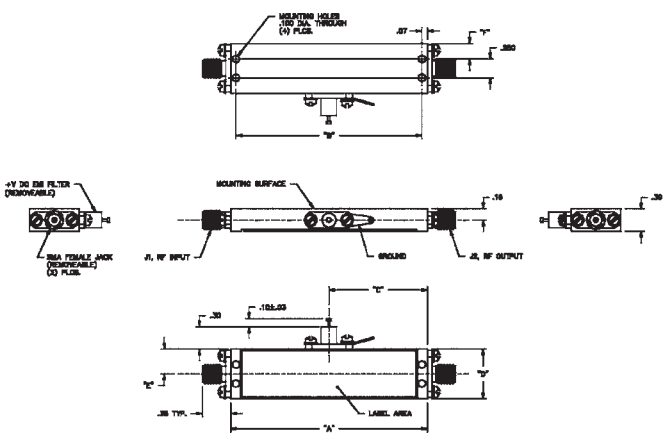


Slim-Pak

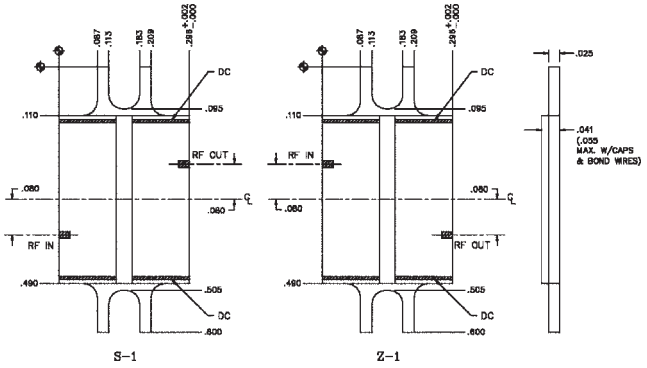
SH & SL Housing Series

SMA Female, DC Filter Feedthru

Though Hole Mounting



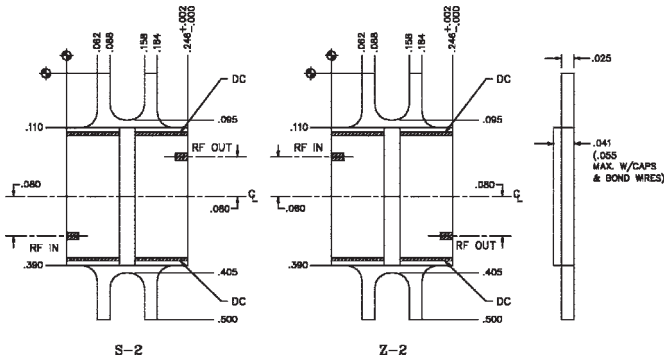
SZ-1



Outline drawings

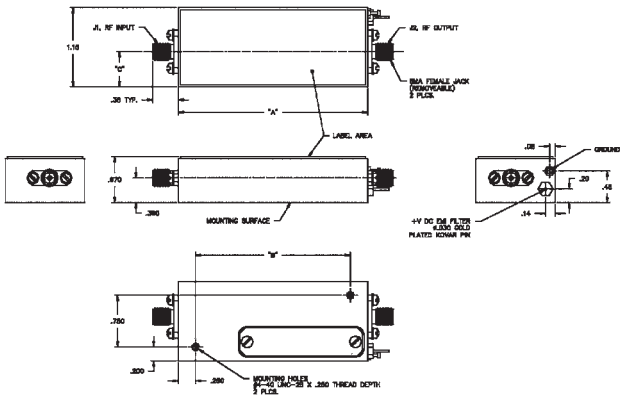
Dimensions in mm and inches (1 mm = 0.0394")

SZ-2

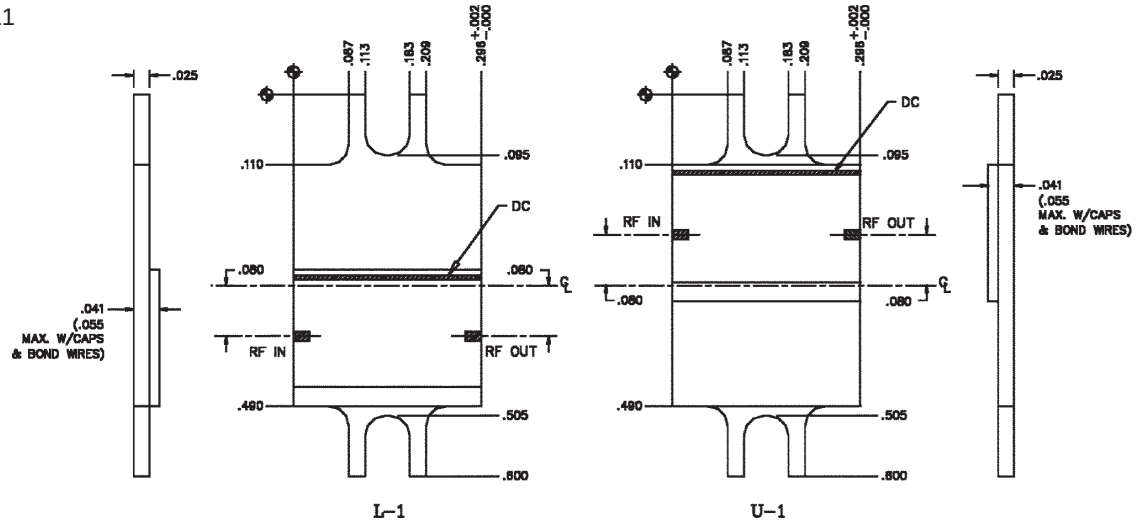


S–2 Z–2

T-Pak
TX & TC Housing Series
SMA Female, DC Filter Terminal
#4-40 Threaded Mounting Holes

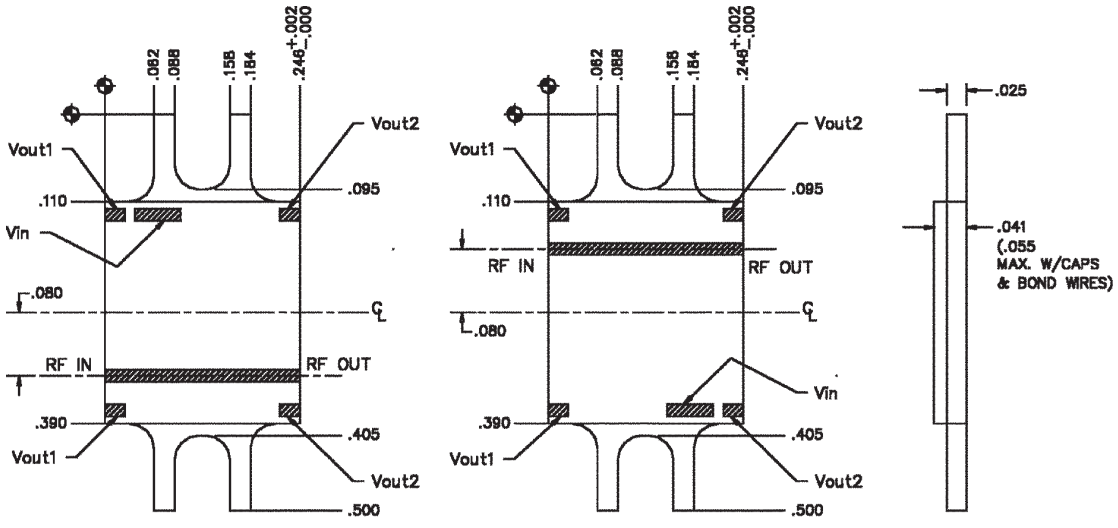


UL1



L–1 U–1

UL2

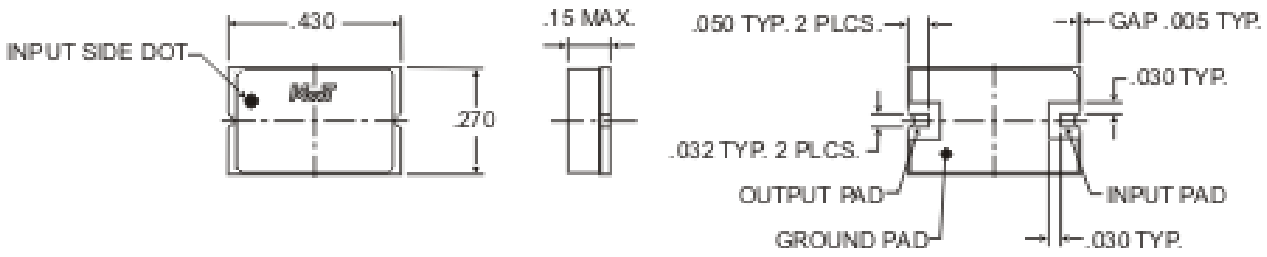


L–2 U–2

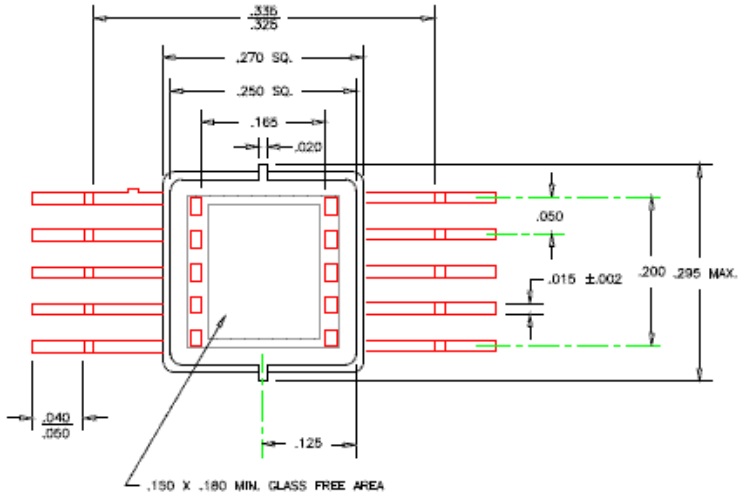
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394")

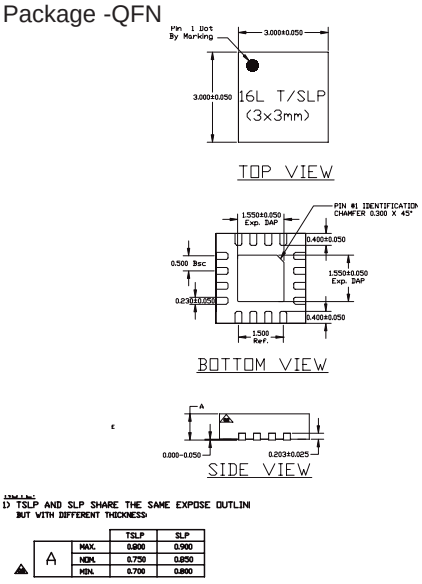
Package 02



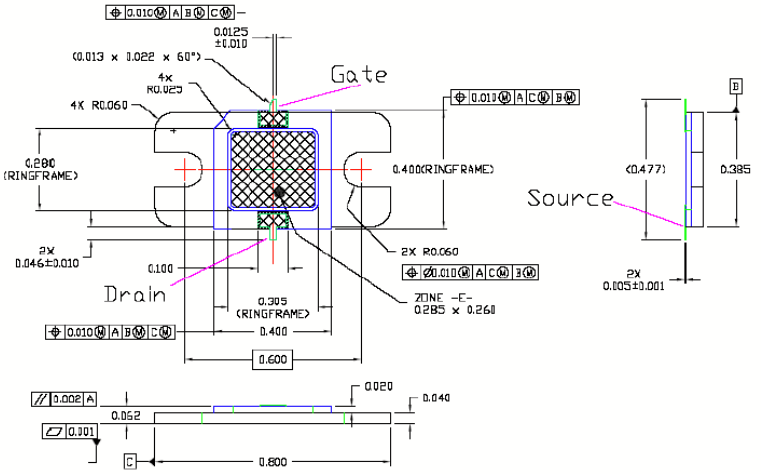
Package 96



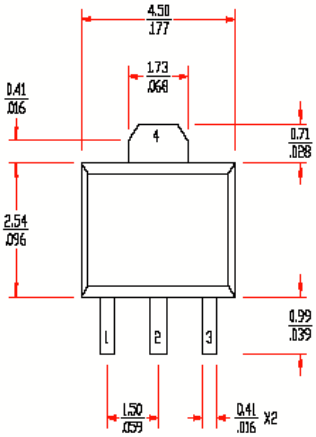
Package -QFN



Package 99



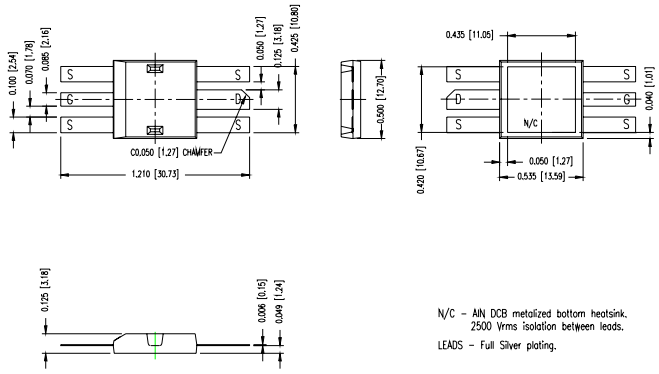
Package 89



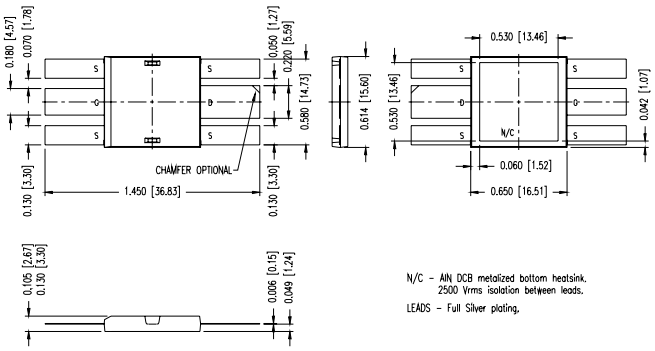
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394")

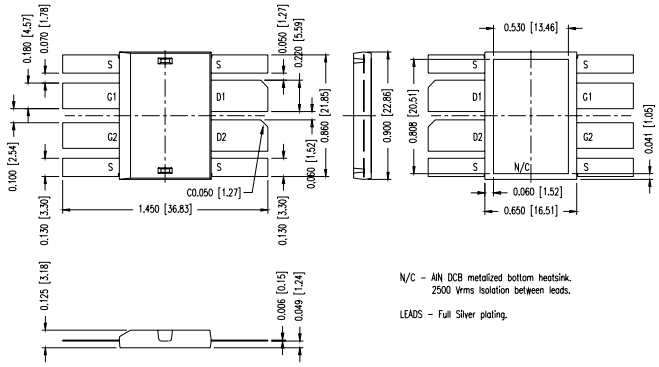
D1 DE 150



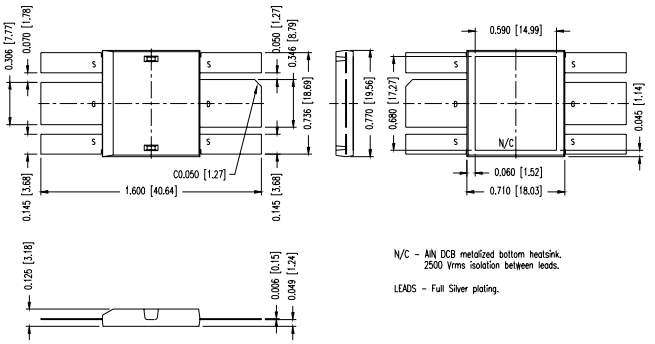
D2 DE 275



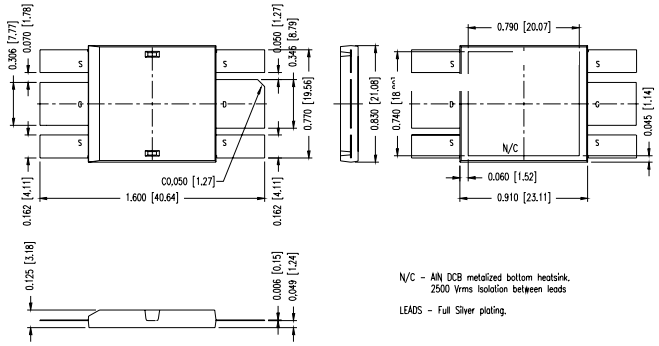
D3 DE 275x2



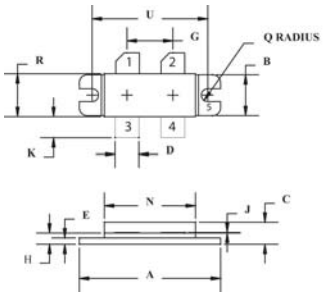
D4 DE 375



DE 475

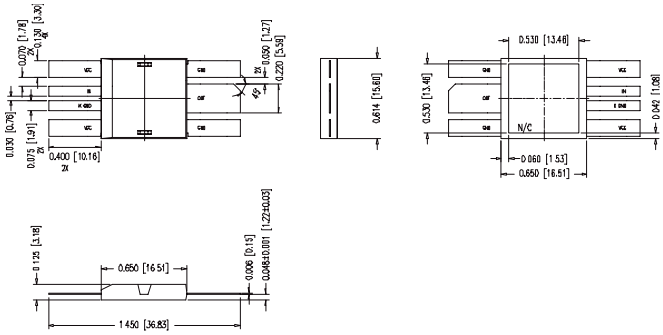


Package 754

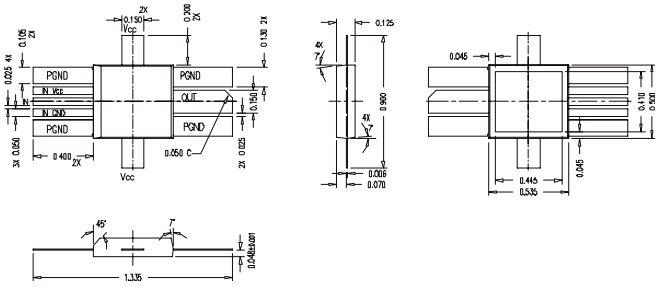


DIM	INCHES		MILIMETERS	
	MIN	MAX	MIN	MAX
A	1.330	1.350	33.79	34.21
B	0.370	0.100	9.40	10.41
C	0.190	0.230	4.83	5.84
D	0.215	0.235	5.47	5.96
E	0.050	0.070	1.27	1.77
G	0.430	0.440	10.92	11.18
H	0.102	0.112	2.59	2.84
J	0.004	0.006	0.11	0.15
K	0.185	0.215	4.83	5.33
N	0.845	0.875	21.46	22.23
Q	0.060	0.070	1.52	1.78
R	0.390	0.410	9.91	10.41
U	1.100 BSC		27.94 BSC	

DE275-IC



DE150-IC

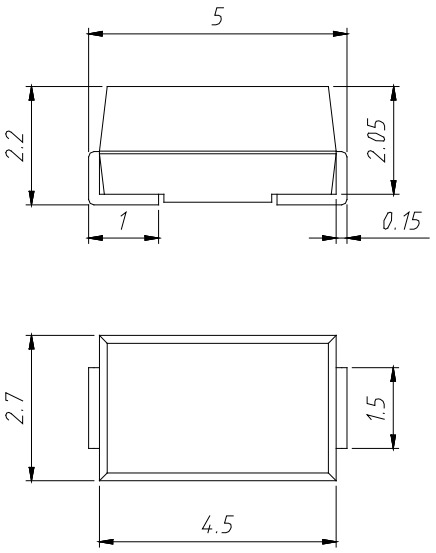


Outline drawings

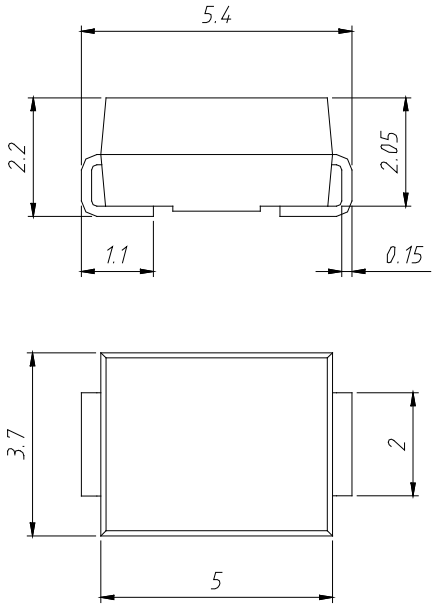
IXYS

Dimensions in mm and inches (1 mm = 0.0394“)

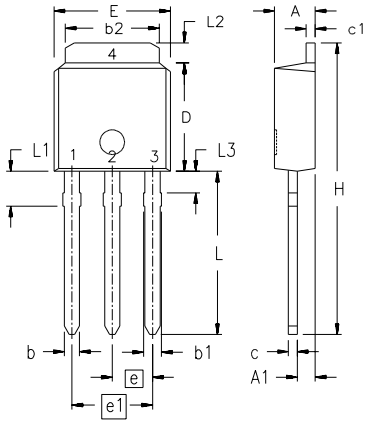
X001 SMA (DO-214 AC)



X002 SMB (DO-214 AA)



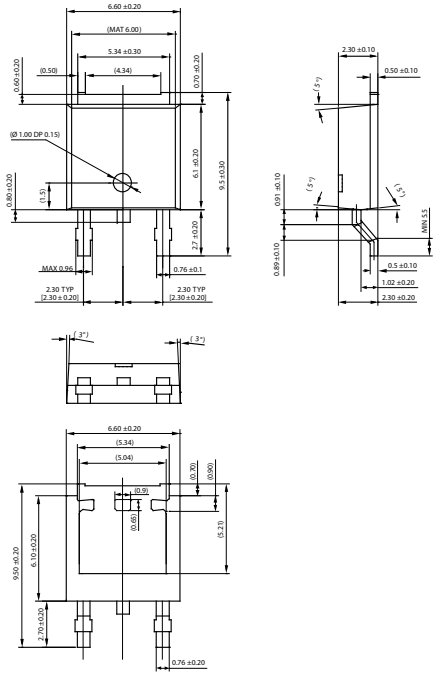
X003 TO-251 AA



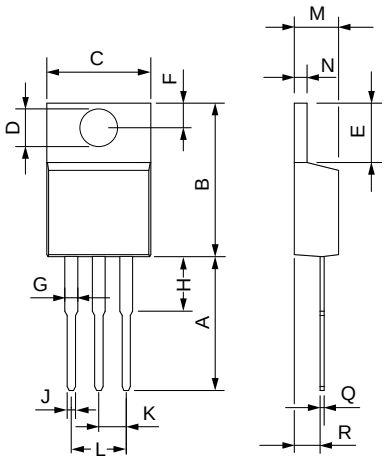
SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.086	.094	2.19	2.38
A1	.035	.045	0.89	1.14
b	.025	.035	0.64	0.89
b1	.030	.045	0.76	1.14
b2	.205	.215	5.21	5.46
c	.018	.023	0.46	0.58
c1	.018	.023	0.46	0.58
D	.235	.245	5.97	6.22
E	.250	.265	6.35	6.73
e	.090 BSC		2.28 BSC	
e1	.180 BSC		4.57 BSC	
H	.670	.700	17.02	17.78
L	.350	.380	8.89	9.65
L1	.075	.090	1.91	2.28
L2	.035	.050	0.89	1.27
L3	.045	.060	1.15	1.52

Notes:
1. This drawing meets all dimensions requirement of JEDEC outlines TO-251AA
2. All metal surface are solder plated except trimmed area.

X004 TO-252 AA (D PAK)

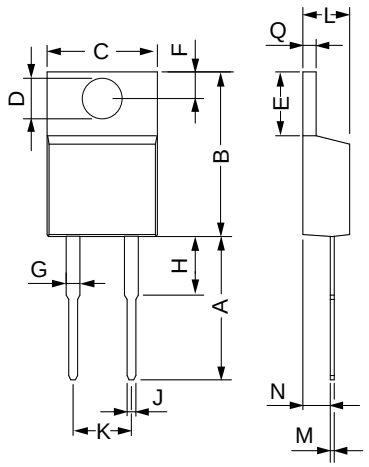


X005a TO-220 AB



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	12.70	13.97	0.500	0.550
B	14.73	16.00	0.580	0.630
C	9.91	10.66	0.390	0.420
D	3.54	4.08	0.139	0.161
E	5.85	6.85	0.230	0.270
F	2.54	3.18	0.100	0.125
G	1.15	1.65	0.045	0.065
H	2.79	5.84	0.110	0.230
J	0.64	1.01	0.025	0.040
K	2.54	BSC	0.100	BSC
M	4.32	4.82	0.170	0.190
N	1.14	1.39	0.045	0.055
Q	0.35	0.56	0.014	0.022
R	2.29	2.79	0.090	0.110

X005b TO-220 AC



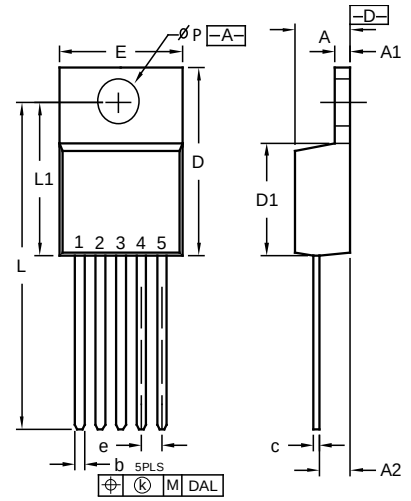
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	12.7	14.73	0.5	0.58
B	14.23	16.51	0.56	0.65
C	9.66	10.66	0.38	0.42
D	3.54	4.08	0.139	0.161
E	5.85	6.85	2.3	0.42
F	2.54	3.42	0.1	0.135
G	1.15	1.77	0.045	0.07
H	-	6.35	-	0.25
J	0.64	0.89	0.025	0.035
K	4.83	5.33	0.19	0.21
L	3.56	4.82	0.14	0.19
M	0.51	0.76	0.02	0.03
N	2.04	2.49	0.08	0.115
Q	0.64	1.39	0.025	0.055

Outline drawings

IXYS

Dimensions in mm and inches (1 mm = 0.0394“)

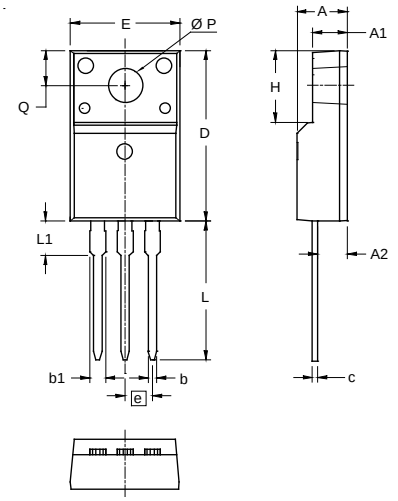
X006 TO-220 (5)



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.170	.190	4.32	4.83
A1	.045	.055	1.14	1.40
A2	.090	.115	2.29	2.92
b	.025	.040	0.64	1.02
c	.015	.025	0.38	0.64
D	.580	.620	14.73	15.75
D1	.340	.370	8.64	9.40
E	.390	.415	9.91	10.54
e	.067 BSC		1.70 BSC	
k	0	.014	0	0.36
L	.995	1.045	25.27	26.54
L1	.470	.510	11.94	12.95
P	.139	.156	3.53	3.96

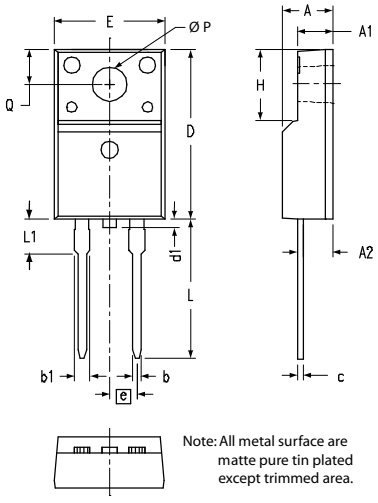
NOTE: This drawing will meet all dimensions requirement of JEDEC outlines TS-001AA & 5 lead version TO-220AB.

X007a TO-220 ABFP



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.177	.193	4.50	4.90
A1	.092	.108	2.34	2.74
A2	.101	.117	2.56	2.96
b	.028	.035	0.70	0.90
b1	.050	.058	1.27	1.47
c	.018	.024	0.45	0.60
D	.617	.633	15.67	16.07
E	.392	.408	9.96	10.36
e	.100 BSC		2.54 BSC	
H	.255	.271	6.48	6.88
L	.499	.523	12.68	13.28
L1	.119	.135	3.03	3.43
ØP	.121	.129	3.08	3.28
Q	.126	.134	3.20	3.40

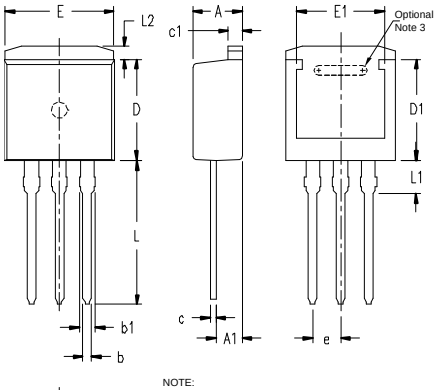
X007b TO-220 ACFP



Note: All metal surface are matte pure tin plated except trimmed area.

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.177	.193	4.50	4.90
A1	.092	.108	2.34	2.74
A2	.101	.117	2.56	2.96
b	.028	.035	0.70	0.90
b1	.050	.058	1.27	1.47
c	.018	.024	0.45	0.60
D	.617	.633	15.67	16.07
d1	0	.043	0	1.10
E	.392	.408	9.96	10.36
e	.100 BSC		2.54 BSC	
H	.255	.271	6.48	6.88
L	.499	.523	12.68	13.28
L1	.119	.135	3.03	3.43
ØP	.121	.129	3.08	3.28
Q	.126	.134	3.20	3.40

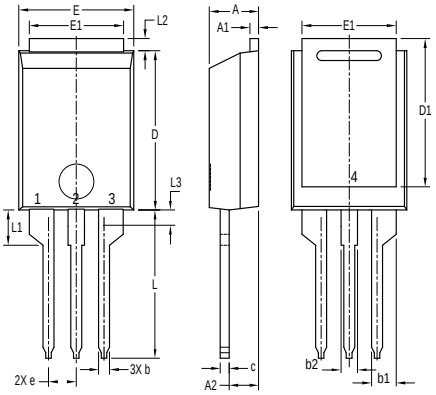
X008 TO-262 I²PAK



NOTE:
1. This drawing will meet all dimensions requirement of JEDEC outline TO-262 AA.
2. All metal surface are matte pure tin plated except trimmed area.
3. Inter locking slot depends upon frame type.

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.160	.190	4.06	4.83
A1	.080	.110	2.03	2.79
b	.025	.035	0.64	0.88
b1	.025	.039	1.14	1.40
c	.018	.025	0.46	0.64
c1	.045	.055	1.14	1.40
D	.340	.380	8.64	9.65
D1	.270	.290	6.86	7.37
E	.380	.405	9.65	10.29
E1	.245	.320	6.22	8.13
e	.100 BSC		2.54 BSC	
L	.500	.560	12.70	14.22
L1	.100	.125	2.54	3.18
L2	.040	.055	1.02	1.40

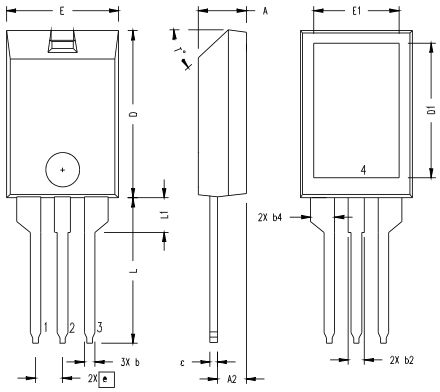
X009a PLUS220™



NOTE: ALL METAL AREAS ARE SOLDER PLATED.

SYM	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	.169	.185	4.30	4.70
A1	.028	.035	0.70	0.90
A2	.098	.118	2.50	3.00
b	.035	.047	0.90	1.20
b1	.080	.095	2.03	2.41
b2	.054	.064	1.37	1.63
c	.028	.035	0.70	0.90
D	.551	.591	14.00	15.00
D1	.512	.539	13.00	13.70
E	.394	.433	10.00	11.00
E1	.331	.346	8.40	8.80
e	.100 BSC		2.54 BSC	
L	.512	.551	13.00	14.00
L1	.118	.138	3.00	3.50
L2	.035	.051	0.90	1.30
L3	.047	.059	1.20	1.50

X010a ISOPLUS220™ AB



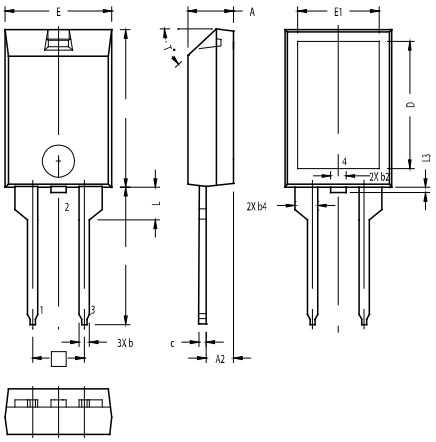
SYM	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	.157	.197	4.00	5.00
A2	.098	.118	2.50	3.00
b	.035	.051	0.90	1.30
b2	.049	.065	1.25	1.65
b4	.093	1.00	2.35	2.55
c	.028	.039	0.70	1.00
D	.591	.630	15.00	16.00
D1	.472	.512	12.00	13.00
E	.394	.433	10.00	11.00
E1	.295	.335	7.50	8.5 0
e	.100 BASIC		2.55 BASIC	
L	.512	.571	13.00	14.50
L1	.118	.138	3.00	3.50
T°			42.5°	47.5°

Outline drawings

IXYS

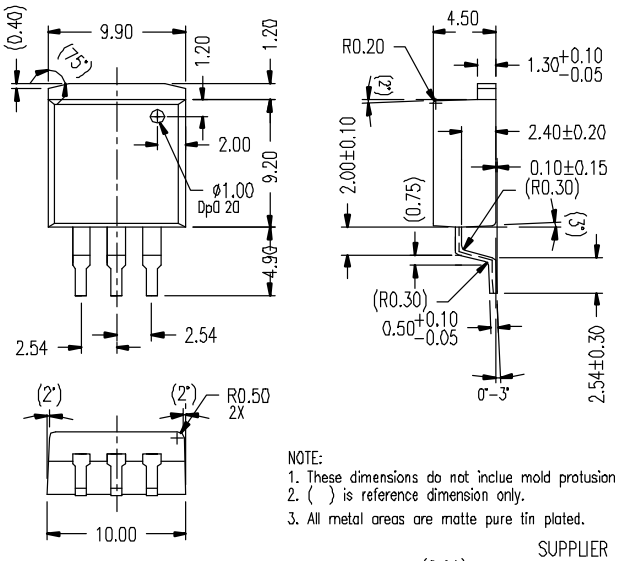
Dimensions in mm and inches (1 mm = 0.0394“)

X010b ISOPLUS220™ AC

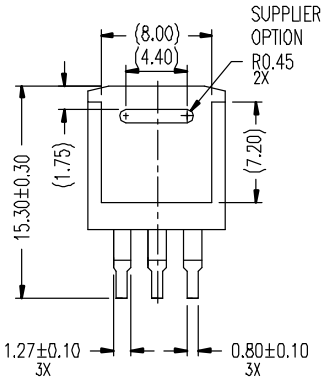


SYM	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	.169	.185	4.30	4.70
A1	.028	.035	0.70	0.90
A2	.098	.118	2.50	3.00
b	.035	.047	0.90	1.20
b1	.080	.095	2.03	2.41
b2	.054	.064	1.37	1.63
c	.028	.035	0.70	0.90
D	.551	.591	14.00	15.00
D1	.512	.539	13.00	13.70
E	.394	.433	10.00	11.00
E1	.331	.346	8.40	8.80
e	.100 BSC		2.54 BSC	
L	.512	.551	13.00	14.00
L1	.118	.138	3.00	3.50
L2	.035	.051	0.90	1.30
L3	.047	.059	1.20	1.50

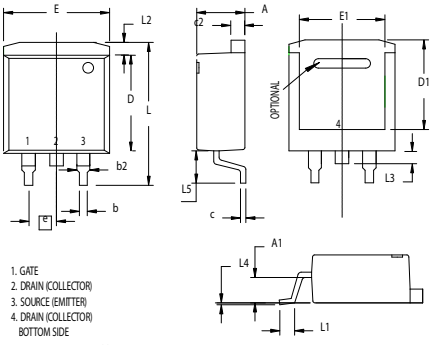
X011a TO-263 AA (D²PAK)



NOTE:
1. These dimensions do not inclue mold protusion
2. ( ) is reference dimension only.
3. All metal areas are matte pure tin plated.



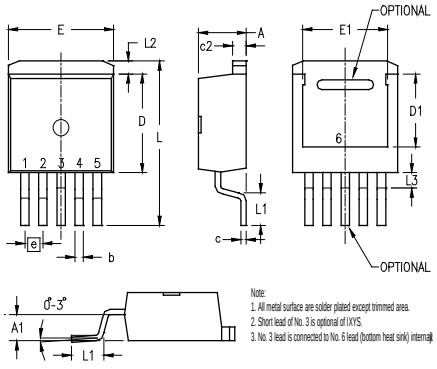
X011b TO-263 AB (D²PAK)



Note: 1. All metal surface are solder plated except trimmed area.

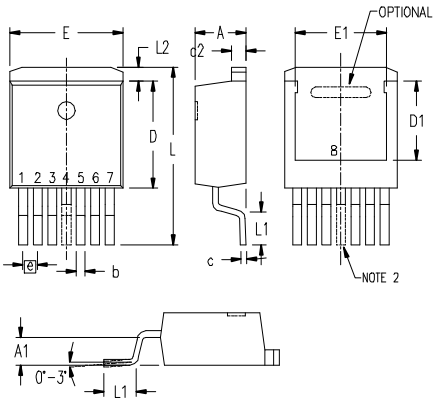
SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.160	.190	4.06	4.83
A1	.080	.110	2.03	2.79
b	.020	.039	0.51	0.99
b2	.045	.055	1.14	1.40
c	.016	.029	0.40	0.74
c2	.045	.055	1.14	1.40
D	.354	.370	9.00	9.40
D1	.315	.350	8.00	8.89
E	.380	.410	9.65	10.41
E1	.245	.320	6.22	8.13
e	.100 BSC		2.54 BSC	
L	.516	.539	13.10	13.70
L1	.047	.071	1.20	1.80
L2	.040	.055	1.02	1.40
L3	.040	.060	1.02	1.52
L4	0	.004	0	0.10
L5	.110	.126	2.80	3.20

X012a TO-263 (5)



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.165	.189	4.20	4.80
A1	.083	.106	2.10	2.70
b	.024	.039	0.60	0.99
c	.016	.028	0.40	0.70
c2	.047	.055	1.20	1.40
D	.346	.374	8.80	9.50
D1	.260	.283	6.60	7.20
E	.380	.406	9.65	10.30
E1	.295	.323	7.50	8.20
e	.067 BSC		1.70 BSC	
L	.583	.622	14.80	15.80
L1	.088	.112	2.24	2.84
L2	.039	.055	1.00	1.40
L3	.047	.067	1.20	1.70

X012b TO-263 (7)
c) middle leg cut



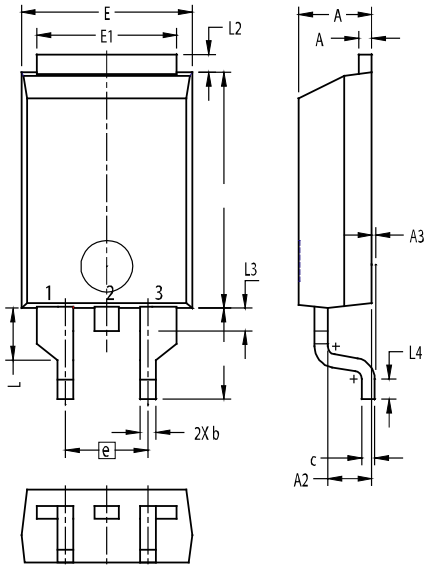
SYM	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	.165	.181	4.20	4.60
A1	.096	.108	2.45	2.75
b	.026	.035	0.65	0.90
c	.016	.024	0.40	0.60
c2	.045	.055	1.14	1.40
D	.330	.340	8.38	8.64
D1	.240	.250	6.10	6.35
E	.394	.406	10.00	10.30
E1	.290	.315	7.34	8.00
e	.050 BSC		1.27 BSC	
L	.580	.620	14.73	15.75
L1	.088	.112	2.24	2.84
L2	.053	.061	1.35	1.55

Outline drawings

IXYS

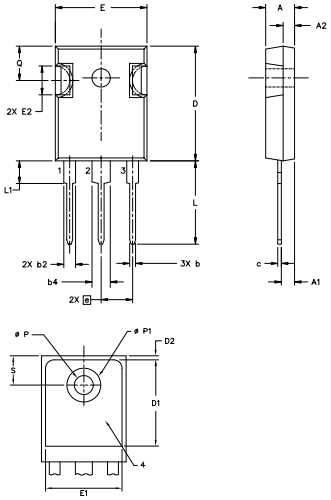
Dimensions in mm and inches (1 mm = 0.0394“)

X013 PLUS220™ (SMD)



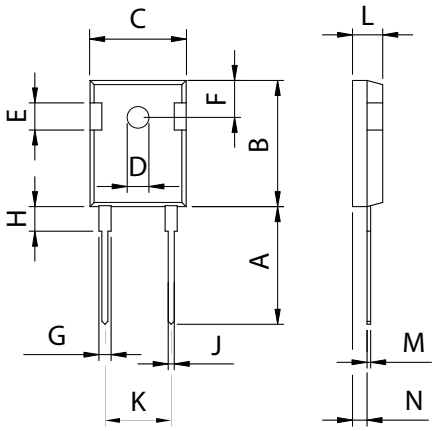
SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.169	.185	4.30	4.70
A1	.028	.035	0.70	0.90
A2	.098	.118	2.50	3.00
A3	.000	.010	0.00	0.25
b	.035	.047	0.90	1.20
b1	.080	.095	2.03	2.41
b2	.054	.064	1.37	1.63
c	.028	.035	0.70	0.90
D	.551	.591	14.00	15.00
D1	.512	.539	13.00	13.70
E	.394	.433	10.00	11.00
E1	.331	.346	8.40	8.80
e	.200 BSC		5.08 BSC	
L	.209	.228	5.30	5.80
L1	.118	.138	3.50	3.50
L2	.035	.051	1.30	1.30
L3	.047	.059	1.50	1.50
L4	.039	.059	1.50	1.50

X014a TO-247 AD



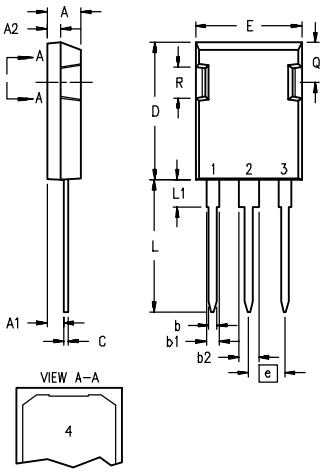
Symbol	Inches		Millimeters	
	min	max	min	max
A	0.185	0.209	4.70	5.30
A1	0.087	0.102	2.21	2.59
A2	0.059	0.098	1.50	2.49
D	0.819	0.845	20.79	21.45
E	0.610	0.640	15.48	16.24
E2	0.170	0.216	4.31	5.48
e	0.215 BSC		5.46 BSC	
L	0.780	0.800	19.80	20.30
L1	-	0.177	-	4.49
ØP	0.140	0.144	3.55	3.65
Q	0.212	0.244	5.38	6.19
S	0.242 BSC		6.14 BSC	
b	0.039	0.055	0.99	1.40
b2	0.065	0.094	1.65	2.39
b4	0.102	0.135	2.59	3.43
c	0.015	0.035	0.38	0.89
D1	0.515	-	13.07	-
D2	0.020	0.053	0.51	1.35
E1	0.530	-	13.45	-
ØP1	-	0.291	-	7.39

X014b TO-247 AD



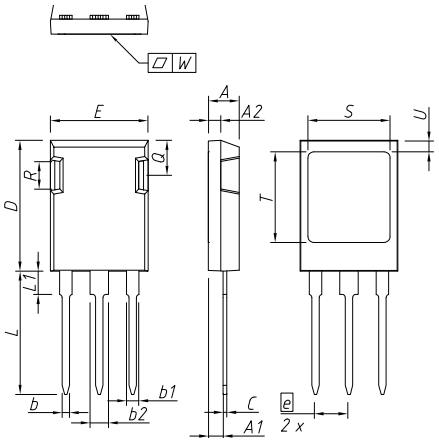
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.610	0.640
D	3.55	3.65	0.140	0.144
E	4.32	5.49	0.170	0.216
F	5.4	6.2	0.212	0.244
G	1.65	2.13	0.065	0.084
H	-	4.5	-	0.177
J	1.0	1.4	0.040	0.055
K	10.8	11.0	0.426	0.433
L	4.7	5.3	0.185	0.209
M	0.4	0.8	0.016	0.031
N	1.5	2.49	0.087	0.102

X015a PLUS247™



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.83	5.21	0.19	0.205
A1	2.29	2.54	0.09	0.1
A2	1.91	2.16	0.075	0.085
b	1.14	1.4	0.045	0.055
b1	1.91	2.13	0.075	0.084
b2	2.92	3.12	0.115	0.123
C	0.61	0.8	0.024	0.031
D	20.8	21.34	0.819	0.84
E	15.75	16.13	0.62	0.635
e	5.45 BSC		.215 BSC	
L	19.81	20.32	0.78	0.8
L1	3.81	4.32	0.15	0.17
Q	5.59	6.2	0.22	0.244
R	4.32	4.83	0.17	0.19

X016a ISOPLUS247™



DIM.	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	4,83	5,21	0,190	0,205
A1	2,29	2,54	0,090	0,100
A2	1,91	2,16	0,075	0,085
b	1,14	1,40	0,045	0,055
b1	1,91	2,15	0,075	0,085
b2	2,92	3,20	0,115	0,126
C	0,61	0,83	0,024	0,033
D	20,80	21,34	0,819	0,840
E	15,75	16,13	0,620	0,635
e	5,45 BSC		0,215 BSC	
L	19,81	20,60	0,780	0,811
L1	3,81	4,38	0,150	0,172
Q	5,59	6,20	0,220	0,244
R	4,32	4,85	0,170	0,191
S	13,21	13,72	0,520	0,540
T	15,75	16,26	0,620	0,640
U	1,65	2,03	0,065	0,080
W	–	0,10	–	0,004

Die konvexe Form des Substrates ist typ. < 0.04 mm über der Kunststofffoberfläche der Bauteilunterseite
The convex bow of substrate is typ. < 0.04 mm over plastic surface level of device bottom side

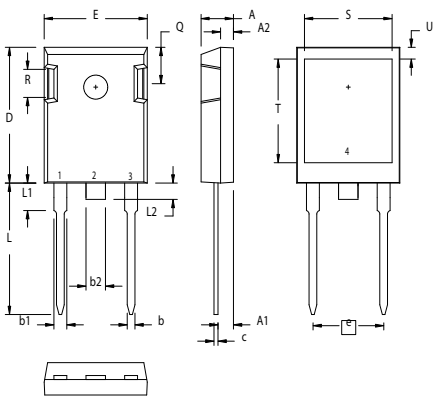
Die Gehäuseabmessungen entsprechen dem Typ TO-247 AD gemäß JEDEC außer Schraubloch und $L_{max.}$
This drawing will meet all dimensions requirement of JEDEC outline TO-247 AD except screw hole and except $L_{max.}$

Outline drawings

IXYS

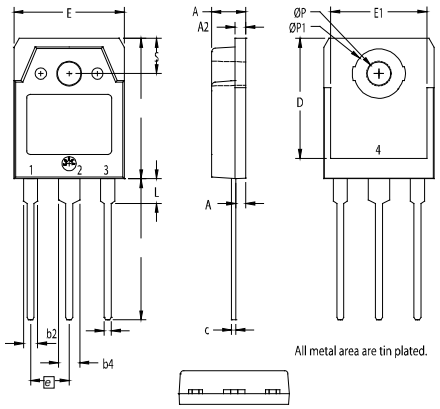
Dimensions in mm and inches (1 mm = 0.0394“)

X016b ISOPLUS247™



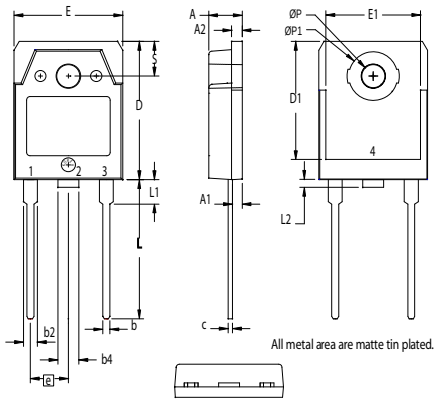
SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.090	.100	2.29	2.54
A2	.075	.085	1.91	2.16
b	.045	.055	1.14	1.40
b1	.075	.084	1.91	2.13
b2	.115	.123	2.92	3.12
c	.024	.031	0.61	0.80
D	.819	.840	20.80	21.34
E	.620	.635	15.75	16.13
e	.430 BSC		10.92 BSC	
L	.780	.800	19.81	20.32
L1	.150	.170	3.81	4.32
L2	0	.100	0	2.54
Q	.220	.244	5.59	6.20
R	.170	.190	4.32	4.83
S	.520	.540	13.21	13.72
T	.620	.640	15.75	16.26
U	.065	.080	1.65	2.03

X017a TO-3P



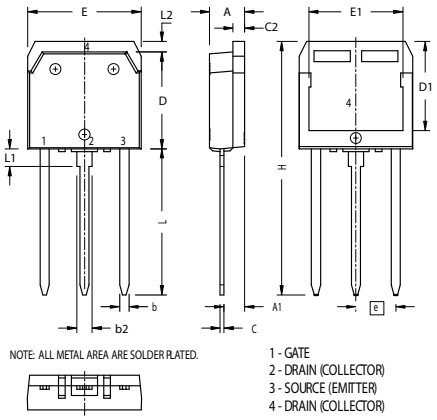
SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.185	.193	4.70	4.90
A1	.051	.059	1.30	1.50
A2	.057	.065	1.45	1.65
b	.035	.045	0.90	1.15
b2	.075	.087	1.90	2.20
b4	.114	.126	2.90	3.20
c	.022	.031	0.55	0.80
D	.780	.791	19.80	20.10
D1	.665	.677	16.90	17.20
E	.610	.622	15.50	15.80
E1	.531	.539	13.50	13.70
e	.215 BSC		5.45 BSC	
L	.779	.795	19.80	20.20
L1	.134	.142	3.40	3.60
ØP	.126	.134	3.20	3.40
ØP1	.272	.280	6.90	7.10
S	.193	.201	4.90	5.10

X017b TO-3P



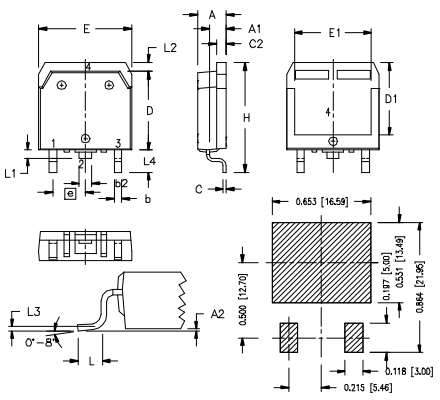
SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.185	.193	4.70	4.90
A1	.051	.059	1.30	1.50
A2	.057	.065	1.45	1.65
b	.035	.045	0.90	1.15
b2	.075	.087	1.90	2.20
b4	.114	.126	2.90	3.20
c	.022	.031	0.55	0.80
D	.780	.799	19.80	20.30
D1	.665	.677	16.90	17.20
E	.610	.622	15.50	15.80
E1	.531	.539	13.50	13.70
e	.215 BSC		5.45 BSC	
L	.779	.795	19.80	20.20
L1	.134	.142	3.40	3.60
L2	0	.055	0	1.40
ØP	.126	.134	3.20	3.40
ØP1	.272	.280	6.90	7.10
S	.193	.201	4.90	5.10

X018 TO-268 I³PAK



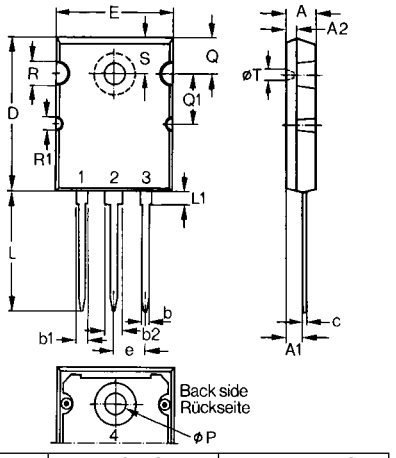
SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.193	.201	4.90	5.10
A1	.106	.114	2.70	2.90
b	.045	.057	1.15	1.45
b2	.075	.083	1.90	2.10
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.488	.500	12.40	12.70
E	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
e	.215 BSC		5.45 BSC	
H	1.365	1.395	34.67	35.43
L	.780	.800	19.81	20.32
L1	.079	.091	2.00	2.30
L2	.039	.045	1.00	1.15

X019 TO-268 AA (D³PAK)



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.193	.201	4.90	5.10
A1	.106	.114	2.70	2.90
A2	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
b2	.075	.083	1.90	2.10
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.488	.500	12.40	12.70
E	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
e	.215 BSC		5.45 BSC	
H	.736	.752	18.70	19.10
L	.094	.106	2.40	2.70
L1	.047	.055	1.20	1.40
L2	.039	.045	1.00	1.15
L3	.010 BSC		0.25 BSC	
L4	.150	.161	3.80	4.10

X020a TO-264 AA



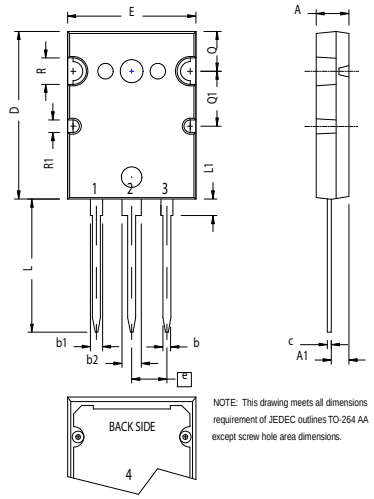
SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	4.82	5.13	.190	.202
A1	2.54	2.89	.100	.114
A2	2.00	2.10	.079	.083
b	1.12	1.42	.044	.056
b1	2.39	2.69	.094	.106
b2	2.90	3.09	.114	.122
c	0.53	0.83	.021	.033
D	25.91	26.16	1.02	1.03
E	19.81	19.96	.780	.786
e	5.46 BSC		.215 BSC	
J	0.00	0.25	.000	.010
K	0.00	0.25	.000	.010
L	20.32	20.83	.800	.820
L1	2.29	2.59	.090	.102
P	3.17	3.66	.125	.144
Q	6.07	6.27	.239	.247
Q1	8.38	8.69	.330	.342
R	3.81	4.32	.150	.170
R1	1.78	2.29	.070	.090
S	6.04	6.30	.238	.248
T	1.57	1.83	.062	.072

Outline drawings

IXYS

Dimensions in mm and inches (1 mm = 0.0394“)

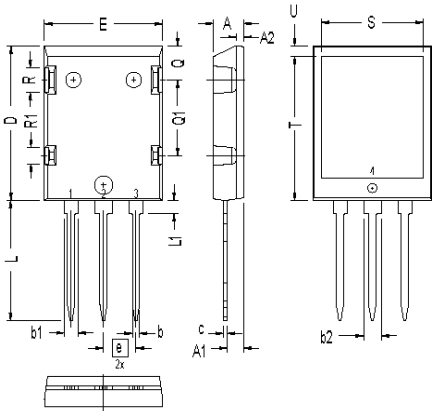
X021a PLUS264™



NOTE: This drawing meets all dimensions requirement of JEDEC outlines TO-264 AA except screw hole area dimensions.

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.185	.209	4.70	5.31
A1	.102	.118	2.59	3.00
b	.037	.055	0.94	1.40
b1	.087	.102	2.21	2.59
b2	.110	.126	2.79	3.20
c	.017	.029	0.43	0.74
D	1.007	1.047	25.58	26.59
E	.760	.799	19.30	20.29
e	.215 BSC		5.46 BSC	
L	.779	.842	19.79	21.39
L1	.087	.102	2.21	2.59
Q	.240	.256	6.10	6.50
Q1	.330	.346	8.38	8.79
∅R	.155	.187	3.94	4.75
∅R1	.085	.093	2.16	2.36

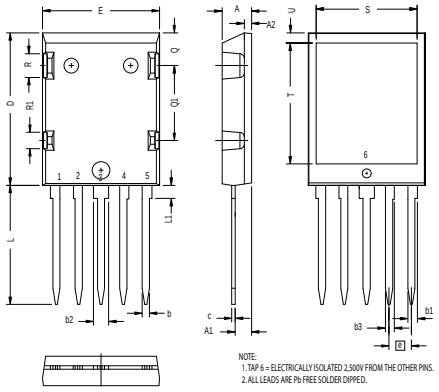
X022a ISOPLUS264™



SYM	INCHES		MILLIMETER	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.102	.118	2.59	3.00
A2	.046	.055	1.17	1.40
b	.045	.055	1.14	1.40
b1	.087	.102	2.21	2.59
b2	.111	.126	2.82	3.20
c	.020	.029	0.51	0.74
D	1.020	1.040	25.91	26.42
E	.770	.799	19.56	20.29
e	.215 BSC		5.46 BSC	
L	.780	.820	19.81	20.83
L1	.080	.102	2.03	2.59
Q	.210	.235	5.33	5.97
Q1	.490	.513	12.45	13.03
R	.150	.180	3.81	4.57
R1	.100	.130	2.54	3.30
S	.668	.690	16.97	17.53
T	.801	.821	20.34	20.85
U	.085	.080	1.65	2.03

X022 ISOPLUS264™

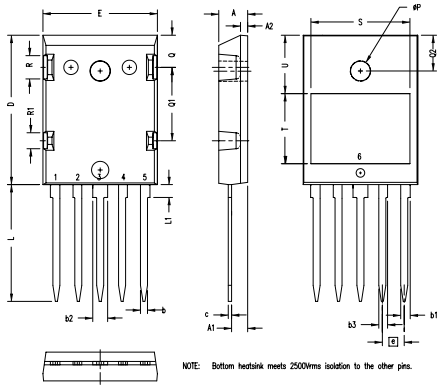
c) 5 pin
d) 3 (sym) w/o pin 2 & 4
e) 3 (HV) w/o pin 3 & 4



NOTE:
1. TAP 6 = ELECTRICALLY ISOLATED 2,500V FROM THE OTHER PINS.
2. ALL LEADS ARE Pb FREE SOLDER DIPPED.

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.102	.118	2.59	3.00
A2	.046	.055	1.17	1.40
b	.045	.055	1.14	1.40
b1	.063	.072	1.60	1.83
b2	.100	.110	2.54	2.79
b3	.058	.068	1.47	1.73
c	.020	.029	0.51	0.74
D	1.020	1.040	25.91	26.42
E	.770	.799	19.56	20.29
e	.150 BSC		3.81 BSC	
L	.780	.820	19.81	20.83
L1	.080	.102	2.03	2.59
Q	.210	.235	5.33	5.97
Q1	.490	.513	12.45	13.03
R	.150	.180	3.81	4.57
R1	.100	.130	2.54	3.30
S	.668	.690	16.97	17.53
T	.801	.821	20.34	20.85
U	.085	.080	1.65	2.03

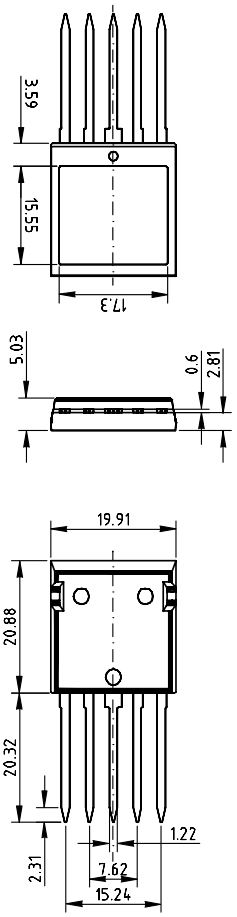
X023 ISO264™



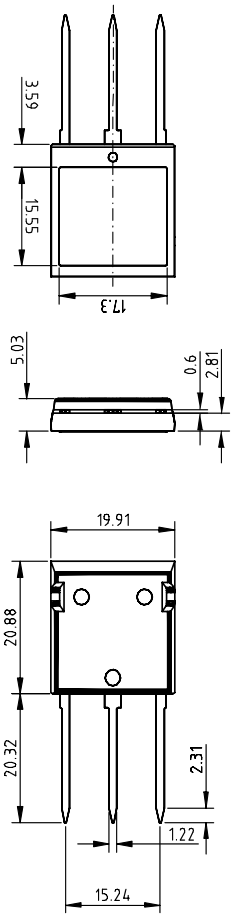
NOTE: Bottom heatsink meets 2500Vrms isolation to the other pins.

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.102	.118	2.59	3.00
A2	.046	.055	1.17	1.40
b	.045	.055	1.14	1.40
b1	.063	.072	1.60	1.83
b2	.100	.110	2.54	2.79
b3	.058	.068	1.47	1.73
c	.020	.029	0.51	0.74
D	1.020	1.040	25.91	26.42
E	.770	.799	19.56	20.29
e	.150 BSC		3.81 BSC	
L	.780	.820	19.81	20.83
L1	.080	.102	2.03	2.59
P	.130	.145	3.30	3.68
Q	.210	.235	5.33	5.97
Q1	.490	.513	12.45	13.03
Q2	.235	.255	5.96	6.48
R	.150	.180	3.81	4.57
R1	.100	.130	2.54	3.30
S	.668	.690	16.97	17.53
T	.470	.490	11.94	12.45
U	.390	.410	9.91	10.41

X024a ISOPLUS i4-PAC™



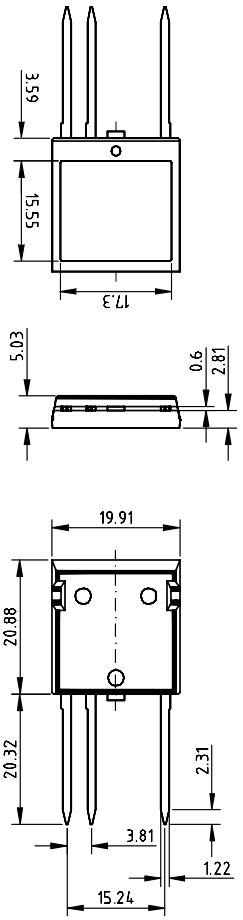
X024b ISOPLUS i4-PAC™



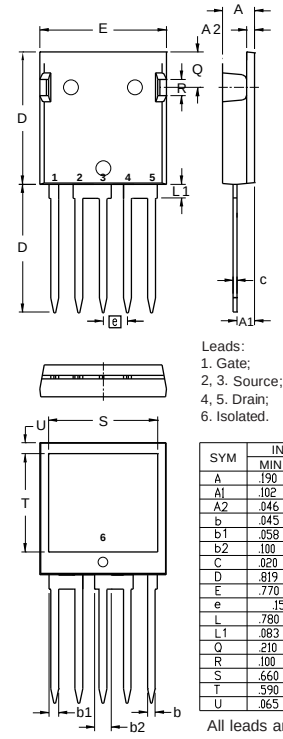
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

X024c ISOPLUS i4-PAC™



X024d ISOPLUS i4-PAC™

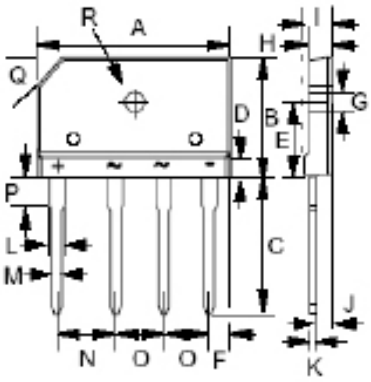


Leads:
1. Gate;
2, 3. Source;
4, 5. Drain;
6. Isolated.

SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.190	.205	4.83	5.21
A1	.102	.118	2.59	3.00
A2	.046	.085	1.17	2.16
b	.045	.055	1.14	1.40
b1	.058	.068	1.47	1.73
b2	.100	.110	2.54	2.79
C	.020	.029	0.51	0.74
D	.819	.840	20.80	21.34
E	.770	.799	19.56	20.29
e	.150 BSC		3.81 BSC	
L	.780	.840	19.81	21.34
L1	.083	.102	2.11	2.59
Q	.210	.244	5.33	6.20
R	.100	.180	2.54	4.57
S	.660	.690	16.76	17.53
T	.590	.620	14.99	15.75
U	.065	.080	1.65	2.03

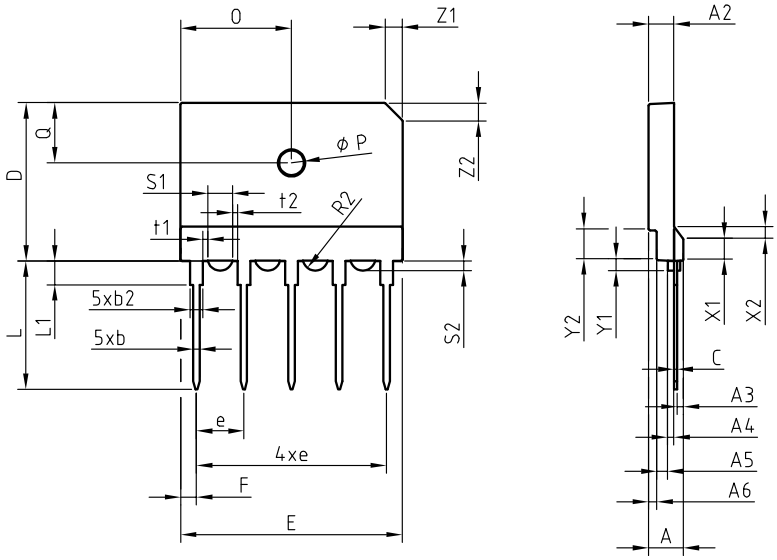
All leads and tab are tin plated.

X025a GBFP



GBJ		
DIM.	MIN.	MAX.
A	29.70	30.30
B	19.70	20.30
C	17.0	18.0
D	4.70	4.90
E	10.80	11.20
F	2.30	2.70
G	3.10	3.40
H	3.40	3.80
I	4.40	4.80
J	2.50	2.90
K	0.60	0.80
L	2.00	2.40
M	0.90	1.10
N	9.80	10.20
O	7.30	7.70
P	3.80	4.20
Q	(3.0) x 45°	
R	3.10 ø	3.40 ø
All Dimensions in millimeter		

X025b GUFP



Size mm	typical
A	5.50
A2	4.00
A3	1.00
A4	1.00
A5	1.70
A6	1.30
b	1.00
b2	2.00
C	0.50
D	25.00
E	35.00
e	7.50
F	2.50
L	20.24

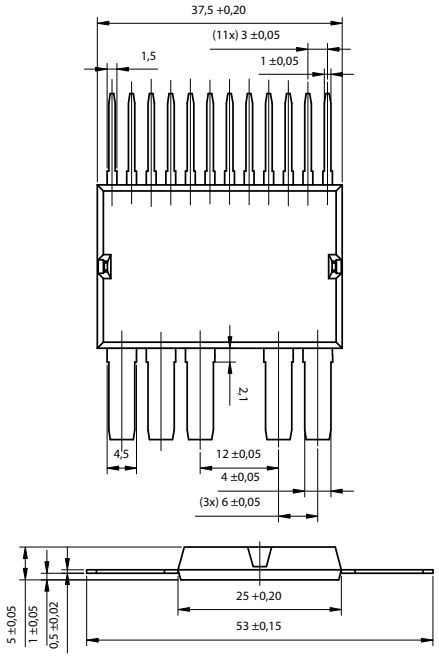
Size mm	typical
L1	3.74
O	17.50
Ø P	4.00
Q	9.50
R (rad.)	1.77
s1	3.50
s2	1.50
t1	1.00
t2	1.00
x1	3.59
x2	2.01
y1	1.71
y2	4.73
z1	2.73

Outline drawings

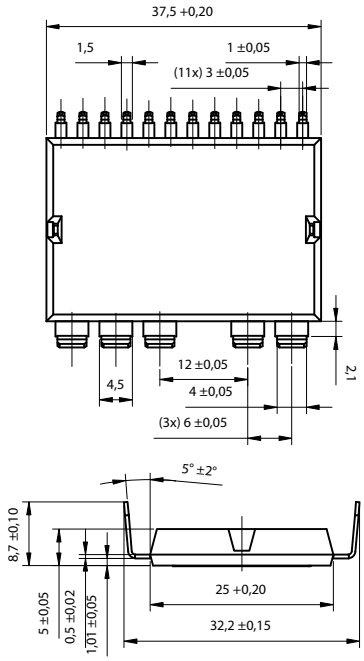
IXYS

Dimensions in mm and inches (1 mm = 0.0394“)

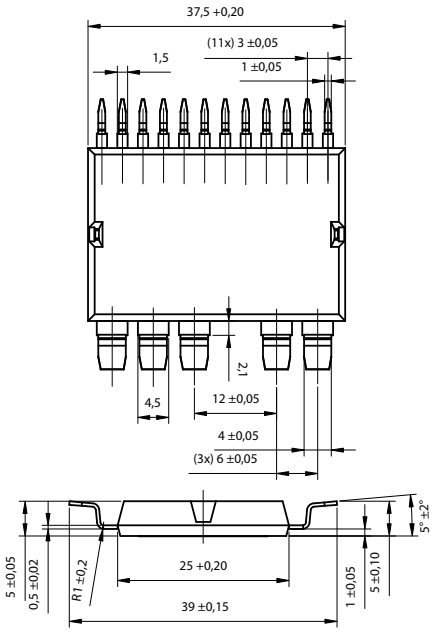
X026a ISOPLUS-DIL™ (SL)



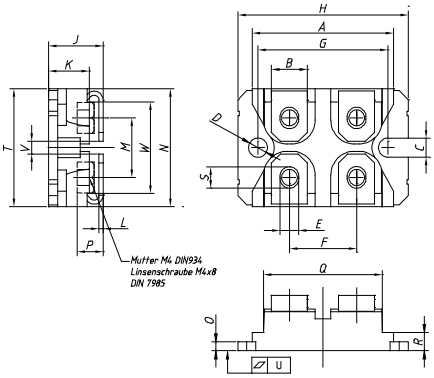
X026b ISOPLUS-DIL™ (BL)



X026c ISOPLUS™-DIL (SMD)

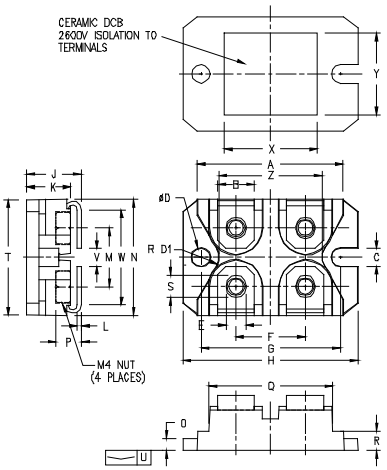


X027a SOT-227 B miniBLOC
X027b SOT-227 UI miniBLOC



SYM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.489	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	0.84	0.030	0.033
M	12.60	12.85	0.496	0.506
N	25.15	25.42	0.990	1.001
O	1.98	2.13	0.078	0.084
P	4.95	5.97	0.195	0.235
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.174
S	4.72	4.85	0.186	0.191
T	24.59	25.07	0.968	0.987
U	0.05	0.10	0.002	0.004
V	3.30	4.57	0.130	0.180
W	19.81	21.08	0.780	0.830

X028 ISOPLUS227™



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	1.240	1.270	31.50	32.26
B	.310	.330	7.87	8.38
C	.155	.165	3.94	4.19
D	.155	.165	3.94	4.19
D1	.150	.157	3.81	3.98
E	.160	.168	4.06	4.27
F	.587	.595	14.91	15.11
G	1.186	1.193	30.12	30.30
H	1.489	1.505	37.80	38.23
J	.465	.481	11.81	12.22
K	.370	.380	9.40	9.65
L	.030	.033	0.76	0.84
M	.496	.506	12.60	12.85
N	.990	1.001	25.15	25.42
O	.100	.105	2.54	2.67
P	.195	.235	4.95	5.97
Q	1.045	1.059	26.54	26.90
R	.160	.170	4.06	4.32
S	.186	.191	4.72	4.85
T	.968	.987	24.59	25.07
U	-.001	.002	-0.03	0.05
V	.130	.160	3.30	4.06
W	.780	.830	19.81	21.08
X	.770	.810	19.56	20.57
Y	.680	.720	17.27	18.29
Z	.885	.892	22.48	22.66

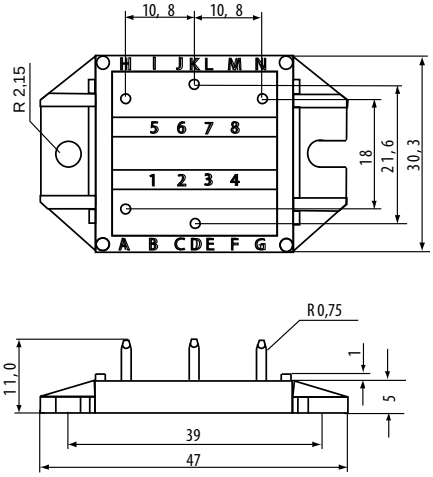
Outline drawings

IXYS

Dimensions in mm and inches (1 mm = 0.0394“)

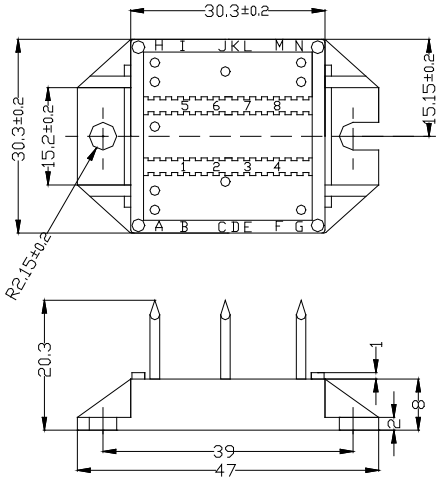
X100 Slim-PAC

See data sheet for pin arrangement



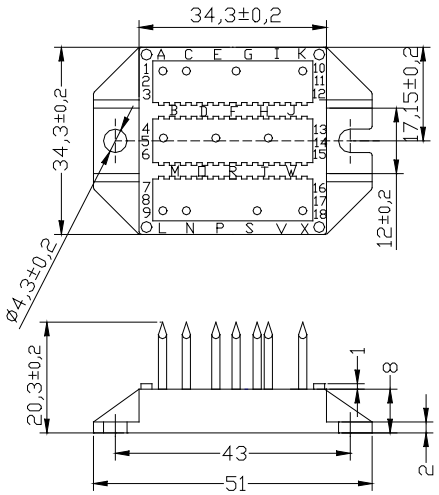
X101 ECO-PAC1

See data sheet for pin arrangement



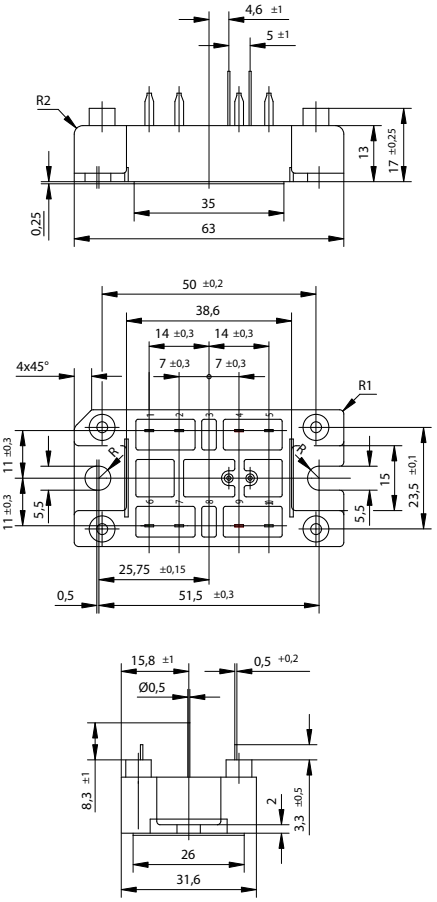
X102 ECO-PAC2

See data sheet for pin arrangement



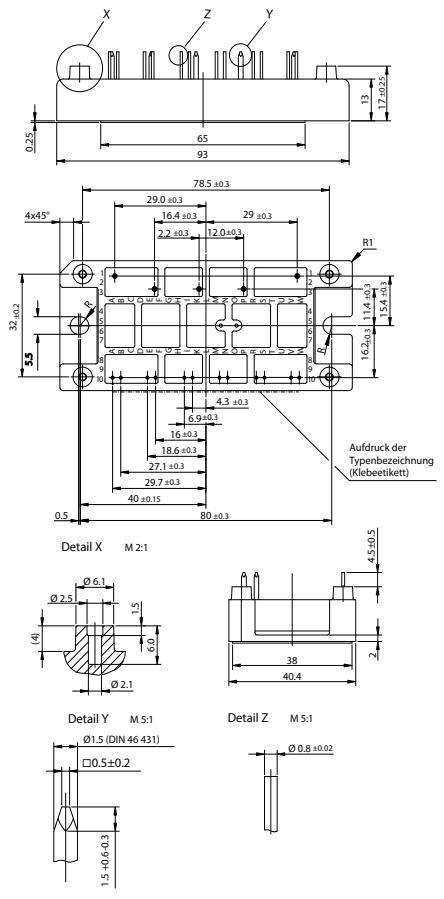
X103 V1-A-Pack

See data sheet for pin arrangement



X104 V2-Pack

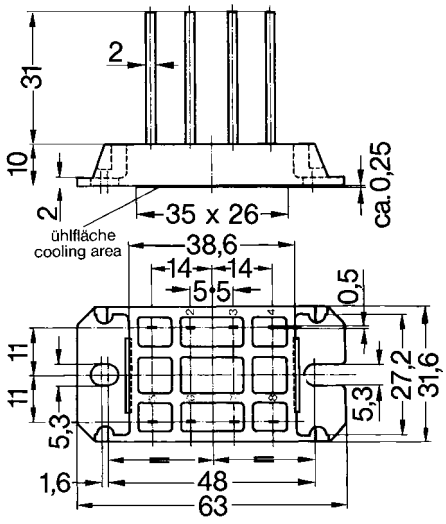
See data sheet for pin arrangement



X105 V1-B-Pack

a: pin length = 31 mm

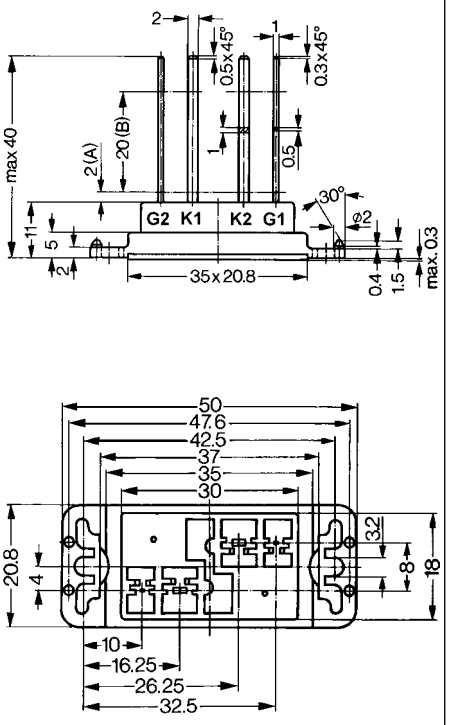
b: pin length = 16 mm



Outline drawings

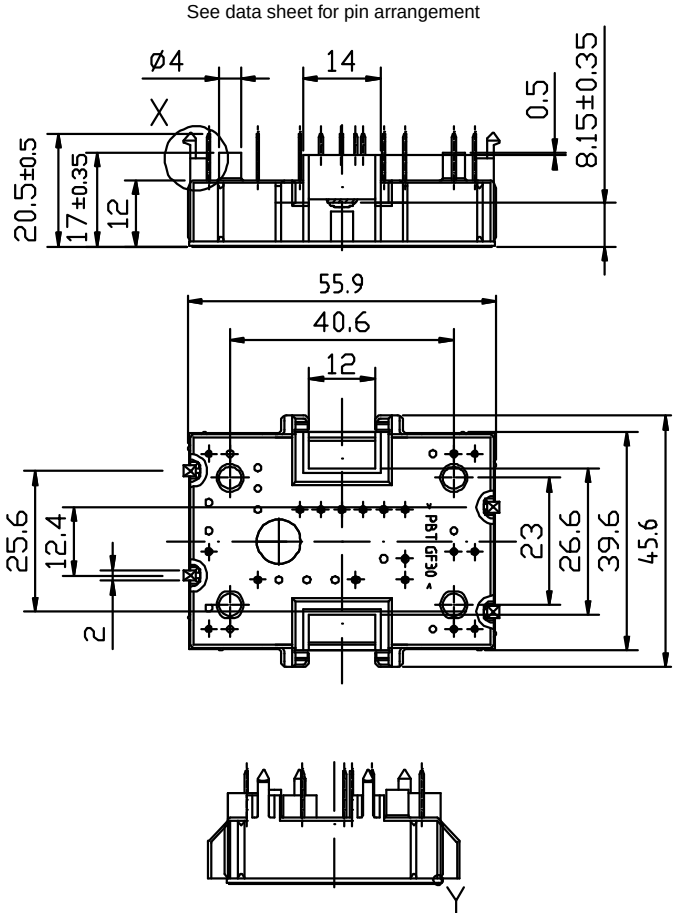
Dimensions in mm and inches (1 mm = 0.0394“)

X106 Kamm-Modul
a: with gate pin G2
b: without gate pin G2



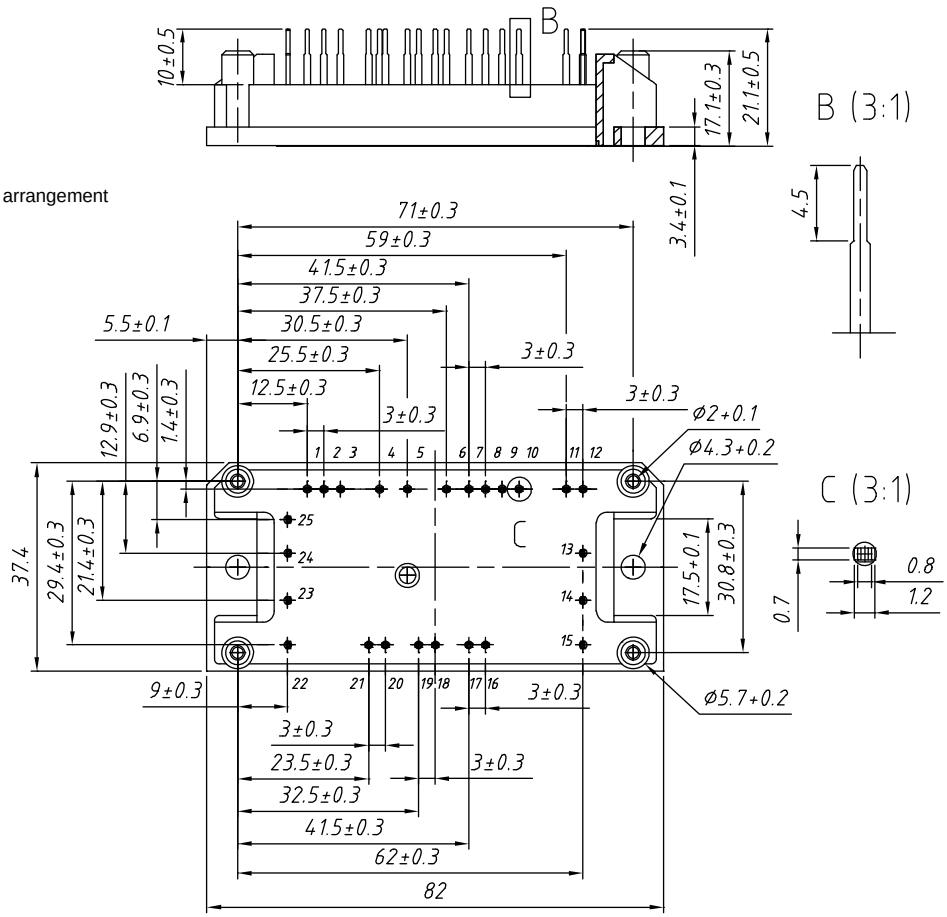
X110 MiniPack2

See data sheet for pin arrangement



X111 E1-Pack

See data sheet for pin arrangement

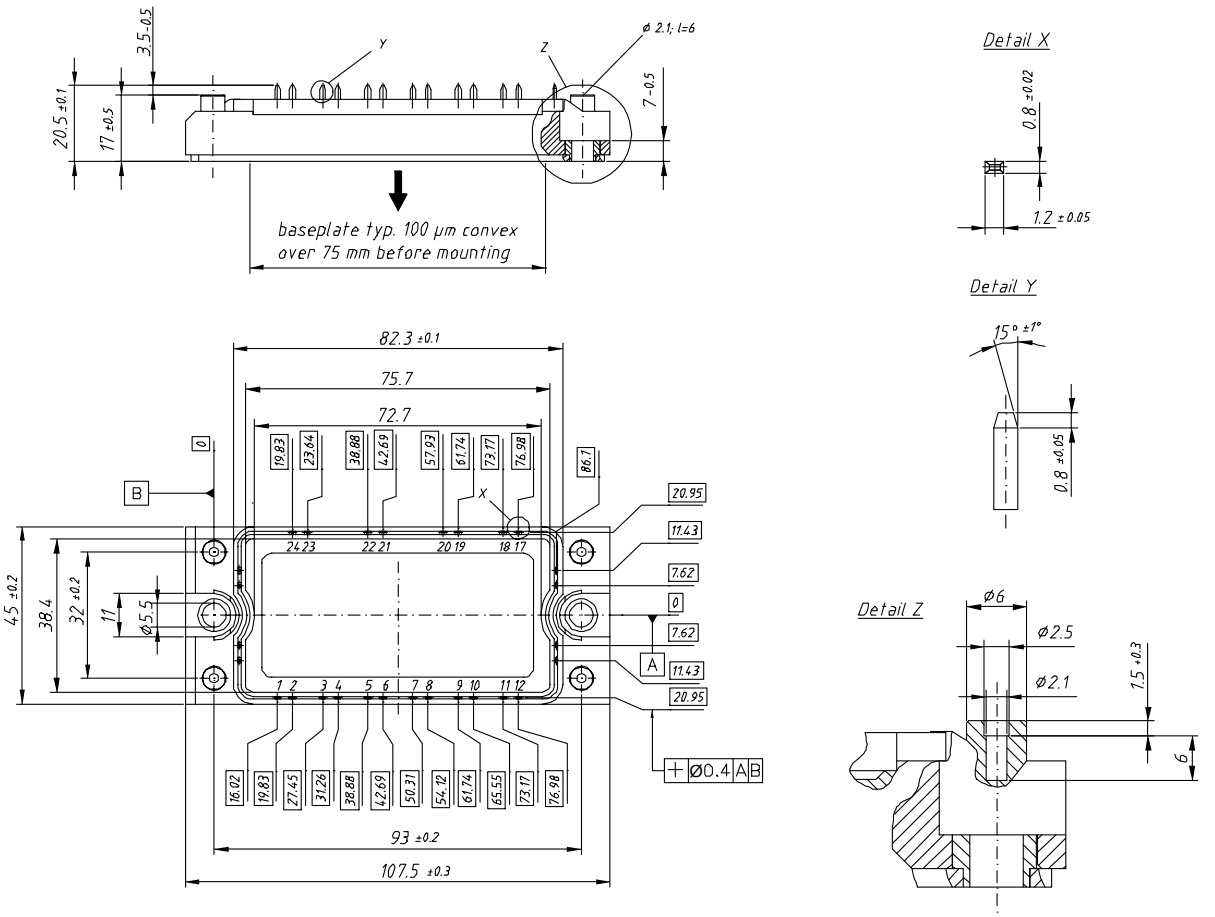


Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

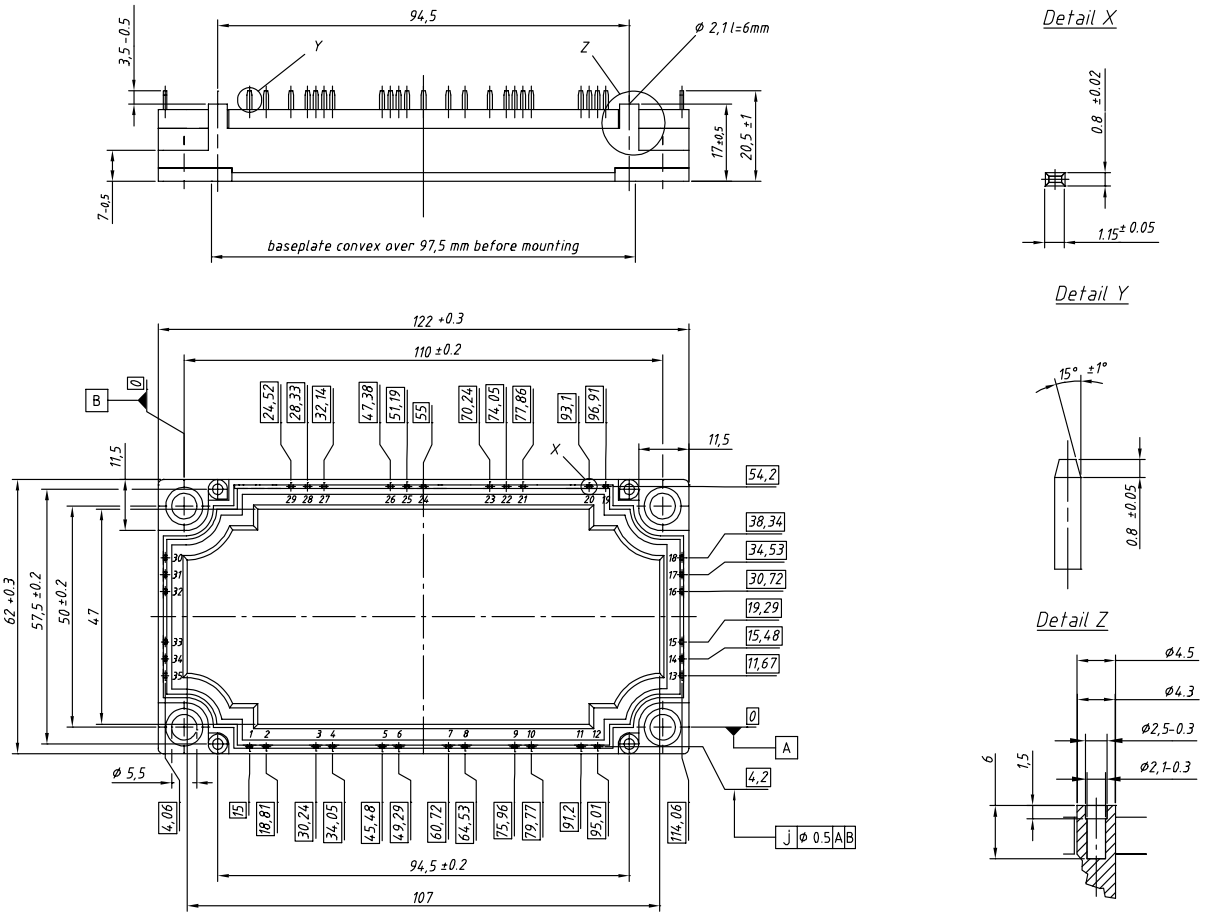
X112 E2-Pack

See data sheet for pin arrangement



X113 E3-Pack

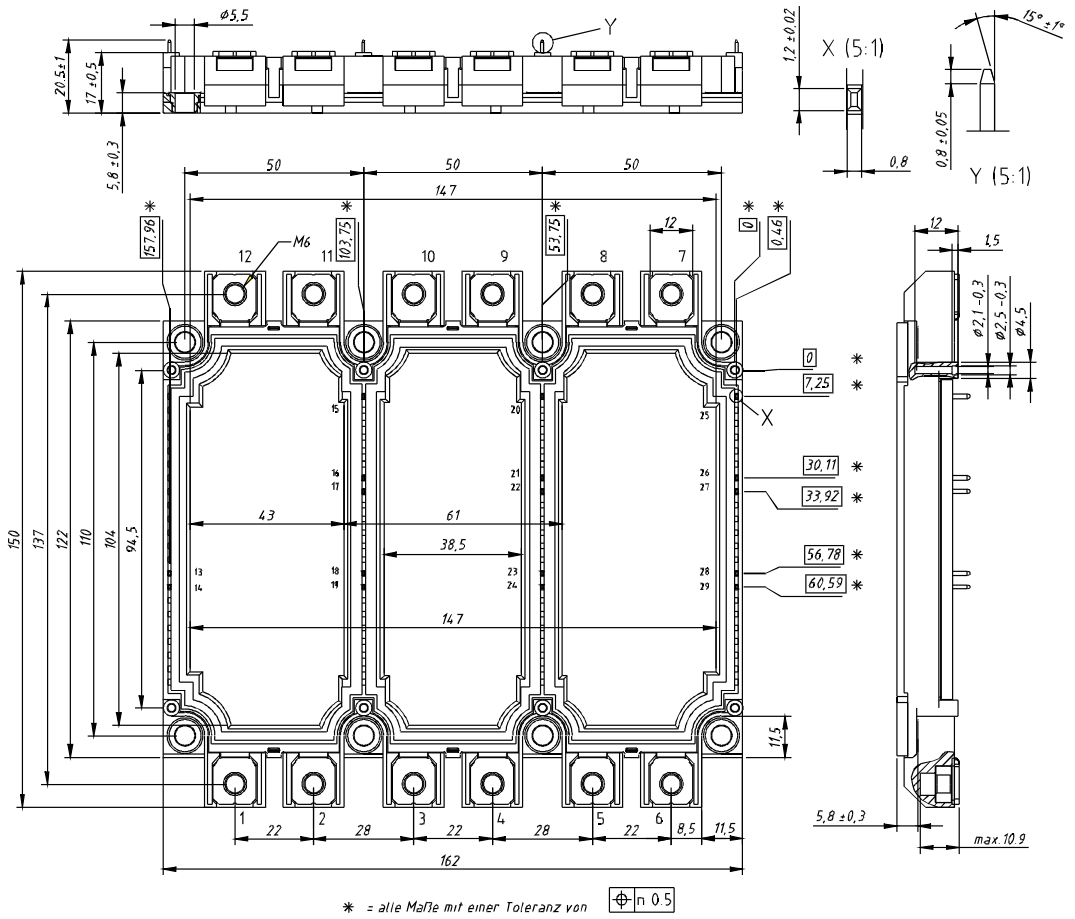
See data sheet for pin arrangement



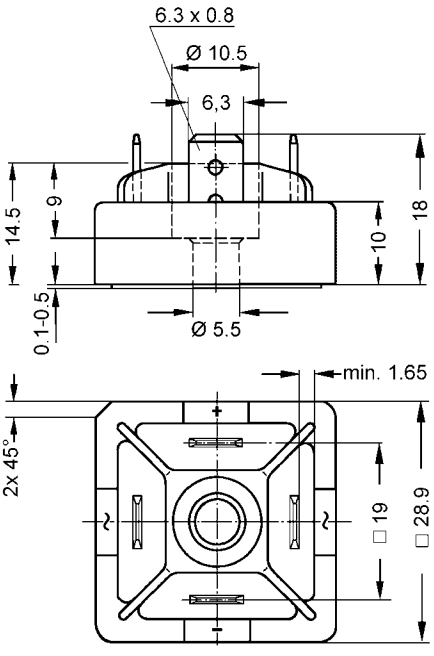
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

X114 E9-Pack



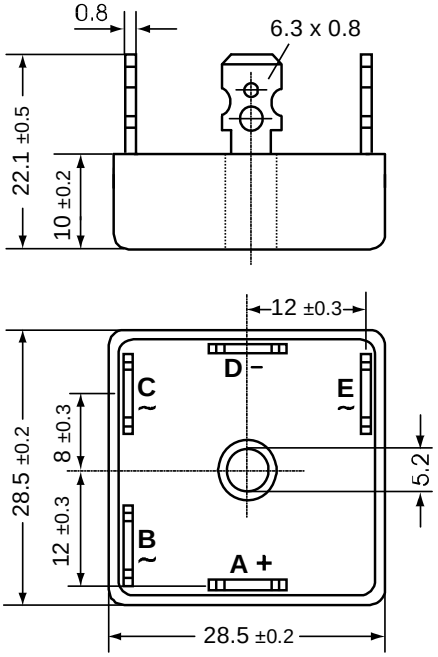
X115 FO-A



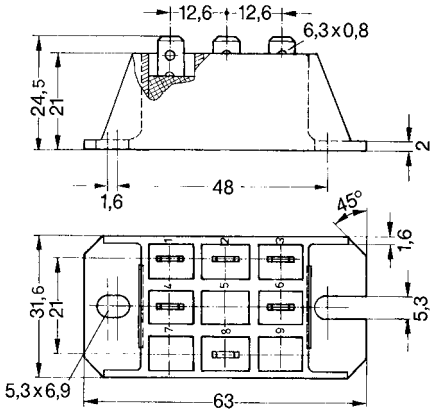
X116 FO-B

a: VUO

b: w/o terminal c (VBO)



X117a FO-F-A

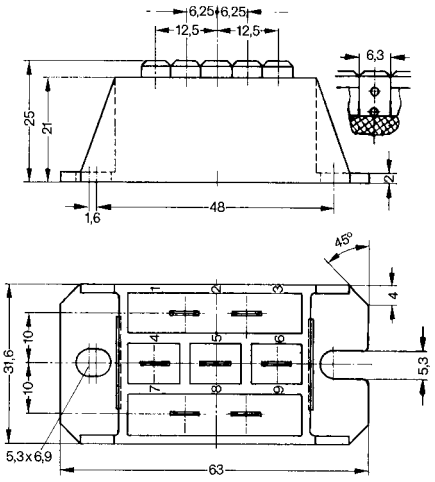


Outline drawings

IXYS

Dimensions in mm and inches (1 mm = 0.0394“)

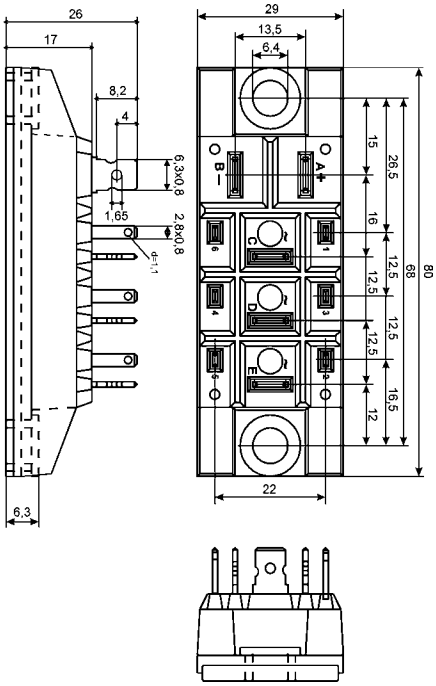
X117b FO-F-B



X118 FO-T-A

a: VTO & VTOF
c: w/o terminal 4, 5, & 6 (VVZ & VVZF)
d: w/o terminal 1, 2, 3, 4, 5, & 6 (VUO)
e: w/o terminal D, 4 & 5 (VKF & VKO)
f: w/o terminal D, 2, 3, 4 & 5 (VGO)
g: w/o terminal D, 3, 4, 5, & 6 (VHF & VHO)
h: w/o terminal D, 1, 2, 3, 4, 5, & 6 (VBO)

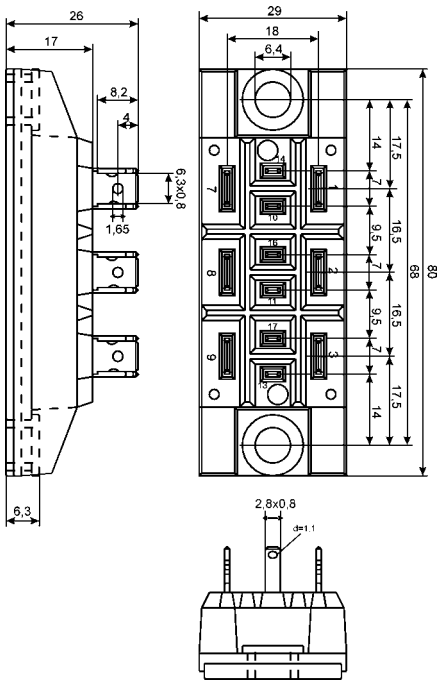
See data sheet for pin arrangement



X118 FO-T-B

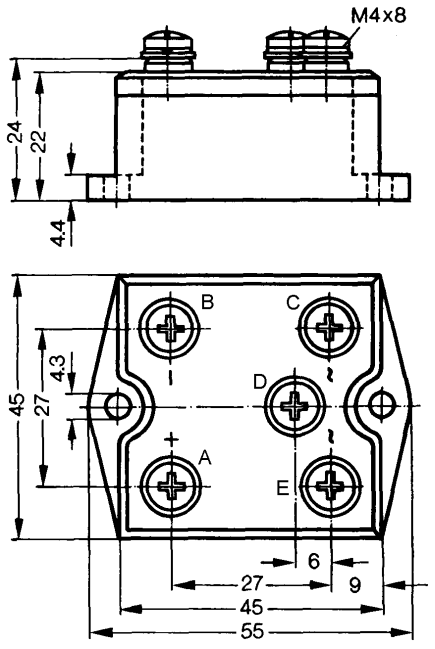
b: VWO

See data sheet for pin arrangement



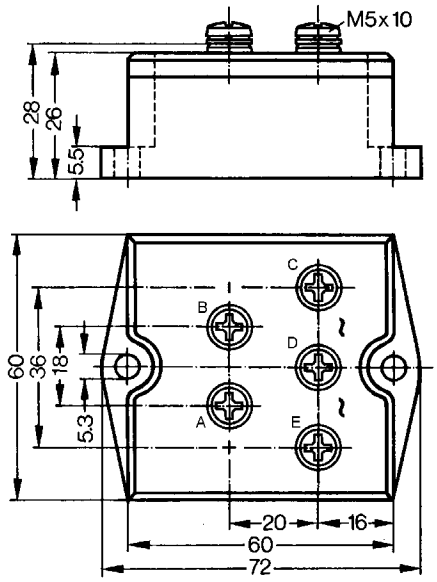
X119 PWS-A

a: VUO
b: w/o terminal d (VBO)



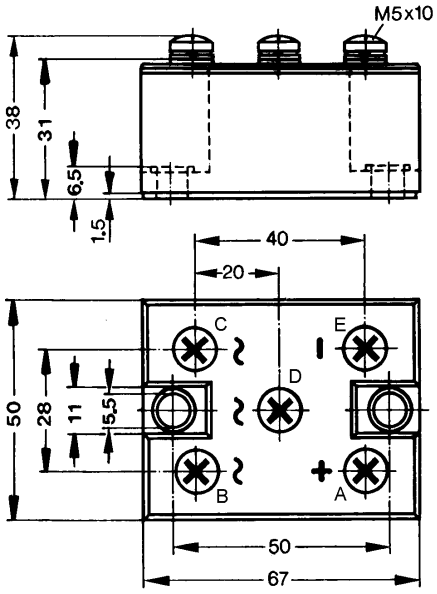
X120 PWS-B

a: VUO
b: w/o terminal d (VBO)



X121 PWS-C

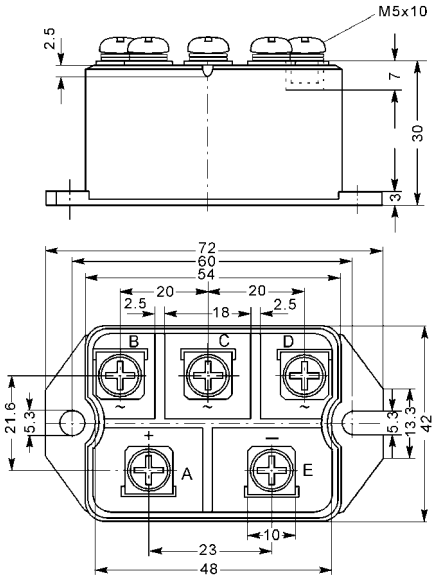
a: VUO
b: w/o terminal d (VBO)



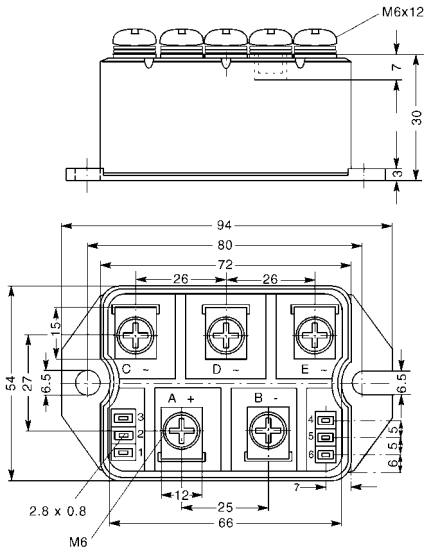
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

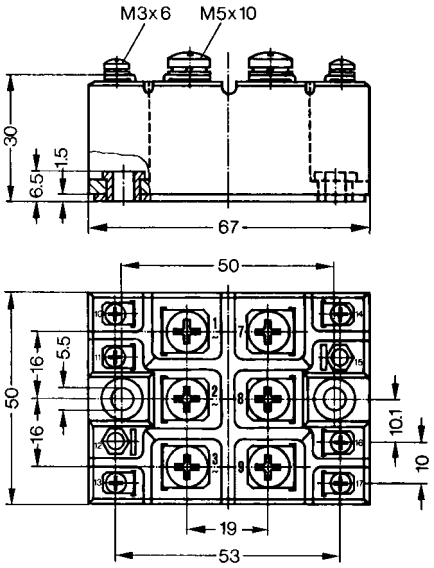
X122 PWS-D
a: VUO
b: w/o terminal c (VBO)



X123 PWS-E
a: VTO
b: w/o terminal 4, 5 & 6 (VVZ)
c: w/o terminal 1, 2, 3, 4, 5 & 6 (VUO)
d: w/o terminal D, 3, 4, 5 & 6 (VHF)
e: w/o terminal D, 1, 2, 3, 4, 5 & 6 (VBO)

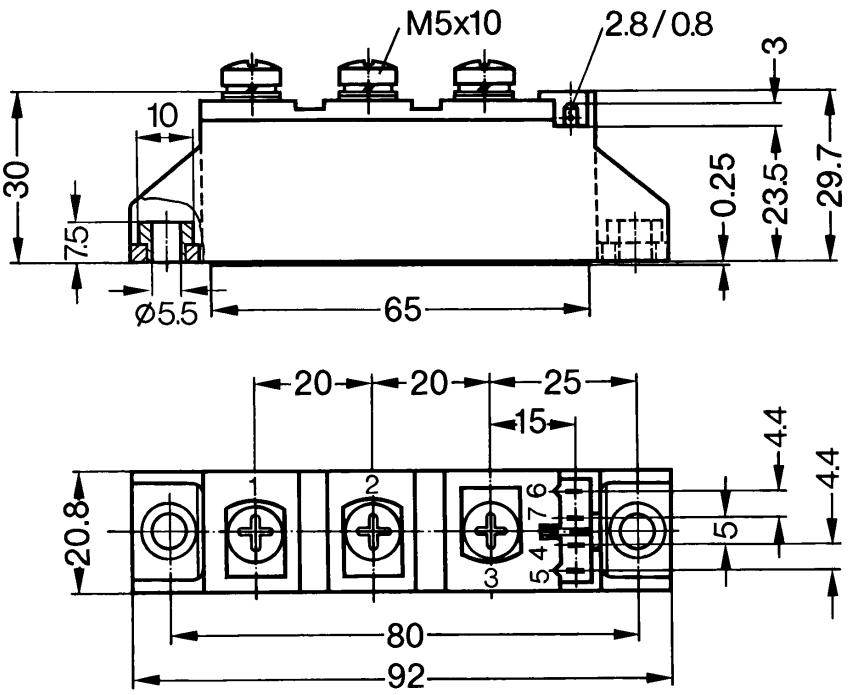


X124 PWS-F
w/o terminal 12 & 15 (VWO)

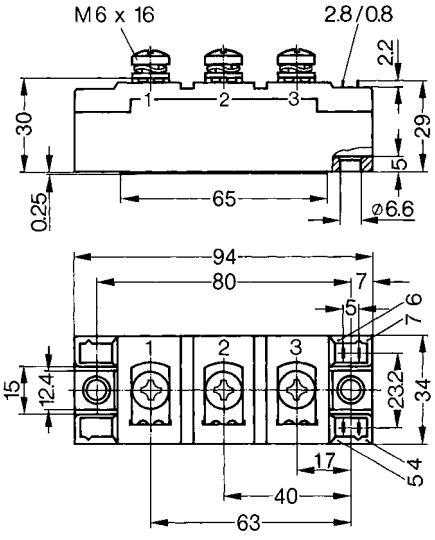


X125 TO-240 AA
a: + Kelvin contact (MCC)
b: + Kelvin contact, w/o pin 6 & 7 (MCD)
c: w/o Kelvin contact 4 & 7 (MCC)
d: w/o Kelvin contact 4, 7 & pin 6 (MCD)
e: w/o pin 4, 5, 6 & 7 (MDD)
f: w/o terminal 2 and pin 4 & 7 (VMO)
g: + Kelvin contact, w/o pin 7 (VMM)

See data sheet for pin arrangement



X126 Y4-M6
a: + Kelvin contact, w/o pin 8 up to 11 (MCC)
b: + Kelvin contact, w/o pin 6 up to 11 (MCD)
c: w/o pin 4 up to 11 (MDD)
d: w/o terminal 2 and pin 4 up to 11 (MEO)

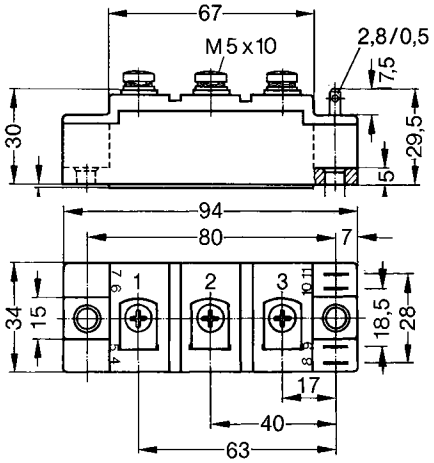


Outline drawings

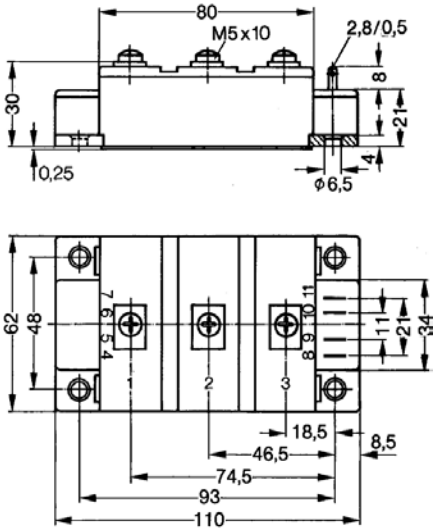
IXYS

Dimensions in mm and inches (1 mm = 0.0394“)

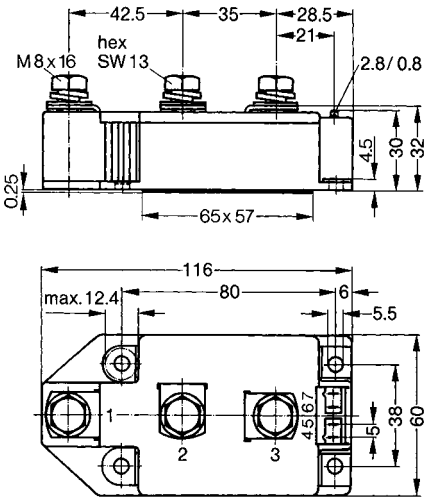
X127 Y4-M5
a: w/o pin 8 up to 11 (MII)
b: w/o pin 6 up to 11 (MID)
c: w/o pin 4, 5 & 8 up to 11 (MDI)



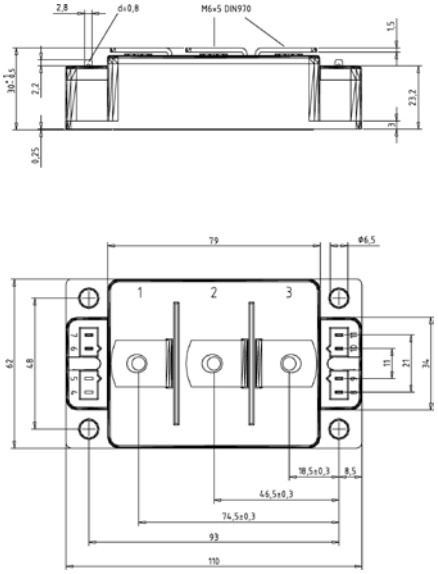
X128 Y3-DCB
a: w/o pin 4 up to 7 (VMM, MII)
b: w/o pin 4 up to 9 (MID)
c: w/o pin 4 up to 7, 10 & 11 (MDI)
d: w/o terminal 3 and pin 6 up to 11 (VMO)



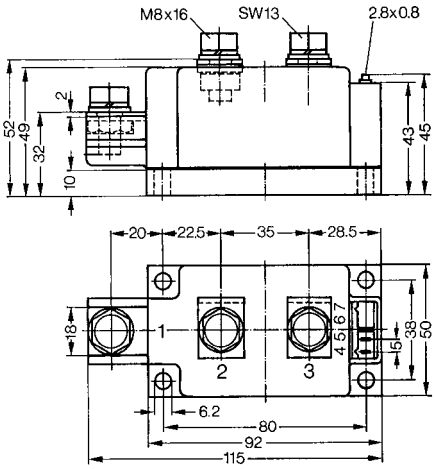
X129 Y2-DCB
a: + Kelvin contact (MCC)
b: + Kelvin contact, w/o pin 6 & 7 (MCD)
c: w/o pin 4, 5, 6 & 7 (MDD)



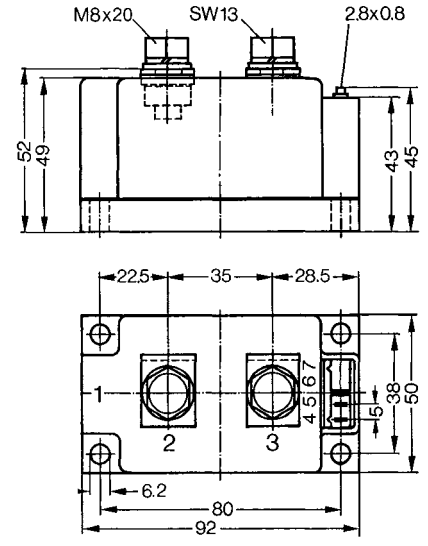
X130 Y3-Li
a: w/o pin 4 up to 7, low inductance (VMM, MII)
b: w/o pin 4 up to 9, low inductance (MID)
c: w/o pin 4 up to 7, 10 & 11, low inductance (MDI)
d: w/o terminal 1 & pin 6 up to 11, low ind. (VMO)
e: w/o pin 4 & 5, low ind. ((VMM, MII) + NTC)
f: w/o pin 4, 5, 8 & 9, low ind. ((MID) + NTC)



X131 Y1-CU
a: + Kelvin contact (MCC)
b: + Kelvin contact, w/o pin 6 & 7 (MCD)
c: w/o pin 4, 5, 6 & 7 (MDD)



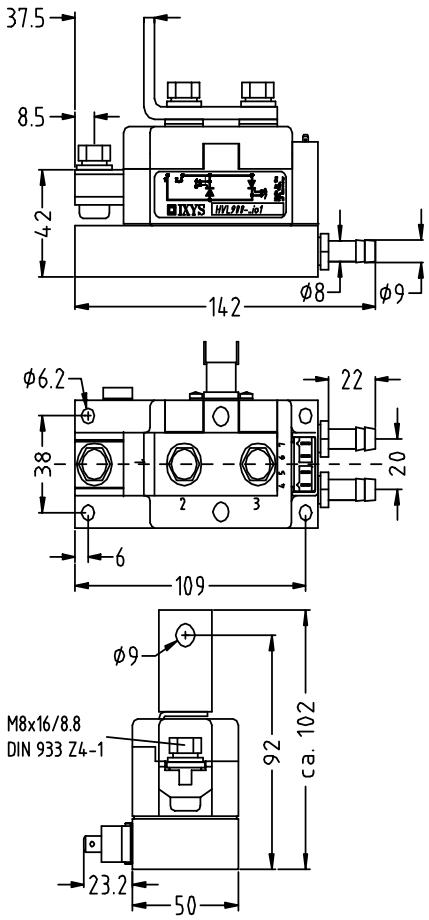
X132 Y1-2-CU
a: + Kelvin contact and pin 6 & 7 (MCO)
b: w/o pin 4, 5, 6 & 7 (MDO)



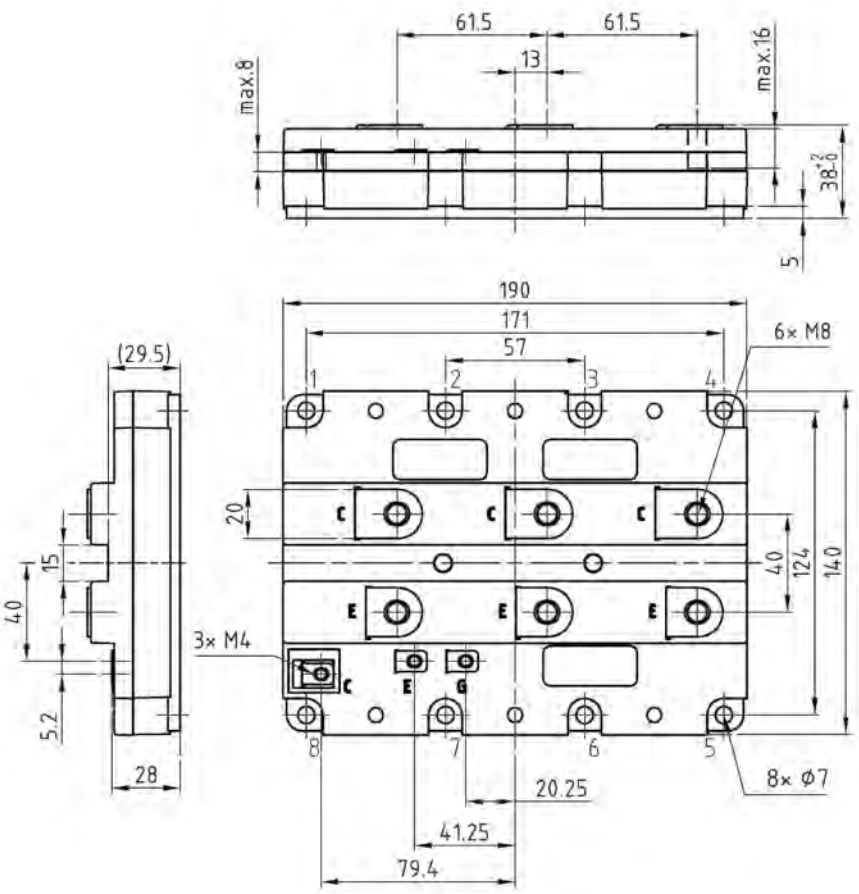
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

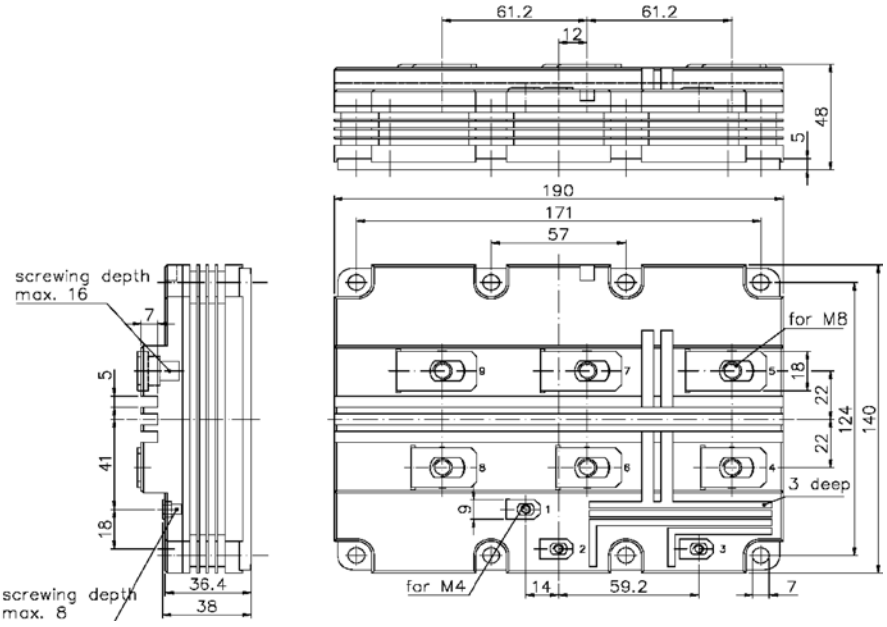
X133 Y1-wc (+ water-cooler, HVL)



X134 E10 Package



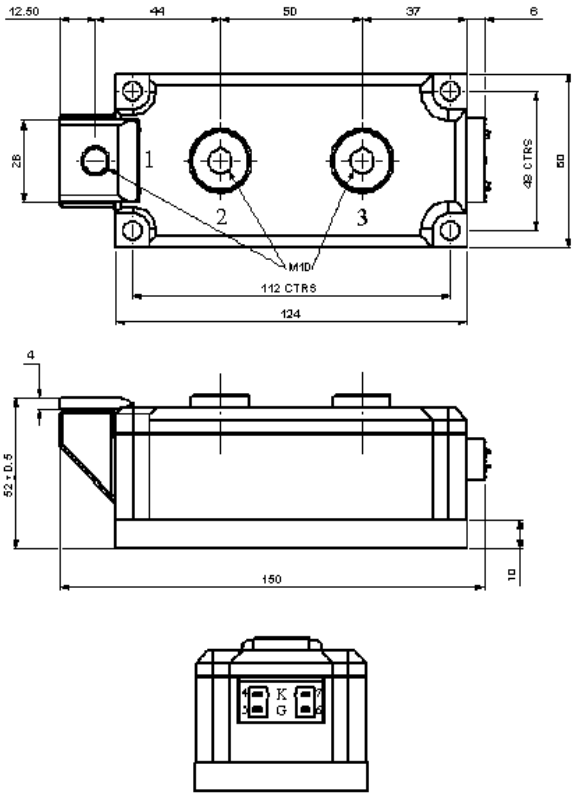
X135 E11 Package



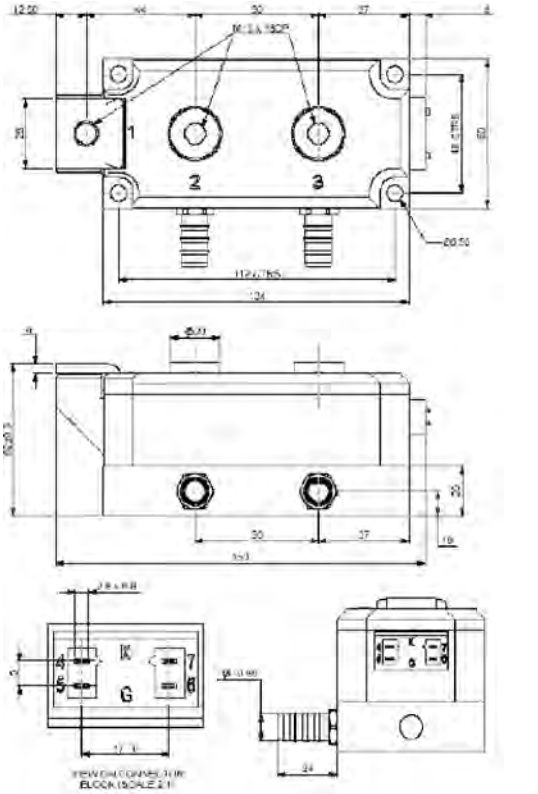
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

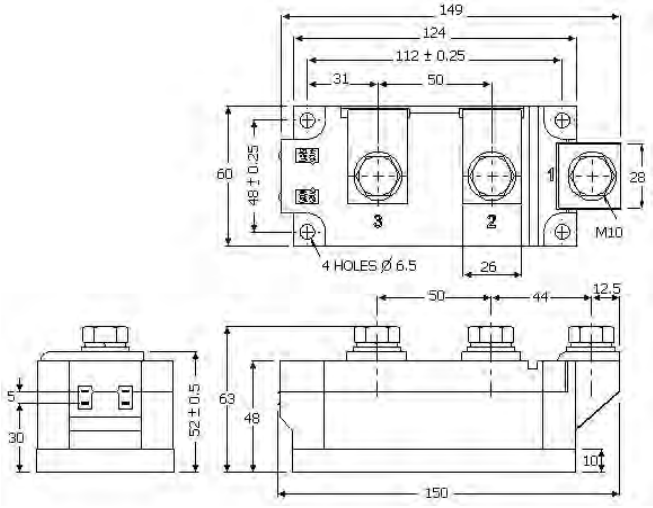
X136 WC-500
a: + Kelvin contact (MCC, MCA, MCK)
b: + Kelvin contact, w/o pin 6 & 7 (MCD)
c: + Kelvin contact, w/o pin 4 & 5 (MDC)
d: w/o pin 4, 5, 6 & 7 (MDD; MDA, MDK)



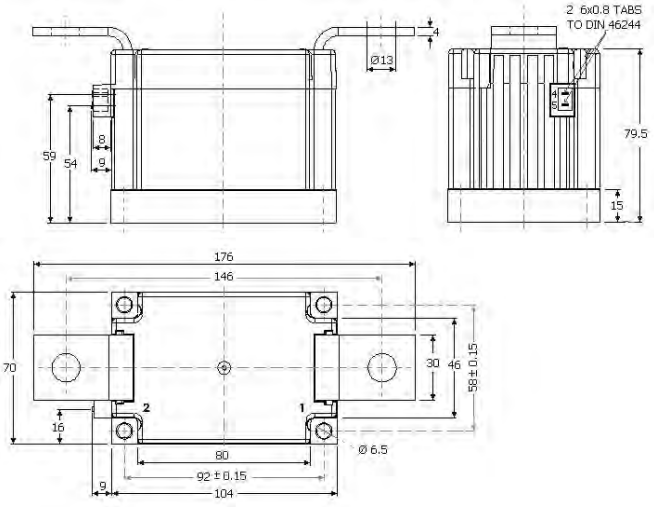
X137 WC-500 wc (+ water cooler)
a: + Kelvin contact (MCC, MCA, MCK)
b: + Kelvin contact, w/o pin 6 & 7 (MCD)
c: + Kelvin contact, w/o pin 4 & 5 (MDC)
d: w/o pin 4, 5, 6 & 7 (MDD; MDA, MDK)



X138 WC-501
a: + Kelvin contact (MCC, MCA, MCK)
b: + Kelvin contact, w/o pin 6 & 7 (MCD)
c: + Kelvin contact, w/o pin 4 & 5 (MDC)
d: w/o pin 4, 5, 6 & 7 (MDD; MDA, MDK)



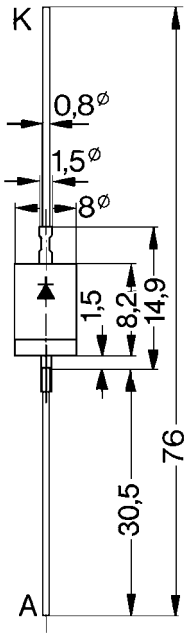
X140 WC-800
a: + Kelvin contact (MCO)
b: w/o pin 3 & 4 (MDO)



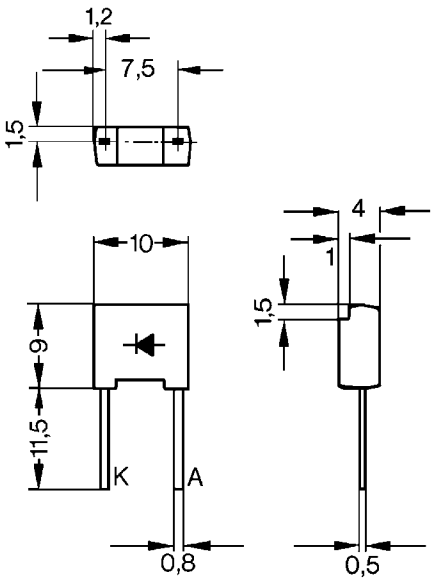
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

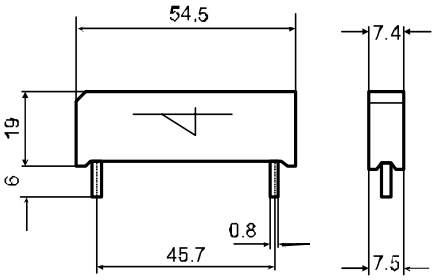
X200 Metal-can



X201 FP-Case (oilproof)



X202 BOD-Package

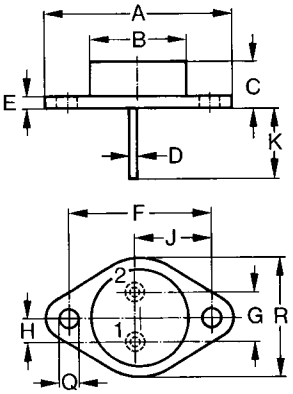


Outline drawings

IXYS

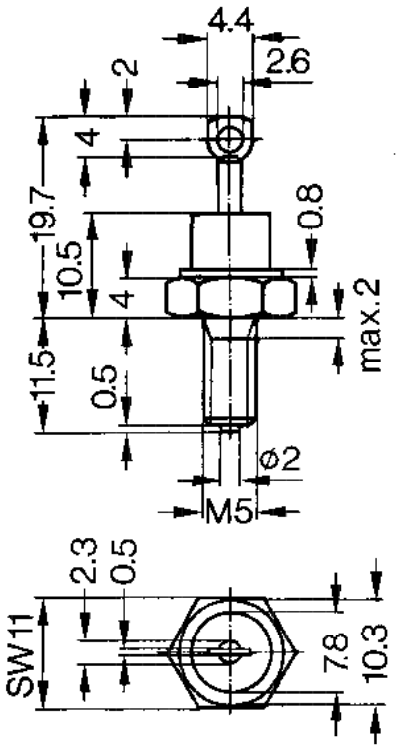
Dimensions in mm and inches (1 mm = 0.0394“)

X203 TO-204 AE

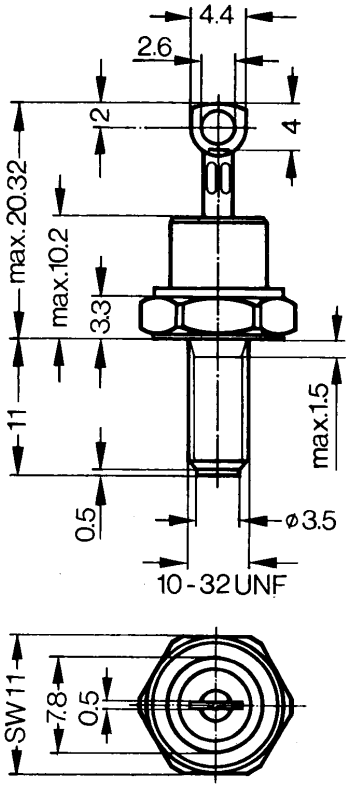


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	38.61	39.12	1.520	1.540
B	-	22.22	-	0.875
C	6.40	11.4	0.252	0.449
D	1.45	1.60	0.057	0.063
E	1.52	3.43	0.060	0.135
F	30.15	BSC	1.187	BSC
G	10.67	11.17	0.420	0.440
H	5.21	5.71	0.205	0.225
J	16.64	17.14	0.655	0.675
K	11.18	12.19	0.440	0.480
Q	3.84	4.19	0.151	0.165
R	25.16	26.66	0.991	1.05

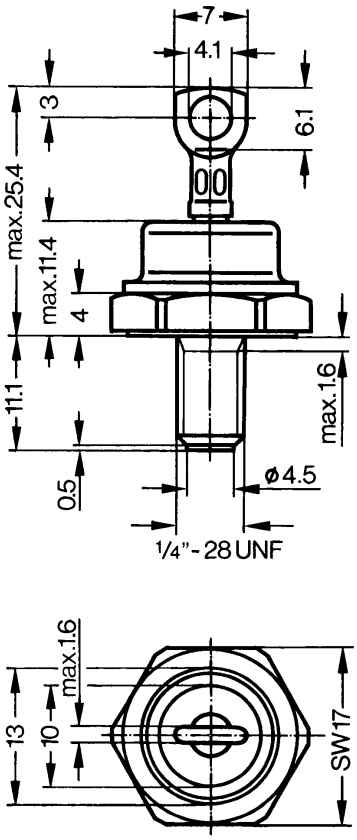
X204 DO-203 AA [M] (DO-4)



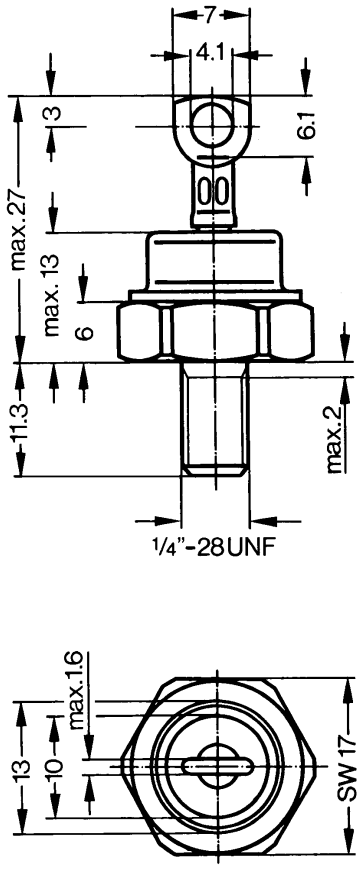
X205 DO-203 AA [UNF] (DO-4)



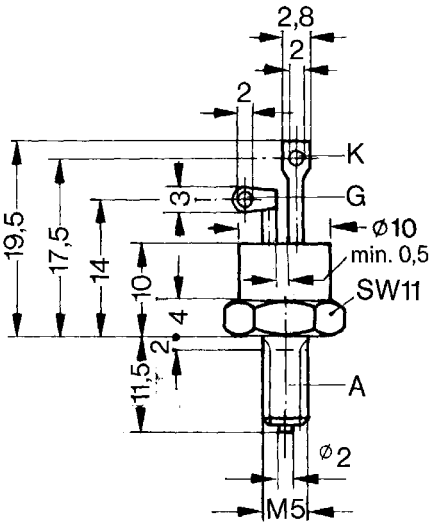
X206a DO-203 AB [UNF] (DO-5)
X206b DO-203 AB [M] (DO-5)



X207 DO-203 AB (DO-5)



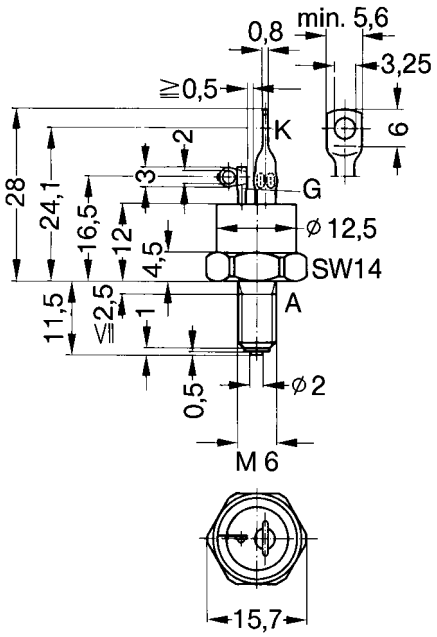
X208 TO-64



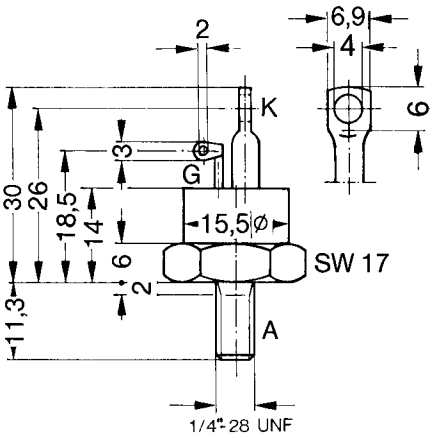
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

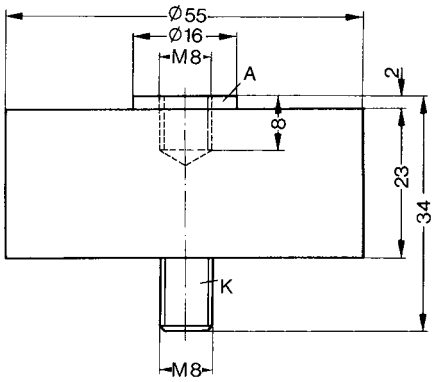
X209 TO-208 AA (TO-48)



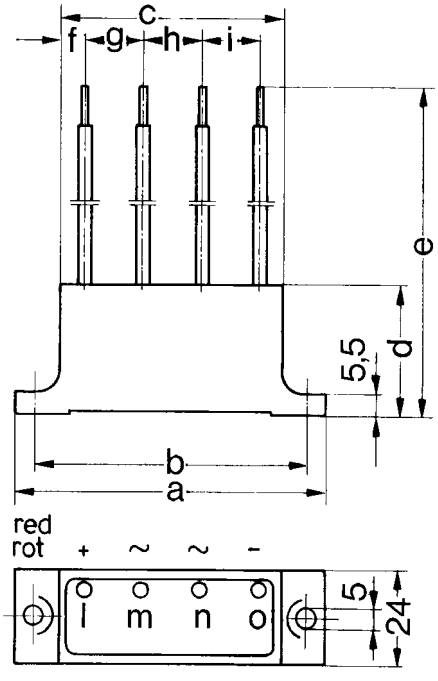
X210 TO-208 AC (TO-65)



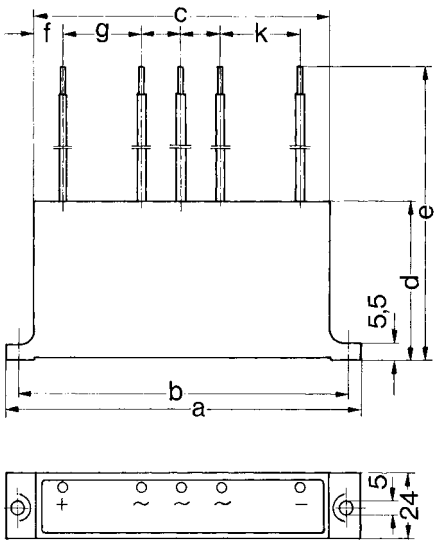
X251 UGE-single



X252 UGB 1~



X253 UGD 3~

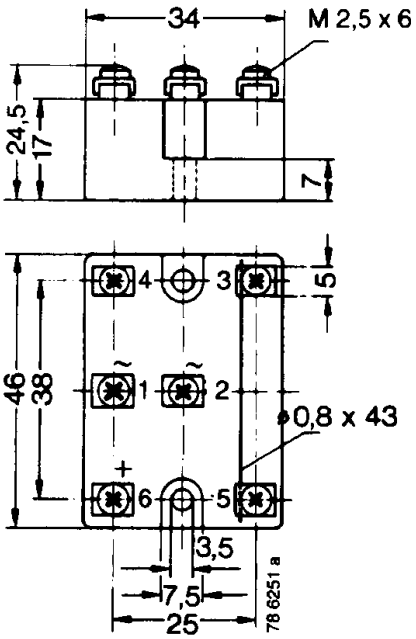


Outline drawings

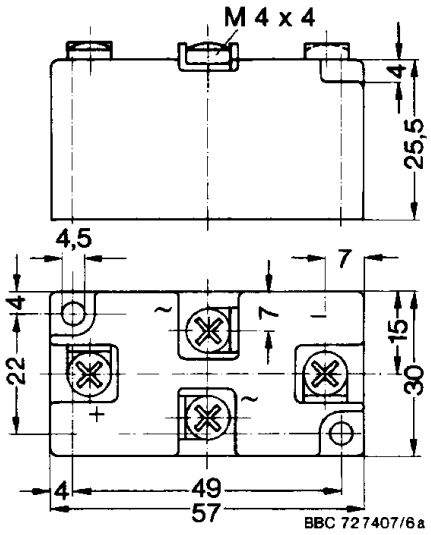
IXYS

Dimensions in mm and inches (1 mm = 0.0394“)

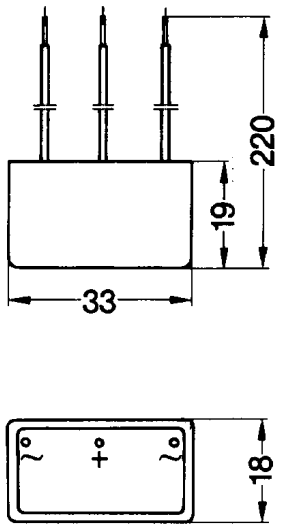
X254 VG-A



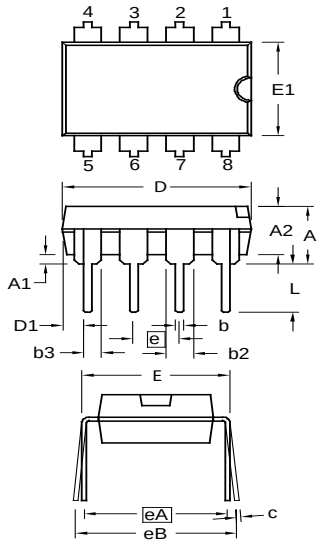
X255 VG-B



X256 VG-C



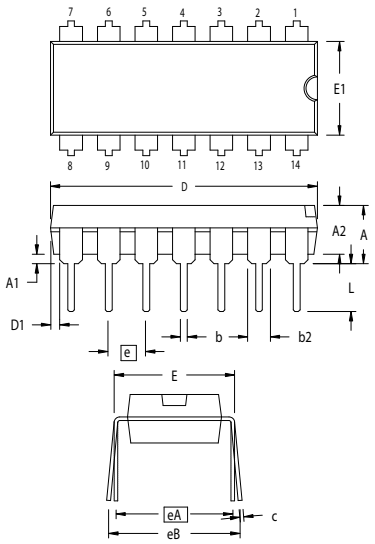
X502 8-Pin P-DIP



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.140	.180	3.56	4.57
A1	.015	.040	0.38	1.02
A2	.125	.145	3.18	3.68
b	.015	.020	0.38	0.51
b2	.055	.065	1.40	1.65
b3	.035	.045	0.89	1.14
c	.009	.012	0.23	0.30
D	.355	.400	9.02	10.16
D1	.010	.040	0.25	1.02
E	.300	.325	7.62	8.26
E1	.240	.270	6.10	6.86
e	.100 BSC		2.54 BSC	
eA	.300 BSC		7.62 BSC	
eB	.300	.430	7.62	10.92
L	.120	.140	3.05	3.56

NOTE: THIS DRAWING MEETS ALL REQUIREMENT OF JEDEC OUTLINES MS-001 BA.

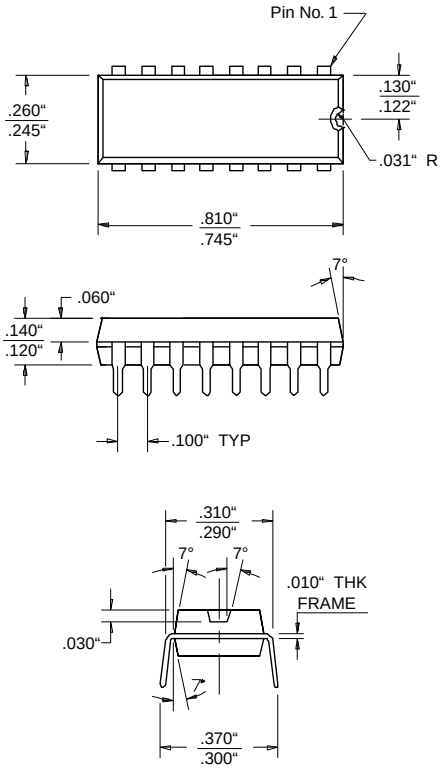
X504 14-Pin P-DIP



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.140	.180	3.56	4.57
A1	.015	.040	0.38	1.02
A2	.125	.145	3.18	3.68
b	.015	.020	0.38	0.51
b2	.055	.065	1.40	1.65
c	.009	.012	0.23	0.30
D	.735	.775	18.67	19.69
D1	.005	.040	0.13	1.02
E	.300	.325	7.62	8.26
E1	.240	.270	6.10	6.86
e	.100 BSC		2.54 BSC	
eA	.300 BSC		7.62 BSC	
eB	.300	.430	7.62	10.92
L	.120	.140	3.05	3.56

NOTE: THIS DRAWING MEETS ALL REQUIREMENT OF JEDEC OUTLINES MS-001 AA .

X505 16-Pin P-DIP

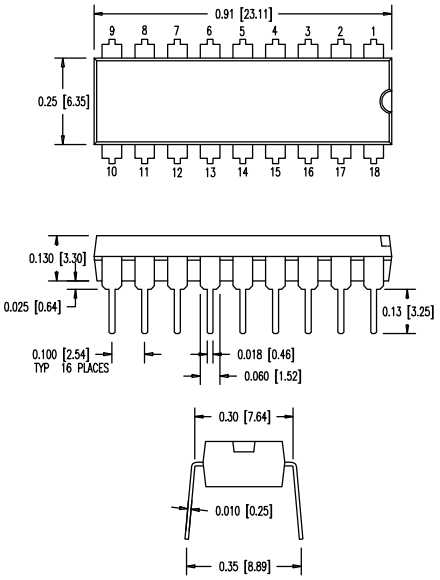


Outline drawings

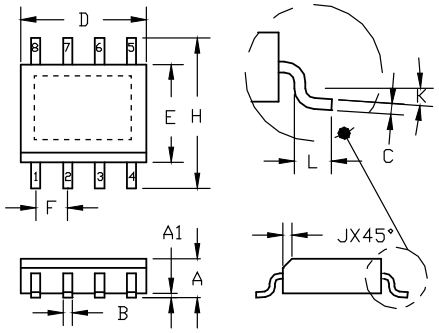
IXYS

Dimensions in mm and inches (1 mm = 0.0394“)

X506 18-pin P-DIP



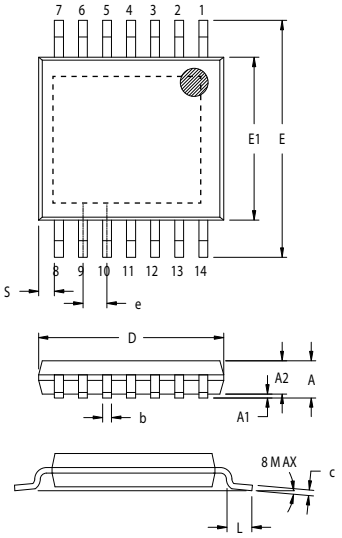
X512 8-pin SOIC/SOP
X512a 8-pin SOIC-CT/SOP-CT



DIMENSIONS (1)					
DIM.	INCH		MM.		NOTE
	MIN.	MAX.	MIN.	MAX.	
A	.0532	.0688	1.35	1.75	----
A1	.0040	.0098	.10	.25	----
B	.013	.020	.33	.51	----
C	.0075	.0098	.19	.25	----
D	.1890	.1968	4.80	5.00	(2)
E	.1497	.1574	3.80	4.00	(2)
F	.050 BSC		1.27 BSC		----
H	.2284	.2440	5.80	6.20	----
J	.0099	.0196	.25	.50	----
K	0°	8°	0°	8°	----
L	.016	.050	.40	1.27	----

(1) Controlling dimensions: Millimeters unless otherwise specified
(2) Dimensions D and E do not include mold protrusions
3. Molded package shall conform to JEDEC standard configuration MS-012 Variation AA

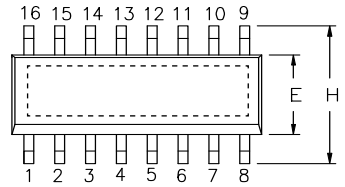
X514 14-pin SOIC/SOP
X514a 14-pin SOIC-CT/SOP-CT



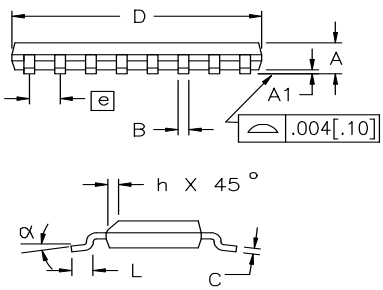
SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.033	.047	0.85	1.20
A1	.002	.006	0.05	0.15
A2	.031	.041	0.80	1.05
b	.007	.012	0.19	0.30
c	.003	.008	0.09	0.20
D	.193	.201	4.90	5.10
E	.252 BSC		6.40 BSC	
E1	.169	.177	4.30	4.50
e	.0256 BSC		0.65 BSC	
L	.018	.030	0.45	0.75
S	.012	.020	0.30	0.50

NOTE: 1. THIS DRAWING MEETS ALL DIMENSIONAL RE QUIREMENT OF JEDEC OUTLINES MO-153 AB-1 .
2. CONTROLLING DIMENSIONS : MILLIMETER .

X515 16-Pin SOIC/SOP
X515a 16-Pin SOIC-CT/SOP-CT

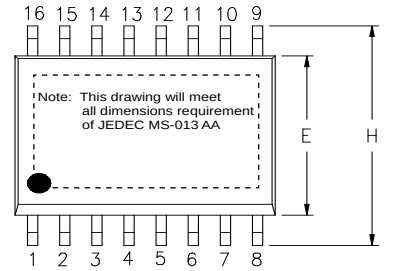


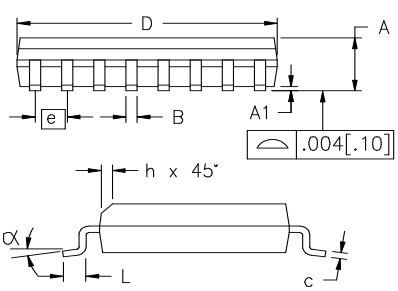
Note: This drawing will meet all dimensions requirement of JEDEC MS-012 AC



SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.053	.069	1.35	1.75
A1	.004	.010	0.10	0.25
B	.013	.020	0.33	0.51
C	.008	.010	0.20	0.25
D	.386	.394	9.80	10.00
E	.150	.157	3.81	3.99
e	.050BSC		1.27BSC	
H	.228	.244	5.80	6.20
h	.010	.020	0.25	0.50
L	.016	.050	0.40	1.27
α	0°	8°	0°	8°

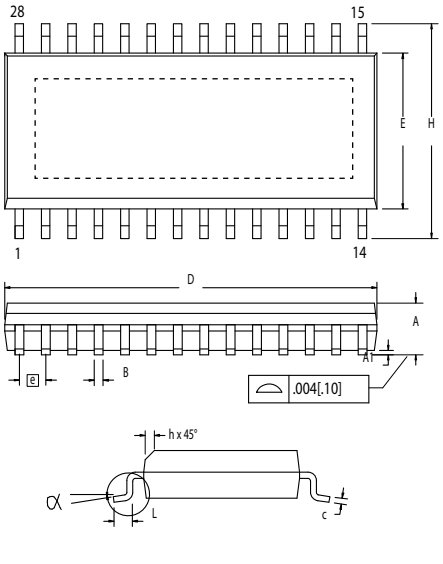
X516 16-Pin SOIC/SOP (W)
X516a 16-Pin SOIC-CT/SOP-CT (W)





SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.093	.104	2.35	2.65
A1	.004	.012	0.10	0.30
B	.013	.020	0.33	0.51
C	.009	.013	0.23	0.32
D	.398	.413	10.10	10.50
E	.291	.299	7.40	7.60
e	.050BSC		1.27BSC	
H	.394	.419	10.00	10.65
h	.010	.029	0.25	0.75
L	.016	.050	0.40	1.27
M	.240	.260	6.10	6.60
N	.190	.210	4.83	5.33
α	0°	8°	0°	8°

X519 28-Pin SOIC/SOP
X519a 28-Pin SOIC-CT/SOP-CT



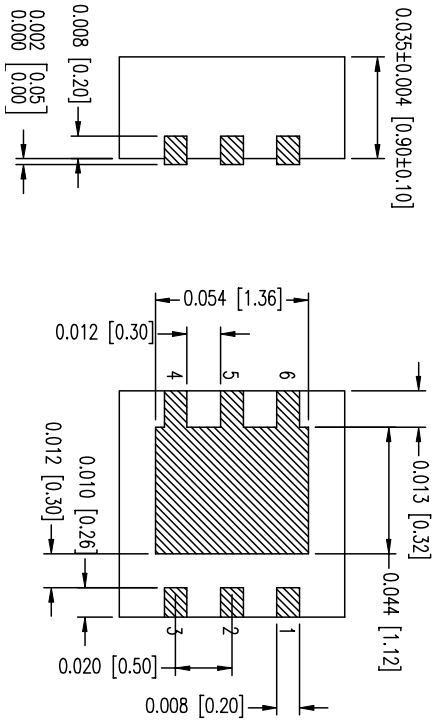
SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.093	.104	2.35	2.65
A1	.004	.012	.10	.30
B	.013	.020	.33	.51
C	.009	.013	.23	.32
D	.697	.713	17.70	18.10
E	.291	.299	7.40	7.60
e	.050 BSC		1.27 BSC	
H	.394	.419	10.00	10.65
h	.010	.029	.25	.75
L	.016	.050	.40	1.27
α	0°	8°	0°	8°

NOTE: This drawing will meet all dimensions requirement of JEDEC MS-013 AE

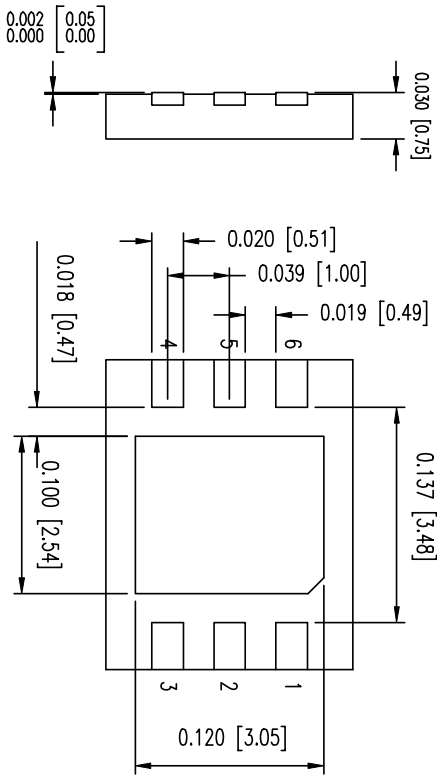
Outline drawings

Dimensions in mm and inches (1 mm = 0.0394“)

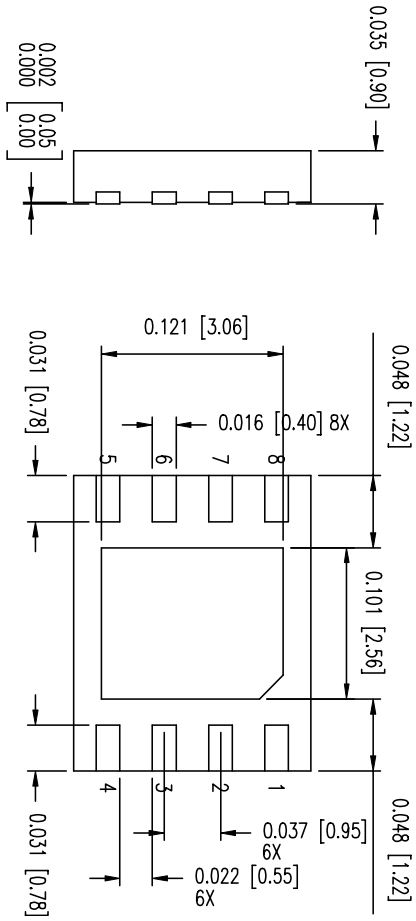
X530 6-Pin DFN 2x2



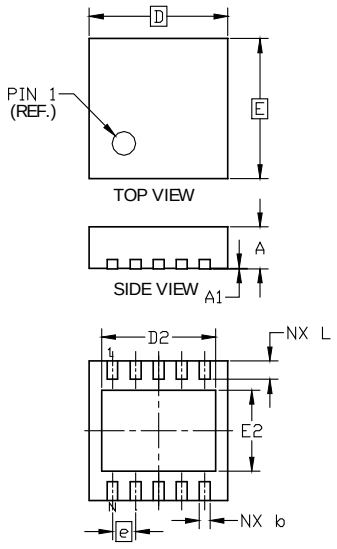
X530 6-Pin DFN 4x5



X532 8-Pin DFN 4x5



X543 10-Pin QFN



DIMENSIONS (1)				
DIM.	INCH		MM.	
	MIN.	MAX.	MIN.	MAX.
A	.0315	.0394	.80	1.00
A1	0	.0020	0	.05
b	.007	.012	.18	.30
D	.118 BSC		3.00 BSC	
D2	.0866	.1063	2.20	2.70
E	.118 BSC		3.00 BSC	
E2	.055	.069	1.40	1.75
e	.0197 BSC		.50 BSC	
L	.0118	.0197	.30	.50
N	10		10	

(1) Controlling dimensions: Millimeters unless otherwise specified
2. Dimensions and tolerancing conform to ASME Y14.5M-1994
3. Molded package shall conform to JEDEC standard configuration MO-229 var. VEED-5