IGBTs

Applications Include:

- Inverters
- Medical Power Supplies
- Motor Drives
- Servo Drives
- Traction Inverters
- UPS
- Welding

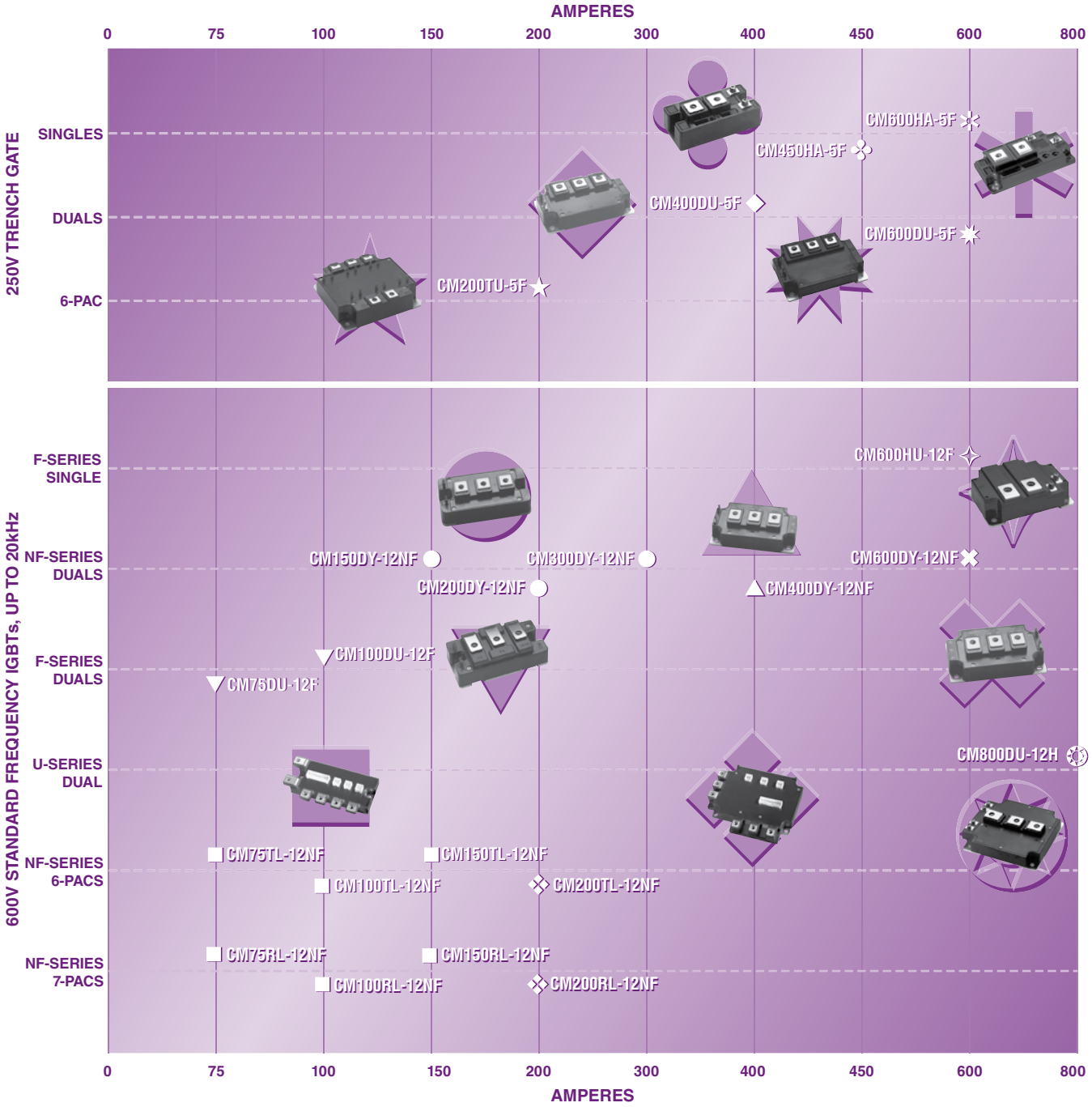
Circuit Configurations:

- Single
- Chopper
- Dual
- 4-Pac
- 6-Pac
- 7-Pac
- CIB

TABLE OF CONTENTS

VOLTAGE: 250V TO 6500V
CURRENT: 10A TO 2500A

Product Overview



Numbering System

CM100DY-24NF is a 100 Ampere, 1200 Volt, Dual IGBT

CM 100 D Y – 24 NF

(1) (2) (3) (4) (5) (6)

(1) CM = IGBTMOD™
CP = DIP-CIB

(2) Current Rating:
I_C (Amperes)

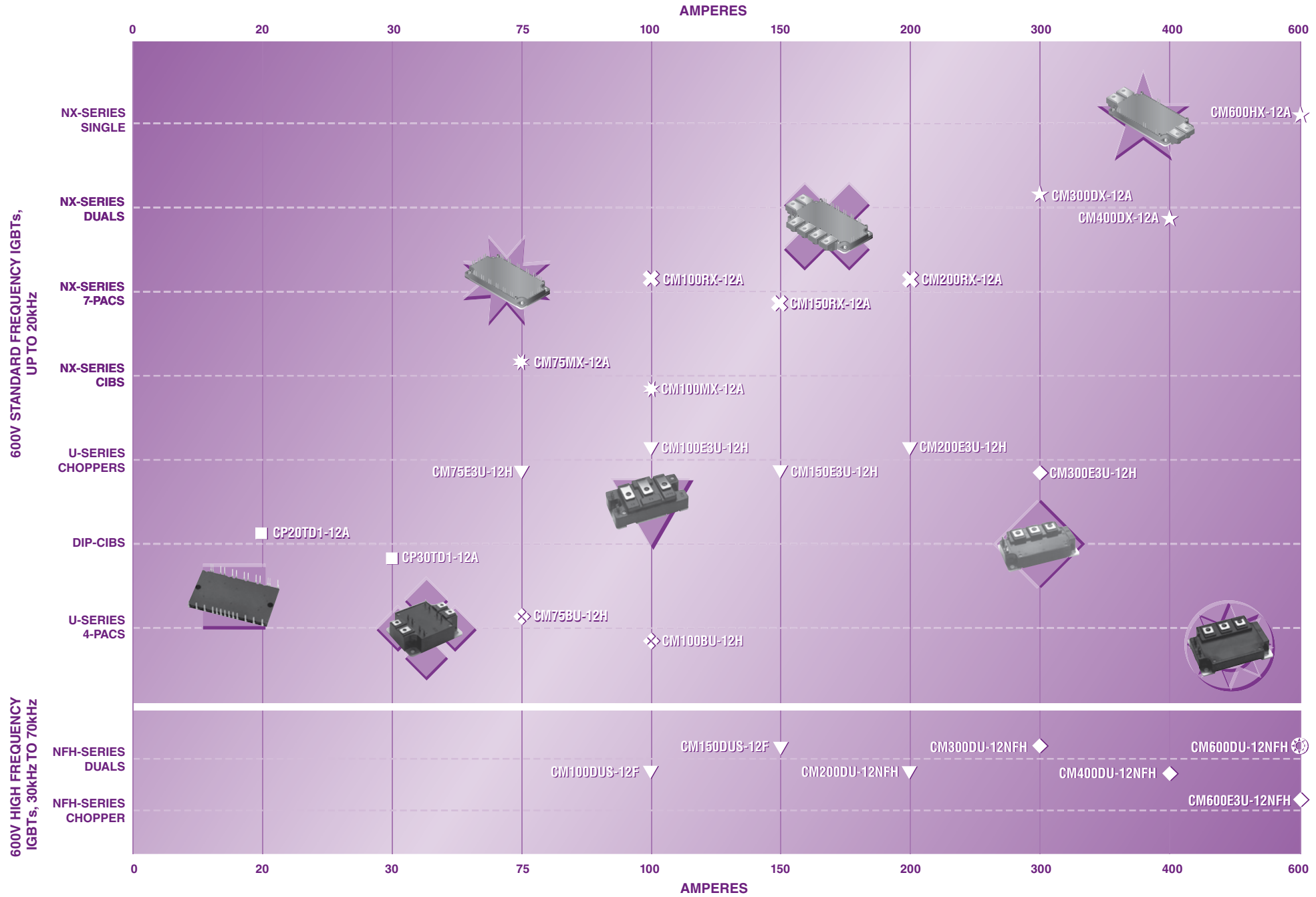
(3) B = Four-in-One
D = Dual
E3 = Chopper
H = Single
M = CIB
R = Seven-in-One
T = Six
TD1 = DIP-CIB

(4) Outline or Minor Change:
C = AlSiC Baseplate
G = High Isolation
U = U Package
X = NX Package

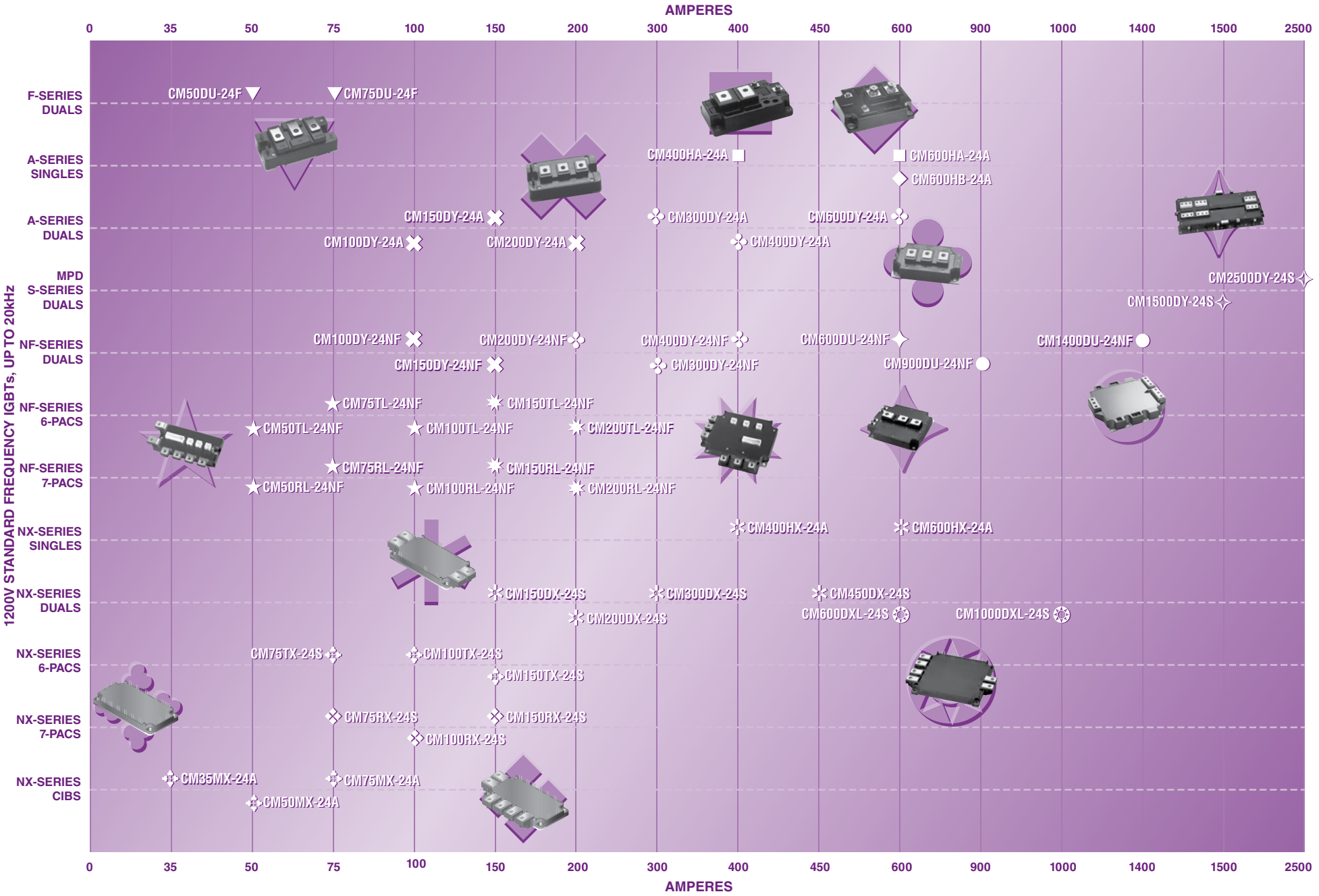
(5) Voltage, V_{CES}
Volts (x50)

(6) A = A-Series IGBT
F = 4th Generation Trench Gate
H = Total Performance H-Series Module
KA = 1700V Non-epitaxial Punch Through
NF = 5th Generation CSTBT™ Trench Gate, Total Performance NF-Series Module
NFH = Total Performance NFH-Series Module, for High Frequency Use 30kHz to 70kHz
R = High Voltage, Low Loss
S = 6th Generation CSTBT™ Trench Gate

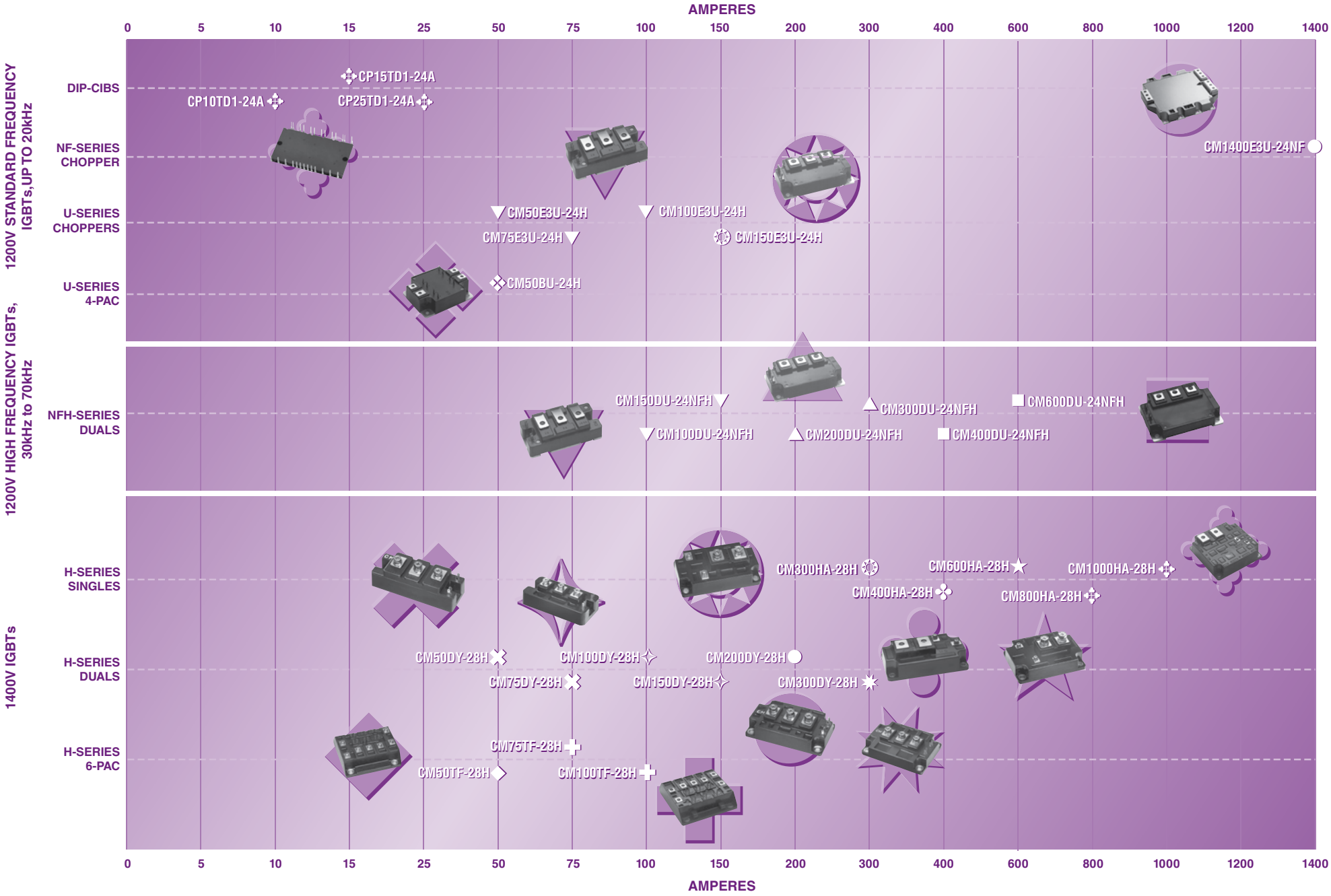
Product Overview

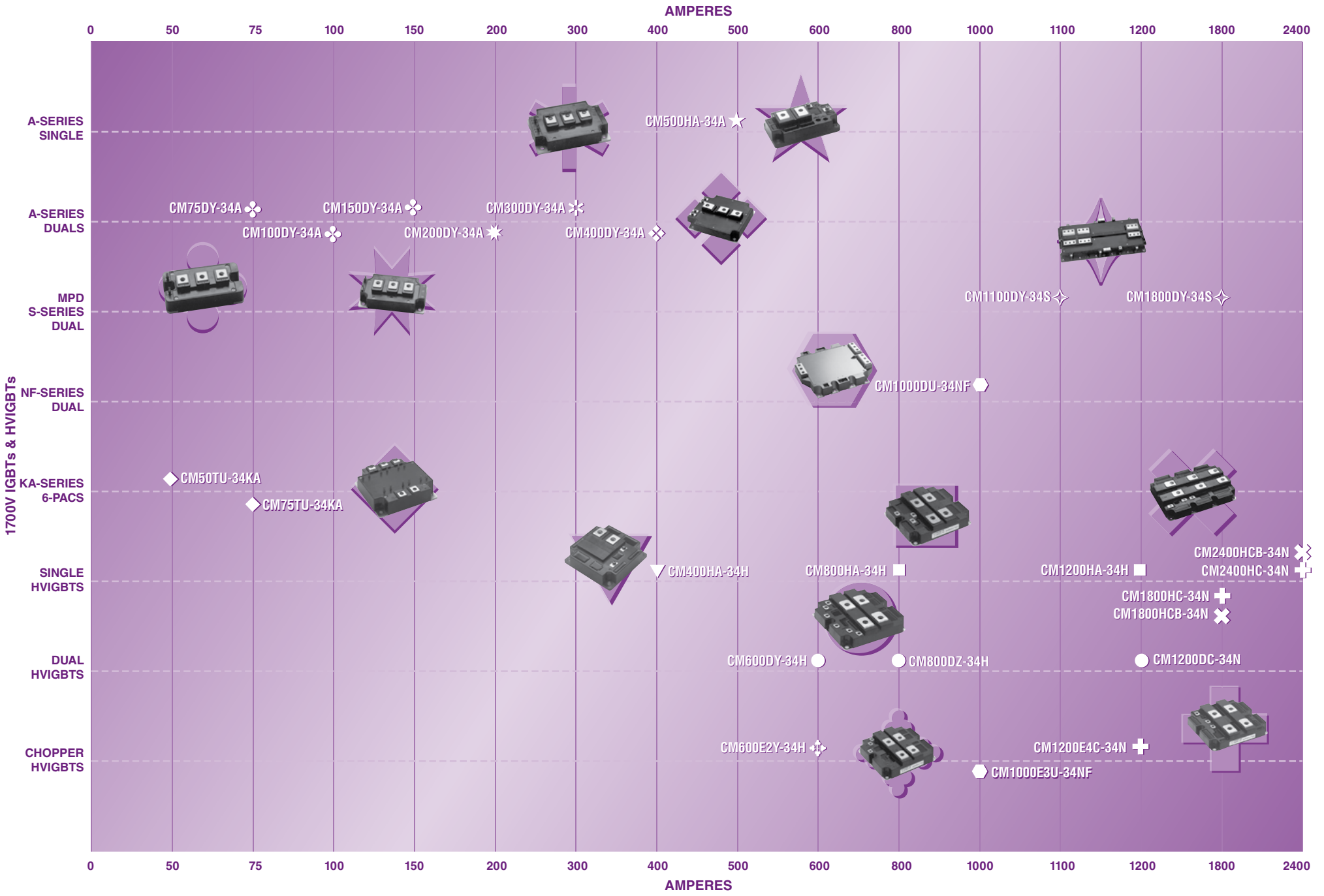


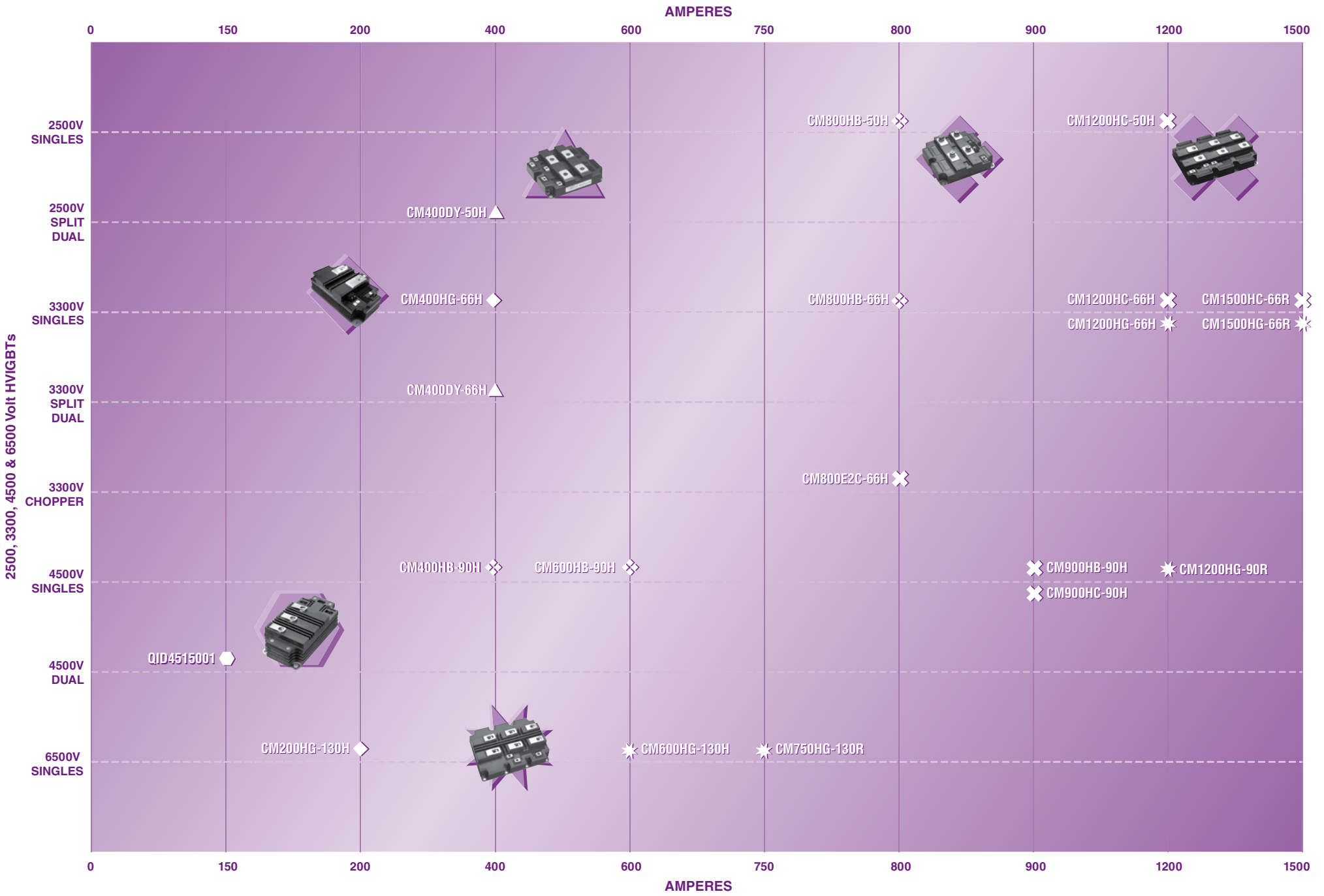
Product Overview



Product Overview




AMPERES
0
50
75
100
150
200
300
400
500
600
800
1000
1100
1200
1800
2400
1700V IGBTs & HVIGBTs
A-SERIES SINGLE
A-SERIES DUALS
MPD S-SERIES DUAL
NF-SERIES DUAL
KA-SERIES 6-PACS
SINGLE HVIGBTS
DUAL HVIGBTS
CHOPPER HVIGBTS
CM500HA-34A
CM75DY-34A
CM150DY-34A
CM300DY-34A
CM100DY-34A
CM200DY-34A
CM400DY-34A
CM1100DY-34S
CM1800DY-34S
CM1000DU-34NF
CM50TU-34KA
CM75TU-34KA
CM400HA-34H
CM800HA-34H
CM1200HA-34H
CM2400HCB-34N
CM2400HC-34N
CM1800HC-34N
CM1800HCB-34N
CM600DY-34H
CM800DZ-34H
CM1200DC-34N
CM600E2Y-34H
CM1200E4C-34N
CM1000E3U-34NF

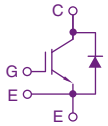

AMPERES
0
150
200
400
600
750
800
900
1200
1500
2500, 3300, 4500 & 6500 Volt HVIGBTs
2500V SINGLES
2500V SPLIT DUAL
3300V SINGLES
3300V SPLIT DUAL
3300V CHOPPER
4500V SINGLES
4500V DUAL
6500V SINGLES
CM800HB-50H
CM1200HC-50H
CM400DY-50H
CM400HG-66H
CM800HB-66H
CM1200HC-66H
CM1500HC-66R
CM1200HG-66H
CM1500HG-66R
CM400DY-66H
CM800E2C-66H
CM400HB-90H
CM600HB-90H
CM900HB-90H
CM1200HG-90R
CM900HC-90H
QID4515001
CM200HG-130H
CM600HG-130H
CM750HG-130R

250 Volt IGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

MAXIMUM RATINGS (IGBT Inverter Sector)						ELECTRICAL CHARACTERISTICS										FREE WHEEL DIODE			THERMAL CHARACTERISTICS					
						Static				Dynamic									Interface	IGBT	Diode			
						Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times						Per Module	(Max.)	(Max.)			
Type	V_{CES} Volts	I_C Amperes	I_{CM} Amperes	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	Weight Grams	Outline Drawings Number	Page
Single IGBTs																									
CM450HA-5F	250	450	900	735	2500	450	10	1.2	1.7	132	6.0	4.5	1200	2700	900	500	450	2.0	300	0.09	0.17	0.23	270	1	A-28
CM600HA-5F	250	600	1200	960	2500	600	10	1.2	1.7	165	7.5	5.6	1000	4000	1000	500	600	2.0	300	0.04	0.13	0.19	400	2	A-28
Dual IGBTs																									
CM400DU-5F	250	400	800	890	2500	400	10	1.2	1.7	110	7.0	3.8	850	400	1100	500	400	2.0	300	0.04	0.14	0.24	400	3	A-28
CM600DU-5F	250	600	1200	1100	2500	600	10	1.2	1.7	170	11.0	5.7	850	600	1100	500	600	2.0	300	0.02	0.11	0.20	580	4	A-29
6-Pac IGBT																									
CM200TU-5F	250	200	400	600	2500	200	10	1.2	1.7	66	3.0	2.3	700	1800	700	500	200	2.0	300	0.09	0.21	0.47	680	5	A-29

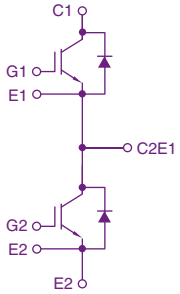
Single IGBTs

CM450HA-5F, CM600HA-5F



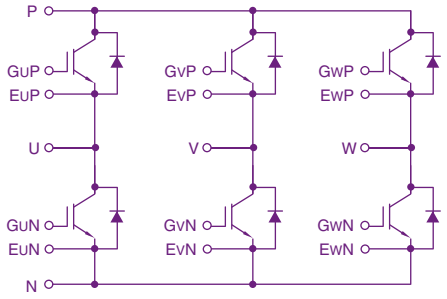
Dual IGBTs

CM400DU-5F, CM600DU-5F



6-Pac IGBT

CM200TU-5F



600V Standard Frequency Application IGBTs, Up to 20kHz

F-Series Single & NF-Series Dual IGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

F-Series Single IGBT

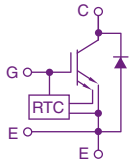
MAXIMUM RATINGS (IGBT Inverter Sector)						ELECTRICAL CHARACTERISTICS											FREE WHEEL DIODE			THERMAL CHARACTERISTICS				
						Static				Dynamic													Weight	Outline Drawings
						Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times							IGBT (Max.)	Diode (Max.)	IGBT Under Chip (Max.)		
Type	V_{CES} Volts	I_C Amperes	I_{CM} Amperes	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	Grams	Number	Page
CM600HU-12F	600	600	1200	1420	2500	600	15	1.6	2.2	160	11.0	6.0	600	400	900	250	600	2.6	300	0.088	0.12	0.048	450	6	A-29

NF-Series Dual IGBTs

MAXIMUM RATINGS (IGBT Inverter Sector)							ELECTRICAL CHARACTERISTICS											FREE-WHEEL DIODE			THERMAL CHARACTERISTICS					
							Static				Dynamic														Weight	Outline Drawings
							Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times							IGBT (Max.)	Diode (Max.)	IGBT Under Chip (Max.)	Contact Thermal Resistance		
Type	V_{CES} Volts	I_C@T_C' Amperes	I_{CM}@T_C' Amperes	T_C' °C	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(c-f)}$ °C/W	Grams	Number	Page
CM150DY-12NF	600	150	300	97	590	2500	150	15	1.7	2.2	23	2.8	0.9	120	100	300	300	150	2.6	150	0.21	0.47	0.16	0.07	310	7	A-30
CM200DY-12NF	600	200	400	93	650	2500	200	15	1.7	2.2	30	3.7	1.2	120	120	300	300	200	2.6	150	0.19	0.35	0.13	0.07	310	7	A-30
CM300DY-12NF	600	300	600	89	780	2500	300	15	1.7	2.2	45	5.5	1.8	120	120	350	300	300	2.6	150	0.16	0.25	0.093	0.07	310	7	A-30
CM400DY-12NF	600	400	800	92	1130	2500	400	15	1.7	2.2	60	7.3	2.4	300	200	450	300	400	2.6	250	0.11	0.19	0.066	0.04	400	8	A-30
CM600DY-12NF	600	600	1200	89	1130	2500	600	15	1.7	2.2	90	11.0	3.6	500	300	750	300	600	2.6	250	0.11	0.18	0.046	0.02	580	9	A-30

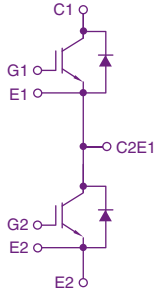
F-Series Single IGBT

CM600HU-12F



NF-Series Dual IGBTs

CM150DY-12NF, CM200DY-12NF, CM300DY-12NF, CM400DY-12NF, CM600DY-12NF



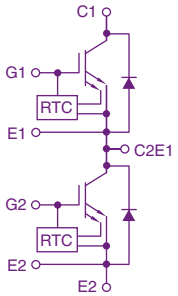
600V Standard Frequency Application IGBTs, Up to 20kHz

F-Series & U-Series Dual IGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

MAXIMUM RATINGS (IGBT Inverter Sector)						ELECTRICAL CHARACTERISTICS										FREE WHEEL DIODE			THERMAL CHARACTERISTICS				
						Static				Dynamic													
						Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times										
Type	V_{CES} Volts	I_C Amperes	I_{CM} Amperes	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns	IGBT (Max.) $R_{th(j-c)}$ °C/W	Diode (Max.) $R_{th(j-c)}$ °C/W	IGBT Under Chip (Max.) $R_{th(j-c)}$ °C/W	Weight Grams	Outline Drawings Number	Outline Drawings Page
F-Series Dual IGBTs																									
CM75DU-12F	600	75	150	290	2500	75	15	1.6	2.2	20	1.4	0.75	100	80	300	250	75	2.6	150	0.43	0.9	0.34	310	10	A-31
CM100DU-12F	600	100	200	350	2500	100	15	1.6	2.2	27	1.8	1.0	100	80	300	250	100	2.6	150	0.35	0.7	0.38	310	10	A-31
U-Series Dual IGBT																									
CM800DU-12H	600	800	1600	1500	2500	800	15	2.55	3.15	70.4	38.4	10.4	400	200	500	300	800	2.6	160	0.01	0.083	0.13	1200	11	A-31

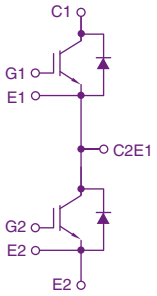
F-Series Dual IGBTs

CM75DU-12F, CM100DU-12F



U-Series Dual IGBT

CM800DU-12H



600V Standard Frequency Application IGBTs, Up to 20kHz

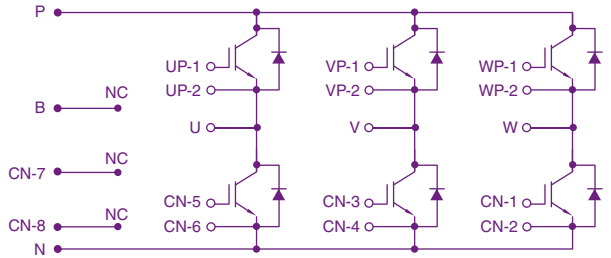
NF-Series 6-Pac & 7-Pac IGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

MAXIMUM RATINGS												ELECTRICAL CHARACTERISTICS											FREE-WHEEL DIODE		
	Inverter Sector						Brake Sector					Static				Dynamic									
												Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times						
Type	V_{CES} Volts	I_C@T_C' Amperes	I_{CM}@T_C' Amperes	T_C' °C	P_d Watts	V_{RMS} Isolation Volts	V_{CES} Volts	I_C@T_C' Amperes	I_{CM}@T_C' Amperes	T_C' °C	P_d Watts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns
6-Pac IGBTs																									
CM75TL-12NF	600	75	150	102	430	2500	—	—	—	—	—	75	15	1.7	2.2	11.3	1.4	0.45	120	100	300	300	75	2.8	100
CM100TL-12NF	600	100	200	89	540	2500	—	—	—	—	—	100	15	1.7	2.2	15.0	1.9	0.6	120	100	300	300	100	2.8	120
CM150TL-12NF	600	150	300	93	730	2500	—	—	—	—	—	150	15	1.7	2.2	23.0	2.8	0.9	120	100	300	300	150	2.8	150
CM200TL-12NF	600	200	400	88	890	2500	—	—	—	—	—	200	15	1.7	2.2	30.0	3.7	1.2	120	100	300	300	200	2.8	150
7-Pac IGBTs																									
CM75RL-12NF	600	75	150	102	430	2500	600	50	100	107	320	75	15	1.7	2.2	11.3	1.4	0.45	120	100	300	300	75	2.8	100
CM100RL-12NF	600	100	200	99	540	2500	600	50	100	107	320	100	15	1.7	2.2	15.0	1.9	0.6	120	100	300	300	100	2.8	120
CM150RL-12NF	600	150	300	93	730	2500	600	75	150	102	430	150	15	1.7	2.2	23.0	2.8	0.9	120	100	300	300	150	2.8	150
CM200RL-12NF	600	200	400	88	890	2500	600	100	200	98	540	200	15	1.7	2.2	30.0	3.7	1.2	120	100	300	300	200	2.8	150

THERMAL CHARACTERISTICS								
	Inverter Sector		Brake Sector					
Type	IGBT Under Chip (Max.) $R_{th(j-c)}$ °C/W	Diode Under Chip (Max.) $R_{th(j-c)}$ °C/W	IGBT Under Chip (Max.) $R_{th(j-c)}$ °C/W	Diode Under Chip (Max.) $R_{th(j-c)}$ °C/W	Contact Thermal Resistance $R_{th(c-f)}$ °C/W	Weight Grams	Outline Drawings Number	Page
6-Pac IGBTs								
CM75TL-12NF	0.29	0.51	—	—	0.085	350	12	A-31
CM100TL-12NF	0.23	0.41	—	—	0.085	350	12	A-31
CM150TL-12NF	0.17	0.31	—	—	0.085	350	12	A-31
CM200TL-12NF	0.14	0.22	—	—	0.051	750	13	A-32
7-Pac IGBTs								
CM75RL-12NF	0.29	0.51	0.39	0.70	0.085	350	12	A-31
CM100RL-12NF	0.23	0.41	0.39	0.70	0.085	350	12	A-31
CM150RL-12NF	0.17	0.31	0.29	0.51	0.085	350	12	A-31
CM200RL-12NF	0.14	0.22	0.23	0.41	0.051	750	13	A-32

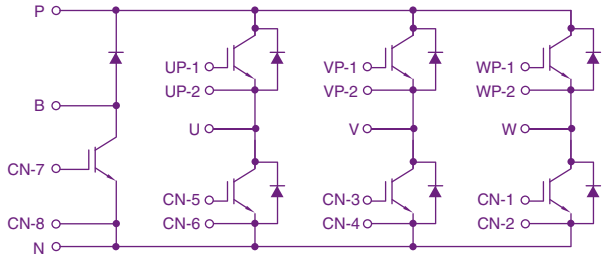
6-Pac IGBTs

CM75TL-12NF, CM100TL-12NF, CM150TL-12NF, CM200TL-12NF



7-Pac IGBTs

CM75RL-12NF, CM100RL-12NF, CM150RL-12NF, CM200RL-12NF



600V Standard Frequency Application IGBTs, Up to 20kHz

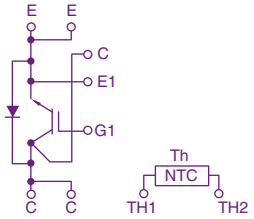
NX-Series Single, Dual, 7-Pac, & CIB IGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

MAXIMUM RATINGS												ELECTRICAL CHARACTERISTICS											FREE-WHEEL DIODE		
	Inverter Sector						Brake Sector					Static				Dynamic									
												Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times						
Type	V_{CES} Volts	I_C@T_C' Amperes	I_{CM}@T_C' Amperes	T_C' °C	P_d Watts	V_{RMS} Isolation Volts	V_{CES} Volts	I_C@T_C' Amperes	I_{CM}@T_C' Amperes	T_C' °C	P_d Watts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns
Single IGBT																									
CM600HX-12A	600	600	1200	66	1890	2500	—	—	—	—	—	600	15	1.7	2.1	60.0	8.0	2.4	—	—	—	—	600	2.8	—
Dual IGBTs																									
CM300DX-12A	600	300	600	68	960	2500	—	—	—	—	—	300	15	1.7	2.1	30.0	4.0	1.2	200	150	350	300	300	2.8	200
CM400DX-12A	600	400	800	71	1340	2500	—	—	—	—	—	400	15	1.7	2.1	40.0	5.3	1.6	200	200	400	550	400	2.8	200
7-Pac IGBTs																									
CM100RX-12A	600	100	200	84	400	2500	600	50	100	103	280	100	15	1.7	2.1	11.3	1.4	0.45	100	100	300	400	100	2.8	200
CM150RX-12A	600	150	300	78	520	2500	600	75	150	84	280	150	15	1.6	2.0	15.0	2.0	0.6	120	100	350	550	150	2.8	200
CM200RX-12A	600	200	400	82	735	2500	600	100	200	88	400	200	15	1.6	2.0	20.0	2.7	0.8	120	150	350	550	200	2.8	200
CIB IGBTs																									
CM75MX-12A	600	75	150	80	280	2500	600	50	100	103	280	75	15	1.7	2.1	7.5	1.0	0.3	100	100	300	300	75	2.8	200
CM100MX-12A	600	100	200	84	400	2500	600	50	100	103	280	100	15	1.7	2.1	11.3	1.4	0.45	100	100	300	300	100	2.8	200

THERMAL CHARACTERISTICS									
	Inverter Sector		Brake Sector						
	IGBT Under Chip (Max.)	Diode Under Chip (Max.)	IGBT Under Chip (Max.)	Diode Under Chip (Max.)	Contact Thermal Resistance		Outline Drawings	
Type	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(c-f)}$ °C/W	Weight Grams	Number	Page
Single IGBTs								
CM600HX-12A	0.066	0.11	—	—	—	350	14	A-32
Dual IGBTs								
CM300DX-12A	0.13	0.22	—	—	—	350	14	A-32
CM400DX-12A	0.093	0.16	—	—	—	350	14	A-32
7-Pac IGBTs								
CM100RX-12A	0.31	0.59	0.44	0.85	—	350	15	A-33
CM150RX-12A	0.24	0.46	0.44	0.85	—	350	15	A-33
CM200RX-12A	0.17	0.33	0.31	0.59	—	350	15	A-33
CIB IGBTs								
CM75MX-12A	0.44	0.85	0.44	0.85	0.24	300	16	A-33
CM100MX-12A	0.31	0.59	0.44	0.85	0.24	300	16	A-33

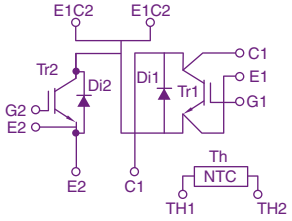
Single IGBTs

CM600HX-12A



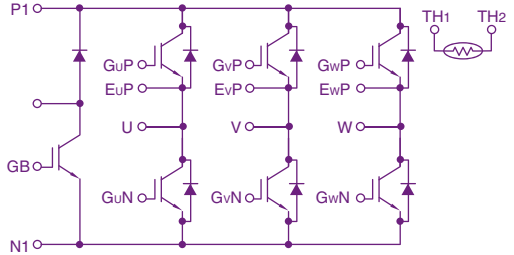
Dual IGBTs

CM300DX-12A, CM400DX-12A



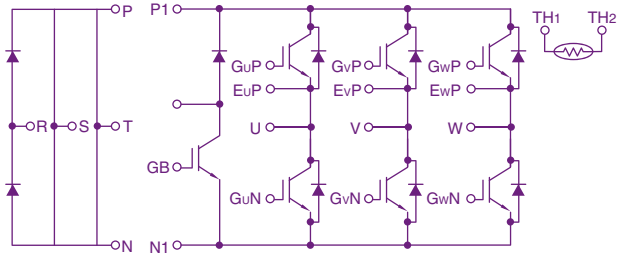
7-Pac IGBTs

CM100RX-12A, CM150RX-12A, CM200RX-12A



CIB IGBTs

CM75MX-12A, CM100MX-12A



600V Standard Frequency Application IGBTs, Up to 20kHz

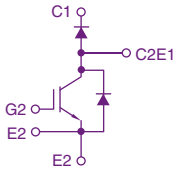
U-Series Chopper & DIP-CIB IGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

MAXIMUM RATINGS (IGBT Inverter Sector)						ELECTRICAL CHARACTERISTICS										FREE WHEEL DIODE			THERMAL CHARACTERISTICS					
						Static				Dynamic														
						Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times							IGBT (Max.)	Diode (Max.)	IGBT Under Chip (Max.)		
Type	V_{CES} Volts	I_C Amperes	I_{CM} Amperes	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	Weight Grams	Outline Drawings Number	Page
U-Series Chopper IGBTs																									
CM75E3U-12H	600	75	150	310	2500	75	15	2.4	3.0	6.6	3.6	1.0	100	250	200	300	75	2.6	160	0.035	0.4	0.9	310	17	A-34
CM100E3U-12H	600	100	200	400	2500	100	15	2.4	3.0	8.8	4.8	1.3	100	250	200	300	100	2.6	160	0.035	0.31	0.7	310	17	A-34
CM150E3U-12H	600	150	300	600	2500	150	15	2.4	3.0	13.2	7.2	2.0	100	350	300	300	150	2.6	160	0.035	0.21	0.47	310	17	A-34
CM200E3U-12H	600	200	400	650	2500	200	15	2.4	3.0	17.6	9.6	2.6	150	400	300	300	200	2.6	160	0.035	0.19	0.35	310	17	A-34
CM300E3U-12H	600	300	600	890	2500	300	15	2.4	3.0	26.4	14.4	4.0	250	600	350	300	300	2.6	160	0.02	0.14	0.24	400	18	A-34

MAXIMUM RATINGS (IGBT Inverter Sector)				ELECTRICAL CHARACTERISTICS					THERMAL CHARACTERISTICS							
				Inverter Sector	Brake Sector		Converter Sector		Inverter Sector		Brake Sector		Converter Sector			
Type	V_{CES} Volts	I_C Amperes	V_{RMS} Isolation Volts	Typ. $V_{CES\ (SAT)}$ Volts	I_C Amperes	Typ. $V_{CE(SAT)}$ Volts	Typ. V_f Volts	I^2t A^2 sec	IGBT (Max.) $R_{th(j-c)}Q$ °C/W	Diode (Max.) $R_{th(j-c)}D$ °C/W	IGBT (Max.) $R_{th(j-c)}Q$ °C/W	Diode (Max.) $R_{th(j-c)}D$ °C/W	IGBT (Max.) $R_{th(j-c)}$ °C/W	Weight Grams	Outline Drawings Number	Page
DIP-CIB IGBTs																
CP20TD1-12A	600	20	2500	1.8	10	1.8	1.1	252	1.3	1.7	1.6	2.1	1.3	52	19	A-34
CP30TD1-12A	600	30	2500	1.7	15	1.8	1.1	416	1.1	1.4	1.4	2.0	1.1	52	19	A-34

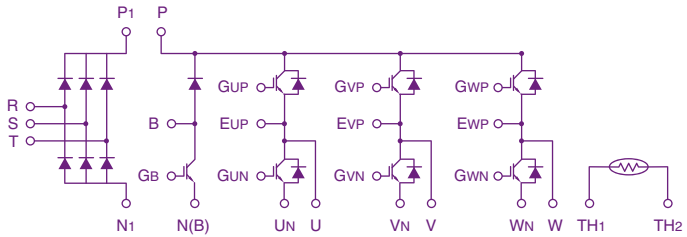
U-Series Chopper IGBTs

CM75E3U-12H, CM100E3U-12H, CM150E3U-12H, CM200E3U-12H, CM300E3U-12H



DIP-CIB IGBTs

CP20TD1-12A, CP30TD1-12A

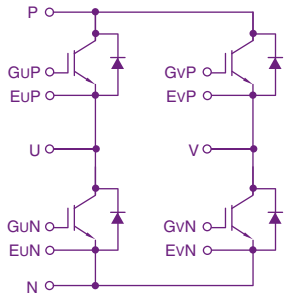


600V Standard Frequency Application IGBTs, Up to 20kHz

U-Series 4-Pac IGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

MAXIMUM RATINGS (IGBT Inverter Sector)						ELECTRICAL CHARACTERISTICS											FREE WHEEL DIODE			THERMAL CHARACTERISTICS					
						Static				Dynamic														
						Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times							IGBT (Max.)	Diode (Max.)	IGBT Under Chip (Max.)		Outline Drawings	
Type	V_{CES} Volts	I_C Amperes	I_{CM} Amperes	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	Weight Grams	Number	Page
CM75BU-12H	600	75	150	310	2500	75	15	2.4	3.0	6.6	3.6	1.0	100	250	200	300	75	2.6	160	0.025	0.4	0.9	390	20	A-35
CM100BU-12H	600	100	200	400	2500	100	15	2.4	3.0	8.8	4.8	1.3	100	250	200	300	100	2.6	160	0.025	0.31	0.7	390	20	A-35

CM75BU-12H, CM100BU-12H



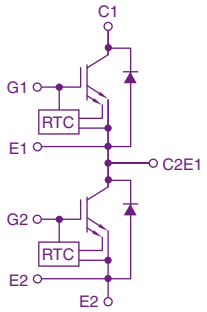
600V High Frequency Application IGBTs, 30kHz to 70kHz

NFH-Series Dual & Chopper IGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

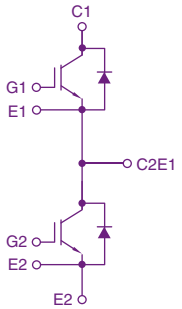
MAXIMUM RATINGS (IGBT Inverter Sector)						ELECTRICAL CHARACTERISTICS												FREE WHEEL DIODE			THERMAL CHARACTERISTICS					
						Static				Dynamic																
						Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times							IGBT (Max.)	Diode (Max.)	IGBT Under Chip (Max.)		Outline Drawings	
Type	V_{CES} Volts	I_C Amperes	I_{CM} Amperes	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	Weight Grams	Number	Page
Dual IGBTs																									
CM100DUS-12F	600	100	200	350	2500	100	15	2.0	2.7	27	1.8	1.0	100	80	300	150	100	2.6	150	0.35	0.70	0.23	310	10	A-31
CM150DUS-12F	600	150	300	520	2500	150	15	2.0	2.7	41	2.7	1.5	120	100	350	150	150	2.6	150	0.24	0.47	0.19	310	10	A-31
CM200DU-12NFH	600	200	400	590	2500	200	15	2.0	2.7	55	3.6	2.0	120	100	350	150	200	2.6	150	0.21	0.35	0.15	310	21	A-35
CM300DU-12NFH	600	300	600	780	2500	300	15	2.0	2.7	83	5.4	3.0	250	120	500	150	300	2.6	200	0.16	0.24	0.10	400	22	A-35
CM400DU-12NFH	600	400	800	940	2500	400	15	2.0	2.7	110	7.2	4.0	400	120	700	150	400	2.6	200	0.13	0.18	0.076	400	22	A-35
CM600DU-12NFH	600	600	1200	1560	2500	600	15	2.0	2.7	166	11.0	6.0	700	300	1400	150	600	2.6	200	0.11	0.12	0.053	400	27	A-37
Chopper IGBT																									
CM600E3U-12NFH	600	600	1200	1420	2500	600	15	2.0	2.7	165	10.8	6.0	—	—	—	150	600	2.6	—	0.088	—	0.051	400	22	A-35

NFH-Series Dual IGBTs

CM100DUS-12F, CM150DUS-12F

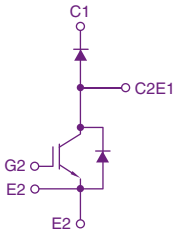


CM200DU-12NFH, CM300DU-12NFH, CM400DU-12NFH, CM600DU-12NFH



NFH-Series Chopper IGBT

CM600E3U-12NFH



1200V Standard Frequency Application IGBTs, Up to 20kHz

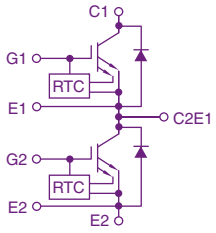
F-Series Dual & A-Series Single & Dual IGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

MAXIMUM RATINGS (IGBT Inverter Sector)					ELECTRICAL CHARACTERISTICS											FREE-WHEEL DIODE			THERMAL CHARACTERISTICS				
					Static				Dynamic														
					Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times							IGBT (Max.)	Diode (Max.)	IGBT Under Chip (Max.)		
Type	V_{CES} Volts	I_C Amperes	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	Weight Grams	Outline Drawings Number Page
F-Series Dual IGBTs																							
CM50DU-24F	1200	50	320	2500	50	15	1.8	2.4	20	0.85	0.5	100	50	300	300	50	3.2	150	0.39	0.7	0.31	310	10 A-31
CM75DU-24F	1200	75	450	2500	75	15	1.8	2.4	29	1.3	0.75	100	50	400	300	75	3.2	150	0.28	0.47	0.22	310	10 A-31

MAXIMUM RATINGS (IGBT Inverter Sector)							ELECTRICAL CHARACTERISTICS												FREE-WHEEL DIODE			THERMAL CHARACTERISTICS				
							Static				Dynamic														
							Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times							IGBT Under Chip (Max.)	Diode Under Chip (Max.)	Contact Thermal Resistance		
Type	V_{CES} Volts	I_C@T_C' Amperes	I_{CM}@T_C' Amperes	T_C' °C	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(c-f)}$ °C/W	Weight Grams	Outline Drawings Number Page
A-Series Single IGBTs																									
CM400HA-24A	1200	400	800	87	2350	2500	400	15	2.1	3.0	70.0	6.0	1.4	550	180	600	350	400	3.8	250	0.053	0.080	0.02	480	43 A-42
CM600HA-24A	1200	600	1200	80	3670	2500	600	15	2.1	3.0	105.0	9.0	2.0	660	190	700	350	600	3.8	250	0.034	0.053	0.02	480	43 A-42
CM600HB-24A	1200	600	1200	80	3670	2500	600	15	2.1	3.0	105.0	9.0	2.0	660	190	700	350	600	3.8	250	0.034	0.053	0.015	570	30 A-38
A-Series Dual IGBTs																									
CM100DY-24A	1200	100	200	84	672	2500	100	15	2.1	3.0	17.5	1.5	0.34	100	70	400	350	100	3.8	150	0.186	0.34	0.022	310	23 A-36
CM150DY-24A	1200	150	300	83	960	2500	150	15	2.1	3.0	23.0	2.0	0.45	130	100	450	350	150	3.8	150	0.13	0.23	0.022	310	23 A-36
CM200DY-24A	1200	200	400	86	1340	2500	200	15	2.1	3.0	35.0	3.0	0.68	130	100	450	350	200	3.8	150	0.093	0.17	0.022	310	23 A-36
CM300DY-24A	1200	300	600	82	1890	2500	300	15	2.1	3.0	47.0	4.0	0.9	550	180	600	350	300	3.8	250	0.066	0.12	0.02	400	24 A-36
CM400DY-24A	1200	400	800	87	2710	2500	400	15	2.1	3.0	70.0	6.0	1.4	550	180	600	350	400	3.8	250	0.046	0.085	0.02	580	25 A-36
CM600DY-24A	1200	600	1200	80	3670	2500	600	15	2.1	3.0	94.0	8.0	1.8	660	190	700	350	600	3.8	250	0.034	0.062	0.018	580	25 A-36

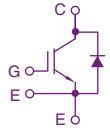
F-Series IGBTs

CM50DU-24F, CM75DU-24F



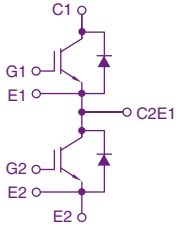
A-Series Singles IGBTs

CM400HA-24A, CM600HA-24A, CM600HB-24A



A-Series Duals IGBTs

CM100DY-24A, CM150DY-24A, CM200DY-24A, CM300DY-24A, CM400DY-24A, CM600DY-24A



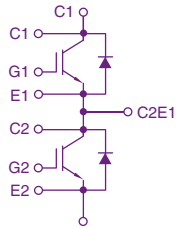
1200V Standard Frequency Application IGBTs, Up to 20kHz

MPD S-Series & NF-Series Dual IGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

MAXIMUM RATINGS (IGBT Inverter Sector)							ELECTRICAL CHARACTERISTICS											FREE-WHEEL DIODE			THERMAL CHARACTERISTICS					
							Static				Dynamic															
							Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times							IGBT (Max.)	Diode (Max.)	IGBT Under Chip (Max.)	Contact Thermal Resistance		Outline Drawings	
Type	V_{CES} Volts	I_C@T_C' Amperes	I_{CM}@T_C' Amperes	T_C' °C	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(c-f)}$ °C/W	Weight Grams	Number	Page
MPD S-Series Dual IGBTs																											
CM1500DY-24S	1200	1500	3000	—	—	—	1500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
CM2500DY-24S	1200	2500	5000	56	7800	2500	2500	15	1.7	2.4	250	25.0	3.0	—	—	—	—	—	—	—	0.016	0.027	—	0.0038	2000	52	A-45
NF-Series Dual IGBTs																											
CM100DY-24NF	1200	100	200	113	650	2500	100	15	1.8	2.5	23	2.0	0.45	120	80	450	350	100	3.2	150	0.19	0.35	0.13	0.07	310	7	A-30
CM150DY-24NF	1200	150	300	110	780	2500	150	15	1.8	2.5	35	3.0	0.68	120	80	450	350	150	3.2	150	0.16	0.25	0.093	0.07	310	7	A-30
CM200DY-24NF	1200	200	400	112	1130	2500	200	15	1.8	2.5	47	4.0	0.9	500	150	600	350	200	3.2	250	0.11	0.19	0.066	0.04	400	8	A-30
CM300DY-24NF	1200	300	600	111	1130	2500	300	15	1.8	2.5	70	6.0	1.4	500	150	600	350	300	3.2	250	0.11	0.18	0.046	0.02	580	9	A-30
CM400DY-24NF	1200	400	800	111	1470	2500	400	15	1.8	2.5	94	8.0	1.8	600	150	700	350	400	3.2	250	0.085	0.15	0.034	0.02	580	9	A-30
CM600DU-24NF	1200	600	1200	109	2080	2500	600	15	1.95	2.65	140	12.0	2.7	800	180	900	350	600	3.35	300	0.06	0.11	0.023	0.019	1200	11	A-31
CM900DU-24NF	1200	900	1800	96	2550	2500	900	15	1.8	2.5	140	16.0	3.0	600	200	800	300	900	3.2	500	0.049	0.078	0.021	0.016	1400	26	A-37
CM1400DU-24NF	1200	1400	2800	90	3900	2500	1400	15	1.8	2.5	220	25.0	4.7	800	300	1000	300	1400	3.2	700	0.032	0.053	0.014	0.016	1400	26	A-37

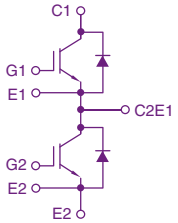
MPD S-Series IGBTs

CM1500DY-24S, CM2500DY-24S

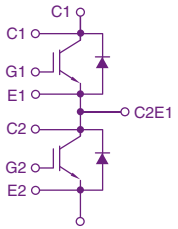


NF-Series IGBTs

CM100DY-24NF, CM150DY-24NF, CM200DY-24NF, CM300DY-24NF, CM400DY-24NF, CM600DU-24NF



CM900DU-24NF, CM1400DU-24NF



1200V Standard Frequency Application IGBTs, Up to 20kHz

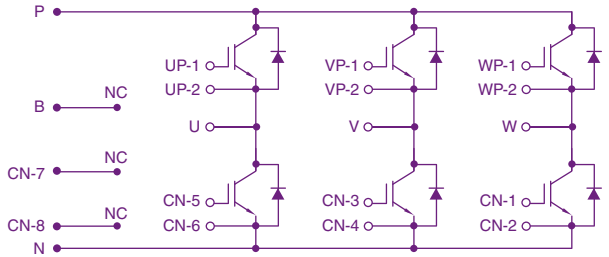
NF-Series 6-Pac & 7-Pac IGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

MAXIMUM RATINGS												ELECTRICAL CHARACTERISTICS											FREE-WHEEL DIODE		
	Inverter Sector						Brake Sector					Static				Dynamic									
												Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times						
Type	V_{CES} Volts	I_C@T_C' Amperes	I_{CM}@T_C' Amperes	T_C' °C	P_d Watts	V_{RMS} Isolation Volts	V_{CES} Volts	I_C@T_C' Amperes	I_{CM}@T_C' Amperes	T_C' °C	P_d Watts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns
6-Pac IGBTs																									
CM50TL-24NF	1200	50	100	94	390	2500	—	—	—	—	—	50	15	2.1	3.0	8.5	0.75	0.17	100	50	300	350	50	3.8	100
CM75TL-24NF	1200	75	150	87	520	2500	—	—	—	—	—	75	15	2.1	3.0	11.5	1.0	0.23	100	50	300	350	75	3.8	120
CM100TL-24NF	1200	100	200	80	620	2500	—	—	—	—	—	100	15	2.1	3.0	17.5	1.5	0.34	100	70	300	350	100	3.8	150
CM150TL-24NF	1200	150	300	76	890	2500	—	—	—	—	—	150	15	2.1	3.0	23.0	2.0	0.45	130	70	400	350	150	3.8	150
CM200TL-24NF	1200	200	400	72	1160	2500	—	—	—	—	—	200	15	2.1	3.0	35.0	3.0	0.68	130	70	400	350	200	3.8	150
7-Pac IGBTs																									
CM50RL-24NF	1200	50	100	94	390	2500	1200	30	60	104	290	50	15	2.1	3.0	8.5	0.75	0.17	100	50	300	350	50	3.8	100
CM75RL-24NF	1200	75	150	87	520	2500	1200	50	100	94	390	75	15	2.1	3.0	11.5	1.0	0.23	100	50	300	350	75	3.8	120
CM100RL-24NF	1200	100	200	80	620	2500	1200	50	100	94	390	100	15	2.1	3.0	17.5	1.5	0.34	100	70	300	350	100	3.8	150
CM150RL-24NF	1200	150	300	76	890	2500	1200	75	150	86	520	150	15	2.1	3.0	23.0	2.0	0.45	130	70	400	350	150	3.8	150
CM200RL-24NF	1200	200	400	72	1160	2500	1200	100	200	80	620	200	15	2.1	3.1	35.0	3.0	0.68	130	70	400	350	200	3.8	150

THERMAL CHARACTERISTICS									
	Inverter Sector		Brake Sector						
Type	IGBT Under Chip (Max.) $R_{th(j-c)}$ °C/W	Diode Under Chip (Max.) $R_{th(j-c)}$ °C/W	IGBT Under Chip (Max.) $R_{th(j-c)}$ °C/W	Diode Under Chip (Max.) $R_{th(j-c)}$ °C/W	Contact Thermal Resistance $R_{th(c-f)}$ °C/W	Weight Grams	Outline Drawings Number	Page
6-Pac IGBTs								
CM50TL-24NF	0.32	0.43	—	—	0.085	350	12	A-31
CM75TL-24NF	0.24	0.36	—	—	0.085	350	12	A-31
CM100TL-24NF	0.20	0.28	—	—	0.085	350	12	A-31
CM150TL-24NF	0.14	0.23	—	—	0.051	750	13	A-32
CM200TL-24NF	0.11	0.17	—	—	0.051	750	13	A-32
7-Pac IGBTs								
CM50RL-24NF	0.32	0.43	0.43	0.65	0.085	350	12	A-31
CM75RL-24NF	0.24	0.36	0.32	0.43	0.085	350	12	A-31
CM100RL-24NF	0.20	0.28	0.32	0.43	0.085	350	12	A-31
CM150RL-24NF	0.14	0.23	0.24	0.36	0.051	750	13	A-32
CM200RL-24NF	0.11	0.17	0.20	0.28	0.051	750	13	A-32

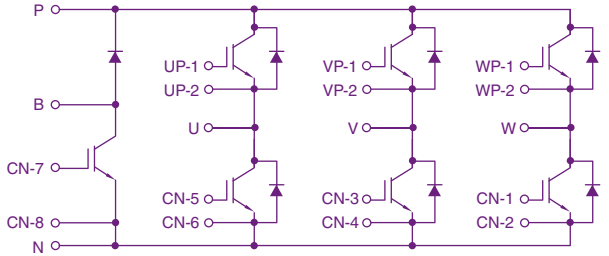
6-Pac IGBTs

CM50TL-24NF, CM75TL-24NF, CM100TL-24NF, CM150TL-24NF, CM200TL-24NF



7-Pac IGBTs

CM50RL-24NF, CM75RL-24NF, CM100RL-24NF, CM150RL-24NF, CM200RL-24NF



1200V Standard Frequency Application IGBTs, Up to 20kHz

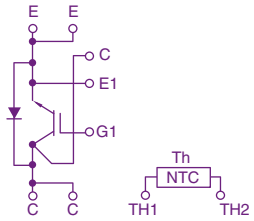
NX-Series Single & Dual IGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

MAXIMUM RATINGS							ELECTRICAL CHARACTERISTICS												FREE-WHEEL DIODE		
Inverter Sector							Static				Dynamic										
							Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times							
Type	V_{CES} Volts	I_C@T_C' Amperes	I_{CM}@T_C' Amperes	T_C' °C	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns
Single IGBTs																				
CM400HX-24A	1200	400	800	81	2450	2500	400	15	2.0	3.0	66	6	1.3	660	190	700	350	400	3.2	250
CM600HX-24A	1200	600	1200	83	3785	2500	600	15	2.0	3.0	105	9	2.0	660	190	700	350	600	3.8	250
Dual IGBTs																				
CM150DX-24S	1200	150	300	119	1150	2500	150	15	1.7	2.15	15	3	0.25	800	200	600	300	150	2.15	300
CM200DX-24S	1200	200	400	118	1500	2500	200	15	1.7	2.15	20	4	0.33	800	200	600	300	200	2.15	300
CM300DX-24S	1200	300	600	119	2270	2500	300	15	1.7	2.15	30	6	0.5	800	200	600	300	300	2.15	300
CM450DX-24S	1200	450	900	119	3400	2500	450	15	1.7	2.15	45	9	0.75	800	200	600	300	450	2.15	300
CM600DXL-24S	1200	600	1200	—	—	—	600	15	—	—	—	—	—	—	—	—	—	600	—	—
CM1000DXL-24S	1200	1000	2000	118	7500	2500	1000	15	1.7	2.15	100	20	1.67	800	200	600	300	1000	2.15	300

THERMAL CHARACTERISTICS						
Inverter Sector						
Type	IGBT Under Chip (Max.) $R_{th(j-c)}$ °C/W	Diode Under Chip (Max.) $R_{th(j-c)}$ °C/W	Contact Thermal Resistance $R_{th(c-f)}$ °C/W	Weight Grams	Outline Drawings Number	Page
Single IGBTs						
CM400HX-24A	0.051	0.093	—	350	14	A-32
CM600HX-24A	0.033	0.048	—	350	14	A-32
Dual IGBTs						
CM150DX-24S	0.13	0.23	0.015	330	14	A-32
CM200DX-24S	0.10	0.19	0.015	330	14	A-32
CM300DX-24S	0.66	0.12	0.015	330	14	A-32
CM450DX-24S	0.044	0.078	0.015	330	14	A-32
CM600DXL-24S	—	—	—	660	53	A-46
CM1000DXL-24S	0.02	0.038	0.007	660	53	A-46

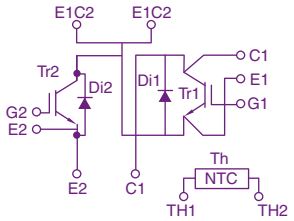
Single IGBTs

CM400HX-24A, CM600HX-24A



Dual IGBTs

CM150DX-24S, CM200DX-24S, CM300DX-24S,
CM450DX-24S, CM600DXL-24S, CM1000DXL-24S



1200V Standard Frequency Application IGBTs, Up to 20kHz

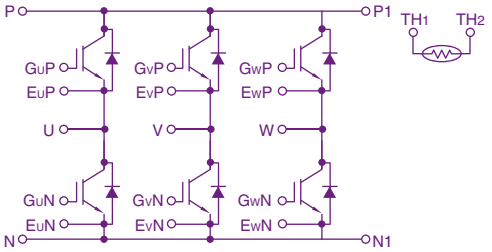
NX-Series 6-Pac, 7-Pac, & CIB IGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

MAXIMUM RATINGS												ELECTRICAL CHARACTERISTICS											FREE-WHEEL DIODE		
	Inverter Sector						Brake Sector					Static				Dynamic									
												Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times						
Type	V_{CES} Volts	I_C@T_C' Amperes	I_{CM}@T_C' Amperes	T_C' °C	P_d Watts	V_{RMS} Isolation Volts	V_{CES} Volts	I_C@T_C' Amperes	I_{CM}@T_C' Amperes	T_C' °C	P_d Watts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns
6-Pac IGBTs																									
CM75TX-24S	1200	75	150	122	600	2500	—	—	—	—	—	75	15	1.7	2.15	7.5	1.5	0.13	300	200	600	300	—	—	300
CM100TX-24S	1200	100	200	118	750	2500	—	—	—	—	—	100	15	1.7	2.15	10.0	2.0	0.17	300	200	600	300	100	2.15	300
CM150TX-24S	1200	150	300	119	1150	2500	—	—	—	—	—	150	15	1.7	2.15	15.0	3.0	0.25	800	200	600	300	150	2.20	300
7-Pac IGBTs																									
CM75RX-24S	1200	75	150	121	600	2500	1200	50	100	125	425	75	15	1.7	2.15	7.5	1.5	0.13	300	200	600	300	75	2.15	300
CM100RX-24S	1200	100	200	118	750	2500	1200	50	100	125	425	100	15	1.7	2.15	10.0	2.0	0.17	300	200	600	300	100	2.15	300
CM150RX-24S	1200	150	300	119	1150	2500	1200	75	150	121	600	150	15	1.7	2.15	15.0	3.0	0.25	800	200	600	300	150	2.15	300
CIB IGBTs																									
CM35MX-24A	1200	35	70	90	335	2500	1200	20	40	118	260	35	15	2.0	3.0	6.0	0.53	0.12	100	50	300	350	35	3.8	200
CM50MX-24A	1200	50	100	82	357	2500	1200	30	60	101	260	50	15	2.0	3.0	8.5	0.75	0.17	100	50	300	350	50	3.8	200
CM75MX-24A	1200	75	150	86	500	2500	1200	50	100	91	357	75	15	2.0	3.0	11.5	1.0	0.23	100	50	300	350	75	3.8	200

THERMAL CHARACTERISTICS									
	Inverter Sector		Brake Sector					Outline Drawings	
Type	IGBT Under Chip (Max.) $R_{th(j-c)}$ °C/W	Diode Under Chip (Max.) $R_{th(j-c)}$ °C/W	IGBT Under Chip (Max.) $R_{th(j-c)}$ °C/W	Diode Under Chip (Max.) $R_{th(j-c)}$ °C/W	Contact Thermal Resistance $R_{th(c-f)}$ °C/W	Weight Grams	Number	Page
6-Pac IGBTs								
CM75TX-24S	0.25	0.4	—	—	0.015	270	16	A-33
CM100TX-24S	0.2	0.29	—	—	0.015	270	16	A-33
CM150TX-24S	0.13	0.23	—	—	0.015	270	16	A-33
7-Pac IGBTs								
CM75RX-24S	0.25	0.40	0.35	0.63	0.015	330	15	A-33
CM100RX-24S	0.20	0.29	0.35	0.63	0.015	330	15	A-33
CM150RX-24S	0.13	0.23	0.25	0.40	0.015	330	15	A-33
CIB IGBTs								
CM35MX-24A	0.37	0.69	0.48	1.1	0.45	300	16	A-33
CM50MX-24A	0.35	0.63	0.48	0.79	0.33	300	16	A-33
CM75MX-24A	0.25	0.40	0.35	0.63	0.24	300	16	A-33

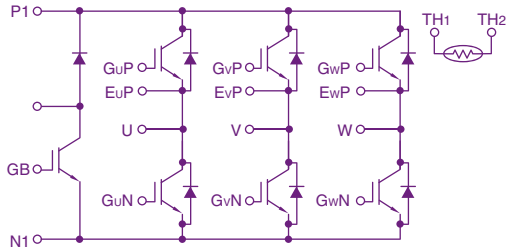
6-Pac IGBTs

CM75TX-24S, CM100TX-24S, CM150TX-24S



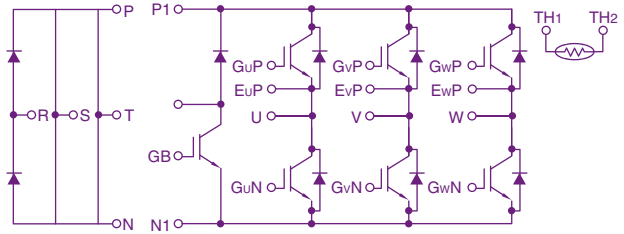
7-Pac IGBTs

CM75RX-24S, CM100RX-24A, CM150RX-24S



CIB IGBTs

CM35MX-24A, CM50MX-24A, CM75MX-24A



1200V Standard Frequency Application IGBTs, Up to 20kHz

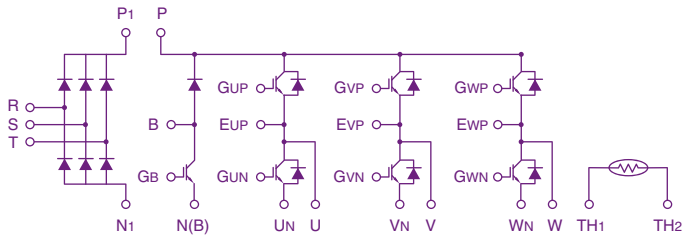
DIP-CIBs, NF-Series & U-Series Chopper, & U-Series 4-Pac IGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

MAXIMUM RATINGS (IGBT Inverter Sector)				ELECTRICAL CHARACTERISTICS					THERMAL CHARACTERISTICS							
				Inverter Sector	Brake Sector		Converter Sector		Inverter Sector		Brake Sector		Converter Sector			
Type	V_{CES} Volts	I_C Amperes	V_{RMS} Isolation Volts	Typ. $V_{CES\ (SAT)}$ Volts	I_C Amperes	Typ. $V_{CE(SAT)}$ Volts	Typ. V_f Volts	I^2t A^2 sec	IGBT (Max.) $R_{th(j-c)}Q$ °C/W	Diode (Max.) $R_{th(j-c)}D$ °C/W	IGBT (Max.) $R_{th(j-c)}Q$ °C/W	Diode (Max.) $R_{th(j-c)}D$ °C/W	IGBT (Max.) $R_{th(j-c)}$ °C/W	Weight Grams	Outline Drawings Number	Page
DIP-CIB IGBTs																
CP10TD1-24A	1200	10	2500	1.8	10	1.8	1.1	168	1.4	2.0	1.4	1.7	1.3	52	19	A-34
CP15TD1-24A	1200	15	2500	1.8	10	1.8	1.1	252	1.1	1.7	1.4	2.0	1.3	52	19	A-34
CP25TD1-24A	1200	25	2500	1.8	15	1.8	1.1	416	0.9	1.5	1.1	1.7	1.1	52	19	A-34

MAXIMUM RATINGS (IGBT Inverter Sector)						ELECTRICAL CHARACTERISTICS										FREE WHEEL DIODE			THERMAL CHARACTERISTICS					
						Static				Dynamic														
						Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times							IGBT (Max.)	Diode (Max.)	IGBT Under Chip (Max.)			
Type	V_{CES} Volts	I_C Amperes	I_{CM} Amperes	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	Weight Grams	Outline Drawings Number	Page
NF-Series Chopper IGBT																									
CM1400E3U-24NFH	1200	1400	2800	3900	2500	1400	15	1.8	2.5	220.0	25.0	4.7	800	300	1000	300	1400	3.2	700	0.032	0.23	0.14	1400	26	A-37
U-Series Chopper IGBTs																									
CM50E3U-24H	1200	50	100	400	2500	50	15	2.9	3.7	7.5	2.6	1.5	80	200	150	350	50	3.2	300	0.035	0.31	0.7	310	17	A-34
CM75E3U-24H	1200	75	150	600	2500	75	15	2.9	3.7	11.0	3.7	2.2	100	200	250	350	75	3.2	300	0.035	0.21	0.47	310	17	A-34
CM100E3U-24H	1200	100	200	600	2500	100	15	2.9	3.7	15.0	5.0	3.0	100	200	300	350	100	3.2	300	0.035	0.19	0.35	310	17	A-34
CM150E3U-24H	1200	150	300	890	2500	150	15	2.9	3.7	22.0	7.4	4.4	200	250	300	350	150	3.2	300	0.02	0.14	0.24	400	18	A-34
U-Series 4-Pac IGBTs																									
CM50BU-24H	1200	50	100	400	2500	50	15	2.9	3.7	7.5	2.6	1.5	80	200	150	350	50	3.26	300	0.025	0.31	0.7	390	20	A-35

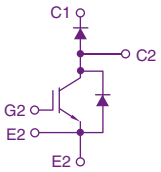
DIP-CIB IGBTs

CP5TD1-24A, CP10TD1-24A,
CP15TD1-24A, CP25TD1-24A



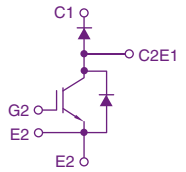
NF-Series Chopper IGBT

CM1400E3U-24NF



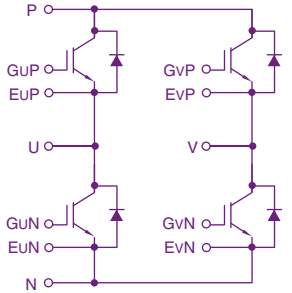
U-Series Chopper IGBTs

CM50E3U-24H, CM75E3U-24H,
CM100E3U-24H, CM150E3U-24H



U-Series 4-Pac IGBTs

CM50BU-24H

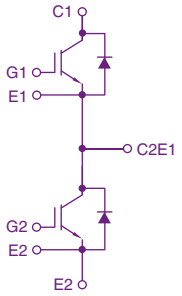


1200V High Frequency Application IGBTs, 30kHz to 70kHz

NFH-Series Dual IGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

MAXIMUM RATINGS (IGBT Inverter Sector)						ELECTRICAL CHARACTERISTICS										FREE WHEEL DIODE			THERMAL CHARACTERISTICS					
						Static				Dynamic													Outline Drawings	
						Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times						IGBT (Max.)	Diode (Max.)	IGBT Under Chip (Max.)			
Type	V_{CES} Volts	I_C Amperes	I_{CM} Amperes	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	Weight Grams	Number	Page
CM100DU-24NFH	1200	100	200	560	2500	100	15	5.0	6.5	16	1.3	0.3	100	50	250	150	100	3.5	150	0.22	0.47	0.17	310	21	A-35
CM150DU-24NFH	1200	150	300	650	2500	150	15	5.0	6.5	24	2.0	0.45	150	80	400	150	150	3.5	150	0.19	0.35	0.13	310	21	A-35
CM200DU-24NFH	1200	200	400	830	2500	200	15	5.0	6.5	32	2.7	0.6	300	80	500	150	200	3.5	250	0.15	0.24	0.095	400	22	A-35
CM300DU-24NFH	1200	300	600	1130	2500	300	15	5.0	6.5	47	4.0	0.9	300	80	500	150	300	3.5	250	0.11	0.18	0.066	400	22	A-35
CM400DU-24NFH	1200	400	800	1040	2500	400	15	5.0	6.5	63	5.3	1.2	300	100	500	150	400	3.5	250	0.12	0.23	0.051	580	27	A-37
CM600DU-24NFH	1200	600	1200	1550	2500	600	15	5.0	6.5	95	8.0	1.8	400	120	700	150	600	3.5	250	0.083	0.15	0.034	580	27	A-37

CM100DU-24NFH, CM150DU-24NFH,
CM200DU-24NFH, CM300DU-24NFH,
CM400DU-24NFH, CM600DU-24NFH



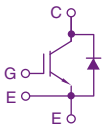
1400V IGBTs

H-Series Single, Dual & 6-Pac IGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

MAXIMUM RATINGS (IGBT Inverter Sector)						ELECTRICAL CHARACTERISTICS												FREE-WHEEL DIODE			THERMAL CHARACTERISTICS					
						Static				Dynamic											Interface Per Module	IGBT (Max.)	Diode (Max.)			
						Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times												
Type	V_{CES} Volts	I_C Amperes	I_{CM} Amperes	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	Weight Grams	Outline Drawings Number	Page
Single IGBTs																										
CM300HA-28H	1400	300	600	2100	2500	300	15	3.1	4.2	60	21.0	12.0	250	500	350	500	300	3.8	300	0.06	0.12	0.04	400	28	A-37
CM400HA-28H	1400	400	800	2800	2500	400	15	3.1	4.2	80	28.0	16.0	300	500	350	500	400	3.8	300	0.04	0.045	0.09	400	29	A-38
CM600HA-28H	1400	600	1200	4100	2500	600	15	3.1	4.2	120	42.0	24.0	350	700	500	500	600	3.8	300	0.035	0.03	0.06	560	30	A-38
CM800HA-28H	1400	800	1600	4800	2500	800	15	2.7	3.6	172	60.0	35.0	500	1200	1000	350	800	3.5	250	0.018	0.026	0.058	1600	31	A-38
CM1000HA-28H	1400	1000	2000	5800	2500	1000	15	3.3	4.5	200	70.0	40.0	800	2000	1200	650	1000	4.0	300	0.018	0.022	0.05	1600	31	A-38
Dual IGBTs																										
CM50DY-28H	1400	50	100	400	2500	50	15	3.1	4.2	10	3.5	2.0	100	250	150	500	50	3.8	300	0.075	0.31	0.70	190	32	A-39
CM75DY-28H	1400	75	150	600	2500	75	15	3.1	4.2	15	5.3	3.0	150	350	250	500	75	3.8	300	0.075	0.21	0.47	190	32	A-39
CM100DY-28H	1400	100	200	780	2500	100	15	3.1	4.2	20	7.0	4.0	250	400	300	500	100	3.8	300	0.13	0.16	0.35	270	33	A-39
CM150DY-28H	1400	150	300	1100	2500	150	15	3.1	4.2	30	10.5	6.0	250	400	300	500	150	3.8	300	0.13	0.11	0.24	270	33	A-39
CM200DY-28H	1400	200	400	1500	2500	200	15	3.1	4.2	40	14.0	8.0	250	400	300	500	200	3.8	300	0.045	0.085	0.18	400	34	A-39
CM300DY-28H	1400	300	600	2100	2500	300	15	3.1	4.2	60	21.0	12.0	250	500	350	500	300	3.8	300	0.035	0.06	0.12	500	35	A-40
6-Pac IGBTs																										
CM50TF-28H	1400	50	100	400	2500	50	15	3.1	4.2	10	3.5	2.0	100	250	150	500	50	3.8	300	0.033	0.31	0.71	540	36	A-40
CM75TF-28H	1400	75	150	600	2500	75	15	3.1	4.2	15	5.3	3.0	150	350	250	500	75	3.8	300	0.025	0.21	0.47	830	37	A-40
CM100TF-28H	1400	100	200	780	2500	100	15	3.1	4.2	20	7.0	4.0	250	400	300	500	100	3.8	300	0.025	0.16	0.35	830	37	A-40

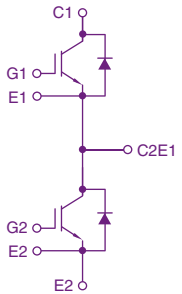
Single IGBTs

CM300HA-28H, CM400HA-28H, CM600HA-28H, CM800HA-28H, CM1000HA-28H



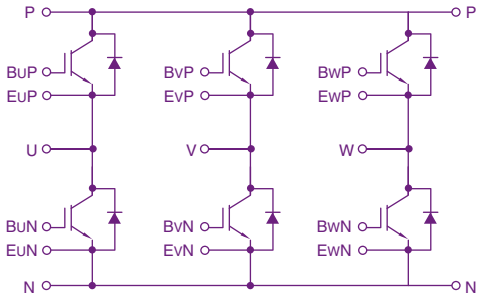
Dual IGBTs

CM50DY-28H, CM75DY-28H, CM100DY-28H, CM150DY-28H, CM200DY-28H, CM300DY-28H



6-Pac IGBTs

CM50TF-28H, CM75TF-28H, CM100TF-28H



1700V HVIGBTs

A-Series Single & Dual, NF-Series & MPD S-Series Dual HVIGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

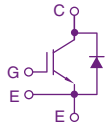
MAXIMUM RATINGS (IGBT Inverter Sector)							ELECTRICAL CHARACTERISTICS											FREE-WHEEL DIODE			THERMAL CHARACTERISTICS					Weight	Outline Drawings	
							Static				Dynamic			Inductive Load Switching Times							IGBT (Max.)	Diode (Max.)	IGBT Under Chip (Max.)	Diode Under Chip (Max.)	Contact Thermal Resistance			
							Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz																	
Type	V_{CES} Volts	I_C@T_C' Amperes	I_{CM}@T_C' Amperes	T_C' °C	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ µs	t_r µs	$t_{d(off)}$ µs	t_f µs	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(c-f)}$ °C/W	Grams	Number	Page
A-Series Single HVIGBT																												
CM500HA-34A	1700	500	1000	87	5000	3500	500	15	2.2	2.8	120.0	14.0	2.6	900	500	1200	250	500	3.2	650	—	—	0.025	0.042	0.015	480	43	A-42
A-Series Dual HVIGBTs																												
CM75DY-34A	1700	75	150	111	780	3500	75	15	2.2	2.8	18.5	2.1	0.4	200	150	550	350	75	3.0	300	—	—	0.16	0.29	0.022	310	23	A-36
CM100DY-34A	1700	100	200	108	960	3500	100	15	2.2	2.8	24.7	2.8	0.53	200	150	550	350	100	3.0	300	—	—	0.13	0.21	0.022	310	23	A-36
CM150DY-34A	1700	150	300	112	1600	3500	150	15	2.2	2.8	37.0	4.2	0.8	550	190	750	350	150	3.0	450	—	—	0.078	0.15	0.02	310	23	A-36
CM200DY-34A	1700	200	400	109	1980	3500	200	15	2.2	2.8	49.4	5.6	1.06	550	190	750	350	200	3.0	450	—	—	0.063	0.11	0.02	400	24	A-36
CM300DY-34A	1700	300	600	108	2900	3500	300	15	2.2	2.8	74.0	8.4	1.6	600	200	850	350	300	3.0	450	—	—	0.043	0.072	0.02	580	25	A-36
CM400DY-34A	1700	400	800	107	3780	3500	400	15	2.2	2.8	98.8	11.2	2.12	600	230	1000	350	400	3.0	500	—	—	0.033	0.055	0.014	1200	11	A-31
NF-Series Dual HVIGBT																												
CM1000DU-34NF	1700	1000	2000	104	3900	2500	1000	15	2.2	2.8	220.0	25.0	4.7	600	150	900	200	1000	3.0	450	0.032	0.053	0.014	0.023	0.016	1400	26	A-37
MPD S-Series Dual HVIGBT																												
CM1100DY-34S	1700	1100	2200	—	—	—	1100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	52	A-45
CM1800DY-34S	1700	1800	3600	66	7800	3500	1800	15	2.1	2.6	460.0	48.0	8.0	—	—	—	—	—	—	—	0.016	0.027	—	—	0.038	2000	52	A-45

KA-Series 6-Pac HVIGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

MAXIMUM RATINGS (IGBT Inverter Sector)						ELECTRICAL CHARACTERISTICS												FREE-WHEEL DIODE			THERMAL CHARACTERISTICS			Weight	Outline Drawings	
						Static				Dynamic			Inductive Load Switching Times							Interface Per Module	IGBT (Max.)	Diode (Max.)				
						Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz																
Type	V_{CES} Volts	I_C Amperes	I_{CM} Amperes	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ ns	t_r ns	$t_{d(off)}$ ns	t_f ns	I_{FM} Amperes	V_{FM} Volts	t_{rr} ns	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	Grams	Number	Page
CM50TU-34KA	1700	50	100	600	3500	50	15	3.2	4.0	7.0	1.2	0.38	100	100	400	800	50	2.2	200	0.21	0.47	0.17	680	38	A-41
CM75TU-34KA	1700	75	150	660	3500	75	15	3.2	4.0	10.5	1.8	0.55	100	100	400	800	75	2.2	200	0.19	0.35	0.13	680	38	A-41

A-Series Single HVIGBT

CM500HA-34A



A-Series Dual HVIGBTs

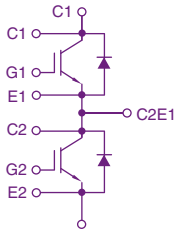
CM75DY-34A, CM100DY-34A, CM150DY-34A, CM200DY-34A, CM300DY-34A, CM400DY-34A

NF-Series Dual HVIGBT

CM1000DU-34NF

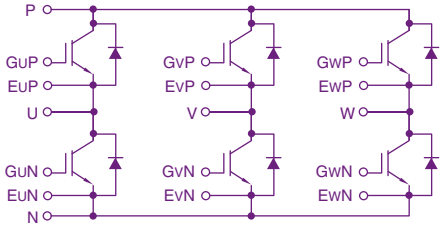
MPD S-Series Dual HVIGBT

CM1100DY-34S, CM1800DY-34S



6-Pac HVIGBTs

CM50TU-34KA, CM75TU-34KA



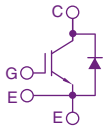
1700V HVIGBTs

Single, Dual, & Chopper HVIGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

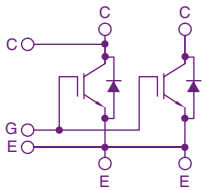
MAXIMUM RATINGS (IGBT Inverter Sector)						ELECTRICAL CHARACTERISTICS										FREE-WHEEL DIODE			THERMAL CHARACTERISTICS					
						Static				Dynamic									Interface Per Module	IGBT (Max.)	Diode (Max.)			
						Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times										
Type	V_{CES} Volts	I_C Amperes	I_{CM} Amperes	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ µs	t_r µs	$t_{d(off)}$ µs	t_f µs	I_{FM} Amperes	V_{FM} Volts	t_{rr} µs	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	Weight Grams	Outline Drawings Number	Page
Single HVIGBTs																									
CM400HA-34H	1700	400	800	4100	4000	400	15	2.7	3.7	85	20.0	15.0	0.9	1.5	1.5	0.8	400	3.4	0.4	0.023	0.030	0.060	980	39	A-41
CM800HA-34H	1700	800	1600	8300	4000	800	15	2.75	3.58	93	13.3	5.1	1.2	1.5	2.0	0.6	800	3.12	2.0	0.012	0.015	0.048	1500	40	A-41
CM1200HA-34H	1700	1200	2400	12500	4000	1200	15	2.75	3.58	140	20.0	7.6	1.2	1.5	2.0	0.6	1200	3.12	2.0	0.008	0.010	0.032	1500	40	A-41
CM1800HC-34N	1700	1800	3600	9600	4000	1800	15	2.15	—	264	14.4	4.2	1.0	0.35	2.0	0.25	1800	2.4	1.0	0.011	0.013	0.028	800	41	A-42
CM1800HCB-34N	1700	1800	3600	13800	4000	1800	15	2.0	—	352	19.2	5.6	0.95	0.3	1.6	0.25	1800	2.35	1.2	0.007	0.009	0.013	1500	44	A-43
CM2400HC-34N	1700	2400	4800	12700	4000	2400	15	2.15	—	352	19.2	5.6	1.0	0.35	2.0	0.25	2400	2.4	1.0	0.008	0.0098	0.021	800	41	A-42
CM2400HCB-34N	1700	2400	4800	15600	4000	2400	15	2.1	—	396	21.6	6.3	0.95	0.3	1.6	0.25	2400	2.5	1.2	0.006	0.008	0.012	1500	44	A-43
Dual HVIGBTs																									
CM600DY-34H	1700	600	1200	6200	4000	600	15	2.75	3.58	70	10.0	3.8	1.2	1.5	2.0	0.6	600	3.12	2.0	0.016	0.02	0.064	1500	45	A-43
CM800DZ-34H	1700	800	1600	5000	4000	800	15	2.80	3.64	72	9.0	3.6	1.6	2.0	2.7	0.8	800	3.38	2.7	0.020	0.025	0.043	1500	45	A-43
CM1200DC-34N	1700	1200	2400	6400	4000	1200	15	2.15	—	125	12.5	2.1	1.2	0.3	1.8	0.4	1200	2.8	2.0	0.008	0.0195	0.04	1000	42	A-42
Chopper HVIGBTs																									
CM600E2Y-34H	1700	600	1200	6200	4000	600	15	2.75	3.58	70	10.0	3.8	1.2	1.5	2.0	0.6	600	3.25	2.0	0.016	0.02	0.064	1500	46	A-43
CM1000E3U-34NF	1700	1000	2000	3900	3500	1000	15	2.45	2.80	220	25.0	4.7	0.6	0.15	0.9	0.2	2000	3.0	0.45	0.012	0.014	0.023	1400	26	A-37
CM1200E4C-34N	1700	1200	2400	6500	4000	1200	15	2.15	2.80	176	9.6	2.8	0.8	0.4	1.2	0.3	1200	2.6	1.0	0.016	0.019	0.042	800	41	A-42

Single HVIGBTs

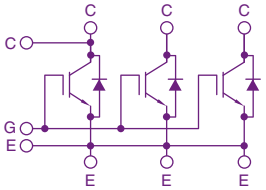
CM400HA-34H



CM800HA-34H, CM1200HA-34H, CM1800HC-34N, CM2400HC-34N

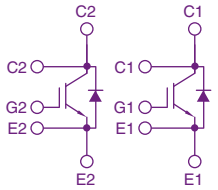


CM1800HCB-34N, CM2400HCB-34N

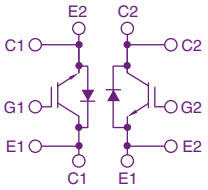


Dual HVIGBTs

CM600DY-34H, CM800DZ-34H

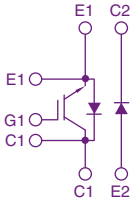


CM1200DC-34N

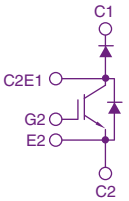


Chopper HVIGBTs

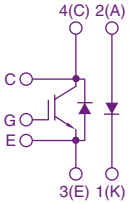
CM600E2Y-34H



CM1000E3U-34NF



CM1200E4C-34N

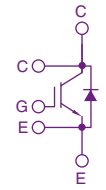


2500 & 3300 Volt HVIGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

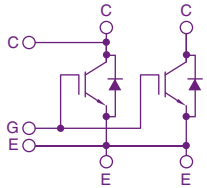
MAXIMUM RATINGS (IGBT Inverter Sector)						ELECTRICAL CHARACTERISTICS											FREE-WHEEL DIODE			THERMAL CHARACTERISTICS					
						Static				Dynamic										Interface Per Module	IGBT (Max.)	Diode (Max.)		Outline Drawings	
						Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times											
Type	V_{CES} Volts	I_C Amperes	I_{CM} Amperes	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ µs	t_r µs	$t_{d(off)}$ µs	t_f µs	I_{FM} Amperes	V_{FM} Volts	t_{rr} µs	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	Weight Grams	Number	Page
2500V Single HVIGBTs																									
CM800HB-50H	2500	800	1600	10400	6000	800	15	2.8	3.64	120	13.2	4.0	1.6	2.0	2.5	1.0	800	3.25	1.2	0.008	0.012	0.024	1500	47	A-44
CM1200HC-50H	2500	1200	2400	15600	6000	1200	15	2.8	3.64	180	13.5	6.0	1.5	2.0	2.5	1.0	1200	3.25	1.2	0.008	0.010	0.020	2200	44	A-43
2500V Split Dual HVIGBT																									
CM400DY-50H	2500	400	800	3400	6000	400	15	3.2	4.16	40	4.4	1.3	1.0	2.0	2.0	1.0	400	3.77	1.2	0.016	0.036	0.072	1500	48	A-44
3300V Single HVIGBTs																									
CM400HG-66H	3300	400	800	4100	10200	400	15	3.3	4.2	60	6.0	5.4	1.6	1.0	2.5	1.0	400	3.6	1.4	0.018	0.030	0.060	520	49	A-44
CM800HB-66H	3300	800	1600	10400	6000	800	15	3.8	4.94	120	12.0	3.6	1.6	2.0	2.5	1.0	800	3.64	1.4	0.008	0.012	0.024	1500	47	A-44
CM1200HC-66H	3300	1200	2400	12500	6000	1200	15	3.3	4.29	180	18.0	5.4	1.6	2.0	2.5	1.0	1200	3.64	1.4	0.008	0.010	0.020	2200	44	A-43
CM1200HG-66H	3300	1200	2400	12500	10200	1200	15	3.3	4.2	180	18.0	5.4	1.6	1.0	2.5	1.0	1200	3.6	1.4	0.006	0.010	0.020	1350	50	A-45
CM1500HC-66R	3300	1500	3000	15600	6000	1500	15	—	5.0	210	13.0	6.0	1.0	0.25	2.7	0.3	1500	2.15	0.55	0.008	—	0.015	1200	44	A-43
CM1500HG-66R	3300	1500	3000	13800	10200	1500	—	2.15	—	210	13.0	6.0	1.0	0.28	2.7	0.3	1500	2.15	0.50	0.006	0.0085	0.0155	1400	50	A-45
3300V Split Dual HVIGBT																									
CM400DY-66H	3300	400	800	3400	6000	400	15	4.4	5.72	40	4.0	1.2	1.0	2.0	2.0	1.0	400	4.29	1.2	0.016	0.036	0.072	1500	48	A-44
3300V Chopper HVIGBT																									
CM800E2C-66H	3300	800	1600	9600	6000	800	15	3.8	4.94	120	12.0	3.6	1.6	2.0	2.5	1.0	800	3.8	1.4	0.008	0.013	0.025	1500	44	A-43

Single HVIGBTs

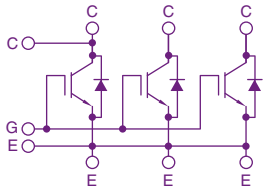
CM400HG-66H



CM800HB-50H, CM800HB-66H, CM1200HC-50H

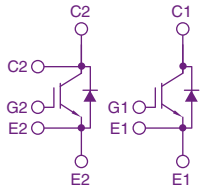


CM1200HC-66H, CM1200HG-66H, CM1500HC-66R, CM1500HG-66R



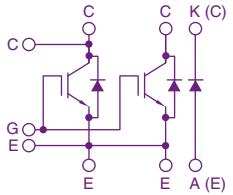
Split Dual HVIGBT

CM400DY-66H



Chopper HVIGBT

CM800E2C-66H

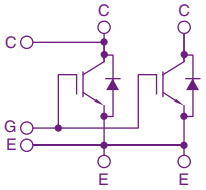


4500 & 6500 Volt HVIGBTs, (Refer to device datasheets at www.pwrx.com for test conditions.)

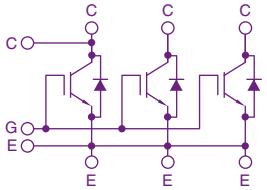
MAXIMUM RATINGS (IGBT Inverter Sector)						ELECTRICAL CHARACTERISTICS										FREE-WHEEL DIODE			THERMAL CHARACTERISTICS					
						Static				Dynamic									Interface Per Module	IGBT (Max.)	Diode (Max.)			
						Test Conditions		Typ.	Max.	V_{GE} = 0V, V_{CE} = 10V, f = 1mHz			Inductive Load Switching Times											
Type	V_{CES} Volts	I_C Amperes	I_{CM} Amperes	P_d Watts	V_{RMS} Isolation Volts	I_C Amperes	V_{GE} Volts	$V_{CE(SAT)}$ Volts	$V_{CE(SAT)}$ Volts	C_{ies} nF	C_{oes} nF	C_{res} nF	$t_{d(on)}$ µs	t_r µs	$t_{d(off)}$ µs	t_f µs	I_{FM} Amperes	V_{FM} Volts	t_{rr} µs	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	$R_{th(j-c)}$ °C/W	Weight Grams	Outline Drawings Number	Page
4500V Single HVIGBTs																									
CM400HB-90H	4500	400	800	4300	6000	400	15	3.0	3.9	72	5.3	1.6	2.40	2.40	6.0	1.2	400	4.0	1.8	0.015	0.023	0.045	1500	47	A-44
CM600HB-90H	4500	600	1200	6700	6000	600	15	3.0	3.9	108	8.0	2.4	2.40	2.40	6.0	1.2	600	4.0	1.8	0.010	0.015	0.030	1500	47	A-44
CM900HB-90H	4500	900	1800	10000	6000	900	15	3.0	3.9	162	12.0	3.6	2.40	2.40	6.0	1.2	900	4.0	1.8	0.007	0.010	0.020	2200	44	A-43
CM900HC-90H	4500	900	1800	10000	6000	900	15	3.0	3.9	162	12.0	3.6	2.40	2.40	6.0	1.2	900	4.0	1.8	—	—	—	2200	44	A-43
CM1200HG-90R	4500	1200	2400	11900	10200	1200	15	3.3	—	180	12.0	6.0	0.95	0.25	5.8	0.4	1200	2.6	0.9	0.006	0.010	0.019	1400	50	A-45
4500V Dual HVIGBT																									
QID4515001	4500	150	300	1440	10200	150	15	3.5	3.9	18	1.33	0.4	1.50	0.50	3.5	1.2	150	—	1.8	—	0.087	0.174	900	51	A-45
6500V Single HVIGBTs																									
CM200HG-130H	6500	200	400	2900	10200	200	15	5.10	—	41	2.5	0.7	1.20	0.35	6.6	3.3	200	4.0	2.4	0.018	0.042	0.066	800	49	A-44
CM600HG-130H	6500	600	1200	8900	10200	600	15	5.10	—	124	7.6	2.2	1.20	0.35	4.5	4.5	600	3.8	2.4	0.006	0.014	0.024	1500	50	A-45
CM750HG-130R	6500	750	1500	10400	10200	750	15	3.30	—	140	6.0	2.4	1.15	0.20	8.3	0.5	750	2.8	0.8	0.006	0.012	0.024	1400	50	A-45

Single HVIGBTs

CM400HB-90H, CM600HB-90H

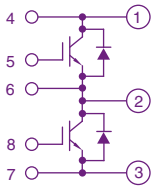


CM200HG-130H, CM600HG-130H, CM750HG-130R, CM900HB-90H, CM900HC-90H, CM1200HG-90R

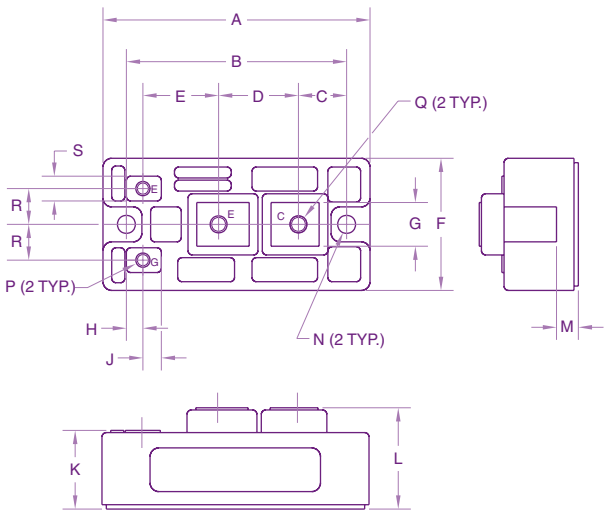


Dual HVIGBT

QID4515001



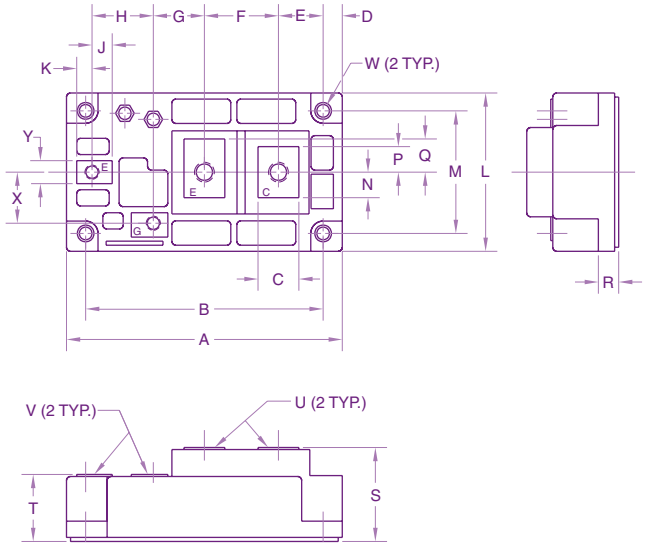
1 CM450HA-5F



Dim.	Inches	Millimeters
A	3.82	97.0
B	3.15	80.0
C	0.69	17.5
D	1.14	29.0
E	1.04	26.5
F	1.89	48.0
G	0.63	16.0
H	0.24	6.0
J	0.26	6.7

Dim.	Inches	Millimeters
K	1.14	29.0
L	1.42	36.0
M	0.28	7.0
N	0.26 Dia.	6.5 Dia.
P	M4 Metric	M4
Q	M5 Metric	M5
R	0.51	13.0
S	0.35	9.0

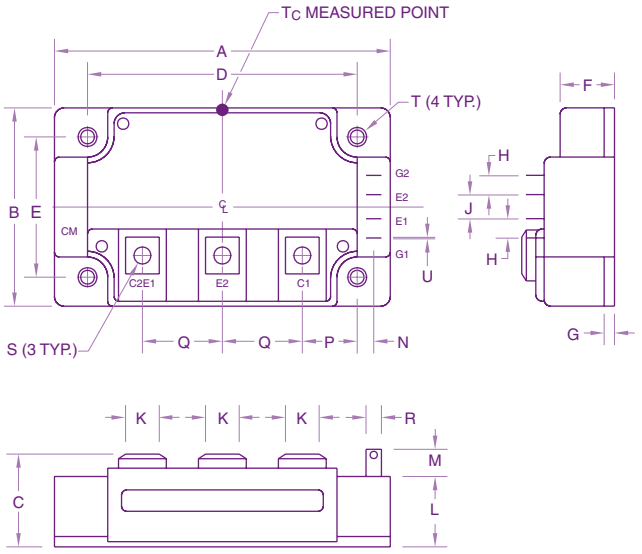
2 CM600HA-5F



Dim.	Inches	Millimeters
A	4.25	108.0
B	3.66	93.0
C	0.63	16.0
D	0.30	7.5
E	0.69	17.5
F	1.14	29.0
G	0.79	20.0
H	0.94	24.0
J	0.31	7.9
K	0.24	6.0
L	2.44	62.0
M	1.89	48.0

Dim.	Inches	Millimeters
N	0.39	10.0
P	0.39	10.0
Q	0.51	13.0
R	0.33	8.5
S	1.42	36.0
T	1.02	25.8
U	M6 Metric	M6
V	M4 Metric	M4
W	0.22 Dia.	5.5 Dia.
X	0.79	20.0
Y	0.35	9.0

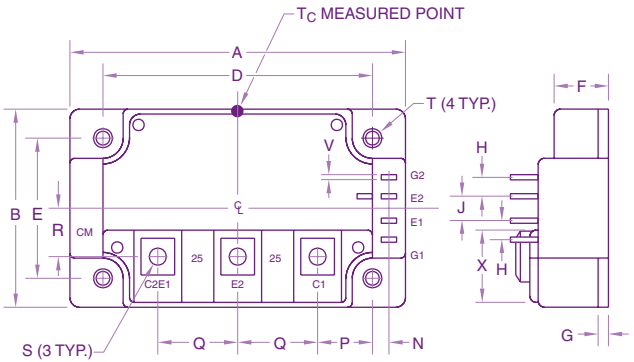
3 CM400DU-5F



Dim.	Inches	Millimeters
A	4.25	108.0
B	2.44	62.0
C	1.144 +0.04/-0.02	29.0 +1.0/-0.5
D	3.66±0.01	93.0±0.25
E	1.88±0.01	48.0±0.25
F	0.67	17.0
G	0.16	4.0
H	0.24	6.0
J	0.59	15.0
K	0.55	14.0

Dim.	Inches	Millimeters
L	0.87	22.0
M	0.33	8.5
N	0.10	2.5
P	0.85	21.5
Q	0.98	25.0
R	0.110	2.8
S	M6	M6
T	0.26 Dia.	6.5 Dia.
U	0.02	0.5

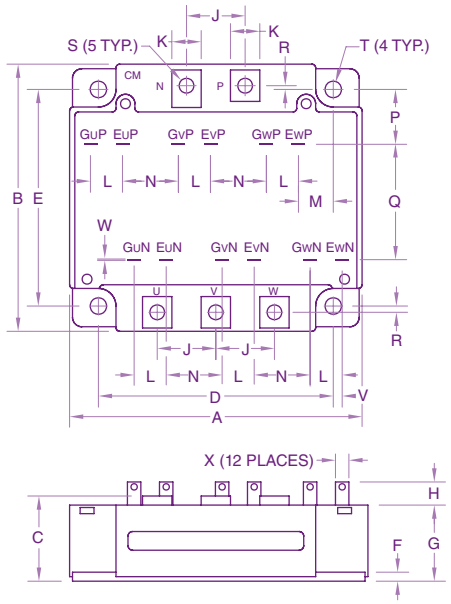
4 CM600DU-5F



Dim.	Inches	Millimeters
A	4.33	110.0
B	3.15	80.0
C	1.14 +0.04/-0.02	29.0 +1.0/-0.5
D	3.66±0.01	93.0±0.25
E	2.44±0.01	62.0±0.25
F	0.83	21.0
G	0.16	4.0
H	0.24	6.0
J	0.59	15.0
K	0.55	14.0

Dim.	Inches	Millimeters
M	0.33	8.5
N	0.10	2.5
P	0.85	21.6
Q	0.98	25.0
R	0.86	21.75
S	M6	M6
T	0.26 Dia.	6.5 Dia.
V	0.02	0.5
W	0.110	2.8
X	1.08	27.35

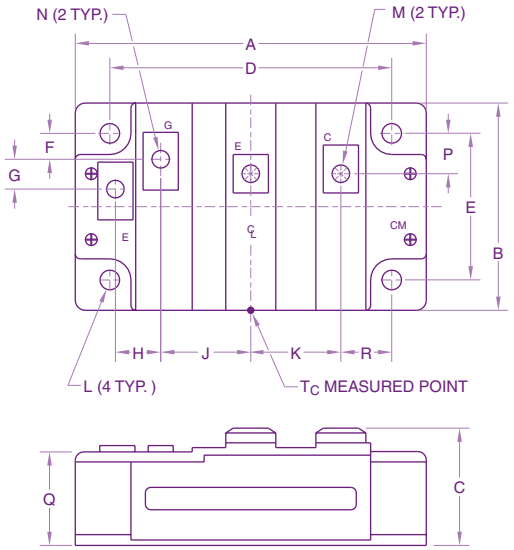
5 CM200TU-5F



Dim.	Inches	Millimeters
A	4.21	107.0
B	4.02	102.0
C	1.14 +0.04/-0.02	29.0 +1.0/-0.5
D	3.54±0.01	90.0±0.25
E	3.15±0.01	80.0±0.25
F	0.16	4.0
G	1.02	26.0
H	0.31	8.1
J	0.91	23.0
K	0.47	12.0
L	0.43	11.0

Dim.	Inches	Millimeters
M	0.57	14.4
N	0.85	21.7
P	0.67	17.0
Q	1.91	48.5
R	0.15	3.75
S	M5	M5
T	0.22 Dia.	5.5 Dia.
U	0.02	0.5
V	0.03	0.8
W	0.02	0.5
X	0.110	2.8

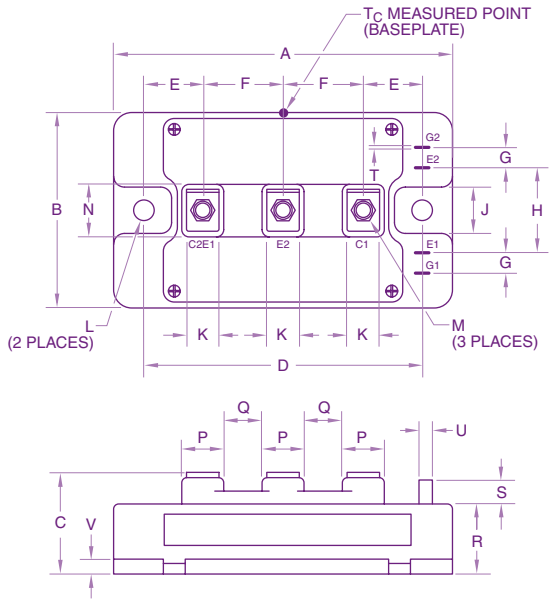
6 CM600HU-12F



Dim.	Inches	Millimeters
A	4.21	107.0
B	2.44	62.0
C	1.34 +0.04/-0.02	34.0 +1.0/-0.5
D	3.66±0.01	93.0±0.25
E	1.88±0.01	48.0±0.25
F	0.37	9.5
G	0.39	10.0
H	0.53	13.5

Dim.	Inches	Millimeters
J	1.02	26.0
K	1.14	29.0
L	0.26 Dia.	6.5 Dia.
M	M8	M8
N	M4	M4
P	0.49	12.55
Q	1.02 +0.04/-0.02	26.0 +1.0/-0.5
R	0.81	20.5

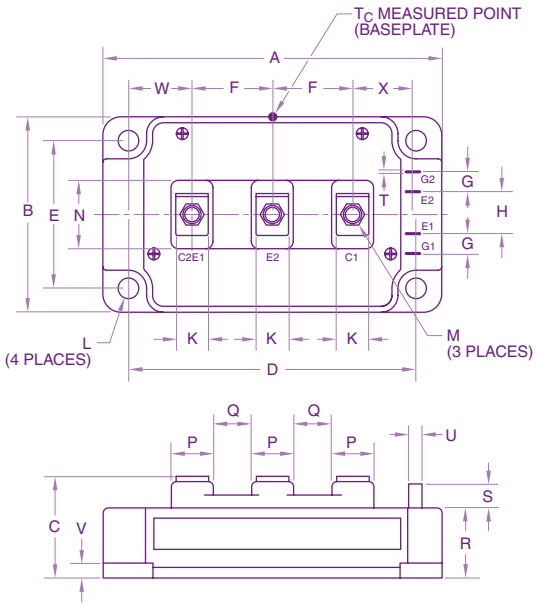
7 CM100DY-24NF, CM150DY-12NF, CM150DY-24NF, CM200DY-12NF, CM300DY-12NF



Dim.	Inches	Millimeters
A	3.70	94.0
B	1.89	48.0
C	1.14+0.04/-0.02	29.0+1.0/-0.5
D	3.15±0.01	80.0±0.25
E	0.67	17.0
F	0.91	23.0
G	0.16	4.0
H	0.71	18.0
J	0.51	13.0
K	0.47	12.0

Dim.	Inches	Millimeters
L	0.26 Dia.	6.5 Dia.
M	M5 Metric	M5
N	0.79	20.0
P	0.63	16.0
Q	0.28	7.0
R	0.83	21.2
S	0.30	7.5
T	0.02	0.5
U	0.110	2.8
V	0.16	4.0

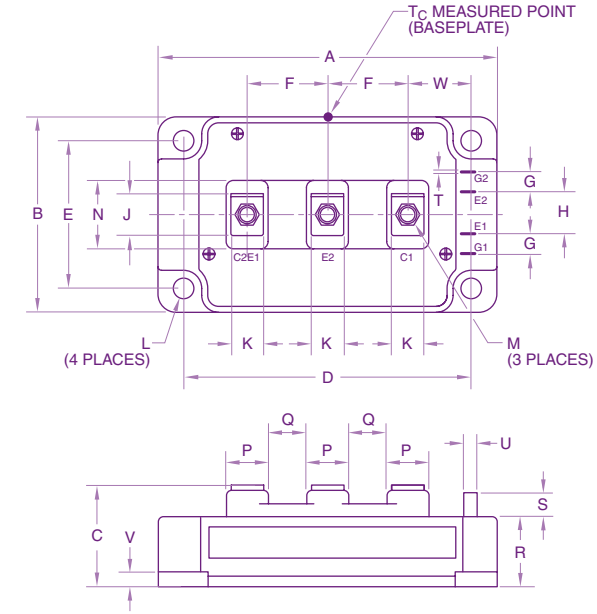
8 CM200DY-24NF, CM400DY-12NF



Dim.	Inches	Millimeters
A	4.25	108.0
B	2.44	62.0
C	1.18+0.04/-0.02	30.0+1.0/-0.5
D	3.66±0.01	93.0±0.25
E	1.89±0.01	48.0±0.25
F	0.98	25.0
G	0.24	6.0
H	0.59	15.0
K	0.55	14.0
L	0.26 Dia.	6.5 Dia.
M	M6 Metric	M6

Dim.	Inches	Millimeters
N	1.18	30.0
P	0.71	18.0
Q	0.28	7.0
R	0.87	22.2
S	0.33	8.5
T	0.02	0.5
U	0.110	2.8
V	0.16	4.0
W	0.85	21.5
X	0.94	24.0

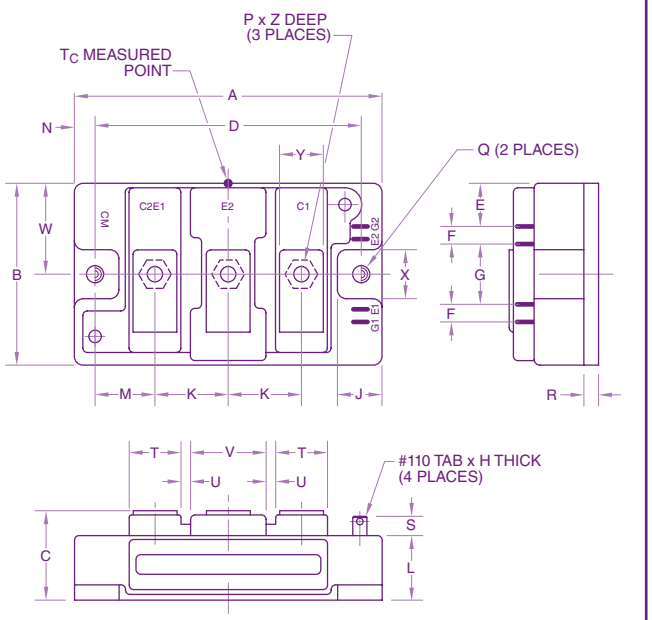
9 CM300DY-24NF, CM400DY-24NF, CM600DY-12NF



Dim.	Inches	Millimeters
A	4.33	110.0
B	3.15	80.0
C	1.14+0.04/-0.02	29.0+1.0/-0.5
D	3.66±0.01	93.0±0.25
E	2.44±0.01	62.0±0.25
F	0.98	25.0
G	0.24	6.0
H	0.59	15.0
J	0.81	20.5
K	0.55	14.0
L	0.26 Dia.	6.5 Dia.

Dim.	Inches	Millimeters
M	M6 Metric	M6
N	1.18	30.0
P	0.71	18.0
Q	0.28	7.0
R	0.83	21.2
S	0.33	8.5
T	0.02	0.5
U	0.110	2.8
V	0.16	4.0
W	0.85	21.5

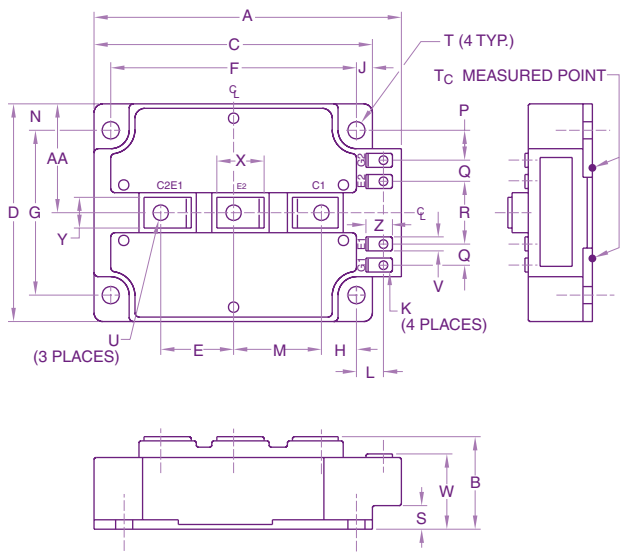
10 CM50DU-24F, CM75DU-12F, CM75DU-24F, CM100DU-12F, CM100DUS-12F, CM150DUS-12F



Dim.	Inches	Millimeters
A	3.70	94.0
B	1.89	48.0
C	1.18+0.04/-0.02	30.0+1.0/-0.5
D	3.15±0.01	80.0±0.25
E	0.43	11.0
F	0.16	4.0
G	0.71	18.0
H	0.02	0.5
J	0.53	13.5
K	0.91	23.0
L	0.83	21.2
M	0.67	17.0

Dim.	Inches	Millimeters
N	0.28	7.0
P	M6.5	M6.5
Q	0.26 Dia.	6.5 Dia.
R	0.02	4.0
S	0.30	7.5
T	0.63	16.0
U	0.10	2.5
V	1.0	25.0
W	0.94	24.0
X	0.51	13.0
Y	0.47	12.0
Z	0.47	12.0

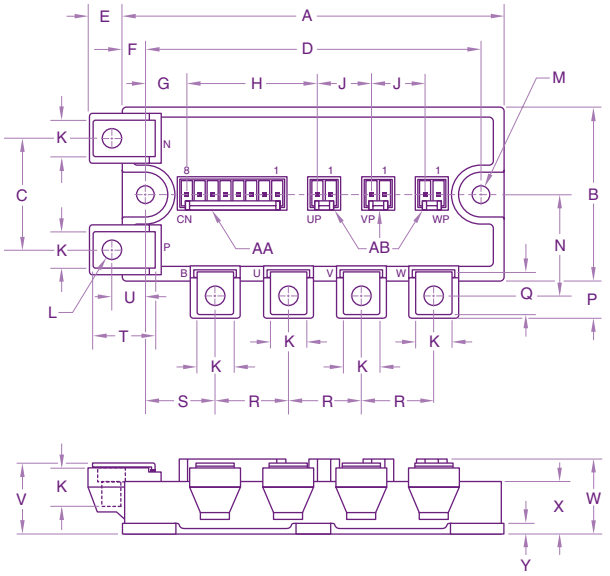
11 CM400DY-34A, CM600DU-24NF, CM800DU-12H



Dim.	Inches	Millimeters
A	5.51	140.0
B	1.38+0.04/-0.02	35.0+1.0/-0.5
C	5.12	130.0
D	5.12	130.0
E	1.42	36.0
F	4.33±0.01	110.0±0.25
G	4.33±0.01	110.0±0.25
H	0.54	13.8
J	0.39	10.0
K	M4 Metric	M4
L	0.45	11.5
M	1.72	43.8
N	0.39	10.0

Dim.	Inches	Millimeters
P	0.80	20.4
Q	0.57	14.5
R	1.57	40.0
S	0.31	8.0
T	0.26 Dia.	6.5 Dia.
U	M8 Metric	M8
V	0.35	9.0
W	0.96+0.04/-0.02	24.5+1.0/-0.5
X	1.02	26.0
Y	0.79	20.0
Z	0.59	15.0
AA	2.56	65.0

12 CM50RL-24NF, CM50TL-24NF, CM75RL-12NF, CM75RL-24NF, CM75TL-12NF, CM75TL-24NF, CM100RL-12NF, CM100RL-24NF, CM100TL-12NF, CM100TL-24NF, CM150RL-12NF, CM150TL-12NF

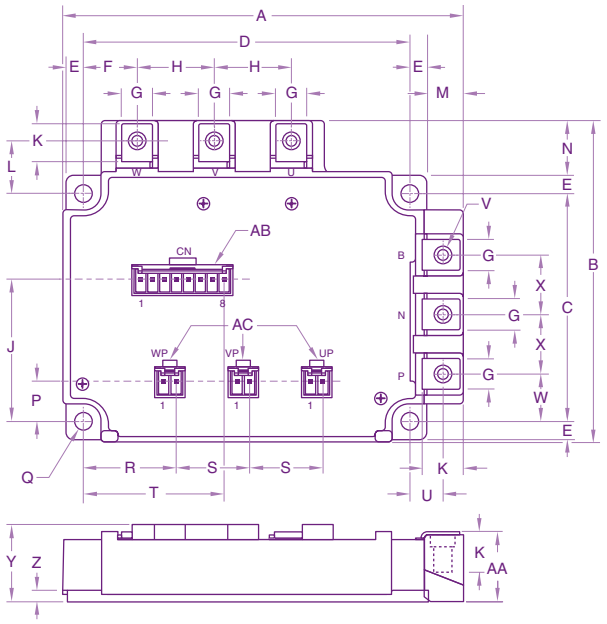


Dim.	Inches	Millimeters
A	4.72	120.0
B	2.17	55.0
C	1.39	35.0
D	4.17±0.02	106.0±0.5
E	0.43	11.0
F	0.28	7.0
G	0.54	13.62
H	1.61	40.78
J	0.67	17.0
K	0.47	12.0
L	M5	M5
M	0.27 Dia.	5.5 Dia.

Housing Types (J.S.T. Mfg. Co. Ltd.)
AA – B8P-VH-FB-B
AB – B2P-VH-FB-B

Dim.	Inches	Millimeters
N	1.23	32.0
P	0.47	11.75
Q	0.53	13.5
R	0.91	23.0
S	0.87	22.0
T	0.76	19.75
U	0.42	10.75
V	0.87+0.04/-0.02	22.0+1.0/-0.5
W	0.91	23.2
X	0.63	16.0
Y	0.12	3.0

13 CM150RL-24NF, CM150TL-24NF, CM200RL-12NF, CM200RL-24NF, CM200TL-12NF, CM200TL-24NF



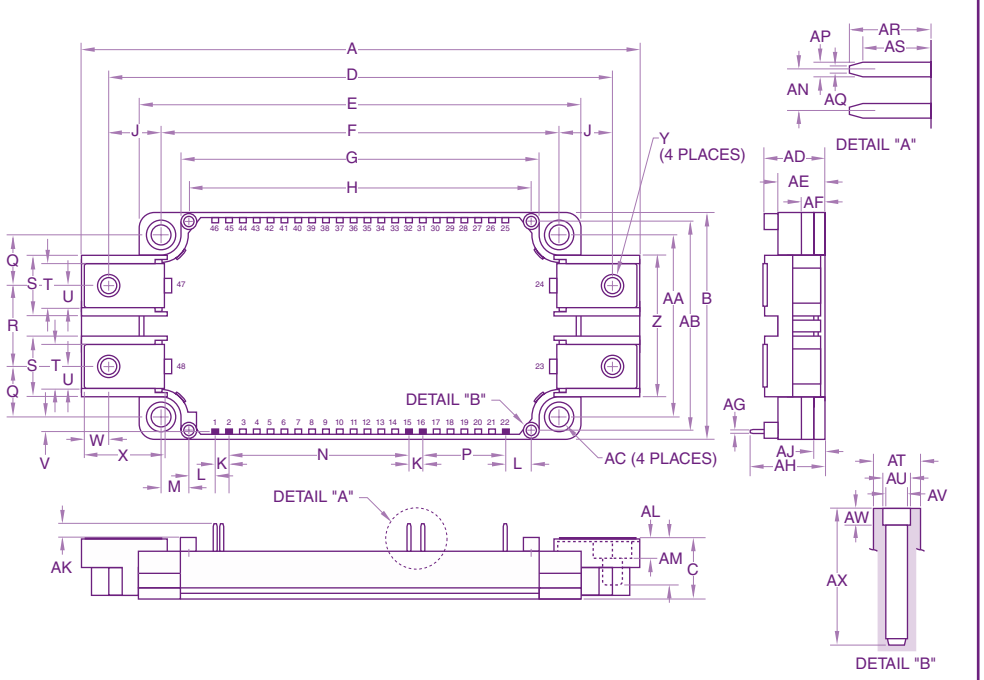
Dim.	Inches	Millimeters
A	5.32	135.0
B	4.33±0.02	110.0±0.5
C	3.07±0.02	78.0±0.5
D	4.33±0.02	110.0±0.5
E	0.24	6.05
F	0.69	17.5
G	0.41	10.5
H	1.02	26.0
J	1.92	48.75
K	0.51	13.0
L	0.71	18.0
M	0.46	11.7
N	0.74	18.7

Dim.	Inches	Millimeters
P	0.54	13.75
Q	0.22	5.5 Dia.
R	1.20	30.5
S	0.98	25.0
T	1.82	46.3
U	0.43	11.0
V	M5	M5
W	0.65	16.5
X	0.78	20.0
Y	1.04	26.5
Z	0.16	4.0
AA	0.95+0.04/-0.02	24.1+1.0/-0.5

Housing Types (J.S.T. Mfg. Co. Ltd.)

AB – B8P-VH-FB-B
AC – B2P-VH-FB-B

14 CM150DX-24S, CM200DX-24S, CM300DX-12A, CM300DX-24S, CM400DX-12A, CM400HX-24A, CM450DX-24S, CM600HX-12A, CM600HX-24A

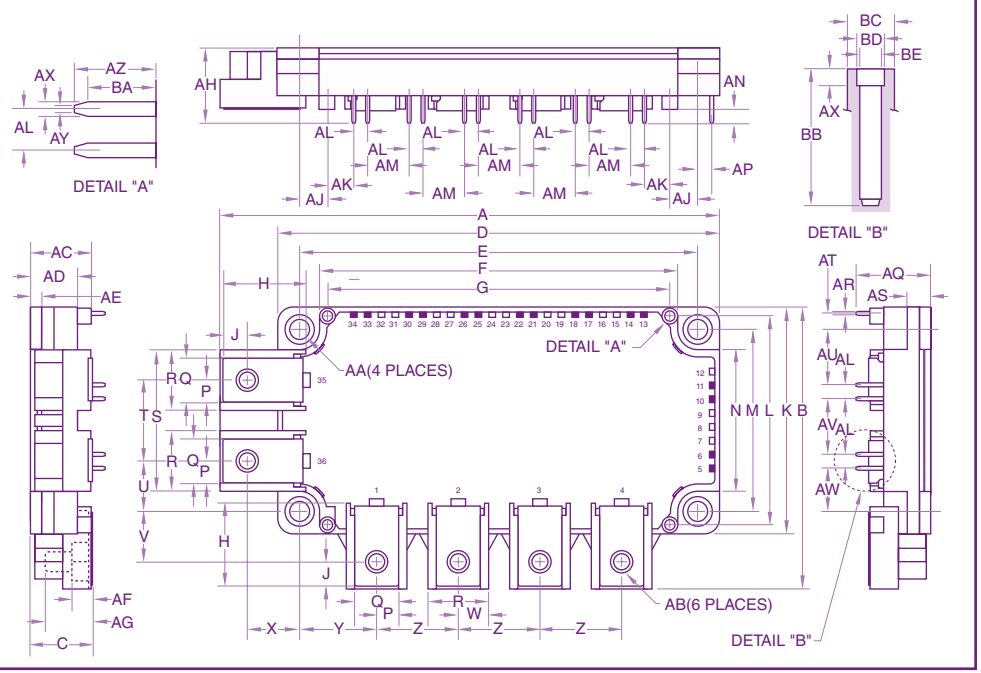


Dim.	Inches	Millimeters
A	5.98	152.0
B	2.44	62.0
C	0.67	17.0
D	5.39	137.0
E	4.79	121.7
F	4.33±0.02	110.0±0.5
G	3.89	99.0
H	3.72	94.5
J	0.53	13.5
K	0.15	3.8
L	0.28	7.25
M	0.30	7.75
N	1.95	49.54
P	0.9	22.86
Q	0.55	14.0
R	0.87	22.0

Dim.	Inches	Millimeters
S	0.67	17.0
T	0.48	12.0
U	0.24	6.0
V	0.16	4.2
W	0.37	6.5
X	0.83	21.14
Y	M6	M6
Z	1.53	39.0
AA	1.97±0.02	50.0±0.5
AB	2.26	57.5
AC	0.22 Dia.	5.5 Dia.
AD	0.67+0.04/-0.02	17.0+1.0/-0.5
AE	0.51	13.0
AF	0.27	7.0
AG	0.03	0.8

Dim.	Inches	Millimeters
AH	0.81	20.5
AJ	0.12	3.0
AK	0.14	3.5
AL	0.21	5.4
AM	0.49	12.5
AN	0.15	3.81
AP	0.05	1.15
AQ	0.025	0.65
AR	0.29	7.4
AS	0.24	6.2
AT	0.17 Dia.	4.3 Dia.
AU	0.10 Dia.	2.5 Dia.
AV	0.08 Dia.	2.1 Dia.
AW	0.06	1.5
AX	0.49	12.5

15 CM75RX-24S, CM100RX-12A, CM100RX-24S, CM150RX-12A, CM150RX-24S, CM200RX-12A

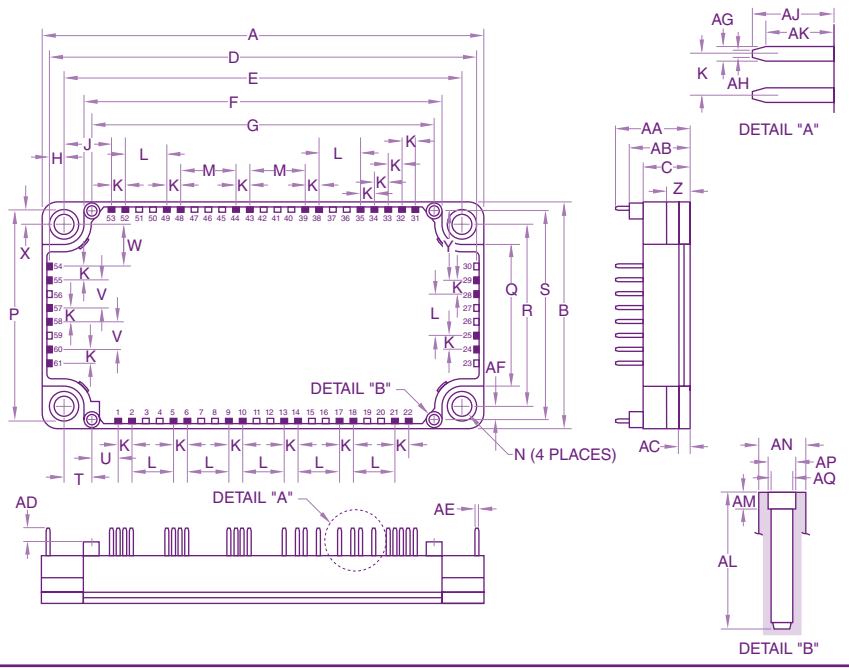


Dim.	Inches	Millimeters
A	5.39	136.9
B	3.03	77.1
C	0.67	17.0
D	4.79	121.7
E	4.33±0.02	110.0±0.5
F	3.89	99.0
G	3.72	94.5
H	0.83	21.14
J	0.37	6.5
K	2.44	62.0
L	2.26	57.5
M	1.97±0.02	50.0±0.5
N	1.53	39.0
P	0.24	6.0
Q	0.48	12.0
R	0.67	17.0
S	1.53	39.0
T	0.87	22.0

Dim.	Inches	Millimeters
U	0.55	14.0
V	0.54	13.64
W	0.33	8.5
X	0.53	13.5
Y	0.81	20.71
Z	0.9	22.86
AA	0.22 Dia.	5.5 Dia.
AB	M5	M5
AC	0.67	17.0
AD	0.51	13.0
AE	0.12	3.0
AF	0.21	5.4
AG	0.49	12.5
AH	0.81	20.5
AJ	0.30	7.75
AK	0.28	7.25
AL	0.15	3.81
AM	0.45	11.44

Dim.	Inches	Millimeters
AN	0.14	3.5
AP	0.16	4.06
AQ	0.78	20.05
AR	0.03	0.8
AS	0.27	7.0
AT	0.16	4.2
AU	0.61	15.48
AV	0.60	15.24
AW	0.46	11.66
AX	0.04	1.15
AY	0.02	0.65
AZ	0.29	7.4
BA	0.24	6.2
BB	0.49	12.5
BC	0.17 Dia.	4.3 Dia.
BD	0.10 Dia.	2.5 Dia.
BE	0.08 Dia.	2.1Dia.

16 CM35MX-24A, CM50MX-24A, CM75MX-12A, CM75MX-24A, CM75TX-24S, CM100MX-12A,CM100TX-24S, CM150TX-24S

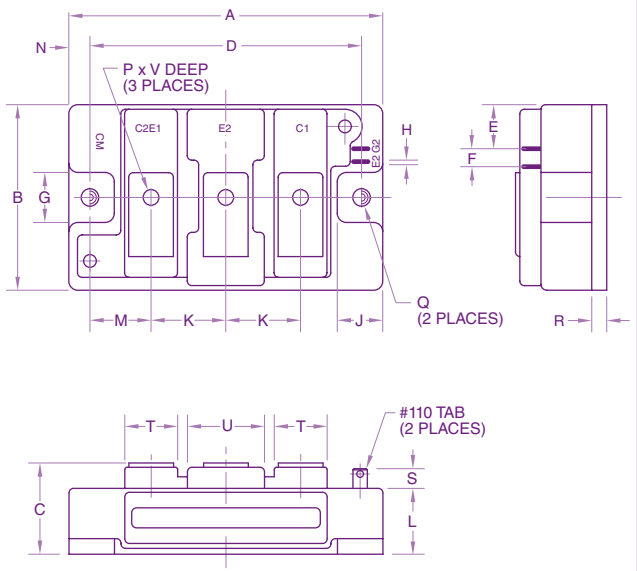


Dim.	Inches	Millimeters
A	4.79	121.7
B	2.44	62.0
C	0.51	13.0
D	4.65	118.1
E	4.33±0.02	110.0±0.5
F	3.89	99.0
G	3.72	94.5
H	0.16	4.06
J	0.51	13.09
K	0.15	3.81
L	0.45	11.43
M	0.6	15.24
N	0.22 Dia.	5.5 Dia.

Dim.	Inches	Millimeters
P	2.30	58.4
Q	1.53	39.0
R	1.97±0.02	50.0±0.5
S	2.26	57.5
T	0.30	7.75
U	0.28	7.25
V	0.3	7.62
W	0.46	11.66
X	0.16	4.2
Y	0.61	15.48
Z	0.27	7.0
AA	0.81	20.5
AB	0.67	17.0

Dim.	Inches	Millimeters
AC	0.12	3.0
AD	0.14	3.5
AE	0.03	0.8
AF	0.15	3.75
AG	0.05	1.15
AH	0.025	0.65
AJ	0.29	7.4
AK	0.05	1.2
AL	0.49	12.5
AM	0.06	1.5
AN	0.17 Dia.	4.3 Dia.
AP	0.10 Dia.	2.5 Dia.
AQ	0.08 Dia.	2.1 Dia.

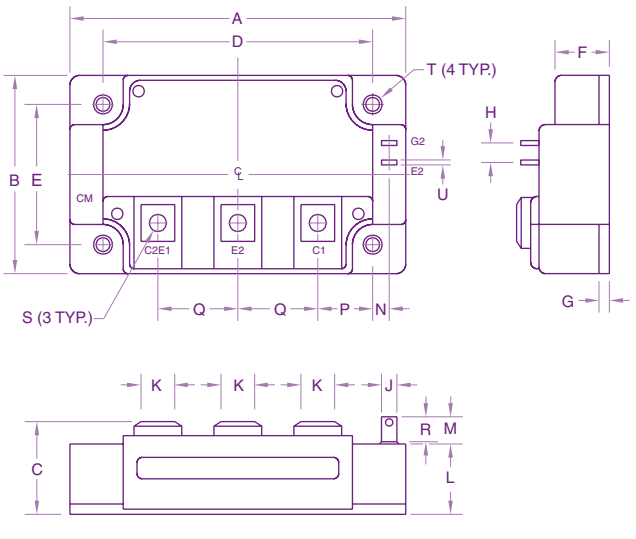
17 CM50E3U-24H, CM75E3U-12H, CM75E3U-24H, CM100E3U-12H, CM100E3U-24H, CM150E3U-12H, CM200E3U-12H



Dim.	Inches	Millimeters
A	3.70	94.0
B	1.89	48.0
C	1.18 +0.04/-0.02	30.0 +1.0/-0.5
D	3.15±0.01	80.0±0.25
E	0.43	11.0
F	0.16	4.0
G	0.51	13.0
H	0.02	0.5
J	0.53	13.5
K	0.91	23.0

Dim.	Inches	Millimeters
L	0.84	21.2
M	0.67	17.0
N	0.28	7.0
P	M5	M5
Q	0.26 Dia.	6.5 Dia.
R	0.02	4.0
S	0.30	7.5
T	0.63	16.0
U	0.98	25.0
V	0.47	12.0

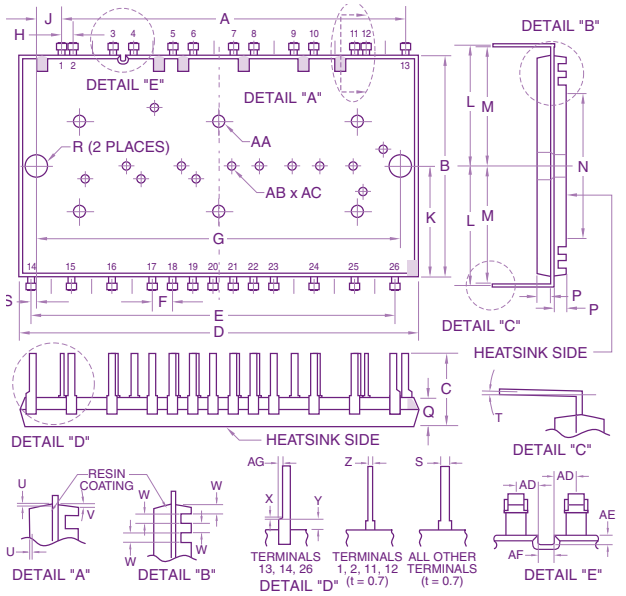
18 CM150E3U-24H, CM300E3U-12H



Dim.	Inches	Millimeters
A	4.25	108.0
B	2.44	62.0
C	1.14 +0.04/-0.02	29.0 +1.0/-0.5
D	3.66±0.01	93.0±0.25
E	1.88±0.01	48.0±0.25
F	0.67	17.0
G	0.16	4.0
H	0.24	6.0
J	0.110	2.8
K	0.71	18.0

Dim.	Inches	Millimeters
L	0.87	22.0
M	0.33	8.5
N	0.10	2.5
P	0.85	21.5
Q	0.98	25.0
R	0.30	7.5
S	M6 Metric	M6
T	0.26 Dia.	6.5 Dia.
U	0.02	0.5

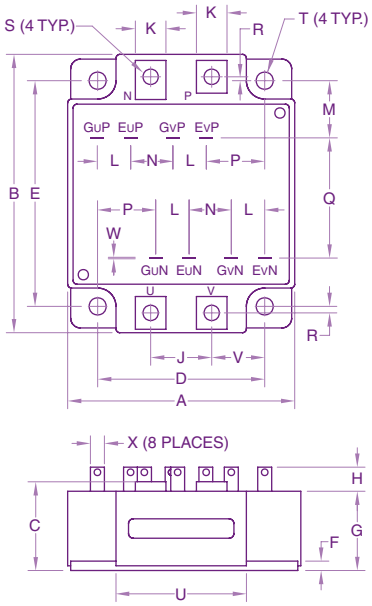
19 CP10TD1-24A, CP15TD1-24A, CP20TD1-12A, CP25TD1-24A, CP30TD1-12A



Dim.	Inches	Millimeters
A	2.68	68.0
B	1.73	44.0
C	0.58±0.02	14.7±0.5
D	3.1	79.0
E	2.83	72.0
F	0.16±0.01	4.0±0.3
G	2.83±0.01	72.0±0.3
H	0.08±0.01	2.0±0.3
J	0.2±0.008	5.0±0.2
K	0.87	22.0
L	0.96±0.01	24.3±0.3
M	0.94±0.02	23.9±0.5
N	1.14	29.0
P	0.098	2.5
Q	0.22±0.02	5.7±0.5
R	0.18	4.5

Dim.	Inches	Millimeters
S	0.04±0.008	1.0±0.2
T	0-5°	0-5°
U	0 Min.	0 Min.
V	8°	8°
W	0.04	1.1
X	0.02 Max.	0.5 Max.
Y	0.06	1.6
Z	0.023±0.008	0.6±0.2
AA	0.08 Dia.	2.0 Dia.
AB	0.1 Dia.	2.5 Dia.
AC	0.03 Deep	0.8 Deep
AD	0.057	1.45
AE	0.023	0.6
AF	0.04	1.1
AG	0.02±0.008	0.5±0.2

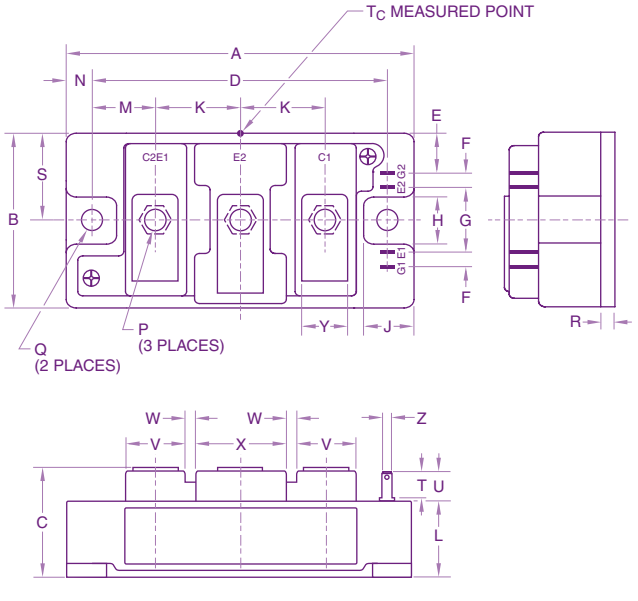
20 CM50BU-24H, CM75BU-12H, CM100BU-12H



Dim.	Inches	Millimeters
A	2.83	72.0
B	3.58	91.0
C	1.16 -0.04/-0.02	29.5 +1.0/-0.5
D	2.17±0.01	55.0±0.25
E	2.91±0.01	74.0±0.25
F	0.16	4.0
G	1.02	26.0
H	0.31	8.1
J	0.79	20.0
K	0.39	10.0
L	0.43	11.0

Dim.	Inches	Millimeters
M	0.74	18.7
N	0.75	19.1
P	0.57	14.43
Q	1.55	39.3
R	0.5	1.25
S	M4 Metric	M4
T	0.22 Dia.	5.5 Dia.
U	1.61	41.0
V	0.69	17.5
W	0.02	0.5
X	0.110	2.8

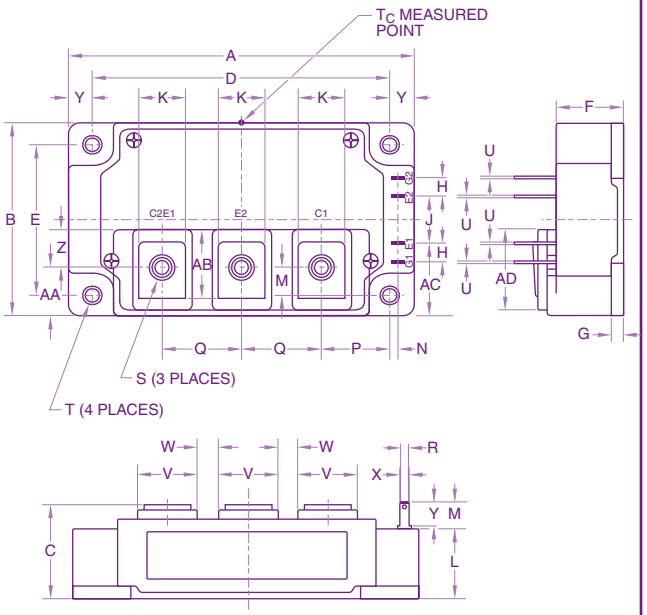
21 CM100DU-24NFH, CM150DU-24NFH, CM200DU-12NFH



Dim.	Inches	Millimeters
A	3.70	94.0
B	1.89	48.0
C	1.18+0.004/-0.02	30.0+1.0/-0.5
D	3.15±0.01	80.0±0.25
E	0.43	11.0
F	0.16	4.0
G	0.71	18.0
H	0.51	13.0
J	0.53	13.5
K	0.91	23.0
L	0.83	21.2
M	0.67	17.0

Dim.	Inches	Millimeters
N	0.28	7.0
P	M5 Metric	M5
Q	0.26 Dia.	6.5 Dia.
R	0.02	4.0
S	0.94	24.0
T	0.3	7.5
U	0.33	8.5
V	0.63	16.0
W	0.1	2.5
X	0.98	25.0
Y	0.47	12.0
Z	0.110	2.8

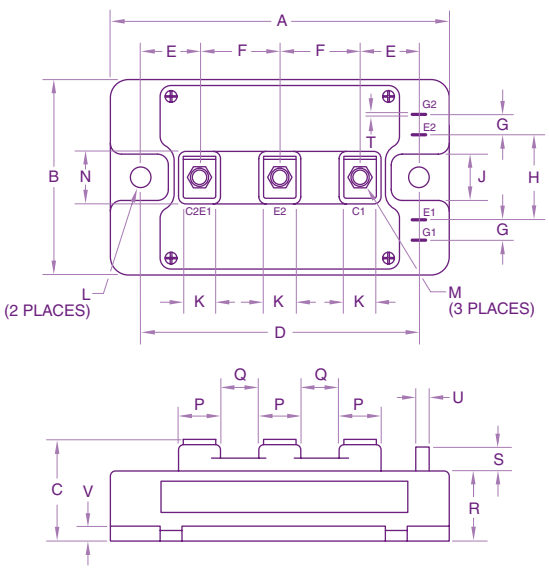
22 CM200DU-24NFH, CM300DU-12NFH, CM300DU-24NFH, CM400DU-12NFH, CM600E3U-12NFH



Dim.	Inches	Millimeters
A	4.25	108.0
B	2.44	62.0
C	1.14+0.04/-0.02	29.0+1.0/-0.5
D	3.66±0.01	93.0±0.25
E	1.88±0.01	48.0±0.25
F	0.67	17.0
G	0.16	4.0
H	0.24	6.0
J	0.59	15.0
K	0.55	14.0
L	0.87	22.0
M	0.33	8.5
N	0.10	2.5
P	0.85	21.5

Dim.	Inches	Millimeters
Q	0.98	25.0
R	0.110	2.8
S	M6 Metric	M6
T	0.26 Dia.	6.5 Dia.
U	0.002	0.5
V	0.71	18.0
W	0.28	7.0
X	0.16	4.0
Y	0.3	7.5
Z	0.325	8.25
AA	0.624	15.85
AB	0.709	18.0
AC	0.69	17.5
AD	1.012	25.7

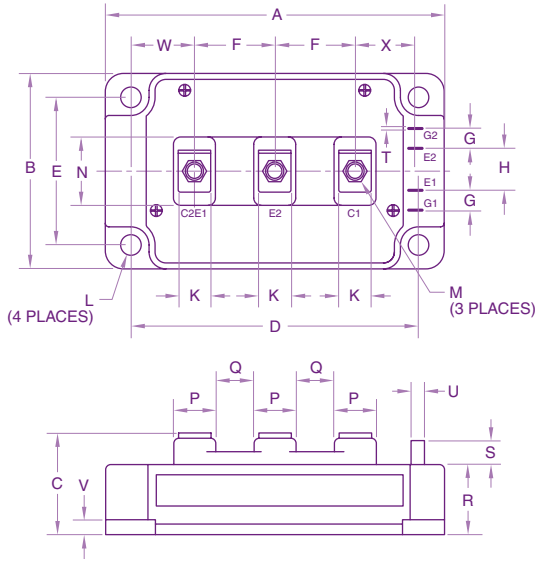
23 CM75DY-34A, CM100DY-24A, CM100DY-34A, CM150DY-24A, CM150DY-34A, CM200DY-24A



Dim.	Inches	Millimeters
A	3.70	94.0
B	1.89	48.0
C	1.14+0.04/-0.02	29.0+1.0/-0.5
D	3.15±0.01	80.0±0.25
E	0.67	17.0
F	0.91	23.0
G	0.16	4.0
H	0.71	18.0
J	0.51	13.0
K	0.47	12.0

Dim.	Inches	Millimeters
L	0.26 Dia.	6.5 Dia.
M	M5 Metric	M5
N	0.79	20.0
P	0.63	16.0
Q	0.28	7.0
R	0.83	21.2
S	0.30	7.5
T	0.02	0.5
U	0.110	2.8
V	0.16	4.0

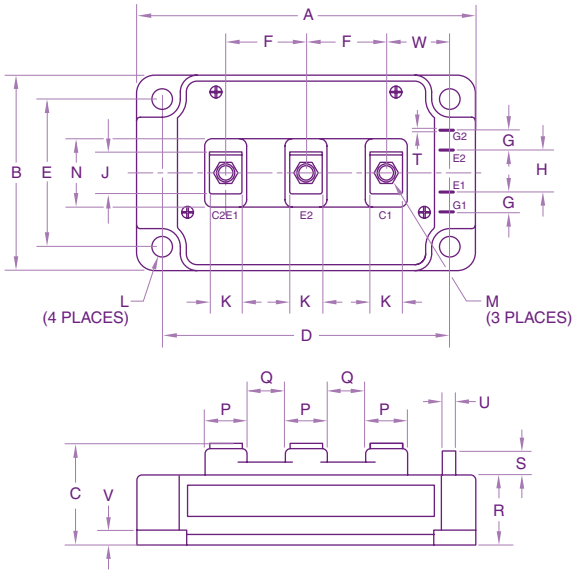
24 CM200DY-34A, CM300DY-24A



Dim.	Inches	Millimeters
A	4.25	108.0
B	2.44	62.0
C	1.18+0.04/-0.02	30.0+1.0/-0.5
D	3.66±0.01	93.0±0.25
E	1.89±0.01	48.0±0.25
F	0.98	25.0
G	0.24	6.0
H	0.59	15.0
K	0.55	14.0
L	0.26 Dia.	6.5 Dia.
M	M6 Metric	M6

Dim.	Inches	Millimeters
N	1.18	30.0
P	0.71	18.0
Q	0.28	7.0
R	0.87	22.2
S	0.33	8.5
T	0.02	0.5
U	0.110	2.8
V	0.16	4.0
W	0.85	21.5
X	0.94	24.0

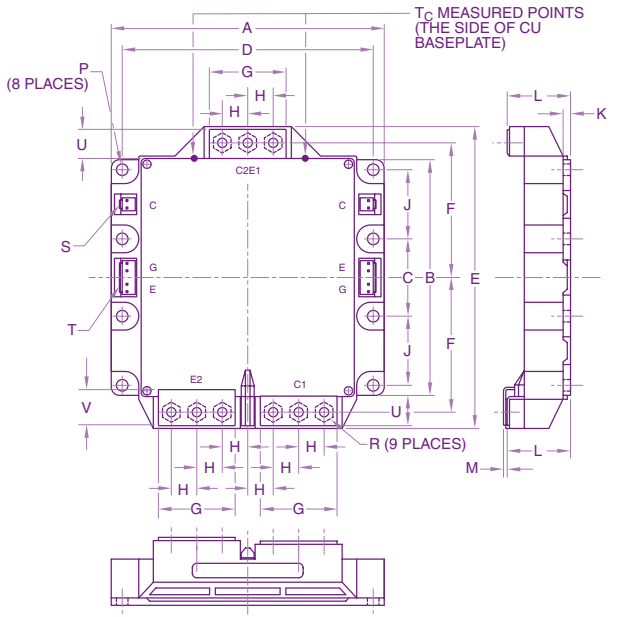
25 CM300DY-34A, CM400DY-24A, CM600DY-24A



Dim.	Inches	Millimeters
A	4.33	110.0
B	3.15	80.0
C	1.14+0.04/-0.02	29.0+1.0/-0.5
D	3.66±0.01	93.0±0.25
E	2.44±0.01	62.0±0.25
F	0.98	25.0
G	0.24	6.0
H	0.59	15.0
J	0.81	20.5
K	0.55	14.0
L	0.26 Dia.	6.5 Dia.

Dim.	Inches	Millimeters
M	M6 Metric	M6
N	1.18	30.0
P	0.71	18.0
Q	0.28	7.0
R	0.83	21.2
S	0.33	8.5
T	0.02	0.5
U	0.110	2.8
V	0.16	4.0
W	0.85	21.5

26 CM900DU-24NF, CM1000DU-34NF, CM1000E3U-34NF, CM1400DU-24NF, CM1400E3U-24NFH

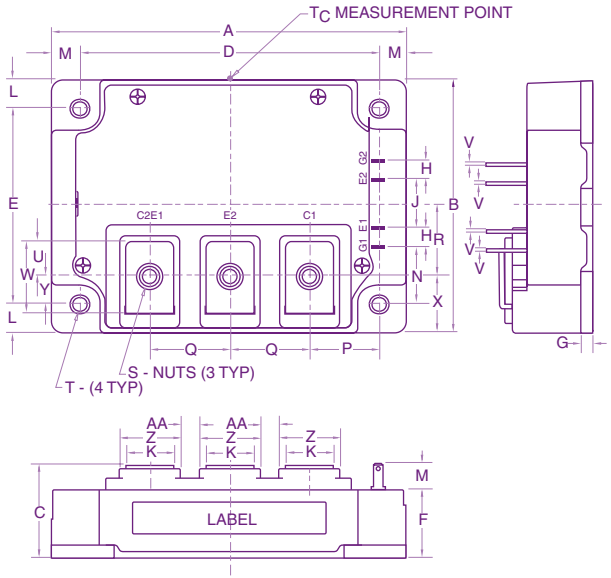


Dim.	Inches	Millimeters
A	5.91	150.0
B	5.10	129.5
C	1.67±0.01	42.5±0.25
D	5.41±0.01	137.5±0.25
E	6.54	166.0
F	2.91±0.01	74.0±0.25
G	1.65	42.0
H	0.55	14.0

Dim.	Inches	Millimeters
J	1.50±0.01	38.0±0.25
K	0.16	4.0
L	1.36 +0.04/-0.02	34.6 +1.0/-0.5
M	0.075±0.008	1.9±0.2
P	0.26 Dia.	6.5 Dia.
R	M6 Metric	M6
U	0.62	15.7
V	0.71	18.0

Housing Types (J.S.T. MFG. CO. LTD)
S = VHR-2N
T = VHR-5N

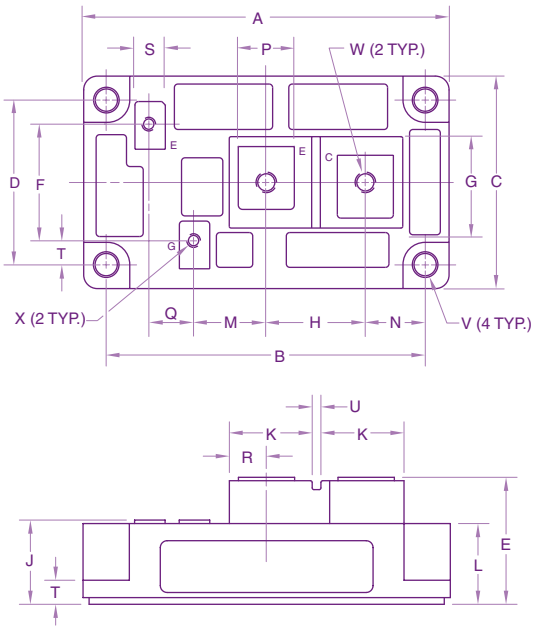
27 CM400DU-24NFH, CM600DU-12NFH, CM600DU-24NFH



Dim.	Inches	Millimeters
A	4.33	110.0
B	3.15	80.0
C	1.14+0.04/-0.02	29.0+1.0/-0.5
D	3.66±0.01	93.0±0.25
E	2.44±0.01	62.0±0.25
F	0.83	21.0
G	0.16	4.0
H	0.24	6.0
J	0.59	15.0
K	0.55	14.0
M	0.33	8.5
N	0.10	2.5
P	0.85	21.5

Dim.	Inches	Millimeters
Q	0.98	25.0
R	0.86	21.75
S	M6 Metric	M6
T	0.26 Dia.	6.5 Dia.
V	0.02	0.5
W	0.73	18.5
X	0.72	18.25
Y	0.32	8.25
Z	0.71	18.0
AA	0.28	7.0
AB	0.16	4.0
AC	0.110	2.8
AD	0.30	7.5

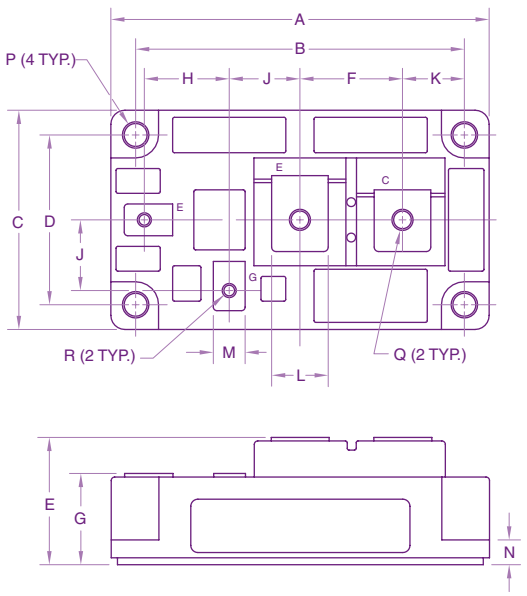
28 CM300HA-28H



Dim.	Inches	Millimeters
A	4.21	107.0
B	3.661±0.01	93.0±0.25
C	2.44	62.0
D	1.89±0.01	48.0±0.25
E	1.42 Max.	36.0 Max.
F	1.34	34.0
G	1.18	30.0
H	1.14	29.0
J	0.98 Max.	25.0 Max.
K	0.94	24.0
L	0.93	23. 5

Dim.	Inches	Millimeters
M	0.83	21.0
N	0.69	17.5
P	0.63	16.0
Q	0.51	13.0
R	0.43	11.0
S	0.35	9.0
T	0.28	7.0
U	0.12	3.0
V	0.26 Dia.	6.5 Dia.
W	M6 Metric	M6
X	M4 Metric	M4

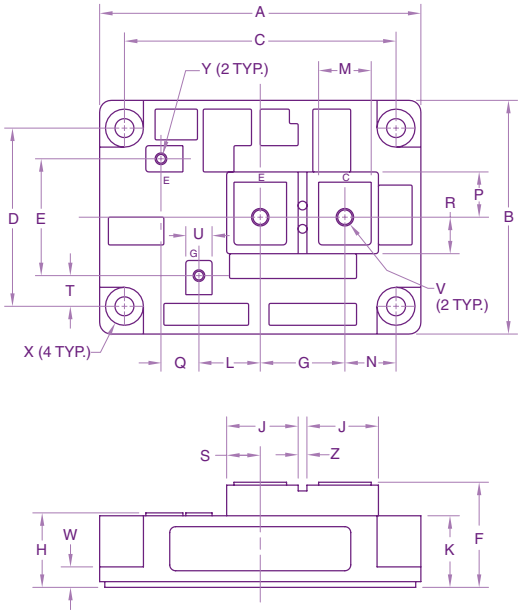
29 CM400HA-28H



Dim.	Inches	Millimeters
A	4.21	107.0
B	3.661±0.01	93.0±0.25
C	2.44	62.0
D	1.89±0.01	48.0±0.25
E	1.42+0.04/-0.02	36.0+1.0/-0.5
F	1.14	29.0
G	1.02+0.04/-0.2	25.8+1.0/-0.5
H	0.94	24.0

Dim.	Inches	Millimeters
J	0.79	20.0
K	0.69	17.5
L	0.63	16.0
M	0.35	9.0
N	0.28	7.0
P	0.26 Dia.	6.5 Dia.
Q	M6 Metric	M6
R	M4 Metric	M4

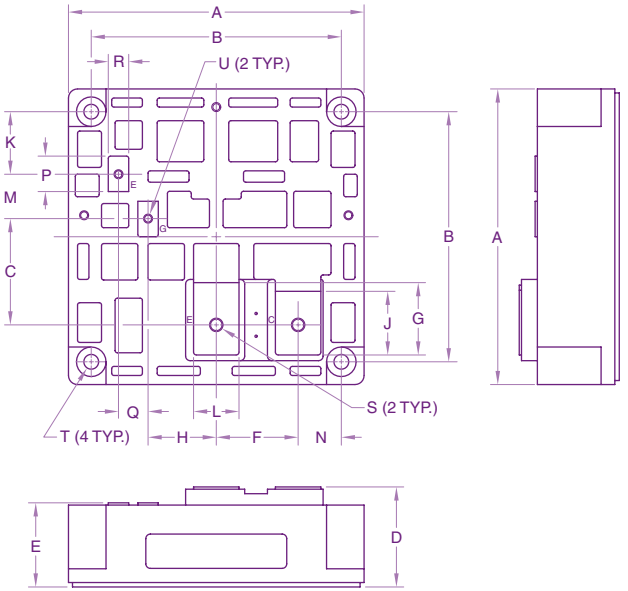
30 CM600HA-28H , CM600HB-24A



Dim.	Inches	Millimeters
A	4.33	110.0
B	3.15	80.0
C	3.66±0.01	93.0±0.25
D	2.44±0.01	62.0±0.25
E	1.57	40.0
F	1.42 Max.	36.0 Max.
G	1.14	29.0
H	1.00 Max.	25.5 Max.
J	0.94	24.5
K	0.94	24.5
L	0.83	21.0
M	0.71	18.0

Dim.	Inches	Millimeters
N	0.69	17.5
P	0.61	15.5
Q	0.51	13.0
R	0.49	12.5
S	0.45	11.5
T	0.43	11.0
U	0.35	9.0
V	M8 Metric	M8
W	0.28	7.0
X	0.256 Dia.	6.50 Dia.
Y	M4 Metric	M4
Z	0.12	3.04

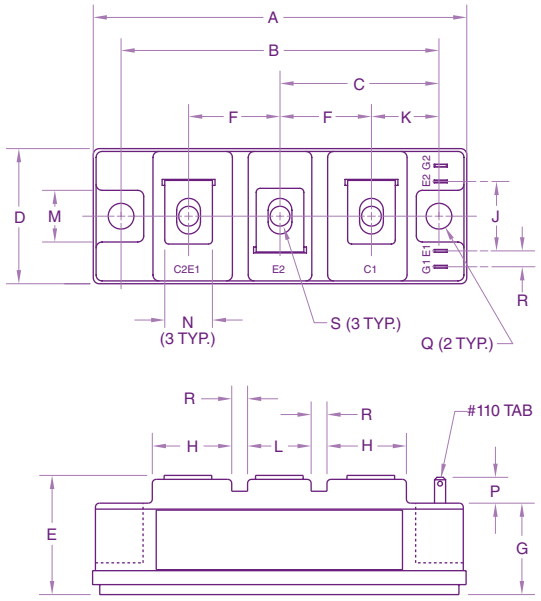
31 CM800HA-28H, CM1000HA-28H



Dim.	Inches	Millimeters
A	5.12	130.0
B	4.33±0.01	110.0±0.25
C	1.840	46.75
D	1.73±0.04/0.02	44.0±1.0/0.5
E	1.46±0.04/0.02	37.0±1.0/0.5
F	1.42	36.0
G	1.25	31.8
H	1.18	30.0
J	1.10	28.0
K	1.08	27.5

Dim.	Inches	Millimeters
L	0.79	20.0
M	0.77	19.5
N	0.75	19.0
P	0.61	15.6
Q	0.51	13.0
R	0.35	9.0
S	M8 Metric	M8
T	0.26 Dia.	6.5 Dia.
U	M4 Metric	M4

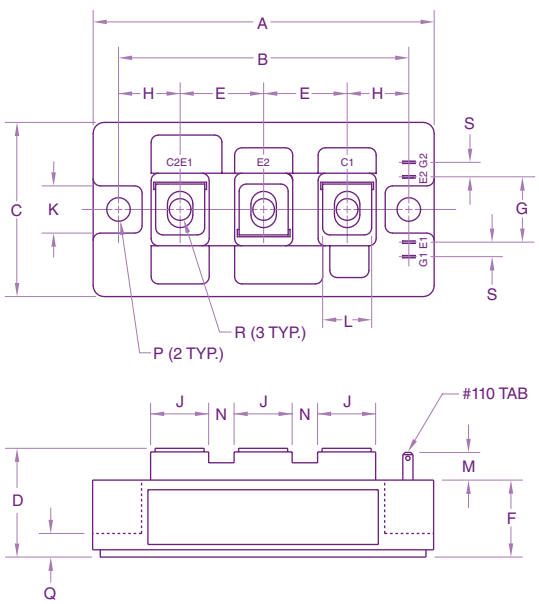
32 CM50DY-28H, CM75DY-28H



Dim.	Inches	Millimeters
A	3.70	94.0
B	3.150±0.01	80.0±0.25
C	1.57	40.0
D	1.34	34.0
E	1.22 Max.	31.0 Max.
F	0.90	23.0
G	0.85	21.5
H	0.79	20.0
J	0.71	18.0

Dim.	Inches	Millimeters
K	0.67	17.0
L	0.63	16.0
M	0.51	13.0
N	0.47	12.0
P	0.28	7.0
Q	0.26 Dia.	6.5 Dia.
R	0.16	4.0
S	M5 Metric	M5

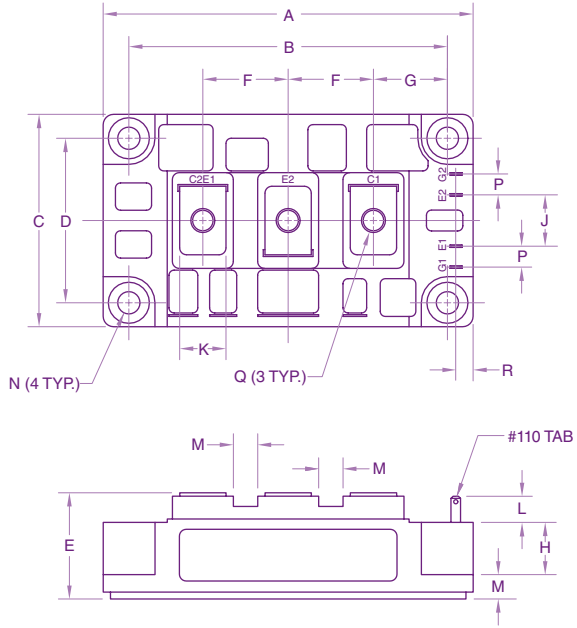
33 CM100DY-28H, CM150DY-28H



Dim.	Inches	Millimeters
A	3.70	94.0
B	3.150±0.01	80.0±0.25
C	1.89	48.0
D	1.18 Max.	30.0 Max.
E	0.90	23.0
F	0.83	21.2
G	0.71	18.0
H	0.67	17.0
J	0.63	16.0

Dim.	Inches	Millimeters
K	0.51	13.0
L	0.47	12.0
M	0.30	7.5
N	0.28	7.0
P	0.26 Dia.	6.5 Dia.
Q	0.26	6.5
R	M5 Metric	M5
S	0.16	4.0

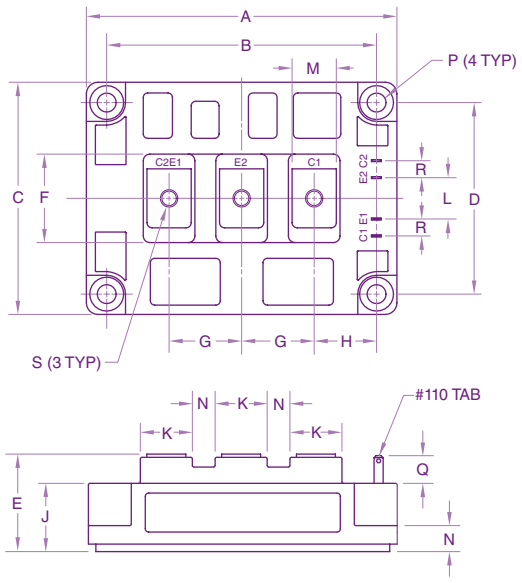
34 CM200DY-28H



Dim.	Inches	Millimeters
A	4.25	108.0
B	3.66±0.01	93.0±0.25
C	2.44	62.0
D	1.89±0.01	48.0±0.25
E	1.22 Max.	31.0 Max.
F	0.98	25.0
G	0.85	21.5
H	0.60	15.2

Dim.	Inches	Millimeters
J	0.59	15.0
K	0.55	14.0
L	0.30	8.5
M	0.28	7.0
N	0.26 Dia.	6.5 Dia.
P	0.24	6.0
Q	M6 Metric	M6
R	0.20	5.0

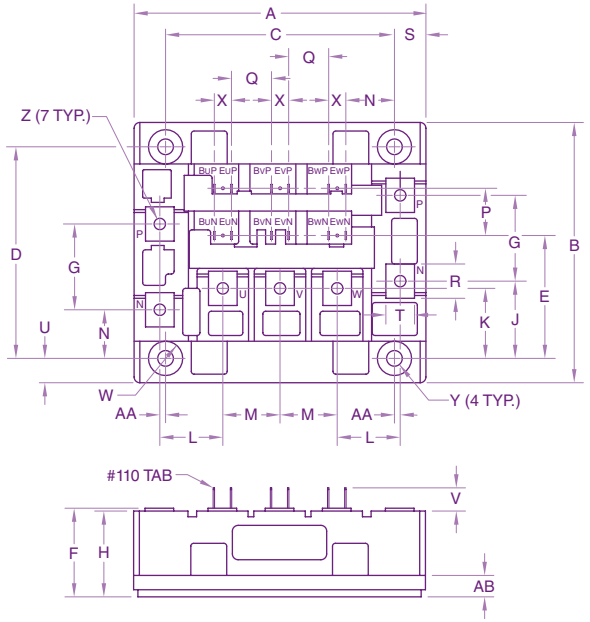
35 CM300DY-28H



Dim.	Inches	Millimeters
A	4.33	110.0
B	3.661±0.01	93.0±0.25
C	3.15	80.0
D	2.441±0.01	62.0±0.25
E	1.18 Max.	30.0 Max.
F	1.18	30.0
G	0.98	25.0
H	0.85	21.5
J	0.83	21.2

Dim.	Inches	Millimeters
K	0.71	18.0
L	0.59	15.0
M	0.55	14.0
N	0.28	7.0
P	0.26 Dia.	6.5 Dia.
Q	0.33	8.5
R	0.24	6.0
S	M6 Metric	M6

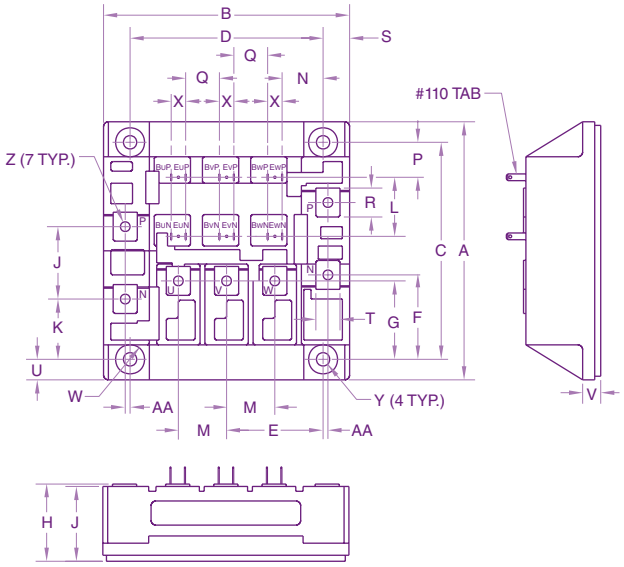
36 CM50TF-28H



Dim.	Inches	Millimeters
A	4.02±0.02	102±0.5
B	3.58±0.02	91.0±0.5
C	3.15±0.01	80.0±0.25
D	2.913±0.01	74.0±0.25
E	1.69	43.0
F	1.18+0.06/-0.02	30.0+1.5/-0.5
G	1.18	30.0
H	1.16	29.5
J	1.06	27.0
K	0.96	24.5
L	0.87	22.0
M	0.79	20.0
N	0.67	17.0

Dim.	Inches	Millimeters
P	0.65	16.5
Q	0.55	14.0
R	0.47	12.0
S	0.43	11.0
T	0.39	10.0
U	0.33	8.5
V	0.32	8.1
W	0.24 Rad.	6.0 Rad.
X	0.24	6.0
Y	0.22 Dia.	5.5 Dia.
Z	M4 Metric	M4
AA	0.08	2.0
AB	0.28	7.0

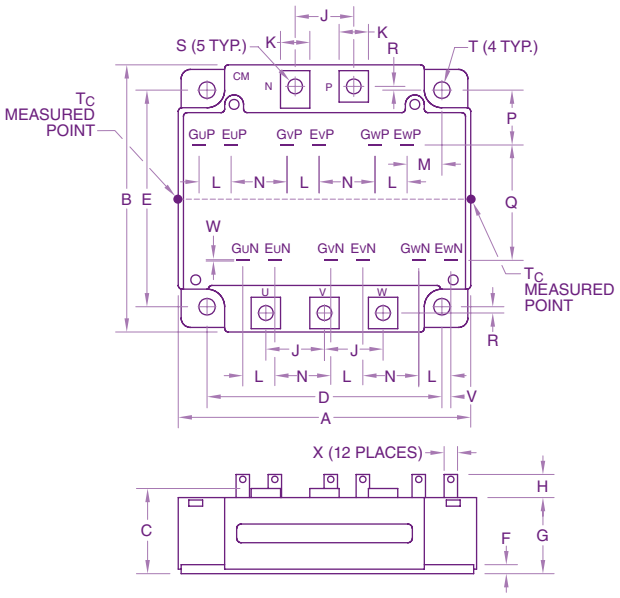
37 CM75TF-28H, CM100TF-28H



Dim.	Inches	Millimeters
A	4.21	107.0
B	4.02	102.0
C	3.543±0.01	90.0±0.25
D	3.15±0.01	80.0±0.25
E	1.57	40.0
F	1.38	35.0
G	1.28	32.5
H	1.26 Max.	32.0 Max
J	1.18	30.0
K	0.98	25.0
L	0.96	24.5
M	0.79	20.0
N	0.67	17.0

Dim.	Inches	Millimeters
P	0.57	14.5
Q	0.55	14.0
R	0.47	12.0
S	0.43	11.0
T	0.39	10.0
U	0.33	8.5
V	0.30	7.5
W	0.24 Rad.	6.0 Rad.
X	0.24	6.0
Y	0.22	5.5
Z	M5 Metric	M5
AA	0.08	2.0

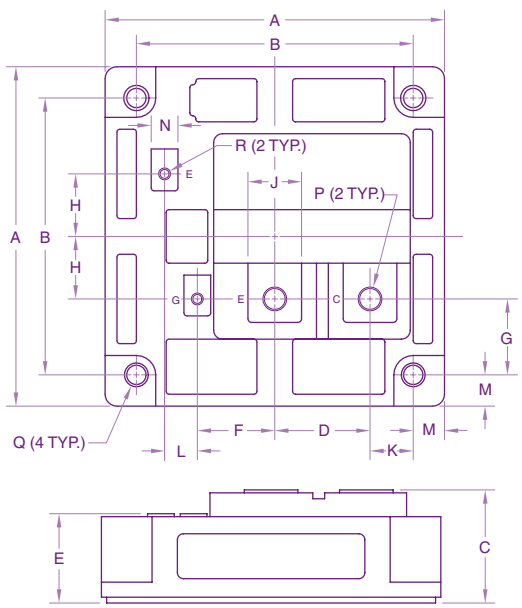
38 CM50TU-34KA, CM75TU-34KA



Dim.	Inches	Millimeters
A	4.21	107.0
B	4.02	102.0
C	1.14 +0.04/-0.02	29.0 +1.0/-0/5
D	3.54±0.01	90.0±0.25
E	3.15±0.01	80.0±0.25
F	0.16	4.0
G	1.02	26.0
H	0.31	8.1
J	0.91	23.0
K	0.47	12.0
L	0.43	11.0

Dim.	Inches	Millimeters
M	0.57	14.4
N	0.85	21.0
P	0.67	17.0
Q	1.91	48.5
R	0.15	3.75
S	M5	M5
T	0.26 Dia.	6.5 Dia.
V	0.03	0.8
W	0.02	0.5
X	0.110	2.8

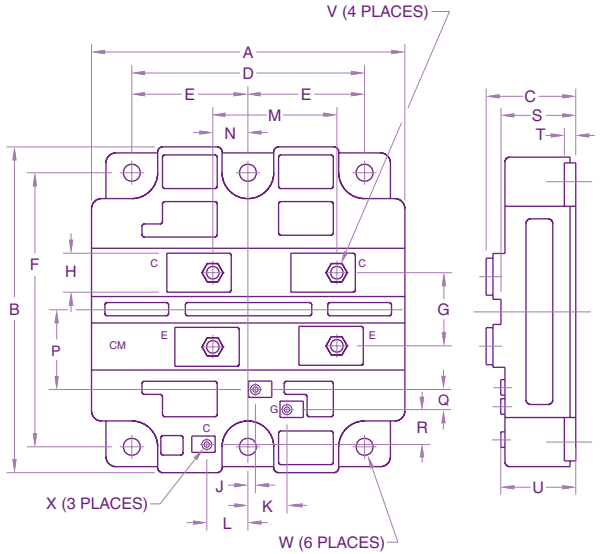
39 CM400HA-34H



Dim.	Inches	Millimeters
A	4.49	114.0
B	3.66±0.01	93.0±0.25
C	1.50+0.04/-0.02	38.0+1.0/-0.5
D	1.26	32.0
E	1.18+0.04/-0.02	30.0+1.0/-0.5
F	1.02	26.0
G	1.0	25.5
H	0.83	21.0

Dim.	Inches	Millimeters
J	0.71	18.0
K	0.57	14.5
L	0.43	11.0
M	0.41	10.5
N	0.35	9.0
P	M8 Metric	M8
Q	0.26 Dia.	6.5 Dia.
R	M4 Metric	M4

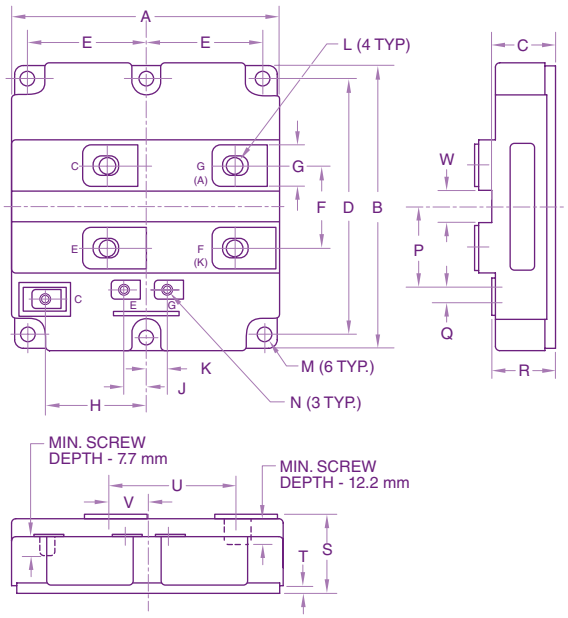
40 CM800HA-34H, CM1200HA-34H



Dim.	Inches	Millimeters
A	5.12	130.0
B	5.51	140.0
C	1.50+0.04/-0	38.0+1.0/-0
D	4.49	114.0
E	2.24±0.01	57.0±0.25
F	4.88±0.01	124.0±0.25
G	1.18	30.0
H	0.79	20.0
J	0.10	2.5
K	0.73	18.5
L	0.65	16.5

Dim.	Inches	Millimeters
M	2.42	61.5
N	0.71	18.0
P	1.38	35.0
Q	0.43	11.0
R	0.57	14.5
S	1.24	31.5
T	0.20	5.0
U	1.10+0.04/-0	28.0+1.0/-0
V	M8 Metric	M8
W	0.28 Dia.	7.0 Dia.
X	M4 Metric	M4

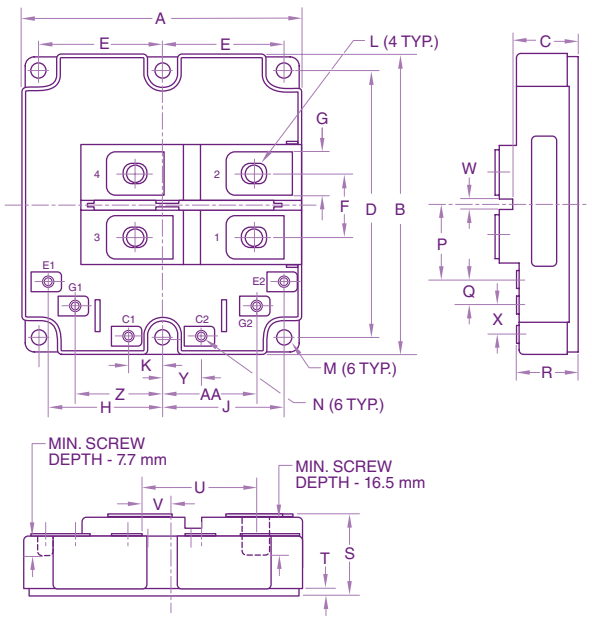
41 CM1200E4C-34N, CM1800HC-34N, CM2400HC-34N



Dim.	Inches	Millimeters
A	5.12±0.02	130.0±0.5
B	5.51±0.02	140.0±0.5
C	1.16±0.02	29.5±0.5
D	4.88±0.004	124.0±0.1
E	2.24±0.004	57.0±0.1
F	1.57±0.008	40.0±0.2
G	0.79±0.004	20.0±0.1
H	1.92±0.008	48.8±0.2
J	0.42±0.008	10.65±0.2
K	0.41±0.008	10.35±0.2
L	M8 Metric	M8

Dim.	Inches	Millimeters
M	0.28 Dia.	7.0 Dia.
N	M4 Metric	M4
P	1.57±0.008	40.0±0.2
Q	0.25±0.008	5.2±0.2
R	0.10+0.039/-0.0	28.0+1.0/-0.0
S	1.45+0.039/-0.0	38.0+1.0/-0.0
T	0.20±0.008	5.0±0.2
U	2.42±0.012	61.5±0.3
V	0.71±0.008	18.0±0.2
W	0.59±0.008	15.0±0.2

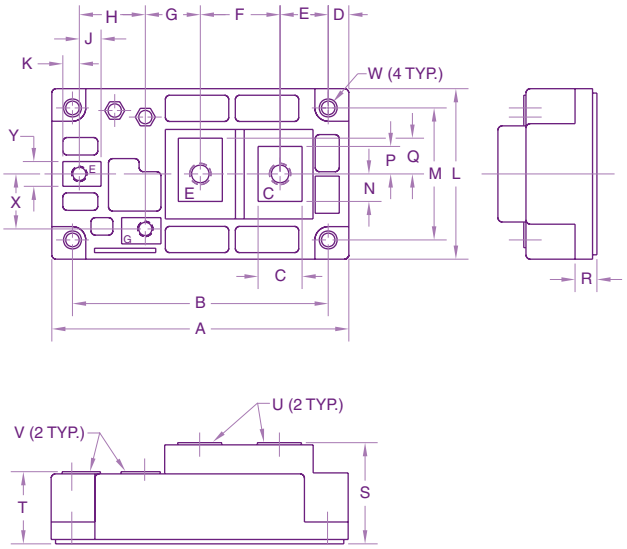
42 CM1200DC-34N



Dim.	Inches	Millimeters
A	5.12±0.02	130.0±0.5
B	5.51±0.02	140.0±0.5
C	1.16±0.02	29.5±0.5
D	4.88±0.009	124.0±0.25
E	2.24±0.009	57.0±0.25
F	1.18±0.008	30.0±0.2
G	0.79±0.004	20.0±0.1
H	2.09±0.008	53.0±0.2
J	2.24±0.008	57.0±0.2
K	0.63±0.008	16.0±0.2
L	M8 Metric	M8
M	0.28 Dia.	7.0 Dia.
N	M4 Metric	M4

Dim.	Inches	Millimeters
P	1.38±0.008	35.0±0.2
Q	0.2±0.008	5.0±0.2
R	0.10+0.039/-0.0	28.0+1.0/-0.0
S	1.45+0.039/-0.0	38.0+1.0/-0.0
T	0.20±0.008	5.0±0.2
U	2.17±0.012	55.2±0.3
V	0.466±0.008	11.85±0.2
W	0.2±0.008	5.0±0.2
X	0.55±0.008	14.0±0.2
Y	0.71±0.008	18.0±0.2
Z	1.57±0.008	40.0±0.2
AA	1.73±0.008	44.0±0.2

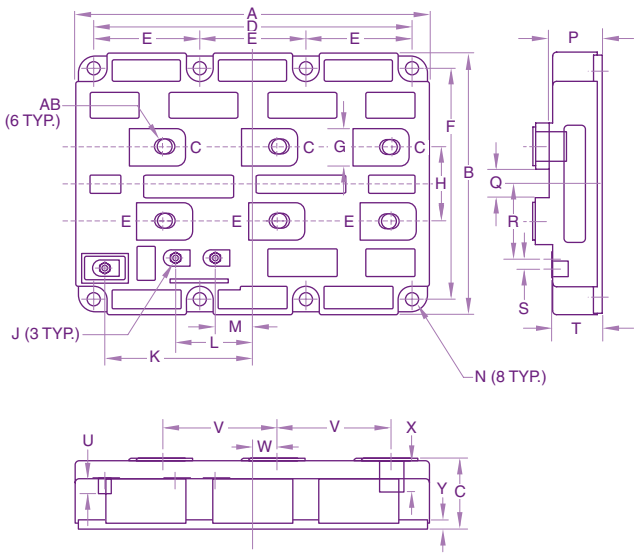
43 CM400HA-24A, CM600HA-24A, CM500HA-34A



Dim.	Inches	Millimeters
A	4.25	108.0
B	3.66	93.0
C	0.63	16.0
D	0.30	7.5
E	0.69	17.5
F	1.14	29.0
G	0.79	20.0
H	0.94	24.0
J	0.31	7.9
K	0.24	62.0
L	2.44	62.0
M	1.89	48.0

Dim.	Inches	Millimeters
N	0.39	10.0
P	0.39	10.0
Q	0.51	13.0
R	0.33	8.5
S	1.42	36.0
T	1.02	25.8
U	M6 Metric	M6
V	M4 Metric	M4
W	0.256 Dia.	6.5 Dia.
X	0.79	20.0
Y	0.35	9.0

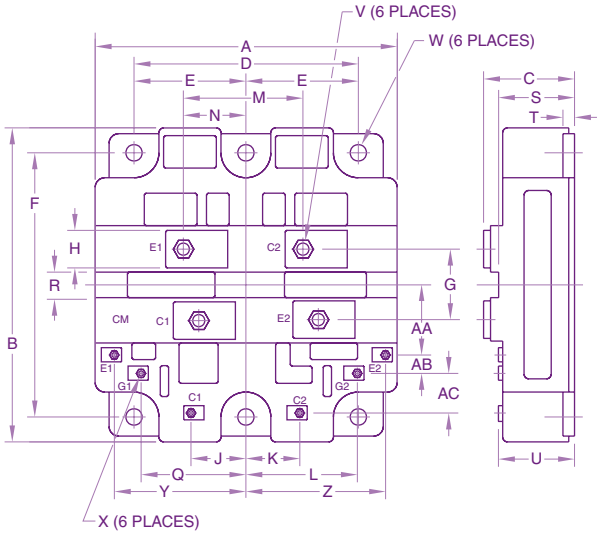
44 CM800E2C-66H, CM900HB-90H, CM900HC-90H, CM1200HC-50H, CM1200HC-66H, CM1500HC-66R, CM1800HCB-34N, CM2400HCB-34N



Dim.	Inches	Millimeters
A	7.5±0.02	190.0±0.5
B	5.51±0.02	140.0±0.5
C	1.50+0.04/-0	38.0+1.0/-0
D	6.73	171.0
E	2.24±0.004	57.0±0.1
F	4.88±0.004	124.0±0.1
G	0.79+0.039/-0.008	20.0+1.0/-0.2
H	1.57±0.008	40.0±0.2
J	M4 Metric	M4
K	3.13±0.012	79.4±0.3
L	1.62±0.012	41.25±0.3
M	0.80±0.008	20.25±0.2

Dim.	Inches	Millimeters
N	0.27 Dia.	7.0 Dia.
P	1.16±0.02	29.5±0.5
Q	0.59±0.008	15.0±0.2
R	1.57±0.012	40.0±0.3
S	0.20±0.008	5.2±0.2
T	1.10+0.04/-0	28.0+1.0/-0.0
U	0.30 Min.	7.7 Min.
V	2.42±0.012	61.5±0.3
W	0.51±0.008	13.0±0.2
X	0.65 Min.	16.5 Min.
Y	0.20±0.006	5.0±0.15

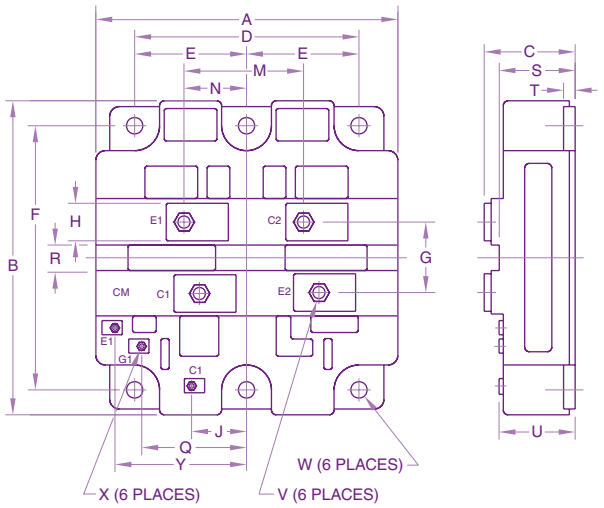
45 CM600DY-34H, CM800DZ-34H



Dim.	Inches	Millimeters
A	5.12	130.0
B	5.51	140.0
C	1.50+0.08/-0	38.0+2.0/-0
D	4.49	114.0
E	2.24±0.01	57.0±0.25
F	4.88±0.01	124.0±0.25
G	1.18	30.0
H	0.79	20.0
J	0.63	16.0
K	0.71	18.0
L	1.73	44.0
M	2.17	55.2
N	0.47	11.85

Dim.	Inches	Millimeters
Q	1.58	40.0
R	0.20	5.0
S	1.24	31.5
T	0.20	5.0
U	1.10+0.08/-0	28.0+2.0/-0
V	M8 Metric	M8
W	0.28 Dia.	7.0 Dia.
X	M4 Metric	M4
Y	2.09	53.0
Z	2.24	57.0
AA	1.38	35.0
AB	0.45	11.5
AC	0.55	14.0

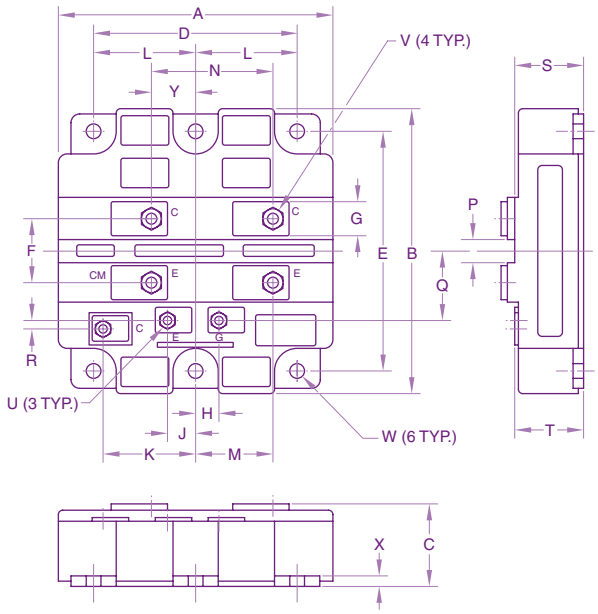
46 CM600E2Y-34H



Dim.	Inches	Millimeters
A	5.12	130.0
B	5.51	140.0
C	1.50+0.04/-0	38.0+1.0/-0
D	4.49	114.0
E	2.24±0.01	57.0±0.25
F	4.88±0.01	124.0±0.25
G	1.18	30.0
H	0.79	20.0
J	0.63	16.0
M	2.17	55.2
N	0.47	11.85
Q	1.58	40.0

Dim.	Inches	Millimeters
R	0.20	5.0
S	1.24	31.5
T	0.20	5.0
U	1.10+0.04/-0	28.0+1.0/-0
V	M8 Metric	M8
W	0.28 Dia.	7.0 Dia.
X	M4 Metric	M4
Y	2.09	53.0
AA	1.38	35.0
AB	0.45	11.5
AC	0.55	14.0

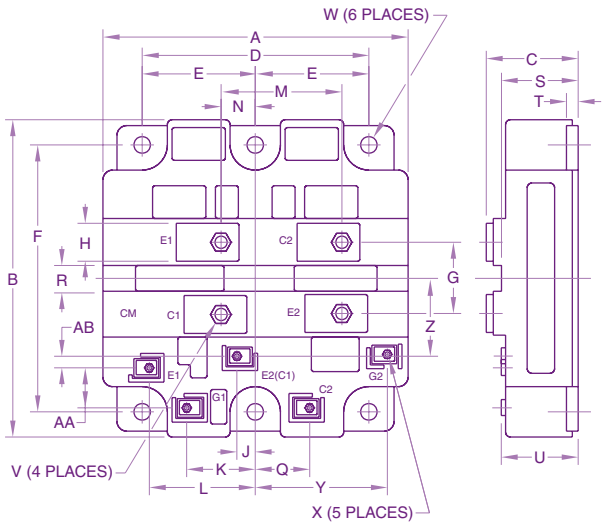
47 CM400HB-90H, CM600HB-90H, CM800HB-50H, CM800HB-66H



Dim.	Inches	Millimeters
A	5.12	130.0
B	5.51	140.0
C	1.50	38.0
D	4.48	114.0
E	4.88±0.01	124.0±0.25
F	1.57	40.0
G	0.79	20.0
H	0.41	10.35
J	0.42	10.65
K	1.92	48.8
L	2.24±0.01	57.0±0.25
M	1.71	43.5

Dim.	Inches	Millimeters
N	2.42	61.5
P	0.59	15.0
Q	1.57	40.0
R	0.20	5.2
S	1.16	29.5
T	1.10	28.0
U	M4 Metric	M4
V	M8 Metric	M8
W	0.28 Dia.	7.0 Dia.
X	0.20	5.0
Y	0.71	18.0

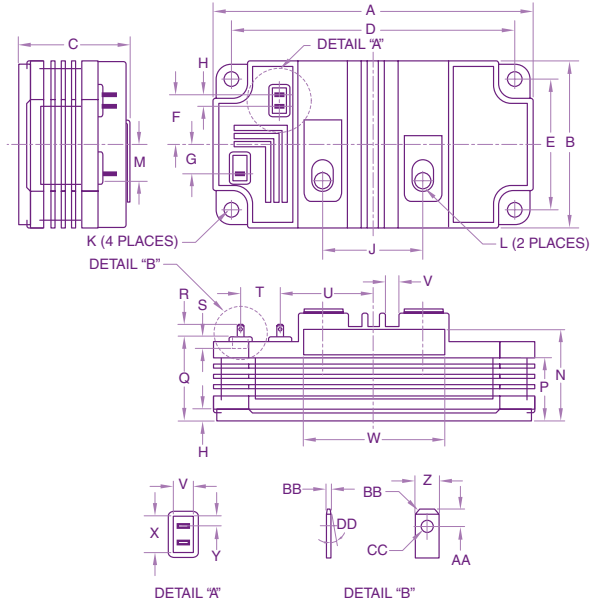
48 CM400DY-50H, CM400DY-66H



Dim.	Inches	Millimeters
A	5.12	130.0
B	5.51	140.0
C	1.50+0.08/-0	38.0+2.0/-0
D	4.49	114.0
E	2.24±0.01	57.0±0.25
F	4.88±0.01	124.0±0.25
G	1.58	40.0
H	0.79	20.0
J	0.28	7.2
K	1.43	36.3
L	1.92	48.8
M	2.42	61.5
N	0.71	18.0

Dim.	Inches	Millimeters
Q	0.97	24.5
R	0.59	15.0
S	1.18	30.0
T	0.20	5.0
U	1.10+0.08/-0	28.0+2.0/-0
V	M8 Metric	M8
W	0.28 Dia.	7.0 Dia.
X	M4 Metric	M4
Y	2.11	53.6
Z	1.56	39.5
AA	0.59	15.0
AB	0.22	5.7

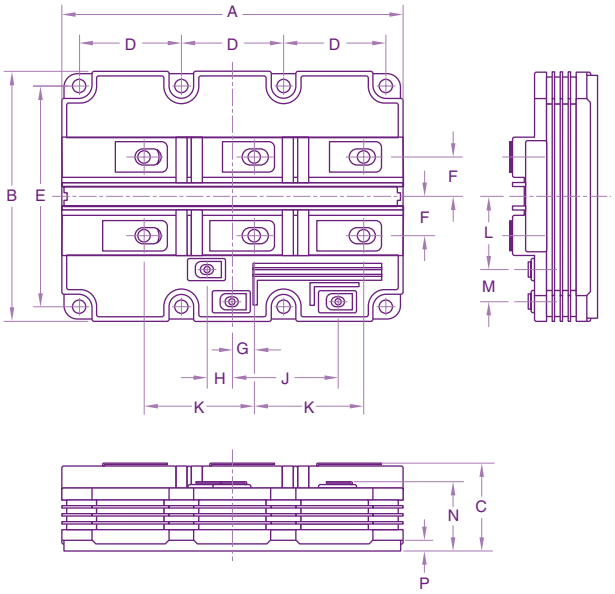
49 CM400HG-66H, CM200HG-130H



Dim.	Inches	Millimeters
A	5.51	140.0
B	2.87	73.0
C	1.89+0.04/-0.0	48.0+1.0/-0.0
D	4.88	124.0
E	2.24	57.0
F	0.85	21.6
G	0.51	12.9
H	0.20	5.0
J	1.73	44.0
K	M6 Metric	M6
L	M8 Metric	M8
M	0.64	16.2
N	1.59	40.4
P	1.10	28.0

Dim.	Inches	Millimeters
R	0.22	5.5
S	0.16	4.0
T	0.68	17.4
U	1.61	41.0
V	0.24	6.0
W	2.44	62.0
X	0.47	12.0
Y	0.14	3.5
Z	0.11	2.8
AA	0.06	1.6
BB	0.02	0.5
CC	0.05 Dia.	1.2 Dia.
DD	10°	10°

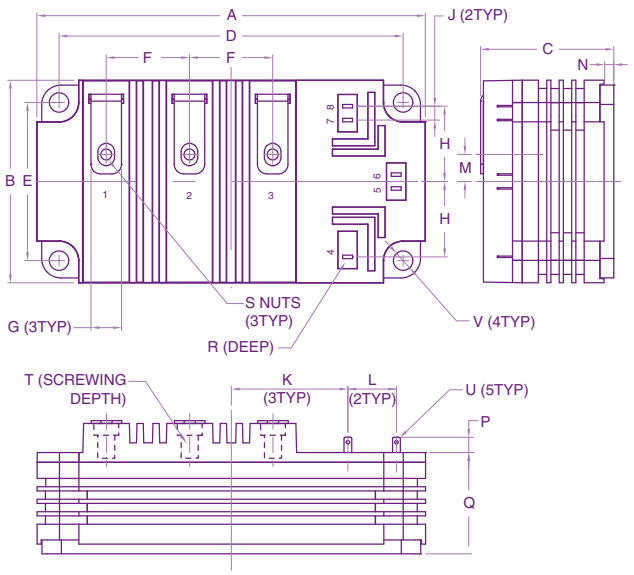
50 CM600HG-130H, CM750HG-130R, CM1200HG-66H, CM1200HG-90R, CM1500HG-66R



Dim.	Inches	Millimeters
A	7.48	190.0
B	5.51	140.0
C	1.89	48.0
D	2.24	57.0
E	4.88±0.01	124.0±0.25
F	0.87	22.0
G	0.47	12.0

Dim.	Inches	Millimeters
H	0.55	14.0
J	2.33	59.2
K	2.41	61.2
L	1.61	41.0
M	0.71	18.0
N	1.50	38.0
P	0.20	5.0

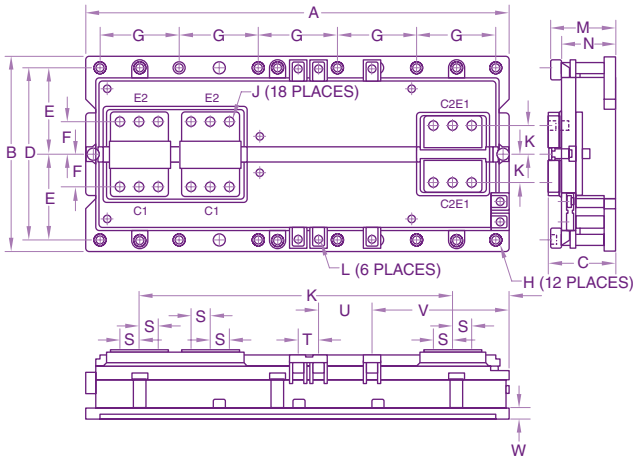
51 QID4515001



Dim.	Inches	Millimeters
A	5.51	140.0
B	2.87	73.0
C	1.89	48.0
D	4.88±0.01	126.0±0.25
E	2.24±0.01	57.0±0.25
F	1.18	30.0
G	0.43	11.0
H	1.07	27.15
J	0.20	5.0
K	1.65	42.0

Dim.	Inches	Millimeters
L	0.69±0.01	17.5±0.25
M	0.38	9.75
N	0.20	5.0
P	0.22	5.5
Q	1.44	36.5
R	0.16	4.0
S	M6 Metric	M6
T	0.63 Min.	1.6 Min.
U	0.11 x 0.02	2.8 x 0.5
V	0.28 Dia.	7.0 Dia.

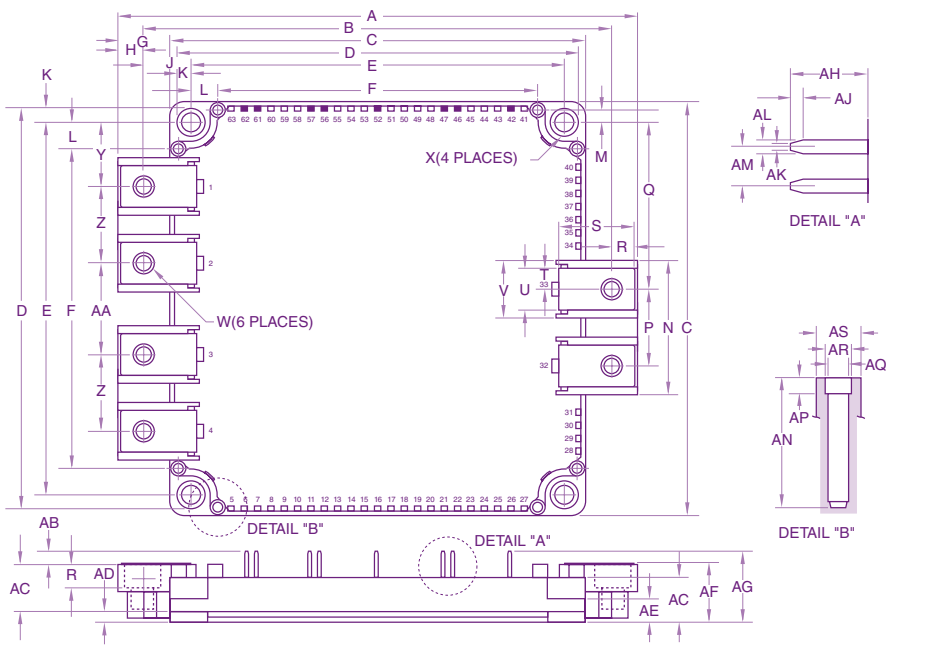
52 CM1100DY-34S, CM1500DY-24S, CM1800DY-34S, CM2500DY-24S



Dim.	Inches	Millimeters
A	12.2	310.0
B	5.6	142.0
C	2.0	51.0
D	4.96	126.0
E	2.46	62.5
F	0.94	24.0
G	2.28	58.0
H	0.22 Dia.	5.5 Dia.
J	M6 Metric	M6
K	0.75	19.0
L	M4 Metric	M4

Dim.	Inches	Millimeters
M	1.89	48.0
N	1.57	40.0
P	2.05	52.0
Q	7.0	178.0
R	1.63	41.5
S	0.55	14.0
T	0.59	15.0
U	1.53	39.0
V	3.97	101.0
W	0.23	6.0

53 CM600DXL-24S, CM1000DXL-24S



Dim.	Inches	Millimeters
A	5.98	152.0
B	5.39	137.0
C	4.79	121.7
D	4.61	117.2
E	4.33±0.02	110.0±0.5
F	3.72	94.5
G	0.6	15.14
H	0.3	7.5
J	0.53	13.5
K	0.14	3.6
L	0.3	7.75
M	0.17	4.5
N	1.53	39.0
P	0.86	22.0

Dim.	Inches	Millimeters
Q	1.95	49.72
R	0.25	6.5
S	0.83	21.14
T	0.23	6.0
U	0.47	12.0
V	0.67	17.0
W	M5 Metric	M5
X	0.22	5.5 Dia.
Y	0.75	19.24
Z	0.86	22.0
AA	1.08	27.53
AB	0.14	3.5
AC	0.51	13.0
AD	0.19	3.0

Dim.	Inches	Millimeters
AE	0.28	7.0
AF	0.67±0.04	17.0±1.0
AG	0.81	20.5
AH	0.29	7.4
AJ	0.05	1.21
AK	0.02	0.65
AL	0.04	1.15
AM	0.15	3.81
AN	0.5	12.5
AP	0.059	1.5
AQ	0.16 Dia.	4.3 Dia.
AR	0.09 Dia.	2.5 Dia.
AS	0.08 Dia.	2.1 Dia.