SELECTION GUIDE

POWER MANAGEMENT PRODUCTS

2013

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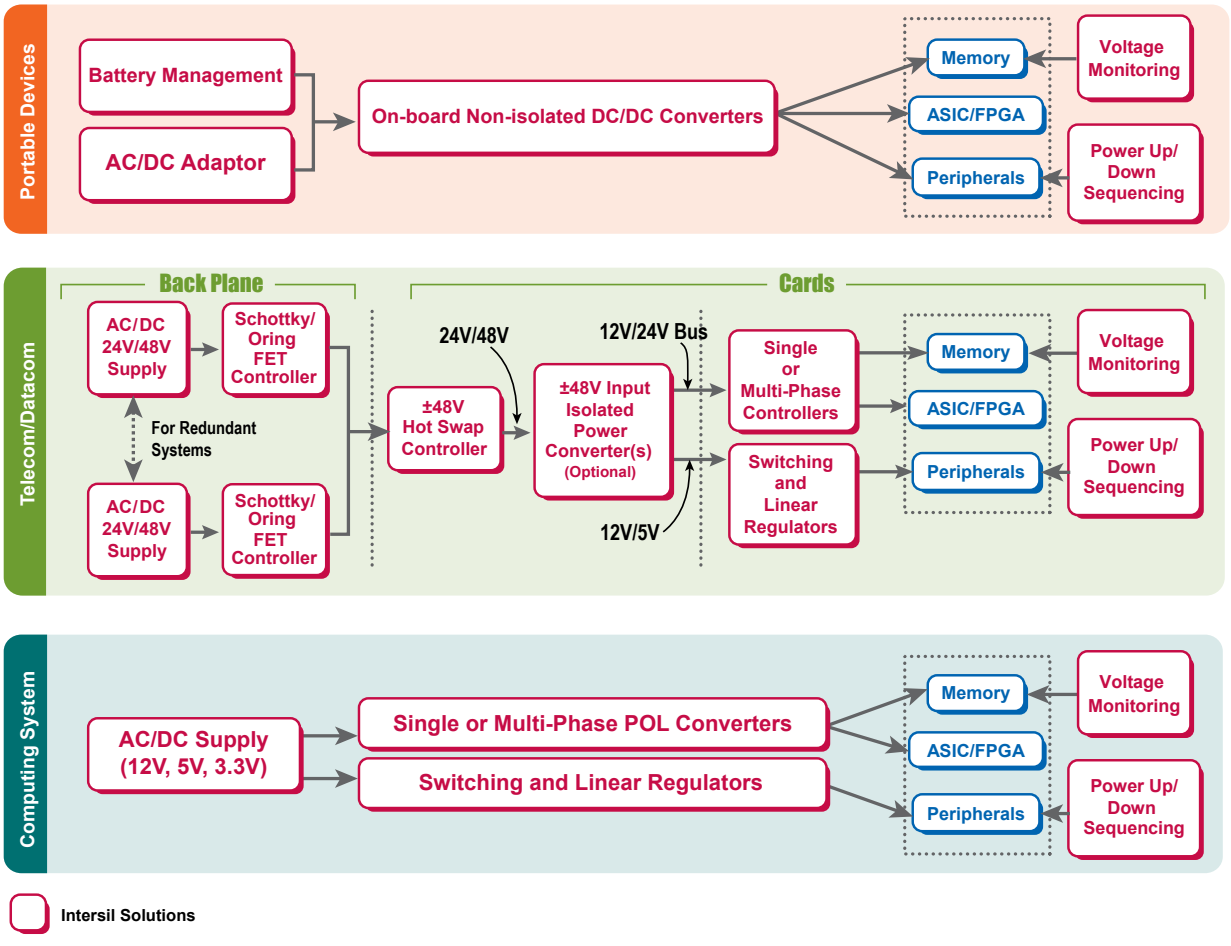
Intersil Power Management Solutions

Complete Power Delivery Solutions

Intersil Corporation offers a complete portfolio of high performance power solutions for DSP, FPGA, CPLD, any processor, DDR memory and other loads in your system. These products, which range from standard linear regulators to highly flexible PWM controller & driver options to plug-in fully integrated power modules, are tailored to meet every designer's challenges. Intersil also makes designing with power products EASY by providing cutting edge support tools like iSim (an online simulation tool), thorough application notes, a broad selection of evaluation boards, comprehensive technical documentation, and the industry's BEST Field Application Engineers to support you every step of the way.

This selection guide contains a broad portfolio of power conversion and power supply control products for use in both isolated and non-isolated applications. Each section features highlight products, graphic representations of portfolios, and parametric tables for easy part selection. Whether you are designing a battery powered portable device or a high power wireless base station, you will find a complete power solution that meets your needs. Intersil is the one-stop shop for all of your power requirements!

Distributed Power Architecture System



Intersil Power Management Product Tree & Table of Contents

Power Conversion

Isolated Power

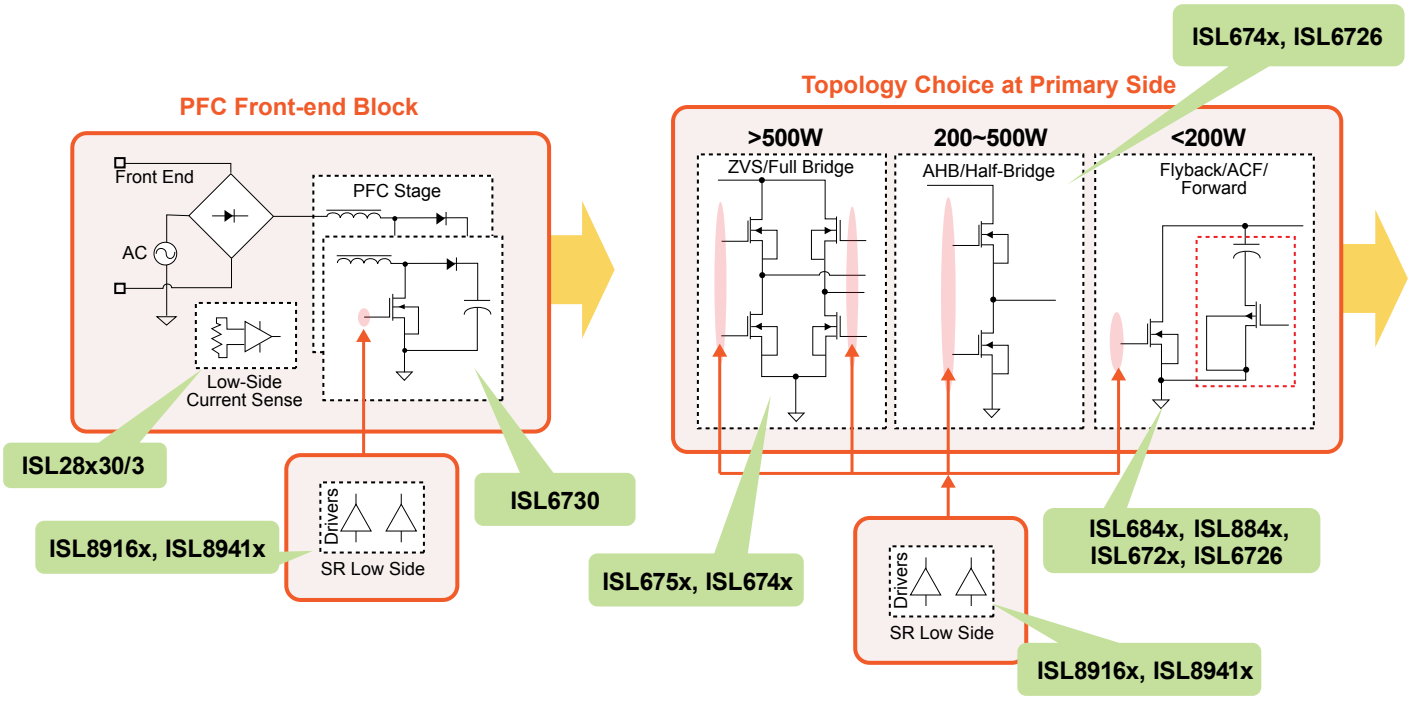
Non-Isolated Power

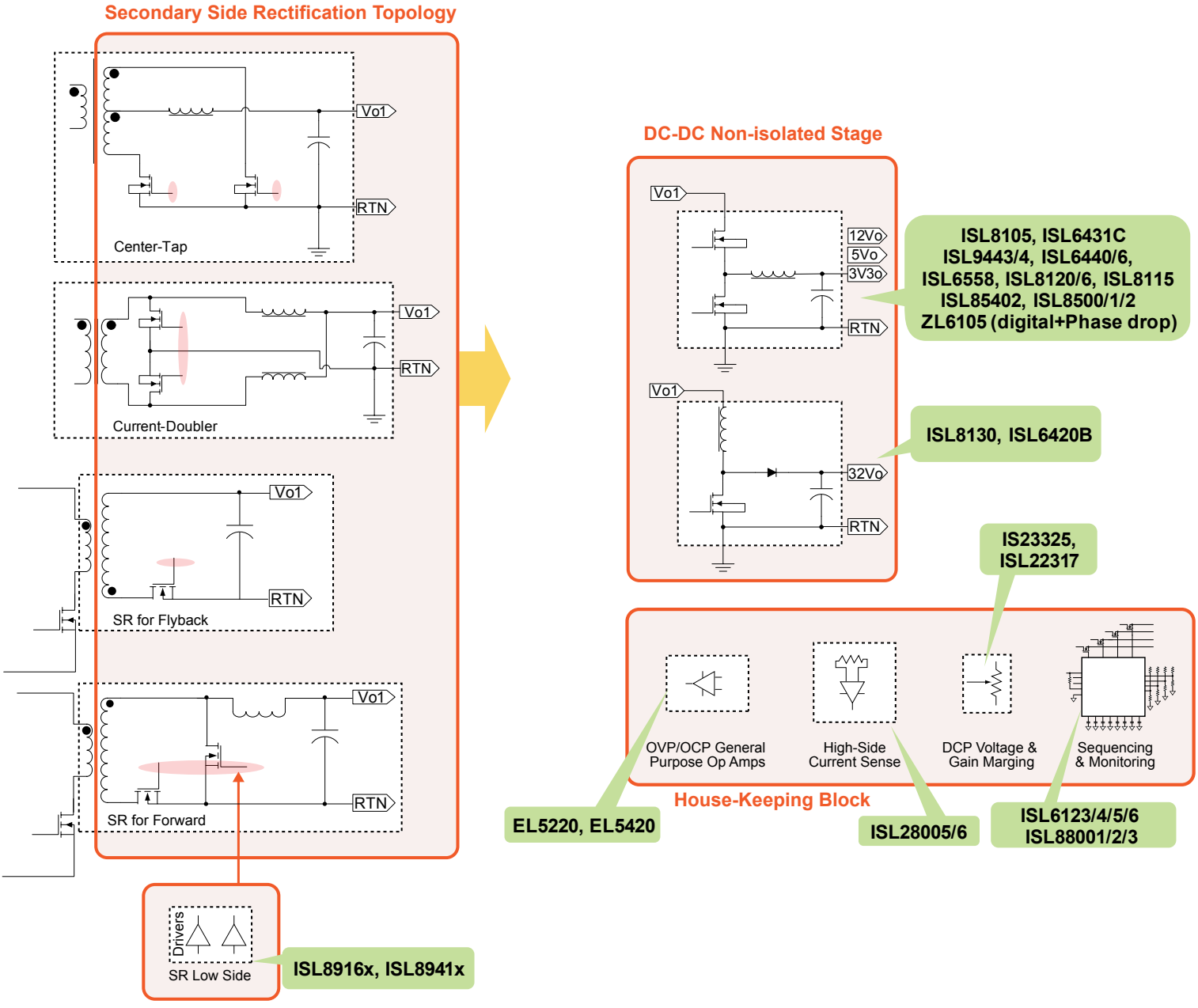
Power Supply Control

Power Supply Signal Flow

A typical power supply consists of many conversion and housekeeping stages before it is usable by the actual load. The required stages and their design complexity varies drastically depending on the input power source and the specific needs of the end applications and the load being powered up.

Intersil Corporation with its years of experience in power management provides a full range of products that enable simple solutions to the increasingly complex power requirements. With its wide range of power portfolio, Intersil Corporation offers solutions for the complete power supply signal chain covering highly integrated isolated and non- isolated power conversion along with battery management solutions. In addition to power conversion, Intersil also provides a wide range of housekeeping functions such as sequencing, monitoring, failure detection and fault protection to improve system reliability and reduce down time.




Secondary Side Rectification Topology
Vo1
RTN
Center-Tap
Vo1
RTN
Current-Doubler
Vo1
RTN
SR for Flyback
Vo1
RTN
SR for Forward
Drivers
SR Low Side
ISL8916x, ISL8941x
DC-DC Non-isolated Stage
Vo1
12Vo
5Vo
3V3o
RTN
ISL8105, ISL6431C
ISL9443/4, ISL6440/6,
ISL6558, ISL8120/6, ISL8115
ISL85402, ISL8500/1/2
ZL6105 (digital+Phase drop)
Vo1
32Vo
RTN
ISL8130, ISL6420B
IS23325,
ISL22317
OVP/OCP General
Purpose Op Amps
High-Side
Current Sense
DCP Voltage &
Gain Marging
Sequencing
& Monitoring
House-Keeping Block
EL5220, EL5420
ISL28005/6
ISL6123/4/5/6
ISL88001/2/3

POWER FACTOR CONTROLLERS

Power Factor Controller

ISL6730

Coming Soon!

Power Factor Correction Controller

The ISL6730 is an active power factor correction (PFC) controller IC that uses a boost topology. The controller is suitable for AC/DC power systems, up to 2kW and over the universal line input.

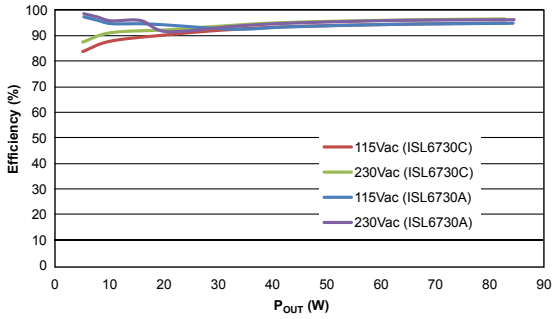
Key Features

- Reduced Component Size Requirements
  - Enables smaller, thinner AC/DC adapters
  - Choke and cap sizes can be reduced by 66%
  - Lower cost of materials
- Excellent Power Factor over Line and Load Regulation
  - Internal current compensation
  - CCM mode with patent pending IP for smaller EMI filter
- Excellent Performance
  - High Power Factor (PF)
  - High Efficiency (>90%)
  - Very Low THD
- Better Light Load Efficiency
  - Automatic pulse skipping
  - Programmable or automatic shutdown
- High Reliable Design
  - Cycle by cycle current Limit
  - Input average power limit
  - OVP and OTP protection
- 10 Ld MSOP with Intelligent Shutdown

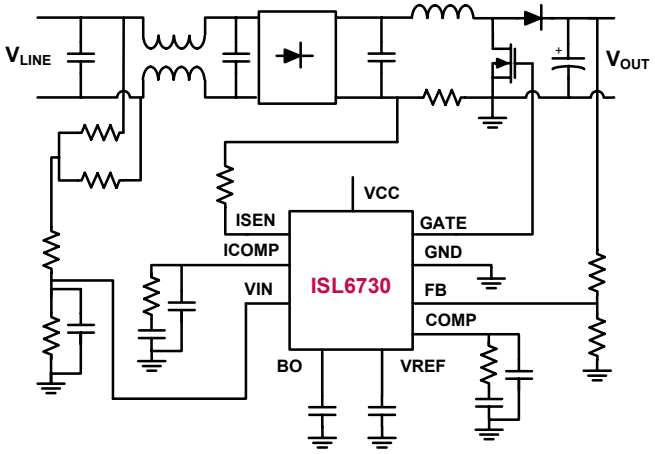
Applications

- Desktop & Server AC/DC Power Supply
- Laptop AC/DC adaptor
- TVs AC/DC power supply
- AC/DC Industrial / Commercial Power Supply

High Efficiency



Typical Application



Version	ISL6730A	ISL6730B	ISL6730C	ISL6730D
Switching Frequency	124kHz	62kHz	124kHz	62kHz
Skip Mode	Yes-Fixed	Yes-Fixed	No	No

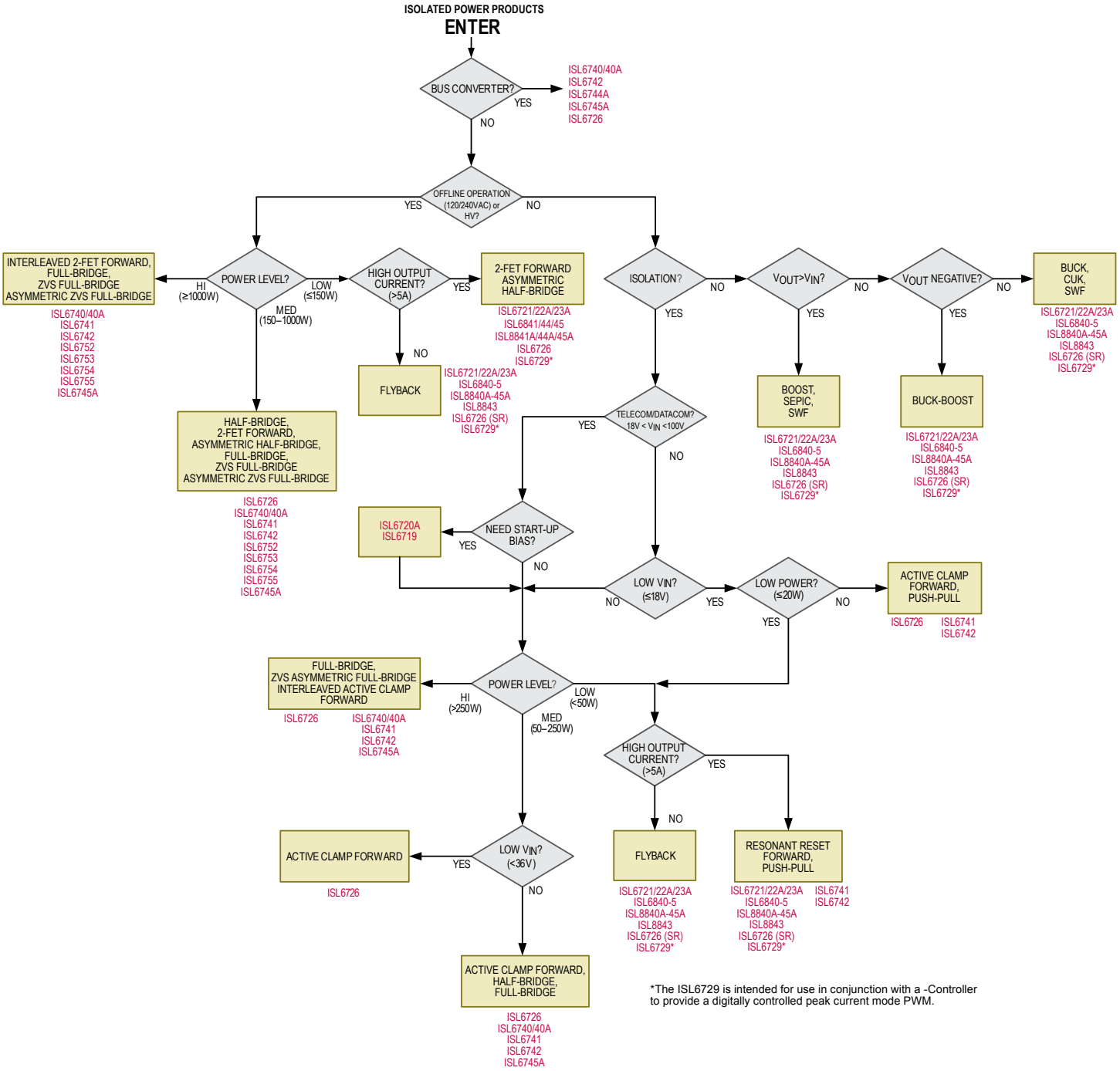
POWER FACTOR CONTROLLERS

Device	Device Description	Control Mode	UVLO Rising	UVLO Falling	V_{BIAS} (max)	No-Load Operating Current	# of PWM Outputs	FET Driver I_{OUT} (max)	Max Duty Cycle (%)	Package
ISL6730	Power Factor Correction Controller	Peak Current Mode	9.65 V	7.25 V	20 V	3.3 mA	1	2.8 A	98.5	10 Ld MSOP

ISOLATED PWM CONTROLLERS

Single-Ended (p. 9) • Double-Ended (p. 9) • Zero-Voltage-Switching (ZVS) (p. 9)

Isolated PWM Controllers Selection Chart



*The ISL6729 is intended for use in conjunction with a -Controller to provide a digitally controlled peak current mode PWM.

Single-Ended

ISL6726

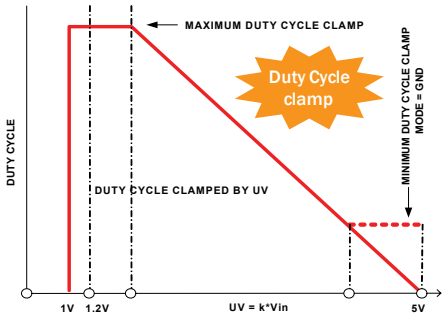
Evalboard Available!

Highly-Integrated Active Clamp Forward PWM Controller

Key Features

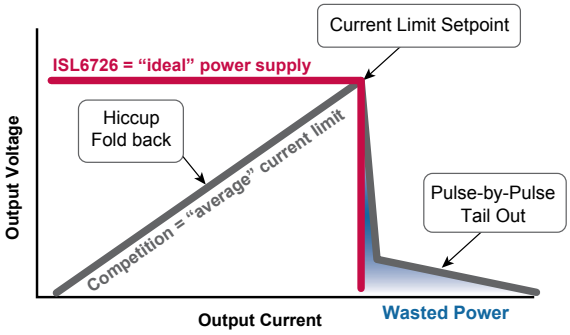
- Single-ended Current Mode Controller – 20 Lead QSOP
- Supports Both N-channel and P-channel Clamp Configurations
- Also Supports Single-ended Topologies with SR and the Asymmetric Half-bridge Topology
- Adjustable Conduction Dead-time Between Outputs
- Adjustable Maximum Duty Cycle Clamp Proportional to V_{IN} (80% max)
- Minimum Duty Cycle Clamp for SR Applications (with override)
- UV/Inhibit Input
- Adjustable Soft-Start/Soft-Stop
- Bi-directional Synchronization, 180° Phase Shift for Interleaved Applications
- Average and Cycle-by-cycle Current Limit
- Adjustable Current Limit Set-point
- 1A Sourcing / 1.5A Sinking Gate Drive OUTM
- 0.5A Sourcing / 0.75A Sinking Gate Drive OUTAC
- Slope Compensation
- Oscillator with Accurate Frequency, Duty Cycle, and Dead-time Control
- On/Off Enable Control with Low Power SLEEP Mode

Precision Duty Cycle and Deadtime Control



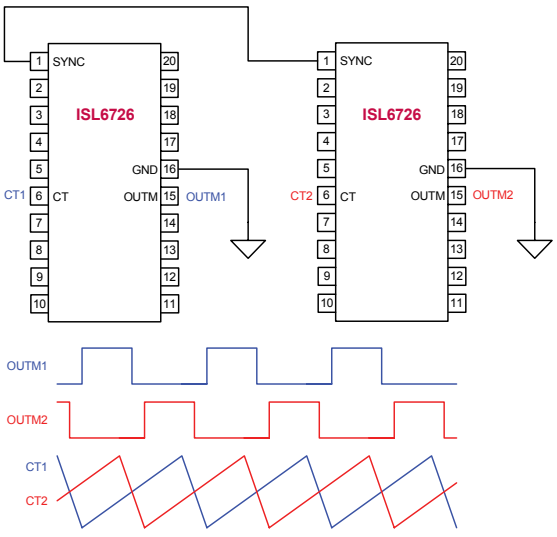
DUTY CYCLE CLAMP

Adjustable Peak and Average Current Limit Protection



Bi-Directional Synchronization with 180° Phase Shift

Bi-directional synchronization with 180° phase shift for interleaved converter applications V complicated part.



SINGLE-ENDED

Device	Device Description	Control Mode	UVLO Rising	UVLO Falling	V_{BIAS} (max)	No-Load Operating Current	FET Driver I_{OUT} (max)	Max Duty Cycle (%)	Package
ISL1903	Dimmable Buck LED Driver - AC Mains or DC Input LED Driver	Critical Conduction Mode (CrCM)	8.55	7.1	26 V	6 mA	1 A	100	16 Ld QSOP
ISL1904	Dimmable AC Mains LED Driver with PFC and Primary Side Regulation	Critical Conduction Mode (CrCM)	8.55	7.1	26 V	6 mA	1 A	100	16 Ld QSOP
ISL6401	Synchronizing Current Mode PWM for Subscriber Line Interface Circuits (SLICs)	Peak Current Mode	4.1 V	3.6 V	7 V	3.7 mA	1 A	50	14 Ld SOIC, 16 Ld QFN
ISL6721	Flexible Single Ended Current Mode PWM Controller	Peak Current Mode	8.25 V	7.7 V	20 V	4.5 mA	1 A	100	16 Ld SOIC, 16 Ld TSSOP
ISL6721A	Flexible Single-ended Current Mode PWM Controller	Peak Current Mode	6.8 V	6.2 V	20 V	4.5 mA	1 A	100	16 Ld SOIC, 16 Ld TSSOP
ISL6722A	Flexible Single Ended Current Mode PWM Controllers	Peak Current Mode	8.25 V	7.7 V	20 V	4.5 mA	1 A	100	16 Ld QFN, 16 Ld SOIC, 16 Ld TSSOP
ISL6723A	Flexible Single Ended Current Mode PWM Controllers	Peak Current Mode	13 V	7.7 V	20 V	4.5 mA	1 A	100	16 Ld SOIC
ISL6726	Active Clamp Forward PWM Controller	Active clamp forward, Asymmetric half-bridge, Interleaved active clamp forward	7.65 V	6.23 V	20 V	10 mA	1 A	100	20 Ld QSOP
ISL6729	Low-Cost Single-Ended Current-Mode PWM for Microcontroller-Based Power Converters	Peak Current Mode	4.5 V	4.3 V	7 V	3.3 mA	1 A	100	8 Ld SOIC, 8 Ld MSOP
ISL6730	Power Factor Correction Controller	Peak Current Mode	9.65 V	7.25 V	20 V	3.3 mA	2.8 A	98.5	10 Ld MSOP
ISL6840	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	7 V	6.6 V	20 V	2.3 mA	1 A	100	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL6841	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	7 V	6.6 V	20 V	2.3 mA	1 A	50	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL6842	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	14.4 V	8.8 V	20 V	2.3 mA	1 A	100	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL6843	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	8.4 V	7.6 V	20 V	2.3 mA	1 A	100	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL6844	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	14.4 V	8.8 V	20 V	2.3 mA	1 A	50	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL6845	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	8.4 V	7.6 V	20 V	2.3 mA	1 A	50	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL78215	Improved Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	7 V	6.6 V	20 V	3.3 mA	1 A	48	8 Ld MSOP
ISL8840A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	7 V	6.6 V	30 V	2.9 mA	1 A	100	8 Ld MSOP, 8 Ld SOIC
ISL8841A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	7 V	6.6 V	30 V	2.9 mA	1 A	50	8 Ld MSOP, 8 Ld SOIC
ISL8842A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	14.4 V	8.8 V	30 V	2.9 mA	1 A	100	8 Ld MSOP, 8 Ld SOIC
ISL8843	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	8.4 V	7.6 V	30 V	2.9 mA	1 A	100	8 Ld MSOP, 8 Ld SOIC
ISL8843A	Single-Ended Current Mode PWM Controller with 3% Current Limit and Military Temp Grade Option	Peak Current Mode	8.4 V	7.6 V	30 V	2.9 mA	1 A	100	8 Ld MSOP, 8 Ld SOIC
ISL8844A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	14.4 V	8.8 V	30 V	2.9 mA	1 A	50	8 Ld MSOP, 8 Ld SOIC
ISL8845A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	8.4 V	7.6 V	30 V	2.9 mA	1 A	50	8 Ld MSOP, 8 Ld SOIC

DOUBLE-ENDED

Device	Device Description	Control Mode	UVLO Rising	UVLO Falling	V_{BIAS} (max)	No-Load Operating Current	FET Driver I_{OUT} (max)	Max Duty Cycle (%)	Package
ISL6740/A	Flexible Double Ended Voltage and Current Mode PWM Controllers	Voltage Mode	7.25 V	6.75 V	20 V	5 mA	0.5 A	100	16 Ld SOIC, 16 Ld TSSOP
ISL6741	Flexible Double Ended Voltage and Current Mode PWM Controllers	Peak Current Mode	7.25 V	6.75 V	20 V	5 mA	0.5 A	100	16 Ld SOIC, 16 Ld TSSOP
ISL6742	Advanced Double-Ended PWM Controller with Synchronous Rectifier Control and Average Current Limit	Voltage, Peak Current, or Average Current Mode	8.75 V	7 V	20 V	5 mA	0.1 A	100	16 Ld QSOP
ISL6744A	Intermediate Bus PWM Controller	Voltage Mode	6.2 V	5.7 V	20 V	3 mA	1 A	100	8 Ld MSOP, 8 Ld SOIC
ISL6745/A	Voltage-Mode Double-Ended PWM Controller with Precision Dead-Time Adjustment	Voltage Mode	6.3 V	5.7 V	20 V	3 mA	1 A	100	10 Ld MSOP

ZERO-VOLTAGE-SWITCHING (ZVS)

Device	Device Description	Control Mode	UVLO Rising	UVLO Falling	V_{BIAS} (max)	No-Load Operating Current	# of PWM Outputs	FET Driver I_{OUT} (max)	Max Duty Cycle (%)	Package
ISL6551	ZVS Full Bridge PWM Controller	Peak Current Mode	9.6 V	8.6 V	16 V	13 mA	6	2 A	100	28 Ld QFN, 28 Ld SOIC
ISL6726	Active Clamp Forward PWM Controller	Active clamp forward, Asymmetric half-bridge, Interleaved active clamp forward	7.65 V	6.23 V	20 V	10 mA	1	1 A	100	20 Ld QSOP
ISL6752	ZVS Full-Bridge Current-Mode PWM with Adjustable Synchronous Rectifier Control	Peak Current Mode	8.75 V	7 V	20 V	6 mA	6	0.1 A	100	16 Ld QSOP
ISL6753	ZVS Full-Bridge PWM Controller	Peak Current Mode or Voltage Mode	8.75 V	7 V	20 V	5 mA	4	0.1 A	100	16 Ld QSOP
ISL6754	ZVS Full-Bridge PWM Controller with Adjustable Synchronous Rectifier Control	Peak Current Mode or Voltage Mode	8.75 V	7 V	20 V	11 mA	6	0.1 A	100	20 Ld QSOP
ISL6755	ZVS Full-Bridge PWM Controller with Average Current Limit	Peak Current Mode or Voltage Mode	8.75 V	7 V	20 V	11 mA	4	0.1 A	100	20 Ld QSOP
ISL78223	ZVS Full-Bridge PWM Controller with Adjustable Synchronous Rectifier Control	Peak Current Mode	8.75 V	7.0 V	20 V	12 mA	1	0.01 A	99	20 Ld QSOP

FET DRIVERS

Half-Bridge (p. 11) • Full Bridge (p. 11) • 3-Phase (p. 11) • Integrated FET Bridge and High Side Drivers (p. 11) • Low-Side FET Drivers (p. 13) • Synchronous Drivers for Multiphase PWM (p. 14)

Key Features of Intersil FET Drivers

Half-Bridge Drivers

- Maximum input voltages up to 100V
- Rise times as fast as 9ns
- Peak drive currents up to 4A
- High-speed drivers allow improved system efficiency and transient response
- Optimal for half bridge converters, two-switch forward converters, and high-voltage synchronous buck converters

Full-Bridge and Three-Phase Drivers

- Maximum input voltages up to 80V
- Peak drive currents up to 2.6A
- Optimal for full-bridge converters, motor drives and class-D audio systems
- Separate control inputs for each MOSFET drive in the full-bridge

Low-Side FET Drivers

- Available in single, dual, and quad configurations
- Peak drive currents up to 6A
- 20ns Rise and Fall time
- Programmable drive delay time

Synchronous Buck MOSFET Drivers

- Adaptive shoot-through protection on select parts
- Available tri-state PWM inputs
- On-chip bootstrap diodes on select parts
- Compact QFN and DFN packages

3-Phase

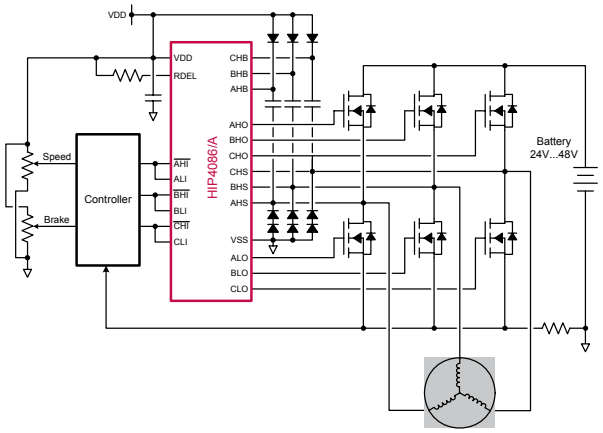
HIP4086A

Low Noise 80V, 500mA, 3-Phase MOSFET Driver

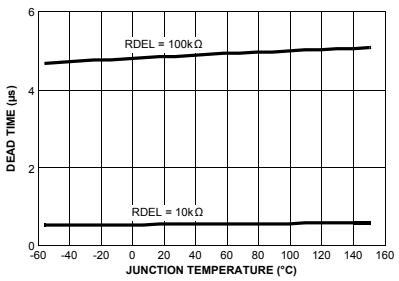
Key Features

- Improved EMI Performance
  - Minimized high noise component
  - Shoot-through prevention
- Reliability
  - Programmable dead time prevent shoot-through
- Easily Configurable
  - Independently drives 6 N-Channel MOSFETs
- Saves Board Space and Simplifies Design
  - Integrated three phase bridge and protection features
- Reduces Thermal Losses and Improves Efficiency
  - Low quiescent currents
  - Fast edge rise and fall times

Typical Application Circuit



Accurate and Stable Dead Time Control



HALF-BRIDGE

Device	Device Description	Max Bootstrap Supply Voltage (V)	Max Bias Voltage (V)	Peak Pull-up Current (A)	Peak Pull-down Current (A)	Turn-On Prop Delay (ns)	Turn-Off Prop Delay (ns)	Rise Time (ns)	Fall Time (ns)	Package
HIP2100	100V/2A Peak Low Cost High-Frequency Half bridge Driver with CMOS Logic Inputs	114	14	2	2	20	20	10	10	8 Ld EPSOIC, 8 Ld SOIC, 12 Ld DFN, 16 Ld QFN
HIP2101	100V/2A Peak Low Cost High-Frequency Half bridge Driver with TTL/CMOS Logic Inputs	114	14	2	2	25	25	10	10	8 Ld EPSOIC, 8 Ld SOIC, 12 Ld DFN, 16 Ld QFN
ISL2100A	100V, 2A Peak, High Frequency Half bridge Drivers	114	14	2	2	39	31	10	10	9 Ld DFN
ISL2101A	100V, 2A Peak, High Frequency Half bridge Drivers	114	14	2	2	39	34	10	10	9 Ld DFN
ISL2110	100V, 3A/4A Peak, High Frequency Half bridge Drivers (CMOS compatible inputs thresholds)	114	14	3	4	38	32	9	7.5	12 Ld DFN, 8 Ld SOIC
ISL2111	100V, 3A/4A Peak, High Frequency Half bridge Drivers (TTL compatible inputs thresholds)	114	14	3	4	38	32	9	7.5	10 Ld TDFN, 12 Ld DFN, 8 Ld SOIC
ISL6700	80V/1.25A Peak, Medium Frequency, Low Cost, Half bridge Driver	96	15	1.4	1.3	70	60	5	5	12 Ld QFN, 8 Ld SOIC
ISL89400	100V, 1.25A Peak, High Frequency Half bridge Driver	114	14	1.25	1.25	39	31	16	16	8 Ld SOIC, 9 Ld DFN
ISL89401	100V, 1.25A Peak, High Frequency Half bridge Driver	114	14	1.25	1.25	39	31	16	16	8 Ld SOIC, 9 Ld DFN
HIP2120	100V, 1.25A Peak, High Frequency Half bridge Driver with PWM and Enable Inputs (CMOS inputs)	114	14	2	2	50	32	10	10	9 Ld DFN, 10 Ld DFN
HIP2121	100V, 2A Peak, High Frequency Half bridge Driver with PWM and Enable Inputs (Logic/TTL inputs)	114	14	2	2	50	32	10	10	9 Ld DFN, 10 Ld DFN
HIP2122	100V, 2A Peak, High Frequency Half bridge Driver with Independent High and Low Inputs (CMOS inputs)	114	14	2	2	50	32	10	10	9 Ld DFN, 10 Ld DFN
HIP2123	100V, 2A Peak, High Frequency Half bridge Driver with Independent High and Low Inputs (Logic/TTL inputs)	114	14	2	2	50	32	10	10	9 Ld DFN, 10 Ld DFN
HIP2124	100V, 2A Peak, Half-Bridge Driver with Tri-Level PWM Input and Adjustable Dead-Time	114	14	2	2	32	32	10	10	9 Ld DFN, 10 Ld DFN

FULL BRIDGE

Device	Device Description	Max Bootstrap Supply Voltage (V)	Max Bias Voltage (V)	Peak Pull-up Current (A)	Peak Pull-down Current (A)	Turn-On Prop Delay (ns)	Turn-Off Prop Delay (ns)	Rise Time (ns)	Fall Time (ns)	Package
HIP4080A	80V/2.5A Peak, High Frequency Full Bridge FET Driver with Charge Pump and Input Comparators	95	15	2.6	2.4	70	50	10	10	20 Ld PDIP, 20 Ld SOIC
HIP4081A	80V/2.5A Peak, High Frequency Full Bridge FET Driver with Charge Pump and Independent Control Inputs	95	15	2.6	2.4	60	35	10	10	20 Ld PDIP, 20 Ld SOIC
HIP4082	80V/1.25A Peak Current Full Bridge FET Driver	95	15	1.4	1.3	75	55	9	9	16 Ld PDIP, 16 Ld SOIC
ISL83202	55V, 1A Peak Current H-Bridge FET Driver	70	15	1	1	75	55	9	9	16 Ld PDIP, 16 Ld SOIC
ISL83204A	60V/2.5A Peak, High Frequency Full Bridge FET Driver	75	15	2.6	2.4	70	50	10	10	20 Ld PDIP, 20 Ld SOIC

3-PHASE

Device	Device Description	Max Bootstrap Supply Voltage (V)	Max Bias Voltage (V)	Peak Pull-up Current (A)	Peak Pull-down Current (A)	Turn-On Prop Delay (ns)	Turn-Off Prop Delay (ns)	Rise Time (ns)	Fall Time (ns)	Package
HIP4083	80V/0.3A Peak Three Phase High Side Driver	95	15	0.24 (avg)	0.3 (avg)	65	60	35	30	16 Ld PDIP, 16 Ld SOIC
HIP4086	80V/0.5A Peak Three Phase Driver with Integrated Charge Pump	95	15	0.5	1.1	65	75	20	10	24 Ld PDIP, 24 Ld SOIC
HIP4086A	80V/0.5A Peak Three Phase Driver	95	15	0.5	1.1	65	75	20	10	24 Ld SOIC

INTEGRATED FET BRIDGE AND HIGH SIDE DRIVERS

Device	Device Description	Max Bootstrap Supply Voltage (V)	Max Bias Voltage (V)	Sourcing Current Capability (A)	Sinking Current Capability (A)	Turn-On Prop Delay (µs)	Turn-Off Prop Delay (µs)	Rise Time (µs)	Fall Time (µs)	Package
HIP4020	Full Bridge Driver with Integrated 0.5A Power FETs for Small 3V, 5V and 12V DC Motors	N/A	15	0.5	0.5	2.5	0.1	4	0.1	20 Ld SOIC
ISL6801	High Voltage Bootstrap High Side Driver	120	6.5	0.2	0.2	1	1	0.1	0.1	8 Ld SOIC

Low Side, Dual

ISL89367

World's Fastest Dual 6A MOSFET Driver

- 25ns Propagation Delay
- 20ns Rise and Fall Times

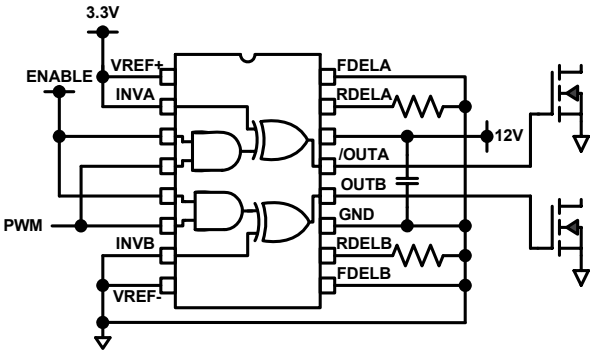
Key Features

- The Only Dual 6A MOSFET Driver on the Market Today
- The World's Fastest 6A Driver
- Unique Precision Logic Thresholds
  - Simplifies design
- Unique Programmable Rising and Falling Edge Delay Times
  - Improved reliability
- The Precision Logic Thresholds Simplify Design of Synchronous Rectification on the Secondary Side
- The Internal Timers can be Programmed to Provide Up to 270ns of Drive Delay
- Precision Thresholds Allow for Use of Simple External RC Circuits

Applications

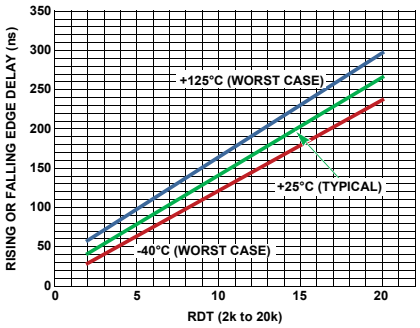
- Synchronous Rectifier (SR) Driver
- Switch Mode Power Supplies
- Motor Drives, Class D amplifiers, UPS, Inverters
- Pulse Transformer Driver

Typical Application



Improved Reliability

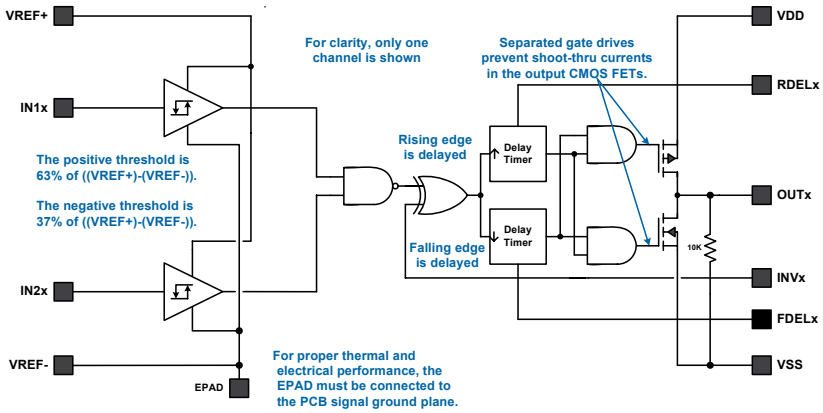
Unique programmable rising and falling edge delay times



Programmable Time Delay

Simplifies Design

Unique precision logic thresholds



LOW-SIDE FET DRIVERS

Device	Device Description	# of Drivers	V_{IN} (max) (V)	Max Operating Frequency (MHz)	Peak Output I_{PK} (A)	Rise Time (ns)	Fall Time (ns)	Turn On Delay (ns)	Turn Off Delay (ns)	I_S (mA)	V_{BIAS} (min) (V)	R_{ON} (Ω)	Input Signal Range (V)	Input Supply Range V_P (V)	Input Signal (min) (V)	Input Signal (max) (V)	Output Signal Range (V)	Output Signal (min) (V)	Output Signal (max) (V)	Input Supply V_P (min) (V)	Input Supply V_P (max) (V)	Package
EL7104	High Speed, Single Channel, Power MOSFET Driver	1	16	10	4	10	15	18	18	7.5	4.5	1.5	0 to V_P	+4.5 to +16	0	16	-3 to +16	-3	16	4.5	16	8 Ld PDIP, 8 Ld SOIC
EL7182	2-Phase, High Speed CCD Driver	2	16	10	2	10	13	18	20	5	4.5	3	0 to V_P	+4.5 to +16	0	16	0 to +16	0	16	4.5	16	8 Ld PDIP, 8 Ld SOIC
EL7202	High Speed, Dual Channel Power MOSFET Drivers	2	15	10	2	10	13	18	20	7.5	4.5	4	0 to V_P	+4.5 to +15	0	15	0 to +15	0	15	4.5	15	8 Ld PDIP, 8 Ld SOIC
EL7212	High Speed, Dual Channel Power MOSFET Drivers	2	15	10	2	10	13	18	20	2.5	4.5	4	0 to V_P	+4.5 to +15	0	15	0 to +15	0	15	4.5	15	8 Ld PDIP, 8 Ld SOIC
EL7222	High Speed, Dual Channel Power MOSFET Drivers	2	15	10	2	10	13	18	20	5	4.5	4	0 to V_P	+4.5 to +15	0	15	0 to +15	0	15	4.5	15	8 Ld PDIP, 8 Ld SOIC
EL7232	Dual Channel, High Speed, High Current Line Driver with 3-State	2	15	10	2	10	13	18	20	2.5	4.5	4	0 to V_P	+4.5 to +15	0	15	0 to +15	0	15	4.5	15	8 Ld PDIP, 8 Ld SOIC
EL7242	Dual Input, High Speed, Dual Channel Power MOSFET Driver	2	15	10	2	20	20	20	20	3	4.5	4	0 to V_P	+4.5 to +15	0	15	0 to +15	0	15	4.5	15	8 Ld PDIP, 8 Ld SOIC
EL7252	Dual Input, High Speed, Dual Channel Power MOSFET Driver	4	15	10	2	20	20	18	20	2.5	4.5	4	0 to V_P	+4.5 to +15	0	16.5	0 to +16.5	0	16.5	4.5	15	8 Ld PDIP, 8 Ld SOIC
ICL7667	Dual Power MOSFET Driver	2	15	10	1	30	30	20	20	5	4.5	8	-V_P to + V_P	-15 to +15	-VP	15	-15 to +15	-15	15	-15	15	8 Ld PDIP, 8 Ld SOIC
ISL89160	High Speed, Dual Channel, 6A, 4.5 to 16VOUT, Power MOSFET Driver	2	16	10	6	20	20	25	25	5	4.5	2	0 to V_P	+4.5 to +16	0	16	0 to +16	0	16	4.5	16	8 Ld EPSOIC, 8 Ld TDFN
ISL89161	High Speed, Dual Channel, 6A, 4.5 to 16VOUT, Power MOSFET Driver	2	16	10	6	20	20	25	25	5	4.5	2	0 to V_P	+4.5 to +16	0	16	0 to +16	0	16	4.5	16	8 Ld EPSOIC, 8 Ld TDFN
ISL89162	High Speed, Dual Channel, 6A, 4.5 to 16VOUT, Power MOSFET Driver	2	16	10	6	20	20	25	25	5	4.5	2	0 to V_P	+4.5 to +16	0	16	0 to +16	0	16	4.5	16	8 Ld EPSOIC, 8 Ld TDFN
ISL89163	High Speed, Dual Channel, 6A, Power MOSFET Driver with Enable Inputs	2	16	10	6	20	20	25	25	5	4.5	2	0 to V_P	+4.5 to +16	0	16	0 to +16	0	16	4.5	16	8 Ld EPSOIC, 8 Ld TDFN
ISL89164	High Speed, Dual Channel, 6A, Power MOSFET Driver with Enable Inputs	2	16	10	6	20	20	25	25	5	4.5	2	0 to V_P	+4.5 to +16	0	16	0 to +16	0	16	4.5	16	8 Ld EPSOIC, 8 Ld TDFN
ISL89165	High Speed, Dual Channel, 6A, Power MOSFET Driver with Enable Inputs	2	16	10	6	20	20	25	25	5	4.5	2	0 to V_P	+4.5 to +16	0	16	0 to +16	0	16	4.5	16	8 Ld EPSOIC, 8 Ld TDFN
ISL89166	High Speed, Dual Channel, 6A, Power MOSFET Driver With Programmable Delays	2	16	10	6	20	20	25	25	5	4.5	2	0 to V_P	+4.5 to +16	0	16	0 to +16	0	16	4.5	16	8 Ld EPSOIC, 8 Ld TDFN
ISL89167	High Speed, Dual Channel, 6A, Power MOSFET Driver With Programmable Delays	2	16	10	6	20	20	25	25	5	4.5	2	0 to V_P	+4.5 to +16	0	16	0 to +16	0	16	4.5	16	8 Ld EPSOIC, 8 Ld TDFN
ISL89168	High Speed, Dual Channel, 6A, Power MOSFET Driver With Programmable Delays	2	16	10	6	20	20	25	25	5	4.5	2	0 to V_P	+4.5 to +16	0	16	0 to +16	0	16	4.5	16	8 Ld EPSOIC, 8 Ld TDFN
ISL89367	High Speed, Dual Channel, 6A, MOSFET Driver With Programmable Rising and Falling Edge Delay Timers	2	16	10	6	20	20	25	25	5	4.5	2	0 to V_P	+4.5 to +16	0	16	0 to +16	0	16	4.5	16	16 Ld TDFN
ISL89410	High Speed, Dual Channel Power MOSFET Drivers	2	18	10	2	10	13	18	20	4.5	4.5	4	0 to V_P	+4.5 to +18	0	18	0 to +18	0	18	4.5	18	8 Ld PDIP, 8 Ld SOIC
ISL89411	High Speed, Dual Channel Power MOSFET Drivers	2	18	10	2	10	13	18	20	1	4.5	*	0 to V_P	+4.5 to +18	0	18	0 to +18	0	18	4.5	18	8 Ld PDIP, 8 Ld SOIC
ISL89412	High Speed, Dual Channel Power MOSFET Drivers	2	18	10	2	10	13	18	20	2.5	4.5	*	0 to V_P	+4.5 to +18	0	18	0 to +18	0	18	4.5	18	8 Ld PDIP, 8 Ld SOIC

SYNCHRONOUS DRIVERS FOR MULTIPHASE PWM

Device	Device Description	V_{IN}/Vpwm (max) (V)	V_{DRIVE} (V)	Output Per Driver I_{UGATE} Source/Sink (A)	Output Per Driver I_{LGATE} Source/Sink (A)	Phase V_{PHASE} (min) (V)	Phase V_{PHASE} (max) (V)	No Load I_S (max) (mA)	I_S	Package
ISL6208	High Voltage Synchronous Rectified Buck MOSFET Driver with Programmable Deadtime	-0.3V to VCC + 0.3V	5	2/2	2/4	VBOOT-7	30	Almost negligible	80µA	8 Ld QFN, 8 Ld SOIC
ISL6209	High Voltage Synchronous Rectified Buck MOSFET Driver with Programmable Deadtime	-0.3V to VCC + 0.3V	5	2/2	2/4	VBOOT-7	30	Almost negligible	85µA	8 Ld QFN, 8 Ld SOIC
ISL6210	Dual Synchronous Rectified MOSFET Drivers	25	5	2	2/4	VBOOT-7	25	Almost negligible	170µA	16 Ld QFN
ISL6608	Synchronous Rectified MOSFET Driver	-0.3V to 7V	5	2/2	2/4	VBOOT-7	22	Almost negligible	80µA	8 Ld QFN, 8 Ld SOIC
ISL6609	Synchronous Rectified MOSFET Driver	-0.3V to VCC + 0.3V	5	2/2	2/4	-8V (<20ns)	15VDC, 30V (<100ns)	Almost negligible	132µA	8 Ld QFN, 8 Ld SOIC
ISL6609A	Synchronous Rectified MOSFET Driver	-0.3V to VCC + 0.3V	5	2/2	2/4	GND - 0.3VDC GND - 8V (<20ns)	15VDC, 30V (<100ns)	Almost negligible	132µA	8 Ld QFN, 8 Ld SOIC
ISL6610	Dual Synchronous Rectified MOSFET Drivers	22	5	2/2	2/4	-8	30	1.6 (typ)	240µA (typ)	14 Ld SOIC, 16 Ld QFN
ISL6610A	Dual Synchronous Rectified MOSFET Drivers	15	5	2/2	2/4	-8	30	1.6 (typ)	240µA (typ)	14 Ld SOIC, 16 Ld QFN
ISL6611A	Phase Doubler with Integrated Drivers and Phase Shedding Function	-0.3V to VCC + 0.3V	5	2/2	2/4	-8V (<20ns)	27VDC, 30V (<100ns)	1.25	2.5mA	16 Ld QFN
ISL6620	VR11.1 Compatible Synchronous Rectified Buck MOSFET Drivers	15	5	2/2	2/4	GND - 0.3VDC GND - 8V (<100ns)	15VDC, 30V (<100ns)	1.27 (typ)	1.85mA (typ)	8 Ld SOIC, 10 Ld DFN
ISL6620A	VR11.1 Compatible Synchronous Rectified Buck MOSFET Drivers	15	5	2/2	2/4	GND - 0.3VDC GND - 8V (<100ns)	15VDC, 30V (<100ns)	1.27 (typ)	1.85mA (typ)	8 Ld SOIC, 10 Ld DFN
ISL6625A	Synchronous Rectified Buck MOSFET Drivers	15	5 to 12	1.25/2	1.75/3	GND - 0.3VDC GND - 8V (400ns)	25VDC, 30V (200ns)	N/A	7.56mA	8 Ld DFN

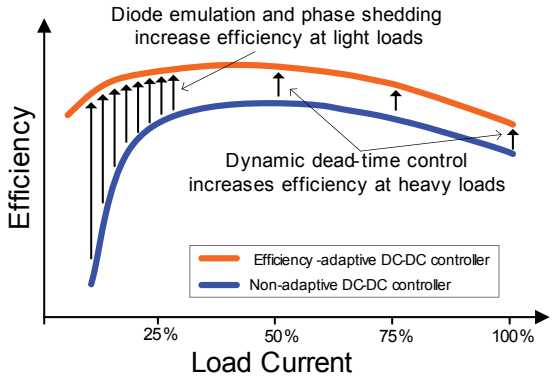
Variable Drive MOSFET DRIVERS

Device	Device Description	V_{IN}/V_{PWM} (max) (V)	V_{DRIVE} (V)	Output Per Driver I_{UGATE} Source/ Sink (A)	Output Per Driver I_{LGATE} Source/ Sink (A)	Phase V_{PHASE} (min) (V)	Phase V_{PHASE} (max) (V)	No Load I_S (max) (mA)	I_S (mA)	Package
ISL6612A	Advanced Synchronous Rectified Buck MOSFET Drivers with Pre-POR OVP	GND - 0.3V to 7V	5 to 12	1.25/2	2/3	GND - 0.3VDC GND - 8V (<400ns)	15VDC, 30V (<200ns)	4.5	7.2	8 Ld EPSOIC, 8 Ld SOIC, 10 Ld DFN
ISL6612B	Advanced Synchronous Rectified Buck MOSFET Drivers with Pre-POR OVP	GND - 0.3V to 7V	5 to 12	1.25/2	2/3	GND - 0.3VDC GND - 8V (<400ns)	15VDC, 30V (<200ns)	4.5	8	8 Ld EPSOIC, 8 Ld SOIC, 10 Ld DFN
ISL6614	Dual Advanced Synchronous Rectified Buck MOSFET Drivers with Protection Features	GND - 0.3V to 7V	5 to 12	1.25/2	2/3	GND - 0.3VDC GND - 8V (<400ns)	15VDC, 30V (<200ns)	4.5	7.1	14 Ld SOIC, 16 Ld QFN
ISL6614A	Dual Advanced Synchronous Rectified Buck MOSFET Drivers with Pre-POR OVP	GND - 0.3V to 7V	5 to 12	1.25/2	2/3	GND - 0.3VDC GND - 8V (<400ns)	15VDC, 30V (<200ns)	4.5	7.1	14 Ld SOIC, 16 Ld QFN
ISL6614B	Dual Advanced Synchronous Rectified Buck MOSFET Drivers with Protection Features	GND - 0.3V to 7V	5 to 12	1.25/2	2/3	GND - 0.3VDC GND - 8V (<400ns)	15VDC, 30V (<200ns)	4.5	7.1	14 Ld SOIC, 16 Ld QFN
ISL6622, ISL6622A	VR11.1 Compatible Synchronous Rectified Buck MOSFET Drivers	15	5 to 12	1.25/2	2/3	GND - 0.3VDC GND - 8V (<200ns)	15VDC, 30V (<200ns)	N/A	5.7	8 Ld SOIC, 10 Ld DFN
ISL6615, ISL6615A	High-Frequency 6A Sink Synchronous MOSFET Drivers with Protection Features	15	4.5 to 13.2	2.5/4	4/6	GND - 0.3VDC GND - 8V (<400ns)	15VDC, 30V (<200ns)	4.5	8	8 Ld SOIC, 10 Ld DFN

DIGITAL POWER

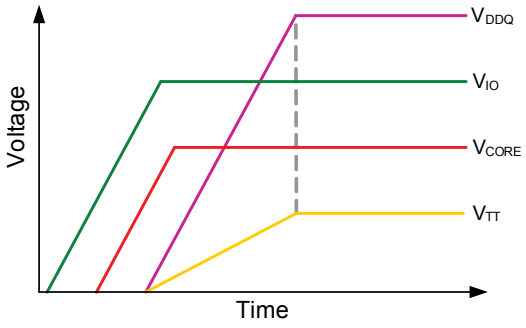
Zilker Labs products combine a world-class digital power conversion architecture with power management logic in a single IC. They require minimal external circuitry, reducing board space requirements and simplifying the design process. The patented Zilker Labs technology from Intersil builds intelligence into the silicon, allowing the devices to be easily configured through simple pin-strap options or by using PMBus™ commands with no programming required. The Digital-DC product family addresses a wide range of operating conditions allowing system designers to complete designs using parts from a single supplier.

Power Conversion Benefits



- High V_{OUT} accuracy across line, load and temperature
- High current >40A per phase
- Active current sharing with phase add/drop
- Adaptive efficiency optimization
- Startup pre-bias protection
- External clock synchronization with phase interleaving

Power Management Benefits



- Voltage tracking
- Autonomous output sequencing
- Adjustable voltage margining
- Voltage, current, temperature monitoring
- Configurable fault management
- Snapshot parametric data capture
- Interoperability with DDC bus
- I^2C/SMBus interface, PMBus™ compatible

DIGITAL PWM CONTROLLERS

Device	Device Description	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	I_Q (mA)	Switching Frequency (MHz)	Peak Efficiency (%)	Integrated FET Drivers	Integrated Power Management	Package
ZL6105	Adaptive Digital DC/DC Controller with Drivers and Auto Compensation and Current Sharing	3	14	0.54	5.5	>40	16	0.2 to 1.4	96	Y	Y	36 Ld QFN
ZL8101	Adaptive Digital DC/DC Controller with Auto Compensation and Current Sharing	4.5	14	0.54	4	>40A	16	0.2 to 1.4	96	N	Y	32 Ld QFN

POWER MOSFET DRIVERS

Device	Device Description	V_{IN}/V_{PWM} (max) (V)	V_{DRIVE} (V)	Output Per Driver I_{UGATE} Source/Sink (A)	Output Per Driver I_{LGATE} Source/Sink (A)	No Load I_S (max) (mA)	Package
ZL1505	Synchronous Step-Down MOSFET Drivers	5	7.5	4/5	3/3	0.8	10 Ld DFN

DIGITAL SWITCHING REGULATORS

Device	Device Description	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	I_Q (mA)	Switching Frequency (MHz)	Peak Efficiency (%)	Integrated MOSFET	Integrated Power Management	Package
ZL2101	6A Digital Synchronous Step-Down DC/DC Converter with Auto Compensation	4.5	14	0.54	5.5	6	11	0.2 to 1.0	91	Y	Y	36 Ld QFN

NON-ISOLATED PWM CONTROLLERS

Single Output Buck Controllers (p. 16) • Single Output Universal Controllers (p. 17) • ACPI Regulators/ Controllers (p. 17) • Multiple Output Controllers (p. 18) • Multiphase Controllers (p. 20)

Single Output Controller

ISL8130

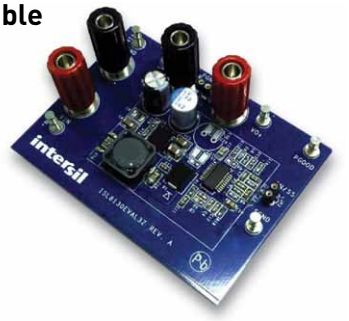
Evalboard Available!

Advanced Universal PWM Controller

Key Features

- Controller for Multiple DC-DC Topologies
  - Configure for Synchronous Buck, Boost or Step Up/Down Operation
- Wide Operating Range 5.5V to 28V
- Programmable Soft Start
- Fast Transient Response Error Amplifier
- 0.1MHz to 1.4MHz Resistor Selectable Switching Frequency
- External Reference Tracking Mode

SEPIC (Step Up/Down) and Boost Reference Designs Available



SINGLE OUTPUT BUCK CONTROLLERS

Device	Device Descriptions	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	V_{BIAS} (min)	V_{BIAS} (max)	I_S (min)	I_S (typ)	Package
ISL6406	Single Synchronous Buck Pulse-Width Modulation (PWM) Controller	3.3	5	0.8	5	20	3.3 V	5 V	7 mA	9.8 mA	16 Ld QFN, 16 Ld SOIC, 16 Ld TSSOP
ISL6439/A	Single Sync Buck PWM Controller for Broadband Gateway Applications	3.3	5	0.8	3.3	20	3.3 V	3.3 V	6.1 mA	6.9 mA	16 Ld QFN, 14 Ld SOIC
ISL6520/A/B	Single Synchronous Buck Pulse-Width Modulation (PWM) Controller	2.5	5	0.8	5	20	5 V	5 V		3.2 mA	16 Ld QFN, 8 Ld SOIC
ISL6526/A	Single Synchronous Buck Pulse-Width Modulation (PWM) Controller	2.5	5	0.8	V_{IN}	20	3.3 V	5 V	6.1 mA	6.9 mA	16 Ld QFN, 14 Ld SOIC
ISL6527/A	Single Synchronous Buck Pulse-Width Modulation (PWM) Controller	2.5	5	0.8	V_{IN}	20	3.3 V	5 V	2.6 mA	3.3 mA	16 Ld QFN, 14 Ld SOIC
ISL6341/A/B/C	5V or 12V Single Synchronous Buck Pulse-Width Modulation (PWM) Controller	1.5	12	0.8	12	30	4.5 V	14.4 V	6.4 mA	7 mA	10 Ld TDFN
ISL6522B	Buck and Synchronous Rectifier Pulse-Width Modulator (PWM) Controller	2.5	12	0.8	V_{IN}	25	12 V	12 V		5 mA	16 Ld QFN, 14 Ld SOIC, 14 Ld TSSOP
ISL6525	Buck and Synchronous-Rectifier Pulse-Width Modulator (PWM) Controller	2.5	12	1.2	V_{IN}	25	12 V	12 V		5 mA	14 Ld SOIC
ISL6535	Synchronous Buck Pulse-Width Modulator (PWM) Controller	1.2	12	0.6	5	30	8 V	12 V		51 mA	16 Ld QFN, 16 Ld SOIC
ISL6545/A	5V or 12V Single Synchronous Buck Pulse-Width Modulation (PWM) Controller	1	12	0.6	5	25	4.5 V	14.4 V		3.2 mA	10 Ld DFN, 8 Ld SOIC
ISL8104	Synchronous Buck Pulse-Width Modulator (PWM) Controller	1.2	12	0.6	5	30	7.6 V	15.4 V		51 mA	14 Ld SOIC, 16 Ld QFN
ISL8105/A/B	+5V or +12V Single-Phase Synchronous Buck Converter PWM Controller with Integrated MOSFET Gate Drivers	1	12	0.6	5	25	4.9 V	14.4 V		3.2 mA	8 Ld SOIC, 10 Ld DFN
ISL6420	Advanced Single Synchronous Buck Pulse-Width Modulation (PWM) Controller	4.5	16	0.6	15.5	20	5 V	5 V	1.4 mA	2 mA	20 Ld QFN, 20 Ld QSOP
ISL6540/A	Single-Phase Buck PWM Controller with Integrated High Speed MOSFET Driver and Pre-Biased Load Capability	3.3	20	0.6	V_{IN}	30	2.9 V	5.5 V			28 Ld QFN
ISL8118	3.3V to 20V Single-Phase PWM Controller with Integrated 2A/4A MOSFET Drivers	3.3	20	0.6	20	30	2.9 V	5.6 V			28 Ld QFN
ISL6263C/D	5-Bit VID Single-Phase Voltage Regulator with Current Monitor for GPU Core Power	5	25	0.412	1.2875	25	4.75 V	5.25 V	1 µA	2.7 mA	32 Ld QFN
ISL6268	High-Performance Notebook PWM Controller	7	25	0.6	3.3	25	5 V	5 V		1.7 mA	16 Ld QSOP
ISL6269/A/B	High-Performance Notebook PWM Controller with Bias Regulator and Audio-Frequency Clamp	7	25	0.6	3.3	25			2 mA		16 Ld QFN
ISL62870	PWM DC/DC Voltage Regulator Controller	3.3	25	0.5	3.3	30	4.75 V	5.25 V	1 µA	1.1 mA	16 Ld µTQFN
ISL62871, ISL62872, ISL62873, ISL62875	PWM DC/DC Controller With VID Inputs For Portable GPU Core-Voltage Regulator	3.3	25	0.5	3.3	30	4.75 V	5.25 V	1 µA	1.1 mA	16 Ld µTQFN, 20 Ld µTQFN
ISL78210	Automotive PWM DC/DC Voltage Controller	3.3	25	0.5	3.3	30	4.75 V	5.25 V		1.1 mA	16 Ld µTQFN
ISL8106	Wide V_{IN}, 7V to 25V, Single-Phase PWM Controller with Integrated MOSFET Drivers	7	25	0.6	3.3	12	5 V	5 V	2 mA	2.2 mA	16 Ld QFN
ISL95870/A/B	PWM DC/DC Controller with VID Inputs for Portable GPU Core-Voltage Regulator	3.3	25	0.5	5	30	4.75 V	5.25 V	1 µA	1.2 mA	16 Ld µTQFN
ISL95872, ISL95873	Buck PWM Controller with Internal Compensation and External Reference Tracking	3.3	25	0.5	3.3	30	4.75 V	5.25 V	1 µA	1.2 mA	16 Ld µTQFN
ISL95874, ISL95875	PWM DC/DC Controller with VID Inputs for Portable GPU Core-Voltage Regulator	3.3	25	0.5	5	30	4.75 V	5.25 V	1 µA	1.2 mA	16 Ld µTQFN
ISL6420B	Advanced Single Synchronous Buck Pulse-Width Modulation (PWM) Controller	4.5	28	0.6	27.5	20	5 V	5 V	1.4 mA	2 mA	20 Ld QFN, 20 Ld QSOP
ISL8130	Advanced Single Universal Pulse-Width Modulation (PWM) Controller	4.5	28	0.6	25.2	30	4.5 V	28 V		2 mA	20 Ld QFN, 20 Ld QSOP
ISL8107	Single-Phase Pulse-Width Modulation (PWM) Controller with Wide (9V-75V) V_{IN} Range	9	75	1.2	75	10	9 V	75 V		2 mA	16 Ld QFN

SINGLE OUTPUT UNIVERSAL CONTROLLERS

Device	Device Description	Control Mode	UVLO Rising	UVLO Falling	V_{BIAS} (max)	No-Load Operating Current	FET Driver I_{OUT} (max)	Max Duty Cycle (%)	Package
ISL6401	Synchronizing Current Mode PWM for Subscriber Line Interface Circuits (SLICs)	Peak Current Mode	4.1 V	3.6 V	7 V	3.7 mA	1 A	50	16 Ld QFN, 14 Ld SOIC
ISL6721	Flexible Single Ended Current Mode PWM Controller	Peak Current Mode	8.25 V	7.7 V	20 V	4.5 mA	1 A	100	14 Ld SOIC, 16 Ld QFN
ISL6721A	Flexible Single-ended Current Mode PWM Controller	Peak Current Mode	6.8 V	6.2 V	20 V	4.5 mA	1 A	100	16 Ld SOIC, 16 Ld TSSOP
ISL6722A	Flexible Single Ended Current Mode PWM Controllers	Peak Current Mode	8.25 V	7.7 V	20 V	4.5 mA	1 A	100	16 Ld SOIC, 16 Ld TSSOP
ISL6723A	Flexible Single Ended Current Mode PWM Controllers	Peak Current Mode	13 V	7.7 V	20 V	4.5 mA	1 A	100	16 Ld QFN, 16 Ld SOIC, 16 Ld TSSOP
ISL6726	Active Clamp Forward PWM Controller	Active clamp forward, Asymmetric half-bridge, Interleaved active clamp forward	7.65 V	6.23 V	20 V	10 mA	1 A	100	16 Ld SOIC
ISL6729	Low-Cost Single-Ended Current-Mode PWM for Microcontroller-Based Power Converters	Peak Current Mode	4.5 V	4.3 V	7 V	3.3 mA	1 A	100	20 Ld QSOP
ISL6730	Power Factor Correction Controller	Peak Current Mode	9.65 V	7.25 V	20 V	3.3mA	2.8A	98.5	8 Ld SOIC, 8 Ld MSOP
ISL6840	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	7 V	6.6 V	20 V	2.3 mA	1 A	100	10 Ld MSOP
ISL6841	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	7 V	6.6 V	20 V	2.3 mA	1 A	50	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL6842	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	14.4 V	8.8 V	20 V	2.3 mA	1 A	100	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL6843	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	8.4 V	7.6 V	20 V	2.3 mA	1 A	100	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL6844	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	14.4 V	8.8 V	20 V	2.3 mA	1 A	50	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL6845	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	8.4 V	7.6 V	20 V	2.3 mA	1 A	50	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL78215	Improved Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	7 V	6.6 V	20 V	3.3 mA	1 A	48	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL8130	Advanced Single Universal Pulse-Width Modulation (PWM) Controller	Voltage Mode	4.4V	4.1V	28 V	2 mA	1 A	100	20 Ld QFN, 20 Ld QSOP
ISL8840A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	7 V	6.6 V	30 V	2.9 mA	1 A	100	8 Ld MSOP, 8 Ld SOIC
ISL8841A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	7 V	6.6 V	30 V	2.9 mA	1 A	50	8 Ld MSOP, 8 Ld SOIC
ISL8842A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	14.4 V	8.8 V	30 V	2.9 mA	1 A	100	8 Ld MSOP, 8 Ld SOIC
ISL8843	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	8.4 V	7.6 V	30 V	2.9 mA	1 A	100	8 Ld MSOP, 8 Ld SOIC
ISL8843A	Single-Ended Current Mode PWM Controller with 3% Current Limit and Military Temp Grade Option	Peak Current Mode	8.4 V	7.6 V	30 V	2.9 mA	1 A	100	8 Ld MSOP, 8 Ld SOIC
ISL8844A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	14.4 V	8.8 V	30 V	2.9 mA	1 A	50	8 Ld MSOP, 8 Ld SOIC
ISL8845A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	8.4 V	7.6 V	30 V	2.9 mA	1 A	50	8 Ld MSOP, 8 Ld SOIC

ACPI REQULATORS/CONTROLLERS

Device	Device Description	Chip Set Supported	3.3V Dual Regulator	5V Dual Regulator	Memory Regulator (V)	Integrated Clock Regulator	Southbridge Resume Well Regulator (V)	VID Regulator (V)	3.3V SBY Regulator	Package
HIP6501A	Triple Linear Power Controller with ACPI Control Interface	i810/i810e/i815/i820, SiS620/5595, SiS630, VIA Apollo ProMedia133	Yes	Yes	2.5 or 3.3 (Selectable)				No	16 Ld SOIC
HIP6503	Multiple Linear Power Controller with ACPI Control Interface	i810/i820 with ICH2	Yes	Yes	2.5 or 3.3 (Selectable)	Yes	1.8		No	20 Ld SOIC
ISL6504	Multiple Linear Power Controller with ACPI Control Interface	i845G with ICH4	Yes	Yes		No	1.8	1.2	No	20 Ld QFN, 16 Ld SOIC
ISL6504A	Multiple Linear Power Controller with ACPI Control Interface	i845G with ICH4	Yes	Yes		No	1.5	1.2	No	20 Ld QFN, 16 Ld SOIC
ISL6505	Multiple Linear Power Controller with ACPI Control Interface	Springdale with ICH5	Yes	Yes		No		1.2	No	20 Ld QFN, 16 Ld SOIC
ISL6506	Multiple Linear Power Controller with ACPI Control Interface	i810, i815, i820, i845, i865, i875, i915, i925, i945, i955 for ICH4, ICH5, ICH6	Yes	Yes	No	No	No	No	Yes	8 Ld SOIC
ISL6506A	Multiple Linear Power Controller with ACPI Control Interface	i810, i815, i820, i845, i865, i875, i915, i925, i945, i955 for ICH4, ICH5, ICH6, ICH7	Yes	Yes	No	No	No	No	Yes	8 Ld SOIC
ISL6506B	Multiple Linear Power Controller with ACPI Control Interface	i810, i815, i820, i845, i865, i875, i915, i925, i945, i955 for ICH4, ICH5, ICH6, ICH8	Yes	Yes	No	No	No	No	Yes	8 Ld SOIC
ISL6506BI	Multiple Linear Power Controller with ACPI Control Interface	i810, i815, i820, i845, i865, i875, i915, i925, i945, i955 for ICH4, ICH5, ICH6, ICH8	Yes	Yes	No	No	No	No	Yes	8 Ld SOIC

Multiple Output Controller

ISL9444

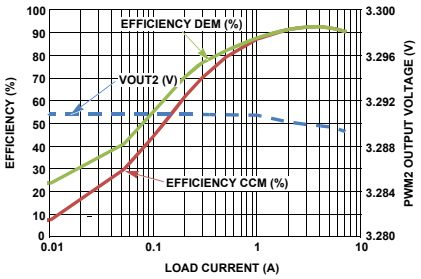
Evalboard Available!

Triple, 180° Out-of-Phase, Synchronous Step-Down PWM Controller

Key Features

- Three Integrated Synchronous Buck PWM Controllers
  - Internal Bootstrap Diodes
  - Independent Programmable Output Voltage
  - Independent Power-Good Indicators, Soft-Starting and Tracking
- Power Failure Monitor
- Light Load Efficiency Enhancement
  - Low Ripple Diode Emulation Mode with Pulse Skipping
- Supports Pre-Biased Output
- Programmable Frequency: 200kHz to 1200kHz
- Adaptive Shoot-through Protection
- Out-of-Phase Switching (0°/180°/0°)
- No External Current Sense Resistor
  - Uses Lower MOSFET's $r_{DS(ON)}$
- Complete Protection
  - Overcurrent, Overvoltage, Over-Temperature
- Wide Input Voltage Range: 4.5V to 26V

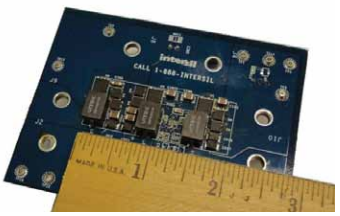
DEM with Pulse Skipping for Light Load Efficiency



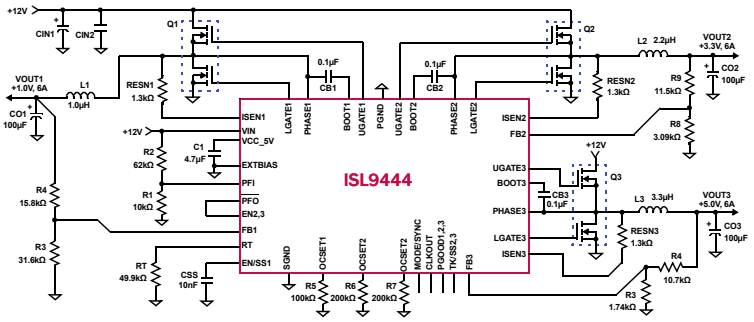
PWM2 EFFICIENCY AND LOAD REGULATION

Small Form Factor Design

3 x 25A outputs in 1.97 x 0.77 inch



Typical Application



Non-Isolated PWM Controllers

MULTIPLE OUTPUT CONTROLLERS

# of Outputs	Device	Device Description	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT1} (max) (V)	I_{OUT1} (max) (A)	Switching Frequency (kHz)	Bias Voltage (V_{CC})	Package
2	ISL6227	Dual Mobile-Friendly PWM Controller with DDR Option	3.3	24	0.9	5.5	16	300	5 V	28 Ld QFN, 28 Ld QSOP
	ISL6228	High-Performance Dual-Output Buck Controller for Notebook Applications	3.3	25	0.6	5	20	200 to 600	5 V	28 Ld TQFN
	ISL6440	300kHz Dual, 180 Out-of-Phase, Step-Down PWM Controller	4.5	24	0.8	24	10	300	5 V	24 Ld QSOP
	ISL6444	PWM Controller with DDR Memory Option for Gateway Applications	3.3	24	0.9	5.5	8	300	5 V	28 Ld QSOP
	ISL6445	1.4MHz Dual, 180 Out-of-Phase, Step-Down PWM Controller	4.5	24	0.8	24	6	1400	5 V	24 Ld QSOP
	ISL6528	Dual Regulator-Standard Buck PWM and Linear Power Controller	3.3	5	0.8	3.3	15	600	5 V	8 Ld SOIC
	ISL6529	Dual Regulator-Synchronous Rectified Buck PWM and Linear Power Controller	3.3	5	0.8	3.3	15	600	12 V	14 Ld SOIC, 16 Ld QFN
	ISL6530	Dual 5V Synchronous Buck Pulse-Width Modulator (PWM) Controller for DDRAM Memory VDDQ and VTT Termination	5	5	0.8	5	1	300	5 V	32 Ld QFN, 24 Ld SOIC
	ISL6532	ACPI Regulator/Controller for Dual Channel DDR Memory Systems	2.5	5	0.8	5	20	250	5 V	20 Ld QFN
	ISL6539	Wide Input Range Dual PWM Controller with DDR Option	3.3	18	0.9	5.5	8	300	6.5 V	28 Ld QFN, 28 Ld QSOP
	ISL6549	Single 12V Input Supply Dual Regulator - Synchronous Rectified Buck PWM and Linear Power Controller	10.8	13.2	0.8	13.2	20	150 to 1000	12 V	14 Ld SOIC, 16 Ld QFN, 16 Ld QSOP
	ISL8112	High Light-Load Efficiency, Dual-Output, Main Power Supply Controllers	5.5	25	0.7	5.5	30	400/500, 300/400, 200/300		32 Ld QFN

MULTIPLE OUTPUT CONTROLLERS (CONTINUED)

# of Outputs	Device	Device Description	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT1} (max) (V)	I_{OUT1} (max) (A)	Switching Frequency (kHz)	Bias Voltage (V_{CC})	Package
3	HIP6018B	Advanced PWM and Dual Linear Power Control	5	5	1.3	3.5	25	50 to 1000	12 V	24 Ld SOIC
	ISL62391/C	High-Efficiency, Triple-Output System Power Supply Controller for Notebook Computers	5.5	25	0.6	5.5	20	200 to 600		28 Ld TQFN
	ISL62392/C	High-Efficiency, Triple-Output System Power Supply Controller for Notebook Computers	5.5	25	0.6	5.5	20	200 to 600		28 Ld TQFN
	ISL6271A	Integrated XScale Regulator	2.76	5.5	0.85	1.6	0.8	1200	3.7 V	20 Ld QFN
	ISL6441	1.4MHz Dual, 180 Out-of-Phase, Step-Down PWM and Single Linear Controller	4.5	24	0.8	24	6	1400	5 V	28 Ld QFN
	ISL6442	2.5MHz Dual, 180 Out-of-Phase, Step-Down PWM and Single Linear Controller	4.5	24	0.8	24	20	300 to 2500	5 V	24 Ld QSOP
	ISL6443	300kHz Dual, 180 Out-of-Phase, Step-Down PWM and Single Linear Controller	4.5	24	0.8	24	10	300	5 V	28 Ld QFN
	ISL6443A	300kHz Dual, 180 Out-of-Phase, Step-Down PWM and Single Linear Controller	4.5	24	0.8	24	10	300	5 V	28 Ld QFN, 28 Ld TSSOP
	ISL6446/A	Dual (180 Out-of-Phase) PWM and Linear Controller	4.5	24	0.6	24	25	100kHz to 2.5MHz	5 V	24 Ld QSOP
	ISL6532A	3-in-1 ACPI Regulator/Controller for Dual Channel DDR and DDR2 Memory Systems	2.5	5	0.8	5	20	250	5 V	28 Ld QFN
	ISL6534	Dual PWM with Linear	3.3	12	0.6	9	20	300 to 1000	5 V	32 Ld QFN, 24 Ld TSSOP
	ISL88550A	Synchronous Step Down Controller with Sourcing and Sinking LDO Regulator	2	25	0.7	3.5	15	200, 300, 450, 600	5 V	28 Ld TQFN
	ISL9440	Triple, 180 Out-of-Phase, Step-Down PWM and Single Linear Controller	4.5	24	0.8	24	20	300	5 V	32 Ld QFN
	ISL9440A	Triple, 180 Out-of-Phase, Step-Down PWM and Single Linear Controller	4.5	24	0.8	24	20	600	5 V	32 Ld QFN
	ISL9440B	Triple Step-Down PWM and Single Linear Controller with Programmable Soft-Start	4.5	24	0.8	24	0.8	300	5 V	32 Ld QFN
	ISL9440C	Triple Step-Down PWM and Single Linear Controller with Programmable Soft-Start	4.5	24	0.8	24	20	600	5 V	32 Ld QFN
	ISL9441	Triple, 180 Out-of-Phase, Step-Down PWM and Single Linear Controller	4.5	24	0.8	24	20	300	5 V	32 Ld QFN
	ISL9443	Triple, 180 Out-of-Phase, Synchronous Step-Down PWM Controller	4.5	26	0.7	26	20	200 to 1200	5 V	32 Ld QFN
	ISL9444	Triple, 180 Out-of-Phase, Synchronous Step-Down PWM Controller	4.5	26	0.7	26	20	200 to 1200	5 V	40Ld QFN
4	HIP6019B	Advanced Dual PWM and Dual Linear Power Control	5	5	1.3	3.5	25	50 to 1000	12 V	28 Ld SOIC
	HIP6021	Advanced PWM and Triple Linear Power Controller	5	5	1.3	3.5	25	50 to 1000	12 V	28 Ld SOIC
	HIP6521	PWM and Triple Linear Power Controller	5	5	0.8	4.5	20	300	5 V	16 Ld SOIC
	ISL6232	High Efficiency System Power Supply Controller for Notebook Computers	5.5	25	0.8	5.5	12	300		28 Ld QSOP
	ISL6236	High-Efficiency, Quad-Output, Main Power Supply Controllers for Notebook Computers	5.5	25	0.7	5.5	20	400/500, 400/300, 200/300		32 Ld QFN
	ISL6236A	High-Efficiency, Quad-Output, Main Power Supply Controllers for Notebook Computers	4.5	25	0.7	5.5	20	400/500, 400/300, 200/300		32 Ld QFN
	ISL6237	High-Efficiency, Quad-Output, Main Power Supply Controllers for Notebook Computers	5.5	25	0.7	5.5	20	400/500, 400/300, 200/300		32 Ld QFN
	ISL62381/C	High-Efficiency, Quad or Triple-Output System Power Supply Controller for Notebook Computers	5.5	25	0.6	5.5	20	Programmable		32 Ld TQFN
	ISL62382/C	High-Efficiency, Quad or Triple-Output System Power Supply Controller for Notebook Computers	5.5	25	0.6	5.5	20	Programmable		32 Ld TQFN
	ISL62383/C	High-Efficiency, Quad or Triple-Output System Power Supply Controller for Notebook Computers	5.5	25	0.6	5.5	20	Programmable		28 Ld TQFN
	ISL62386	High-Efficiency, Quad Output System Power Supply Controller for Notebook Computers	5.5	25	0.6	5.5	20	Programmable		32 Ld TQFN
	ISL6521	PWM Buck DC/DC and Triple Linear Power Controller	5	5	0.8	4.5	20	300	5 V	16 Ld SOIC
	ISL6537	ACPI Regulator/Controller for Dual Channel DDR Memory Systems	4.5	5.5	0.8	5.5	25	250	5 V	28 Ld QFN
	ISL6548	ACPI Regulator/Controller for Dual Channel DDR Memory Systems	4.5	5.5	0.8	5.5	25	250	5 V	28 Ld QFN
5	ISL6537A	ACPI Regulator/Controller for Dual Channel DDR Memory Systems	4.5	5.5	0.8	5.5	25	250	5 V	28 Ld QFN
	ISL6548A	ACPI Regulator/Controller for Dual Channel DDR Memory Systems	4.5	5.5	0.8	5.5	25	250	5 V	28 Ld QFN

Multiphase Controller

ISL8126

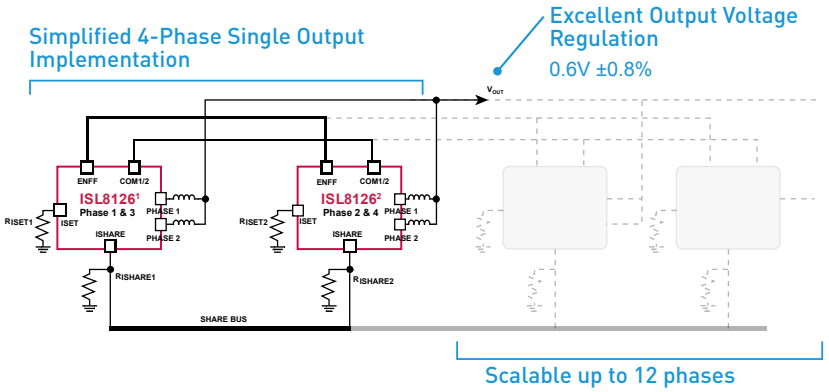
Evalboard Available!

Scalable/Cascadeable 2/4/6/8/12-Phase PWM Controller

Key Features

- Wide 3.0 to 26.5V V_{IN} Range
- Oscillator-programmable from 150kHz to 1.5MHz
- Configurable as a Dual Output Single-Phase or Single Output Dual-Phase
- Phase Shift Between Phases (Multiple Options) Using Frequency SYNC and Clock Out

Unmatched Flexibility for Power-Hungry ASICs and Computer Designs



MULTIPHASE CONTROLLERS

Device	Device Description	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	V_{BIAS} (V)	Applications	Max # of Outputs	Max # of Phases	VID	Package
General Purpose												
ISL6310	Two-Phase Buck PWM Controller with High Current Integrated MOSFET Drivers	5	12	0.6	2.3	60	4.75 to 5.25	General Purpose	1	2	No VID	32 Ld QFN
ISL6315	Two-Phase Multiphase Buck PWM Controller with MOSFET Drivers Integrated (No Droop)	5	12	0.84	1.6	60	4.75 to 5.25	General Purpose	1	2	No VID	24 Ld QFN
ISL6567	Multipurpose Two-Phase Buck PWM Controller with Integrated MOSFET Drivers	3	20	0.6	5	60	4.9 to 5.5	General Purpose	1	2	No VID	24 Ld QFN
ISL8120	Dual/n-Phase Buck PWM Controller with Integrated Drivers	2.97	22	0.6	19.8	60	3 to 5.6	General Purpose	2	2	No VID	32 Ld QFN
ISL8121	3V to 20V, Two-Phase Buck PWM Controller with Integrated 4A MOSFET Drivers	3	20	0.6	13.2	60	4.9 to 5.5	General Purpose	1	2	No VID	24 Ld QFN
ISL8126	Dual/n-Phase Buck PWM Controller with Integrated Drivers	3	26.5	0.6	23.85	60	2.97 to 5.60	General Purpose	2	2	No VID	32 Ld QFN
ISL9506	Multiphase PWM Controller with Programmable Output Voltage	4.75	5.25	0.3	1.5	90	4.75 to 5.25	General Purpose	1	3	Yes	40 Ld QFN
ISL6308A	Three-Phase Buck PWM Controller with High Current Integrated MOSFET Drivers	5	12	0.6	2.3	100	4.75 to 5.25	General Purpose	1	3	No VID	40 Ld QFN
ISL6558	Multi-Purpose Precision Multiphase PWM Controller With Optional Active Voltage Positioning	4.75	12	0.8	5	120	4.75 to 5.25	General Purpose	1	4	No VID	16 Ld SOIC, 20 Ld QFN
ISL6564A	Multiphase PWM Controller with Linear 6-Bit DAC Capable of Precision $r_{DS(ON)}$ or DCR Differential Current Sensing	3	12	0.525	1.3	120	5, 12	General Purpose	1	4	Yes	40 Ld QFN
AMD Solutions												
ISL6265A/C	Multi-Output Controller with Integrated MOSFET Drivers for AMD SVI Capable Mobile CPUs	5	24	0.5	1.55	60	4.75 to 5.25	AMD Dual and Single Plane Processors	3	2	Yes	40 Ld QFN
ISL62771	Multiphase PWM Regulator for AMD Fusion Mobile CPUs Using SVI 2.0	4.5	25	0.5	1.55	60	4.75 to 5.25	AMD Fusion™ Mobile CPUs Using SVI 2.0	2	2	Yes	40 Ld TQFN
ISL6569/A	2 Phase Multiphase Buck PWM Controller	3	12	0.8	1.55	60	5, 12	AMD Hammer (Athlon 64™, Opteron™, Sempron™)	1	2	Yes	32 Ld QFN, 24 Ld SOIC
ISL6267	Multiphase PWM Regulator for AMD Fusion Mobile CPUs	4.5	25	0	1.55	90	4.75 to 5.25	AMD Fusion™ CPU/ GPU Core Power	2	3	Yes	48 Ld QFN
ISL62773	Multiphase PWM Regulator for AMD Fusion Desktop CPUs Using SVI 2.0	4.5	25	0.5	1.55	90	4.75 to 5.25	AMD Fusion CPU/ GPU Core Power, Desktop Computers	2	3	Yes	48 Ld QFN
ISL6277/A	Multiphase PWM Regulator for AMD Fusion Mobile CPUs Using SVI 2.0	4.5	25	0.5	1.55	90	4.75 to 5.25	AMD Fusion CPU/ GPU Core Power	2	3	8-bit VID	48 Ld QFN
ISL6244	Multiphase PWM Controller	5.5	25	0.8	1.5	120	4.75 to 5.25	AMD Mobile Hammer	1	4	Yes	32 Ld QFN
ISL6323	Hybrid SVI/PVI, Monolithic Dual PWM Hybrid Controller Powering AMD SVI Split-Plane and VI Uniplane Processors	5	12	0	2	120	4.75 to 5.25	AMD Dual and Single Plane Processors	2	4	Yes	48 Ld QFN

MULTIPHASE CONTROLLERS (CONTINUED)

Device	Device Description	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	V_{BIAS} (V)	Applications	Max # of Outputs	Max # of Phases	VID	Package
ISL6323A	Monolithic Dual PWM Hybrid Controller Powering AMD SVI Split-Plane and PVI Uniplane Processors	5	12	0	2	120	4.75 to 5.25	AMD Dual and Single Plane Processors	2	4	Yes	48 Ld QFN
ISL6323B	Monolithic Dual PWM Hybrid Controller Powering AMD SVI Split-Plane and PVI Uniplane Processors	5	12	0	2	120	4.75 to 5.25	AMD Dual and Single Plane Processors	2	4	Yes	48 Ld QFN
ISL6324/A	Hybrid SVI/PVI with I²C Monolithic Dual PWM Hybrid Controller Powering AMD SVI Split-Plane and PVI Uniplane Processors	5	12	0	2	120	4.75 to 5.25	AMD Dual and Single Plane Processors with Overclocking	2	4	Yes	48 Ld QFN
ISL6328/A	Dual PWM Controller for Powering AMD SVI Split-Plane Processors	5	12	0.0125	1.55	120	4.75 to 5.25	AMD SVI Split-Plane Processors	2	4	Yes	48 Ld QFN
ISL6377	AMD Fusion Desktop CPUs Using SVI 2.0	4.75	5.25	0.5	1.55	120	4.75 to 5.25	AMD Fusion™ Desktop CPUs Using SVI 2.0	2	4	Yes	48 Ld QFN
ISL6559	Multiphase PWM Controller	3	12	0.8	1.55	120	5, 12	AMD Hammer (Athlon 64™, Opteron™, Sempron™)	1	4	Yes	32 Ld QFN, 28 Ld SOIC
ISL6329	Dual PWM Controller Powering AMD SVI Split-Plane Processors	5	12	0.0125	1.55	200	4.75 to 5.25	AMD SVI Split-Plane Processors	2	6	Yes	60 Ld QFN
IMVP Solutions												
ISL6261	One-Phase INT DC/DC Buck Controller	4.75	5.25	0.3	1.5	30	4.75 to 5.25	IMVP-6	1	1	Yes	48 Ld QFN
ISL62881/B	Single-Phase PWM Regulator for IMVP-6.5 Mobile CPUs and GPUs	5	25	0	1.5	30	4.75 to 5.25	Mobile GPU & CPU IMVP-6.5	1	1	Yes	28 Ld TQFN
ISL62881C/D	Single-Phase PWM Regulator for IMVP-6.5 Mobile CPUs and GPUs	4.5	25	0	1.5	30	4.75 to 5.25	Mobile GPU & CPU IMVP-6.5	1	1	Yes	28 Ld TQFN
ISL62884C	Single-Phase PWM Regulator for IMVP-6 Mobile CPUs	4.5	25	0	1.5	30	4.75 to 5.25	Mobile GPU & CPU IMVP-6®	1	1	Yes	28 Ld TQFN
ISL6216	PWM Controller for Intel Pentium M	5.5	25	0.7	1.708	32		IMVP-IV		2	Yes	28 Ld QSOP
ISL6217/A	PWM Controller for Intel Pentium M	5.5	25	0.7	1.708	60	4.75 to 5.25	IMVP-IV	1	2	Yes	38 Ld TSSOP
ISL6262/A	Two-Phase Core Regulator for IMVP-6 Mobile CPUs	4.75	5.25	0.3	1.5	60	4.75 to 5.25	IMVP-6	1	2	Yes	48 Ld QFN
ISL6264	Two-Phase Core Controller for AMD Mobile Turion CPUs	5	24	0.375	1.55	60	4.75 to 5.25	Mobile Turion CPUs	1	2	Yes	40 Ld QFN
ISL6266/A	Two-phase Core Controllers (Montevina, IMVP-6+)	4.75	5.25	0.3	1.5	60	4.75 to 5.25	IMVP-6+	1	2	Yes	48 Ld QFN
ISL62882/B/C	Multiphase PWM Regulator for IMVP-6.5 Mobile CPUs and GPUs	5	25	0.75	1.5	60	4.75 to 5.25	IMVP-6.5	1	2	Yes	40 Ld TQFN
ISL6260/B/C	Multi-Phase Core Regulator for IMVP-VI Mobile CPUs	4.75	5.25	0.3	1.5	90	4.75 to 5.25	IMVP-6	1	3	Yes	40 Ld QFN
ISL62883/B/C	Multiphase PWM Regulator for IMVP-6.5 Mobile CPUs	5	21	0.75	1.5	90	4.75 to 5.25	IMVP-6.5	1	3	Yes	40 Ld TQFN
ISL6247	Multiphase PWM Controller for Mobile Intel Pentium 4	5.5	25	0.8375	1.6	120		IMVP-IV	1	4	Yes	40 Ld QFN
VR8, VR9, VR10, VR11, VR12, AMD Solutions												
ISL6314	Single-Phase Buck PWM Controller with Integrated MOSFET Drivers for Intel VR11 and AMD Applications	3	12	0.375	1.6	30	5 to 12	VR11, AMD	1	1	Yes	32 Ld QFN
ISL95837	3+1 and 1+1 Voltage Regulator for IMVP-7/VR12 CPUs	4.5	5.5	0	1.52	30	4.75 to 5.25	VR12/IMVP7	2	1	Yes	40 Ld QFN
ISL95838	Dual 3+2 PWM Controller for IMVP-7/VR12 CPUs	25	4.75	0.25	1.52	30	4.75 to 5.25	VR12/IMVP7	2	3	Yes	40 Ld TQFN
ISL6322G	Two-Phase Buck PWM Controller with Integrated MOSFET Drivers, I²C Interface, and Phase Dropping	3	12	0.375	1.99375	50	4.75 to 5.25	VR10, VR11, AMD M2 6-Bit	1	4	Yes	48 Ld QFN
HIP6302	Microprocessor CORE Voltage Regulator Multiphase Buck PWM Controller	3	12	1.1	1.85	60	4.75 to 5.25	VR9	1	2	Yes	16 Ld SOIC
ISL6223	Mobile Microprocessor CORE Voltage Regulator Multiphase Buck PWM Controller	5.5	25	0.925	2	60	7	VID - Mobile VID	1	2	Yes	20 Ld QSOP
ISL6313/B	Two-Phase Buck PWM Controller with Integrated MOSFET Drivers for Intel VR11 and AMD Applications	5	12	0.5	1.6	60	4.75 to 5.25	VR11, AMD	1	2	Yes	36 Ld TQFN
ISL6553	Microprocessor CORE Voltage Regulator 2 Phase Buck PWM Controller	3	12	1.05	1.825	60	4.75 to 5.25	VR8.5	1	2	Yes	16 Ld SOIC
ISL6554	Microprocessor CORE Voltage Regulator 2-4 Phase Buck PWM Controller	3	12	0.95	1.7	60	4.75 to 5.25	VR8.5	1	4	Yes	20 Ld SOIC
ISL6560	Microprocessor Core Voltage Regulator Two Phase Buck PWM Controller	3	12	1.1	1.85	60	4.75 to 5.25	VR9	1	2	Yes	16 Ld SOIC
ISL6563	Two-Phase Multiphase Buck PWM Controller with Integrated MOSFET Drivers	4.75	12	0.8	1.85	60	4.75 to 5.25	VR9, VR10, AMD Hammer™ (Athlon 64™, Opteron™, Sempron™)	1	2	Yes	24 Ld QFN
ISL6568	Two-Phase Buck PWM Controller with Integrated MOSFET Drivers for VRM9, VRM10, and AMD Hammer Applications	3	12	0.8375	1.6	60	4.75 to 5.25	VR9, VR10, AMD Hammer	1	2	Yes	32 Ld QFN

MULTIPHASE CONTROLLERS (CONTINUED)

Device	Device Description	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	V_{BIAS} (V)	Applications	Max # of Outputs	Max # of Phases	VID	Package
ISL8101	Two-Phase Multiphase Buck PWM Controller with Integrated MOSFET Drivers	4.6	12	0.6	2.3	60	4.75 to 5.25	VRM9, VRM10 and AMD's Hammer microprocessors	1	2	No VID	24 Ld QFN
ISL95833	Dual 2+1 PWM Controller for IMVP-7/VR12 CPUs	4.75	5.25	0.25	1.52	60	4.75 to 5.25	VR12/IMVP7	2	2	Yes	32 Ld QFN
ISL6565A/B	Multiphase PWM Controller with Precision $r_{DS(ON)}$ or DCR Current Sensing for VR10.X Application	3	12	0.8375	1.6	90	5, 12	VR10	1	3	Yes	28 Ld QFN, 28 Ld SOIC, 28 Ld TSSOP
ISL95831	3+1 Voltage Regulator for IMVP-7/VR12 CPUs	4.5	25	0.25	1.52	90	4.75 to 5.25	VR12/IMVP7	1	3	Yes	48 Ld TQFN
ISL95835	3+1 and 1+1 Voltage Regulator for IMVP-7/VR12 CPUs	4.5	5.5	0	1.52	90	4.75 to 5.25	VR12/IMVP7	2	3	Yes	40 Ld QFN
ISL95836	Dual 3+2 PWM Controller for IMVP-7/VR12 CPUs	4.75	5.25	0.25	1.52	90	4.75 to 5.25	VR12/IMVP7	2	3	Yes	40 Ld TQFN
ISL6333/A/B/C	Three-Phase Buck PWM Controller with Integrated MOSFET Drivers and Light Load Efficiency Enhancements for Intel VR11.1 Applications	5	12	0.5	1.6	100	4.75 to 5.25	VR11.1	1	3	Yes	48 Ld QFN
ISL6566/A	Three-Phase Buck PWM Controller with Integrated MOSFET Drivers for VRM9, VRM10, and AMD Hammer Applications	3	12	0.8375	1.6	100	4.75 to 5.25	VR9, VR10, AMD Hammer	1	3	Yes	40 Ld QFN
HIP6301/V	Microprocessor CORE Voltage Regulator Multiphase Buck PWM Controller	3	12	1.1	1.85	120	4.75 to 5.25	VR9	1	4	Yes	20 Ld SOIC
HIP6311/A	Microprocessor CORE Voltage Regulator Multiphase Buck PWM Controller	3	12	1.1	1.85	120	4.75 to 5.25	VR9	1	4	Yes	20 Ld SOIC
ISL6312/A	Four-Phase Buck PWM Controller with Integrated MOSFET Drivers for Intel VR10, VR11, and AMD Applications	3 / 5 (A ver)	12	0.375	1.6	120	4.75 to 5.25	VR10, VR11, AMD M2 6-Bit	1	4	Yes	48 Ld QFN
ISL6322	Four-Phase Buck PWM Controller with Integrated MOSFET Drivers and I^2C Interface for Intel VR10, VR11, and AMD Applications	3	12	0.375	1.99375	120	4.75 to 5.25	VR10, VR11, AMD M2 6-Bit	1	4	Yes	48 Ld QFN
ISL6326/B	4-Phase PWM Controller with 8-Bit DAC Code Capable of Precision DCR Differential Current Sensing	3	12	0.5	1.6	120	4.75 to 5.25	VR11 DT, Servers	1	4	Yes	40 Ld QFN
ISL6353	Multiphase PWM Regulator for VR12 DDR Memory Systems	4.5	25	0	1.52	120	4.75 to 5.25	VR12 DDR Memory Systems	1	3	Yes	40 Ld TQFN
ISL6552	Microprocessor CORE Voltage Regulator Multiphase Buck PWM Controller	3	12	1.05	1.825	120	4.75 to 5.25	VR8.5	1	4	Yes	20 Ld QFN, 20 Ld SOIC
ISL6557A	Multiphase PWM Controller for CORE Voltage Regulation	3	12	0.88	1.55	120	4.75 to 5.25	VR9	1	4	Yes	24 Ld SOIC
ISL6561	Multiphase PWM Controller with Precision r_{DS}, On or DCR Current Sensing	3	12	0.8375	1.65	120	5, 12	VR10	1	4	Yes	40 Ld QFN
ISL6306	4-Phase PWM Controller with 8-Bit DAC Code Capable of Precision $r_{DS(ON)}$ or DCR Differential Current Sensing	3	12	0.5	1.6	130	4.75 to 5.25	VR11	1	4	Yes	40 Ld QFN
ISL6316	Enhanced 4-Phase PWM Controller with 6-Bit VID Code Capable of Precision $r_{DS(on)}$ or DCR Differential Current Sensing for VR10 Application	3	12	0.8375	1.65	130	4.75 to 5.25	VR10x	1	4	Yes	40 Ld QFN
ISL6334/A	VR11.1, 4-Phase PWM Controller with Light Load Efficiency Enhancement and Load Current Monitoring Features	3	12	0.5	1.6	130	4.75 to 5.25	VR11.1	1	4	Yes	40 Ld QFN
ISL6334AR5368	VR11.1, 4-Phase PWM Controller with Light Load Efficiency Enhancement and Load Current Monitoring Features	3	12	0.5	1.6	130	4.75 to 5.25	VR11.1	1	4	Yes	40 Ld QFN
ISL6334B/C/D	VR11.1, 4-Phase PWM Controller with Light Load Efficiency Enhancement and Load Current Monitoring Features	3	12	0.5	1.6	130	4.75 to 5.25	VR11.1	1	4	Yes	40 Ld QFN
ISL6363	Multiphase PWM Regulator for VR12 Desktop CPUs	5	12	0	1.52	130	4.75 to 5.25	VR12	2	4	Yes	48 Ld TQFN
ISL6364/A	Dual 4-Phase + 1-Phase PWM Controller for VR12/ IMVP7 Applications	4.75	5.25	0.25	1.52	130	4.75 to 5.25	VR12/IMVP7	2	4	Yes	48 Ld QFN
ISL6307/A	6-Phase PWM Controller with 8 Bit VID Code Capable of Precision $r_{DS(ON)}$ or DCR Differential Current	3	12	0.5	1.6	200	4.75 to 5.25	VR11	1	6	Yes	48 Ld QFN
ISL6307B	6-Phase VR11 PWM Controller with 8-Bit VID Code Capable of Precision $r_{DS(ON)}$ or DCR Differential Current Sensing for Applications in Which Supply Voltage is Higher than 5V	3	12	0.5	1.6	200	12	VR11	1	6	Yes	48 Ld QFN
ISL6327/A	Enhanced 6-Phase PWM Controller with 8-Bit VID Code and Differential Inductor DCR or Resistor Current Sensing	3	12	0.5	1.6	200	4.75 to 5.25	VR11 Workstations, Servers	1	6	Yes	48 Ld QFN
ISL6336/A/B	6-Phase PWM Controller with Light Load Efficiency Enhancement and Current Monitoring	3	12	0.5	1.6	200	4.75 to 5.25	VR11.1	1	6	Yes	48 Ld QFN
ISL6366	Dual 6-Phase + 1-Phase PWM Controller for VR12/ IMVP7 Applications	4.75	5.25	0.25	1.52	200	4.75 to 5.25	VR12/IMVP7	2	6	Yes	60 Ld QFN
ISL6367/H	Green Hybrid Digital Dual 6+1 Phase PWM Controller for VR12/IMVP7 Applications With SMBus/PMBus/I^2C and AUTO Phase	4.75	5.25	0.25	1.52	200	4.75 to 5.25	VR12/IMVP7	2	6	Yes	60 Ld QFN

INTEGRATED FET SWITCHING REGULATORS

Single Output Buck Regulators (p. 24) • Single Output Buck-Boost Regulators (p. 25) • Single Output Boost Regulators (p. 26) • Multiple Output Buck Regulators (p. 27)

Single Output Buck Regulators

ISL8016

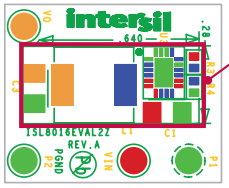
Evalboard Available!

High Efficiency 6A Int. FET Buck Regulator

Key Features

- **High Efficiency Over Full Load Range**
  - PFM mode for improved efficiency at light loads - 97% peak efficiency
  - 6A guaranteed output current
- **Space Saving and Fewer External Components**
  - 1MHz fixed & 4MHz sync freq gives small inductor
  - High side P-Channel device reduces need for boost diode
  - Internal Compensation
  - 3x4 QFN 20
  - Small overall solution size
  - Reduce size of inductor
- **Design Flexibility**
  - 100% duty cycle (V_{IN}=V_{OUT})
  - Sync IN and Sync Out for master slave
  - ±10% voltage margining
  - Internal (1ms) or external soft-start
  - Current sharing capability (multiple IC's)
- **Protection**
  - Peak current limiting
  - Hiccup mode short circuit protection
  - Over temperature protection
  - Programmable current limit

Small Solution Size



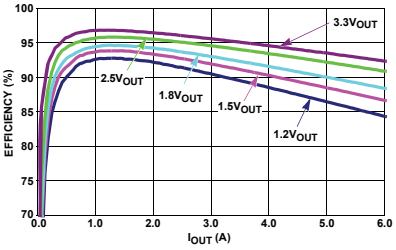
TOP COMPONENTS

0.64"x0.28" Solution Size

Actual Size

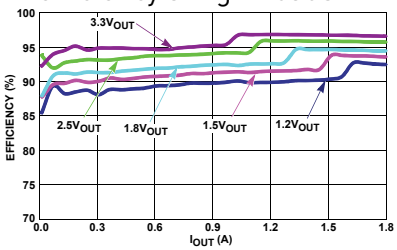
High Efficiency Over Full Load Range

Up to 97% efficiency



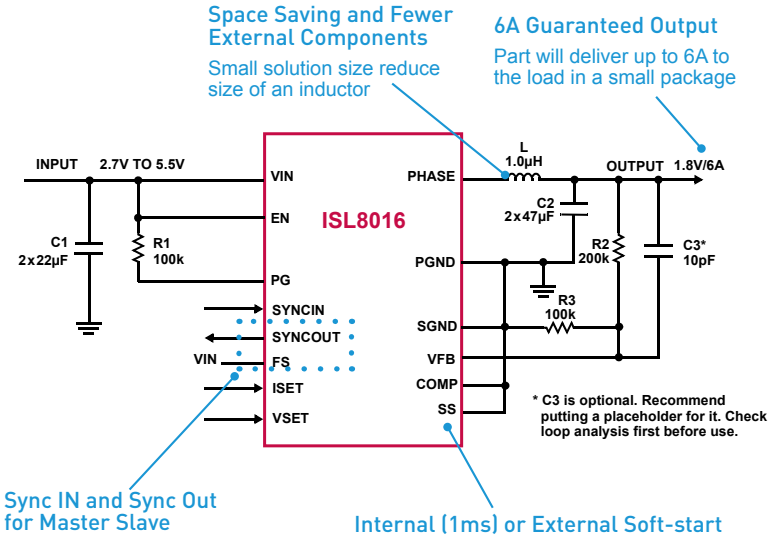
EFFICIENCY vs LOAD (1MHz 5V_{IN} PWM)

PFM mode for improved efficiency at light loads



EFFICIENCY vs LOAD (1MHz 5VIN PFM)

Design Flexibility



SINGLE OUTPUT BUCK REGULATORS

Device	Device Description	V_{IN} (min) (V)	V_{IN} (max) (V)	I_{OUT} (max) (A)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_Q	Switching Frequency Min	Switching Frequency Max	Topology	Package
ISL6410	Single Synchronous Buck Regulator with Integrated FET for WLAN Chipsets	3	3.6	0.6	1.2, 1.5, 1.8	1.2, 1.5, 1.8	2.3 mA	0.75 MHz	0.75 MHz	Buck	10 Ld MSOP, 16 Ld QFN
ISL6273	1.2A Low Quiescent Current 1.6MHz High Efficiency Synchronous Buck Regulator	2.7	5.5	1.2	0.8	5.5	25 µA	1.6 MHz	1.6 MHz	Buck	10 Ld DFN
ISL6410A	Single Synchronous Buck Regulator with Integrated FET for WLAN Chipsets	4.5	5.5	0.6	1.2, 1.8, 3.3	1.2, 1.8, 3.3	2.3 mA	0.75 MHz	0.75 MHz	Buck	10 Ld MSOP, 16 Ld QFN
ISL78213	3A Low Quiescent Current, High Efficiency Synchronous Buck Regulator	2.8	5.5	3	0.8	5.5	35 µA	1 MHz	1 MHz	Buck	16 Ld QFN
ISL78214	4A Low Quiescent Current High Efficiency Synchronous Buck Regulator	2.8	5.5	4	0.8	5.5	35 µA	1 MHz	1 MHz	Buck	16 Ld QFN
ISL8002/A	Compact 2A Synchronous Buck Regulator	2.7	5.5	2	0.6	V_{IN}	35 µA	0.85 MHz	2.3 MHz	Buck	8 Ld TDFN
ISL8009A	1.5A Low Quiescent Current 1.6MHz High Efficiency Synchronous Buck Regulator	2.7	5.5	1.5	0.8	5.5	17 µA	1.6 MHz	1.6 MHz	Buck	8 Ld DFN
ISL80019/A	Compact 1.5A Synchronous Buck Regulator	2.7	5.5	1.5	0.6	V_{IN}	35 µA	0.85 MHz	2.3 MHz	Buck	8 Ld TDFN
ISL8010	Monolithic 600mA Step-Down Regulator with Low Quiescent Current	2.5	5.5	0.6	0.8	5.5	120 µA	1.5 MHz	1.5 MHz	Buck	10 Ld MSOP
ISL8011	1.2A Integrated FETs, High Efficiency Synchronous Buck Regulator	2.7	5.5	1.2	0.8	5.5	5 mA	1.6 MHz	1.6 MHz	Buck	10 Ld DFN
ISL8012	2A Low Quiescent Current 1MHz High Efficiency Synchronous Buck Regulator	2.7	5.5	2	0.8	5.5	40 µA	1 MHz	1 MHz	Buck	10 Ld DFN
ISL8013/A	3A Low Quiescent Current 1MHz High Efficiency Synchronous Buck Regulator	2.7	5.5	3	0.8	5.5	35 µA	1 MHz	1 MHz	Buck	16 Ld QFN
ISL8014/A	4A Low Quiescent Current 1MHz High Efficiency Synchronous Buck Regulator	2.7	5.5	4	0.8	5.5	35 µA	1 MHz	1 MHz	Buck	16 Ld QFN
ISL8016	6A Low Quiescent Current High Efficiency Synchronous Buck Regulator	2.7	5.5	6	0.6	5.5	70 µA	0.5 MHz	4 MHz	Buck	20 Ld QFN
ISL8023/A	Compact Synchronous Buck Regulator	2.7	5.5	3	0.6	5.5	50 µA	0.5 MHz	4 MHz	Buck	16 LD TQFN
ISL8024/A	Compact Synchronous Buck Regulator	2.7	5.5	4	0.6	5.5	50 µA	0.5 MHz	4 MHz	Buck	16 LD TQFN
ISL8025/A	Compact Synchronous Buck Regulator	2.7	5.5	5	0.6	V_{IN}	50 µA	0.8 MHz	2.4 MHz	Buck	16 LD TQFN
ISL9105	600mA Low Quiescent Current 1.6MHz High Efficiency Synchronous Buck Regulator	2.7	5.5	0.6	0.8	5.5	25 µA	1.6 MHz	1.6 MHz	Buck	8 Ld DFN
ISL9106	1.2A 1.6MHz Low Quiescent Current High Efficiency Synchronous Buck Regulator	2.7	5.5	1.2	0.8	5.5	17 µA	1.6 MHz	1.6 MHz	Buck	10 Ld DFN
ISL9107	1.5A 1.6MHz Low Quiescent Current High Efficiency Synchronous Buck Regulator	2.7	5.5	1.5	0.8	5.5	17 µA	1.6 MHz	1.6 MHz	Buck	8 Ld DFN
ISL9108	1.5A 1.6MHz Low Quiescent Current High Efficiency Synchronous Buck Regulator	2.7	5.5	1.5	0.8	5.5	17 µA	1.6 MHz	1.6 MHz	Buck	8 Ld DFN
ISL9109	RF PA 1.5A DC/DC Regulator	2.7	5.5	1.5	0.8	5.5	4.3 µA	1.6 MHz	1.6 MHz	Buck	8 Ld DFN
ISL95210	High Efficiency 5V, 10A Buck Regulator	2.97	5.5	10	0.6	2.16	0.4 µA	0.4 MHz	0.8 MHz	Buck	32 Ld QFN
ISL9103/A	500mA 2.4MHz Low I_Q High Efficiency Synchronous Buck Converter	2.7	6	0.5	0.8	6	20 µA	2.4 MHz	2.4 MHz	Buck	6 Ld µTDFN
ISL9104/A	500mA 4.3MHz Low I_Q High Efficiency Synchronous Buck Converter	2.7	6	0.5	0.8	6	20 µA	4.3 MHz	4.3 MHz	Buck	6 Ld µTDFN
ISL97536	Monolithic 1A Step-Down Regulator with Low Quiescent Current	2.5	6	1	0.8	6	0.5 mA	1.4 MHz	1.4 MHz	Buck	10 Ld MSOP
ISL8502/A	2A Synchronous Buck Regulator with Integrated MOSFETs	4.5	14	2	0.6	14		0.5 MHz	1.2 MHz	Buck	24 Ld QFN
ISL8500	2A Standard Buck PWM Regulator	5.5	25	2	0.6	19	80 µA	0.5 MHz	0.5 MHz	Buck	12 Ld DFN
ISL85001	1A Standard Buck PWM Regulator	5.5	25	1	0.6	19	80 µA	0.5 MHz	0.5 MHz	Buck	12 Ld DFN
ISL85402	2.5A Regulator with Integrated High-Side MOSFET for Synchronous Buck or Boost Buck Converter	3	36	2.5	0.8	34	0.3 mA	0.2 MHz	2.2 MHz	Buck or Boost	20 LD QFN
ISL78200	2.5A Regulator with Integrated High-Side MOSFET for Synchronous Buck or Boost Buck Converter	3	40	2.5	0.8	38	0.3 mA	0.2 MHz	2.2 MHz	Buck or Boost	20 Ld HTSSOP
ISL78205	2.5A Buck Controller with Integrated High-Side MOSFET	3	40	2.5	0.8	38	1.2 mA	0.2 MHz	2.2 MHz	Buck	20 Ld HTSSOP
ISL8540	DC/DC Power Switching Regulator	9	40	2	1.21	35	60 µA	0.1 MHz	0.6 MHz	Buck	20 Ld HTSSOP
ISL8560	DC/DC Power Switching Regulator	9	60	2	1.21	55	60 µA	0.1 MHz	0.6 MHz	Buck	20 Ld QFN

Single Output Buck-Boost Regulators

ISL9110, ISL9112

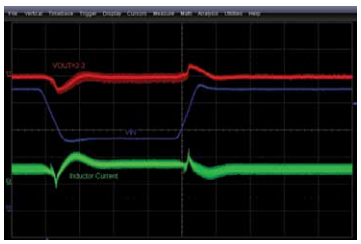
Evalboard Available!

1.2A Buck-Boost with Best in Class Transient Response

Key Features

- Input Battery Range of 1.8V to 5.5V
- High Fsw– 2.5MHz, Sync 2.75 to 3.3MHz
- Adjustable Output Voltage down to 0.8V (ISL9110)
- Fully Synchronous in any Operating Mode
- Internal Digital Soft-start
- Remote Voltage Sensing with Fixed Output Versions
- Battery Monitor and Power Good Pins (ISL9110)
- Voltage Programmability Through I^2C Bus (ISL9112)
- Excellent Transient Response During Buck/Boost Transitions
- Available in 20-Bump WLCSP Package (ISL9110A)

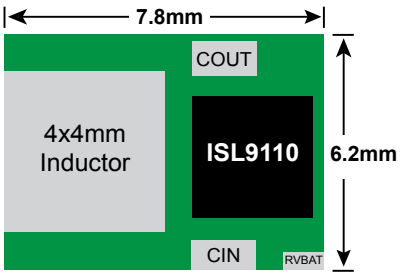
Best in Class Transient Response



TRANSIENT LOAD RESPONSE

Simple Layout

ISL9110 is smaller than power inductor



Single Output Buck-Boost Regulator

ISL91108

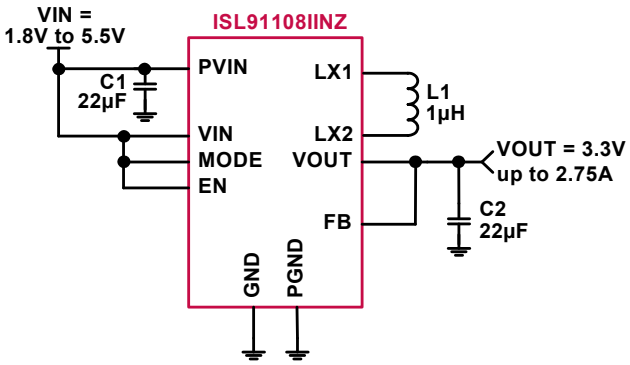
Coming Soon!

2.75A High Efficiency Buck-Boost Regulator

Key Features

- Integrated 4A Switches
- Delivers up to 2.75A Output Current for PVIN = 3V and V_{OUT} = 3.3V to Support GSM PA Bursts
- Input Battery Range of 1.8V to 5.5V
- 2.5MHz Switching Frequency
- Very Low r_{DS} Integrated MOSFETs for High Efficiency (75 to 90mΩ)
- 3.3V and 5V Fixed Output Voltages and Adjustable Output Voltage Option Down to 0.8V

Typical Fixed Output Application



SINGLE OUTPUT BUCK-BOOST REGULATORS

Device	Device Description	V_{IN} (min) (V)	V_{IN} (max) (V)	I_{OUT} (max) (A)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_Q	Switching Frequency	Package
ISL9110/A	1.2A High Efficiency Buck-Boost Regulator	1.8	5.5	1.2	1	5.2	35 µA	2.5 MHz	12 Ld DFN, 20 Bump WLCSP (A version)
ISL9112	1.2A High Efficiency Buck-Boost Regulator with I^2C	1.8	5.5	1.2	1.9	5	35 µA	2.5 MHz	12 Ld DFN
ISL91108	2.75A High Efficiency Buck-Boost Regulator	1.8	5.5	2.75	1	5.2	35 µA	2.5 MHz	20 Bump WLCSP

Single Output Boost Regulators

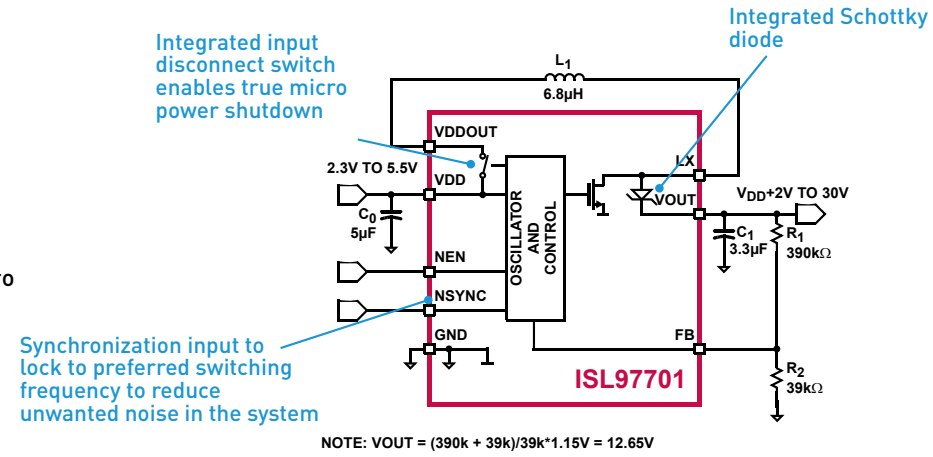
ISL97701

Boost Regulator with Integrated Schottky and Input Disconnect Switch

Key Features

- Up to 87% Efficiency
- 2.3V to 5.5V Input
- Up to 28V Output
- Integrated Boost Schottky Diode
- Input Voltage Disconnect Switch for Micro Power Shutdown
- Synchronization Input
- 10 Ld 3x3 DFN Package
- Pb-free (RoHS Compliant)

Highly Integrated Design Reduces External Components



NOTE: VOUT = (390k + 39k)/39k*1.15V = 12.65V

Single Output Boost Regulators

ISL91117

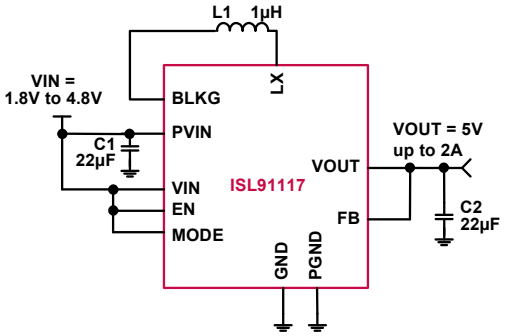
Coming Soon!

Boost Converter with 4A Switches

Key Features

- Integrated 4A Switches
  - Output current: up to 1.5A (PVIN = 3.3V, V_{OUT} = 5V)
- Input Battery Range of 1.8V to 5V
- Up to 90% Efficiency
- 2.5MHz Switching Frequency
- Very Low r_{DS} Integrated MOSFETs for High Efficiency (75 to 90mΩ)
- 35µA Quiescent Current Maximizes Light-load Efficiency

Typical Fixed Output Application



SINGLE OUTPUT BOOST REGULATORS

Device	Device Description	V_{IN} (min) (V)	V_{IN} (max) (V)	I_{OUT} (max) (A)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_Q	Switching Frequency	Package
ISL9113	1.8MHz Switching Frequency, Low Input Voltage and High Efficiency Synchronous Boost Converter with 1.3A Switch	0.8	4.7	0.7	1	5.2	20 µA	1.8MHz	8 Ld DFN, 6 Bump WLCSP
ISL91117	High Efficiency Synchronous Boost Converter with 4A Switches and Output Disconnect	1.8	4.8	1.5		5.2	35 µA	2.5MHz	20 Bump WLCSP
ISL9111/A	Low Input Voltage, High Efficiency Synchronous Boost Converter with 1A Switch	0.8	5.25	1	2.5	5.25	20 µA	1.2MHz	6 Ld SOT
ISL97516	600kHz/1.2MHz PWM Step-Up Regulator	2.3	5.5	2	1.1	25		1.2MHz	8 Ld MSOP
ISL97519/A	1% Output Accuracy 600kHz/1.2MHz PWM Step-Up Regulator	2.3	5.5	2	1.1	25		1.2MHz	8 Ld MSOP
ISL97701	Boost Regulator with Integrated Schottky and Input Disconnect Switch	2.3	5.5	0.05	4.3	28	0.1 µA	1MHz	10 Ld 3x3 DFN
ISL97702	Boost Regulator with Dual Feedback Paths and Output Disconnect for Passive OLED Power Applications	2.3	5.5	0.05	4.3	28	0.1 µA	1MHz	10 Ld 3x3 DFN
ISL97656	Integrated 4A Switch PWM Step-Up Regulator	2.3	6	4	1.1	24		1.2MHz	10 Ld 3x3 DFN
ISL98012	1.8V Input PWM Step-Up Regulator	1.8	13.2	0.6	4.5	17		670kHz	10 Ld MSOP

Multiple Output Integrated FET Buck Regulators

ISL85033

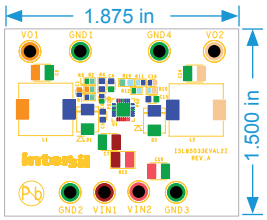
Evalboard Available!

Dual Output, Standard Buck Regulator with Integrated High-side MOSFETs

Key Features

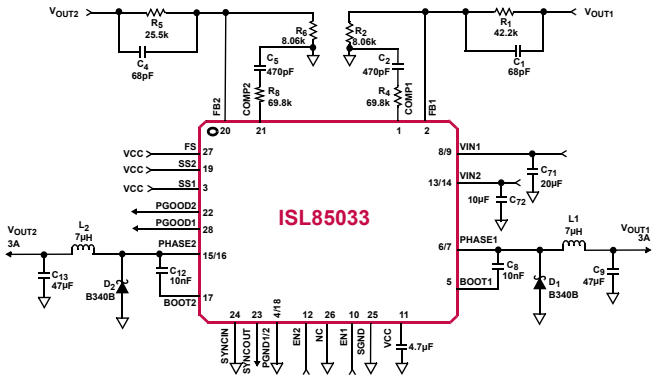
- 3A/Channel Guaranteed Output Current
- 180° Out-of-Phase Operation or In-Phase Operation
- Current Mode Control
- Output Current Sharing Capability
- Fsw: 500kHz (default) or 300kHz to 2MHz Adj.
- Synchronization to External Clock – 360kHz to 2MHz
- Independent EN and P_{GOOD} for Both Channels
- Internal 5ms Soft-Start or Externally Adjustable Soft-Start

Small Solution Size



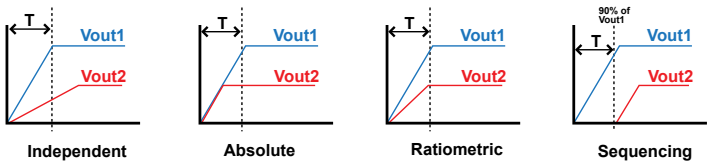
ISL85033EVAL2Z TOP SILK SCREEN

Typical Application Schematics



DUAL 3A OUTPUT (V_{IN} RANGE FROM 4.5V TO 28V)

Simple Settings for Sequencing and Tracking



MULTIPLE OUTPUT BUCK REGULATORS

# of Outputs	Device	Device Description	V_{IN} (min) (V)	V_{IN} (max) (V)	I_{OUT} (max) (A)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_Q	Switching Frequency Min	Switching Frequency Max	Topology	Package
2	ISL65426	6A Dual Synchronous Buck Regulator with Integrated MOSFETs	3	5.5	6	1	5.5		1 MHz	1 MHz	Buck	50 Ld QFN
	ISL78228	Dual 800mA Low Quiescent Current 2.25MHz High Efficiency Synchronous Buck Regulator	2.75	5.5	0.8	0.6	5.5	30 µA	1.8 MHz	2.7 MHz	Buck	10 Ld DFN
	ISL78322	Dual 2A/1.7A Low Quiescent Current 2.25MHz High Efficiency Synchronous Buck Regulator	2.8	5.5	2	0.6	5.5	40 µA	1.8 MHz	2.7 MHz	Buck	12 Ld DFN
	ISL8022	Dual 2A/1.7A Low Quiescent Current 2.25MHz High Efficiency Synchronous Buck Regulator	2.8	5.5	2.0 / 1.7	0.6	5.5	40 µA	2.25 MHz	2.25 MHz	Buck	12 Ld DFN
	ISL8088	Dual 800mA Low Quiescent Current 2.25MHz High Efficiency Synchronous Buck Regulator	2.75	5.5	0.8	0.6	5.5		2.25 MHz	2.25 MHz	Buck	10 Ld DFN
	ISL8033	Dual 3A Low Quiescent Current High Efficiency Synchronous Buck Regulator	2.85	6	3	0.8	6	15 mA	1 MHz	1 MHz	Buck	24 Ld QFN
	ISL8033A	Dual 3A Low Quiescent Current High Efficiency Synchronous Buck Regulator	2.85	6	3	0.8	6	15 mA	2.5 MHz	2.5 MHz	Buck	24 Ld QFN
	ISL8036/A	Dual 3A 1MHz/2.5MHz High Efficiency Synchronous Buck Regulator	2.85	6	6	0.8	6	15 mA	1 MHz	1 MHz	Buck	24 Ld QFN
	ISL8510	Dual Output Controller with 1A Standard Buck PWM and LDO	5	25	1	0.6	22		0.5 MHz	0.5 MHz	Buck	24 Ld QFN
	ISL85033	Wide V_{IN} Dual Standard Buck Regulator With 3A/3A Continuous Output Current	4.5	28	3	0.8	28	1.2 mA	0.3 MHz	2 MHz	Buck	28 Ld TQFN
3	ISL6455/A	0.6A PWM Regulator and Dual 0.3A LDOs and Reset	3	3.6/ 5.5 (A ver)	0.6	0.8	2.5		0.75 MHz	0.75 MHz	Buck	24 Ld QFN
	ISL8501	Triple Output Controller with 1A Standard Buck PWM and Dual LDOs	5	25	1	0.6	22		0.5 MHz	0.5 MHz	Buck	24 Ld QFN
4	ISL9307	3MHz Dual 1500mA Step-Down Converters and Dual Low-Input LDOs	2.5	5.5	1.5	0.9	3.3	50 µA	2.6 MHz	3.4 MHz	Buck	16 Ld TQFN

Solar Power Management IC

ISL1801

New!

sPMIC for Micro-Converter Bias and Drivers

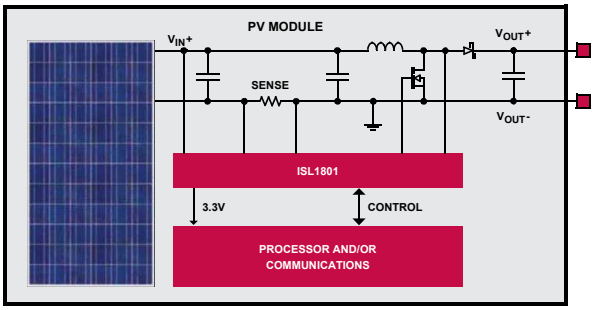
Key Features

- 90V Input Buck Switching Regulator
  - 120mA (minimum) Output with OCP, OVP, OTP
  - Integrated Upper and Lower MOSFETs
- 90V On-Chip Start-Up 6.7V LDO
- Low Voltage Buck Switching Regulator
  - 200mA (minimum) Output with OCP, OVP
  - Integrated Upper and Lower MOSFETs
  - PGOOD Output
- Low Voltage Bias LDO
  - Input Voltage Range from 6V to 14V
  - Regulated 5V Output up to 10mA
- Dual High-Speed Gate Driver
  - 14V Voltage Rating
  - 2A Peak Sourcing and 5A Peak Sinking Current
  - Peak Current Limit for DRIVE3
- Dedicated Amplifier for Accurate Current Sense
- Two Comparators for General Purpose Protection
- Integrated Watch-dog Timer

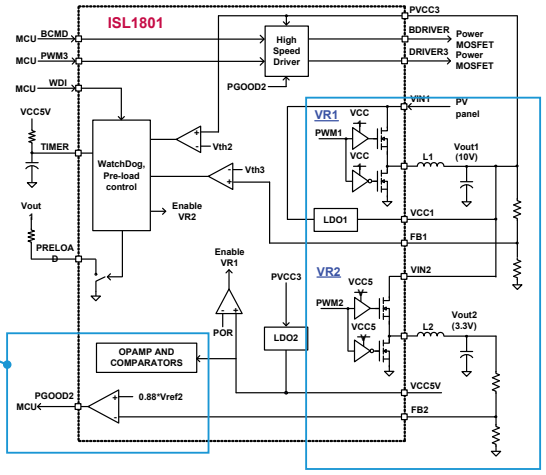
Applications

- Solar Power Optimizer
- Solar Power Micro-Inverter
- Solar Charge Controller
- Telecom Power Supply

Typical Application



Block Diagram



Integrated Buck converters reduces BOM count and cost

The PGOOD2 signal is used to indicate that VR2 output voltage is within the regulation window, preventing false start of the system

PMIC

Device	Device Description	# of Outputs	Switching Frequency (kHz)	DCD1 & DCD2 V_{IN} (V)	LDO1 & LDO2 V_{IN} (V)	DCDC1 & DCD2 V_{OUT} (V)	LDO1 & LDO2 V_{OUT} (V)	DCDC Max I_{OUT} (mA)	LDO Max I_{OUT} (mA)	I^2C	Package
ISL9305	3MHz Dual Step-Down Converters and Dual Low-Input LDOs with I^2C Compatible Interface	4	3000	2.3 to 5.5	1.5 to 5.5	0.8 to V_{IN}	0.9 to 3.3	800	300	Yes	16 Ld TQFN
ISL9305H	3MHz Dual 1.5A Step-Down Converters and Dual Low-Input LDOs with I^2C Compatible Interface	4	3000	2.5 to 5.5	1.5 to 5.5	0.8 to V_{IN}	0.9 to 3.3	1500	300	Yes	16 Ld TQFN
ISL9307	3MHz Dual 1500mA Step-Down Converters and Dual Low-Input LDOs	4	3000	2.5 to 5.5	1.5 to 5.5	0.8 to V_{IN}	0.9 to 3.3	1500	300	No	16 Ld TQFN

APPLICATION SPECIFIC PMIC

Device	Device Description	# of Outputs	V_{IN} (min) (V)	V_{IN} (max) (V)	Linear Output	V_{IN} (V)	Applications	Package
ISL78419	Integrated Automotive TFT-LCD Power Supply Regulator	4	2.5	5.5	Yes	2.5 to 5.5	Automotive TFT-LCD	28 Ld QFN
ISL1801	sPMIC for Micro-Converter Bias and Drivers	4	6	14	Yes	6 to 14	Solar array micro-converters and other systems operating from a high voltage DC supply.	48 Ld TSSOP

LDO / LINEAR REGULATORS

Low Voltage (p. 29) • High Voltage (p. 30)

Low Voltage LDOs

ISL80111, ISL80112, ISL80113

Evalboard Available! New!

Ultra Low Dropout 1A, 2A, 3A Low Input Voltage NMOS LDOs

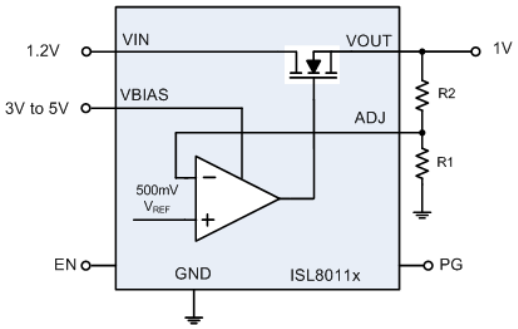
Key Features

- 2.2V to 6V Input Range
- <75mV LDO @ 1A, 2A, 3A
- Separate 3V/5V Bias and V_{IN} Pins
- Fast Load Transient Response
- High PSRR

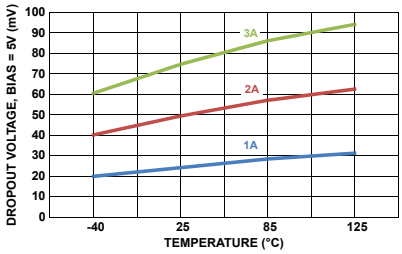
Applications

- Low Voltage µP, DSP, FPGA Power
- Low Noise POL Regulation
- Medical and Instrumentation Equipment

Typical Application Diagram



Ultra Low Dropout vs Temp vs Load



LOW VOLTAGE

Device	Device Description	V_{IN} Range (V)	V_{OUT} Range (V)	O/P Volt Accuracy (%)	I_{OUT1} (max)	I_{OUT2} (max)	PSRR @ 1kHz (dB)	I_Q (µA)	Typical Drop-Out Voltage (mV)	Enable/ Shut-down	Package
ISL9003A	Low Noise LDO with Low I_Q, High PSRR	2.3 to 6.5	1.5 to 3.3	±1.8	150mA	N/A	90	29	200 @150mA	Y	5 Ld SC-70, 6 Ld µTDFN
ISL9008A	Low Noise LDO with Low I_Q, High PSRR	2.3 to 6.5	1.5 to 3.3	±1.8	150mA	N/A	65	45	200 @150mA	Y	5 Ld SC-70, 6 Ld µTDFN
ISL9011A	Dual LDO with Low Noise, Low I_Q, and High PSRR	2.3 to 6.5	1.5 to 3.3	±1.8	150mA	300mA	70	45	250 @ 300mA	Y	10 Ld DFN
ISL9012	Dual LDO with Low Noise, Low I_Q, and High PSRR	2.3 to 6.5	1.5 to 3.3	±1.8	150mA	300mA	70	45	250 @ 300mA	Y	10 Ld DFN
ISL9016	150mA Dual LDO with Low Noise, High PSRR, and Low I_Q	1.8 to 6.5	1.2 to 3.3	±1.8	150mA	150mA	80	49	250 @ 150mA	Y	6 Ld µTDFN
ISL9021A	250mA Single LDO with Low I_Q, Low Noise and High PSRR LDO	1.5 to 5.5	0.9 to 3.3	±1.8	250mA	N/A	60	35	150 @ 250mA	Y	4 Ball WLCSP, 6 Ld µTDFN
ISL9000A	Dual LDO with Low Noise, Very High PSRR, and Low I_Q	2.3 to 6.5	1.5 to 3.3	±1.8	300mA	300mA	90	40	250 @ 300mA	Y	10 Ld DFN
ISL9001A	LDO with Low I_{SUPPLY}, High PSRR	2.3 to 6.5	1.5 to 3.3	±1.8	300mA	N/A	90	25	250 @ 300mA	Y	8 Ld DFN
ISL9005A	LDO with Low I_{SUPPLY}, High PSRR	2.3 to 6.5	1.5 to 3.3	±1.8	300mA	N/A	75	50	250 @ 300mA	Y	8 Ld DFN
ISL9014A	Dual LDO with Low Noise, Low I_Q, and High PSRR	2.3 to 6.5	1.5 to 3.3	±1.8	300mA	300mA	70	45	250 @ 300mA	Y	10 Ld DFN
ISL9007	High Current LDO with Low I_Q and High PSRR	2.3 to 6.5	1.5 to 3.3	±1.8	400mA	N/A	75	50	250 @ 400mA	Y	8 Ld MSOP
ISL80101	High Performance 1A LDO	2.2 to 6.0	0.8 to 5.0	±1.8	1A	N/A	58	3mA	130 @ 1A	Y	10 Ld DFN
ISL80101-ADJ	High Performance Adjustable Vout 1A LDO	2.2 to 6.0	0.8 to 5.0	±1.8	1A	N/A	58	3mA	130 @ 1A	Y	10 Ld DFN
ISL80101A	High Performance Adjustable Vout 1A LDO with Programmable Current Limiting	2.2 to 6.0	0.8 to 5.0	±2.0	1A	N/A	48	3mA	212 @ 1A	Y	10 Ld DFN
ISL80111	Ultra Low Dropout 1A Low Input Voltage NMOS LDOs	1 to 3.6	0.8 to 3.6	±1.6	1A	N/A	80	3.5mA	27	Y	10 Ld DFN
ISL80121-5	Fixed 5V Output 1A LDO with Programmable Current Limiting	2.2 to 6.0	0.8 to 5.0	±1.8	1A	N/A	40	3mA	130 @ 1A	Y	10 Ld DFN
ISL80102	High Performance 2A LDO	2.2 to 6.0	0.8 to 5.0	±1.8	2A	N/A	55	7.5mA	81 @ 2A	Y	10 Ld DFN
ISL80112	Ultra Low Dropout 2A Low Input Voltage NMOS LDOs	1 to 3.6	0.8 to 3.6	±1.6	2A	N/A	80	3.5mA	53	Y	10 Ld DFN
ISL80103	High Performance 3A LDO	2.2 to 6.0	0.8 to 5.0	±1.8	3A	N/A	55	7.5mA	120 @ 3A	Y	10 Ld DFN
ISL80113	Ultra Low Dropout 3A Low Input Voltage NMOS LDOs	1 to 3.6	0.8 to 3.6	±1.6	3A	N/A	80	3.5mA	75	Y	10 Ld DFN

High Voltage LDO

ISL80136, ISL80138

40V, 50mA/150mA Linear Regulators

The ISL80136/8 are high voltage, low quiescent current linear regulators ideally suited for always-on and keep alive applications. The ISL80136/8 operate from an input voltage of +6V to +40V under normal operating conditions consuming only 18µA of quiescent current at no load.

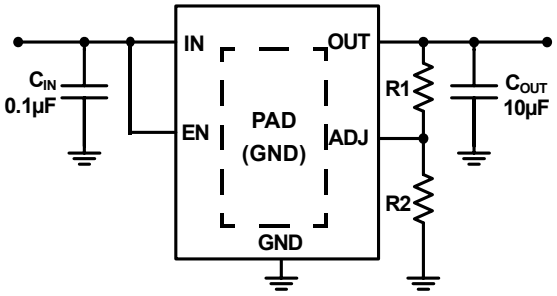
Key Features

- 6V to 40V Input Range
- Programmable V_{OUT} 2.5V to 12V
- 50mA Output ISL80136
- 150mA Output ISL80138
- ±1% Reference Voltage Accuracy
- Micro-power 20µA Quiescent Current
- Low Dropout <300mV at Full Load

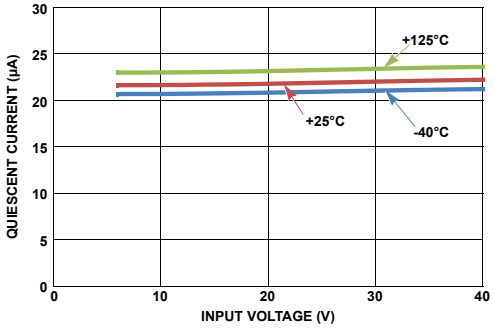
Applications

- High Input Voltage Low Power DC Regulation
- Telecom or Networking Equipment
- Industrial Equipment
- 12V to 36V Systems

Typical 14V to 12V Application



Low Quiescent Current Over Wide V_{IN}



Quiescent Current vs Input Voltage (No Load)

HIGH VOLTAGE

Device	Device Description	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (mA)	I_Q	Package
ICL7663S	CMOS Programmable Micropower Positive Voltage Regulator	1.6	16	1.3	16	40	12µA	8 Ld PDIP, 8 Ld SOIC
ISL80136	40V, Low Quiescent Current, 50mA Linear Regulator	6	40	2.5	12	50	18µA	8 Ld EPSOIC
ISL80138	40V, Low Quiescent Current, 150mA Linear Regulator	6	40	2.5	12	150	18µA	14 Ld HTSSOP
ISL6719	100V Linear Bias Supply	17	100	1.5	20	100	1.1mA	9 Ld DFN
ISL6720A	100V Triple Linear Bias Supply	17	100	0	20	125	1.2mA	11 Ld DFN

LED DRIVERS

High Brightness LED Lighting Drivers (p. 31) • LED Backlight Drivers (p. 32) •
RGGB LED Driver/Controllers (p. 32)

High Brightness LED Driver

ISL1903, ISL1904

Dimmable Buck LED Driver - AC Mains or DC Input LED Driver

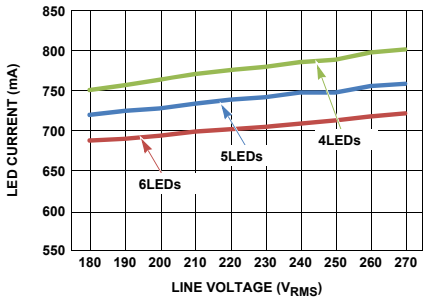
Key Features

- Excellent LED Current Regulation over Line, Load, and Temperature
- 0 - 100% Dimming with Leading-Edge (Triac) and Trailing-Edge Dimmers
- Configurable for PWM or DC Current Dimming Control of LEDs
- Power Factor Correction for up to 0.995 Power Factor and less than 20% Harmonic Content
- Critical Conduction Mode (CrCM) Operation for Quasi-Resonant High Efficiency Performance
- Supports Universal AC Mains Input
- Monitors FET Switching Current for Load Regulation
- Supports Isolated and Non-Isolated Buck Topologies
- Closed Loop Soft-Start for No Overshoot
- OFFREF Feature to Set Dimming Off-Point to Improve Fixture Performance Matching
- -40°C to +125°C Operation

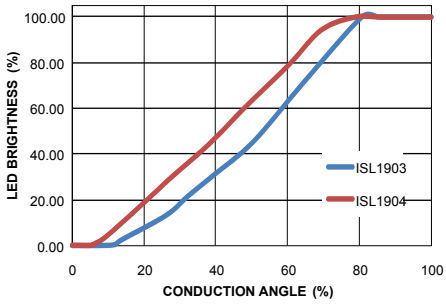
Applications

- Industrial and Commercial LED Lighting
- Retrofit LED Lamps with Triac Dimming
- Universal AC Mains Input LED Retrofit Lamps
- AC or DC Input LED Ballasts

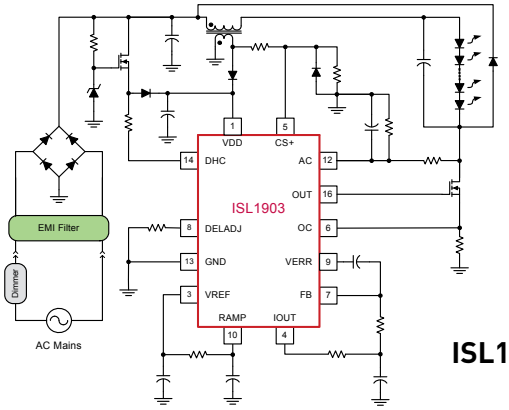
Excellent Line Regulation



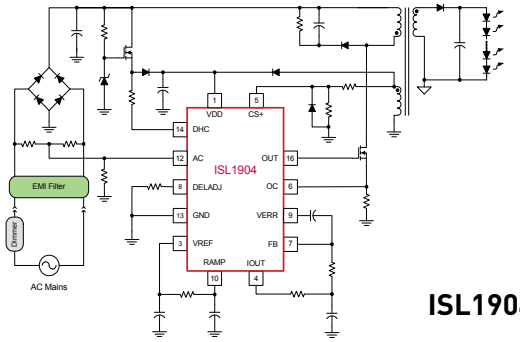
Controllable Output Current for Dimming



Typical Application



ISL1903



ISL1904

HIGH BRIGHTNESS LED LIGHTING DRIVERS

Device	Device Descriptions	Topology	Control Mode	UVLO Rising (V)	UVLO Falling (V)	V_{BIAS} (max)	No-Load Operating Current	# of PWM Outputs	FET Driver I_{OUT} (max)	Max Duty Cycle (%)	Package
ISL1903	Dimmable Buck LED Driver - AC Mains or DC Input LED Driver	Buck, Forward	Critical Conduction Mode (CrCM)	8.55	7.1	26 V	6 mA	1	1 A	100	16 Ld QSOP
ISL1904	Dimmable AC Mains LED Driver with PFC and Primary Side Regulation	Boost, Flyback, SEPIC, CUK, Buck-Boost	Critical Conduction Mode (CrCM)	8.55	7.1	26 V	6 mA	1	1 A	100	16 Ld QSOP

LED Backlight Driver

ISL97687

Evalboard Available!

4-Channel LED Driver with Phase Shift Control and 10-Bit Dimming Resolution

Key Features

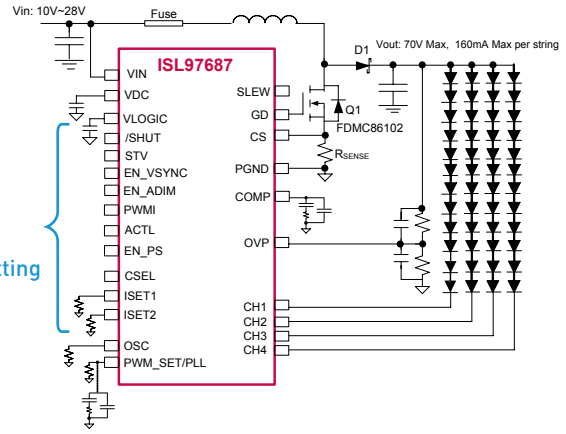
- 4 x 160mA Channels with Integrated Channel Regulation FETs
- Channels can be ganged for high current
- 9V ~ 32V Input
- LED Channels rated to 75V Abs Max
- 2 Selectable Current Levels for 3D Application
- Fault Protection

Flexible Application & Various Interfaces

Multiple dimming modes

Frame synchronization

2 step current setting



LED BACKLIGHT DRIVERS

# of Devices/ Channels	Device	Device Descriptions	Total Current for DC/DC Lighting	Output Current Max/ Channel	V_{OUT} (max) (V)	Brightness Control	Interface Type	V_{IN} (min) (V)	V_{IN} (max) (V)	Backlight for LCD Size (min)	Backlight for LCD Size (max)	Package
1	EL7630	6 LEDs Driver	30 mA	30 mA	27	PWM	No	2.7	5.5	1.8 in	3.5 in	5 Ld TSOT, 6 Ld SC70
	ISL78100	High Power LED Driver	1000 mA	1000 mA	32	DC or PWM	No	2.7	16	3.5 in	9 in	
	ISL97631	6 LEDs Driver with Integrated Schottky Diode with OVP	30 mA	30 mA	27	PWM	No	2.7	5.5	1.8 in	3.5 in	6 Ld TSOT
	ISL97632	LED Driver with 1-Wire Dimming	40 mA	40 mA	27	Digital 5-Bit Dimming	Single Wire	2.4	5.5	1.8 in	3.5 in	8 Ld TDFN
	ISL97634	White LED Driver with PWM Dimming	40 mA	40 mA	27	PWM DC to 32kHz	No	2.4	5.5	1.8 in	3.5 in	8 Ld TDFN
	ISL97801	High Power LED Driver	1300 mA	1300 mA	31	DC or PWM	No	2.7	16	3.5 in	9 in	20 Ld QFN
2	ISL97682	Compact 2-Ch LED Drivers with Phase Shift Control	200 mA	100 mA	up to 45	Yes	No	4	26.5	0 in	17 in	16 Ld TQFN
3	ISL97683	Compact 3-Ch LED Drivers with Phase Shift Control	150 mA	50 mA	up to 45	Yes	No	4	26.5	0 in	17 in	16 Ld TQFN
4	ISL97684	Compact 4-Ch LED Drivers with Phase Shift Control	200 mA	50 mA	up to 45	Yes	No	4	26.5	0 in	17 in	16 Ld TQFN
	ISL97686	4-Channel LED Driver with Independent Channel Control for Dynamic Dimming	700 mA	160 mA	75	PWM or LED DC current control	Yes	9	32	0 in	29 in	28 Ld SOIC, 28 Ld QFN
	ISL97687	4-Channel LED Driver with Phase Shift Control and 10-Bit Dimming Resolution	700 mA	160 mA	75	PWM or LED DC current control	Yes	9	32	0 in	29 in	28 Ld SOIC, 28 Ld QFN
	ISL97691	2.4V LED Driver with Independent Analog and PWM Dimming Controls of 2 Backlights for 3D Application	240 mA	60 mA	21	Yes	Yes	2.4	5.5	0 in	17 in	16 Ld TQFN
	ISL97692	Single or Multiple Cell Li-ion Battery Powered 4-Channel and 6-Channel LED Drivers	160 mA	40 mA	26	Yes	No	2.4	5.5	0 in	17 in	16 Ld TQFN
6	ISL97635A	SMBus 6-Channel LED Driver	210 mA	35 mA	34.5	SMBus, PWM or DC	SMBus/I²C	6	24	0 in	17 in	24 Ld QFN
	ISL97636A	6-Channel LED Driver	210 mA	35 mA	34.5	PWM	No	6	24	0 in	17 in	24 Ld QFN
	ISL97671A	6-Channel SMBus/I²C or PWM Dimming LED Driver with Phase Shift Control	300 mA	50 mA	45	SMBus, PWM or DC	SMBus/I²C	4.5	26.5	0 in	17 in	20 Ld QFN
	ISL97672A/B	6-Channel LED Driver with Ultra Low Dimming Capability	300 mA	50 mA	45	PWM	No	4.5	26.5	0 in	17 in	20 Ld QFN
	ISL97693	Single or Multiple Cell Li-ion Battery Powered 4-Channel and 6-Channel LED Drivers	180 mA	30 mA	26	Yes	No	2.4	5.5	0 in	17 in	16 Ld TQFN
	ISL97694A	Single or Multiple Cell Li-ion Battery Powered 4-Channel and 6-Channel LED Drivers	180 mA	30 mA	26	Yes	Yes	2.4	5.5	0 in	17 in	20 Ld TQFN
8	ISL97636	8-Channel LED Driver	280 mA	35 mA	34.5	PWM	No	6	24	0 in	17 in	24 Ld QFN
	ISL97635	SMBus 8-Channel LED Driver	280 mA	35 mA	34.5	SMBus, PWM or DC	SMBus/I²C	6	24	0 in	17 in	24 Ld QFN
	ISL97678	8-Channel 45V 50mA LED Driver	400 mA	50 mA	45	PWM	No	4.75	26	0 in	17 in	32 Ld QFN
	ISL97677	SMBus/I²C 8-Channel LED Driver	400 mA	50 mA	45	PWM	SMBus/I²C	4.75	26	0 in	17 in	32 Ld QFN

RGGB LED DRIVER/CONTROLLERS

# of Devices/ Channels	Device	Device Descriptions	Topologies	Output Current Max/ Channel	V_{OUT} (max) (V)	I_Q (max)	V_{IN} (min) (V)	V_{IN} (max) (V)	Peak Efficiency (%)	Frequency	Interface Type	Package
3	ISL97900	RGB Buck-Boost 3-Channel Color Sequencing LED Driver	Buck-Boost	1500 mA	5.5	60 µA	2.8	5.5	90	2.5 MHz	I²C	8 Ld QFN
4	ISL97901	RGB Buck-Boost Four-Channel LED Driver with Color Sequencing and Automatic White Balance	Buck-Boost	1500 mA	5.5	70 µA	2.7	5.5	91	2.5 MHz	I²C	28 Ld QFN

POWER MODULES

Analog Power Modules (p. 33) • Digital Power Modules (p. 34)

Power Module

ISL8225M

New!

Evalboard Available!

30A High Power Density DC/DC Power Module

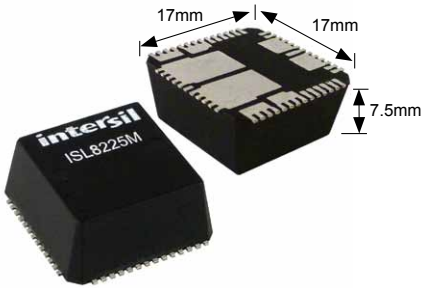
Key Features

- Highest Power Density
  - Up to 100 W in a tiny 2.9 cm² footprint
- Design Flexibility
  - Dual 15A outputs can be interleaved for single 30A output
- Easy to Use (Power Made Simple)
  - Minimal external component for full DC-DC buck regulator
- Simplified Scalability
  - Interleave up to 6 modules for a 12 phase 180A solution
- Best Thermal Performance
  - Thermally enhanced QFN package operates at full load over the widest temperature range without heat sinks and fans

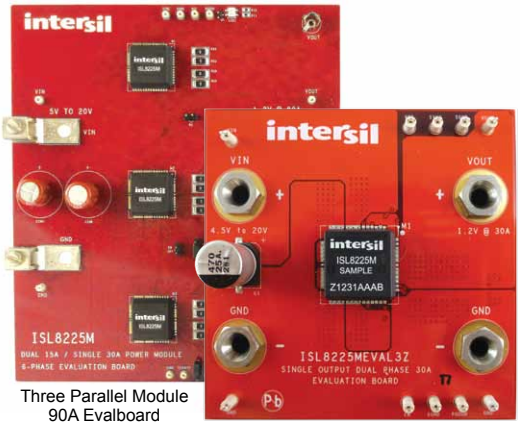
Applications

- Server, Telecom, and Datacom
- Industrial and Medical Equipment
- Point of Load Regulation

Small Footprint with High Power Density



Simplified Scalability



Three Parallel Module 90A Evalboard

ISL8225M Single Module Evalboard

ANALOG POWER MODULES

Device	Device Description	V_{IN} (range) (V)	V_{OUT} (range) (V)	I_{OUT} (A)	Current Share	Multi-phase	P_{GOOD}	Enable	Ambient Temp Range (°C)	Load Fault Protection	Peak Efficiency (%)	Package (mm)
ISL8200AM	Complete Current Share 10A DC/DC Power Module	4.5 - 20	0.6 - 6	10	Y Up to 6 phase single output with current balancing and sharing	Y	Y	Y	-40 to +85	Y	93	23 Ld QFN (15 x 15 x 2.2)
ISL8200MMREP	Full Mil-Temp Complete Current Share 10A DC/DC Power Module	3 - 20	0.6 - 6	10	Y Up to 6 phase single output with current balancing and sharing	Y	Y	Y	-55 to +125	Y	94	23 Ld QFN (15 x 15 x 2.2)
ISL8201M	10A, High Efficiency DC/DC Module	1 - 20	0.6 - 5	10	N	N	N	Y	-40 to +85	Y	95	15 Ld QFN (15 x 15 x 3.5)
ISL8204M*	High Efficiency DC/DC Power Module	1 - 20	0.6 - 6	4	N	N	N	Y	-40 to +85	Y	95	15 Ld QFN (15 x 15 x 3.5)
ISL8206M*	Complete High Efficiency DC/DC Power Module	1 - 20	0.6 - 6	6	N	N	N	Y	-40 to +85	Y	95	15 Ld QFN (15 x 15 x 3.5)
ISL8225M	Dual 15A/15A High Efficiency Power Module	4.5 - 20	0.6 - 6	30	Y Up to 12 phase single output with current balancing and sharing	Y	Y	Y	-40 to +85	Y	94	26 Ld QFN (17 x 17 x 7.5)

*Pin to pin compatible to the ISL8201M

Digital Power Module

ZL9117M

Evalboard Available!

High efficiency 17A DC/DC Digital Power Module

intersil™
Zilker Labs™

Key Features

- Higher Output Current vs. ZL9101M
- ~5% Efficiency Improvement vs. Previous Modules
- Optimized for <2.5V_{OUT} Operation
- Input Voltage Range: 4.5V to 13.2V
- Adjustable 0.6V to 3.6V Output Range
- A Few External Components
- Excellent Output Regulation
- ±1% Over Industrial Temperature Range
- Programmable Switching Frequency From 600kHz to 1.2MHz (Preset to ~600kHz)
- Frequency Sync and Power Good, Internal Soft-Start

Applications

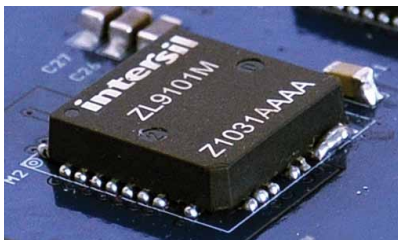
- Server, Telecom, and Datacom
- Industrial and Medical Equipment
- General Purpose Point of Load

Fully Encapsulated Module in QFN Package

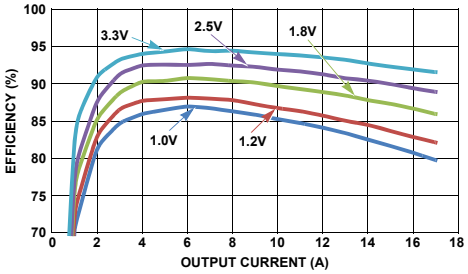
Fully Encapsulated Module

- Up to 4X better power density
- Better overall reliability
- Superior thermal capability (w/o air flow required)

} than open framed module



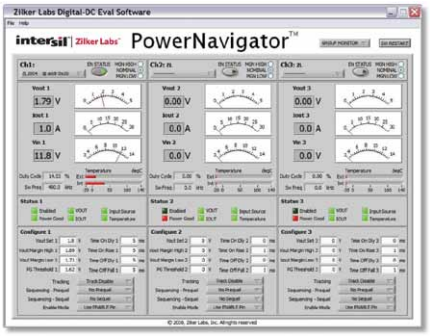
High Efficiency



Easy-to-Use Development Tools

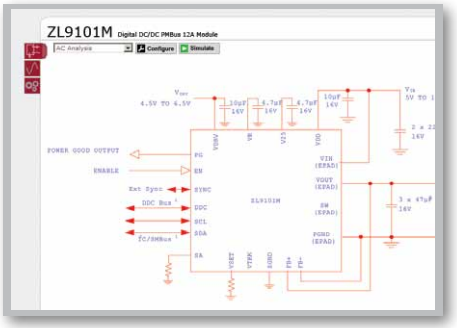
PowerNavigator™

Allows simple configuration and monitoring of multiple Digital-DC devices using a PC with a USB interface.



iSim

Allows dynamic simulation and display of loop compensation settings and configuration coefficients.



DIGITAL POWER MODULES

Device	Device Description	V_{IN} (range) (V)	V_{OUT} (range) (V)	I_{OUT} (A)	Current Share	Multi-phase	P_{GOOD}	Enable	Ambient Temp Range (°C)	Load Fault Protection	Peak Efficiency (%)	Package (mm)
ZL9101M	Digital DC/DC PMBus 12A Module	4.5 - 13.2	0.54-3.6	12	Y	Y	Y	Y	-40 to +85	Y	95	21 Ld QFN (15 x 15 x 3.5)
ZL9117M**	Digital DC/DC PMBus 17A Module	4.5 - 13.2	0.54-3.6	17	Y	Y	Y	Y	-40 to +85	Y	95	21 Ld QFN (15 x 15 x 3.5)

**Pin to pin compatible to ZL9101M

HOT PLUG / ORING CONTROLLERS

Single Rail (p. 35) • Dual Rail (p. 36) • PCI (p. 36) • PCI Express (p. 36) • ORing FET Controllers (p. 36)

Single Rail

ISL6186

Evalboard Available!

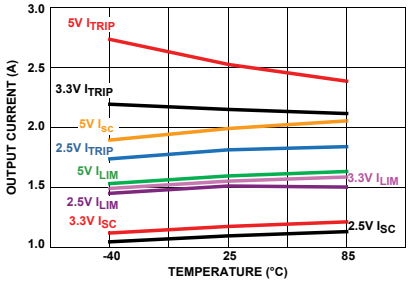
Single USB Port Power Supply Controller

Pin-pin replacement for ISL6121

Key Features

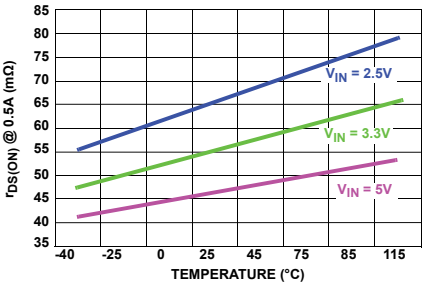
- 2.5V to 5.5V Operating Range
- 45mΩ Integrated Power P-channel MOSFET Switches
- Variants for 1.5A, 3.0A and 3.6A Continuous Current Operation with Accurate Current Limiting
- Thermally Insensitive 12ms of Current Limiting Prior to Latch-Off or Turn-Off
- Output Discharges with Reverse Current Blocking when Disabled
- Latch-off or Auto Restart Variants
- 1µA Off-State Supply Current.
- Enable Polarity Variants
- Industry Standard Pin for Pin SOIC and Smaller DFN Pkgs

High Accuracy Current Limit And Trip



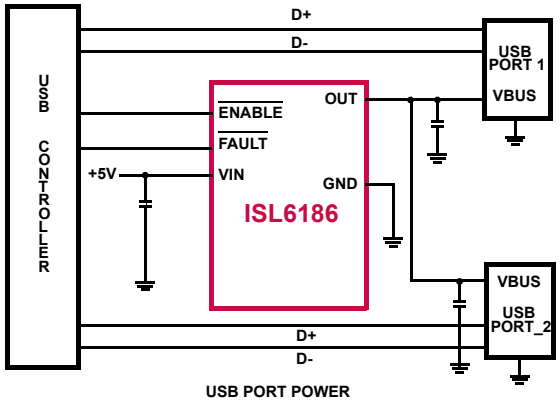
1.5A CONTINUOUS CURRENT CHARACTERISTICS

Better $r_{DS(on)}$ Performance



SWITCH ON-RESISTANCE AT 0.5A

Typical Application



USB PORT POWER

SINGLE RAIL

Internal FET

Device	Device Description	V_{BIAS} (V)	Controlled Voltages (V)	Regulation or Latch-Off for Overcurrent	$r_{DS(ON)}$ (mΩ)	UV/OV Feature	Reporting	Package
ISL6121	Single Supply Integrated Current Limiting Controller	+2.5 to +5.5	+2.5 to +5.5	Current Regulation (2A)	50	UV Lockout	Fault-bar for OC Latch-Off	8 Ld SOIC
ISL6186	Single Supply Integrated Current Limiting Controller	+2.5 to +5.5	+2.5 to +5.5	Current Regulation Various Latch-Off or Retry	45	UV Lockout	Fault-bar for OC Latch-Off	8 Ld SOIC, 8 Ld DFN, 10 Ld DFN

External FET

Device	Device Description	V_{BIAS} (V)	Controlled Voltages (V)	Regulation or Latch-Off for Overcurrent	Adjustable or Fixed OC VTH	Int/Ext FET	UV/OV Feature	Reporting	Package
ISL6115/ ISL6115A	Power Distribution Controllers	12	12	Current Regulation	Adjustable	Ext	UV Lockout	PGOOD + Fault Off	8 Ld SOIC
ISL6116, ISL6117, ISL6120	Power Distribution Controllers	12	5/3.3/2.5	Current Regulation	Adjustable	Ext	UV Lockout	PGOOD + Fault Off	8 Ld SOIC
ISL6140/ ISL6150	Negative Voltage Hot Plug Controller	-10 to -80	-10 to -80	Latch-Off	Fixed	Ext	UV/OV Lockout	$\overline{\text{PWRGD}}$	8 Ld SOIC
ISL6141/ ISL6142	Negative Voltage Hot Plug Controller	-20 to -80	-20 to -80	Current Regulation	Fixed	Ext	UV/OV Lockout	$\overline{\text{PWRGD}}$	8/14 Ld SOIC
ISL6151/ ISL6152	Negative Voltage Hot Plug Controller	-20 to -80	-20 to -80	Current Regulation	Fixed	Ext	UV/OV Lockout	PWRGD	8/14 Ld SOIC

DUAL RAIL

Internal FET

Device	Device Description	V_{BIAS} (V)	Controlled Voltages (V)	Regulation or Latch-Off for Overcurrent	$r_{DS(ON)}$ (mΩ)	UV/OV Feature	Reporting	Package
ISL6118	2.5V to 5V Dual Power Supply Controller with 0.6A Integrated Current Regulation and Timed Delay to Latch-off	+2.5 to +5.5	+2.5 to +5.5	Current Regulation (0.6A)	80	UV Lockout	$\overline{\text{FAULT}}$ for OC	8 Ld SOIC
ISL6119	USB Dual Port Power Supply Controller	+2.5 to +5.5	+2.5 to +5.5	Current Regulation (1A)	80	UV Lockout	$\overline{\text{FAULT}}$ for OC	8 Ld SOIC
ISL6185	USB Dual Port Power Supply Controller	+2.5 to +5.5	+2.5 to +5.5	Current Regulation (Various) Latch-Off or Retry	71	UV Lockout	$\overline{\text{FAULT}}$ for OC	8 Ld SOIC, 8 Ld DFN, 10 Ld DFN

External FET

Device	Device Description	V_{BIAS} (V)	Controlled Voltages (V)	Regulation or Latch-Off for Overcurrent	Int/Ext FET	UV/OV Feature	Reporting	Package
HIP1012A	Dual Power Distribution Controller	12	+12 and +5 or +5 and +3.3	Current Regulation	Ext	UV Notification	PGOOD for UV or OC	14 Ld SOIC
HIP1020	Single, Double or Triple-Output Hot Plug™ Controller	+12 or +5	≤ Bias Voltage	N/A	Ext	N/A	N/A	5 Ld SOT23
ISL6160	InfiniBand +12V Bulk and +5V Auxiliary Power Controller	12	+12 and +5	Current Regulation	Ext for +12V, Int for +5V	UV Lockout	$\overline{\text{FAULT}}$ for UV or OC	14 Ld SOIC
ISL6161	Dual Power Distribution Controller	12	+12 and +3.3	Current Regulation	Ext	UV Notification	PGOOD for UV or OC	14 Ld SOIC
ISL6173	Dual Low Voltage Hot Swap Controller	2.2 to 3.6	0.7 to 3.3	Current Regulation	Ext	UV	PGOOD and FAULT	28 Ld QFN
ISL6174	Dual Low Voltage Circuit Breaker	2.2 to 3.6	0.7 to 3.3	Latch-Off	Ext	UV	PGOOD and FAULT	28 Ld QFN

PCI

Single Slot

Device	Device Description	V_{BIAS} (V)	Controlled Voltages (V)	Regulation or Latch-Off for Overcurrent	Int/Ext FET	UV/OV Feature	Reporting	Package
HIP1011/A	PCI Hot Plug Controller	12	+12, -12, +5, +3.3	Latch-Off	Int for +12V, -12V, Ext for +5V, +3.3V	UV Latch-Off	$\overline{\text{FAULT}}$ for UV, OC	16 Ld SOIC
HIP1011B	PCI Hot Plug Controller	12	+12, -12, +5, +3.3	Latch-Off (adj Trip Delay)	Int for +12V, -12V, Ext for +5V, +3.3V	N/A	$\overline{\text{FAULT}}$ for UV, OC	16 Ld SOIC
ISL6111	Current Regulated PCI Hot Plug Power Switch Controller	12	+12, -12, +5, +3.3	Programmable Current Regulation Level and Duration	Int for +12V, -12V, Ext for +5V, +3.3V	UV Indicator	$\overline{\text{FAULT}}$ for OC, $\overline{\text{PGOOD}}$ for UV	20 Ld QFN

Dual Slot

Device	Device Description	V_{BIAS} (V)	Controlled Voltages (V)	Regulation or Latch-Off for Overcurrent	Int/Ext FET	UV/OV Feature	Reporting	Package
HIP1011D	Dual Slot PCI Hot Plug Controller	12	+12, -12, +5, +3.3	Latch-Off (adj Trip Delay)	Int for +12V, -12V, Ext for +5V, +3.3V	UV Latch-Off	$\overline{\text{FAULT}}$ for UV, OC	28 Ld SSOP
HIP1011E	Dual Slot PCI Hot Plug Controller	12	+12, -12, +5, +3.3	Latch-Off (adj Trip Delay)	Int for +12V, -12V, Ext for +5V, +3.3V	N/A	$\overline{\text{FAULT}}$ for UV, OC	28 Ld SSOP

PCI EXPRESS

Dual Slot

Device	Device Description	V_{BIAS} (V)	Controlled Voltages (V)	Regulation or Latch-Off for Overcurrent	Int/Ext FET	UV/OV Feature	Reporting	SM Bus	Package
ISL6112	Dual Slot PCI-Express Power Controller with I^2C	3.3	+12 and +3.3 and 3.3 Aux	Current Regulation	Int and Ext	UV Lockout	PGOOD for UV or OC, PE Reset	Y	48 Ld QFN
ISL6113	Dual Slot PCI-E Hot Plug Controllers	3.3	+12 and +3.3 and 3.3 Aux	Current Regulation	Int and Ext	UV Lockout	PGOOD for UV or OC, PE Reset	N	48 Ld QFN
ISL6114	Dual Slot PCI-E Hot Plug Controllers	3.3	+12 and +3.3 and 3.3 Aux	Current Regulation	Int and Ext	UV Lockout	PGOOD for UV or OC, PE Reset	N	48 Ld QFN

ORING FET CONTROLLERS

Device	Device Description	V_{BIAS} (V)	Transient Voltage Withstanding (V)	Response Time to Dead Short (ns)	Response Time to PS Slow Turn Off (µs)	Ramp	Reverse Current Threshold	Package
ISL6144	High Voltage ORing MOSFET Controller	+10 to +75	100	<300	<100	Voltage	Resistor-Adjustable (0V to 5.3V)	16 Ld TSSOP, 20 Ld QFN
ISL6146	Low Voltage ORing MOSFET Controller	+3.3 to +20	24	160	10	Voltage	Resistor-Adjustable	8 Ld MSOP, 8 Ld DFN

VOLTAGE MONITORS

Intersil Voltage Monitors Quick Chart

Adjustable voltage threshold inputs down to 600mV

Enhanced WDT with 1.6sec normal and 51sec start-up timeout

Single

ISL88011: Fixed V_{TRIP} + Adj POR	ISL88014: AdjV_{TRIP} + Adj POR	ISL88013: Fixed V_{TRIP}
ISL88015: AdjV_{TRIP}	ISL88016/17: Pin-select, 26 fixed V_{TRIP}	ISL88001/2/3: 160nA 3Ld SC70/SOT23

Pin-selectable Vtrip allow users to choose from 26 voltages

150nA for portable electronics

Dual

ISL88012: AdjV_{TRIP} + Adj POR	ISL88705/706/716/813: WDI/WDO, PFI/PFO	Improved Pin-to-Pin Replacements
ISL88707/708: PFI/PFO + Adj POR	ISL6132: Dual VMON, UV & OV	

Triple

ISL88021: Triple VMON, UV Monitor	ISL88022: Triple VMON, UV & OV

Quad

ISL88041: Quad Detector, Adj V_{TRIP}	ISL88042: Quad VMON, Fixed + Adj VTH	ISL6131: Individual RST Outputs

Quintuple

ISL88031: Quintuple VMON — Monitor up to five separate voltages with one chip

Software Programmable with EEPROM

	I²C	SPI
0Kb	X4003/5 X40020 X40030/1	X5001
4Kb	X4043/5 X40415 X40420/1 X40430/1	X5043/5
8Kb		X5083
16Kb		X5163/5 X5168/9
32Kb		X5323/5 X5328/9

Acronym Definitions

WDT = Watchdog Timer
WDI = Watchdog Input
WDO = Watchdog Output
PFI = Power Fail Input
PFO = Power Fail Output
VMON = Voltage Monitor
UV = Under-Voltage
OV = Over-Voltage
POR = Power On Reset
MR = Manual Reset
VTH = Voltage Threshold
RST = Reset

Single Voltage Monitor

ISL88001, ISL88002, ISL88003

Evalboard Available!

Power-Efficient 1.8V to 5V Voltage Monitors

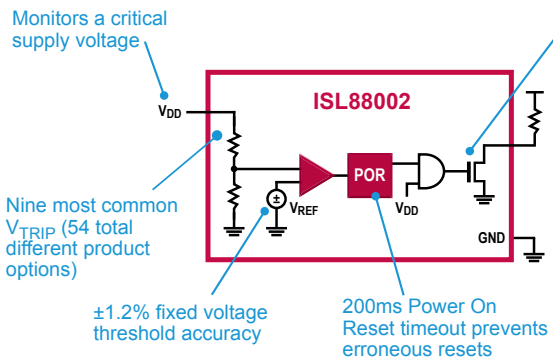
Key Features

- Single Voltage Monitoring Supervisors
- Fixed-Voltage Options Allow Precise Monitoring of +1.8V, +2.5V, +3.0V, +3.3V and +5.0V Power Supplies
- Ultra Low 160nA Supply Current
- ±1.2% Voltage Threshold Accuracy
- 190ms Power-On Reset Timeout
- Reset Signal Valid Down to V_{DD} = 1V
- No External Components Necessary
- Immune to Power-Supply Transients

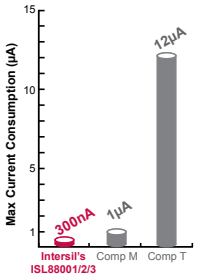
Applications

- Battery-Powered and Portable Electronics
- Medical Instrumentation
- Consumer Applications
- Telecom Equipment

High Accuracy Multiple Trip Point Options

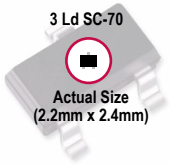


Ultra-Low Current Consumption



Tiny Package

Industry standard pin-out in SC-70 and SOT-23.



VOLTAGE MONITORS

Device	Device Description	# of Voltage Monitors	Fixed V_{TRIP}	Adj. V_{TRIP} (Resistors)	Reset Output Type	Manual Reset	TwinPin™ $\overline{MR}$/$\overline{RST}$	WDT	Adj. POR Timeout	Additional Features	Package
ISL88001	Ultra Low Power 3 Ld Voltage Supervisors in SC-70 and SOT-23 Packages	1	Y	N	Active Low	N	N	N	N	Ultra Low 160nA Current	3 Ld SC70, 3 Ld SOT23
ISL88002					Open Drain						
ISL88003					Active High						
ISL88011	5 Ld Voltage Supervisors with Adjustable Power-On Reset, Dual Voltage Monitoring or Watchdog Timer Capability	1	Y	N	Active High and Low	Y	Y	N	Y	Adj POR Delay	5 Ld SOT23, 5 Ld SOT23, 14 Ld PDIP
ISL88013								Y	N	Enhanced WDT	
ISL88014	5 Ld Voltage Supervisors with Adjustable Power-On Reset, Dual Voltage Monitoring or Watchdog Timer Capability	1	N	Y	Active Low	Y	Y	N	Y	Adj POR Delay	5 Ld SOT23
ISL88015								Y	N	Enhanced WDT	
ISL88016	6-Pin Voltage Supervisors with Pin-Selectable Voltage Trip Points	1	Y	N	Active Low	Y	Y	N	N	26 Pin Selectable VTRIP	6 Ld TSOT
ISL88017											
ICL7665S	CMOS Micropower Over/Under Voltage Detector	2	N	Y	Active Low	N	N	N	N	Programmable Hysteresis	8 Ld PDIP, 8 Ld SOIC
ISL6132	Multiple Voltage Supervisory ICs	2x2 2(UV) 2(OV)	N	Y	Active Low	Y	N	N	N	PGOOD, Individual Reset Outputs, UV/OV Monitor	24 Ld QFN
ISL88012	5 Ld Voltage Supervisors with Adjustable Power-On Reset, Dual Voltage Monitoring or Watchdog Timer Capability	2	Y	Y	Active High and Low	Y	Y	N	N		5 Ld SOT23
ISL88705	µP Supervisor with Watchdog Timer, Power-Fail Comparator, Manual Reset and Adjustable Power-On Reset	2	Y	Y	Active Low	Y	N	Y	Y	PFI/PFO	8 Ld PDIP, 8 Ld SOIC,
ISL88706											
ISL88707	µP Supervisor with Watchdog Timer, Power-Fail Comparator, Manual Reset and Adjustable Power-On Reset	2	Y	Y	Active High and Low	Y	N	N	Y	PFI/PFO	8 Ld PDIP, 8 Ld SOIC
ISL88708											
ISL88716	µP Supervisor with Watchdog Timer, Power-Fail Comparator, Manual Reset and Adjustable Power-On Reset	2	Y	Y	Active High	Y	N	Y	N	PFI/PFO	8 Ld PDIP, 8 Ld SOIC
ISL88813											
ISL88021	Triple Voltage Monitor with Adjustable Power-On Reset and Undervoltage/Overvoltage Monitoring Capability	3	Y	Y	Active High and Low	Y	N	N	Y	UV Monitor	8 Ld MSOP
ISL88022										UV/OV Monitor	
ISL6131	Multiple Voltage Supervisory ICs	4	N	Y	Active Low	Y	N	N	N	PGOOD, Individual Reset Outputs	24 Ld QFN
ISL88042	Quadruple Voltage Monitor	4	Y	Y	Active Low	Y	N	N	N	Two fixed and two adj. monitors	8 Ld TDFN
ISL88031	Quintuple Voltage Monitor	5	Y	Y	Active Low	Y	N	N	N		8 Ld MSOP

Voltage Monitors with EEPROM I^2C Interface

Device	Device Description	# of Voltage Monitors	Reset Output Type	Watchdog Timer (s)	Manual Reset	Bus Interface	EEPROM Size (kbits)	Battery Monitor and Switchover	Fault Detection Register	Features	Package
X4003	CPU Supervisor	1	Active High	OFF, 0.6, 0.2, 1.4	N	I^2C	0	N	N		8 Ld MSOP, 8 Ld SOIC
X4005			Active Low								
X4043	CPU Supervisor with 4kbit EEPROM	1	Active High	OFF, 0.6, 0.2, 1.4	N	I^2C	4	N	N		8 Ld MSOP, 8 Ld PDIP, 8 Ld SOIC
X4045			Active Low								
X40020	Dual Voltage Monitor with Integrated CPU Supervisor and System Battery Switch	2	Active High	OFF, 0.025, 0.2, 1.4	Y	I^2C	0	Y	Y	Battery Switch, WDO Out	14 Ld SOIC, 14 Ld SOIC, 14 Ld TSSOP
X40415	Dual Voltage Monitor with Integrated CPU Supervisor	2	Active Low	OFF, 0.025, 0.2, 1.4	N	I^2C	4	N	Y		8 Ld SOIC, 8 Ld TSSOP
X40420	Dual Voltage Monitor with Integrated CPU Supervisor and System Battery Switch	2	Active High	OFF, 0.025, 0.2, 1.4	Y	I^2C	4	Y	Y	Battery Switch, WDO Out	14 Ld SOIC, 14 Ld TSSOP
X40421			Active Low								
X40030	Triple Voltage Monitor with Integrated CPU Supervisor	3	Active High	OFF, 0.025, 0.2, 1.4	Y	I^2C	0	N	Y		14 Ld SOIC, 14 Ld TSSOP
X40031			Active Low								
X40430	4kbit EEPROM; Triple Voltage Monitor with Integrated CPU Supervisor	3	Active High	OFF, 0.025, 0.2, 1.4	Y	I^2C	4	N	Y		14 Ld SOIC, 14 Ld TSSOP
X40431			Active Low								

Voltage Monitors with EEPROM SPI Interface

Device	Device Description	# of Voltage Monitors	Reset Output Type	Watchdog Timer (s)	Manual Reset	Bus Interface	EEPROM Size (kbits)	Battery Monitor and Switchover	Fault Detection Register	Features	Package
X5001	CPU Supervisor	1	Active Low	OFF, 1.4, 0.6, 0.2	N	SPI	0	N	N		8 Ld PDIP, 8 Ld SOIC, 8 Ld TSSOP
X5043	CPU Supervisor with 4k SPI EEPROM	1	Active High	OFF, 0.2, 0.6, 1.4	N	SPI	4	N	N		8 Ld MSOP, 8 Ld PDIP, 8 Ld SOIC, 14 Ld TSSOP
X5045			Active Low								
X5083	CPU Supervisor with 8Kbit SPI EEPROM	1	Active Low	OFF, 0.2, 0.6, 1.4	N	SPI	8	N	N		8 Ld PDIP, 8 Ld SOIC, 8 Ld TSSOP
X5163	CPU Supervisor with 16Kbit SPI EEPROM	1	Active High	OFF, 0.2, 0.6, 1.4	N	SPI	16	N	N		8 Ld PDIP, 8 Ld SOIC, 14 Ld TSSOP
X5165			Active Low								
X5168	CPU Supervisor with 16Kbit SPI EEPROM	1	Active High	N	N	SPI	16	N	N	Replaces X25268/169	8 Ld PDIP, 8 Ld SOIC, 14 Ld TSSOP
X5169			Active Low								
X5323	CPU Supervisor with 32Kb SPI EEPROM	1	Active High	OFF, 0.2, 0.6, 1.4	N	SPI	32	N	N	Replaces X25323/5	8 Ld PDIP, 8 Ld SOIC. 14 Ld TSSOP
X5325			Active Low								
X5328	CPU Supervisor with 32Kbit SPI EEPROM	1	Active High	N	N	SPI	32	N	N	Replaces X25328/9	8 Ld PDIP, 8 Ld SOIC, 14 Ld TSSOP
X5329			Active Low								

POWER SEQUENCERS

Low Voltage Sequencers (p. 40) • High Voltage Sequencers (p. 40)

Low Voltage

ISL6123, ISL6124, ISL6125, ISL6126, ISL6127, ISL6128, ISL6130

Evalboard Available!

Low Voltage 4 Rail Power Sequencers

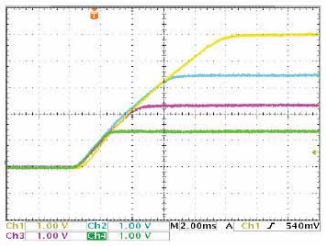
Key Features

- User-Programmable Under-Voltage Thresholds and Delays
  - Users can easily program threshold voltages via resistors and change the turn-on and turn-off sequence using external capacitors
- Available Options With FET Gate Drive or Open Drain Outputs for Driving Logic Inputs
  - Gives flexibility to choose the appropriate output options based on specific application needs
- Options for Integrated Supply Monitoring and Reset Capability
  - Helps save cost by eliminating the need for additional discrete voltage monitors
- Daisy-Chainable for Systems with More Than Four Rails to Sequence
  - More than four supplies can be sequenced by simply connecting a wire between the SYSRST pins of cascaded Intersil sequencers

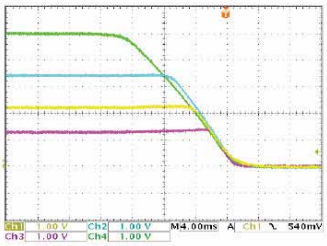
Applications

- Graphics Cards
- FPGA/ASIC/Microprocessor/PowerPC Supply Sequencing
- Network Routers
- Telecommunications Systems

Power Tracking Capability

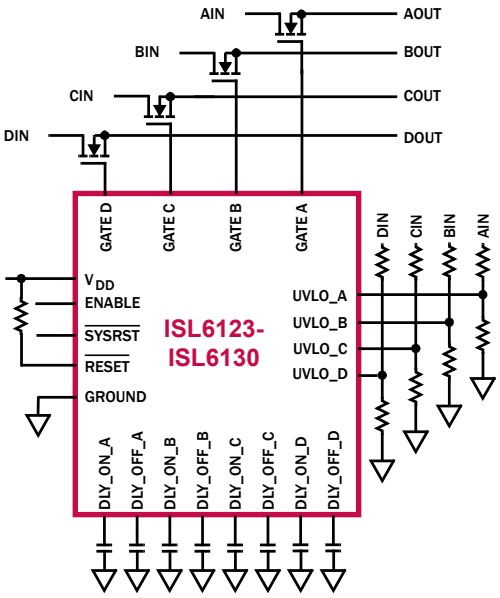


Power-Up Tracking



Power-Down Tracking

ISL6123-ISL6130 Typical Application



LOW VOLTAGE SEQUENCERS

Device	Device Description	V_{BIAS} Range (V)	Sequenced Voltages or Range (V)	Enable	Logic Level	Sequenced Output Control	Initial Startup Requirements	Monitored Inputs	Channel That Turn-off When 1 UVLO Faults	Preset or Adjustable Sequence	Features	Package
ISL6123	Power Sequencing Controllers	+1.5 to +5.5	+0.7 to +5.5	Active High	TTL	Charge Pumped 1µA FET Drive	4 UVLO 1EN	4	4 Gates	Adjustable ON & OFF Delay	Auto Restart, Low bias current sleep	24 Ld QFN
ISL6124	Power Sequencing Controllers	+1.5 to +5.5	+0.7 to +5.5	Active Low	CMOS	Charge Pumped 1µA FET Drive	4 UVLO 1EN	4	4 Gates	Adjustable ON & OFF Delay	Auto Restart	24 Ld QFN
ISL6125	Power Sequencing Controllers	+1.5 to +5.5	N/A	Active Low	CMOS	Open Drain Logic	4 UVLO 1EN	4	4 Open Drain	Adjustable ON & OFF Delay	Auto Restart, Open Drain Sequenced Outputs	24 Ld QFN
ISL6126	Power Sequencing Controllers	+1.5 to +5.5	+0.7 to +5.5	Active Low	CMOS	Charge Pumped 1µA FET Drive	1 UVLO 1EN	4	1 Gate	Voltage Determined ON, Adjustable OFF Delay	Gates Independent On as UVLO Valid	24 Ld QFN
ISL6127	Power Sequencing Controllers	+1.5 to +5.5	+0.7 to +5.5	Active Low	CMOS	Charge Pumped 1µA FET Drive	4 UVLO 1EN	4	4 Gates	Preset Order	Auto Restart	24 Ld QFN
ISL6128	Power Sequencing Controllers	+1.5 to +5.5	+0.7 to +5.5	Active Low	CMOS	Charge Pumped 1µA FET Drive	4 UVLO 2EN	4 (2 Pairs)	2 Gates	Preset Order	Dual Redundant Operation	24 Ld QFN
ISL6130	Power Sequencing Controllers	+1.5 to +5.5	+0.7 to +5.5	Active High	TTL	Charge Pumped 1µA FET Drive	1 UVLO 1EN	4	1 Gate	Voltage Determined ON, Adjustable OFF Delay	Gates Independent On as UVLO Valid, Low Bias Current Sleep	24 Ld QFN
ISL8723	Power Sequencing Controllers	+2.5 to +5.5	+0.7 to +5.5	Active High	TTL	Charge Pumped 10µA FET Drive	4 UVLO 1EN	4	4 Gates	Adjustable ON & OFF Delay	Auto Restart, Low Bias Current Sleep	24 Ld QFN
ISL8724	Power Sequencing Controllers	+2.5 to +5.5	+0.7 to +5.5	Active Low	CMOS	Charge Pumped 10µA FET Drive	4 UVLO 1 EN	4	4 Gates	Adjustable ON & OFF Delay	Auto Restart	24 Ld QFN

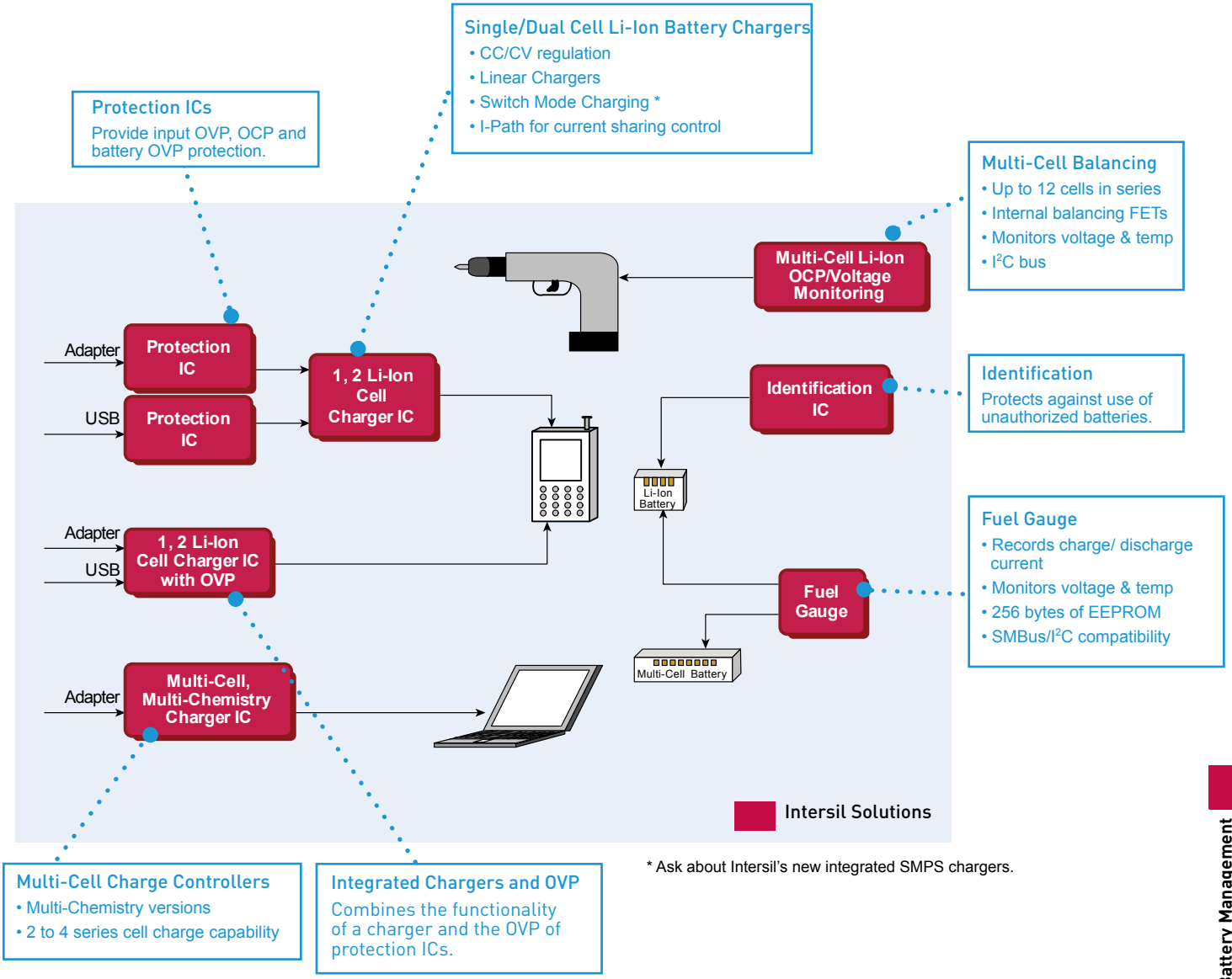
HIGH VOLTAGE SEQUENCERS

Device	Device Description	V_{BIAS} (V)	Enable	Logic Level	Sequenced Output Control	Initial Startup Requirements	Monitored Inputs	Channels That Turn-On When V_{IN} is Non-Compliant	Preset or Adjustable Sequence	Features	Package
ISL8700	Adjustable Quad Sequencer	2.5 to 24	N/A	N/A	Active High, Open Drain	UV/OV	1	4 Simultaneous	Preset Order, Adjustable Delay		14 Ld SOIC
ISL8700A	Adjustable Quad Sequencer	3.3 to 24	N/A	N/A	Active High, Open Drain	UV/OV	1	4 Simultaneous	Preset Order, Adjustable Delay		14 Ld SOIC
ISL8701	Adjustable Quad Sequencer	2.5 to 24	N/A	N/A	Active Low, Open Drain	UV/OV	1	4 Simultaneous	Preset Order, Adjustable Delay		14 Ld SOIC
ISL8701A	Adjustable Quad Sequencer	3.3 to 24	N/A	N/A	Active Low, Open Drain	UV/OV	1	4 Simultaneous	Preset Order, Adjustable Delay		14 Ld SOIC
ISL8702	Adjustable Quad Sequencer	2.5 to 12	Active High	TTL	Active High, Open Drain	UV/OV & EN	1	4 Simultaneous	Preset Order, Adjustable Delay	Fault Reporting	14 Ld SOIC
ISL8702A	Adjustable Quad Sequencer	3.3 to 24	Active High	TTL	Active High, Open Drain	UV/OV & EN	1	4 Simultaneous	Preset Order, Adjustable Delay	Fault Reporting	14 Ld SOIC
ISL8703A	Adjustable Quad Sequencer	3.3 to 24	Active Low	TTL	Active Low, Open Drain	UV/OV & EN	1	4 Simultaneous	Preset Order, Adjustable Delay	Fault Reporting	14 Ld SOIC
ISL8704A	Adjustable Quad Sequencer	3.3 to 24	Active Low	TTL	Active High, Open Drain	UV/OV & EN	1	4 Simultaneous	Preset Order, Adjustable Delay	Fault Reporting	14 Ld SOIC
ISL8705A	Adjustable Quad Sequencer	3.3 to 24	Active Low	TTL	Active Low, Open Drain	UV/OV & EN	1	4 Simultaneous	Preset Order, Adjustable Delay	Fault Reporting	14 Ld SOIC

BATTERY MANAGEMENT

Single Cell Li+/Polymer Battery Chargers (p. 42) • Multiple Cell Li+/Polymer Battery Charger (p. 43) • Charge System Safety (p. 44) • Cell Balancing and Safety (p. 44)

Intersil provides an entire range of battery management ICs. From input Over Voltage Protection (OVP) to multi-cell balancing. Intersil's chargers address the needs of handheld devices, Mobile Internet Devices (MIDs), laptops, power tools, and many others. This is accomplished with fully integrated solutions for compact applications and with charge controllers for higher power applications.



* Ask about Intersil's new integrated SMPS chargers.

Single Cell Li+/Polymer Battery Chargers

ISL9230

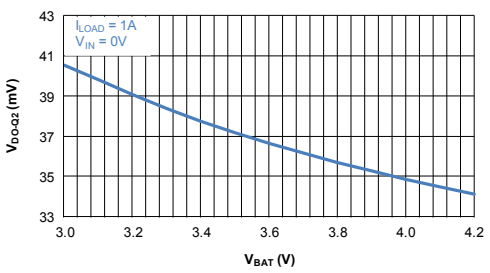
Evalboard Available!

High Power Li-Ion Charger W/I-Path Management

Key Features

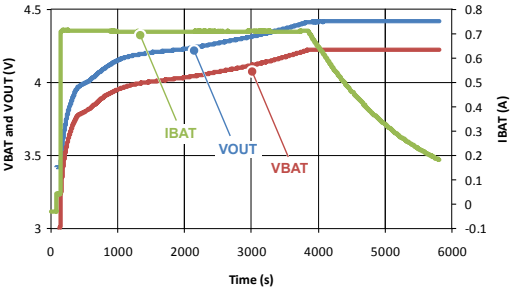
- Complete Charger for Single-Cell Li-ion/Polymer Batteries
- Current Path Management Optimize for Charge and System Currents
- Intelligent Timeout Interval Based on Actual Charge Current
- 1% Charger Output Voltage Accuracy
- Programmable Input Current Limit
- Programmable Charge Current
- NTC Thermistor Input
- Complies with USB Charger
- Charge Current Thermal Foldback for Thermal Protection
- Trickle Charge for Fully Discharged Batteries
- 26V Maximum Voltage at V_{IN} Pin
- Power Presence and Charge Indications
- Ambient Temperature Range: -40°C to +85°C
- 16 Ld 3x3 TQFN Package

Low Power Path Resistance



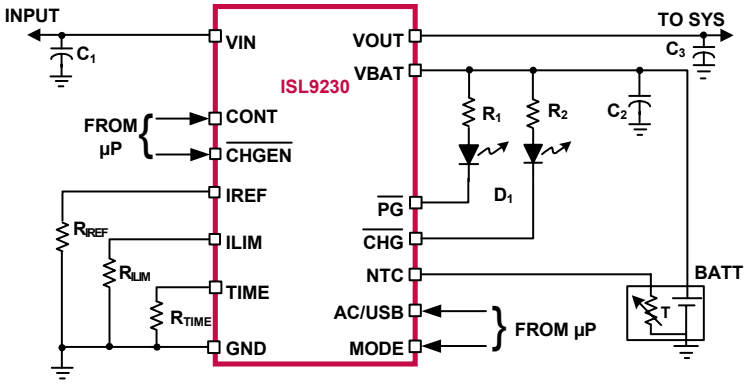
Power Path Resistance

Charge Profile



ISL9230 Charge Profile

Typical Application Circuit



SINGLE CELL LI+/POLYMER BATTERY CHARGERS

Device	Device Description	V_{OUT} (typ) (V)	Voltage Accuracy (%)	V_{IN1} (max) (V)	V_{IN2} (max) (V)	I_{OUT1} (Max) (A)	I_{OUT2} (max) (A)	Safety Timer	Self Termination	Accepts CC Adapter	V_{IN1} Trickle Charge (min) (% CC)	Functions (Pin)	Package
ISL9205B	Li-ion Battery Charger	4.2	0.6	7	N/A	1	N/A	Y	Y	Y	10	Enable, Charge Indication, Fault, I_{REF} Set, I_{MIN} Set, Time Set	10 Ld DFN
ISL9205C	Li-ion Battery Charger	4.256	0.6	7	N/A	1	N/A	Y	Y	Y	10	Enable, Charge Indication, Fault, I_{REF} Set, I_{MIN} Set, Time Set	10 Ld DFN
ISL9205D	Li-ion Battery Charger	4.2	0.6	7	N/A	1	N/A	Y	Y	Y	10	Enable, Charge Indication, Fault, NTC, I_{REF} Set, I_{MIN} Set, Time Set	10 Ld DFN
ISL9214A	Li-ion/Li-Polymer Battery Charger Accepting Two Power Sources	4.2	1	28	7	1	0.38	N	N	N	16	Enable, Charge Status, Programmable I_{MIN}, Reference Voltage	10 Ld DFN
ISL9219	Li-ion Battery Charger	4.2	0.7	28	N/A	1.1	N/A	Y	Y	Y	10	Enable, Trickle Mode Indication, Charge State Indication, Adapter Fault, P_{GOOD}, I_{SET}, NTC Input, Time Set	20 Ld QFN

SINGLE CELL LI+/POLYMER BATTERY CHARGERS (CONTINUED)

Device	Device Description	V_{OUT} (typ) (V)	Voltage Accuracy (%)	V_{IN1} (max) (V)	V_{IN2} (max) (V)	I_{OUT1} (Max) (A)	I_{OUT2} (max) (A)	Safety Timer	Self Termination	Accepts CC Adapter	V_{IN1} Trickle Charge (min) (% CC)	Functions (Pin)	Package
ISL9221	Dual Input Lithium Ion Battery Charger with OVP USB Bypass and 10mA LDO	4.2	1	28	5.4	1.2	0.465	N	Y	Y	18	Enable, Charge Status, Power Present Indicator	12 Ld DFN
ISL9222A	High Input Voltage Charger	4.2	1	28	7	1	0.38	N	N	N	16	Enable, Programmable I_{MIN}, Power Presence Indication, Auxiliary OR-gate For System Booting Logic	8 Ld TDFN
ISL9228	Dual Input Li-ion/ Li-Polymer Battery Charger With Battery Removal Detection	4.2	1	28	N/A	1	N/A	N	Y	Y	16	Enable, Charge Status, Power Present Indicator	10 Ld DFN
ISL9301	High Input Voltage Charger With Power Path Management	4.5	1	28	N/A	0.8	N/A	Y	Y	Y	16	Power Presence, Charge Indication, Battery Disconnect, I_{REF}, I_{MIN} Set, Time Set	10 Ld DFN
ISL9220	Switching Charger for 1-Cell and 2-Cell Li-ion Batteries	4.2	0.5	18	N/A	2	N/A	Y	Y	N	10	Enable, Charge Status, Fault	20 Ld TQFN
ISL9230	High Power Li-Ion Charger W/I-Path Management	4.2	1	26	N/A	1.5	N/A	Y	Y	N	10	Power Good & Charge Status	16 Ld QFN

MULTIPLE CELL LI+/POLYMER BATTERY CHARGER

Device	Device Description	Input Voltage Range (V)	Input Current Limit Accuracy (%)	Battery Charge Voltage (V)	Charging Voltage Accuracy (max) (%)	Battery Charge Voltage Adjust (%)	Charge Current Limit Accuracy (%)	Automatic Trickle Charge (typ) (V)	Battery Leakage Current (max) (µA)	Automatic Power Source Selection	Switching Frequency (typ) (kHz)	Max Duty Cycle (%)	Operating Temp. Range (°C)	Package
ISL6255A	Highly Integrated Battery Charger with Automatic Power Source Selector for Notebook Computers	7 to 25	±3	4.2/Cell (2S, 3S, 4S)	±0.5	±5/Cell	±3 (CHLIM=2.0V)	No (Set by Host)	10 (DCIN=0V, No System Load)	Yes	300	99.9	-10 to 100	28 Ld QFN, 28 Ld QSOP
ISL6256	Highly Integrated Battery Charger with Automatic Power Source Selector for Notebook Computers	7 to 25	±3	4.2/Cell (2S, 3S, 4S)	±0.5	±5/Cell	±3 (CHLIM=2.0V)	No (Set by Host)	10 (DCIN=0V, No System Load)	Yes	300	99.6	-10 to 100	28 Ld QFN, 28 Ld QSOP
ISL6256A	Highly Integrated Battery Charger with Automatic Power Source Selector for Notebook Computers	7 to 25	±3	4.2/Cell (2S, 3S, 4S)	±0.5	±5/Cell	±3 (CHLIM=2.0V)	No (Set by Host)	10 (DCIN=0V, No System Load)	Yes	300	99.6	-10 to 100	28 Ld QFN, 28 Ld QSOP
ISL6257	Highly Integrated Narrow VDC Battery Charger for Notebook Computers	7 to 25	±1.5	4.2/Cell (2S, 3S, 4S)	±0.5	±5/Cell	±1.5 (CHLIM=2.0V)	No (Set by Host)	10 (DCIN=0V, No System Load)	No (Set by Host)	300	99.9	-10 to 100	28 Ld QFN
ISL6258	Narrow VDC Regulator/Charger with SMBus Interface	7 to 25	±3	6.144 to 19.2 in 16mV Steps	±0.5	16mV Steps	±3	Yes (Threshold Set by User)	25 (DCIN=0V, No System Load)	Yes	400	99.9	-10 to 100	28 Ld TQFN
ISL6258A	Narrow VDC Regulator/Charger with SMBus Interface	7 to 25	±3	6.144 to 19.2 in 16mV Steps	±0.5	16mV Steps	±3	Yes (Threshold Set by User)	25 (DCIN=0V, No System Load)	Yes	400	99.9	-10 to 100	28 Ld TQFN
ISL88731	SMBus Level 2 Battery Charger	7 to 25	±3	2.7 to 19.2 in 16mV Steps	±0.5	16mV steps	±3	2.7	2 (DCIN=0V, No System Load)	No (Set by Host)	400	99.9	-10 to 100	28 Ld TQFN
ISL9518	Narrow VDC Regulator/Charger with SMBus Interface	8 to 22	±3	1.024 to 19.2 in 16mV Steps	0.5	16mV steps	3	4.5	25 (DCIN=0V, No System Load)	Yes	400, 100, 50	90	-10 to 100	28 Ld TQFN
ISL9518A	Narrow VDC Regulator/Charger with SMBus Interface	8 to 22	±3	1.024 to 19.2 in 16mV Steps	0.5	16mV steps	3	4.5	25 (DCIN=0V, No System Load)	Yes	400, 100, 50	90	-10 to 100	28 Ld TQFN
ISL95871C	SMBus Interfaced Battery Charger with Internal FETs	8 to 22	±3	1.024 to 19.2 in 16mV Steps	±0.5	16mV steps	±3		2 (DCIN=0V, No System Load)		400	99.6	-10 to 100	50 Ld QFN

CHARGE SYSTEM SAFETY

Device	Device Description	Programmable Overcurrent (A)	Input Overvoltage Protection (V)	Battery Overvoltage Protection (V)	Battery Leakage	R_{ON} @ 500mA (mΩ)	Package
ISL9200	Charging System Safety Circuit	0 to 1	6.8 typ, 6.65 min, 7.0 max	4.4 typ, 4.325 min, 4.475 max	20nA max @ $4.4V_{VB}$	250 typ, 450 max	12 Ld QFN
ISL9209	Charging System Safety Circuit	0 to 1	5.58 typ, 5.65 min, 6.0 max	4.4 typ, 4.325 min, 4.475 max	20nA max @ $4.4V_{VB}$	250 typ, 450 max	12 Ld DFN
ISL9209B	Charging System Safety Circuit	0 to 1.5	5.58 typ, 5.65 min, 6.0 max	4.34 typ, 4.28 min, 4.4 max	20nA max @ $4.34V_{VB}$	250 typ, 450 max	12 Ld TDFN
ISL9209C	Charging System Safety Circuit	0 to 1.5	5.58 typ, 5.65 min, 6.0 max	4.34 typ, 4.28 min, 4.4 max	20nA max @ $4.4V_{VB}$	170 typ, 280 max	12 Ld TDFN
ISL9211A	Charging System Safety Circuit	0 to 2.0	5.8 typ, 4.6 min, 7.0 max	4.34 typ, 4.25 min, 4.4 max	20nA max @ $4.34V_{VB}$	170 typ, 280 max	8 Ld µTDFN
ISL9212, ISL9212A, ISL9212B	Charging System Safety Circuit	0 to 2	6.8 typ, 6.65 min, 7.0 max	4.4 typ, 4.325 min, 4.475 max	20nA max @ $4.4V_{VB}$	170 typ, 280 max	12 Ld DFN

CELL BALANCING AND SAFETY

Device	Device Description	# of Series Connected Li-Ion Cells	Power FET Control	Overcurrent Shutdown	Short Circuit Shutdown	Programmable Threshold	Programmable Timeout	Cell Voltage Monitor	Pack Current Monitor	Cell Balancing FETs	Voltage Regulator (V)	Package
ISL9208	Multi-Cell Li-ion Battery Pack OCP/Analog Front End	5 to 7	Y	Discharge + Charge	Discharge	4-Discharge OC, 4-Charge OC, 4-Short Circuit	8-Discharge OC, 8-Charge OC, 2-Short Circuit	Y	Y	Y	3.3	32 Ld QFN
ISL9216	8 to 12 Cell Li-Ion Battery Overcurrent Protection and Analog Front End Chip Set	5	Y	Discharge + Charge	Discharge	4-Discharge OC, 4-Charge OC, 4-Short Circuit	8-Discharge OC, 8-Charge OC, 2-Short Circuit	Y	Y	Y	3.3	32 Ld QFN
ISL9217	8 to 12 Cell Li-Ion Battery Overcurrent Protection and Analog Front End Chip Set	1 to 7	N	N	N	N	N	Y	N	Y	3.3	24 Ld QFN
ISL94200	Multi-Cell Li-ion Battery Pack OCP/Analog Front-End	4 to 7	Y	Discharge + Charge	Discharge	4-Discharge OC, 4-Charge OC, 4-Short Circuit Circuit	8-Discharge OC, 8-Charge OC, 2-Short Circuit	Y	Y	N	3.3	24 Ld QFN
ISL94201	Multi-Cell Li-ion Battery Pack Analog Front-End	4 to 7	N	N	N	N	N	Y	N	N	3.3	24 Ld QFN

▶For complete device listing, please visit **www.intersil.com** Battery Management

POWER SUPPLY SUPPORT

Current Sense Op Amps

Current sense amplifiers (also called current shunt amplifiers) are special purpose amplifiers that output a voltage proportional to the current flowing in a power rail. They utilize a "sense resistor" to convert the load current in the power rail to a small voltage, which is then amplified by the current sense amplifier. The current in the power rail can be in the range of 1A to 20A, as a result, the sense resistor is a very low ohmic value (usually in the mΩ range in some cases PCB traces are used as sense resistors).

These amplifiers are designed to amplify a very small "sense voltage"— on the order of 10mV to 100mV in the presence of very large common-mode voltages. DC precision (low input offset voltage) and high common-mode rejection ratio (CMRR) are distinguishing characteristics of these amplifiers. Current sense amplifiers can either measure current flowing in a single direction (uni-directional) or both directions (bi-directional) through a sense resistor.

Zero-Drift Current Sense Op Amp

ISL28134

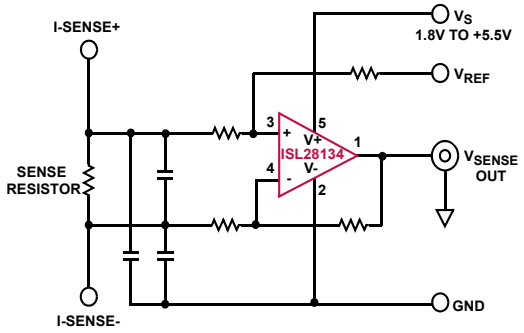
Evalboard Available!

5V Ultra Low Noise, Zero-Drift Rail-to-Rail Precision Op Amp

Key Features

- Rail-to-Rail Inputs and Outputs
  - CMRR @ V_{CM} = 0.1V beyond V_S ...135dB, Typ
- Low Offset Voltage..... 2.5µV, Max
- Superb Offset Drift .....15nV/°C, Max
- Low I_{CC} .....675µA, Typ
- Wide Bandwidth.....3.5MHz

Typical Current Sense Application Circuit



CURRENT SENSE OP AMPS

Device			Supply Voltage (V)		Rail-To-Rail		Vos Max @ 25°C	TCVos Typ	Ib Max @ 25°C	CMRR min @ 25°C	Is Max @ 25°C	GBW	Slew Rate	Voltage Noise @ 1kHz	Temp Range	Package					
Single	Dual	Quad	Min	Max	In	Out	mV	µV/°C	nA	dB	mA	MHz	V/µs	nV/√Hz	°C	SC70	SOT23	MSOP	SOIC	TSSOP	DFN/TDFN
Standard High Side/Low Side																					
ISL28130C	ISL28230C	ISL28430C	1.8	5.5	Yes	Yes	0.04	0.02	0.25	110	0.025	0.4	0.2	65	0 to 70	S	S	D	D/Q	Q	
ISL28130F	ISL28230F	ISL28430F	1.8	5.5	Yes	Yes	0.04	0.02	0.25	110	0.025	0.4	0.2	65	-40 to 125	S	S	D	S/D	Q	
Zero-Drift, High Side/Low Side																					
ISL28134I			2.25	6	Yes	Yes	0.0025	0.0005	0.3	120	0.900	3.5	1.5	10	-40 to 85				S		
ISL28133	ISL28233	ISL28433	1.8	5.5	Yes	Yes	0.006	0.05	0.18	118	0.025	0.4	0.2	65	-40 to 125	S	S	D	D/Q	Q	S/D
40V Low Side Only																					
ISL28118	ISL28218		3	40	Ground	Yes	0.15	0.2	575	103	1.1	4	1.2	5.6	-40 to 125			S/D	S/D		
ISL28108	ISL28208	ISL28408	3	40	Ground	Yes	0.23	0.1	43	105	0.25	1.2	0.45	15.8	-40 to 125			S/D	S/D/Q		S/D

S = Single Op Amp D = Dual Op Amp Q = Quad Op Amp

Voltatge Output Current Sense Amplifiers

ISL28005, ISL28006

Evalboard Available!

28V Micro-power, Precision High Side and Low Side Current Sense Amplifiers

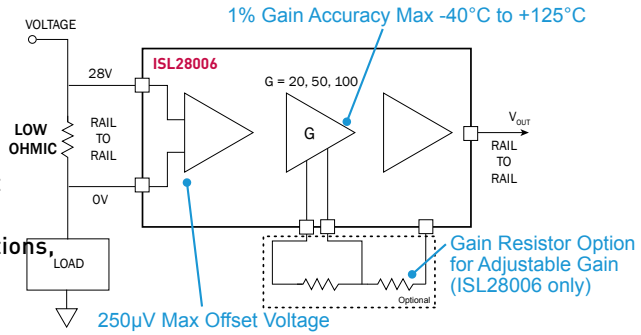
Key Features

- Supply Independent of Input
  - 2.7V to 28V Supply
  - 0V to 28V V_{CM}
- Max. 250µV Input V_{OS}
- Gain Accuracy Max:
  - 0.5% 25°C
- Four Gain Options
  - 20V/V, 50V/V, 100V/V, & ADJ
- -40°C to +125°C Operation

Applications

- Low Ohmic Shunt Sense
- Battery Management
- High-precision Voltage and Current Measurement
- Power Management in Communications, Networking, Industrial
- Computing and Display Power Management
- Alternative Energy (wind, power, solar)

Only 50µA Current Consumption



CURRENT SENSE AMPLIFIERS

Part Number	Supply Voltage Range V	Input Common Mode Range V	Vos Max @ 25°C µV	Vos Max Temp µV	CMRR min Temp dB	PSRR min Temp dB	Gain Range V/V	Gain Accuracy @ 25°C %	Gain Accuracy Temp %	Is Max @ 25°C µA	Is Max Temp µA	GBW kHz	Temp Range °C	Package
ISL28005	2.7 to 28	0 to 28	500	500	105	90	20, 50, 100	2	3	59	59	180	-40 to 125	SOT23
ISL28006	2.7 to 28	0 to 28	250	300	105	90	20, 50, 100, Adj (20-100)	0.7	1	62	62	180	-40 to 125	SOT23

Precision Digital Power Monitor

ISL28022

Evalboard Available!

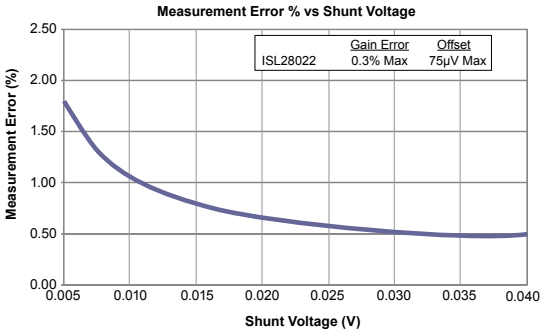
Precision Digital Power Monitor

The ISL28022 is a bi-directional high-side and low-side digital current sense and voltage monitor with serial interface. The device monitors current and voltage and provides the results digitally along with calculated power. The digital power monitor has configurable fault thresholds and measurable ADC gain ranges. With a wide common-mode input voltage range from 0V to 60V, the ISL28022 is ideal for telecom, routers, servers, battery management/charging, automotive, and industrial applications with minimal external circuitry.

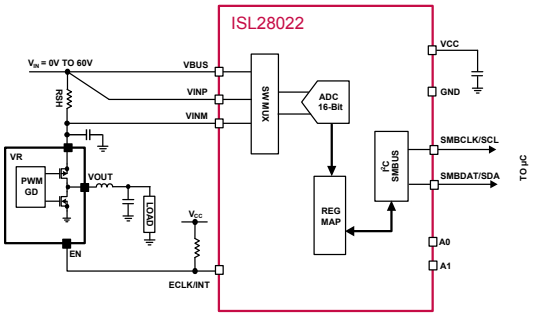
Key Features

- Current Sense
  - High-side or low-side (RTN) Sensing
  - Bi-directional current sensing
- Wide Input Voltage Sense Range: 0V to 60V
  - Handles negative system voltage
- 16-bit ∑ΔADC Monitors Current and Voltage
  - Voltage measuring error: <0.3%
  - Current measuring error: <0.3%
  - Internal 500kHz clock and adjustable sample rate from 72µs to 64ms
  - External Clock Sync available
- Over/Under Voltage and Over Current Fault Monitoring
  - Interrupt output pin available
- I^2C/SMBus interface
  - Supports high speed I^2C: 3.4MHz
  - 16 slave addresses
  - Broadcast I^2C measurement command available
- V_{CC} Range: 3V to 5.5V
- I_{CC}: 700µA
- ESD (HBM): 8kV

Accuracy: Max Measurement Error



Typical Application



PRECISION DIGITAL POWER MONITOR

Part Number	Supply Voltage Range V	Input Common Mode Range V	Vos Max @ 25°C µV	CMRR min Temp dB	PSRR min Temp dB	Current/Voltage Error Max @ 25°C %	∑ΔADC Bit	Is Max @ 25°C mA	Temp Range °C	Package
ISL28022	3 to 5.5	0 to 60	±75	110	105	0.3	16	1	-40 to 125	10 Ld MSOP, 16 Ld QFN

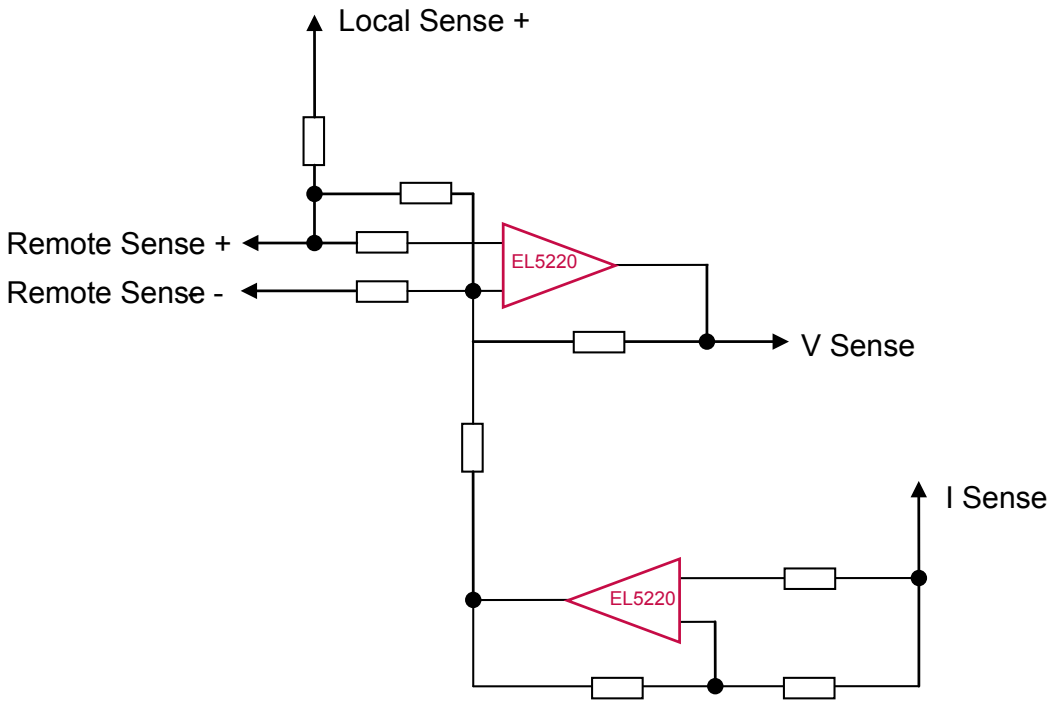
OVP/OCP Monitoring Op Amp

EL5220

Evalboard Available!

Voltage (OVP) / Current (OCP) Monitoring Op Amps

A sensing circuit, it is primarily to monitor system loading conditions from no load to full load.



Typical OVP/OCP Application Circuit

GENERAL PURPOSE OP AMPS

Part Number			Supply Voltage (V)		Rail-To-Rail		Vos Max @ 25°C	TCVos Typ	Ib Max @ 25°C	CMRR min @ 25°C	Is Max @ 25°C	GBW	Slew Rate	Voltage Noise @ 1kHz	Temp Range	Package						
Single	Dual	Quad	Min	Max	In	Out	mV	µV/°C	nA	dB	mA	MHz	V/µs	nV/√Hz	°C	SC70	SOT23	MSOP	SOIC	TSSOP	DFN/TDFN	QFN
Over Voltage Protection(OVP)/Over Current Protection (OCP)																						
ISL28148 (EN)	ISL28248		2.4	5.5	Yes	Yes	1.8	0.03	0.03	75	1.250	4.5	4	28	-40 to 125		S	D	D	Q		
ISL28113	ISL28213	ISL28413	1.8	5.5	Yes	Yes	5	2	0.02	72*	0.130	2	1	55	-40 to 125	S	S/D	D	D/Q	Q		
ISL28114	ISL28214	ISL28414	1.8	5.5	Yes	Yes	5	2	0.02	72*	0.360	5	2.5	40	-40 to 125	S	S	D	D/Q	Q		
EL5120T	EL5220	EL5420	4.5	16.5	Yes	Yes	12	5	50	50	0.750	8	10	10*	-40 to 85		S	D	Q	Q		Q
ISL28191 (EN)	ISL28291 (EN)		3	5.5	Ground	Yes	0.63	3.1	6,000	78	3.500	61	17	1.7	-40 to 125		S	D	D		S/D	
ISL28190 (EN)	ISL28290 (EN)		3	5.5	Ground	Yes	0.7	1.9	16,000	78	11	170	50	1	-40 to 125		S	D	D		S/D	

S = Single Op Amp D = Dual Op Amp Q = Quad Op Amp

EN = Enable available

*See data sheet for conditions as between the single, dual, and quad op amps there are slight differences or conditions.

Single, Non-Volatile

ISL22317

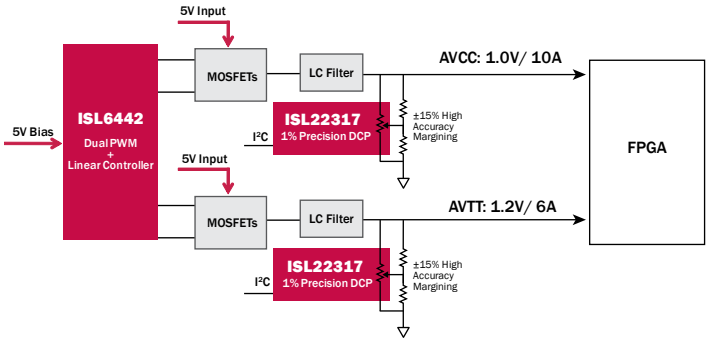
1st Low Voltage Precision DCP

Typically >99% Accurate at Each Tap

Key Features

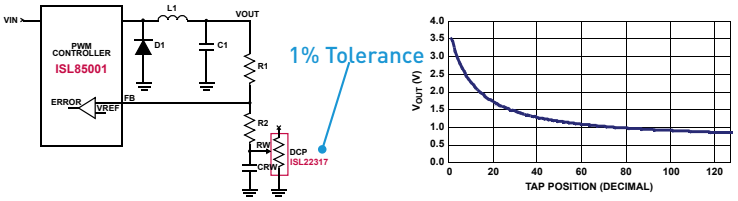
- 128-tap, I²C Controlled, Precision Digital Potentiometer
  - 1% typical resistive tolerance over operational conditions
  - Zero-compensated wiper resistance
  - 10ppm/°C temperature coefficient match to reference resistor
- Operational Specifications
  - Single 2.7V to 5.5V supply
  - Pin selectable slave address
  - 10kΩ, 50kΩ and 100kΩ total resistance
- High Reliability - Non-volatile EEPROM Storage of Wiper Position
  - 15 years retention @ +125°C
  - 1,000,000 cycles endurance
- Functional as a True Digital Rheostat or Adjustable Voltage
- Eliminates the Need for Complex Algorithms to Guarantee Precision

True Digital Rheostat



99% Accuracy

ISL85001 V_{OUT}, 1A Standard Buck PWM Regulator used with ISL22317.



ADJUSTABLE POINT OF LOAD DC/DC REGULATOR

THE ISL85001 VOUT vs THE ISL22317W TAP POSITION

Dual, Volatile

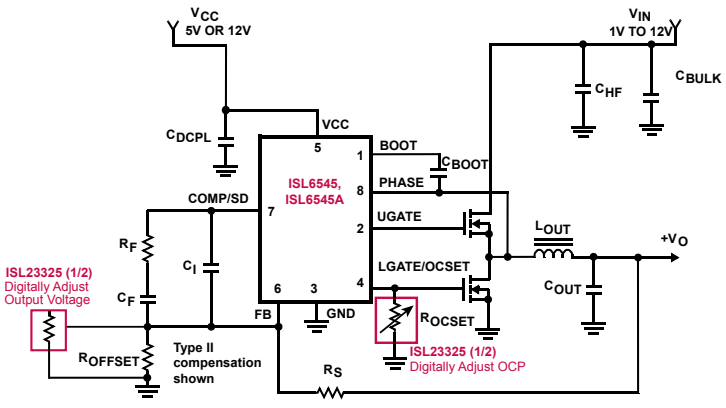
ISL23325

World's Smallest and Lowest Voltage, Dual, DCP

Key Features

- 256-tap, I²C/SM Bus Controlled Device with 3 Address Pins Allowing Up to 9 Devices per Bus
- Operational Voltage From 5.5V Down to 1.7V
- Lowest Digital Logic Signal at 0.84V (VIH)
- Smallest Package, ~50% Smaller than Competitive Solutions - µTQFN (2.6mmx1.8mm)
- Also Available in the 14LD TSSOP
- See Also - ISL23315, ISL23415 (Single); ISL23425 (Dual,SPI); ISL23345, ISL23445 (Quad)

Adjusting Over Current Protection and Margining with DCPs



DIGITALLY CONTROLLED POTENTIOMETER (DCPs)

Non-Volatile (EEPROM Memory)

Single 16-Tap (4-Bits)
X9116 - 10kΩ, Up-Down
ISL22512 - 10kΩ, Push Button

Single 32-Tap (5-Bits)
[D] X9313 - 1kΩ / 10kΩ / 50kΩ, Up-Down
[D] X9314 - 10kΩ, Log Taper, Up-Down
X9315 - 10kΩ / 50kΩ / 100kΩ, Up-Down
X93154 - 50kΩ, Up-Down, 2-Terminal
X93155 - 50kΩ, Up-Down, 2-Terminal
X93156 - 12.5kΩ / 50kΩ, Up-Down
[D] X9511 - 10kΩ, Push Button
ISL22511 - 10kΩ / 50kΩ, Push Button

Single 64-Tap (6-Bits)
X9429 - 2.5kΩ / 10kΩ, 2-Wire

Single 100-Tap (~6.65-Bits)
X9317 - 1kΩ / 10kΩ / 50kΩ / 100kΩ, Up-Down
[D] X9C102 - 1kΩ, Up-Down
[D] X9C103 - 10kΩ, Up-Down
[D] X9C104 - 100kΩ, Up-Down
[D] X9C503 - 50kΩ, Up-Down
[D] X9C303 - 32kΩ, Log Taper, Up-Down

Single 128-Tap (7-Bits)
ISL22316 - 10kΩ / 50kΩ, I²C
ISL22317 - 10kΩ / 50kΩ / 100kΩ, 1% Tolerance, I²C
ISL22319 - 10kΩ / 50kΩ, I²C, Wiper Only
[E] ISL95311 - 10kΩ / 50kΩ, I²C
[D] ISL95711 - 10kΩ / 50kΩ, I²C
ISL96017 - 10kΩ / 50kΩ, I²C (16kbits extra EEPROM)
ISL22416 - 10kΩ / 50kΩ, SPI
ISL22419 - 10kΩ / 50kΩ, SPI, Wiper Only
[E] ISL95310 - 10kΩ / 50kΩ, Up-Down
[D] ISL95710 - 10kΩ / 50kΩ, Up-Down

Single 256-Tap (8-Bits)
ISL95810 - 10kΩ / 50kΩ, I²C
ISL95811 - 10kΩ / 50kΩ, I²C
[D] ISL22313 - 10kΩ / 50kΩ / 100kΩ, I²C
[D] ISL22414 - 10kΩ / 50kΩ / 100kΩ, SPI

Single 1024-Tap (10-Bits)
[D] X9110 - 100kΩ, SPI
X9111 - 100kΩ, SPI
[D] X9118 - 100kΩ, 2-Wire
X9119 - 100kΩ, 2-Wire

Dual 32-Tap (5-Bits)
X93256 - 50kΩ, Up-Down

Dual 64-Tap (6-Bits)
[D] X9221A - 2kΩ / 10kΩ / 50kΩ, 2-Wire

Dual 128-Tap (7-Bits)
ISL22326 - 10kΩ / 50kΩ, I²C
ISL22329 - 10kΩ / 50kΩ, I²C, Wiper Only
ISL22426 - 10kΩ / 50kΩ, SPI
ISL22429 - 10kΩ / 50kΩ, SPI, Wiper Only

Dual 256-Tap (8-Bits)
X95820 - 10kΩ / 50kΩ, I²C
[D] X9268 - 50kΩ / 100kΩ, 2-Wire
[D] ISL22323 - 10kΩ / 50kΩ / 100kΩ, I²C
[D] ISL22424 - 10kΩ / 50kΩ / 100kΩ, SPI

Quad 64-Tap (6-Bits)
[D] X9400 - 2.5kΩ / 10kΩ, SPI
X9401 - 10kΩ, SPI
[D] X9241A - 2kΩ / 10kΩ / 50kΩ, 2-Wire
[D] X9408 - 2.5kΩ / 10kΩ, 2-Wire
X9409 - 2.5kΩ / 10kΩ, 2-Wire

Quad 128-Tap (7-Bits)
ISL22346 - 10kΩ / 50kΩ, I²C
ISL22349 - 10kΩ / 50kΩ, I²C, Wiper Only
ISL22446 - 10kΩ / 50kΩ, SPI
ISL22449 - 10kΩ / 50kΩ, SPI, Wiper Only

Quad 256-Tap (8-Bits)
X95840 - 10kΩ / 50kΩ, I²C
[D] X9250 - 50kΩ / 100kΩ, SPI
X9251 - 50kΩ, SPI
X9252 - 2kΩ / 10kΩ / 50kΩ, 2-Wire
[D] X9258 - 50kΩ / 100kΩ, 2-Wire
X9259 - 50kΩ / 100kΩ, 2-Wire
[D] ISL22343 - 10kΩ / 50kΩ / 100kΩ, I²C
[D] ISL22444 - 10kΩ / 50kΩ / 100kΩ, SPI

Special Function DCPs

Dual Audio DCP - Integrated Output Buffer Amps and Audio Detect
ISL22102 - 32kΩ, Log Taper, Push Button, 0 to -72dB Dynamic Range

Low Voltage 1% Tolerant Precision DCP & Low Temperature Coefficient
ISL22317 - 10kΩ / 50kΩ / 100kΩ, I²C

Single 128-Tap DCP with 16kbits General Purpose E²PROM
ISL96017 - 10kΩ / 50kΩ, I²C

TFT/LCD Programmable V_{COM} Calibrator (128 Step)
ISL45041 - I²C
ISL45042 - Up-Down

Volatile (No EEPROM Memory)

Single 16-Tap (4-Bits)
ISL23512 - 10kΩ, Push Button

Single 32-Tap (5-Bits)
X9015 - 10kΩ / 50kΩ / 100kΩ, Up-Down
ISL23511 - 10kΩ / 50kΩ, Push Button
ISL90460 - 10kΩ / 50kΩ / 100kΩ, Up-Down, Rheostat
ISL90461 - 10kΩ / 50kΩ / 100kΩ, Up-Down, 2-Terminal
ISL90462 - 10kΩ / 50kΩ / 100kΩ, Up-Down, 2-Terminal

Single 128-Tap (7-Bits)
ISL90726 - 10kΩ / 50kΩ, I²C, 2-Terminal
ISL90727/28 - 10kΩ / 50kΩ, I²C, 2-Terminal
[NEW] ISL23318 - 10kΩ / 50kΩ / 100kΩ, I²C,Low Voltage
[NEW] ISL23418 - 10kΩ / 50kΩ / 100kΩ, SPI,Low Voltage
[D] ISL23711 - 10kΩ / 50kΩ, I²C
[D] ISL23710 - 10kΩ / 50kΩ, Up-Down

Single 256-Tap (8-Bits)
ISL90810 - 10kΩ / 50kΩ, I²C
ISL23315 - 10kΩ / 50kΩ / 100kΩ, I²C, Low Voltage
ISL23415 - 10kΩ / 50kΩ / 100kΩ, SPI, Low Voltage

Dual 32-Tap (5-Bits)
ISL22102 - 32kΩ, Log Taper, Audio Detect, Push Button

Dual 128-Tap (7-Bits)
[NEW] ISL23328 - 10kΩ / 50kΩ / 100kΩ, I²C, Low Voltage
[NEW] ISL23428 - 10kΩ / 50kΩ / 100kΩ, SPI, Low Voltage

Dual 256-Tap (8-Bits)
ISL23325 - 10kΩ / 50kΩ / 100kΩ, I²C, Low Voltage
ISL23425 - 10kΩ / 50kΩ / 100kΩ, SPI, Low Voltage

Quad 128-Tap (7-Bits)
[NEW] ISL23348 - 10kΩ / 50kΩ / 100kΩ, I²C, Low Voltage
[NEW] ISL23448 - 10kΩ / 50kΩ / 100kΩ, SPI, Low Voltage

Quad 256-Tap (8-Bits)
ISL23345 - 10kΩ / 50kΩ / 100kΩ, I²C,Low Voltage
ISL23445 - 10kΩ / 50kΩ / 100kΩ, SPI, Low Voltage
ISL90840 - 10kΩ / 50kΩ, I²C
ISL90841 - 10kΩ / 50kΩ, I²C, 2-Terminal
ISL90842 - 10kΩ / 50kΩ, I²C, 2-Terminal

[E] Extended positive terminal voltage [D] Positive and negative terminal voltage

Voltage Reference

ISL21090

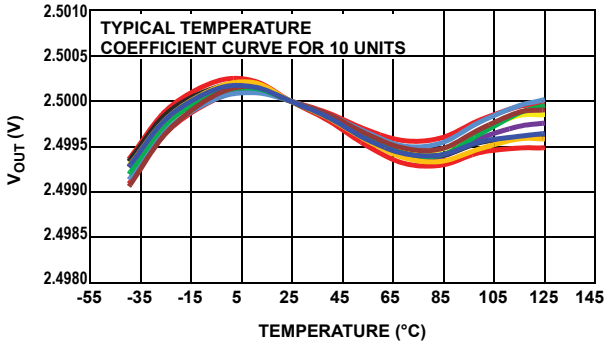
Ultra Low Noise, Precision Voltage Reference

The ISL21090 is an ultra low noise, high DC accuracy precision voltage reference with wide input voltage range from 3.7V to 36V. The ISL21090 uses the new Intersil Advanced Bipolar technology to achieve sub 1μV_{P-P} (0.1Hz to 10Hz) noise with an initial voltage accuracy of 0.02%. The ISL21090 offers a 1.25V, 2.5V, 5V, and 7.5V output voltage option with 7ppm/°C temperature coefficient and also provides excellent line and load regulation. The device is offered in an 8 Ld SOIC package. The ISL21090 is ideal for high-end instrumentation, data acquisition and processing applications requiring high DC precision where low noise performance is critical.

Key Features

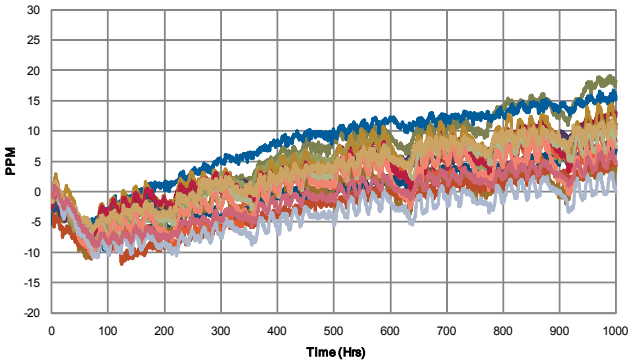
- 2.5V Reference Output Voltage Option
- Initial Accuracy: ±0.02%
- Output Voltage Noise: 1μV_{P-P} Typ (0.1Hz to 10Hz) (1.25V Option)
- Supply Current: 930µA (Typ)
- Tempco: 7ppm/°C Max
- Output Current Capability: 20mA
- Line Regulation: 8ppm/V
- Load Regulation: 2.5ppm/mA
- Operating Temperature Range: -40°C to +125°C

Temperature Drift (Coefficient)



ISL21090 Typical Temperature Coefficient Curve for 10 Units

Long Term Drift



ISL21090 Long Term Drift Data (1000 Hrs)

PRECISION VOLTAGE REFERENCES

Device	Vout (V)														Temp Co	Initial Accuracy	Temp Range	Isy Max	Vsy Range	Noise Low Freq	Line Reg	Load Reg	Iout Source/ Sink	Hyst	LTD	Pkg
	0.6	0.9	1.024	1.2	1.25	1.5	1.8	2.048	2.5	2.6	3	3.3	4.096	5	7.5	ppm/°C	% Vout @2.5V	°C	µA	V	µVp-p	µV/V @2.5V	µVmA @2.5V	mA	ppm	ppm /1khr	
ISL21007					X			X	X		X					3, 7, 10	0.08	-40 to 125	150	2.7 to 5.5	4.5	200	100	7/7	50	50	SOIC-8
ISL21009					X				X				X	X		3, 7, 10	0.02	-40 to 125	180	3.5 to 16.5	4.5	150	100	7/7	50	50	SOIC-8
ISL21090					X				X					X	X	7	0.02	-40 to 125	1280	3.7 to 36	1	45	42.5	20/10	-	20	SOIC-8
ISL21060								X	X		X		X			10, 25	0.10	-40 to 125	40	2.7 to 5.5	10	150	400	10/5	100	100	SOT23-6
X60003													X	X		10, 20	0.10*	-40 to 85	0.9	4.5 to 9	30	150	100	10/10	100	45	SOT23-3
ISL60002			X	X	X		X	X	X	X	X	X				20	0.49	-40 to 85	0.9	2.7 to 5.5	30	350	250	7/7	100	50	SOT23-3
ISL21070	X							X	X							30	0.20	-40 to 85	25	2.7 to 5.5	30	250	100	7/10	20	50	SOT23-3
ISL21010			X		X	X		X	X		X	X	X			50	0.20	-40 to 125	80	2.2 to 5.5	58*	130	110	25/1	100	50	SOT23-3
ISL21080		X	X		X	X		X	X		X	X	X	X		50	0.30	-40 to 85	1.5	2.7 to 8	30	350	350	7/7	100	50	SOT23-3

*See data sheet for conditions as there are slight difference in parameter/conditions.

E

H

I

X

Z

Power Design Made Easy with iSim™

iSim Online Design Simulation Tool

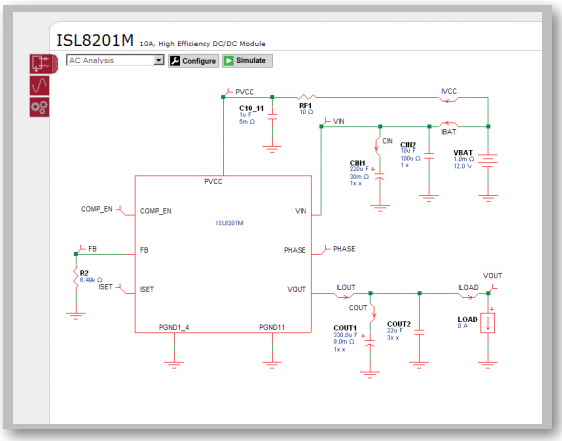
www.intersil.com/isim

Intersil's iSim™ is an interactive, web-based tool for selecting and simulating devices from Intersil's broad portfolio. Based on input and output specifications provided by the user, iSim will find all suitable Intersil devices for your application. In many cases, a simulation is also made available for immediate feedback on circuit performance.

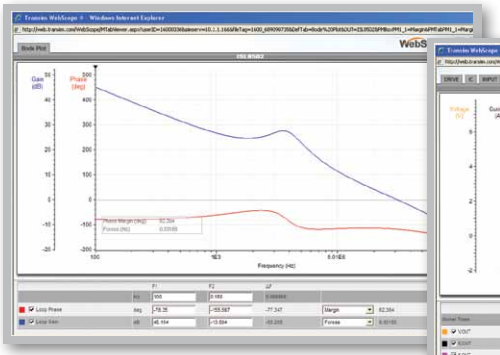
FAST Simulation

isim™ initializes circuit to DC steady state conditions

isim™ online runs on a host server



Easily Generate Schematics with Intersil's Devices



Plot the Frequency Response

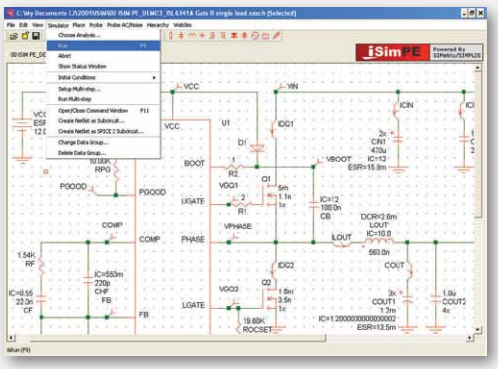
Generate Transient Graphs

Perform a Steady State Analysis

isim™ : PE Personal Edition of iSim

http://stage.transim.com/intersil/download.html

- isim™ : PE (Personal Edition) is an offline simulator
- Once circuit is set up online, download the schematic file for use in PE
- Captured schematic is pre-initialized with user's selected settings, ready for further simulation
- Save design schematics on your computer for a toolkit of quick solutions
- Device models are encrypted and simulator dependent



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