INTERSIL SELECTION GUIDE Q3/Q4 2012

POWER MANAGEMENT

Battery Management, Digital Power, Drivers
FET Drivers, Hot Plug Controllers
Integrated FET, Switching Regulators
Isolated PWM Controllers, LDO / Linear Regulators, LED Drivers
ORing FET Controllers, PMIC, Power Modules
Power Sequencers, PWM Controllers, Voltage Monitors

intersil®

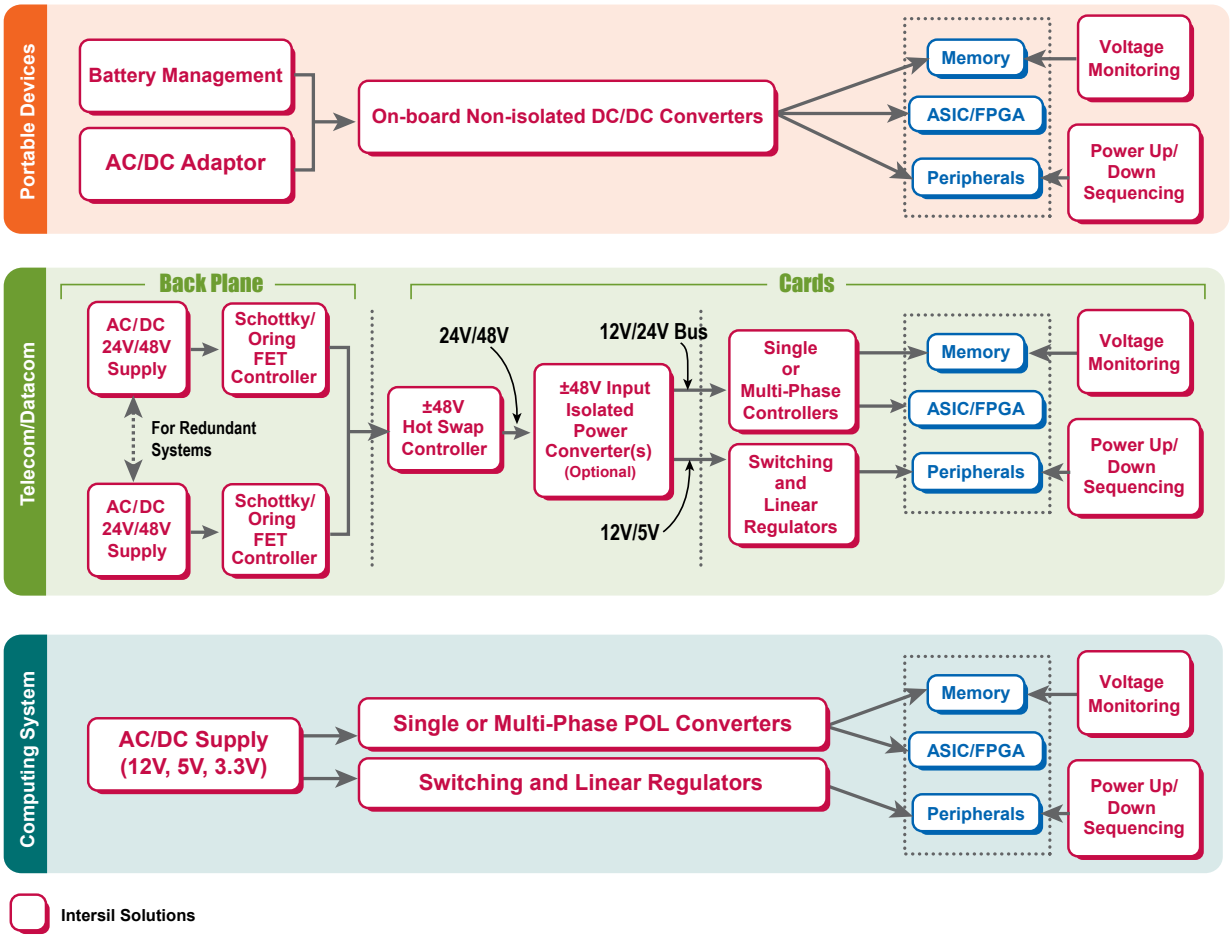
Intersil Power Management Solutions

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

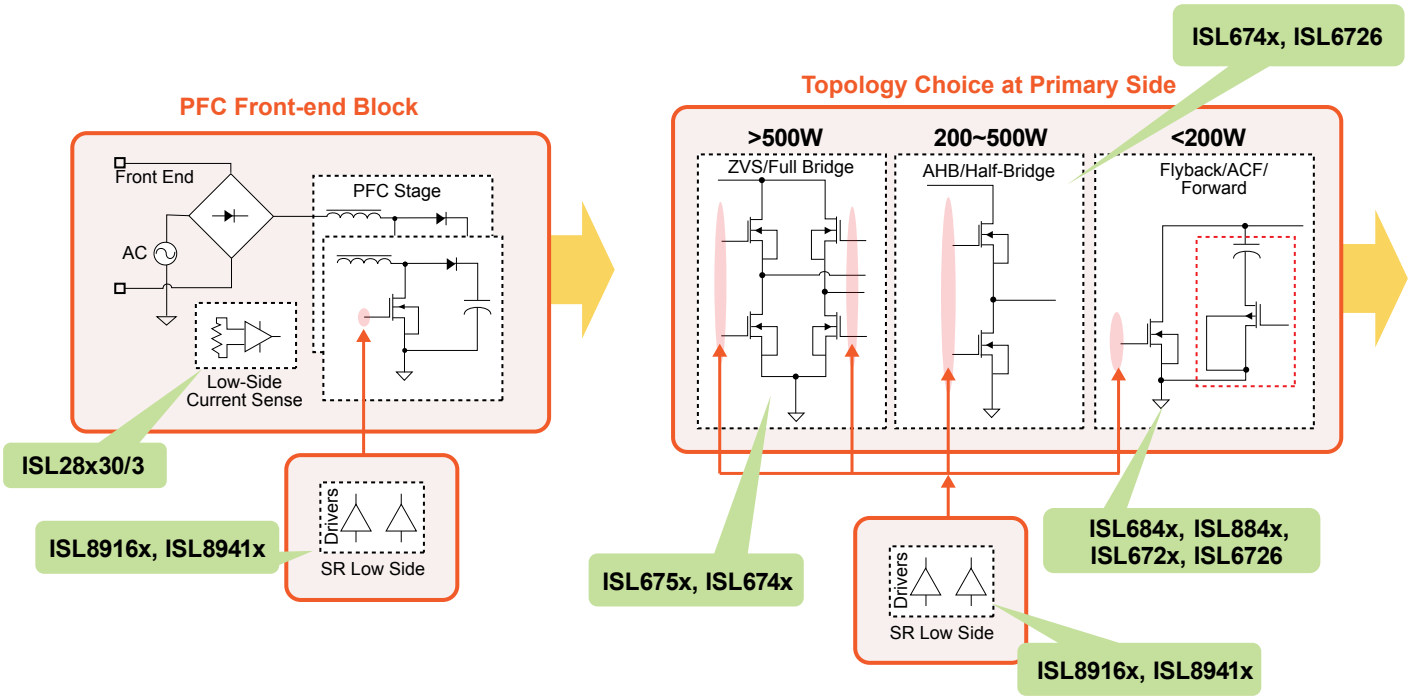
:: Non-Isolated Power

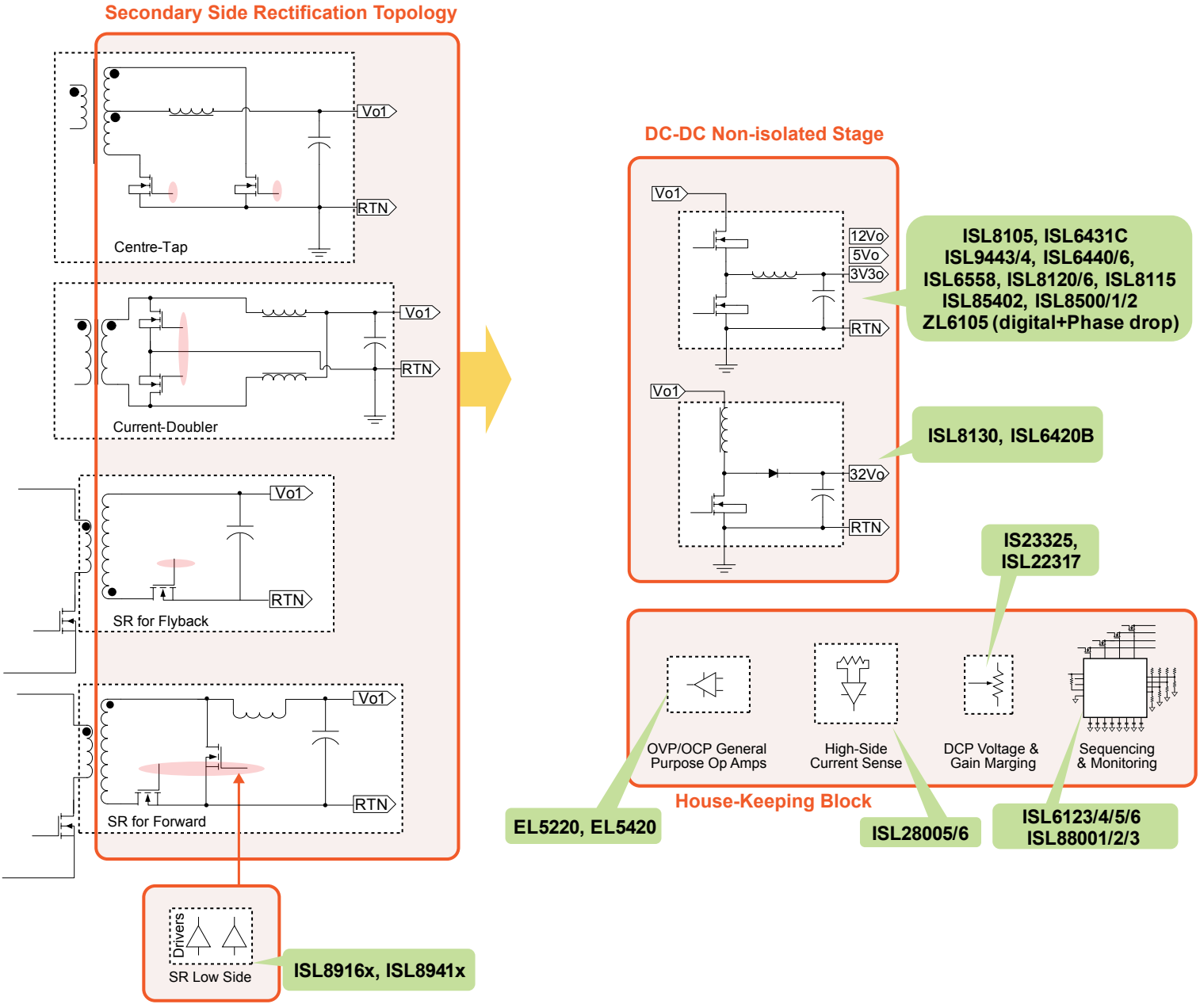
Power Supply Control

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.





ORing FET Controllers

Most Comprehensive Fault Coverage Low Voltage ORing FET Controller

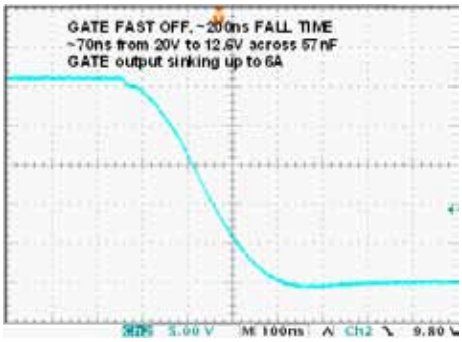
Key Features

- ORing down to 1V and up to 20V with ISL6146A, ISL6146B
- 3.3V to 20V Programmable UV & OV Voltage Compliant Operation with ISL6146C
- 6A GATE Sink Current for Fast Turn-Off

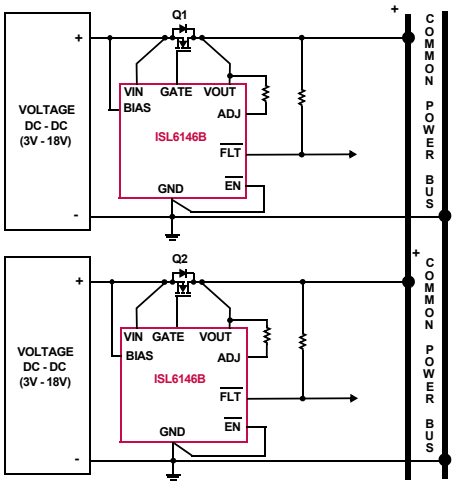
Differentiators

- Most Comprehensive Fault Coverage Including:
  - V_{IN} < V_{OUT}
  - V_{IN} <POR Vth
  - Not ON (not a fault , just not conducting)
  - ORing FET Terminal Shorts
  - Excessive FET Vds Voltage
  - On GATE Voltage < V_{IN}+0.2V
  - Over Temperature
  - UVLO > V_{IN} > OVP on ISL6146C

6A GATE Sink Current for Fast Turn-Off



Typical Application Diagram

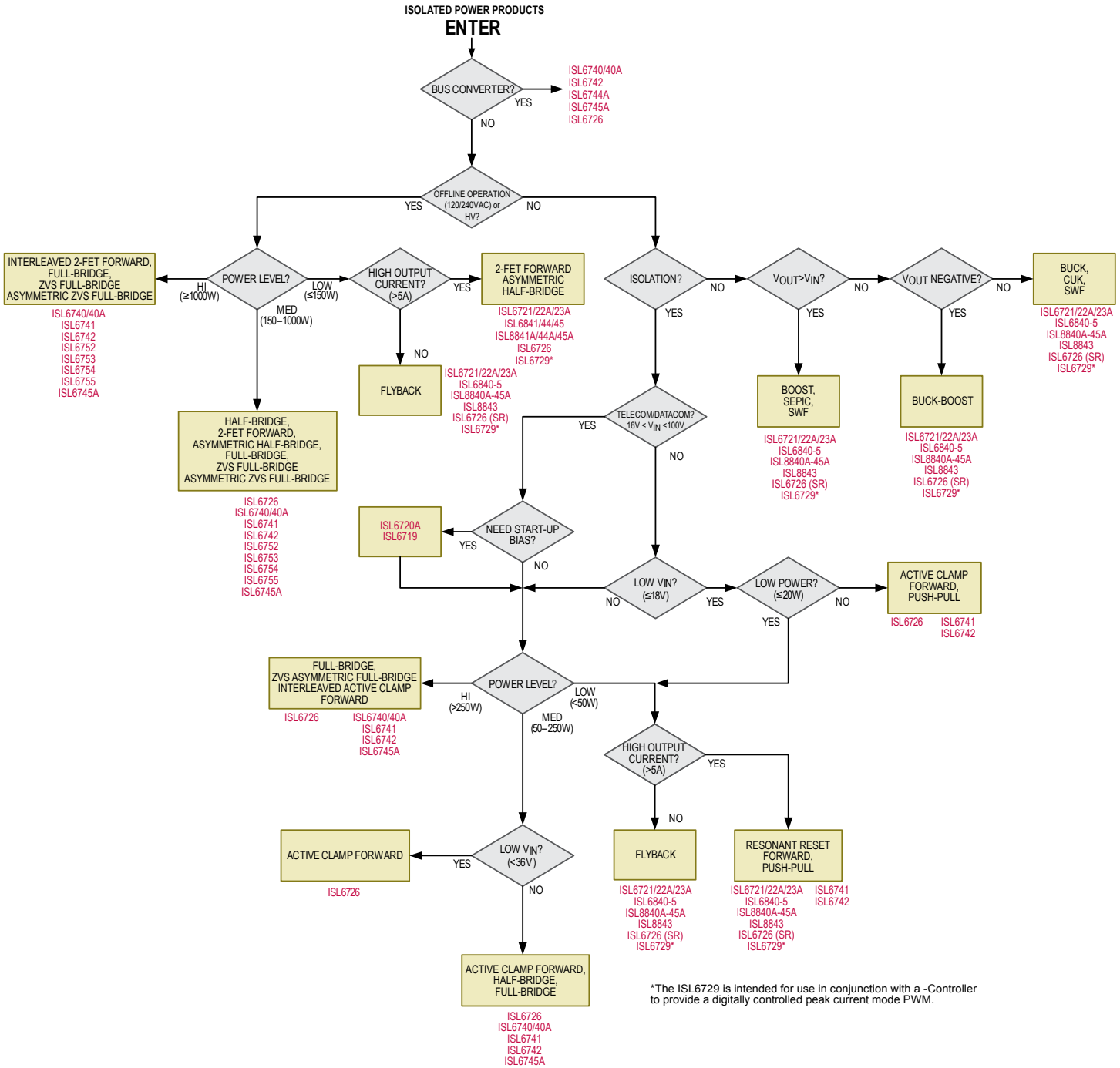


ORing FET Controllers

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

Isolated PWM Controllers

Isolated PWM Controllers Selection Chart



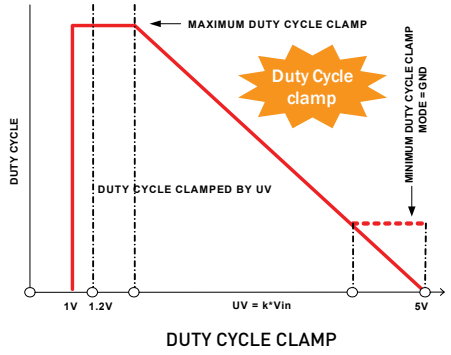
*The ISL6729 is intended for use in conjunction with a -Controller to provide a digitally controlled peak current mode PWM.

Highly-Integrated Active Clamp Forward PWM Controller

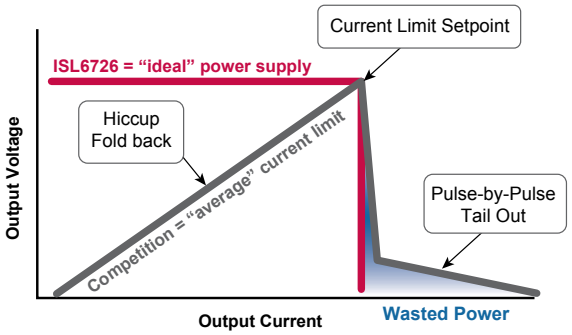
Key Features

- 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
- 3A GATE Drive OUTM / 2A 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

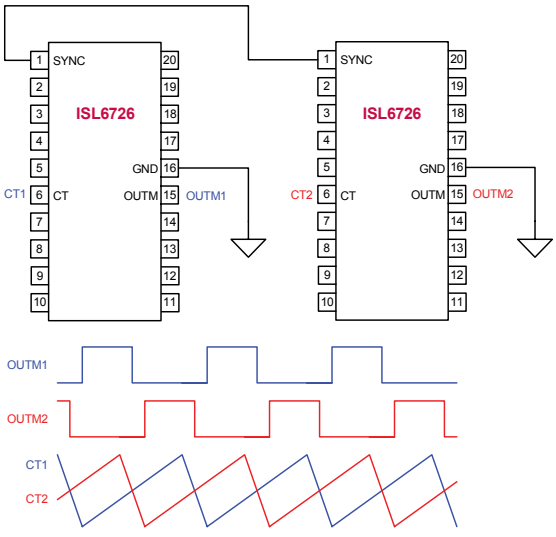


Adjustable Peak and Average Current Limit Protection



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 (V)	UVLO Falling (V)	V_{BIAS} (max) (V)	No-Load Operating Current (mA)	# of PWM Outputs	FET Driver I_{OUT} (max) (A)	Max Duty Cycle (%)	Package
ISL6401	Synchronizing Current Mode PWM for Subscriber Line Interface Circuits (SLICs)	Peak Current Mode	4.1	3.6	7	3.7	1	1	50	14 Ld SOIC, 16 Ld QFN
ISL6721	Flexible Single Ended Current Mode PWM Controller	Peak Current Mode	8.25	7.7	20	4.5	1	1	100	16 Ld SOIC
ISL6721A	Flexible Single Ended Current Mode PWM Controller	Peak Current Mode	6.8	6.2	20	4.5	1	1	100	16 Ld TSSOP, 16 Ld QFN
ISL6722A	Flexible Single Ended Current Mode PWM Controllers	Peak Current Mode	8.25	7.7	20	4.5	1	1	100	16 Ld QFN, 16 Ld SOIC
ISL6723A	Flexible Single Ended Current Mode PWM Controllers	Peak Current Mode	13	7.7	20	4.5	1	1	100	16 Ld SOIC
ISL6726	Active Clamp Forward PWM Controller	Active clamp forward, Asymmetric half-bridge, Interleaved active clamp forward	7.65	6.23	20	10	1	1	100	20 Ld QSOP
ISL6729	Low-Cost Single-Ended Current-Mode PWM for Microcontroller-Based Power Converters	Peak Current Mode	4.5	4.3	7	3.3	1	1	100	8 Ld MSOP
ISL6840	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	7	6.6	20	2.3	1	1	100	8 Ld MSOP, 8 Ld SOIC
ISL6841	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	7	6.6	20	2.3	1	1	50	8 Ld DFN, 8 Ld MSOP
ISL6842	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	14.4	8.8	20	2.3	1	1	100	8 Ld DFN, 8 Ld MSOP
ISL6843	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	8.4	7.6	20	2.3	1	1	100	8 Ld DFN, 8 Ld MSOP
ISL6844	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	14.4	8.8	20	2.3	1	1	50	8 Ld DFN, 8 Ld MSOP
ISL6845	Improved Industry-Standard Single-Ended PWM Controller	Peak Current Mode	8.4	7.6	20	2.3	1	1	50	8 Ld DFN, 8 Ld MSOP
ISL8840A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	7	6.6	30	2.9	1	1	100	8 Ld MSOP, 8 Ld SOIC
ISL8841A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	7	6.6	30	2.9	1	1	50	8 Ld MSOP
ISL8842A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	14.4	8.8	30	2.9	1	1	100	8 Ld MSOP, 8 Ld SOIC
ISL8843	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	8.4	7.6	30	2.9	1	1	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	7.6	30	2.9	1	1	100	8 Ld MSOP, 8 Ld SOIC
ISL8844A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	14.4	8.8	30	2.9	1	1	50	8 Ld MSOP, 8 Ld SOIC
ISL8845A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Peak Current Mode	8.4	7.6	30	2.9	1	1	50	8 Ld MSOP, 8 Ld SOIC

Double-Ended

Device	Device Description	Control Mode	UVLO Rising (V)	UVLO Falling (V)	V_{BIAS} (max) (V)	No-Load Operating Current (mA)	# of PWM Outputs	FET Driver I_{OUT} (max) (A)	Max Duty Cycle (%)	Package
ISL6740	Flexible Double-Ended Voltage-Mode PWM Controller	Voltage Mode	7.25	6.75	20	5	2	0.5	100	16 Ld SOIC, 16 Ld TSSOP
ISL6740A	Flexible Double-Ended Voltage-Mode PWM Controller with Voltage Feed Forward	Voltage Mode	7.25	6.75	20	5	2	0.5	100	16 Ld TSSOP
ISL6741	Flexible Double-Ended Peak-Current-Mode PWM Controller	Peak Current Mode	7.25	6.75	20	5	2	0.5	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	7	20	5	4	0.1	100	16 Ld QSOP
ISL6744A	Intermediate Bus PWM Controller	Voltage Mode	6.2	5.7	20	3	2	1	100	8 Ld MSOP, 8 Ld SOIC
ISL6745A	Voltage-Mode Double-Ended PWM Controller with Precision Dead-Time Adjustment	Voltage Mode	6.3	5.7	20	3	2	1	100	10 Ld MSOP

Zero-Voltage-Switching (ZVS)

Device	Device Description	Control Mode	UVLO Rising (V)	UVLO Falling (V)	V_{BIAS} (max) (V)	No-Load Operating Current (mA)	# of PWM Outputs	FET Driver I_{OUT} (max) (A)	Max Duty Cycle (%)	Package
ISL6551	ZVS Full Bridge PWM Controller	Peak Current Mode	9.6	8.6	16	13	6	2	100	28 Ld QFN, 28 Ld SOIC
ISL6752	ZVS Full Bridge Current-Mode PWM with Adjustable Synchronous Rectifier Control	Peak Current Mode	8.75	7	20	6	6	0.1	100	16 Ld QSOP
ISL6753	ZVS Full Bridge PWM Controller	Peak Current Mode or Voltage Mode	8.75	7	20	5	4	0.1	100	16 Ld QSOP
ISL6754	ZVS Full Bridge Controller with Average Current Monitor Feature and Adjustable Synchronous Rectifier Outputs	Peak Current Mode	8.75	7	20	6	6	0.1	100	20 Ld QSOP
ISL6755	ZVS Full Bridge Controller with Average Current Monitor	Peak Voltage or Current Mode	8.75	7	20	6	6	0.1	100	20 Ld QSOP

FET Drivers

Half-Bridge / Full-Bridge, 3-Phase / Integrated FET Full Bridge / Low-Side FET Drivers / Synchronous Buck

Key Features

- **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

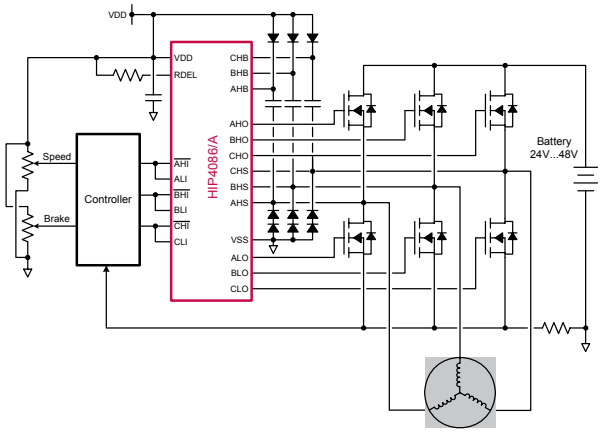
3-Phase: HIP4086A

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

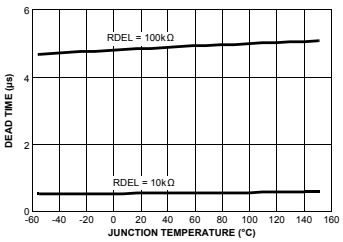
Key Features

- 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



DEAD TIME

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

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

World's Fastest Dual 6A MOSFET Driver

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

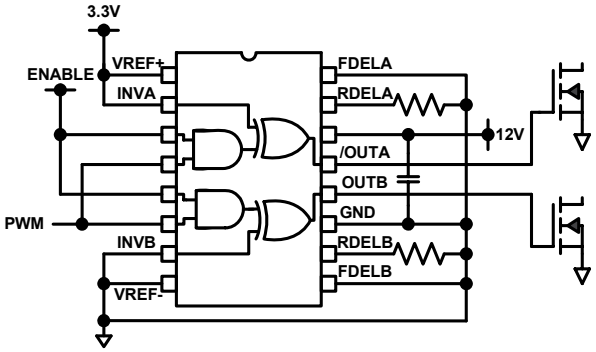
Key Features

- **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

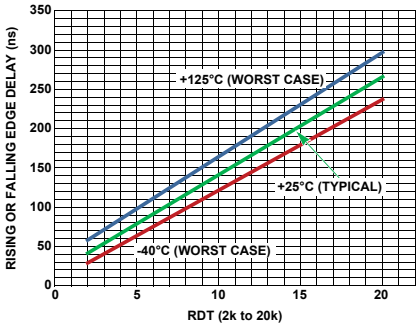
- Synchronous Rectifier (SR) Driver
- Switch Mode Power Supplies
- Motor Drives, Class D amplifiers, UPS, Inverters
- Pulse Transformer Driver

Typical Application



Improved Reliability

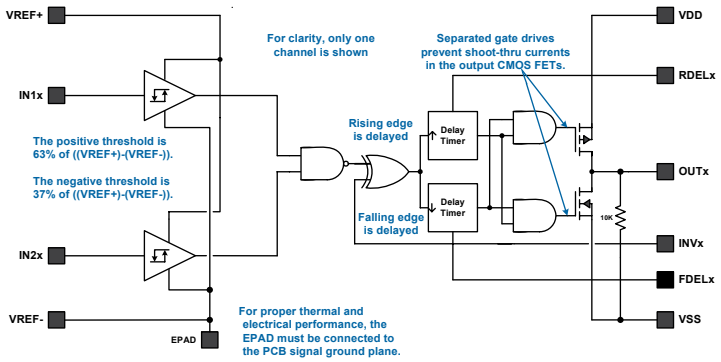
Unique programmable rising and falling edge delay times



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

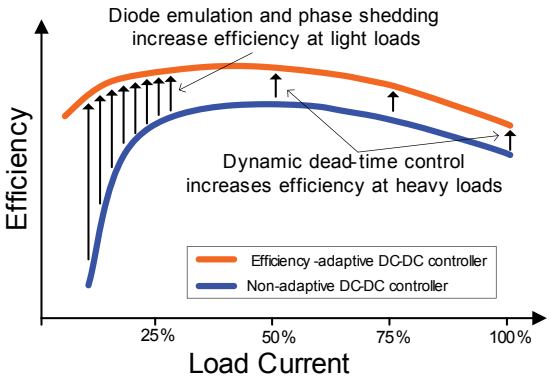
Variable Drive MOSFET DRIVERS

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

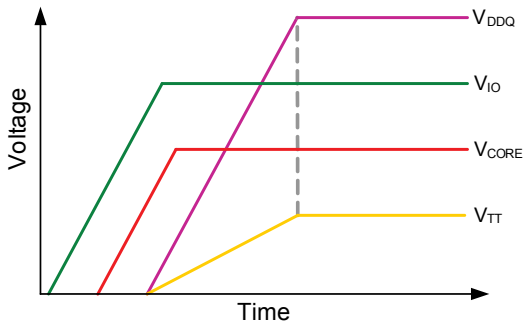
Zilker Labs products combine a world-class digital power conversion architecture with power management logic in a single IC. They require minimal external circuitry, reducing board space requirements and simplifying the design process. The patented Zilker Labs technology from Intersil builds intelligence 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 (50% / 100%)
- Autonomous output sequencing
- Adjustable voltage margining (5% / 10%)
- Voltage, current, temperature monitoring
- Configurable fault management
- Snapshot parametric data capture
- Interoperability with DDC bus
- I^2C/SMBus interface, PMBus™ compatible

Digital PWM Controllers and Drivers

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	94	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	95	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

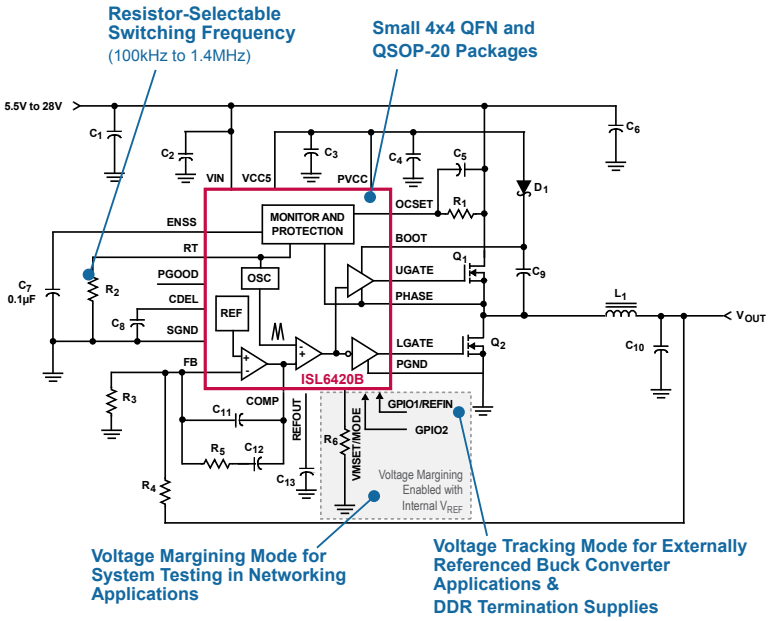
Single Output Controller: ISL6420B

28V Wide Input Single Synchronous Buck PWM Controller

Key Features

- Wide 4.5V to 28V Input Voltage
- Tight 0.6V ±2% Voltage Reference Accuracy
- Adjustable V_{OUT} Margining of ±10%
- Extensive Circuit Monitoring & Protection Functions
- P_{GOOD}, Over-voltage, Under-voltage, Over Current, Thermal Shutdown
- C_{DELAY} & P_{GOOD} Can be Used As Power On Reset

Integrated Control, Output Adjustment, Monitoring and Protection Functions



Single Output Buck Controllers

Device	Device Description	Architecture	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	V_{BIAS} (V)	Switching Frequency (MHz)	I_S (typ) (mA)	Package
ISL62870	PWM DC/DC Voltage Regulator Controller	R³	3.3	25	0.5	3.3	30	5	0.3	1.1	16 Ld µTQFN
ISL6269	High-Performance Notebook PWM Controller with Bias Regulator and Audio-Frequency Clamp	R³	7	25	0.6	3.3	25	N/A (Internal)	0.6	2.2	16 Ld QFN
ISL6269A	High-Performance Notebook PWM Controller	R³	5	25	0.6	3.3	25	5	0.6	1.7	16 Ld QFN
ISL6269B	High-Performance Notebook PWM Controller with Audio-Frequency Clamp	R³	7	25	0.6	3.3	25	5	0.6	1.7	16 Ld QFN
ISL6341, ISL6341C	5V or 12V Synchronous Buck PWM Controller	Voltage Mode	1.5	12	0.8	V_{IN}	30	4.5 to 14.4	0.3	7	10 Ld TDFN
ISL6341A, ISL6341B									0.6		
ISL6420	Advanced Synchronous Buck PWM Controller	Voltage Mode	4.5	16	0.6	V_{IN}-0.5V	10	5	1.4	2	20 Ld QFN, 20 Ld QSOP
ISL6420B*	Advanced Synchronous Buck PWM Controller	Voltage Mode	4.5	28	0.6	V_{IN}-0.5V	10	5	1.4	2	20 Ld QFN, 20 Ld QSOP
ISL6535	Synchronous Buck Pulse-Width Modulator (PWM) Controller	Voltage Mode	1.2	12	0.6	5	30	8 to 12		51	14 Ld SOIC, 16 Ld QFN
ISL6540A	Buck PWM Controller with Integrated High Speed MOSFET Driver and Pre-Biased Load Capability	Voltage Mode with Input Feed-Forward	3.3	20	0.6	V_{IN}	30	2.9 to 5.5	0.25 to 2	8	28 Ld QFN
ISL8104	Synchronous Buck PWM Controller	Voltage Mode	1.5	15.4	0.6	V_{IN}	20	8 to 14	1.5	51	14 Ld SOIC, 16 Ld QFN
ISL8105	1V to 12V Single-Phase Synchronous Buck Converter PWM Controller with Integrated MOSFET Gate Drivers	Voltage Mode	1	20	0.6	0.87 V_{IN}	15	5, 12	0.3	3.2	8 Ld SOIC, 10 Ld DFN
ISL8105A	1V to 12V Single-Phase Synchronous Buck Converter PWM Controller with Integrated MOSFET Gate Drivers	Voltage Mode	1	20	0.6	0.75 V_{IN}	15	5, 12	0.6	3.2	8 Ld SOIC, 10 Ld DFN
ISL8105B	+5V or +12V Single-Phase Synchronous Buck Converter PWM Controller with Integrated MOSFET Gate Drivers, Extended Soft-Start Time	Voltage Mode	1	20	0.6	0.87 V_{IN}	15	5, 12	0.3	3.2	8 Ld SOIC, 10 Ld DFN
ISL8106	Wide V_{IN}, 7V to 25V, Single-Phase PWM Controller with Integrated MOSFET Drivers	R³	7	25	0.6	3.3	30	N/A (Internal)	0.6	2.2	16 Ld QFN
ISL8118	3.3V to 20V Single-Phase PWM Controller with Integrated 2A/4A MOSFET Drivers	Voltage Mode with Input Feed-Forward	3.3	20	0.6	V_{IN}	30	2.9 to 5.6	0.25 to 2	8	28 Ld QFN
ISL62871, ISL62872	PWM DC/DC Controller With VID Inputs For Portable GPU Core-Voltage Regulator	R³	3.3		0.5	3.3	30	5	0.3	1.1	16 Ld µTQFN, 20 Ld µTQFN
ISL95870, ISL95870A, ISL95870B	PWM DC/DC Controller with VID Inputs for Portable GPU Core-Voltage Regulator	R⁴	3.3		0.5	5	30	5	0.3, 0.5, 0.6, 1	1.2	16 Ld µTQFN, 20 Ld µTQFN, 20 Ld QFN
ISL8107	Single-Phase Pulse-Width Modulation (PWM) Controller with Wide (9V-75V) V_{IN} Range	Voltage Mode with Input Feed-Forward	9	75	1.2	75	10	N/A (Internal)	0.1 to 0.6	2	16 Ld QFN

* Product available on military temperature plastic program (Visit http://www.intersil.com/space/VID.asp for further information).

Single Output Universal Controllers

Device	Device Description	Architecture	UVLO Rising (V)	UVLO Falling (V)	V_{BIAS} (max) (V)	No-Load Operating Current (mA)	# of PWM Outputs	FET Driver I_{OUT} (max) (A)	Max Duty Cycle (%)	Package
ISL6721	Flexible Single Ended Current Mode PWM Controller	Current Mode	8.25	7.7	20	4.5	1	1	100	16 Ld SOIC, 16 Ld TSSOP
ISL6722A	Flexible Single Ended Current Mode PWM Controllers	Current Mode	8.25	7.7	20	4.5	1	1	100	16 Ld QFN, 16 Ld SOIC, 16 Ld TSSOP
ISL6723A	Flexible Single Ended Current Mode PWM Controllers	Current Mode	13	7.7	20	4.5	1	1	100	16 Ld SOIC
ISL6729	Low-Cost Single-Ended Current-Mode PWM for Microcontroller-Based Power Converters	Peak Current Mode	4.5	4.3	7	3.3	1	1	100	8 Ld SOIC, 8 Ld MSOP
ISL6840	Improved Industry-Standard Single-Ended PWM Controller	Current Mode	7	6.6	20	2.3	1	1	100	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL6841	Improved Industry-Standard Single-Ended PWM Controller	Current Mode	7	6.6	20	2.3	1	1	50	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL6842	Improved Industry-Standard Single-Ended PWM Controller	Current Mode	14.4	8.8	20	2.3	1	1	100	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL6843	Improved Industry-Standard Single-Ended PWM Controller	Current Mode	8.4	7.6	20	2.3	1	1	100	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL6844	Improved Industry-Standard Single-Ended PWM Controller	Current Mode	14.4	8.8	20	2.3	1	1	50	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL6845	Improved Industry-Standard Single-Ended PWM Controller	Current Mode	8.4	7.6	20	2.3	1	1	50	8 Ld DFN, 8 Ld MSOP, 8 Ld SOIC
ISL8840A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Current Mode	7	6.6	30	2.9	1	1	100	8 Ld MSOP, 8 Ld SOIC
ISL8841A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Current Mode	7	6.6	30	2.9	1	1	50	8 Ld MSOP, 8 Ld SOIC
ISL8842A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Current Mode	14.4	8.8	30	2.9	1	1	100	8 Ld MSOP, 8 Ld SOIC
ISL8843	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Current Mode	8.4	7.6	30	2.9	1	1	100	8 Ld MSOP, 8 Ld SOIC
ISL8843A	Single-Ended Current Mode PWM Controller with 3% Current Limit and Military Temp Grade Option	Current Mode	8.4	7.6	30	2.9	1	1	100	8 Ld MSOP, 8 Ld SOIC
ISL8844A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Current Mode	14.4	8.8	30	2.9	1	1	50	8 Ld MSOP, 8 Ld SOIC
ISL8845A	High Performance Industry Standard Single-Ended Current Mode PWM Controller	Current Mode	8.4	7.6	30	2.9	1	1	50	8 Ld MSOP, 8 Ld SOIC

ACPI Requlators/Controllers

Device	Description	Architecture	Number of Output	V_{IN} (Min) (V)	V_{IN} (Max) (V)	V_{OUT1} (V)	V_{OUT2} (V)	V_{OUTX} (V)	I_{OUT1} (A)	Switching Frequency (MHz)	Package
ISL6532	ACPI Regulator/Controller for Dual Channel DDR Memory Systems	Voltage Mode	2	2.5	5	0.8 to Vin	0.8 to Vin	NA	20	0.25	20 Ld QFN
ISL6532A	3-in-1 ACPI Regulator/Controller for Dual Channel DDR and DDR2 Memory Systems	Voltage Mode	3	2.5	5	0.8 to Vin	0.8 to Vin	NA	20	0.25	28 Ld QFN
ISL6537	ACPI Regulator/Controller for Dual Channel DDR Memory Systems	Voltage Mode	4	4.5	5.5	0.8 to Vin	50% of Vout1	Adjustable down to 0.8	25	0.25	28 Ld QFN
ISL6537A	ACPI Regulator/Controller for Dual Channel DDR Memory Systems	Voltage Mode	5	4.5	5.5	0.8 to Vin	50% of Vout1	Adjustable down to 0.8	25	0.25	28 Ld QFN
ISL6548	ACPI Regulator/Controller for Dual Channel DDR Memory Systems	Voltage Mode	4	4.5	5.5	0.8 to Vin	50% of Vout1	Adjustable down to 0.8	25	0.25	28 Ld QFN
ISL6548A	ACPI Regulator/Controller for Dual Channel DDR Memory Systems	Voltage Mode	5	4.5	5.5	0.8 to Vin	50% of Vout1	Adjustable down to 0.8	25	0.25	28 Ld QFN

Device	Device Description	Chip Set Supported	3.3VDUAL Regulator	5VDUAL Regulator	Memory Regulator (V)	Integrated Clock Regulator	Southbridge Resume Well Regulator (V)	VID Regulator (V)	3.3VSBY Regulator	Package
ISL6506B	Multiple Linear Power Controller with ACPI Control Interface	i810, i815, i820, i845, i865, i875, i915, i925, i945, i955 for ICH4, ICH5, ICH6, ICH8	Y	Y	N	N	N	N	Y	8 Ld EPSOIC

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

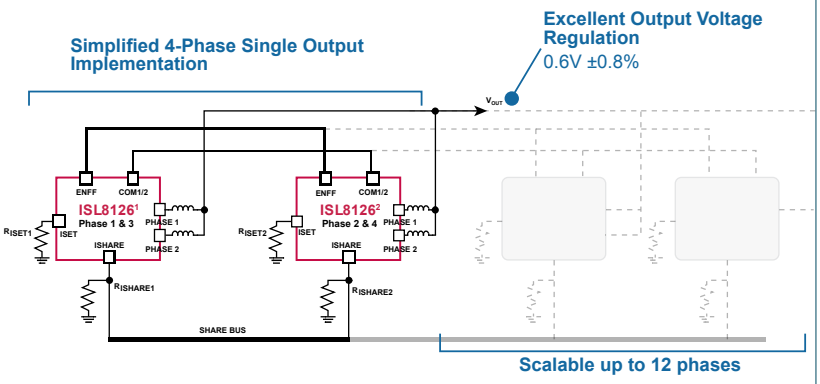
Key Features

- 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

Applications

- Datacom/Telecom and RAID Systems
- Power Modules, Power Supplies
- CPU Power (Servers, Industrial Computers)

Unmatched Flexibility for Power-Hungry ASICs and Computer Designs



Multiple Output Controllers

Device	Device Description	Architecture	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	Switching Freq. (kHz)	Package
ISL6228	High-Performance Dual-Output Buck Controller for Notebook Applications	R^3	3.3	25	0.6	5	15	200 to 600	28 Ld TQFN
ISL6440	300kHz Dual, 180° Out-of-Phase, Step-Down PWM Controller	Current Mode	4.5	24	0.8	22	10	300	24 Ld QSOP
ISL6445	1.4MHz Dual, 180° Out-of-Phase, Step-Down PWM Controller	Current Mode	4.5	24	0.8	17	6	1400	24 Ld QSOP
ISL6539	Wide Input Range Dual PWM Controller with DDR Option	Voltage Mode	3.3	18	0.9	5.5	8	300	28 Ld QFN, 28 Ld QSOP
ISL8112	High Light-Load Efficiency, Dual-Output, Main Power Supply Controllers	Constant-on	4.5	25	0.7	5.5	30	400/500, 300/400, 200/300	32 Ld QFN
ISL8126	Dual/n-Phase Buck PWM Controller with Integrated Drivers	Voltage Mode with Input Feed-Forward	2.97	26.5	0.6	90% of V_{IN}	>60	150 to 1500	32 Ld QFN

2-in-1 PWM Switchers + Linear

Device	Device Description	Architecture	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT1} (min) (V)	V_{OUT1} (max) (V)	V_{OUT2} (V)	I_{OUT1} (A)	I_{OUT2} (A)	V_{BIAS} (V)	Switching Frequency (MHz)	Package
ISL6528	Dual Regulator-Standard Buck PWM and Linear Power Controller	Voltage Mode	3.3	5	0.8	3.3	0.8 to 3.3	15	4	5	0.6	8 Ld SOIC
ISL6529, ISL6529A	Dual Regulator-Synchronous Rectified Buck PWM and Linear Power Controller	Voltage Mode	3.3	5	0.8	3.3	0.8 to 3.3	15	4	12	0.3	14 Ld SOIC, 16 Ld QFN
ISL6549	Single 12V Input Supply Dual Regulator - Synchronous Rectified Buck PWM and Linear Power Controller	Voltage Mode	1	12	0.8	V_{IN}	0.8 to V_{IN}	20	4	12	1	14 Ld SOIC, 16 Ld QFN, 16 Ld QSOP
ISL88550A	Synchronous Step Down Controller with Sourcing and Sinking LDO Regulator	Voltage Mode	2	25	0.7	3.5	50% of REFIN	15	2.5	5	0.3 to 0.6	28 Ld TQFN

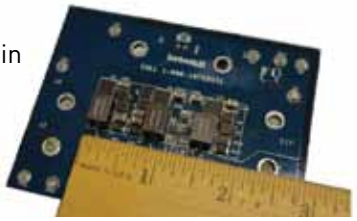
Triple, 180° Out-of-Phase, Synchronous Step-Down PWM Controller

Key Features

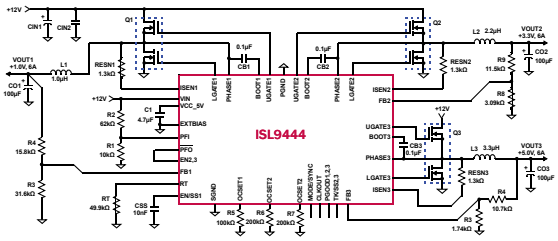
- Three Integrated Synchronous Buck PWM Controllers
  - Internal Bootstrap Diodes
  - Independent Programmable Output Voltage
  - Independent Power-Good Indicators, Soft-Starting and Tracking
- Power Failure Monitor
- Light Load Efficiency Enhancement
  - Low Ripple Diode Emulation Mode with Pulse Skipping

Small Form Factor Design

3 x 25A outputs in
1.97 x 0.77 inch



Typical Application



Multiple Output Controllers (Continued)

3-in-1 PWM Switchers + Linear

Device	Device Description	Architecture	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT1} (min) (V)	V_{OUT1} (max) (V)	V_{OUT2} (V)	V_{OUT3} (V)	I_{OUT1} (A)	I_{OUT2} (A)	Switching Frequency (MHz)	Package
ISL62391, ISL62391A	High-Efficiency, Triple-Output System Power Supply Controller for Notebook Computers	R^3	5.5	25	0.6	5.5	0.6 to 5.5	3.3	20	20	0.6	28 Ld TQFN
ISL6441	1.4MHz Dual, 180° Out-of-Phase, Step-Down PWM and Single Linear Controller	Current Mode	4.5	24	0.8	17	0.8 to 17	Adj.	6	6	1.4	28 Ld QFN
ISL6442	2.5MHz Dual, 180° Out-of-Phase, Step-Down PWM and Single Linear Controller	Voltage Mode	4.5	24	0.6	24	0.6 to 24	Adj.	20	20	2.5	24 Ld QSOP
ISL6443A	300kHz Dual, 180° Out-of-Phase, Step-Down PWM and Single Linear Controller	Current Mode	4.5	24	0.8	22	0.8 to 22	Adj.	10	10	0.3	28 Ld QFN, 28 Ld TSSOP
ISL9443	Triple, 180° Out-of-Phase, Synchronous Step-Down PWM Controller	Current Mode	4.5	26	0.7	V_{IN}	0.7V-V_{IN}	0.7V-V_{IN}	25	25	200 to 1200	32 Ld QFN
ISL9444	Triple, 180° Out-of-Phase, Synchronous Step-Down PWM Controller	Current Mode	4.5	26	0.7	V_{IN}	0.7V-V_{IN}	0.7V-V_{IN}	25	25	200 to 1200	40Ld QFN

4-in-1 PWM Switchers + Linear

Device	Device Description	Architecture	V_{IN} (min) (V)	V_{IN} (max) (V)	$V_{OUT1, 2, 3}$ (min) (V)	$V_{OUT1, 2, 3}$ (max) (V)	I_{OUT} (A)	V_{OUT4} (V)	Switching Frequency (kHz)	Package
ISL9440B	Triple Step-Down PWM and Single Linear Controller with Programmable Soft-Start	Current Mode	4.5	24	0.8	22	20	0.8 to 5.5	300	32 Ld QFN
ISL9440C	Triple Step-Down PWM and Single Linear Controller with Programmable Soft-Start	Current Mode	4.5	24	0.8	20	20	0.8 to 5.5	600	32 Ld QFN
ISL9441	Triple, 180° Out-of-Phase, Step-Down PWM and Single Linear Controller	Current Mode	4.5	24	0.8	22	20	0.8 to 5.5	300	32 Ld QFN

4-in-1 PWM Switchers + Linear (Continued)

Device	Device Description	Architecture	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT1} (min) (V)	V_{OUT1} (max) (V)	V_{OUT2} (V)	V_{OUT3} (V)	V_{OUT4} (V)	I_{OUT1} (A)	Package
ISL6236A	High-Efficiency, Quad-Output, Main Power Supply Controllers for Notebook Computers	Constant on-time	4.5	25	4.975 (Adj. 0.7)	5.125 (Adj. 5.5)	3.3 (Adj. 0.5 to 2.5)	3.3 or 5 Linear (Adj. 0.7 to 4.5)	3.3 Always Linear	20	32 Ld QFN
ISL62381, ISL62382	High-Efficiency, Quad-Output System Power Supply Controller for Notebook Computers	R^3	5.5	25	0.6	5.5	0.6 to 5.5	Adj.	5	20	32 Ld TQFN
ISL62383	High-Efficiency, Triple-Output System Power Supply Controller for Notebook Computers	R^3	5.5	25	0.6	5.5	0.6 to 5.5	Adj.	5	20	28 Ld TQFN
ISL62386	High-Efficiency, Quad Output System Power Supply Controller for Notebook Computers	R^3	5.5	25	0.6	5.5	0.6 to 5.5	3.3	5	20	32 Ld TQFN

Multiphase Controllers

General Purpose

Device	Device Description	Architecture	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	V_{BIAS} (V)	Package
ISL6244	Multiphase PWM Controller	Voltage/Current Mode Hybrid	5.5	25	0.8	1.5	N/A	5	32 Ld QFN
ISL6308A	3-Phase Buck Controller with Integrated High Current MOSFET Drivers	Voltage/Current Mode Hybrid	5	12	0.6	2.3	100	5	40 Ld QFN
ISL6310	2-Phase Buck Controller with Integrated High Current MOSFET Drivers	Voltage/Current Mode Hybrid	5	12	0.6	2.3	>60	5	32 Ld QFN
ISL6315	2-Phase Buck Controller with MOSFET Drivers Integrated (No Droop)	Voltage/Current Mode Hybrid	5	12	0.84	1.6	>60	5	24 Ld QFN
ISL6558	Multi-Purpose Precision Multiphase PWM Controller With Optional Active Voltage Positioning	Voltage/Current Mode Hybrid	1.2	12	0.8	5	>120	5	16 Ld SOIC, 20 Ld QFN
ISL6567	Multipurpose 2-Phase Buck Controller with Integrated MOSFET Drivers	Voltage Mode	3	20	0.6	5	>60	5 to 12	24 Ld QFN
ISL8101	Two-Phase Multiphase Buck PWM Controller with Integrated MOSFET Drivers	Voltage/Current Mode Hybrid	4.6	12	0.6	2.3	>60	5	24 Ld QFN
ISL8121	3V to 20V, 2-Phase Buck Controller with Integrated 4A MOSFET Drivers	Voltage/Current Mode Hybrid	4.5	20	0.6	66% of V_{IN}	>60	5	24 Ld QFN

Single/Multiphase Controllers- VR11/VR11.1

Device	Device Description	Architecture	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	V_{BIAS} (V)	Package
ISL6312A	4-Phase Buck Controller with Integrated MOSFET Drivers for Intel VR10, VR11, and AMD Applications	Voltage/Current Mode Hybrid	5	12	0.375	1.6	120	5	48 Ld QFN
ISL6313	2-Phase Buck Controller with Integrated MOSFET Drivers for Intel VR11 and AMD Applications	Voltage/Current Mode Hybrid	5	12	0.5	1.6	60	5	36 Ld QFN
ISL6314	Buck PWM Controller with Integrated MOSFET Drivers for Intel VR11 and AMD Applications	Voltage Mode	3	12	0.375	1.6	≥30	5 to 12	32 Ld QFN
ISL6322G	2-Phase Buck Controller with Integrated MOSFET Drivers, I^2C Interface, and Phase Dropping	Voltage/Current Mode Hybrid	3	12	0.375	1.99375	>50	5	48 Ld QFN
ISL6326, ISL6326B	4-Phase PWM Controller with 8-Bit DAC Code Capable of Precision DCR Differential Current Sensing	Voltage/Current Mode Hybrid	3	12	0.5	1.6	>130	5	40 Ld QFN
ISL6327, ISL6327A	Enhanced 6-Phase PWM Controller with 8-Bit VID Code and Differential Inductor DCR or Resistor Current Sensing	Voltage/Current Mode Hybrid	3	12	0.5	1.6	>200	5	48 Ld QFN
ISL6333	3-Phase Buck Controller with Integrated MOSFET Drivers and Light Load Efficiency Enhancements	Voltage/Current Mode Hybrid	5	12	0.5	1.6	100	5	48 Ld QFN
ISL6333A, ISL6333B, ISL6333C	3-Phase Buck Controller with Integrated MOSFET Drivers and Light Load Efficiency Enhancements	Voltage/Current Mode Hybrid	5	12	0.5	1.6	100	5	48 Ld QFN
ISL6334, ISL6334A, ISL6334B, ISL6334C	VR11.1, 4-Phase PWM Controller with Light Load Efficiency Enhancement and Load Current Monitoring Features	Voltage/Current Mode Hybrid	3	12	0.5	1.6	≥130	5	40 Ld QFN
ISL6334D	VR11.1, 4-Phase PWM Controller with Phase Dropping, Droop Disabled and Load Current Monitoring Features	Voltage/Current Mode Hybrid	3	12	0.5	1.6	≥3	5	40 Ld QFN
ISL6336A	6-Phase PWM Controller with Light Load Efficiency Enhancement and Current Monitoring	Voltage/Current Mode Hybrid	3	12	0.5	1.6	≥200	5	48 Ld QFN

Multiphase Controllers- AMD SVI Solutions (AM2+)

Device	Device Description	Architecture	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	V_{BIAS} (V)	Package
ISL6323	Hybrid SVI/PVI, Monolithic Dual PWM Hybrid Controller Powering AMD SVI Split-Plane and VI Uniplane Processors	Voltage/Current Mode Hybrid	5	12	0	2	120	5	48 Ld QFN
ISL6323A	Monolithic Dual PWM Hybrid Controller Powering AMD SVI Split-Plane and PVI Uniplane Processors	Voltage/Current Mode Hybrid	5	12	0	2	120	5	48 Ld QFN
ISL6324	Hybrid SVI/PVI with I^2C Monolithic Dual PWM Hybrid Controller Powering AMD SVI Split-Plane and PVI Uniplane Processors	Voltage/Current Mode Hybrid	5	12	0	2	120	5	48 Ld QFN
ISL6328	Dual PWM Controller for Powering AMD SVI Split-Plane Processors	Voltage/Current Mode Hybrid	4.5	12	0.0125	1.55	>200	5	48 Ld QFN
ISL6329	Dual PWM Controller Powering AMD SVI Split-Plane Processors	Voltage/Current Mode Hybrid	5	12	0.0125	1.55	>200	5	60 Ld QFN

Multiphase Controllers- AMD Mobile CPUs

Device	Device Description	Architecture	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	V_{BIAS} (V)	Package
ISL6264	2-Phase Controller for AMD Mobile Turion CPUs	R^3	5	24	0.375	1.55	60	5	40 Ld QFN
ISL6267	Multiphase PWM Regulator for AMD Fusion™ Mobile CPUs	R^3	4.5	25	0	1.55	90	5	28 Ld QFN
ISL6265A	2-Phase AMD V Controller For Fusion (ISL6265 replacement)	R^3	4.5	25	1.5	1.55	60	5	40 Ld QFN

Multiphase (Continued)

Single/Multiphase Controllers- IMVP6/IMVP6.5

Device	Device Description	Architecture	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	V_{BIAS} (V)	Applications	Package
ISL62881	Single-Phase PWM Regulator for IMVP-6.5™ Mobile CPUs and GPUs	R^3	5	25	0	1.5	30	5	Mobil GPU & CPU IMVP-6.5	28 Ld TQFN
ISL62881B	Single-Phase PWM Regulator for IMVP-6.5™ Mobile CPUs and GPUs	R^3	5	25	0	1.5	30	5	Mobil GPU & CPU IMVP-6.5	32 Ld TQFN
ISL62882	Multiphase PWM Regulator for IMVP-6.5™ Mobile CPUs	R^3	5	21	0.75	1.5	60	5	Mobil GPU & CPU IMVP-6.5	40 Ld TQFN
ISL62883	Multiphase PWM Regulator for IMVP-6.5™ Mobile CPUs	R^3	5	21	0.75	1.5	90	5	Mobil GPU & CPU IMVP-6.5	40 Ld TQFN
ISL62884C	Single-Phase PWM Regulator for IMVP-6™ Mobile CPUs	R^3	4.5	25	0	1.5	30	5	Mobil GPU & CPU IMVP-6	28 Ld TQFN
ISL6260C	3-Phase IMVP-6+ V Controller with Phase Dropping Capability	R^3	4.5	25	0.3	1.5	90	5	Mobil GPU & CPU IMVP-6	40 Ld QFN
ISL6262A	2-Phase IMVP-6+ V Controller	R^3	4.5	25	0.3	1.5	60	5	Mobil GPU & CPU IMVP-6	48 Ld QFN
ISL6266	2-Phase IMVP-6+ V Controller For Coupled Inductor Buck Regulators	R^3	4.5	25	0.3	1.5	60	5	Mobil GPU & CPU IMVP-6	48 Ld QFN
ISL6266A	2-Phase IMVP-6+ V Controller	R^3	4.5	25	0.3	1.5	60	5	Mobil GPU & CPU IMVP-6	48 Ld QFN

VID Voltage Set - VR12/IMVP7

Device	Device Description	V_{IN} (min) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	V_{BIAS} (V)	Applications	Max # of outputs	Max # of phases	Droop	Integrated MOSFET Driver	Package
ISL6364	Dual 4-Phase + 1-Phase PWM Controller for VR12/ IMVP7 Applications	4.75	0.25	1.52	130	5	VR12/IMVP7	2	4	Y	N	48 Ld QFN
ISL6366	Dual 6-Phase + 1-Phase PWM Controller for VR12/ IMVP7 Applications	4.75	0.25	1.52	>200	5	VR12/IMVP7	2	6	Y	N	60 Ld QFN
ISL95831	3+1 Voltage Regulator for IMVP-7/VR12 CPUs	4.5	0.25	1.52	90	5	VR12/IMVP7	1	3	Y	Y	48 Ld TQFN
ISL95835	3+1 and 1+1 Voltage Regulator for IMVP-7/VR12™ CPUs	4.5	0	1.52	90	5	VR12/IMVP7	2	3	Y	Y	40 Ld QFN
ISL95837	3+1 and 1+1 Voltage Regulator for IMVP-7/VR12™ CPUs	4.5	0	1.52	30	5	VR12/IMVP7	2	1	Y	Y	40 Ld QFN

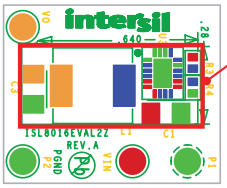
Integrated FET Switching Regulators

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



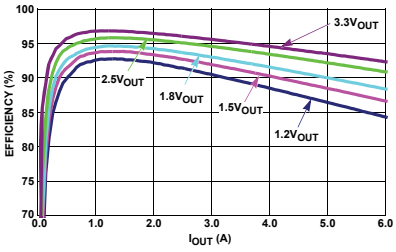
0.64"x0.28" Solution Size

TOP COMPONENTS

Actual Size

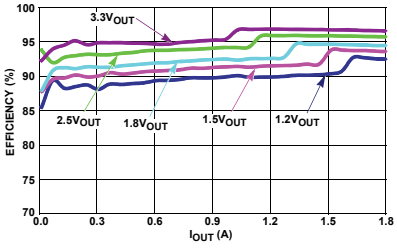
High Efficiency Over Full Load Range

Up to 97% efficiency



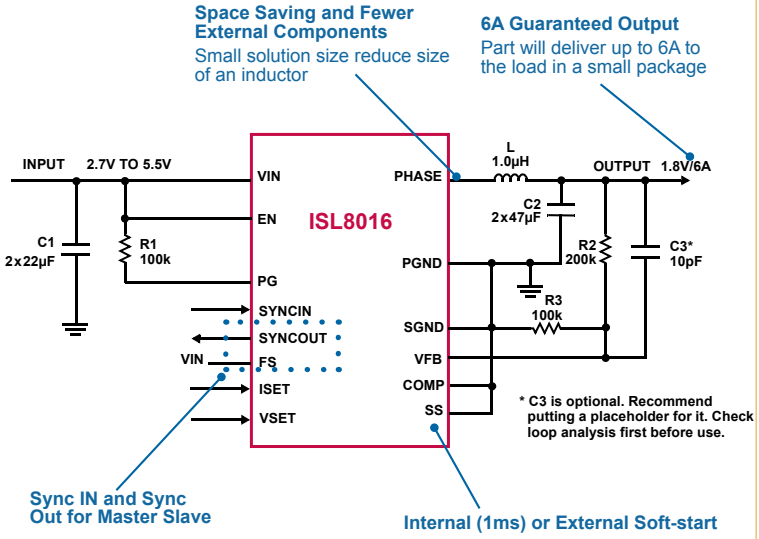
EFFICIENCY vs LOAD (1MHz $5V_{IN}$ PWM)

PFM mode for improved efficiency at light loads



EFFICIENCY vs LOAD (1MHz 5VIN PFM)

Design Flexibility

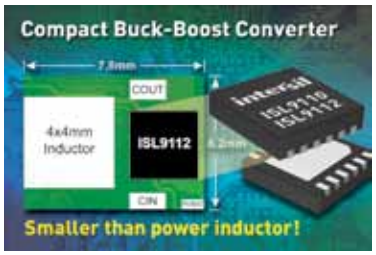


Single Output Buck Regulators

Device	Device Description	Architecture	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	I_Q (µA)	Switching Frequency (MHz)	Peak Efficiency (%)	POR	Package
ISL9103	500mA 2.4MHz Low I_Q High Efficiency Synchronous Buck Converter	Current Mode	2.7	6	0.8	V_{IN}	0.5	20	2.4	95	N	6 Ld µTDFN
ISL9103A	500mA 2.4MHz Low I_Q High Efficiency Synchronous Buck Converter	Current Mode	2.7	6	0.8	V_{IN}	0.5	32	2.4	95	N	6 Ld µTDFN
ISL9104	500mA 4.3MHz Low I_Q High Efficiency Synchronous Buck Converter	Current Mode	2.7	6	0.8	V_{IN}	0.5	20	4.3	93	N	6 Ld µTDFN
ISL9104A	500mA 4.3MHz Low I_Q High Efficiency Synchronous Buck Converter	Current Mode	2.7	6	0.8	V_{IN}	0.5	32	4.3	93	N	6 Ld µTDFN
ISL6410	Single Synchronous Buck Regulator with Integrated FET for WLAN Chipsets	Current Mode	3	3.6	1.2, 1.5, 1.8	1.2, 1.5, 1.8	0.6	2300	0.75	90	Y	10 Ld MSOP, 16 Ld QFN
ISL6410A	Single Synchronous Buck Regulator with Integrated FET for WLAN Chipsets	Current Mode	4.5	5.5	1.2, 1.8, 3.3	1.2, 1.8, 3.3	0.6	2300	0.75	90	Y	10 Ld MSOP, 16 Ld QFN
ISL8010	Monolithic 600mA Step-Down Regulator with Low Quiescent Current	Current Mode	2.5	5.5	0.8	V_{IN}	0.6	120	1.5	94	N	10 Ld MSOP
ISL9105	600mA Low Quiescent Current 1.6MHz High Efficiency Synchronous Buck Regulator	Current Mode	2.7	5.5	0.8	V_{IN}	0.6	25	1.6	96	Y	8 Ld DFN
ISL85001	1A Standard Buck PWM Regulator	Voltage Mode	4.5	25	0.6	19	1	80	0.5	94	Y	12 Ld DFN
ISL97536	Monolithic 1A Step-Down Regulator with Low Quiescent Current	Current Mode	2.5	6	0.8	6	1	400	1.4	95	Y	10 Ld MSOP
ISL6273	1.2A Low Quiescent Current 1.6MHz High Efficiency Synchronous Buck Regulator	Current Mode	2.7	5.5	0.8	V_{IN}	1.2	25	1.6	96	Y	10 Ld DFN
ISL8011	1.2A Integrated FETs, High Efficiency Synchronous Buck Regulator	Current Mode	2.7	5.5	0.8	V_{IN}	1.2	5000	1.6	96	Y	10 Ld DFN
ISL9106	1.2A 1.6MHz Low Quiescent Current High Efficiency Synchronous Buck Regulator	Current Mode	2.7	5.5	0.8	V_{IN}	1.2	17	1.6	95	Y	10 Ld DFN
ISL8009A	1.5A Low Quiescent Current 1.6MHz High Efficiency Synchronous Buck Regulator	Current Mode	2.7	5.5	0.8	V_{IN}	1.5	17	1.6	95	Y	8 Ld DFN
ISL9107	1.5A 1.6MHz Low Quiescent Current High Efficiency Synchronous Buck Regulator	Current Mode	2.7	5.5	0.8	V_{IN}	1.5	17	1.6	95	Y	8 Ld DFN
ISL9108	1.5A 1.6MHz Low Quiescent Current High Efficiency Synchronous Buck Regulator	Current Mode	2.7	5.5	0.8	V_{IN}	1.5	17	1.6	95	N	8 Ld DFN
ISL9109	RF PA 1.5A DC/DC Regulator	Current Mode	2.7	5.5	0.8	V_{IN}	1.5	4.3	1.6	95	N	8 Ld DFN
ISL8012	2A Low Quiescent Current 1MHz High Efficiency Synchronous Buck Regulator	Current Mode	2.7	5.5	0.8	V_{IN}	2	40	1	95	Y	10 Ld DFN
ISL8500	2A Standard Buck PWM Regulator	Voltage Mode	4.5	25	0.6	19	2	80	0.5	94	Y	12 Ld DFN
ISL8502	2A Synchronous Buck Regulator with Integrated MOSFETs	Voltage Mode	4.5	14	0.6	V_{IN}	2	*	0.5 to 1.2	95	Y	24 Ld QFN
ISL8540	DC/DC Power Switching Regulator	Voltage Mode	9	40	1.21	35	2	60	0.1 to 0.6	95	Y	20 Ld HTSSOP
ISL8560*	DC/DC Power Switching Regulator	Voltage Mode	9	60	1.21	55	2	60	0.1 to 0.6	95	Y	20 Ld QFN
ISL85402	2A regulator with Integrated High Side MOSFET for Synchronous Buck or Boost-Buck Convertor	Current Mode	2.97	40	0.8	V_{IN}*D_{MAX}	2	180	0.2 to 2.2	95%	Y	20 LD QFN
ISL8013A	3A Low Quiescent Current 1MHz High Efficiency Synchronous Buck Regulator	Current Mode	2.8	5.5	0.8	V_{IN}	3	35	1	97	Y	16 Ld QFN
ISL8023	3A Low Iq High Efficiency Synchronous Buck Regulator	Current Mode	2.7	6	0.6	V_{IN}	3	50	0.5 to 4	95%	Y	16 LD TQFN
ISL8014A	4A Low Quiescent Current 1MHz High Efficiency Synchronous Buck Regulator	Current Mode	2.8	5.5	0.8	V_{IN}	4	35	1	97	Y	16 Ld QFN
ISL8024	4A, low Iq High Efficiency Synchronous Buck Regulator	Current Mode	2.7	6	0.6	V_{IN}	4	50	0.5 to 4	95%	Y	16 LD TQFN
ISL8016	6A Low Quiescent Current High Efficiency Synchronous Buck Regulator	Current Mode	2.7	5.5	0.6	V_{IN}	6	70	0.5 to 4	97	N	20 Ld QFN
ISL95210	10A Synchronous Buck Regulator with Integrated Power MOSFETs that Requires No Compensation	R[4]	2.97 [PVCC min=4.5]	5.5	0.6	2.16	10	0.4	0.400, 0.533, 0.800	95	Y	32 Ld QFN

* Product available on military temperature plastic program (Visit http://www.intersil.com/space/VID.asp for further information).

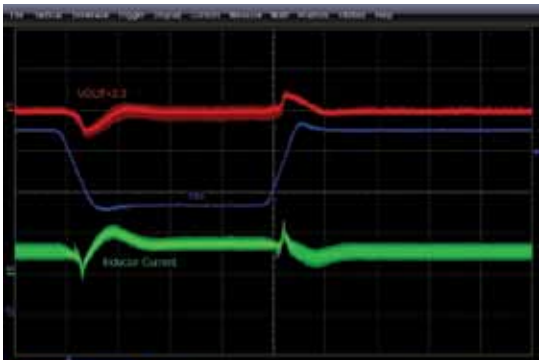
2A Buck-Boost with Best in Class Transient Response



Key Features

- More than 2A @ 2V from Lithium Ion Battery
- 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

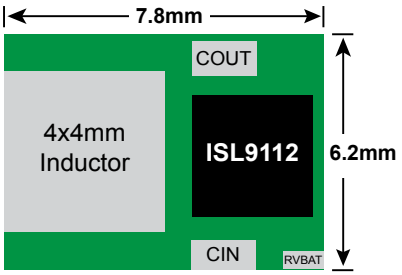
Best in Class Transient Response



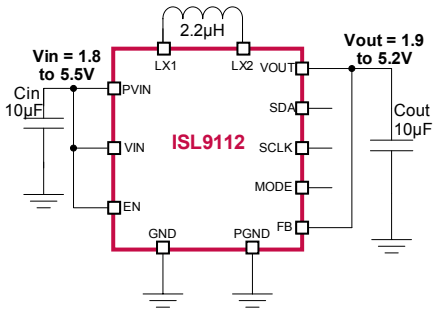
TRANSIENT LOAD RESPONSE

Simple Layout

ISL9112 is smaller than power inductor



Application



Single Output Buck-Boost Regulators

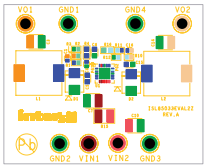
Device	Device Description	# of Outputs	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	Iq (µA)	Switching Frequency (MHz)	Peak Efficiency (%)	SYNCH Capability	Control Type	Package
ISL9110	1.2A High Efficiency Buck-Boost Regulators	1	1.8	5.5	1	5.2	1.2	35	2.5	95	Y	Current Mode	12 Ld TDFN
ISL9110A	1.2A High Efficiency Buck-Boost Regulators	1	1.8	5.5	1	5.2	1.2	35	2.5	95	Y	Current Mode	20 Ld WLCSP
ISL9112	1.2A High Efficiency Buck-Boost Regulators	1	1.8	5.5	1.9	5	1.2	35	2.5	95	Y	Current Mode	12 Ld TDFN

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

Key Features

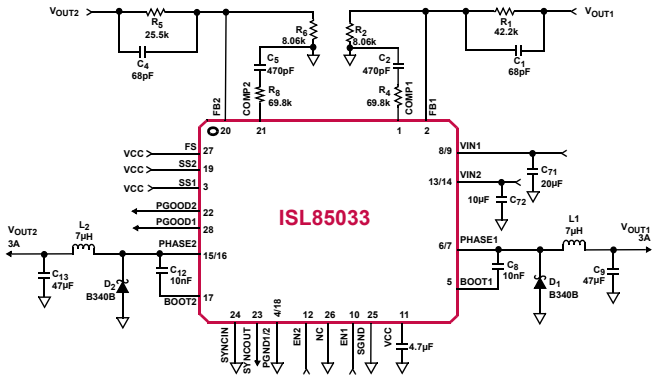
- 3A/Channel Guaranteed Output Current
- 180° Out-of-Phase Operation or In-Phase Operation
- Current Mode Control
- Output Current Sharing Capability
- Fsw: 500kHz (default) or 300kHz to 2MHz Adj.
- Synchronization to External Clock – 360kHz to 2MHz
- Independent EN and P_{GOOD} for Both Channels
- Internal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

Small Solution Size



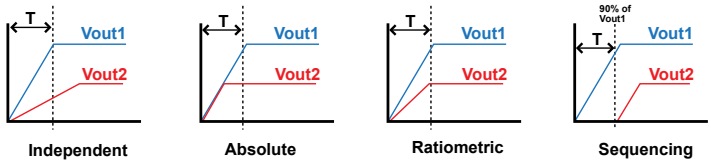
ISL85033EVAL2Z TOP SILK SCREEN

Typical Application Schematics



DUAL 3A OUTPUT (VIN RANGE FROM 4.5V TO 28V)

Simple Settings for Sequencing and Tracking



Multiple Output Buck Regulators

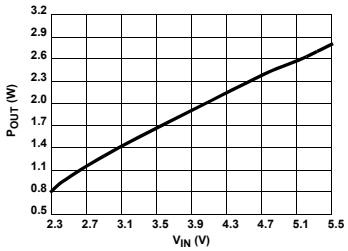
Device	Device Description	Control Type	# of Outputs	V_{IN} (min) (V)	V_{IN} (max) (V)	V_{OUT} (min) (V)	V_{OUT} (max) (V)	I_{OUT} (max) (A)	Iq (mA)	Switching Frequency (MHz)	Peak Efficiency (%)	Switching Frequency (min) (MHz)	Package
ISL6455	0.6A PWM Regulator and Dual 0.3A LDOs and Reset	Current Mode	3	3	3.6	0.8	2.5	0.6	2.5	0.75	93	0.75	24 Ld QFN
ISL6455A	0.6A PWM Regulator and Dual 0.3A LDOs and Reset	Current Mode	3	4.5	5.5	0.8	3.3	0.6	3.5	0.75	93	0.75	24 Ld QFN
ISL65426	6A Dual Synchronous Buck Regulator with Integrated MOSFETs	Current Mode	2	3	5.5	1	V_{IN}	6	30	1	95	1	50 Ld QFN
ISL8022	Dual 2A/1.7A Low Quiescent Current 2.25MHz High Efficiency Synchronous Buck Regulator	Current Mode	2	2.8	5.5	0.6	V_{IN}	2.0 / 1.7	0.04	2.25	97	2.25	12 Ld DFN
ISL8033	Dual 3A Low Quiescent Current High Efficiency Synchronous Buck Regulator	Current Mode	2	2.85	6	0.8	V_{IN}	3	15	1	95	1	24 Ld QFN
ISL8033A	Dual 3A Low Quiescent Current High Efficiency Synchronous Buck Regulator	Current Mode	2	2.85	6	0.8	V_{IN}	3	15	2.5	95	2.5	24 Ld QFN
ISL8036	Dual 3A Current Sharing 1MHz High Efficiency Synchronous Buck Regulator	Current Mode	2	2.85	6	0.8	V_{IN}	6	15	1	95	1	24 Ld QFN
ISL8036A	Dual 3A Current Sharing 2.5MHz High Efficiency Synchronous Buck Regulator	Current Mode	2	2.85	6	0.8	V_{IN}	6	15	2.5	95	2.5	24 Ld QFN
ISL8088	Dual 800mA Low Quiescent Current 2.25MHz High Efficiency Synchronous Buck Regulator	Current Mode	2	2.75	5.5	0.6	V_{IN}	0.8	0.03	2.25	96	2.25	10 Ld DFN
ISL8501	Triple Output Controller with 1A Standard Buck PWM and Dual LDOs	Voltage Mode	3	5	25	0.6	22	1	2.5	0.5	95	0.5	24 Ld QFN
ISL85033	Wide VIN Dual Standard Buck Regulator With 3A/3A Continuous Output Current	Current Mode	2	4.5	28	0.8	V_{IN}	3	1.2	0.3 to 2	92	0.3	28 Ld TQFN
ISL8510	Dual Output Controller with 1A Standard Buck PWM and LDO	Voltage Mode	2	5	25	0.6	22	1	2.5	0.5	95	0.5	24 Ld QFN

Boost Regulator with Integrated Schottky and Input Disconnect Switch

Key Features

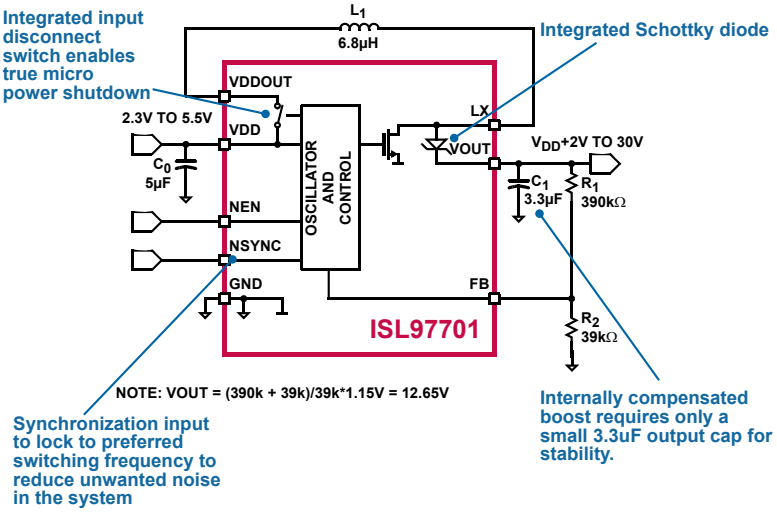
- Up to 87% Efficiency
- 2.3V to 5.5V Input
- Up to 28V Output
- Integrated Boost Schottky Diode
- Input Voltage Disconnect Switch for Micro Power Shutdown
- Synchronization Input
- 10 Ld 3x3 DFN Package
- Pb-free (RoHS Compliant)

Up to 2.5W Output Power Delivered in a 3x3mm TDFN package



RECOMMENDED MAXIMUM OUTPUT POWER vs INPUT VOLTAGE

Highly Integrated Design Reduces External Components



Single Output Boost Regulators

Device	Device Description	V_{IN} Min (V)	V_{IN} Max (V)	V_{OUT} Min (V)	V_{OUT} Max (V)	Boost Current Limit (A)	Feedback Voltage & Accuracy	Features	Package
ISL9111	Low Input Voltage, High Efficiency Synchronous Boost Converter with 1A Switch	0.8	5.25	2.5	5.25	1.2	0.800V / ±2%	Under Voltage Lockout, Soft-Start, 1.2MHz switching frequency	6 Ld SOT23
ISL9111A	Low Input Voltage, High Efficiency Synchronous Boost Converter with 1A Switch	0.8	5.25	2.5	5.25	1.2	0.800V / ±2%	Soft-Start, 1.2MHz switching frequency	6 Ld SOT23
ISL9113	Low Input Voltage and High Efficiency Synchronous Boost Converter with 1.3A Switch	0.8	4.7	1	5.2	500mA	0.8V ±2%	95% Efficiency, Low Quiescent Current Boost Converter for USB-OTG or HDMI Applications	8 Ld DFN
ISL97701	Boost Regulator with Integrated Schottky and Input Disconnect Switch	2.3	5.5	1.1 * Vin	28	1.2	1.15V ±2.6%	Integrated Schottky, Low quiescent current and input disconnect switch for micropower shutdown	10 Ld DFN
ISL98012	Wide Input Voltage, Adjustable Frequency Boost Regulator	1.8	13.2	4.5	17	1.4	1.33V ±3%	Adjustable Soft-Start, 380kHz to 750kHz SF, Low battery detection	10 Ld MSOP
ISL97516	600kHz/1.2MHz PWM Step-Up Regulator	2.3	5.5	1.1* V_{IN}	25	2	1.294V -1.7%, +1.15%	Adjustable Soft-Start, 600kHz/1.2MHz switching frequency	8 Ld MSOP
ISL97519	1% Output Accuracy PWM Step-Up Regulator with 1.294V Reference	2.3	5.5	1.1* V_{IN}	25	2	1.294V ±1%	Adjustable Soft-Start, 620kHz/1.25MHz switching frequency	8 Ld MSOP
ISL97519A	1% Output Accuracy PWM Step-Up Regulator with 1.24V Reference	2.3	5.5	1.1* V_{IN}	25	2	1.24V ±1%	Adjustable Soft-Start, 620kHz/1.25MHz switching frequency	8 Ld MSOP
ISL97656	High current PWM Step-Up Regulator with 1.24V Reference	2.3	5.5	1.1* V_{IN}	25	4	1.24V ±1.6%	Adjustable Soft-Start, 640kHz/1.22MHz switching frequency, high output current capability	10 Ld TDFN

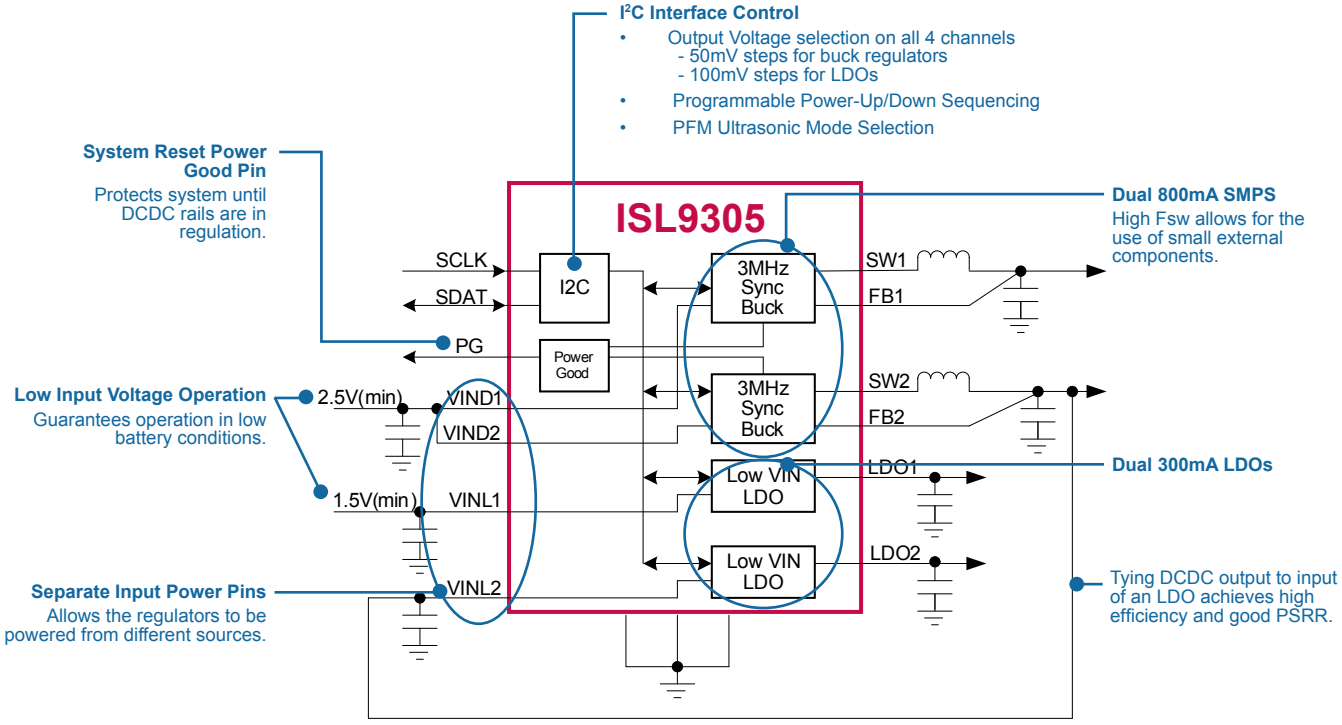
PMIC

Intersil is taking its years of experience in power management to the next level with the introduction of our first product of Mini PMICs. The compact ISL9305 provides all the fundamental features needed to efficiently power a handheld device. Incorporated into the ISL9305 are high efficiency, high switching frequency step-down converters to power system processors; two high current LDOs to power memory, I/Os and other periphery; an I²C interface to control SMPS operation and voltage slewing; and the Power Good pin ensures system stability.

Multiple Output : ISL9305

Compact Power Management IC Reduces Complexity, Component Count, and Cost While Saving Space

Four Regulators with Integrated FETs Into One Package



PMIC

Device	Device Description	# of outputs	Switching Frequency (kHz)	V_{IN} (min) (V)	V_{IN} (max) (V)	I_{OUT1} (max) (A)	V_{OUT} (min) (V)	V_{OUT1} (max) (V)	Linear Output	DDR Capable	Package
ISL9305	3MHz Dual Step-Down Converters and Dual Low-Input LDOs with I2C Compatible Interface	4	3000	2.3	5.5	0.8	0.8	VIN	Y	N	16 Ld TQFN
ISL9305H	3MHz Dual 1.5A Step-Down Converters and Dual Low-Input LDOs with I2C Compatible Interface	4	3000	2.5	5.5	1.5	0.8	VIN	Y	N	16 Ld TQFN
ISL9307	3MHz Dual 1500mA Step-Down Converters and Dual Low-Input LDOs	4	3400	2.5	5.5	1.5 (Dual) + two .3A LDOs	0.6	3.3	Y	N	16 Ld TQFN

LDO / Linear Regulators

Fast Transient Response 1A LDOs

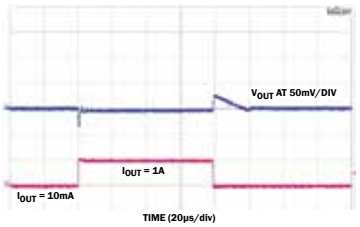
Key Features

- 2.2V to 6V Input Voltage Range
- ±2% V_{ADJ} Accuracy Guaranteed Over Line, Load and T_J = -40°C to +125°C
- Adjustable V_{OUT} and OCL
- Very Fast Transient Response
- Programmable Soft-Start
- Very Low 212mV Dropout Voltage at V_{IN} = 4.5V
- High Accuracy Current Limit Programmable Up to 1.75A
- Power-Good Output
- Over-Temperature Protection
- Small 10 Ld DFN Package

Applications

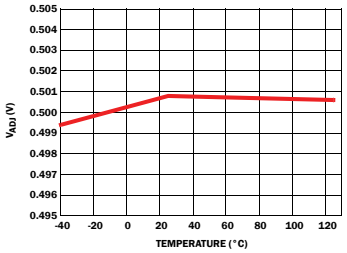
- Telecommunications and Networking
- Medical Equipment
- Instrumentation Systems
- USB Devices
- Gaming
- Routers and Switchers

Ultra Fast Transient Response



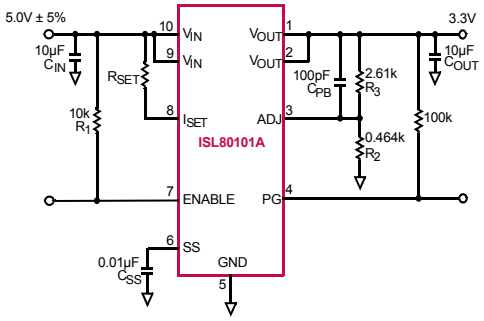
LOAD TRANSIENT RESPONSE

Best in Class Accuracy



VADJ vs TEMPERATURE

Typical Application Circuit



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/ Shutdown	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 Ld 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

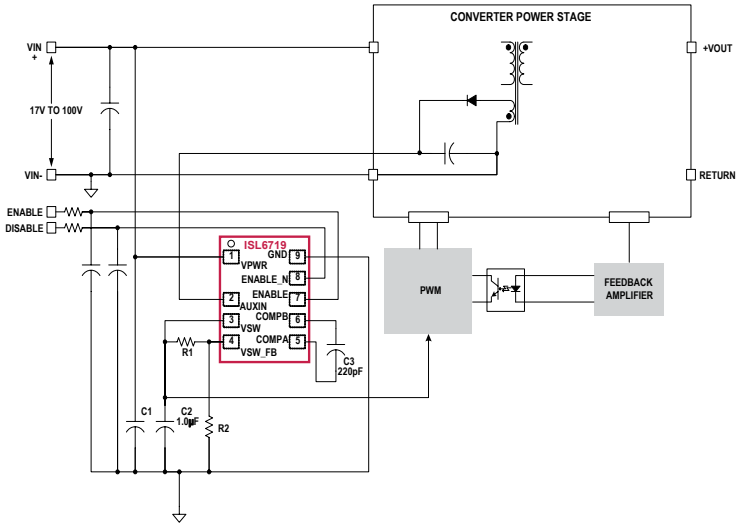
Low Voltage (continued)

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/ Shutdown	Package
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
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
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
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
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
ISL80111	Ultra Low Dropout 1A Low Input Voltage NMOS LDOs	1 to 3.6	0.8 to 3.6	±1.6	1	N/A	80	3.5mA	27	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	3	N/A	80	3.5mA	75	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	2	N/A	80	3.5mA	53	Y	10 Ld DFN

* Product available on military temperature plastic program (Visit http://www.intersil.com/space/VID.asp for further information).

High Voltage LDO: ISL6719

100V Linear Regulator Typical Application



Key Features

- Industry's First Dual 100V Linear Regulator
- Up to 100mA Output Current
- Enable Capability with Over-Current & Over-Temp Protection
- High Efficiency Bias for Both Isolated and Non-isolated Applications
- Small Form Factor DFN Package

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
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
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

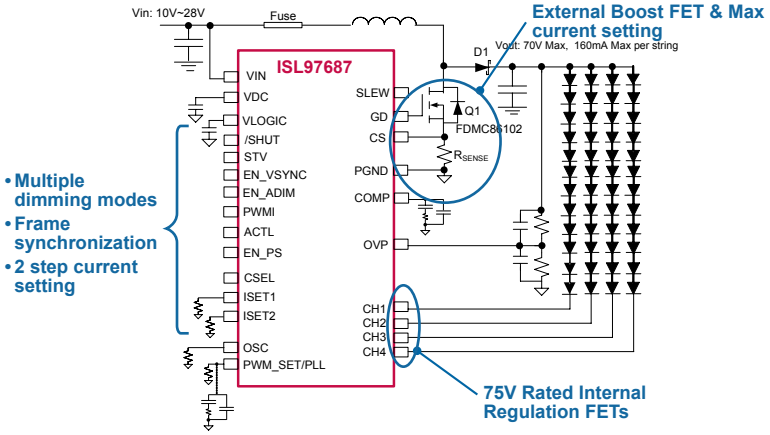
LED Drivers

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

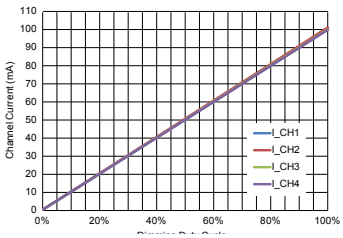
Key Features

- 4 x 160mA Channels with Integrated Channel Regulation FETs
- Channels can be ganged for high current
  - 2 x 350mA
  - 1 x 700mA
- 9V ~ 32V Input
- LED Channels rated to 75V Abs Max
- Dimming Modes:
  - Direct PWM Dimming
  - PWM Dimming with Adjustable Output Frequency from 100~30kHz
    - 10bit Dimming resolution
    - Vsync Function
  - Analog to PWM dimming with 8-bit resolution
- 2 Selectable Current Levels for 3D Application
- Current Matching of ±1%
- Fault Protection
  - String Open Circuit Protection
  - String Short Circuit Protection
  - Over-voltage Protection
  - Over-temperature Protection
- TQFN-28 Ld 5x5mm
- SOIC-28Ld 300mil

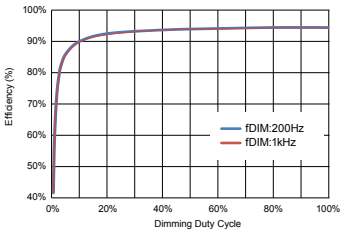
Flexible Application & Various Interfaces



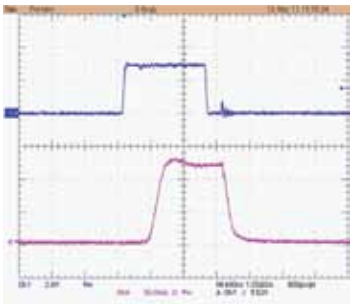
Extremely Linear Dimming



High Efficiency



350ns Minimum On-Time Enables High Resolution



Small, Cost Effective Single Layer design possible

75mm x 58mm, Single Layer PCB for a 45W backlight

White LED Drivers

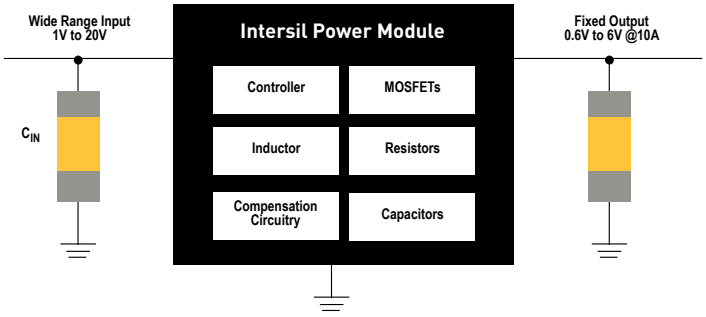
Device	Device Description	Topology	# of Channels	I_{OUT} (max/Channel) (mA)	Backlight For LCD Size (inches)	Total Current for DC/DC Lighting (mA)	Peak Efficiency (%)	V_{IN} (V)	V_{OUT} (max) (V)	Frequency (MHz)	Isw (typ) (mA)	Integrated Diode	Fault Switch	Brightness Control	Package
EL7630	Single string 6 Series LEDs Driver	Boost	1	30	Up to 3.5		86	2.7 to 5.5	27	1.35	350	N	N	PWM	5 Ld TSOT, 6 Ld SC70
ISL97631	6 LEDs Driver with Integrated Schottky Diode with OVP	Boost	1	30	Up to 3.5		85	2.7 to 5.5	27	1.35	350	Y	N	PWM	6 Ld TSOT
ISL97632	LED Driver with Integrated Schottky and 1-Wire Dimming	Boost	1	40	Up to 3.5		85	2.4 to 5.5	27	1.4	470	Y	Y	Digital 5-Bit Dimming	8 Ld TDFN
ISL97634	LED Driver with Integrated Schottky PWM Dimming	Boost	1	40	Up to 3.5		85	2.4 to 5.5	27	1.4	470	Y	Y	PWM	8 Ld TDFN
ISL97635	8-Channel LED Driver with SMBus Control	Boost	8	35	Up to 17	280	91	6 to 24	34.5	0.6/1.2	2400	N	Y	SMBus/ I^2C, PWM or DC	24 Ld QFN
ISL97635A	6-Channel LED Driver with SMBus Control	Boost	6	35	Up to 17	210	91	6 to 24	34.5	0.6/1.2	2400	N	Y	SMBus/ I^2C, PWM or DC	24 Ld QFN
ISL97636	8-Channel LED Driver	Boost	8	35	Up to 17	280	91	6 to 24	34.5	1.2	2500	N	Y	PWM	24 Ld QFN
ISL97636A	6-Channel LED Driver	Boost	6	35	Up to 17	210	91	6 to 24	34.5	1.2	2500	N	Y	PWM	24 Ld QFN
ISL97671A	6-Channel SMBus/I^2C or PWM Dimming LED Driver with Phase Shift Control	Boost	6	50	Up to 17	300	92.9	3.0 to 26.5	45	0.6/1.2	2000	N	Y	SMBus/ I^2C, PWM or DC	20 Ld QFN
ISL97672A	6-Channel LED Driver with Ultra Low Dimming Capability	Boost	6	40	Up to 17	240	92.9	3.0 to 26.5	45	0.6/1.2	2000	N	Y	PWM	20 Ld QFN
ISL97673	6-Channel SMBus or PWM Dimming LED Driver with Phase Shift Control	Boost	6	40	Up to 17	240	92.9	4.5 to 26.5	45	0.6/1.2	2000	N	Y	SMBus/ I^2C, PWM or DC	20 Ld QFN
ISL97674	6-Channel LED Driver with Phase Shift Control and Frame Rate to Dimming Frequency Synchronization	Boost	6	40	Up to 17	240	92.9	4.5 to 26.5	45	0.6/1.2	2000	N	Y	SMBus/ I^2C, PWM or DC	20 Ld QFN
ISL97675	4-Channel LED Driver with Phase Shift Control	Boost	4	30	Up to 17	120	92	4.5 to 26	45	1.2/0.6	3.5	N	Y	PWM	20 Ld QFN
ISL97676	6-Channel LED Driver with Phase Shift Control	Boost	6	30	Up to 17	180	92	4.75 to 26	45	1.2/0.6	2200	N	Y	PWM	20 Ld QFN
ISL97677	SMBus/I^2C 8-Channel LED Driver	Boost	8	50	Up to 17	400	93.4	4.75 to 26	45	1.5	3800	N	N	SMBus/ I^2C/ PWM	32 Ld QFN
ISL97678	8-Channel 45V 50mA LED Driver	Boost	8	50	Up to 17	400	93.4	4.75 to 26	45	1.5	3800	N	N	PWM	32 Ld QFN
ISL97682	Compact 2-Ch LED Drivers with Phase Shift Control	Boost	2	100	Up to 17	200	90.1	3.0 to 26.5	Up to 45	1.0/0.6	1800	N	Y	PWM	16 Ld TQFN
ISL97683	Compact 3-Ch LED Drivers with Phase Shift Control	Boost	3	50	Up to 17	150	90.1	3.0 to 26.5	Up to 45	1.0/0.6	1800	N	Y	PWM	16 Ld TQFN
ISL97684	Compact 4-Ch LED Drivers with Phase Shift Control	Boost	4	50	Up to 17	200	90.1	3.0 to 26.5	Up to 45	1.0/0.6	1800	N	Y	PWM	16 Ld TQFN
ISL97801	High Power LED Driver	Buck or Boost or Pseudo Buck or Boost	1	1300	Up to 17	1300	90	2.7 to 16	31	1	3600	N	Y	PWM	20 Ld QFN
ISL97686	4-Channel LED Driver with Phase Shift Control, 10-Bit Dimming Resolution and PWM to Frame Rate Synchronization	Boost/ SEPIC	4	160	40	700	95	9 to 32	Up to 100V with external FET. Channel pins rated to 75V	0.2 to 1.2	External FET	N	N	PWM	28 Ld SOIC, 28 Ld QFN
ISL97687	4-Channel LED Driver with Independent Channel Control via SPI and 12-Bit Dimming Resolution	Boost/ SEPIC	4	160	40	700	95	9 to 32	Up to 100V with external FET. Channel pins rated to 75V	0.2 to 1.2	External FET	N	N	SPI or PWM	28 Ld SOIC, 28 Ld QFN
ISL97692	Single or Multi Cell Li-ion Battery Powered 4-Channel LED Driver	Boost	4	40	17	160	90	2.4 to 5.5	26	0.4 to 1.5	2500	N	N	PWM	16 Ld TQFN
ISL97693	Single or Multi Cell Li-ion Battery Powered 6-Channel LED Driver	Boost	6	30	17	180	90	2.4 to 5.5	26	0.4 to 1.5	2500	N	N	PWM	16 Ld TQFN
ISL97694A	Single or Multi Cell Li-ion Battery Powered 6-Channel LED Driver	Boost	6	30	17	180	90	2.4 to 5.5	26	0.4 to 1.5	2500	N	N	PWM	20 Ld TQFN

Power Modules

Intersil's Power Modules Advantages:

❶ Highly Integrated Power Solution
= Reduces Design Time + Lowers Cost + Saves Space

Intersil Power Modules are highly integrated, ready-to-design solutions which include PWM controllers, drivers, MOSFETs, most passive components and various power management support ICs (eliminating the need to design with and layout up to 80 different components).



❷ Leading Power Technology

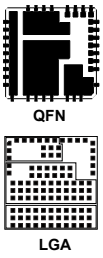
- Efficiency >90%
- Latest power management features (Freq. Sync, Current Sharing, etc)
- Pin-to-pin compatible for changing power requirements
- Easy to use digital interface (ZL9101M & ZL9117M)

❸ QFN Package Technology
Designed Specifically to Enhance the Power Modules Solution

Best-in-Class Thermal Performance

- ✓ Thermal molding compound allows for even heat distribution
- ✓ Large copper islands (V_{IN}, V_{OUT}, PHASE, GND) optimize heat dissipation
- ✓ Theta J_A = 11.5°C/W (15% better than LGA package)
- ✓ Operates at full 10A load up to 80°C (LGA's full 10A load is at 40°C)

Easier Design



QFN vs LGA

- ✓ All QFN pins are accessible for testing and probing
- ✓ QFN is easier to solder and greatly reduces "lift off"
- ✓ QFN better endures shock and vibration

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)
ISL8200M	Complete Current Share 10A DC/DC Power Module	3 - 20	0.6 - 6	10	Y	Y	Y	Y	-40 to +85	Y	93	23 Ld QFN (15 x 15 x 2.2)
					Up to 6 phase single output with current balancing and sharing							
ISL8200MMREP	Full Mil-Temp Complete Current Share 10A DC/DC Power Module	3 - 20	0.6 - 6	10	Y	Y	Y	Y	-55 to +125	Y	94	23 Ld QFN (15 x 15 x 2.2)
					Up to 6 phase single output with current balancing and sharing							
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 (Coming soon)	Dual 15A/15A High Efficiency Power Module	3 - 20	0.6 - 6	30	Y	Y	Y	Y	-40 to +85	Y	94	26 Ld QFN (17 x 17 x 7.5)
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)

* Low output current pin to pin compatible to the ISL8201M
**Pin to pin compatible to ZL9101M

Digital DC/DC PMBus 12A Power Module

intersil™
Zilker Labs™

Key Features

- 5V and 12V Bus Voltage Operation
- Digital Switch Mode Power Supply
- Fast Transient Response
- External Synchronization
- Output Voltage Tracking
- Current Sharing
- Programmable Soft-start Delay and Ramp
- Overcurrent/Undercurrent Protection
- PMBus Compliant

Applications

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

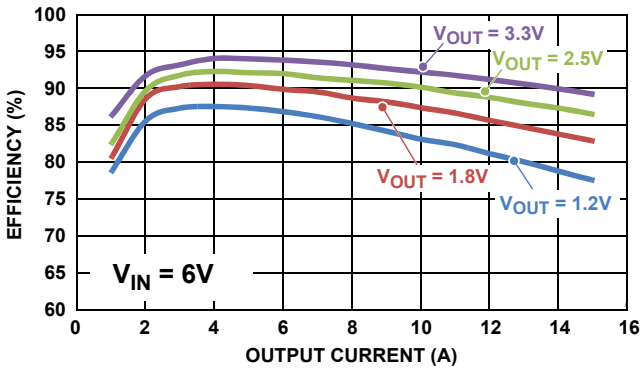
Fully Encapsulated Module in QFN Package

Fully Encapsulated Module

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

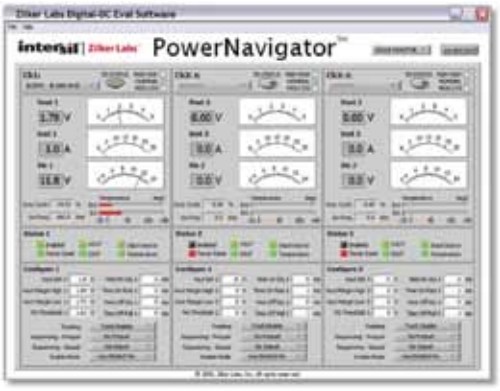
} than open framed module

High Efficiency

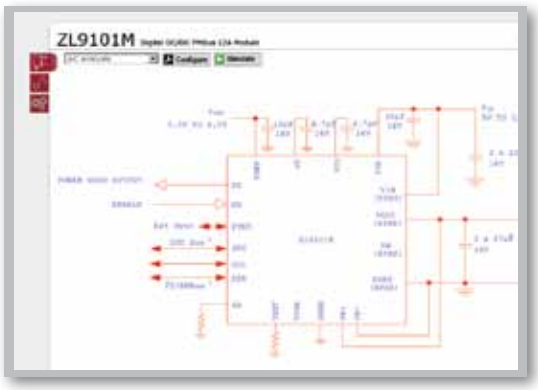


Easy-to-Use Development Tools

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.



Hot Plug Controllers

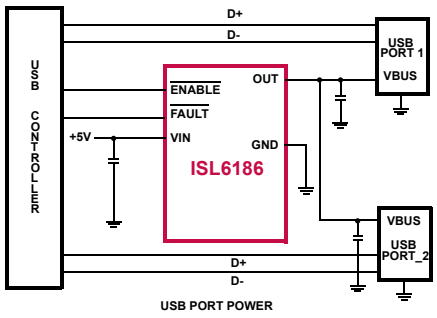
Single USB Port Power Supply Controller

Key Features

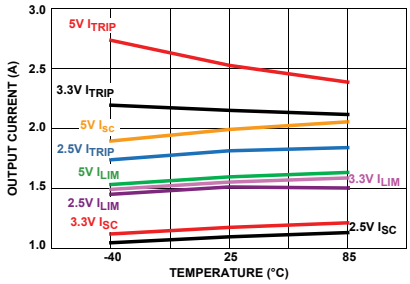
- 2.5V to 5.5V Operating Range
- 45mΩ Integrated Power P-channel MOSFET Switches
- Variants for 1.5A, 3.0A and 3.6A Continuous Current Operation with Accurate Current Limiting
- Thermally Insensitive 12ms of Current Limiting Prior to Latch-Off or Turn-Off
- Output Discharges with Reverse Current Blocking 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

Pin-pin replacement for ISL621

Typical Application

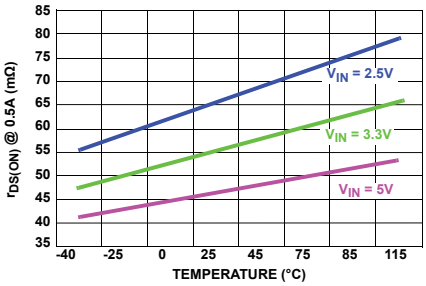


High Accuracy Current Limit And Trip



1.5A CONTINUOUS CURRENT CHARACTERISTICS

Better $R_{DS(on)}$ Performance



SWITCH ON-RESISTANCE AT 0.5A

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	$\overline{PWRGD}$	8 Ld SOIC
ISL6141/ ISL6142	Negative Voltage Hot Plug Controller	-20 to -80	-20 to -80	Current Regulation	Fixed	Ext	UV/OV Lockout	$\overline{PWRGD}$	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 $\overline{\text{Lockout}}$	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 $\overline{\text{Lockout}}$	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 $\overline{\text{Lockout}}$	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

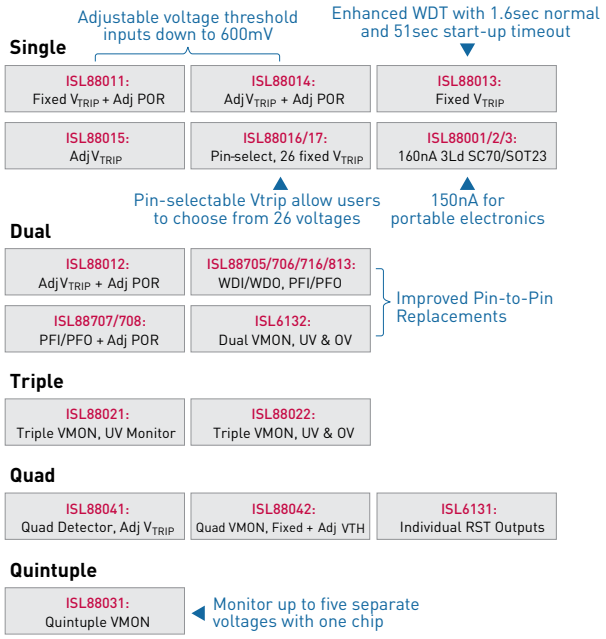
Device	Device Description	V_{BIAS} (V)	Controlled Voltages (V)	Regulation or Latch-Off for Overcurrent	Int/Ext FET	UV/OV Feature	Reporting	Package
HIP1011D	Dual Slot PCI Hot Plug Controller	12	+12, -12, +5, +3.3	Latch-Off (adj Trip Delay)	Int for +12V, -12V, Ext for +5V, +3.3V	UV Latch-Off	$\overline{\text{FAULT}}$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

Voltage Monitors



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

Power-Efficient 1.8V to 5V Voltage Monitors

300nA (max) current consumption at 1.8V, tight voltage threshold accuracy of ±1.2% and 54 total options - all at a competitive price - make ISL88001/2/3 the ideal single voltage monitors.

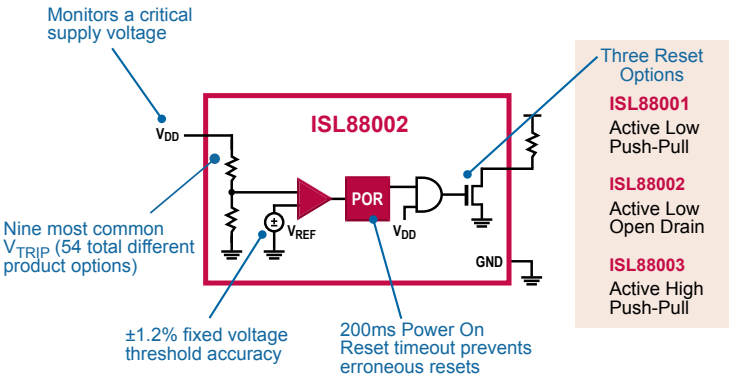
Key Features

- 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

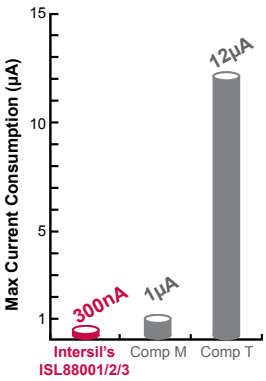
Tiny Package

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

High Accuracy Multiple Trip Point Options



Ultra-Low Current Consumption



Intersil's ISL88001/2/3 voltage monitors use only a fraction of power compared to competitors, making them ideal for portable and battery-powered applications.

Applications

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

Voltage Monitors

Device	Device Description	# of Voltage Monitors	Fixed V_{TRIP}	Adj. V_{TRIP} (Resistors)	Reset Output Type	Manual Reset	TwinPin™ ~~MR/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	P_{GOOD}, 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	P_{GOOD}, 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

Intersil single-chip sequencing solutions sequence up to four different voltages while providing other useful features such as voltage monitoring, fault protection, and reset assertion. High performance DSP, FPGA, µP and various subsystems can utilize such power sequencing for proper functionality at initial power-up as well as for power-down.

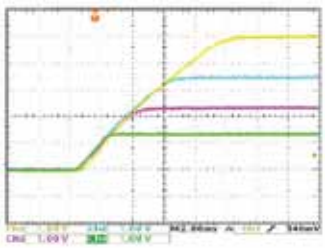
Low Voltage: ISL6123, ISL6124, ISL6125, ISL6126, ISL6127, ISL6128, ISL6130

Low Voltage 4 Rail Power Sequencers

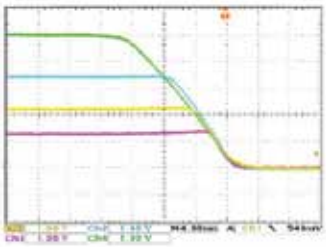
Key Features

- **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

Power Tracking Capability

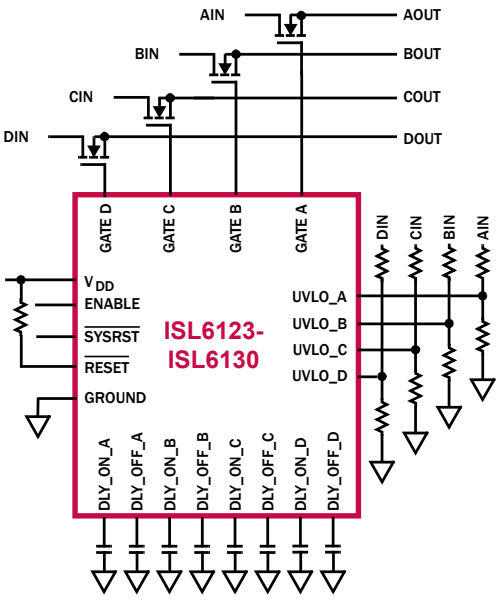


Power-Up Tracking



Power-Down Tracking

ISL6123-ISL6130 Typical Application



Low Voltage Sequencers

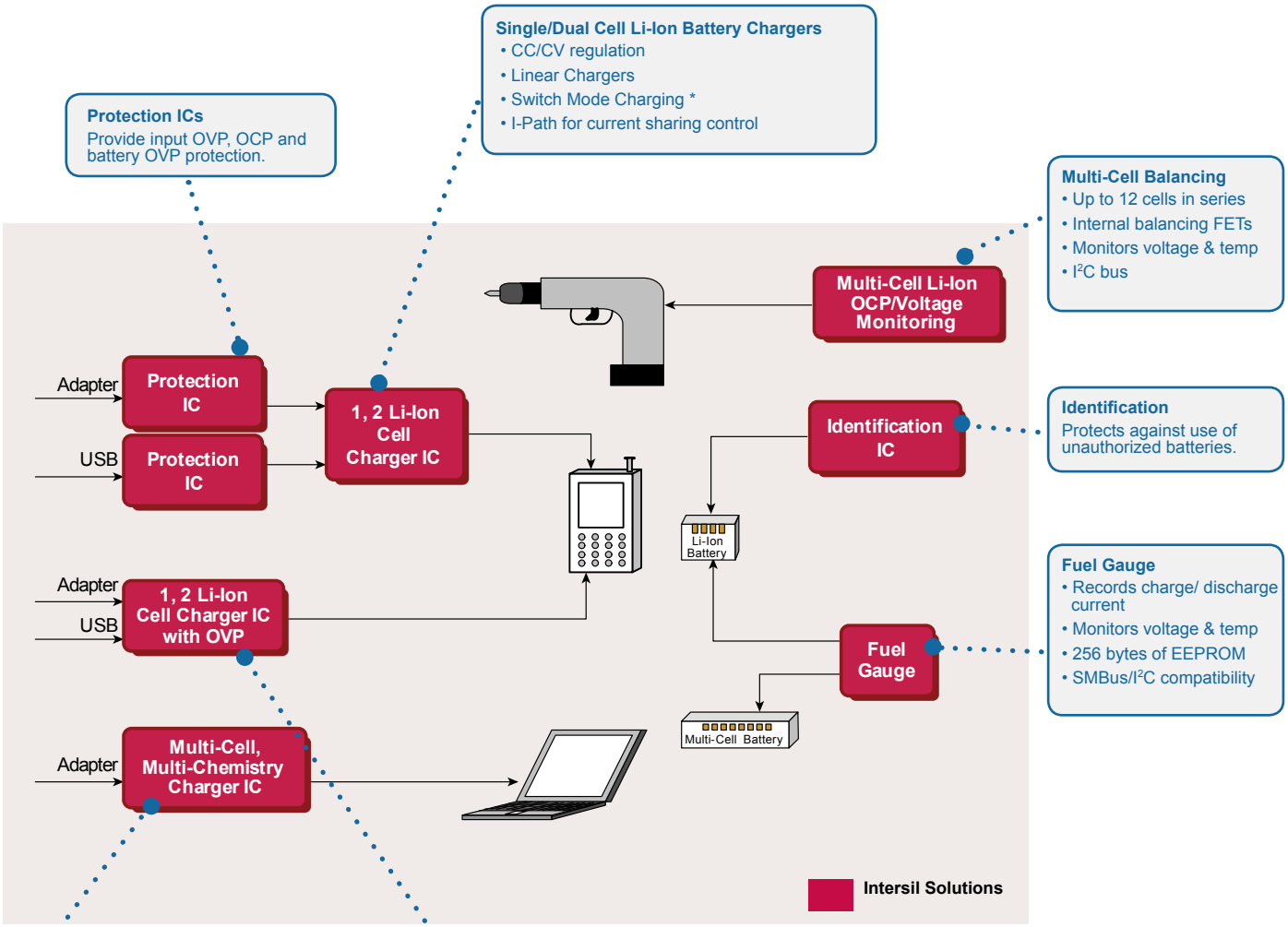
Device	Device Description	V_{BIAS} Range (V)	Sequenced Voltages or Range (V)	Enable	Logic Level	Sequenced Output Control	Initial Startup Requirements	Monitored Inputs	Channel That Turn-off When 1 UVLO Faults	Preset or Adjustable Sequence	Features	Package
ISL6123	Power Sequencing Controllers	+1.5 to +5.5	+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

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. Also available from Intersil are authentication and gas gauging ICs.



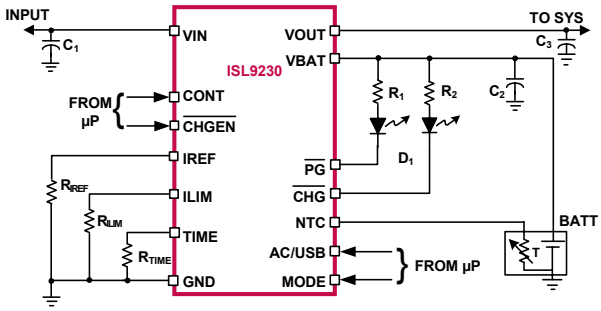
* Ask about Intersil's new integrated SMPS chargers.

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

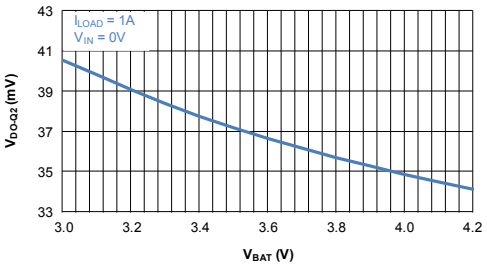
Key Features

- 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

Typical Application Circuit

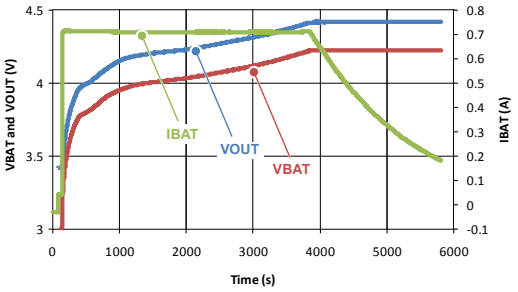


Low Power Path Resistance



Power Path Resistance

Charge Profile



ISL9230 Charge Profile

Battery Management

Single Cell Li+/Polymer Battery Chargers

Device	Device Description	V_{OUT} (typ) (V)	Voltage Accuracy (%)	V_{IN1} (max) (V)	V_{IN2} (max) (V)	I_{OUT2} (max) (A)	Safety Timer	Self Termination	Accepts CC Adapter	V_{IN1} Trickle Charge (min) (% CC)	I_{OUT1} (Max) (A)	Functions (Pin)	Package
ISL9205B	Li-ion Battery Charger	4.2	0.6	7	N/A	N/A	Y	Y	Y	10	1	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	N/A	Y	Y	Y	10	1	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	N/A	Y	Y	Y	10	1	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	0.38	N	N	N	16	1	Enable, Charge Status, Programmable I_{MIN}, Reference Voltage	10 Ld DFN

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_{OUT2} (max) (A)	Safety Timer	Self Termination	Accepts CC Adapter	V_{IN1} Trickle Charge (min) (% CC)	I_{OUT1} (Max) (A)	Functions (Pin)	Package
ISL9219	Li-ion Battery Charger	4.2	0.7	28	N/A	N/A	Y	Y	Y	10	1.1	Enable, Trickle Mode Indication, Charge State Indication, Adapter Fault, P_{GOOD}, I_{SET}, NTC Input, Time Set	20 Ld QFN
ISL9221	Dual Input Lithium Ion Battery Charger with OVP USB Bypass and 10mA LDO	4.2	1	28	5.4	0.465	N	Y	Y	18	1.2	Enable, Charge Status, Power Present Indicator	12 Ld DFN
ISL9222A	High Input Voltage Charger	4.2	1	28	7	0.38	N	N	N	16	1	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	N/A	N	Y	Y	16	1	Enable, Charge Status, Power Present Indicator	10 Ld DFN
ISL9301	High Input Voltage Charger With Power Path Management	4.5	1	28	N/A	N/A	Y	Y	Y	16	0.8	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	N/A	Y	Y	N	10	2	Enable, Charge Status, Fault	20 Ld TQFN
ISL9230	High Power Li-Ion Charger W/I-Path Management	4.2	1	26	N/A	N/A	Y	Y	N	10	1.5	Power Good & Charge Status	16 Ld QFN

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 (%)	Trickle Charge Current Limit Accuracy (%)	Battery Leakage Current (max) (µA)	DC Adapter Detection	Switching Frequency (typ) (kHz)	Max Duty Cycle (%)	Operating Temp. Range (°C)	Thermal Shutdown (°C)	Battery Chemistry	Package
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	128mA	2 (DCIN=0V, No System Load)	Yes	400	99.6	-10 to 100	150	Multi-Cell Li+/ Polymer	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

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

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

Power Support
Current Sense Amplifiers

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.

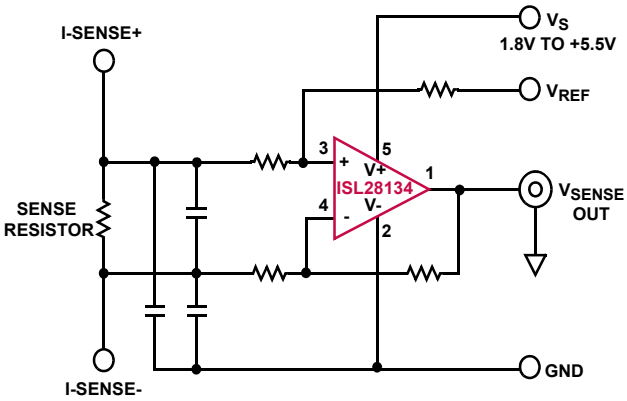
Zero-Drift: ISL28134

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

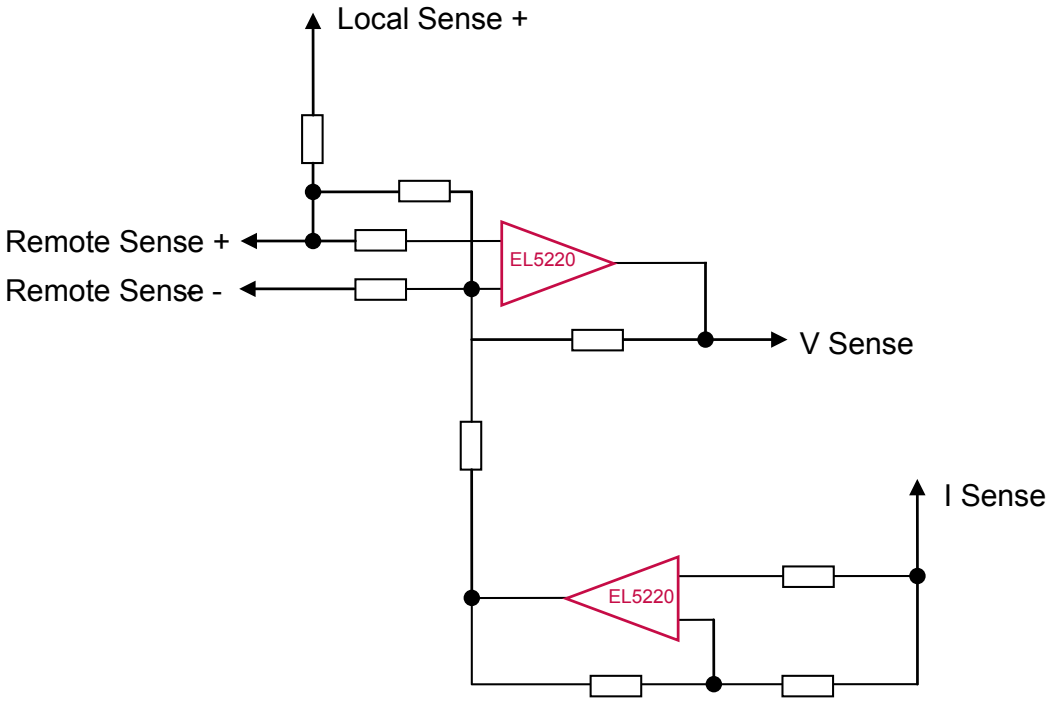
Device			Supply Voltage (V)		Rail-To-Rail		Vos Max @ 25°C	TCVos Typ	Ib Max @ 25°C	CMRR min @ 25°C	Is Max @ 25°C	GBW	Slew Rate	Voltage Noise @ 1kHz	Temp Range	Package					
Single	Dual	Quad	Min	Max	In	Out	mV	µV/°C	nA	dB	mA	MHz	V/µs	nV/√Hz	°C	SC70	SOT23	MSOP	SOIC	TSSOP	DFN/TDFN
Standard High Side/Low Side																					
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	S/D/Q	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/Q
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		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

Device	Supply Voltage (V)		Input Common Mode Range (V)		Vos Max @ 25°C	Vos Max Temp	CMRR Min Temp	Gain Range	Gain Accuracy @ 25°C	Gain Accuracy Temp	Is Max @ 25°C	GBW	Temp Range	Package
Single	Min	Max	Min	Max	µV	µV	dB	V/V	%	%	µA	kHz	°C	
Integrated Current Sense Amplifier														
ISL28005	2.7	28	0	28	500	500	105	20, 50, 100	2	3	59	180	-40 to 125	5 Ld SOT23
ISL28006	2.7	28	0	28	250	300	105	20, 50, 100, Adj (20-100)	0.7	1	62	180	-40 to 125	5 Ld SOT23

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

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
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	
EL5120	EL5220	EL5420	4.5	16.5	Yes	Yes	12	5	50	50	0.750	8	10	10*	-40 to 85						
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.

Power Support
Digitally Controlled Potentiometer (DCPs)

Single, Non-Volatile: ISL22317

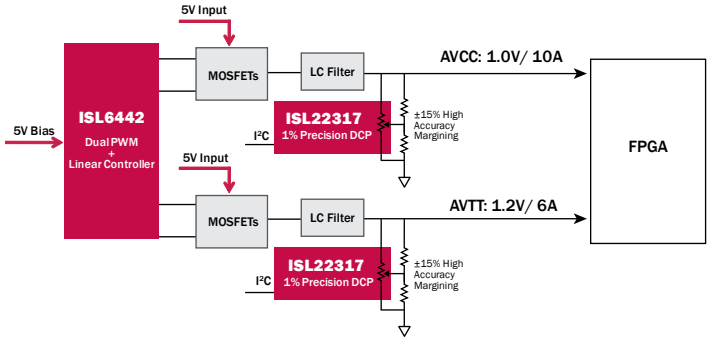
1st Low Voltage Precision DCP

Typically >99% Accurate at Each Tap

Key Features

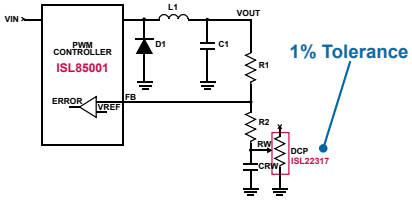
- **128-tap, I²C Controlled, Precision Digital Potentiometer**
  - 1% typical resistive tolerance over operational conditions
  - Zero-compensated wiper resistance
  - 10ppm/°C temperature coefficient match to reference resistor
- **Operational Specifications**
  - Single 2.7V to 5.5V supply
  - Pin 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

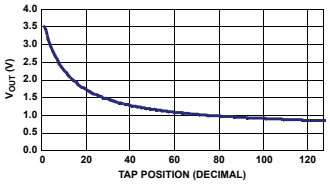


99% Accuracy

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

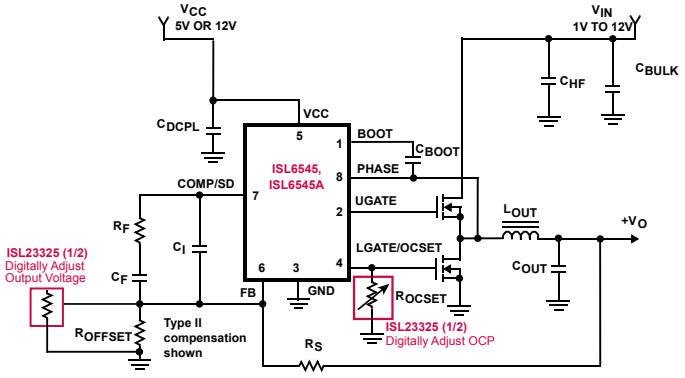
Dual, Volatile: ISL23325

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



INTERSIL DCP QUICK REFERENCE

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 - 1kΩ / 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
[E] X9318 - 10kΩ, Up-Down
[E] X9319 - 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)
X93254 - 50kΩ, Up-Down, 2-Terminal
X93255 - 50kΩ, Up-Down, 2-Terminal
X93256 - 50kΩ, Up-Down

Dual 64-Tap (6-Bits)
[D] X9410 - 10kΩ, SPI
[D] X9221A - 2kΩ / 10kΩ / 50kΩ, 2-Wire
[D] X9418 - 2.5kΩ / 10kΩ, 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] X9260 - 50kΩ / 100kΩ, SPI
X9261 - 50kΩ / 100kΩ, SPI
[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 / 100kΩ, SPI
X9252 - 2kΩ / 10kΩ / 50kΩ / 100kΩ, 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

Programmable Voltage Reference
X60250 - Micro-power, 8-bit Adjustable, 0 to 1.25V
ISL21400 - Programmable Gain and Temperature Slope

Sensor Conditioners with ADC, E²PROM Look-Up Tables, and DACs
X96010 - Dual, 2-Wire
X96011 - Single with Temperature Sensor, 2-Wire
X96012 - Dual with Temperature Sensor, 2-Wire

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)
[D] X9460 - 32kΩ, Log Taper, 2-Wire
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 256-Tap (8-Bits)
ISL90840 - 10kΩ / 50kΩ, I²C
ISL90841 - 10kΩ / 50kΩ, I²C, 2-Terminal
ISL90842 - 10kΩ / 50kΩ, I²C, 2-Terminal
ISL90843 - 10kΩ / 50kΩ, I²C, Wiper Only

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

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

Power Support
Voltage Reference

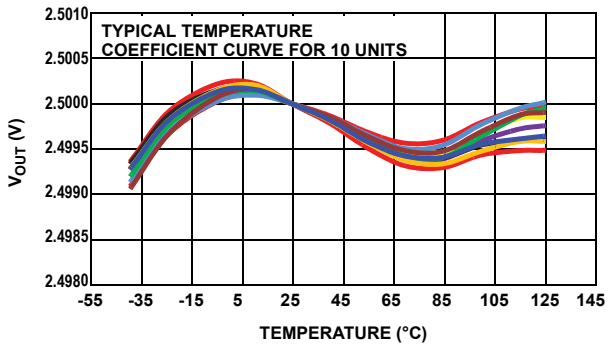
Ultra Low Noise, Precision Voltage Reference

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 and 2.5V 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

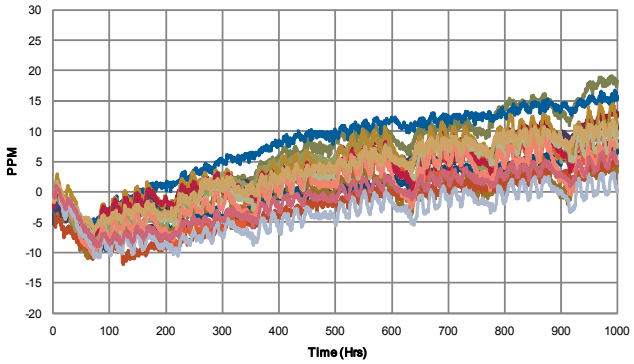
- 2.5V Reference Output Voltage Option
- Initial Accuracy: ±0.02%
- Output Voltage Noise: 1μV_{P-P} Typ (0.1Hz to 10Hz) (1.25V Option)
- Supply Current: 930µA (Typ)
- Tempco: 7ppm/°C Max
- Output Current Capability: 20mA
- Line Regulation: 8ppm/V
- Load Regulation: 2.5ppm/mA
- Operating Temperature Range: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

Product Index

X

Z

Design Resources

Design Software

Power Design Made Easy with iSim™

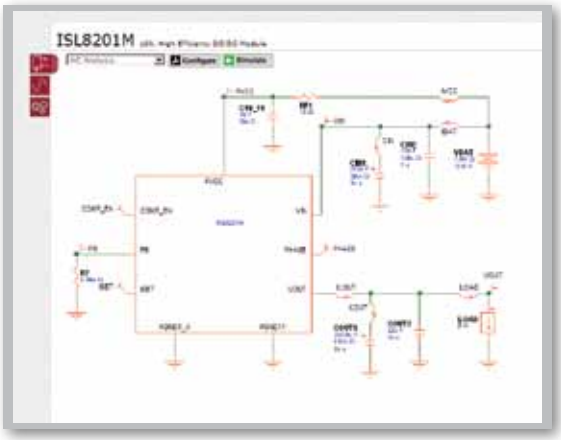
iSim Online Design Simulation Tool

www.intersil.com/isim

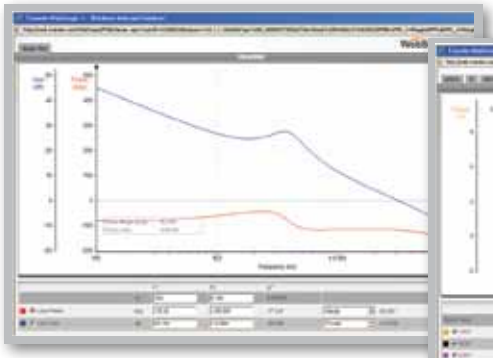
Intersil's iSim™ is an interactive, web-based tool for selecting and simulating devices from Intersil's broad portfolio. Based on input and output specifications provided by the user, iSim will find all suitable Intersil devices for your application. In many cases, a simulation is also made available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

FAST Simulation

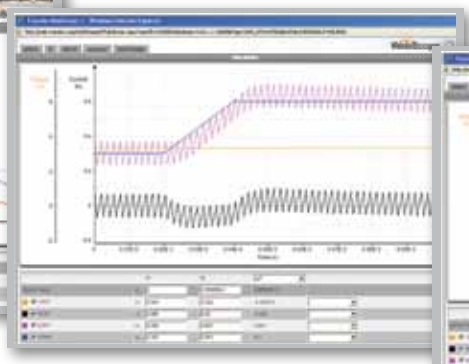
- isim™ initializes circuit to DC steady state conditions
- isim™ online runs on a host server



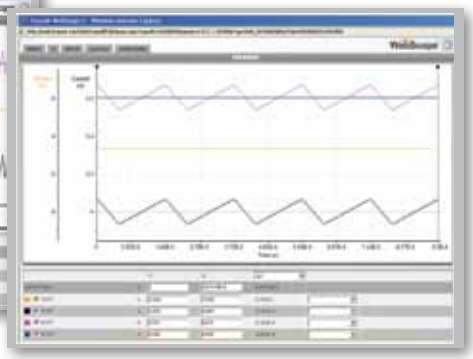
Easily Generate Schematics with Intersil's Devices



Plot the Frequency Response



Generate Transient Graphs



Perform a Steady State Analysis

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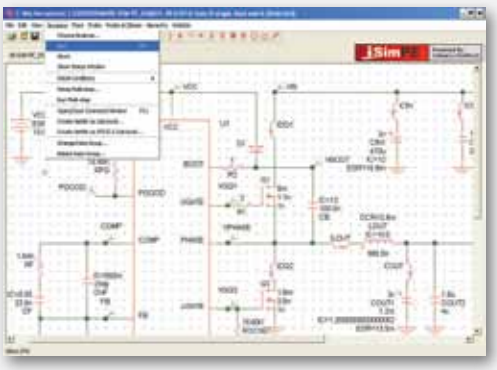

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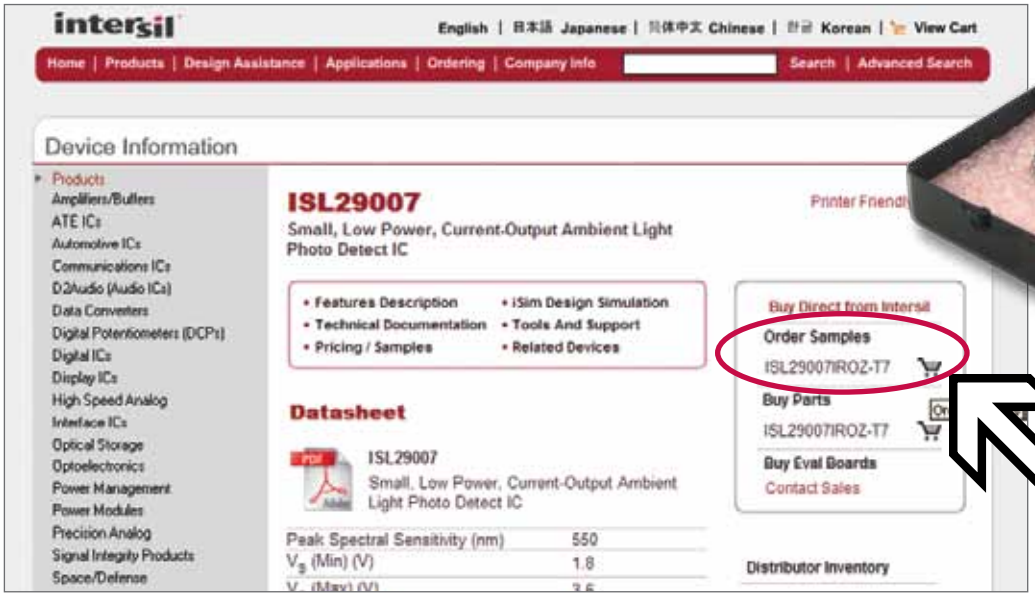

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