

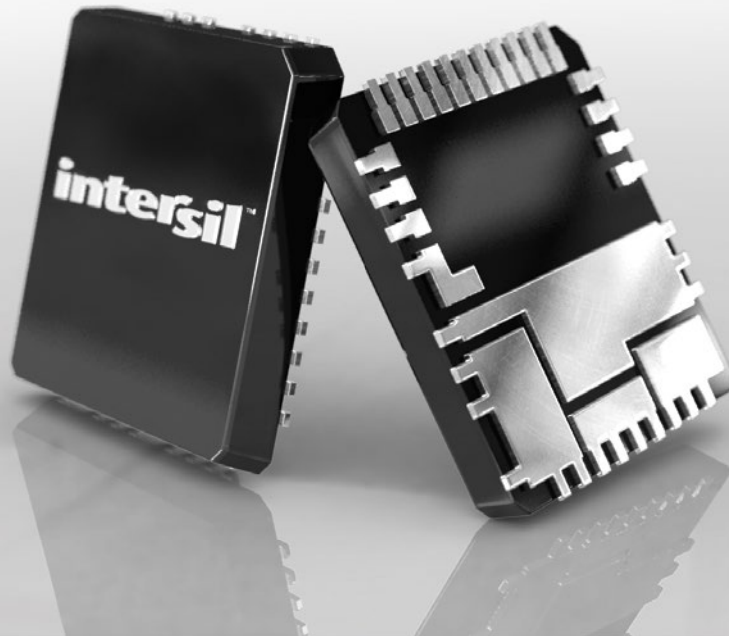
Industrial Power Solutions

Power Modules, Digital Power Monitors, LDOs,
Switching Regulators, Analog Controllers, FPGA Solutions



Product Highlights
April 2017

intersil[™]
A Renesas Company



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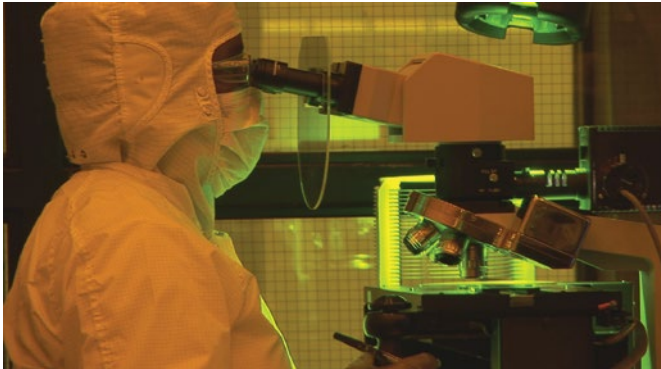


The Power Management Experts

As an industry leader in power management and analog technology, Intersil provides innovative design solutions that maximize performance and reliability across a broad range of industrial applications, including the smart home and smart grid, test and measurement systems, medical devices and factory automation.

Intersil offers a comprehensive portfolio of highly integrated and efficient digital and analog controllers, power modules and switching regulators that simplify design and integration for power designers seeking solutions for the most complex systems.

Why Intersil?



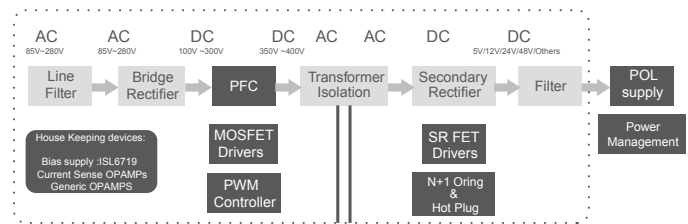
Reliable, Proven Supply Chain

Proven proprietary processes and package technologies, shipping over 1 billion ICs per year.

- **Strong technology development**
 - Proprietary process and package technologies
- **Multi-sourcing strategy**
 - Sourcing from multiple leading-edge semiconductor foundries & assembly/test partners ensures a steady product supply and reduced risk
- **Industry-leading quality & reliability metrics**
 - Billion+ ICs shipped every year
 - Less than 1.0 DPPM (defective parts per million) and improving
 - Decades of experience handling military/space products and delivering world-class quality and reliability metrics
 - ISO/TS16949 and AEC-Q100
 - MIL-PRF-38535 compliant and 100% burned in

A Complete Power Solution

Intersil offers a complete portfolio of high-performance power solutions for processor, controller, DSP, FPGA, CPLD, DDR memory or other load in your system. Whether you need standard linear regulators, highly flexible PWM controllers or fully integrated plug-and-play power modules, our products are tailored to meet your design challenges.

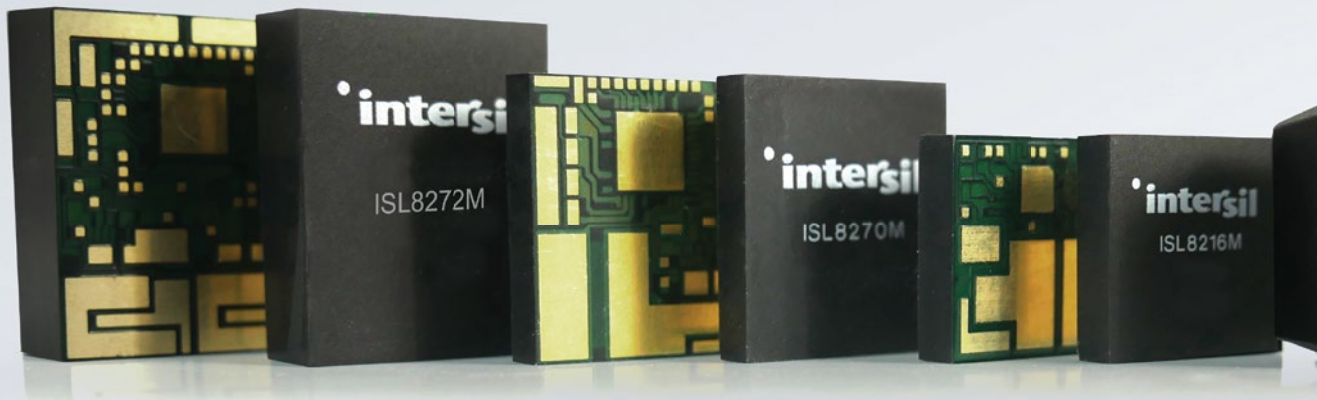


Assured Product Supply

Long life cycles ensure a steady flow of product, which gives your design longevity. Intersil still supports products that have been in production for more than 40 years.



Simplicity & Performance



Power Dense Modules for Compact <10A Designs



Intersil power modules are simple to design, and offer the smallest footprint for a given output current.

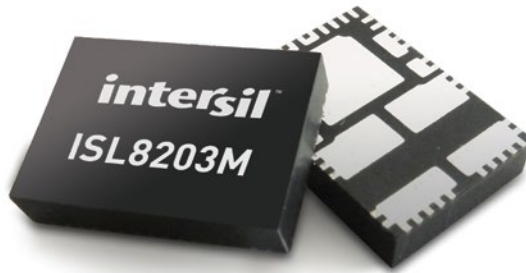
- Pin-compatible 3A ISL8202M and 5A ISL8205M single channel analog power modules offer a 2.6V to 5.5V input voltage range, 0.6V to 5.2V output range with $\pm 1.6\%$ accuracy over line/load/temperature, and up to 95% efficiency. The selectable light load efficiency and 100% duty cycle LDO support Energy Star compliance and extend battery life.
- Offered in an ultra-compact 6.5 mm x 9 mm package, the high efficiency fully integrated ISL8203M can be configured as a dual channel 3A or a single channel 6A power module. Supporting parallel operations for 12A+ output currents, the ISL8203M is so flexible that it reduces your design time for virtually all your low power point of load designs.

Output current	33.75mm ² QFN22 4.5x7.5mm 1.85mm height	58.5mm ² QFN23 6.5x9mm 1.85mm height
3A	ISL8202M	ISL8203M
5A	ISL8205M	
6A		ISL8203M
12A+		ISL8203M x 2+



Power Modules

Fully Integrated DC/DC Point-of-Load Solutions

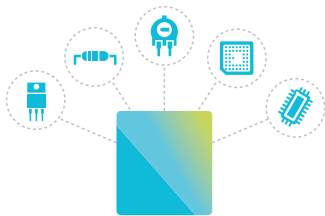


Simple to Design & Use

- Fastest time-to-market power solution
- Flexible & adaptive
- Simple schematics
- Flexible PCB positioning & routing

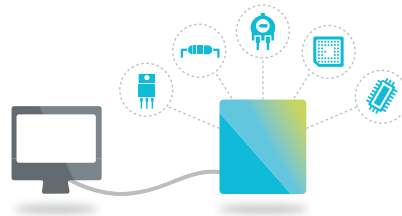
Power-Dense

- High power density, small form factor
- Up to ~250W POL in a single package
- Multi-phase and/or multi-module allows high output power



Analog Module

A simple, effective DC/DC power supply solution that integrates necessary power elements in a single package.



Digital Module

A high-performance DC/DC power supply solution that integrates all power elements in a single package and supports digital communication and configurability for advanced power management techniques. Digitally design with PowerNavigator GUI software.

Rugged & Reliable

- Thermally optimized packages
- Built-in voltage/current/thermal protections
- Full output load available
- Fully characterized & tested solution

PowerNavigator™ GUI

Simple Configuration and Monitoring

Digital Power Design Simplified

Intersil's PowerNavigator™ software allows simple configuration and monitoring of multiple digital-DC devices using a PC with a USB interface. PowerNavigator makes it easy to change all the features and functions of your digital power supply design within a simple graphical user interface.

- All Intersil digital power modules & controllers supported
- Drag-and-drop system design
- Click-and-drag sequencing
- Command tool library



Download Free Software

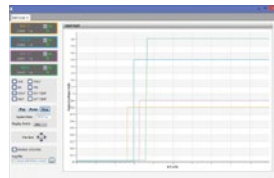
www.intersil.com/powernavigator

POWERMAP



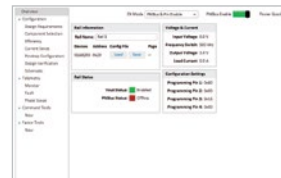
Adds real-time information to the power rail blocks, such as device name, phase count, output voltage and more.

RAILSCOPE



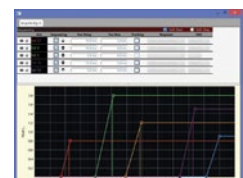
Simplifies system validation, giving users the ability to plot all device telemetry.

RAIL INSPECTOR



Quickly guides users through the power supply parameters setup.

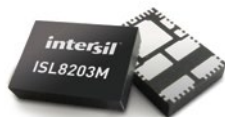
SEQUENCING



Adjust power sequencing of multiple rails using graphical interface.

Analog Power Module Highlights

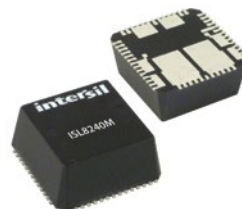
Find the power module that fits your needs at intersil.com/powermodule



6A
ISL8203M



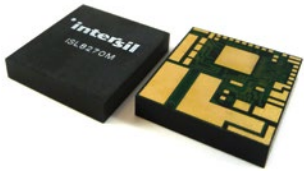
30A
ISL8225M



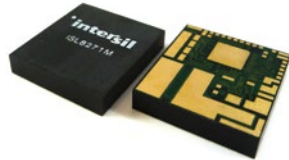
40A
ISL8240M

V_{IN} Range (V)	2.85 to 6	4.5 to 20	4.5 to 20
V_{OUT} Range (V)	0.8 to 5	0.6 to 7.5	0.6 to 2.5
I_{OUT} (A)	Dual 3A or single 6A	Dual 15A or single 30A	Dual 20A or single 40A
Current Share	Yes	Yes	Yes
Multi-phase	Yes	Yes	Yes
PGOOD	Yes	Yes	Yes
Enable	Yes	Yes	Yes
Ambient Temp Range (°C)	-40 to +85	-40 to +125	-40 to +125
Load Fault Protection	Yes	Yes	Yes
Peak Efficiency (%)	95	94	94
Package (mm)	23 Ld QFN (9 x 6.5 x 1.83)	26 Ld QFN (17 x 17 x 7.5)	26 Ld QFN (17 x 17 x 7.5)

Digital Power Module Highlights



25A
ISL8270M



33A
ISL8271M



50A
ISL8272M



80A
ISL8273M

4.5 to 14	4.5 to 14	4.5 to 14	4.5 to 14
0.6 to 5	0.6 to 5	0.6 to 5	0.6 to 2.5
25	33	50	80
Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes
-40 to +85	-40 to +85	-40 to +85	-40 to +85
Yes	Yes	Yes	Yes
96	96	96	93
40 Ld HDA MODULE (17 x 19 x 3.55)	40 Ld HDA MODULE (17 x 19 x 3.55)	58 Ld HDA MODULE (18 x 23 x 7.5)	58 Ld HDA MODULE (18 x 23 x 7.5)

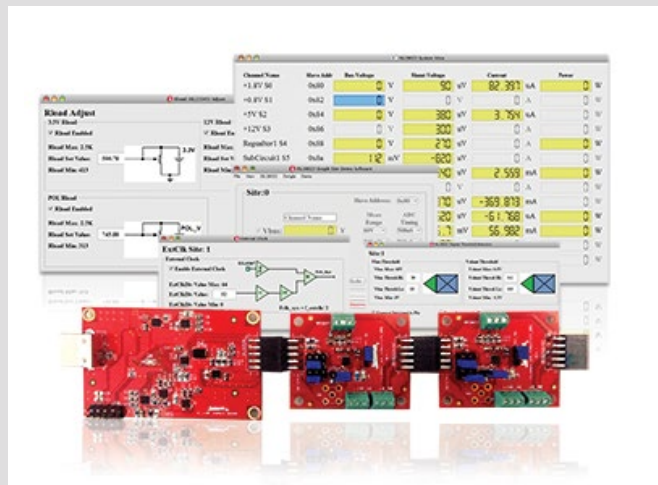
Digital Power Monitors

Highly Accurate Digital Current Sense and Voltage Monitors

Intersil's ISL2802x digital power monitor (DPM) family delivers high accuracy measurements in a wide input common mode voltage range (0V to 60V), providing designers with the high level of safety margin that is often necessary in wired, wireless and data infrastructure applications.

- The ISL28022 is a bidirectional high-side and low-side digital current sense and voltage monitor with serial interface.
- The ISL28023 is a precision DPM that integrates the analog comparators, a voltage regulator, a DAC and a low voltage auxiliary channel in a single chip.
- The ISL28025 is a high precision DPM with integrated analog comparators and an integrated voltage regulator.

With a wide specified temperature range and the option of a tiny solution footprint, the ISL2802x digital power monitor family is ideal for telecom, industrial and consumer applications.



Order Your Reference Designs & GUI Software today!

intersil.com/en/tools/reference-designs/isl2802xevkit1z.html



ISIM



EVALUATION
BOARD



DESIGN
MODEL



POWERCOMPASS

Precision Digital Power Monitor Comparison



**Basic
ISL28022**



**Full Featured
ISL28023**



**Tiny Package
ISL28025**

Input Range	0 to 60V	Opt 1: 0 to 60V Opt 2: 0 to 16V	Opt 1: 0 to 60V Opt 2: 0 to 16V
Primary Channel	Yes	Yes	Yes
LV Aux Channel	-	Yes	Voltage Only
Internal Temp Sensor	-	Yes	Yes
External Temp Sensor	-	Yes	-
HV Internal Regulator (3.3V out)	-	Yes	Yes
Fast OC/OV/UV Alert Outputs	-	2	2
Margin DAC	-	Yes	-
Slave Addresses Available	16	55	55
User Select Conversion Mode / Sample Rate	Yes	Yes	Yes
User Select Fixed Period Averaging	-	Yes	Yes
Peak Min / Max Current Registers	-	Yes	Yes
I²C / SMBus	Yes	Yes	Yes
PMBus	-	Yes	Yes
1.2V I²C Level Translators	-	Yes	Yes
High Speed (3.4MHz) I²C Mode	Yes	Yes	Yes
External Clock Input	Yes	Yes	Yes
Power Shutdown Mode	Yes	Yes	Yes
Package	10 Ld MSOP, 16 Ld QFN	24 Ld QFN	16 Ld WLCSP

LDOs

Best-in-Class Solution

ISL80510/05

Best Dropout and Transient Performance for Sensitive Loads

These high-performance, single output low-dropout (LDO) voltage regulators offer noise immunity across a wide range of frequencies. The ISL80510 and ISL80505 deliver 1A and 0.5A of continuous output current and ultra-low dropout of 130mV and 45mV at full load, respectively.



EVALUATION BOARD



DESIGN MODEL



POWERCOMPASS

Leading Performance

- Fast transient response
- Best in class $\pm 0.5\%$ initial accuracy & $\pm 1.8\%$ total DC accuracy over full temp range
- Very low dropout (81mV @ 2A typ)
- Best-in-class package power density (Up to 3A per 9mm²)

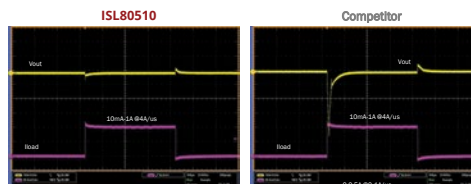
Feature Rich

- Adjustable soft-start to set ramp time and inrush current
- Low enable threshold for low voltage applications
- Adjustable current limit
- Power-Good

Best-in-Class Transient Performance

The high transient performance of ISL80510/05 allows minimal variation in output with a small 4.7 μ F output ceramic capacitor.

ISL80510 vs. Competitor: Transient Response



The ISL80510 has a peak-to-peak excursion that's 9 times lower than the competitor's device under similar conditions.

World-Class Design & Support Team

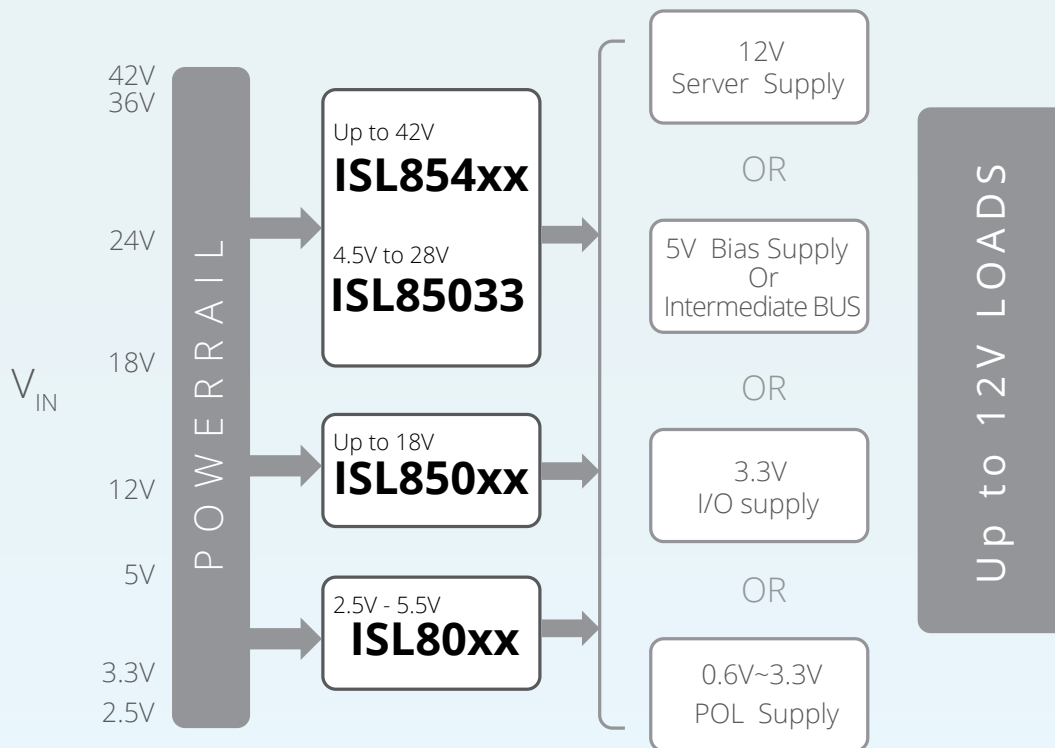
- Expertise in high-performance DC/DC solution for CPUs
- Complete reference designs

High-Performance LDO Highlights

Device	V _{IN} (V)	V _{OUT} (V)	I _{OUT} max (A)	PSRR @1kHz (dB)	Split Input	Fixed V _{OUT} Option	Dropout (mV)	Acc.	I _q	Package
ISL80505	1.8 to 6	0.8 to 5.5	0.5	50	No	No	45	1.8%	2.2mA	8 Ld 3x3 DFN
ISL80510	2.2 to 6	0.8 to 5.5	1	48	No	No	130	1.8%	2.2mA	8 Ld 3x3 DFN
ISL80101A	2.2 to 6	0.8 to 5	1	48	No	Yes	90	1.8%	3.0mA	10 Ld 3x3 DFN
ISL80101-Adj	2.2 to 6	0.8 to 5	1	58	No	Yes	130	1.8%	3.0mA	10 Ld 3x3 DFN
ISL80102	2.2 to 6	0.8 to 5	2	55	No	Yes	81	1.8%	7.5mA	10 Ld 3x3 DFN
ISL80103	2.2 to 6	0.8 to 5	3.0	55	No	Yes	120	1.8%	7.5mA	10 Ld 3x3 DFN
ISL80111	1 to 3.6	0.8 to 3.3	1	80	Yes	No	27	1.6%	3.5mA	10 Ld 3x3 DFN
ISL80112	1 to 3.6	0.8 to 3.3	2	80	Yes	No	53	1.6%	3.5mA	10 Ld 3x3 DFN
ISL80113	1 to 3.6	0.8 to 3.3	3	80	Yes	No	75	1.6%	3.5mA	10 Ld 3x3 DFN
ISL80136	6 to 40	2.5 to 12	0.05	45	No	No	120	1.0%	18μA	8 Ld EPSON
ISL80138	6 to 40	2.5 to 12	0.15	47	No	No	295	1.0%	18μA	14 Ld HTSSOP

Complete Portfolio

Wide Range of V_{IN} Switching Regulators





Wide V_{IN} Sync Buck Regulators

ISL85410/5/8

- Wide input voltage range (3V to 40V) with 500mA to 1A options
- V_{OUT} range: 0.6V to 95% of V_{IN}
- Fully integrated synchronous buck regulators
- Internal or external compensation
- High efficiency synchronous buck operation
- Light load efficiency
- Internal fixed (500kHz) or adjustable switching frequency from 300kHz to 2MHz
- 12 Ld 4 x 3 DFN



Compact Synchronous Buck Regulator

ISL8002B

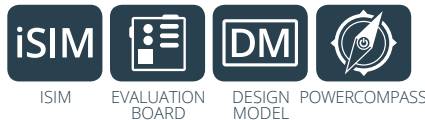
- V_{IN} range: 2.7V to 5.5V
- I_{OUT} maximum: 2A
- External soft-start programmable
- Output tracking and sequencing
- Switching frequency: 2MHz
- Selectable PFM or PWM operation option
- Overcurrent and short-circuit protection
- Over-temperature/thermal protection
- V_{IN} undervoltage lockout and V_{OUT} overvoltage protection
- Up to 95% peak efficiency
- 8 Ld 2 x 2 TDFN



8A, High Efficiency Sync Buck Regulator

ISL8018

- V_{IN} range: 2.7V to 5.5V
- V_{OUT} range: 0.6V to V_{IN}
- Up to 97% efficiency
- $\pm 10\%$ output voltage margining
- Adjustable current limit
- Start-up with prebiased output
- Internal soft-start - 1ms or adjustable, internal/external compensation
- Adjustable frequency from 500kHz to 4MHz - default at 1MHz
- External synchronization up to 4MHz - master to slave phase shifting capability
- 20 Ld 3 x 4 QFN



2.5V – 6V Synchronous Buck Regulators

Device	# of Outputs	V _{IN} Range (V)	I _{OUT} (max) (A)	V _{OUT} Range (V)	PFM	Adj SS/ TRK	Ext Comp	Sync	Adj Freq	Adj OCP	Package
ISL8088	Dual	2.7 to 5.5	0.8	0.6 to V _{IN}	Y	N/N	N	Y	N	N	10 Ld 3x3 DFN
ISL80019/A	Single	2.7 to 5.5	1.5	0.6 to V _{IN}	Y	N/N	Y	N	N	N	8 Ld 2x2 TDFN
ISL80015/A	Single	2.7 to 5.5	1.5	0.6 to V _{IN}	N	N/N	N	N	N	N	8 Ld 2x2 TDFN
ISL8022	Dual	2.7 to 5.5	2/1.7	0.6 to V _{IN}	Y	N/N	N	Y	N	N	12 Ld 4x3 DFN
ISL8002/A	Single	2.7 to 5.5	2	0.6 to V _{IN}	Y	N/N	Y	N	N	N	8 Ld 2x2 TDFN
ISL8002B	Single	2.7 to 5.5	2	0.6 to 4	Y	Y/Y	N	N	N	N	8 Ld 2x2 TDFN
ISL80020/A	Single	2.7 to 5.5	2	0.6 to V _{IN}	N	N/N	N	N	N	N	8 Ld 2x2 TDFN
ISL8033/A	Dual	2.85 to 6	3/3	0.8 to V _{IN}	N	N/N	N	Y	N	Y	24 Ld 4x4 QFN
ISL8036/A	Dual	2.85 to 6	3/3	0.8 to V _{IN}	N	Y/N	N	Y	N	N	24 Ld 4x4 QFN
ISL80030/A	Single	2.7 to 5.5	3	0.6 to V _{IN}	N	N/N	N	N	N	N	8 Ld 2x2 TDFN
ISL80031/A	Single	2.7 to 5.5	3	0.6 to V _{IN}	Y	N/N	N	N	N	N	8 Ld 2x2 TDFN
ISL8023/A	Single	2.7 to 5.5	3	0.6 to V _{IN}	Y	Y/N	Y	Y	Y	N	16 Ld 3x3 TQFN
ISL8024/A	Single	2.7 to 5.5	4	0.6 to V _{IN}	Y	Y/N	Y	Y	Y	N	16 Ld 3x3 TQFN
ISL8025/A	Single	2.7 to 5.5	5	0.6 to V _{IN}	Y	Y/N	Y	Y	Y	N	16 Ld 3x3 TQFN
ISL8026/A	Single	2.5 to 5.5	6	0.6 to V _{IN}	Y	Y/N	Y	Y	Y	N	16 Ld 3x3 TQFN
ISL8016	Single	2.7 to 5.5	6	0.6 to V _{IN}	Y	Y/N	Y	Y	Y	Y	20 Ld 3x4 QFN
ISL8018	Single	2.7 to 5.5	8	0.6 to V _{IN}	Y	Y/N	Y	Y	Y	Y	20 Ld 3x4 QFN

Up to 18V Synchronous Buck Regulators

Device	# of Outputs	V _{IN} Range	I _{OUT} (max)	V _{OUT} Range	I _Q (typ)	Package
ISL85003/A	Single	4.5V to 18V	3A	0.8V to Dmax*V _{IN}	3.2mA	12 Ld 3x4 DFN
ISL85005/A	Single	4.5V to 18V	5A	0.8V to Dmax*V _{IN}	3.2mA	12 Ld 4x3 DFN
ISL85009	Single	3.8V to 18V	9A	0.6V to Dmax*V _{IN}	3mA	15 Ld 3.5x3.5 TQFN
ISL85012	Single	3.8V to 18V	12A	0.6V to Dmax*V _{IN}	3mA	15 Ld 3.5x3.5 TQFN
ISL85014	Single	3.8V to 18V	14A	0.6V to Dmax*V _{IN}	3mA	15 Ld 3.5x3.5 TQFN

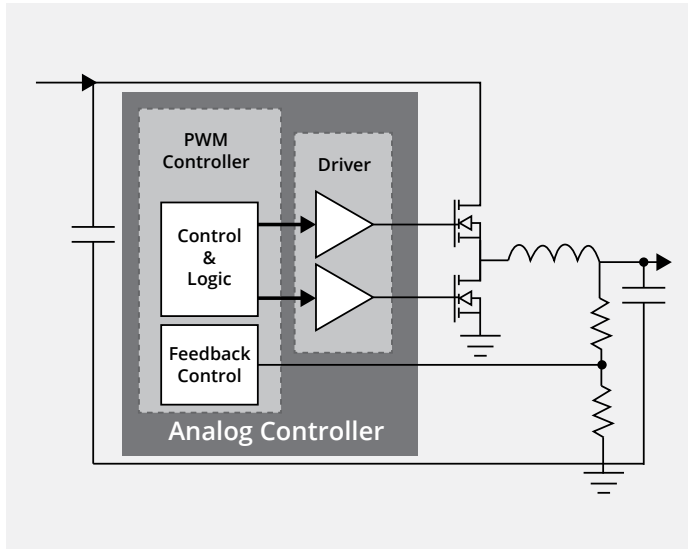
Up to 28V Synchronous Buck Regulators

ISL85033	Dual	4.5V to 28V	3A	0.8V - Dmax*V _{IN}	1.2mA	28 Ld 4x4 TQFN
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Up to 40V Synchronous Buck Regulators

ISL85412	Single	3.5V to 40V	150mA	0.6V to Dmax*V _{IN}	50 μA	8 Ld 3x3 TDFN
ISL85418	Single	3V to 40V	800mA	0.6V to Dmax*V _{IN}	80μA	12 Ld 4x3 DFN
ISL85413	Single	3.5V to 40V	0.3A	0.6V to Dmax*V _{IN}	50μA	8 Ld 3x3 DFN
ISL85415	Single	3V to 36V	0.5A	0.6V to Dmax*V _{IN}	80μA	12 Ld 4x3 DFN
ISL85410	Single	3V to 40V	1A	0.6V to Dmax*V _{IN}	80μA	12 Ld 4x3 DFN
ISL854102	Single	3V to 40V	1.2A	0.6V to Dmax*V _{IN}	80μA	12 Ld 4x3 DFN
ISL85403 (Buck or Buck-Boost)	Single	3V to 40V	2.5A	0.8V to Dmax*V _{IN}	300μA	20 Ld 4x4 QFN

Robust & Reliable Analog Controllers



Intersil's extensive portfolio of PWM controllers can support multiple applications. The portfolio of single, dual, triple and quad output controllers offer either voltage mode or current mode architecture. These PWM controllers are optimized to provide high efficiency across the entire load range and have the drivers integrated.

Robust, Reliable Performance

- Remote sense, Power-Good, Enable, adjustable soft-start
- Extensive protection (OCP, OVP, OTP, SCP)
- Reference tracking, voltage margining
- Pre-biased startup, external compensation
- External frequency synchronization

Large Selection

- Wide input voltages up to 72V
- Several configurations (single output, multi-output, multi-phase)
- Wide frequency (100kHz to 2.5MHz)
- Variety of package choices (i.e. DFN, QFN, HTSSOP, QSOP)

High Integration

- On-chip MOSFET drivers
- Internal bootstrap diodes
- Integrated compensation

World-Class Design & Support Team

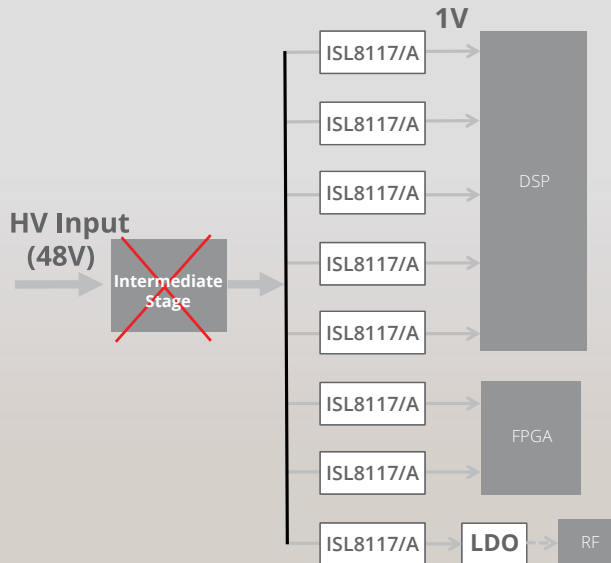
- Leading modulator technology (EAPP, R4)
- Expertise in high current solution for CPUs
- Complete reference designs

ISL8117/A

Innovative 60V Sync Buck Controller

The ISL8117/A is 60V synchronous buck controller able to bypass the intermediate step-down conversion stage traditionally requested for industrial applications.

ELIMINATES NEED FOR INTERMEDIATE POWER CONVERSION STAGE



iSIM

EVALUATION
BOARDDESIGN
MODEL

POWERCOMPASS

- **Reduces design time, solution cost**
 - Option of internal or external compensation
 - Adjustable frequency up to 2MHz optimizes power supply cost, size and efficiency
- **Simplifies design, easy-to-use**
 - No external compensation required
 - Layout friendly pin architecture
 - Default design values reduce external components
- **Less real estate, higher performance**
 - 40% fewer external components than competing devices
 - Up to 98% efficiency, 1.5% output voltage accuracy

Single Output Analog Controllers

Input	Device	V _{IN} Range (V)	V _{OUT} Range (V)	I _{OUT} (max) (A)	Package	Technical Highlights
12V	ISL8104	1.2 to 12	0.6 to Dmax*V _{IN}	30	16 Ld QFN, 14 Ld SOIC	
	ISL6341/A/B/C	1.5 to 12	0.8 to Dmax*V _{IN}	30	10 Ld DFN	
	ISL6545A	1 to 12	0.6 to Dmax*V _{IN}	25	10 Ld DFN, 8 Ld SOIC	
	ISL8105A/B	4.5 – 14	0.6 – Dmax*V _{IN}	25	10 Ld DFN, 8 Ld SOIC	Voltage mode with non-linear control, Current sharing
20V	ISL8118	3.3 to 20	0.6 to Dmax*V _{IN}	30	28 Ld QFN	
	ISL6540A	3.3 – 20	0.6 – Dmax*V _{IN}	30	28 Ld QFN	Voltage mode with feed forward, feature rich, popular for POL module
	ISL8106	7 to 25	0.6 to Dmax*V _{IN}	12	16 Ld QFN	
28V	ISL8130	4.5 – 28	0.6 – Dmax*V _{IN}	20	20 Ld QFN, 20 Ld QSOP	Universal controller for buck, boost or SEPIC
	ISL6420B	4.5 to 28	0.6 to Dmax*V _{IN}	20	20 Ld QFN, 20 Ld QSOP	
36V	ISL8115	3.0 – 36	0.6 – Dmax*V _{IN}	40	24 Ld TQFN	Voltage mode with non-linear control, Current sharing
60V	ISL8117/A	4.5 – 60	0.6 – Dmax*V _{IN}	20	16 Ld QFN, 16 Ld TSSOP	Current mode, simplified pin-out, Low external components
75V	ISL8107	9 to 75	1.2 to Dmax*V _{IN}	10	16 Ld QFN	

Multi-Output Analog Controllers

Output	Device	V _{IN} Range (V)	V _{OUT} Range (V)	I _{OUT} (max) (A)	Package	Technical Highlights
Dual	ISL6446A	5.6 to 24	0.6 to Dmax*V _{IN}	25/ch	24 Ld QSOP	2 outputs, voltage mode
Triple	ISL9444	4.5 to 28	0.6 to Dmax*V _{IN}	25/ch	40 Ld QFN	3 outputs, current mode, Internal compensation
	ISL9440B	4.5 - 24	0.8 - Dmax*V _{IN}	0.8/ch	32 Ld QFN	3 outputs with programmable soft-start

Multiphase Analog Controllers

Phase	Device	V _{IN} Range (V)	V _{OUT} Range (V)	I _{OUT} (max) (A)	Package	Technical Highlights
Up to 12-phase	ISL8126	3.0 to 26.5	0.6 to Dmax*V _{IN}	60	32 Ld QFN	Current sharing up to 12 phase
2-phase	ISL8121	3.0 to 20	0.6 to Dmax*V _{IN}	60	24 Ld QFN	2-phase, popular for 5V/3.3V module
4-phase	ISL6558	5 ±10%	0.8 to Dmax*V _{IN}	120	20 Ld QFN, 16 Ld SOIC	4-phase controller, 5V _{IN} bias

FPGA Power Solutions

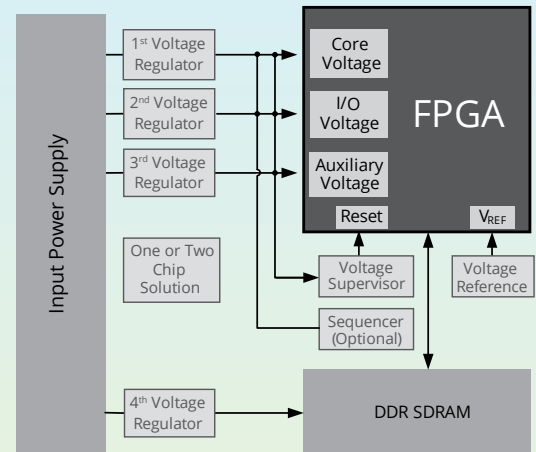
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Start Your Project Now

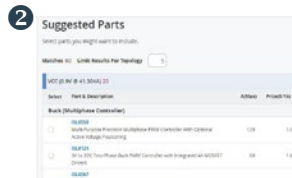
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Define your system input and output requirements. You can build a system from scratch, or you can choose from over 250 templates covering popular FPGA platforms such as Xilinx, Altera (now Intel), Lattice, and Microsemi/Actel.

Select Parts



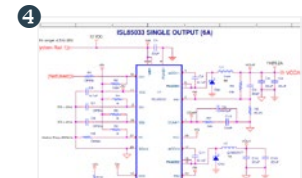
Once you've got your rails identified, suggested parts are just a click away—including both single output devices, and dual devices that could serve more than one output. You can choose as many parts as you'd like to compare.

Summary Analysis



To help you finalize part selections, the app looks at the efficiency data across your specified output operational range, and presents system cost and graphs showing the system efficiency, power dissipation and junction temperature.

Generate Reference Designs



For schematic-enabled parts, you can generate customized reference design files to get a BOM and a set of base schematics with all the associated blocks connected together—simplifying your design effort.

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Quickly identify parts that match your specific requirements, set up multiple rails, perform high-level system analysis, and generate custom reference design files.

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