



Power Management

Power Conversion

Switching Regulators
Switching Controllers
LDOs and Regulators

System Controls

Voltage References
Supervisors
Power Switches

LED Lighting

Regulators
Controllers
Current Drivers



2009
EXAR CORPORATION

State of the Art Solutions

Exar offers a broad array of power management integrated circuits (IC) that are used in a wide variety of end applications. Exar's state of the art solutions provide high efficiency, low quiescent current, small size, and the industry's best price/size and performance ratio.

Many of Exar's most advanced power management ICs are offered in thermally enhanced, leadless DFN or QFN packages for the best blend of low thermal impedance and minimal circuit board area. In an effort to respect

the environment and reduce the use of hazardous substances, all Exar products have been qualified and released in lead-free versions while the transition to green/halogen free devices is in progress.

Exar power management products can be used as stand alone solutions but are designed to be used together to create a complete power management system.

Exar Power Management Portfolio

POWER CONVERSION	SYSTEM CONTROLS
Switching Regulators	Linear Voltage References
Step-down, PowerBlox™, Step-up	Precise and Stable References
Switching Controllers	Supervisors
Step-down, Step-up	1V to 5V System Monitors
Linear LDOs & Regulators	Power Switches
Up to 5A, Single/Dual	Single/Dual USB Switches
LED LIGHTING	
Step-down, Step-up, Step-up/down	High/Low Side Current Drivers

Power Conversion

Exar has a complete family of DC/DC conversion products for Point-of-Load (PoL) power ranging from linear LDOs and regulators to high-performance switching regulators and controllers covering applications with currents ranging from a few mA to 30A. These DC/DC products form a complete power management solution for PoL power suitable for a range of applications for industrial, embedded systems, telecom, set top boxes, graphics cards, motherboards, cell phones, PDAs, notebooks, etc.

Exar PowerBlox™ family of high voltage high current step-down regulators provides a high performance market proven solution for POLA replacement with capabilities of up to 12Amps and one the highest current density on the market. Complemented by its online design generator tool, solutions around the PowerBlox™ family of devices can be customized, generated and simulated in less than 10 minutes.

Exar's newest high efficiency synchronous step-down controllers, the XRP615x family, are capable of a wide input voltage (up to 30V) and can drive multiple NFETs to achieve currents of up to 30A in a single phase. With switching frequencies ranging from 300kHz to 1MHz, this family offers the designers the flexibility to choose the optimum trade-off between efficiency and solution size. Protection features include integrated compensation network, sequencing capability, thermal shutdown, short circuit protection, under voltage protection, and UVLO on both VIN and VCC supplies.

The non-synchronous SP6125/26/27 family in a TSOT-23-6 package is the worlds smallest buck controller having an input voltage range of 4.5V to 30V. This family is designed to drive an external PFET at switching speeds of 300kHz, 600kHz and 900kHz, respectively.

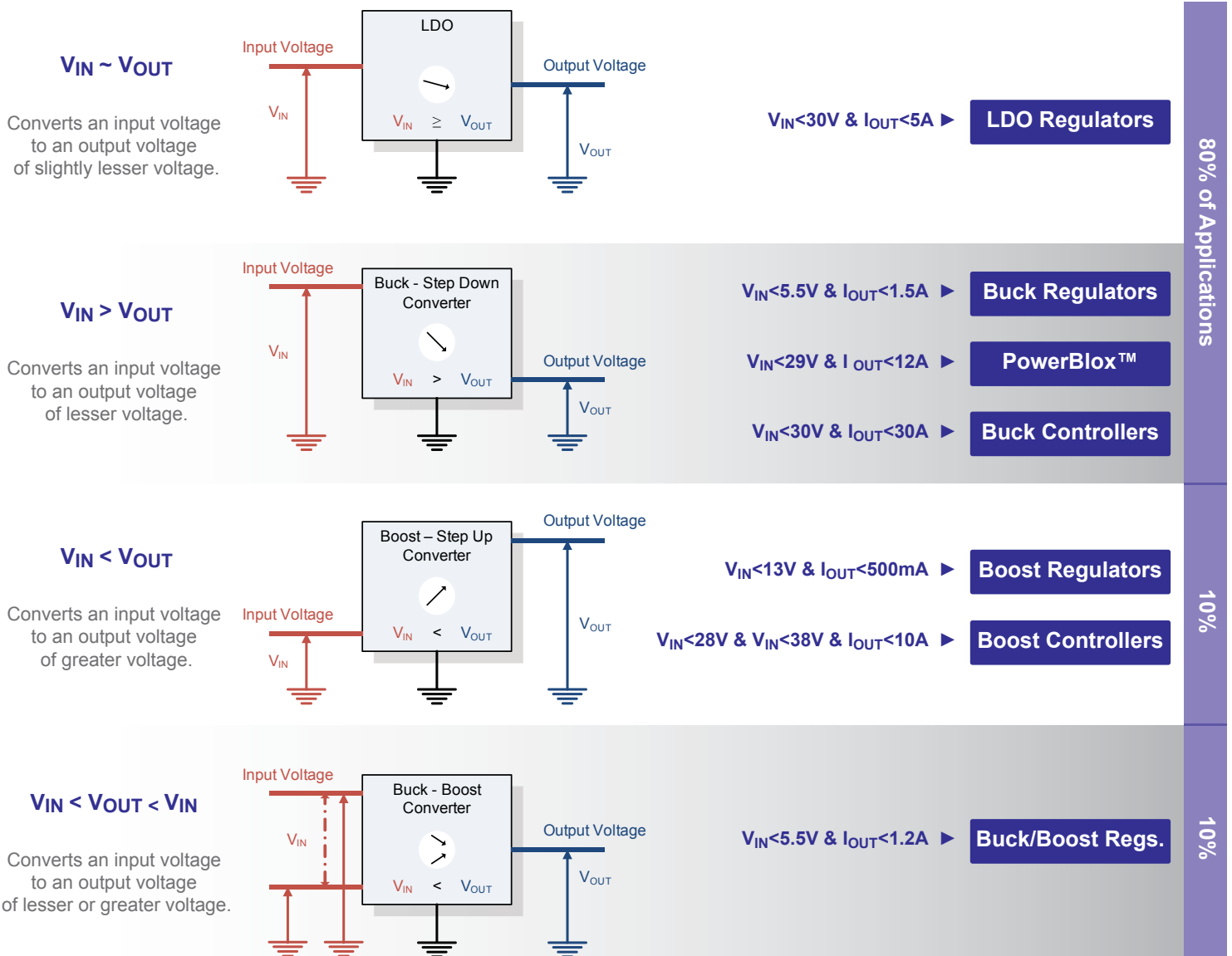
LED Lighting

As LEDs gain in popularity due to their efficiency, power, durability, and reliability, Exar continues to develop expertise in the market with the highest performing, extremely compact solutions for driving the latest LEDs in a wide variety of applications. Knowing the importance of design flexibility, Exar offers four different categories of solutions for LED driver applications, Buck Regulators, Boost Regulators, Buck/Boost Regulators and Linear Drivers, each offering specific advantages.

The new XRP7604, XRP7604 and SP7600 are Exar's first dedicated buck switching regulators for driving high Power LEDs. Operating at 1.2MHz which results in a minimum size solution, this family of devices is pin compatible for an evolutive design and can drive LEDs up to 500mA, 1Amp and 2Amps respectively. All devices are compatible with PWM dimming up to 1kHz and integrated compensation minimizes external component count.

An Exar Solution For Each Conversion Stage

Electronic systems includes one or more power conversion stages. From a simple direct connection to a battery to more elaborate inter-connections, each power conversion stage is characterised by a few key parameters. The most important ones are always the input voltage range (V_{IN}) from which the conversion has to take place, the output voltage range (V_{OUT}) that the conversion stage has to support and the amount of current or power the conversion stage has to be capable of providing (I_{OUT}). Knowing those three key parameters identifies the type of solution that will be the most adequate to implement.



POWER CONVERSION :: Switching Regulators :: Step-down Regulators

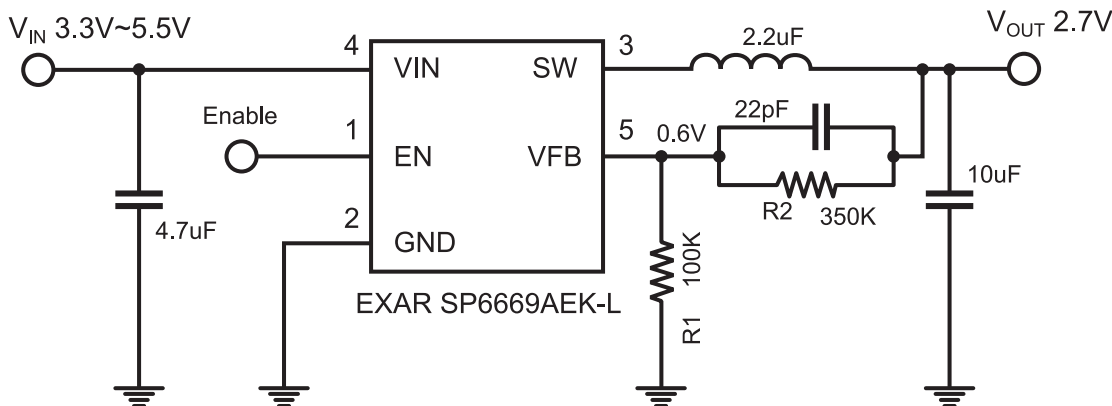
Step-down regulators, also known as buck regulators, are used to lower the input voltage to the desired output level with higher efficiency than an LDO. A step-down regulator integrates power FET ICs, providing a monolithic power converter.

Applications

- Distributed Power Architectures
- Point of Load Converters
- Point of Load Modules
- FPGAs, DPSs and Processor Power Supplies

Part Number	Output Current	Frequency Mode	Operating Voltage		Output Voltage	Output Voltage Range		Quiescent Current	Efficiency	Package	Features
			Min.	Max.		Min.	Max.				
SP6655	400mA	PFM	2.7V	5.5V	Adj.	1.0V	27V	20µA	98%	10-pin MSOP 10-pin DFN	Synchronous Enable Pin Low Battery Detection Adjustable UVLO - Over Temperature Protection
SP6656	400mA	PFM	2.7V	5.5V	Adj.	1.0V	28V	20µA	98%	10-pin DFN	Synchronous Enable Pin Dual Output Voltage Selectable UVLO - Over Temperature Protection
SP6650	600mA	PFM	2.7V	6.5V	Adj.	1.25V	20.2V	70µA	95%	10-pin MSOP	Synchronous Enable Pin Low Battery Detection UVLO - Over Temperature Protection
SP6669	600mA	1.5MHZ	2.5V	5.5V	Adj.	0.6V	5.5V	200µA	95%	5-pin SOT-23	Synchronous Enable Pin Pulse skipping at light load Over Temperature Protection
					Fixed	1.2V, 1.5V, 1.8V					
SP6651	800mA	PFM	2.7V	5.5V	Adj.	1.0V	5V	20µA	98%	10-pin MSOP 10-pin DFN	Synchronous Enable Pin Low Battery Detection Adjustable UVLO - Over Temperature Protection
SP6654	800mA	PFM	2.7V	5.5V	Adj.	0.8V	5V	20µA	98%	10-pin MSOP 10-pin DFN	Synchronous Enable Pin Power Good Indicator Adjustable UVLO - Over Temperature Protection
SP6652	1A	1.4MHz	2.7V	5.5V	Adj.	0.75V	5V	1mA	97%	10-pin MSOP 10-pin DFN	Synchronous Enable Pin - Soft Start External Clock Synchronization Over Current and Over Temperature Protection
XRP6657*	1.5A	1.3MHZ	2.5V	5.5V	Adj.	0.6V	5V	240µA	95%	6-pin DFN	Synchronous Enable Pin Pulse skipping at light load Over Temperature Protection

*coming soon



POWER CONVERSION :: Switching Regulators :: PowerBlox™

PowerBlox™ family of synchronous and non synchronous step-down regulators provides a fully integrated single chip solution for point-of-load applications with high current output requirements. The high input voltage range and operating switching frequency options allow the PowerBlox™ family to fit in a wide range of applications and power architectures by enabling step-down DC to DC conversions from various intermediate power bus levels while providing a highly efficient and performing solution in the most compact footprint.

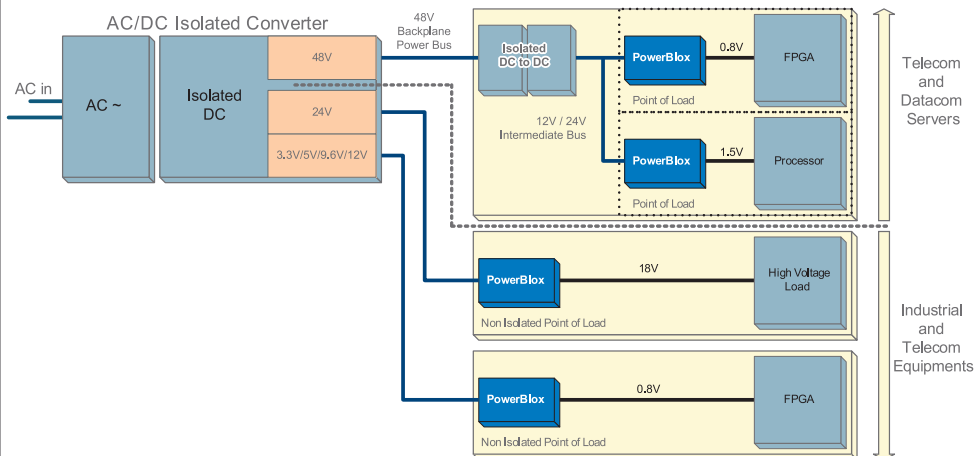
Supported by PowerLab™, our online interactive design solution simulator and generator.

Applications

- Distributed Power Architectures
- Point of Load Converters
- Point of Load Modules
- FPGAs, DSPs and Processor Power Supplies

Part Number	Output Current	Frequency	Operating Voltage		Output Voltage	Output Voltage Range		Accuracy	Efficiency	Package	Features
			Min.	Max.		Min.	Max.				
SP7650	3A	300KHz	2.5V	28V	Adj.	0.8V	27V	1.0%	95%	26-pin DFN	Synchronous UVLO, OTP, Soft Start Short Circuit Protection /Auto Restart
SP7656	3A	600KHz	4.5V	29V	Adj.	0.6V	28V	1.0%	89%	8-pin SO8	Non synchronous UVLO, Current Limiting, Softstart Internal Compensation
SP7661	3A	600KHz	3.0V	22V	Adj.	0.8V	20.2V	1.0%	92%	26-pin DFN	Synchronous UVLO, OTP, Soft Start, Current Limiting Short Circuit Protection /Auto Restart
SP7651	3A	900KHz	2.5V	20V	Adj.	0.8V	19V	1.0%	92%	26-pin DFN	Synchronous UVLO, OTP, Soft Start Short Circuit Protection /Auto Restart
SP7653	3A	1300KHz	2.5V	20V	Adj.	0.8V	19V	1.0%	91%	26-pin DFN	Synchronous UVLO, OTP, Soft Start Short Circuit Protection /Auto Restart
SP7652	6A	600KHz	2.5V	28V	Adj.	0.8V	27V	1.0%	92%	26-pin DFN	Synchronous UVLO, OTP, Soft Start Short Circuit Protection /Auto Restart
SP7663	6A	600KHz	3.0V	22V	Adj.	0.8V	20.2V	1.0%	91%	26-pin DFN	Synchronous UVLO, OTP, Soft Start, Current Limiting Short Circuit Protection /Auto Restart
SP7655	8A	300KHz	2.5V	28V	Adj.	0.8V	27V	1.0%	95%	26-pin DFN	Synchronous UVLO, OTP, Soft Start Short Circuit Protection /Auto Restart
SP7662	12A	300KHz	3.0V	22V	Adj.	0.8V	20.2V	1.0%	93%	26-pin DFN	Synchronous UVLO, OTP, Soft Start, Current Limiting Short Circuit Protection /Auto Restart

Distributed Power Architecture





<http://www.exar.com/powerlab>

- **High performance design solution generator and simulator**
 - As simple as entering Vin, Vout and current load
 - Schematics and Bill of Material generator
 - Extensive waveforms viewer and transient analysis capability
 - Supports multiple outputs
 - **All in less than 10 minutes!**

The screenshot displays the PowerLab software interface. On the left, a detailed circuit schematic is shown with various components labeled, including resistors (R22, R2, R1), capacitors (C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C31, C32, C33, C34, C35, C36, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C47, C48, C49, C50, C51, C52, C53, C54, C55, C56, C57, C58, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C75, C76, C77, C78, C79, C80, C81, C82, C83, C84, C85, C86, C87, C88, C89, C90, C91, C92, C93, C94, C95, C96, C97, C98, C99, C100), inductors (L1, L2, L3, L4, L5, L6, L7, L8, L9, L10, L11, L12, L13, L14, L15, L16, L17, L18, L19, L20, L21, L22, L23, L24, L25, L26, L27, L28, L29, L30, L31, L32, L33, L34, L35, L36, L37, L38, L39, L40, L41, L42, L43, L44, L45, L46, L47, L48, L49, L50, L51, L52, L53, L54, L55, L56, L57, L58, L59, L60, L61, L62, L63, L64, L65, L66, L67, L68, L69, L70, L71, L72, L73, L74, L75, L76, L77, L78, L79, L80, L81, L82, L83, L84, L85, L86, L87, L88, L89, L90, L91, L92, L93, L94, L95, L96, L97, L98, L99, L100), and other components like diodes (D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D15, D16, D17, D18, D19, D20, D21, D22, D23, D24, D25, D26, D27, D28, D29, D30, D31, D32, D33, D34, D35, D36, D37, D38, D39, D40, D41, D42, D43, D44, D45, D46, D47, D48, D49, D50, D51, D52, D53, D54, D55, D56, D57, D58, D59, D60, D61, D62, D63, D64, D65, D66, D67, D68, D69, D70, D71, D72, D73, D74, D75, D76, D77, D78, D79, D80, D81, D82, D83, D84, D85, D86, D87, D88, D89, D90, D91, D92, D93, D94, D95, D96, D97, D98, D99, D100), and operational amplifiers (OP1, OP2, OP3, OP4, OP5, OP6, OP7, OP8, OP9, OP10, OP11, OP12, OP13, OP14, OP15, OP16, OP17, OP18, OP19, OP20, OP21, OP22, OP23, OP24, OP25, OP26, OP27, OP28, OP29, OP30, OP31, OP32, OP33, OP34, OP35, OP36, OP37, OP38, OP39, OP40, OP41, OP42, OP43, OP44, OP45, OP46, OP47, OP48, OP49, OP50, OP51, OP52, OP53, OP54, OP55, OP56, OP57, OP58, OP59, OP60, OP61, OP62, OP63, OP64, OP65, OP66, OP67, OP68, OP69, OP70, OP71, OP72, OP73, OP74, OP75, OP76, OP77, OP78, OP79, OP80, OP81, OP82, OP83, OP84, OP85, OP86, OP87, OP88, OP89, OP90, OP91, OP92, OP93, OP94, OP95, OP96, OP97, OP98, OP99, OP100). The central window shows a transient analysis plot of output voltage and current over time. The right window shows a Bode plot of the system's frequency response, including gain and phase margins.

POWER CONVERSION :: Switching Regulators :: Step-up Regulators

Step-up regulators, also known as boost regulators, are used to step up an input voltage to the desired higher output level. They are typically used in portable equipments where the power supply is provided by a battery.

Applications

- Handheld & Portable Equipments

Part Number	Output Current	Operating Voltage		Startup Voltage	Output Voltage	Output Voltage Range		Quiescent Current	Efficiency	Package	Features
		Min.	Max.			Min.	Max.				
SP4446	75mA	1V	8V		Adj.		30V	20µA	75%	5-pin SOT-23	Non-synchronous Enable Pin Current limiting
SP6641A	190mA	0.5V	4.5V	0.85V	Fixed	3.3V		10µA	87%	5-pin SOT-23	Non-synchronous Enable Pin Current limiting
					Fixed	5V					
SP6644	190mA	0.82V	3.3V	0.82V	Adj.	2.0V	5.5V	1.6µA	92%	8-pin MSOP	Synchronous Enable Pin - Low Battery Detection Inductor Peak Current Limiting Reverse Battery Protection
					Fixed	3.3V					
SP6648	400mA	0.7V	4.5V	0.85V	Adj.	2.5V	5.5V	12µA	92%	10-pin MSOP 10-pin DFN	Synchronous Enable Pin Programmable Low Battery Detection Under Voltage Lockout Protection
SP6641B	500mA	0.5V	4.5V	0.85V	Fixed	3.3V		10µA	87%	5-pin SOT-23	Non-synchronous Enable Pin Current limiting
					Fixed	5V					
SP6649*	500mA	0.7V	5.5V	0.93V	Adj.	1.8V	5.5V	26µA	93%	8-pin MSOP 5-pin SOT-23	Synchronous Enable Pin - Preset 3.3V and 5V output mode Low Battery Detection
SP34063	Adj. <1.5A	3.0V	36V		Adj.	1.0V	27V	20µA	80%	8-pin NSOIC	Can be implemented in Buck, Boost or Inverting topologies

*coming soon

Part Number	Output Current	Operating Voltage		Output Voltage	Output Voltage Range		Frequency	Efficiency	Package	Features
		Min.	Max.		Min.	Max.				
SP6660	200mA	1.5V	4.25V	Inverter	-4.25V	-1.5V	10KHz/ 80KHz	92%	8-pin SOIC	Charge Pump Topology Selectable Oscillator External Oscillator Input
				Doubler	3.0V	8.0V		96%		
SP6661	200mA	1.5V	5.3V	Inverter	-5V	-1.5V	120KHz 900KHz	89%	8-pin SOIC 8-pin MSOP	Charge Pump Topology Selectable Oscillator External Oscillator Input
		2.5V	5.3V	Doubler	5.0V	10.0V		94%		

POWER CONVERSION :: Switching Controllers :: Step-down Controllers

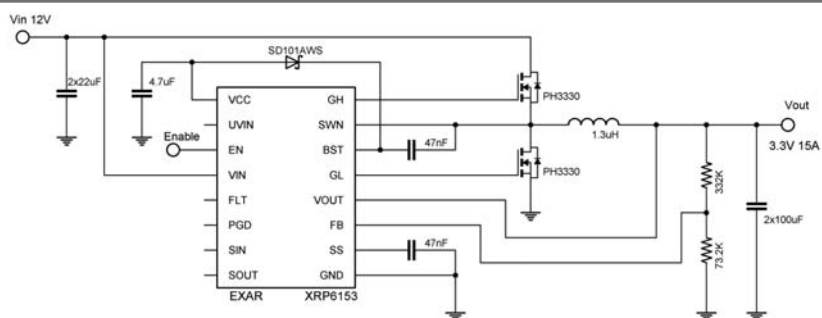
Step-down controllers, also known as buck controllers, are the basic element used to build high efficiency and high power point of loads. Driving one or two external FETs in respectively its synchronous or non synchronous versions, step down controllers allow the maximum flexibility and tailoring for high performance conversions.

Applications

- Distributed Power Architectures
- Point of Load Converters
- Point of Load Modules
- Set-top Boxes

Part Number	Rec. Output Current	Operating Voltage		Min. Output Voltage	Quiescent Current	Frequency	Efficiency	Package	Features
		Min.	Max.						
XRP6155*	<10A	4.5V	30V	0.6V	2.6mA	1000KHz	95%	16-pin QFN	Synchronous Voltage Mode PWM Internal Compensation - External Synchronisation Capable Enable pin - Power Good flag indicator Programmable Soft-start - Current limiting UVLO, over temperature and output short circuit protection
XRP6154*	<15A					600KHz			
XRP6153*	<30A					300KHz			
SP6136	<15A	3.0V	24V	0.8V	1.5mA	600KHz	92%	16-pin QFN	Synchronous Voltage Mode PWM Enable pin - Power Good flag indicator Programmable Soft-start - Current limiting UVLO, over temperature and output short circuit protection
SP6133	<30A					300KHz			
SP6137	<10A	2.5V	20V	0.8V	1.5mA	900KHz	91%	10-pin MSOP	Synchronous Voltage Mode PWM Programmable Soft-start UVLO, over temperature and output short circuit protection
SP6134H	<15A	3.0V	28V			600KHz	92%		
SP6132H	<20A	3.0V	28V			300KHz	95%		
SP6128A	<10A	3.0V	5.5V	0.8V	500µA	300KHz	89%	14-pin TSSOP	Synchronous Voltage Mode PWM Soft-Start - On/Off Mode UVLO and Over Current Protection
SP6127	<2A	4.5V	29V	0.6V	300µA	1300KHz	95%	6-pin TSOT-23	Non Synchronous Voltage Mode PWM On/Off Mode - Single supply operations Internal type II Compensation Programmable Over Current Protection
SP6126	<3A					600KHz			
SP6125	<5A					300KHz			
SP6123A	<10A	3.0V	5.5V	1.25V	500µA	500KHz	95%	8-pin NSOIC	Synchronous Voltage Mode PWM Soft-Start - On/Off Mode UVLO and over current Protection
SP6123						300KHz			
SP6121	<10A	3.0V	5.5V	1.25V	500µA	500KHz	90%	8-pin NSOIC	Synchronous Voltage Mode PWM Soft-start - On/Off Mode Output over voltage and over current protection
SP6120 SP6120B	<10A	3.0V	5.5V	1.25V	950µA	250-550KHz	95%	16-pin TSSOP	Synchronous Voltage Mode PWM Enable Pin - High side N or P FET Capable Programmable frequency Soft-Start - UVLO and over-current Protection

*coming soon



POWER CONVERSION :: Switching Controllers :: Step-up Controllers

Step-up controllers, also known as boost controllers are the basic element used to build high efficiency and high power point of loads. Driving one or two external FETs step-up controllers allow the maximum flexibility and tailoring for high performance conversions.

Applications

- Point of Load Converters
- Point of Load Modules

Part Number	Operating Voltage		Frequency	Output Voltage	Output Voltage Range		Quiescent Current	Efficiency	Package	Features
	Min.	Max.			Min.	Max.				
XRP7410*	7V	28V	600KHz	Adj.	7V	38V	2.2mA	95%	8-pin DFN	Voltage Mode PWM Enable Pin - Feedback resistors disconnect UVLO and Over Current Protection
XRP7607*	7V	28V	1200KHz	Adj.	7V	28V	2mA	95%	8-pin DFN	Voltage Mode PWM Enable Pin - Soft Start Internal compensation UVLO, over voltage and Over Current Protection Used with XRP7617

Most of Exar's step-down controllers can be easily configured to operate as step-up controllers. Contact your local Exar's sales representative or FAE for implementation details.

**coming soon*

POWER CONVERSION :: Linear :: LDOs

The simplest and lowest cost technique for stepping down a DC voltage. A low dropout regulator provides a quiet, well regulated DC voltage supply that has excellent transient response.

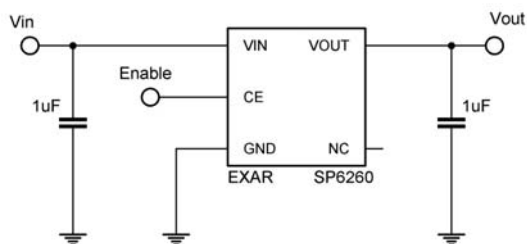
Applications

- Portable Equipments
- Handheld Devices
- Mobile Phones & PDAs
- Medical and Instrumentation

Single Channel										
Part Number	Output Current	Output Voltage	Accuracy	Dropout Voltage	Operating Voltage		Quiescent Current	Package	Features	
					Min.	Max.				
SP6222	50mA	Adj., 2.5V, 3.0V	1%	60mV	1.6V	4.5V	14µA	5-pin SC-70 5-pin SOT-23	Enable Pin Over Temperature protection	
SP6213	100mA	1.8V, 2.5V, 2.85V, 3.0V, 3.3V	2.5%	250mV	2.5V	6V	65µA	5-pin SC-70	Enable pin Current limiting and thermal protection	
SP6214	100mA	1.8V, 2.85V 3.0V, 3.3V	2.5%	250mV	2.5V	6V	65µA	5-pin SC-70	Enable pin Current limiting and thermal protection	
SP6200	100mA	3.0V	2%	160mV	2.5V	6V	28µA	5-pin SOT-23	Enable pin Power Good indicator	
LP2950	100mA	3.3V, 5.0V	0.5%, 1%	380mV	3.7V	30V	150µA	3-pin TO-92	Current limiting and thermal protection	
LP2951	100mA	3.3V, 5.0V	1%	380mV	3.7V	30V	150µA	8-pin NSOIC	Enable pin Output Error flag indicator Current limiting and thermal protection	
SP6260	150mA	1.5V, 1.8V, 2.5V, 2.8V, 3.0V, 3.2V, 3.3V	2%	200mV	2V	6V	25µA	5-pin SOT-23	Low noise: 30µVrms - no bypass cap needed Enable pin Current limiting and thermal protection	
SPX5205	150mA	Adj., 1.2V, 1.8V, 2.5V, 3.0V, 3.3V, 5.0V	1%	210mV		16V	70µA	5-pin SOT-23	Reverse battery protection Current limiting and thermal protection	
SPX2951	150mA	5.0V	0.5%	300mV		30V	150µA	8-pin NSOIC	Enable pin Output error flag indicator Current limiting and thermal protection	
SP6201	200mA	Adj., 1.5V, 1.8V, 2.5V, 2.85V, 3.0V, 3.3V, 5.0V	2%	320mV	2.5V	6V	28µA	5-pin SOT-23	Enable pin Power Good indicator	
		Adj., 1.8V, 3.3V						8-pin DFN	Enable pin Power Good indicator (fixed voltage version)	
SPX2954	250mA	5.0V	0.5%	310mV		30V	150µA	8-pin NSOIC 3-pin SOT223	Enable pin Output error flag indicator Current limiting and thermal protection	
		3.3V, 5.0V	1.0%					8-pin NSOIC 3-pin SOT-223		
SP6203	300mA	Adj., 2.5V, 2.85V, 3.0V, 3.3V	2%	180mV		6V	45µA	5-pin SOT-23	Low noise: 12µVrms (fixed voltage version) Enable pin	
		Adj., 1.8V						8-pin DFN	Current limiting and thermal protection	
SPX1521	300mA	3.3V, 5.0V	1%	300mV		20V	100µA	3-pin SOT-223	Reverse battery protection Current limiting and thermal protection	

Single Channel									
Part Number	Output Current	Output Voltage	Accuracy	Dropout Voltage	Operating Voltage		Quiescent Current	Package	Features
					Min.	Max.			
SPX2945	400mA	3.3V, 5.0V	1%	420mV		26V	100µA	3-pin SOT-223	Enable pin Output error flag indicator Current limiting and thermal protection
SP6205	500mA	Adj., 2.5V, 2.85V, 3.0V, 3.3V	2%	300mV		6V	45µA	5-pin SOT-23	Low noise: 12µVrms (fixed voltage version) Enable pin Current limiting Over temperature protection
		Adj., 2.5V						8-pin DFN	
SPX3819	500mA	Adj., 1.2V, 1.5V, 1.8V, 2.5V, 3.0V, 3.3V, 5.0V	1%	340mV	2.5V	16V	90µA	5-pin SOT-23	Enable pin Reverse battery protection Current limiting and thermal protection
		Adj., 1.2V, 1.8V						8-pin DFN	
		Adj., 1.2V, 1.5V, 1.8V, 2.5V, 3.3V, 5.0V						8-pin NSOIC	
SPX1117	800mA	Adj., 1.5V, 1.8V, 2.5V, 3.3V, 5.0V	1%	1.1V	2.63V	20V	5mA	3-pin SOT-223	Current limiting and thermal protection
		Adj., 3.3V						3-pin TO-262	
SPX2940	1A	5.0V	3%	280mV		16V	12mA	3-pin TO-263 3-pin TO-220	Reverse battery protection Current limiting and thermal protection
SPX2941	1A	Adj.	3%	280mV		16V	12mA	5-pin TO-263	Enable pin Reverse battery protection Current limiting and thermal protection
SPX3940	1A	1.8V, 2.5V, 3.3V, 5.0V	1%	280mV		16V	12mA	3-pin SOT-223	Reverse battery protection Current limiting and thermal protection
		1.8V, 3.3V, 5.0V						3-pin TO-263	
		2.5V, 3.3V, 5.0V	2%					3-pin SOT-223	
		3.3V, 5.0V						3-pin TO-263	
SP1086	1.5A	3.3V	1%	1.3V		15V	5mA	3-pin TO-263	Current limiting and thermal protection
SPX1583	1.5A	Adj.	2%	400mV		6V	5mA	5-pin TO-263	Enable pin External Sense pin Current limiting and thermal protection
SPX2815	1.5A	Adj., 3.3V	1%	1.1V		10V	4mA	3-pin TO-263	Current limiting and thermal protection
		Adj.						3-pin TO-252	
SPX29150	1.5A	1.8V, 2.5V, 3.3V, 5.0V	1%	390mV		16V	12mA	3-pin TO-263	Reverse battery protection Current limiting and thermal protection
SPX29151	1.5A	1.8V, 2.5V, 5.0V	1%	390mV		16V	12mA	5-pin TO-263	Enable pin Output error flag indicator Current limiting Current limiting and thermal protection
SPX29152	1.5A	Adj.	1%	390mV		16V	12mA	5-pin TO-263 5-pin TO-220	Enable pin Current limiting Current limiting and thermal protection
SPX1582	3A	Adj., 2.5V	2%	400mV		5.5V	5mA	5-pin TO-263	Enable pin External Sense pin Current limiting and thermal protection
SPX1587	3A	Adj.	1%	1.1V		10V	4mA	3-pin TO-220	Current limiting Over temperature protection
		Adj., 2.5V, 3.3V						3-pin TO-263	
		Adj., 1.5V, 5.0V	2%					3-pin TO-263	
		3.3V, 5.0V						3-pin TO-220	
SPX29300	3A	1.8V, 2.5V, 3.3V, 5.0V	1%	450mV		16V	37mA	3-pin TO-263	Current limiting and thermal protection Reverse battery protection
SPX29301	3A	3.3V, 5.0V	1%	450mV		16V	37mA	5-pin TO-263	Enable pin Output error flag indicator Current limiting and thermal protection
SPX29302	3A	Adj.	1%	450mV		16V	37mA	5-pin TO-263 5-pin TO-220	Enable pin Current limiting and thermal protection Reverse battery protection
			0.5%					5-pin TO-263	
SPX1585	5A	Adj., 3.3V	1%	1.1V		10V	5mA	3-pin TO-263	Current and Thermal limiting Reverse battery protection
SPX29501	5A	3.3V, 5.0V	1%	420mV		16V	20mA	5-pin TO-263	Enable pin Output error flag indicator Current limiting and thermal protection Reverse battery protection
SPX29502	5A	Adj.	1%	420mV		16V	20mA	5-pin TO-263 5-pin TO-220	Enable pin Current limiting and thermal protection Reverse battery protection

Dual Channels									
Part Number	Output Current	Output Voltage	Accuracy	Dropout Voltage	Operating Voltage		Quiescent Current	Package	Features
					Min.	Max.			
SP6265	150mA 150mA	1.8V/2.5V 1.8V/2.8V 1.8V/3.3V	2%	300mV	2.8V	4.5V	70µA	6-pin TSOT-23	Dual Enable Pins Optional Noise Reduction Bypass Capacitor Over Current protection Over Temperature protection
		2.85V/2.85V 3.0V/3.0V 1.8V/2.5V 1.8V/2.8V						8-pin DFN	



POWER CONVERSION :: Linear :: Voltage Regulators

Voltage Regulators converts various input voltages and produces a constant regulated output voltage with current up to 2A.

Applications

- DC Power Supplies

Part Number	Output Current	Output Voltage	Accuracy	Operating Voltage		Quiescent Current	Package	Features
				Min.	Max.			
SP2996	2A	Adjustable	20mV	1.6V	6V	8µA	8-pin NSOIC	DDR Bus Termination Regulator Over-Temperature Protection Over-Current Protection
SP317	1A	Adjustable	1%		15V	50µA	3-pin TO-252	Over-Temperature Protection Over-Current Protection
SP7805	1A	5V	5%	7.5V	18V	3.2mA	3-pin TO-220 3-pin TO-252	Over-Temperature Protection Short-circuit Protection
SP78L05	100mA	5V	5%	7.5V	18V	1.5mA	8-pin NSOIC	Over-Temperature Protection Short-circuit Protection

SYSTEM CONTROLS :: Linear Voltage References

Voltage references provide a precise and stable output voltage over a wide range of conditions such as input voltage fluctuations and/or operating temperature change. These devices guarantee system accuracy and performance.

Applications

- Power Supplies
- Mother Boards
- Medical and Industrial Instrumentations

Part Number	Vref	Accuracy	Operating Current	Max. Operating Voltage	Iref	Temperature Coefficient	Package	Features
SPX385	1.235V	1.0%	20µA - 20mA	n/a	n/a	30ppm/°C	8-pin NSOIC	Shunt reference Replacement for L01285/385
	2.5V 5.0V						3-pin SOT-23	
	2.5V	2%					3-pin TO-92	
SPX431A	2.5V	0.5%	1mA - 150mA	36V	0.7µA	30ppm/°C	3-pin SOT-89 3-pin TO-92	Vref adjustable up to 36V Replaces TL431 and AS431
SPX431L	2.5V	0.5%	1mA - 100mA	20V	0.7µA	30ppm/°C	3-pin TO-92	Vref adjustable up to 20V Replaces TL431 and AS431
		1%					3-pin SOT-89 3-pin TO-92	

Part Number	Vref	Accuracy	Operating Current	Max. Operating Voltage	Iref	Temperature Coefficient	Package	Features
SPX432	1.24V	0.5%	1mA - 80mA	15V	3μA	50ppm/°C	3-pin SOT-23	Vref adjustable to 15V Replaces TLV431 and AS432
		1.0%					3-pin SOT-23 3-pin TO-92	
SPX1431	2.5V	0.4%	1mA - 150mA	36V	0.7μA	30ppm/°C	3-pin SOT-89 8-pin NSOIC	Vref adjustable up to 36V Replaces TL1431
SPX2431	2.5V	0.5% 1%	1mA - 100mA	20V	0.7μA	30ppm/°C	3-pin SOT-23	Vref adjustable up to 20V Replaces TL2431 and AS2431

SYSTEM CONTROLS :: Power Switches

Power switches provide low loss, high efficiency power management, monitoring and fault handling capabilities to any power distribution network. Usage of these compact devices results in safer, more stable and more reliable interconnecting systems.

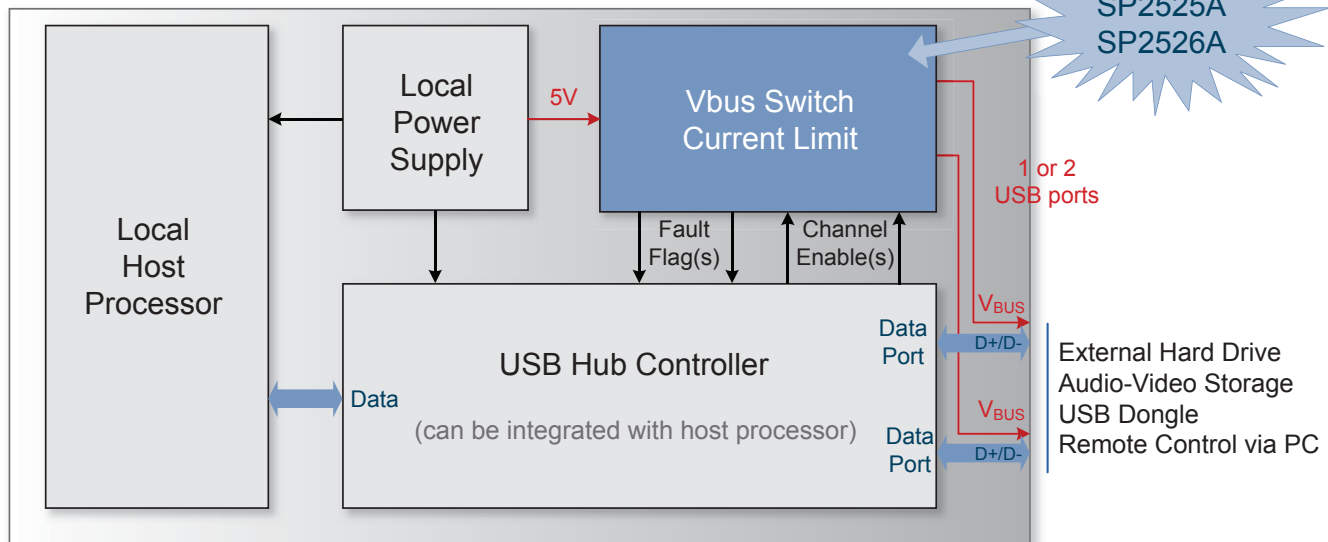
Applications

- USB 2.0 VBUS Power Management
- Set-top Boxes
- DVRs & DVD Players
- USB Peripherals
- Battery Charger Circuits

Part Number	Channel(s)	Output Current	Current Limit	Operating Voltage		Quiescent Current	Package	Features
				Min.	Max.			
SP2525A	1	500mA	850mA	3.0V	5.5V	75μA	8-pin NSOIC	Active High or Low Enable Pin(s) Current Limiting Fault Flag Indicator(s) Over-Temperature Protection Under Voltage Lock Out Protection
SP2526A	2	500mA	850mA	3.0V	5.5V	110μA	8-pin NSOIC	Active High or Low Enable Pin(s) Current Limiting Fault Flag Indicator(s) Over-Temperature Protection Under Voltage Lock Out Protection
SP619	1	600mA	800mA	2.5V	5.5V	350μA	6-pin SOT-23	Active High Enable Pin Current Limiting Short Circuit Protection Over-Temperature Protection



Self Powered Hub Architecture



Set-top Boxes / PVRs / DVD Players...

SYSTEM CONTROLS :: Supervisors

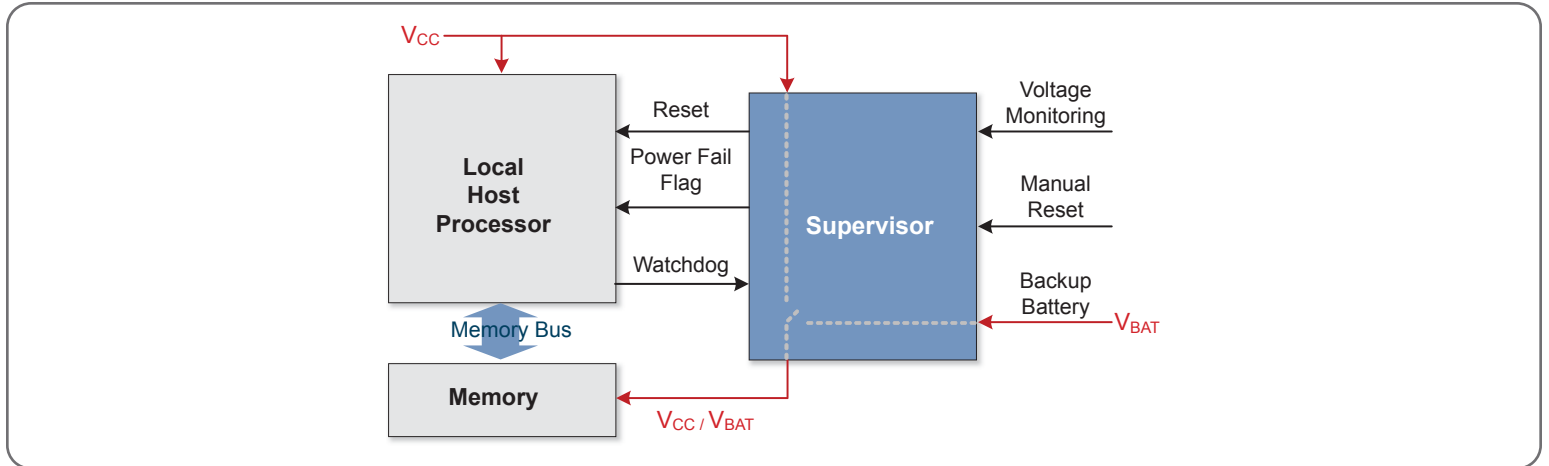
Supervisory circuits ensure safe operating conditions for microprocessor and memory based systems. By monitoring one or more system supplies, supervisory circuit provides basic protection such as power-on reset as well as fault monitoring during power-up, power down and under voltage (brownout) conditions. Additional functions may typically include a watchdog timer, a manual reset and battery backup supply switching.

Applications

- Mother Boards
- Telecom and Datacom Equipment
- Medical and Industrial Instrumentations

Part Number	Channel(s)	Reset Threshold	Reset Accuracy	Reset Active	Operating Voltage		Quiescent Current	Package	Efficiency
					Min.	Max.			
SP690A	1	4.65V	125mV	Low	1V	5.5V	35µA	8-pin NSOIC 8-pin PDIP	Watchdog timer Back-up battery switchover Power Fail-Low Battery Indicator
SP690S	1	2.925V	75mV	Low	1V	5.5V	25µA	8-pin NSOIC	Watchdog timer Back-up battery switchover Power Fail-Low Battery Indicator
SP690T	1	3.075V	75mV	Low	1V	5.5V	25µA	8-pin NSOIC	Watchdog timer Back-up battery switchover Power Fail-Low Battery Indicator
SP691	1	4.65V	125mV	Low/ High	1V	5.5V	35µA	16-pin NSOIC 16-pin PDIP 16-pin WSOIC	Programmable Watchdog timer Back-up battery switchover Power Fail-Low Battery Indicator Chip Enable gating
SP705	1	4.65V	150mV	Low	1.1V	5.5V	40µA	8-pin NSOIC 8-pin MSOP	Watchdog timer Power Fail-Low Battery Indicator Manual Reset
SP706	1	4.40V	150mV	Low	1.1V	5.5V	40µA	8-pin NSOIC 8-pin MSOP	Watchdog timer Power Fail-Low Battery Indicator Manual Reset
SP706R	1	2.63V	80mV	Low	1.1V	5.5V	25µA	8-pin NSOIC 8-pin MSOP	Watchdog timer Power Fail-Low Battery Indicator Manual Reset
SP706S	1	2.93V	80mV	Low	1.1V	5.5V	25µA	8-pin NSOIC 8-pin MSOP	Watchdog timer Power Fail-Low Battery Indicator Manual Reset
SP706T	1	3.08V	80mV	Low	1.1V	5.5V	25µA	8-pin NSOIC 8-pin MSOP	Watchdog timer Power Fail-Low Battery Indicator Manual Reset
SP707	1	4.65V	150mV	Low/ High	1.1V	5.5V	40µA	8-pin NSOIC 8-pin MSOP	Power Fail-Low Battery Indicator Manual Reset
SP708	1	4.40V	150mV	Low/ High	1.1V	5.5V	40µA	8-pin NSOIC	Power Fail-Low Battery Indicator Manual Reset
SP708R	1	2.63V	80mV	Low/ High	1.1V	5.5V	25µA	8-pin NSOIC	Power Fail-Low Battery Indicator Manual Reset
SP708S	1	2.93V	80mV	Low/ High	1.1V	5.5V	25µA	8-pin NSOIC 8-pin MSOP	Power Fail-Low Battery Indicator Manual Reset
SP708T	1	3.08V	80mV	Low/ High	1.1V	5.5V	25µA	8-pin NSOIC	Power Fail-Low Battery Indicator Manual Reset
SP791	1	4.65V	150mV	High	1V	5.5V	40µA	16-pin NSOIC	Programmable Watchdog timer Back-up battery switchover Power Fail-Low Battery Indicator Chip Enable gating Manual Reset
SP809	1	2.3V, 2.6V, 2.9V, 3.1V, 4.6V	1.50%	Low	0.9V	6V	1µA	3-pin SOT23	140ms Reset pulse Width Push-pull output
SP809N	1	2.3V, 2.9V, 3.1V, 4.6V	1.50%	Low	0.9V	6V	1µA	3-pin SOT23	140ms Reset pulse Width Open Drain output

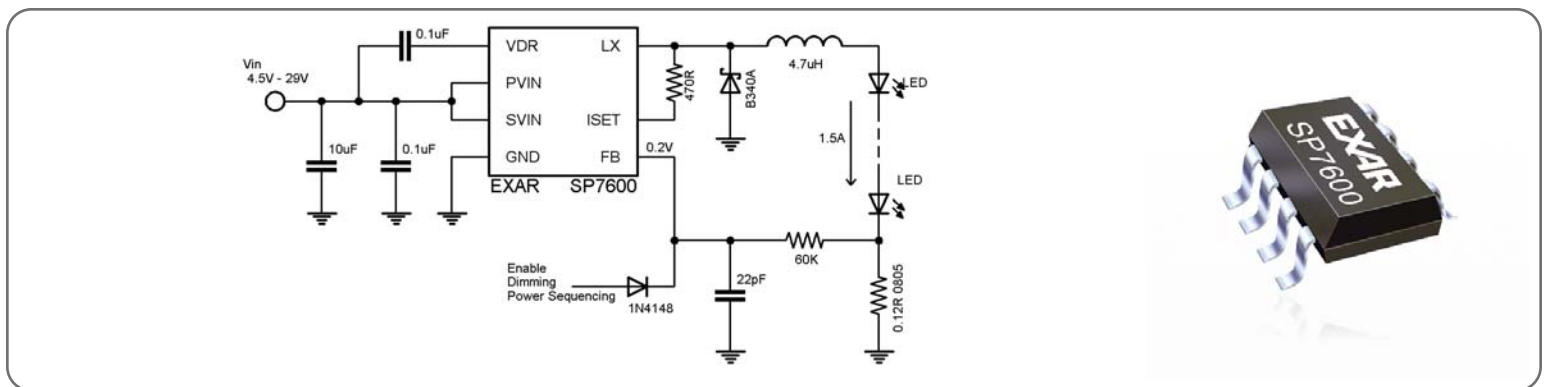
Part Number	Channel(s)	Reset Threshold	Reset Accuracy	Reset Active	Operating Voltage		Quiescent Current	Package	Efficiency
					Min.	Max.			
SP810	1	2.6V, 4.4V	1.50%	High	0.9V	6V	1µA	3-pin SOT23	140ms Reset pulse Width
SP813	1	4.65V	150mV	High	1.1V	5.5V	40µA	8-pin NSOIC 8-pin PDIP	Watchdog timer Manual Reset
SP6336	3	3.075V-1.110V 0.5V	2%	Low	0.9V	5.5V	20µA	8-pin TSOT	Watchdog timer Manual Reset
SP6330	4	2.925V-1.575V 0.5V-0.5V 3.075V-2.313V 0.5V-0.5V	2%	Low	0.9V	5.5V	20µA	8-pin TSOT	Watchdog timer Manual Reset



LED LIGHTING :: Step-down Regulators

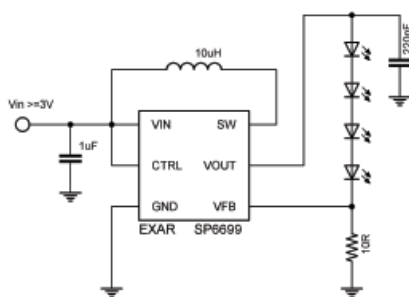
Part Number	Ch.	Max. Current per Ch.	LEDs per Ch.	Frequency	Operating Voltage		Reference Voltage	Package	Application	Features
					Min.	Max.				
XRP7603*	1	0.5A	6	1.2MHz	4.5V	29V	200mV	8-pin SOIC	High Power LED	Non Synchronous PWM On/Off Mode - PWM Dimming Internal Compensation - Soft Start Over current protection Pin compatible with XRP7604 and SP7600
XRP7604*	1	1A	6	1.2MHz	4.5V	29V	200mV	8-pin SOIC	High Power LED	Non Synchronous PWM On/Off Mode - PWM Dimming Internal Compensation - Soft Start Over current protection Pin compatible with XRP7603 and SP7600
SP7600	1	2A	6	1.2MHz	4.5V	29V	200mV	8-pin SOIC	High Power LED	Non Synchronous PWM On/Off Mode - PWM Dimming Internal Compensation - Soft Start Over current protection Pin compatible with XRP7604 and XRP7603

*coming soon



LED LIGHTING :: Step-up Regulators

Part Number	Ch.	Max. Current per Ch.	LEDs per Ch.	Operating Voltage		Ref. Voltage	Output Voltage	Max. Output Voltage	Quiescent Current	Efficiency	Package	Application	Features
				Min.	Max.								
SP6699	1	20mA	6	2.5V	16V	200mV	Adj.	27V	3.2µA	84%	6-pin SOT-23	Backlight	Integrated Schottky diode Enable Pin - PWM diming Soft Start
SP6690	1	25mA	7	1.0V	13.5V	1.22V	Adj.	30V	20µA	75%	8-pin DFN 5-pin SOT-23	Backlight	Enable Pin
SP6691	1	60mA	6	1.0V	13.5V	1.22V	Adj.	30V	20µA	75%	5-pin TSOT 5-pin SOT-23	Backlight	Enable Pin
SP6887	4	30mA	1	2.7V	5.5V	1.23V	n/a	n/a	600µA	90%	16-pin TQFN	Backlight	Charge Pump Topology Enable Pin - PWM diming Programmable LED current 3-bit interface



LED LIGHTING :: Step-up/down Regulators

Part Number	Ch.	Max. Current per Ch.	LEDs per Ch.	Operating Voltage		Ref. Voltage	Freq.	Quiescent Current	Efficiency	Package	Application	Features
				Min.	Max.							
SP6686	1	400mA	1	2.7V	5.5V	50mV	2400KHz	500µA	94%	10-pin DFN	Flash	Charge Pump Topology Enable Pin - Flash/Torch Mode Adjustable Flash Current - Soft Start Overvoltage, over current and temperature protection
SP7686	1	Prog. <500mA	1	2.7V	5.5V	60mV	2400KHz	300µA	94%	8-pin DFN	Flash	Charge Pump Topology Single Wire interface Soft Start - Flash Timeout Protection Overvoltage, over current and temperature protection
SP7686A	1	500mA	1	2.7V	5.5V	50mV	2400KHz	300µA	94%	8-pin DFN	Flash	Charge Pump Topology Enable Pin - Flash/Torch Mode Adjustable Flash Current - Soft Start Flash Timeout Protection Overvoltage, over current and temperature protection
SP6685	1	700mA	1	2.7V	5.5V	50mV	2400KHz	500µA	94%	10-pin DFN	Flash	Charge Pump Topology Enable Pin - Flash/Torch Mode Adjustable Flash Current - Soft Start Overvoltage, over current and temperature protection
SP7685	1	1200mA	1	2.7V	5.5V	50mV	2400KHz	500µA	94%	8-pin DFN	Flash	Charge Pump Topology Enable Pin - Flash/Torch Mode Adjustable Flash Current - Soft Start Flash Timeout Protection Overvoltage, over current and temperature protection

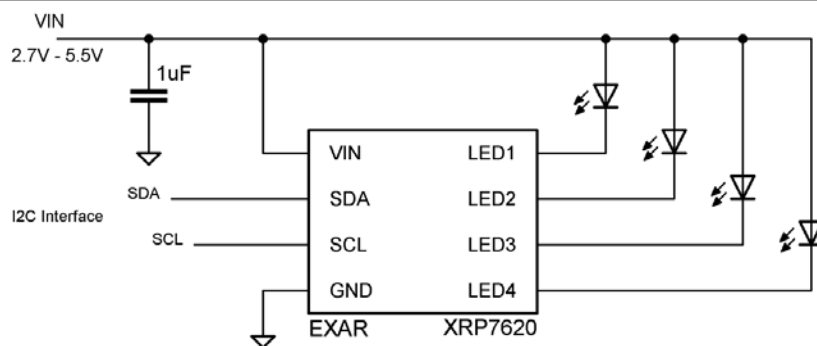
LED LIGHTING :: Step-down Controllers

Part Number	Rec. Ouput Current	Frequency	Operating Voltage		Reference Voltage	Package	Application	Features
			Min.	Max.				
SP7601	<4A	1.2MHz	4.5V	29V	200mV	6-pin TSOT	High Power LED	Non Synchronous PWM On/Off mode - PWM diming Adjustable over current protection

LED LIGHTING :: Current Drivers

Part Number	Ch.	Max. Current per Ch.	LEDs per Ch.	Operating Voltage		Dropout Voltage	Ch./Ch. Accuracy	Control Interface	Package	Application	Features
				Min.	Max.						
SP7619	1	200/500mA	1	2.5V	5.5V	60mV	n/a	TTL	8-pin DFN	Flash	Enable pin - PWM Diming Programmable torch/flash mode Over Temperature and flash timeout protection
SP7120	2	20mA	1	2.7V	5.5V	160mV	0.8%	TTL	6-pin SOT23	General	High Side Current Driver Enable Pin - PWM Diming
SP7121	2	25mA	1	2.7V	5.5V	135mV	0.2%	TTL	6-pin SOT23	General	High Side Current Driver Enable Pin - PWM Diming Programmable LED current
SP7614A	2	80mA	1	2.7V	5.5V	150mV	0.8%	TTL	6-pin SC-70 6-pin TDFN	General	Low Side Current Driver Programmable LED Current Enable Pin - Analog and PWM Diming
SP7122	3	15/20mA	1	2.7V	5.5V	160mV	0.8%	TTL	6-pin SOT23	General	High Side Current Driver Enable Pin - PWM Diming
SP7612A	3	40mA	1	2.7V	5.5V	300mV	0.8%	TTL	6-pin SC-70	General	Low Side Current Driver Programmable LED Current Enable Pin - Analog and PWM Diming
XRP7620*	4	31.5mA	1	2.5V	5.5V	100mV	2.0%	I2C	8-pin DFN	General	WRGB Application Independent channel current programming Over temperature protection
SP7611	4	40mA	1	2.7V	5.5V	300mV	0.8%	TTL	6-pin SC-70 6-pin TDFN	General	Low Side Current Driver Programmable LED Current
SP7616	4	60mA	9	4.5V	30V	200mV	1.5%	TTL	8-pin DFN	Backlight	Programmable LED Current Analog and PWM Diming Over temperature protection
XRP7617*	8	30mA	9	5.5V	30V	500mV	0.5%	ST	16-pin QFN	Backlight	Enable Pin - PWM Diming Programmable LED Current Smart Talk power optimization Open LED and Over temp/current Flags Use with XRP7607 Controller

*coming soon





NORTH AMERICA

Exar Corporation, Fremont, CA, USA
Exar Corporation, Palatine, IL, USA
Exar Corporation, Billerica, MA, USA
Exar Corporation, Raleigh, NC, USA
Exar Corporation, Center Valley, PA, USA
Exar Corporation, Dallas, TX, USA
Exar Corporation, Atlanta, GA, USA
Exar IC Canada Corporation, Montreal, Quebec, Canada

EUROPE

Exar SARL, Paris, France
Exar GmbH, Munich, Germany
Exar Ltd, London, United Kingdom
Exar SRL, Milano, Italy

JAPAN

Exar Japan Corporation, Tokyo, Japan

ASIA PACIFIC

Exar Corporation Beijing Representative Office, Beijing, China
Exar Corporation Shanghai Representative Office, Shanghai, China
Exar Corporation Shenzhen Representative Office, Shenzhen, China
Exar Korea Co. Ltd., Seoul, Korea
Exar Pte Ltd., Singapore
Exar Corporation Taiwan Branch Office, Taipei, Taiwan

www.exar.com