



Power Management

Power Conversion

- Switching Regulators
- Switching Controllers
- LDOs & Regulators

System Controls

- Power Switches
- Voltage References
- Supervisors

LED Lighting

- Regulators
- Controllers
- Current Drivers

Programmable Power^{XR}

- Digital Switching Controllers

2011

www.exar.com

STATE OF THE ART POWER SOLUTIONS

A world leader in power management technologies, Exar Corporation provides innovative power management solutions that simplify the power and system architecture in a wide variety of end markets for both line and battery-powered electronic equipment. These solutions are particularly suitable for audio-video equipment, home gateways, networking equipment and medical and industrial instruments.

From DC to DC general purpose point-of-load (PoL) power conversion to system controls and power monitoring solutions, Exar's power management portfolio offers a broad range of technologies capable of supporting numerous architectures. A specific products segment also targets the emerging LED lighting applications for display and keyboard backlighting, portable equipment flash and torch functions as well as architectural and accent high power LED lighting.

With over 40 years of analog and mixed-signal expertise, Exar's power solutions are trusted everyday to provide an unprecedented combination of high efficiency, high performance, board space optimization and improved system reliability while reducing costs and time to market.

POWER MANAGEMENT PORTFOLIO

POWER CONVERSION

- **Switching Regulators**

Step-down, PowerBlox™, Step-up

- **Switching Controllers**

Step-down

- **Linear LDOs and Voltage Regulators**

Up to 5A, Single/Dual

LED LIGHTING

- **Step-up/-down Regulators**

- **Step-down Controllers**

- **SuperCapacitor Charger/Drivers**

- **Linear Current Drivers**

SYSTEM CONTROLS

- **Linear Voltage References**

Precise and Stable References

- **Supervisors**

1V to 5V System Monitors

- **Power Switches**

Single/Dual USB/Programmable Current Switches

POWER^{XR}

- **Digital Switching Controllers**

Multi Channel Step Down Controllers

POWER MANAGEMENT PORTFOLIO

Power Conversion

Exar offers a complete family of DC to DC power conversion products for Point-of-Load (PoL) converters from linear LDOs and regulators to high-performance switching regulators and controllers covering applications with currents ranging from a few mA to 30A. These products provide a complete power management solution for non isolated point of load converters operating from an intermediate bus in various distributed power architectures.

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.

System Controls

Power delivery and control functions insure electronic systems and equipment operate at the anticipated performance level and within the required safety margins. While stable voltage references guarantee accurate power generation, system supervisors monitor one or several voltage rails for abnormal operations. Power switches are key elements of power distribution providing on/off functionalities along insuring over current protection for the equipment and peripheral systems.

LED Lighting

Efficiency, performance, size and reliability are rapidly imposing LEDs as the lighting solution of choice in space constrained portable electronic equipment as well as in architectural and accent lighting fixtures. Exar's LED lighting

products offers compact and efficient solutions for line and battery-operated devices and are capable of driving multiple LEDs in various series or parallel topologies.

The XRP7603, XRP7604 and SP7600 are Exar's dedicated step down switching regulators for driving high Power LEDs in architectural, ambient and MR16 lighting applications. 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.

The XRP6840 is the industry's highest Intensity LED Flash driver and constant current dual-cell supercapacitor charger. With an I2C based programmable 4.3A Flash LED current, it provides all the function to manage and drive high brightness LEDs in portable equipment using the emerging supercapacitor technology.

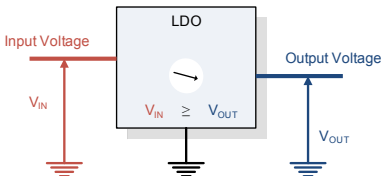
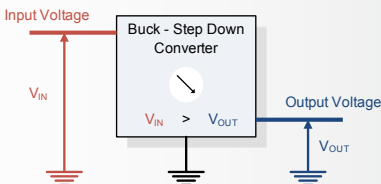
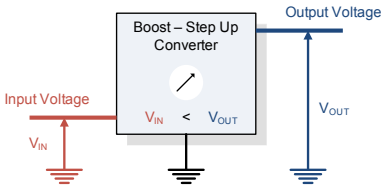
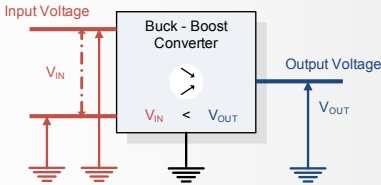
The XRP7618 is an 8-channel constant-current LED driver capable of up to 100mA current per channel. Controlling strings of multiple LEDs with excellent accuracy, the XRP7618 can be paralleled to provide a performing backlighting solution for display and panels 10 inches and above.

Power^{XR}

Exar's Power^{XR} family of highly (re)configurable multi channel digital power step down PWM controllers more intelligently manages today's high performance power systems with independent digital control loops. These controllers are fully addressable and configurable via an I²C interface for monitoring, control and management of DC to DC point-of-load power conversions.

An Exar Solution for Each Conversion Stage

Electronic systems include one or more power conversion stages. From a simple direct connection to a battery to more elaborate inter-connections, each power conversion stage is characterized by a few key parameters. The most important ones are 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.

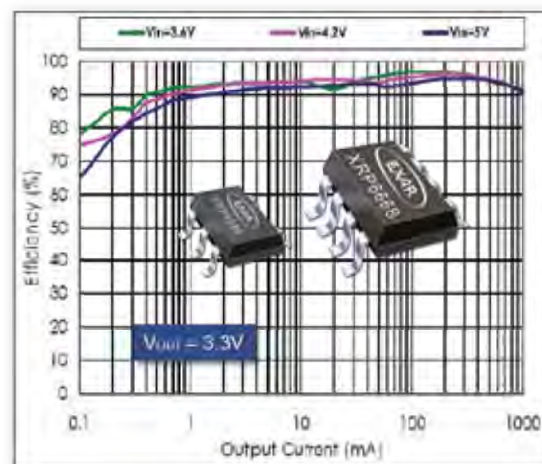
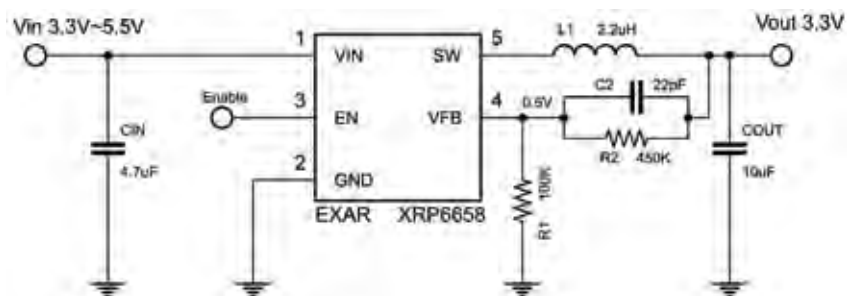
$V_{IN} \sim V_{OUT}$ Converts an input voltage to an output voltage of slightly lesser voltage.		$V_{IN} < 30V$ & $I_{OUT} < 5A$ ▶ LDO Regulators	80% of Applications
$V_{IN} > V_{OUT}$ Converts an input voltage to an output voltage of lesser voltage.		$V_{IN} < 5.5V$ & $I_{OUT} < 1.5A$ ▶ Step-down Regulators $V_{IN} < 29V$ & $I_{OUT} < 12A$ ▶ PowerBlox™ $V_{IN} < 30V$ & $I_{OUT} < 30A$ ▶ Step-down Controllers	
$V_{IN} < V_{OUT}$ Converts an input voltage to an output voltage of greater voltage.		$V_{IN} < 13V$ & $I_{OUT} < 500mA$ ▶ Step-up Regulators	
$V_{IN} < V_{OUT} < V_{IN}$ Converts an input voltage to an output voltage of lesser or greater voltage.		$V_{IN} < 5.5V$ & $I_{OUT} < 1.2A$ ▶ Step-up/-down Regulators	10%

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, DSPs and Processor Power Supplies

Part Number	Ch.	Output Current	Frequency Mode	Operating Voltage		Output Voltage	Output Voltage Range		Quiescent Current	Efficiency	Package	Features
				Min.	Max.		Min.	Max.				
SP6655	1	400mA	PFM	2.7V	5.5V	Adj.	1.0V	27V	20μA	98%	DFN-10	Synchronous Enable pin Low battery detection Adj. UVLO - over temperature protection
SP6656	1	400mA	PFM	2.7V	5.5V	Adj.	1.0V	28V	20μA	98%	DFN-10	Synchronous Enable pin Dual output voltage selectable UVLO - over temperature protection
SP6650	1	600mA	PFM	2.7V	6.5V	Adj.	1.25V	20.2V	70μA	95%	MSOP-10	Synchronous Enable pin Low battery detection UVLO - over temperature protection
SP6669	1	600mA	1.5MHZ	2.5V	5.5V	Adj.	0.6V	5.5V	200μA	95%	SOT-23-5	Synchronous Enable pin Pulse skipping at light load Over temperature protection
						Fixed	1.2V, 1.5V, 1.8V					
SP6651	1	800mA	PFM	2.7V	5.5V	Adj.	1.0V	5V	20μA	98%	MSOP-10 DFN-10	Synchronous Enable pin Low battery detection Adjustable UVLO - over temperature protection
SP6654	1	800mA	PFM	2.7V	5.5V	Adj.	0.8V	5V	20μA	98%	MSOP-10 DFN-10	Synchronous Enable pin Power good indicator Adjustable UVLO - over temperature protection
SP6652	1	1A	1.4MHz	2.7V	5.5V	Adj.	0.75V	5V	1mA	97%	MSOP-10 DFN-10	Synchronous Enable Pin - soft start External clock synchronization Over current and over temperature protection
XRP6658	1	1A	1.5MHZ	2.5V	5.5V	Adj.	0.6V	5Vt	15μA	97%	SOT-23-5	Synchronous Light load efficiency - PFM and PWM mode Enable pin UVLO and over temperature protection
XRP6657	1	1.5A	1.3MHZ	2.5V	5.5V	Adj.	0.6V	5V	240μA	95%	DFN-6	Synchronous Enable pin Pulse skipping at light load Over temperature protection
SP34063	1	Adj. <1.5A	110KHz	3V	36V	Adj.	1.0V	27V	20μA	80%	NSOIC-8	Can be implemented in Buck, Boost or Inverting topologies
XRP6668	2	1A/1A	1.5MHz	2.5V	5.5V	Adj.	0.6V	5V	30μA	97%	NSOIC-8	Synchronous Light load efficiency - PFM and PWM mode Individual enable pin UVLO and over temperature protection



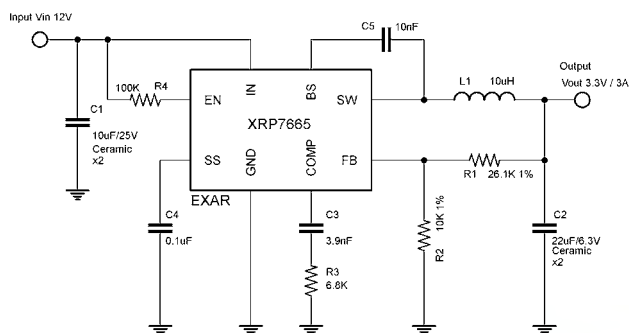
PowerBlox™ family of synchronous and non synchronous step-down regulators provides a fully integrated single chip solution for point-of-load applications with high current output requirements. The high input voltage range and operating switching frequency options allow the PowerBlox™ family to fit in 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.

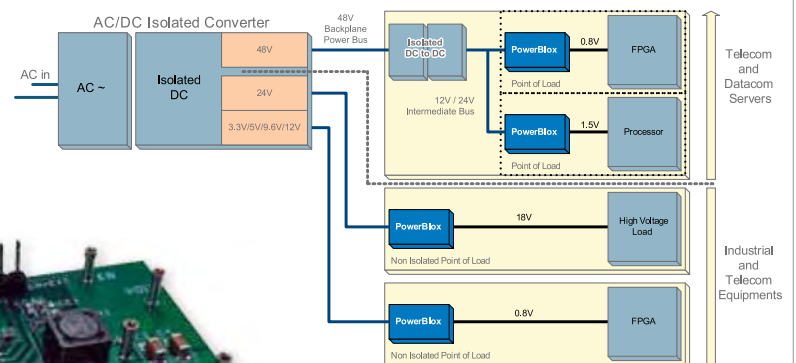
Applications

- 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.				
XRP7657	2A	420KHz	4.75V	25V	Adj.	0.8V	21V	2.0%	94%	SOIC-8	Non synchronous Enable Pin, softstart External compensation
XRP7664	2A	340KHz	4.75V	18V	Adj.	0.925V	16V	2.7%	93%	SOIC-8	Synchronous UVLO, OTP, soft start Over current and output over voltage protections
XRP7665	3A	340KHz	4.75V	18V	Adj.	0.925V	16V	2.7%	93%	SOIC-8	Synchronous UVLO, OTP, soft start Over current and output over voltage protections
SP7650	3A	300KHz	2.5V	28V	Adj.	0.8V	27V	1.0%	95%	DFN-26	Synchronous UVLO, OTP, soft start Short circuit protection/auto restart
SP7656	3A	600KHz	4.5V	29V	Adj.	0.6V	28V	1.0%	89%	SOIC-8	Non synchronous UVLO, current limiting, soft start Internal compensation
SP7661	3A	600KHz	3.0V	22V	Adj.	0.8V	20.2V	1.0%	92%	DFN-26	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%	DFN-26	Synchronous UVLO, OTP, soft start Short circuit protection/auto restart
SP7653	3A	1300KHz	2.5V	20V	Adj.	0.8V	19V	1.0%	91%	DFN-26	Synchronous UVLO, OTP, soft start Short circuit protection/auto restart
SP7652	6A	600KHz	2.5V	28V	Adj.	0.8V	27V	1.0%	92%	DFN-26	Synchronous UVLO, OTP, soft start Short circuit protection/auto restart
SP7663	6A	600KHz	3.0V	22V	Adj.	0.8V	20.2V	1.0%	91%	DFN-26	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%	DFN-26	Synchronous UVLO, OTP, soft start Short circuit protection/auto restart
SP7662	12A	300KHz	3.0V	22V	Adj.	0.8V	20.2V	1.0%	93%	DFN-26	Synchronous UVLO, OTP, soft start, current limiting Short circuit protection/auto restart



Distributed Power Architecture



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 equipment where the power supply is provided by a battery.

Applications

- Handheld & Portable Equipment

Part Number	Output Current	Operating Voltage		Startup Voltage	Output Voltage	Output Voltage Range		Quiescent Current	Efficiency	Package	Features
		Min.	Max.			Min.	Max.				
SP6641A	190mA	0.5V	4.5V	0.85V	Fixed	3.3V		10µA	87%	SOT-23-5	Non synchronous Enable pin Current limiting
					Fixed	5V					
SP6644	190mA	0.82V	3.3V	0.82V	Adj.	2.0V	5.5V	1.6µ A	92%	MSOP-8	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%	MSOP-10 DFN-10	Synchronous Enable pin Programmable low battery detection Under voltage lockout protection
SP6641B	500mA	0.5V	4.5V	0.85V	Fixed	3.3V		10µA	87%	SOT-23-5	Non synchronous Enable pin Current limiting
					Fixed	5V					
SP34063	Adj. <1.5A	3.0V	36V	n/a	Adj.	1.0V	27V	20µA	80%	NSOIC-8	Can be implemented in buck, boost or inverting topologies
SP6660	200mA	1.5V	4.25V	n/a	Inverter	-4.25V	-1.5V	10KHz/ 80KHz	92%	SOIC-8	Charge pump topology Selectable oscillator External oscillator Input
					Doubler	3.0V	8.0V		96%		
SP6661	200mA	1.5V	5.3V	n/a	Inverter	-5V	-1.5V	120KHz 900KHz	89%	SOIC-8 MSOP-8	Charge pump topology Selectable oscillator External oscillator Input
		2.5V	5.3V		Doubler	5.0V	10.0V		94%		

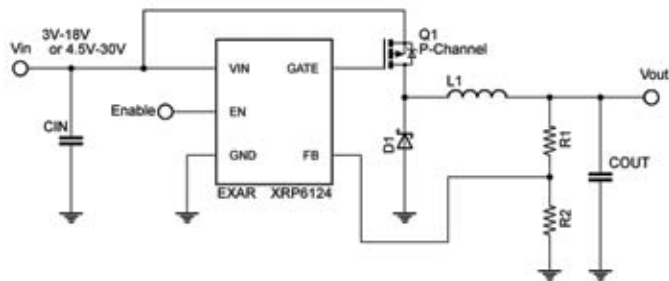
POWER CONVERSION → SWITCHING CONTROLLERS → Step-down Controllers

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.						
SP6136	<15A	3.0V	24V	0.8V	1.5mA	600KHz	92%	QFN-16	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%	MSOP-10	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%	TSSOP-14	Synchronous voltage mode PWM Soft-start - On/off mode UVLO and over current protection
SP6127	<2A	4.5V	29V	0.6V	300µA	900KHz	95%	TSOT-23-6	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%	NSOIC-8	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%	NSOIC-8	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%	TSSOP-16	Synchronous voltage mode PWM Enable pin - high side N or P FET capable Programmable frequency Soft-start - UVLO and over-current protection
XRP6142	<20A	1V	5.5V	0.5V	400µA	500KHz- 1MHz	96%	QFN-16	Constant on-time architecture 0.5µs, 1.0µs and 2.0µs options No external compensation - DDR Memory support
XRP6124	<5A	3V	30V	1.2V	500µA	200KHz- 1MHz	92%	SOT-23-5	Non synchronous, 500ns Constant on time Enable pin - Soft-start UVLO and output short circuit protections



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.

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.

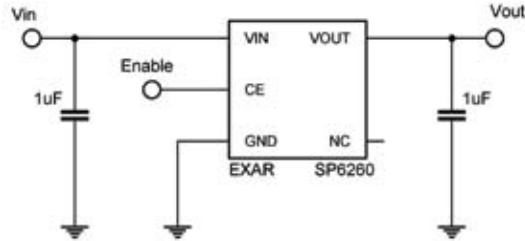
Applications

- Portable Equipment
- Handheld Devices
- Mobile Phones & PDAs
- Medical and Instrument

Single Channel									
Part Number	Output Current	Output Voltage	Accuracy	Dropout Voltage	Operating Voltage		Quiescent Current	Package	Features
					Min.	Max.			
SP6213	100mA	1.8V, 2.5V, 2.85V, 3.0V, 3.3V	2.5%	250mV	2.5V	6V	65µA	SC-70-5	Enable pin Current limiting and thermal protection
SP6214	100mA	1.8V, 2.85V, 3.0V, 3.3V	2.5%	250mV	2.5V	6V	65µA	SC-70-5	Enable pin Current limiting and thermal protection
SP6200	100mA	3.0V	2%	160mV	2.5V	6V	28µA	SOT-23-5	Enable pin Power good indicator
LP2950	100mA	3.3V, 5.0V	0.5%, 1%	380mV	3.7V	30V	150µA	TO-92-3	Current limiting and thermal protection
LP2951	100mA	3.3V, 5.0V	1%	380mV	3.7V	30V	150µA	NSOIC-8	Enable pin Output error flag indicator Current limiting and thermal protection
SPX5205	150mA	Adj., 1.2V, 1.8V, 2.5V, 3.0V, 3.3V, 5.0V	1%	210mV	2.5V	16V	70µA	SOT-23-5	Reverse battery protection Current limiting and thermal protection
SPX2951	150mA	5.0V	0.5%	300mV	5.3V	30V	150µA	NSOIC-8	Enable pin Output error flag indicator Current limiting and thermal protection
SP6260	200mA	1.2V, 1.5V, 1.8V, 2.5V, 2.8V, 3.0V, 3.2V, 3.3V	2%	200mV	2V	6V	25µA	SOT-23-5	Low noise: 30µVrms - no bypass cap needed Enable pin 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	SOT-23-5	Enable pin Power good indicator
		Adj., 1.8V, 3.3V						DFN-8	Enable pin Power good indicator (fixed voltage version)
SPX2954	250mA	5.0V	0.5%	310mV	3.6V	30V	150µA	NSOIC-8 SOT-223-3	Enable pin Output error flag indicator Current limiting and thermal protection
		3.3V, 5.0V	1.0%					NSOIC-8 SOT-223-3	
SP6203	300mA	Adj., 2.5V, 2.8V, 2.85V, 3.0V, 3.3V	2%	180mV	2.7V	6V	45µA	SOT-23-5	Low noise: 12µVrms (fixed voltage version) Enable pin Current limiting and thermal protection
		Adj., 1.8V						DFN-8	
SPX1521	300mA	3.3V, 5.0V	1%	300mV	3.6V	20V	100µA	SOT-223-3	Reverse battery protection Current limiting and thermal protection
SPX2945	400mA	3.3V, 5.0V	1%	420mV	3.7V	26V	100µA	SOT-223-3	Enable pin Output error flag indicator Current limiting and thermal protection

Single Channel									
Part Number	Output Current	Output Voltage	Accuracy	Dropout Voltage	Operating Voltage		Quiescent Current	Package	Features
					Min.	Max.			
SP6205	500mA	Adj., 2.5V, 2.8V, 2.85V, 3.0V, 3.3V	2%	300mV	2.7V	6V	45µA	SOT-23-5	Low noise: 12µVrms (fixed voltage version) Enable pin Current limiting Over temperature protection
		Adj., 2.5V						DFN-8	
SPX3819	500mA	Adj., 1.2V, 1.5V, 1.8V, 2.5V, 3.0V, 3.3V, 5.0V	1%	340mV	2.5V	16V	90µA	SOT-23-5	Enable pin Reverse battery protection Current limiting and thermal protection
		Adj., 1.2V, 1.8V						DFN-8	
		Adj., 1.2V, 1.5V, 1.8V, 2.5V, 3.3V, 5.0V						NSOIC-8	
SPX1117	800mA	Adj., 1.5V, 1.8V, 2.5V, 3.3V, 5.0V	1%	1.1V	2.63V	20V	5mA	SOT-223-3	Current limiting and thermal protection
		Adj., 3.3V						TO-262-3	
SPX2940	1A	5.0V	3%	280mV	5.3V	16V	12mA	TO-263-3 TO-220-3	Reverse battery protection Current limiting and thermal protection
SPX2941	1A	Adj.	3%	280mV	2.5V	16V	12mA	TO-263-5	Enable pin Reverse battery protection Current limiting and thermal protection
SPX3940	1A	1.8V, 2.5V, 3.3V, 5.0V	1%	280mV	2.5V	16V	12mA	SOT-223-3	Reverse battery protection Current limiting and thermal protection
		1.8V, 3.3V, 5.0V						TO-263-3	
		2.5V, 3.3V, 5.0V	2%					SOT-223-3	
		3.3V, 5.0V						TO-263-3	
SP1086	1.5A	3.3V	1%	1.3V	2.5V	15V	5mA	TO-263-3	Current limiting and thermal protection
SPX1583	1.5A	Adj.	2%	400mV	2.5V	6V	5mA	TO-263-5	Enable pin External sense pin Current limiting and thermal protection
SPX2815	1.5A	Adj., 3.3V	1%	1.1V	2.5V	10V	4mA	TO-263-3	Current limiting and thermal protection
		Adj.						TO-252-3	
SPX29150	1.5A	1.8V, 2.5V	1%	390mV	2.5V	16V	12mA	TO-263-3	Reverse battery protection Current limiting and thermal protection
SPX29151	1.5A	1.8V, 2.5V, 5.0V	1%	390mV	2.5V	16V	12mA	TO-263-5	Enable pin Output error flag indicator Current limiting Current limiting and thermal protection
SPX29152	1.5A	Adj.	1%	390mV	2.5V	16V	12mA	TO-263-5 TO-220-5	Enable pin Current limiting Current limiting and thermal protection
SPX1582	3A	Adj., 2.5V	2%	400mV	2.5V	5.5V	5mA	TO-263-5	Enable pin External sense pin Current limiting and thermal protection
SPX1587	3A	Adj.	1%	1.1V	2.5V	10V	4mA	TO-252-3	Current limiting Over temperature protection
		Adj.						TO-220-3	
		Adj., 2.5V, 3.3V						TO-263-3	
		Adj., 1.5V, 5.0V	TO-263-3						
		3.3V, 5.0V	TO-220-3						
SPX29300 XRP29300	3A	1.8V, 2.5V, 3.3V, 5.0V	1%	600mV	2.5V	16V	37mA	TO-263-3	Current limiting and thermal protection Reverse battery protection
SPX29301 XRP29301	3A	3.3V, 5.0V	1%	600mV	4.0V	16V	37mA	TO-263-5	Enable pin Output error flag indicator Current limiting and thermal protection
SPX29302 XRP29302	3A	Adj.	1%	600mV	2.24V	16V	37mA	TO-263-5 TO-220-5	Enable pin Current limiting and thermal protection Reverse battery protection
SPX29501	5A	3.3V, 5.0V	1%	420mV	2.5V	16V	20mA	TO-263-5	Enable pin Output error flag indicator Current limiting and thermal protection Reverse battery protection
SPX29502	5A	Adj.	1%	420mV	2.5V	16V	20mA	TO-263-5 TO-220-5	Enable pin Current limiting and thermal protection Reverse battery protection

Dual Channel									
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 2.85V/2.85V 3.0V/3.0V	2%	300mV	2.8V	4.5V	70μA	TSOT-23-6	Dual enable pins Optional noise reduction bypass capacitor Over current protection Over temperature protection
		1.8V/2.5V 1.8V/2.8V						DFN-8	



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
- DDR I/II Termination

Part Number	Output Current	Output Voltage	Accuracy	Operating Voltage		Quiescent Current	Package	Features
				Min.	Max.			
XRP2997*	2A	Adjustable	20mV	1.1V	5.5V	8µA	NSOIC-8	DDR Bus termination regulator Over temperature protection Over current protection
SP2996	2A	Adjustable	20mV	1.6V	6V	8µA	NSOIC-8	DDR Bus termination regulator Over temperature protection Over current protection
SP317	1A	Adjustable	1%	2.5V	15V	50µA	TO-252-3	Over temperature protection Over current protection
SP7805	1A	5V	5%	7.5V	18V	3.2mA	TO-220-3 TO-252-3	Over temperature protection Short-circuit protection
SP78L05	100mA	5V	5%	7.5V	18V	1.5mA	NSOIC-8	Over temperature protection Short-circuit protection

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

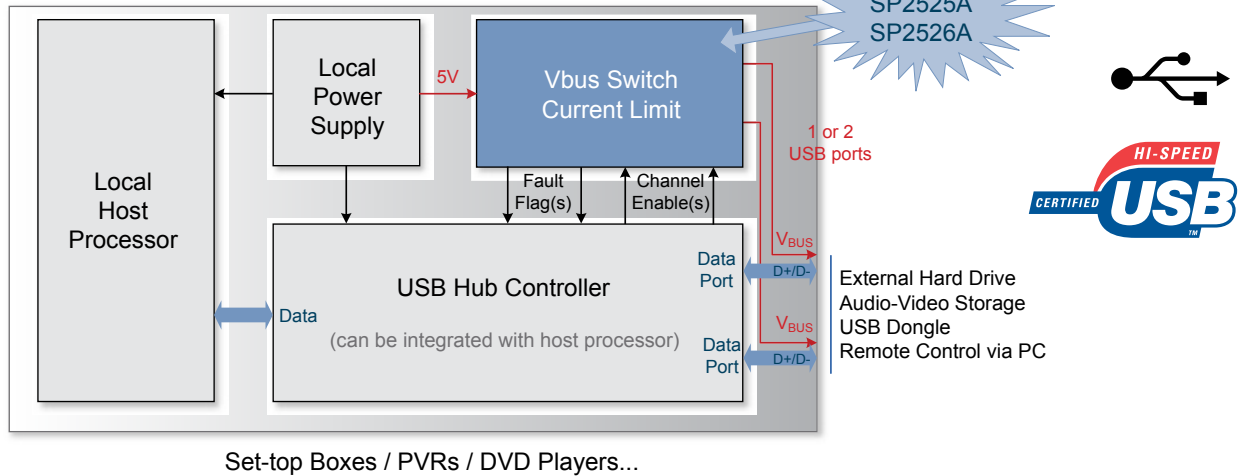
- USB 2.0 V_{BUS} Power Management
- Set-top Boxes
- USB Peripherals
- Battery Charger Circuits

Part Number	Channel(s)	Output Current	Current Limit	Operating Voltage		Quiescent Current	Package	Features
				Min.	Max.			
XRP2527*	1	900mA	Adj.	1.8V	5.5V	65µA	TDFN-8	Active high or low enable pin(s) USB3.0 compliant, Current limiting Blanking fault flag indicator(s) Over temperature/reverse current protections Under voltage lock out protection
XRP2728*	2	900mA	Adj.	1.8V	5.5V	65µA	TDFN-10	
XRP2525*	1	900mA	1.15A	1.8V	5.5V	65µA	NSOIC-8	Active high or low enable pin(s) USB3.0 compliant, Current limiting Blanking fault flag indicator(s) Over temperature/reverse current protections Under voltage lock out protection
XRP2526*	2	900mA	1.15A	1.8V	5.5V	65µA	NSOIC-8	

*coming soon

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	NSOIC-8	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	NSOIC-8	
SP619	1	600mA	800mA	2.5V	5.5V	350µA	SOT-23-6	Active high enable pin Current limiting Short circuit protection Over temperature protection

Self Powered Hub Architecture



SYSTEM CONTROLS → 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 Instruments

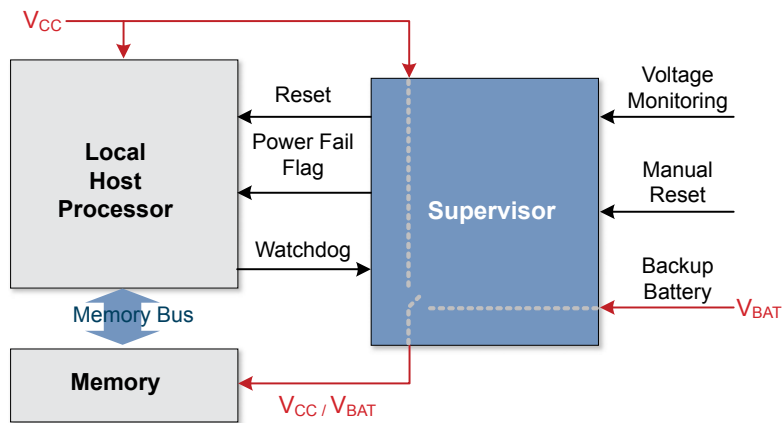
Part Number	Vref	Accuracy	Operating Current	Max. Operating Voltage	Iref	Temperature Coefficient	Package	Features
SPX385	1.235V	1.0%	10µA - 20mA			30ppm/°C	NSOIC-8	Shunt reference Replacement for LM285/385
	2.5V 5.0V						SOT-23-3	
	2.5V	2%					TO-92-3	
SPX431A	2.5V	0.5%	1mA - 150mA	36V	0.7µA	30ppm/°C	SOT-89-3 TO-92-3	Vref adjustable up to 36V Replaces TL431 and AS431
SPX431L	2.5V	0.5%	1mA - 100mA	20V	0.7µA	30ppm/°C	TO-92-3	Vref adjustable up to 20V Replaces TL431 and AS431
		1%					SOT-89-3 TO-92-3	
SPX432	1.24V	0.5%	1mA - 80mA	15V	3µA	50ppm/°C	SOT-23-3	Vref adjustable to 15V Replaces TLV431 and AS432
		1.0%					SOT-23-3 TO-92-3	
SPX1431	2.5V	0.4%	1mA - 150mA	36V	0.7µA	30ppm/°C	SOT-89-3 NSOIC-8	Vref adjustable up to 36V Replaces TL1431
SPX2431	2.5V	0.5% 1%	1mA - 100mA	20V	0.7µA	30ppm/°C	SOT-23-3	Vref adjustable up to 20V Replaces TL2431 and AS2431
XRP431L	1.24V	0.5%	100µA - 100mA	18V	0.15µA	20ppm/°C	SOT-23-5	Vref adjustable up to 18V

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

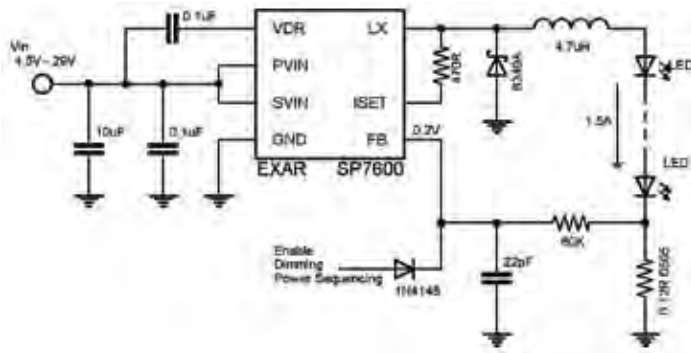
- Mother Boards
- Telecom and Datacom Equipment
- Medical and Industrial Instruments

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	NSOIC-8 PDIP-8	Watchdog timer Back-up battery switchover Power fail-low battery indicator
SP690S	1	2.925V	75mV	Low	1V	5.5V	25µA	NSOIC-8	Watchdog timer Back-up battery switchover Power fail-low battery indicator
SP690T	1	3.075V	75mV	Low	1V	5.5V	25µA	NSOIC-8	Watchdog timer Back-up battery switchover Power fail-low battery indicator
SP691	1	4.65V	125mV	Low/High	1V	5.5V	35µA	NSOIC-16 PDIP-16 WSOIC-16	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	NSOIC-8 MSOP-8	Watchdog timer Power fail-low battery indicator Manual reset
SP706	1	4.40V	150mV	Low	1.1V	5.5V	40µA	NSOIC-8 MSOP-8	Watchdog timer Power fail-low battery indicator Manual reset
SP706R	1	2.63V	80mV	Low	1.1V	5.5V	25µA	NSOIC-8 MSOP	Watchdog timer Power fail-low battery indicator Manual reset
SP706S	1	2.93V	80mV	Low	1.1V	5.5V	25µA	NSOIC-8 MSOP-8	Watchdog timer Power fail-low battery indicator Manual reset
SP706T	1	3.08V	80mV	Low	1.1V	5.5V	25µA	NSOIC-8 MSOP-8	Watchdog timer Power fail-low battery indicator Manual reset
SP707	1	4.65V	150mV	Low/High	1.1V	5.5V	40µA	NSOIC-8 MSOP-8	Power fail-low battery indicator Manual reset
SP708	1	4.40V	150mV	Low/High	1.1V	5.5V	40µA	NSOIC-8	Power fail-low battery indicator Manual reset
SP708R	1	2.63V	80mV	Low/High	1.1V	5.5V	25µA	NSOIC-8	Power fail-low battery indicator Manual reset
SP708S	1	2.93V	80mV	Low/High	1.1V	5.5V	25µA	NSOIC-8 MSOP-8	Power fail-low battery indicator Manual reset
SP708T	1	3.08V	80mV	Low/High	1.1V	5.5V	25µA	NSOIC-8	Power fail-low battery indicator Manual reset
SP791	1	4.65V	150mV	High	1V	5.5V	40µA	NSOIC-16	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	SOT23-3	140ms reset pulse width Push-pull output
SP809N	1	2.3V, 2.9V 3.1V, 4.6V	1.50%	Low	0.9V	6V	1µA	SOT23-3	140ms reset pulse width Open drain output
SP810	1	2.6V, 4.4V	1.50%	High	0.9V	6V	1µA	SOT23-3	140ms reset pulse width
SP813	1	4.65V	150mV	High	1.1V	5.5V	40µA	NSOIC-8 PDIP-8	Watchdog timer Manual reset
SP6336	3	3.075V-1.110V 0.5V	2%	Low	0.9V	5.5V	20µA	TSOT-8	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	TSOT-8	Watchdog timer Manual reset



LED LIGHTING → Step-down Regulators

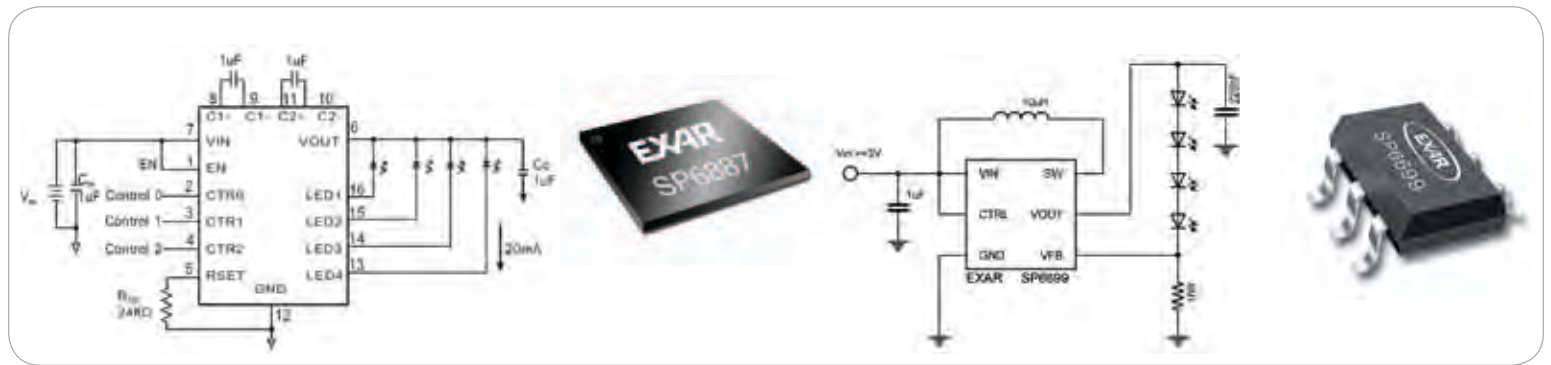
Part Number	Ch.	Max. Current per Ch.	LEDs per Ch.	Frequency	Operating Voltage		Reference Voltage	Package	Application	Features
					Min.	Max.				
XRP7603	1	0.5A	6	1.2MHz	4.5V	29V	200mV	SOIC-8	High Power LED	Non synchronous PWM On/off mode - PWM dimming Internal compensation - soft start Over current protection Pin compatible with XRP7604 and SP7600
XRP7604	1	1A	6	1.2MHz	4.5V	29V	200mV	SOIC-8	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	SOIC-8	High Power LED	Non synchronous PWM On/off mode - PWM dimming Internal compensation - soft start Over current protection Pin compatible with XRP7604 and XRP7603



LED LIGHTING → Step-up Regulators

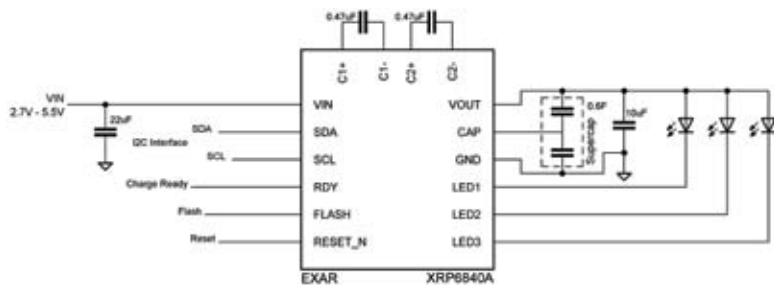
Part Number	Ch.	Max. Current per Ch.	LEDs per Ch.	Operating Voltage		Ref. Voltage	Output Voltage	Max. Output Voltage	Quiescent Current	Efficiency	Package	Application	Features
				Min.	Max.								
SP6699	1	20mA	6	2.5V	16V	200mV	Adj.	27V	3.2µA	84%	SOT-23-6	Backlight	Integrated Schottky diode Enable Pin - PWM dimming Soft Start
SP6682	1	200mA	6	2.7V	5.5V	1.25V	Adj.	6.0V	1.2mA	80%	DFN-10 MSOP-10	Backlight	600KHz charge pump topology Enable pin - true shutdown disconnect PWM dimming

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.								
SP6683	1	200mA	8	2.7V	5.5V	0.31V	Adj.	6.0V	0.5mA	90%	DFN-10	Backlight	1.2MHz charge pump topology Enable pin - true shutdown disconnect PWM dimming - soft start
SP7648	1	800mA	1	2.7V	4.5V	0.28V	Adj.	5.5V	n/a	92%	DFN-10 MSOP-10	Flash	Synchronous True shutdown - current limit Under voltage lockout protection
SP6887	4	30mA	1	2.7V	5.5V	1.23V	n/a	n/a	600µA	90%	TQFN-16	Backlight	Charge pump topology Enable pin - PWM dimming 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%	DFN-10	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%	DFN-8	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%	DFN-8	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%	DFN-10	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%	DFN-8	Flash	Charge pump topology Enable pin - flash/torch mode Adjustable flash current - soft start Flash timeout protection Overvoltage, over current and temperature protection
XRP6840	2	2150mA	1	2.7V	5.5V		2400KHz	1µA		TQFN-20	Flash	Charge Pump topology Enable pin, flash/torch mode I ² C programmable Overvoltage, overcurrent and temp. protection Supercapacitor technology support
	3	1450mA	1									



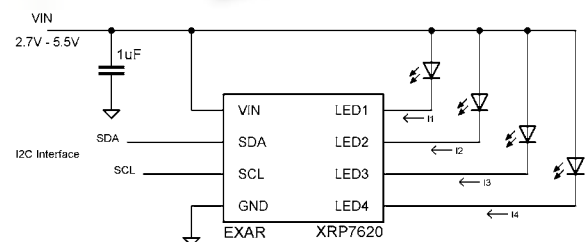
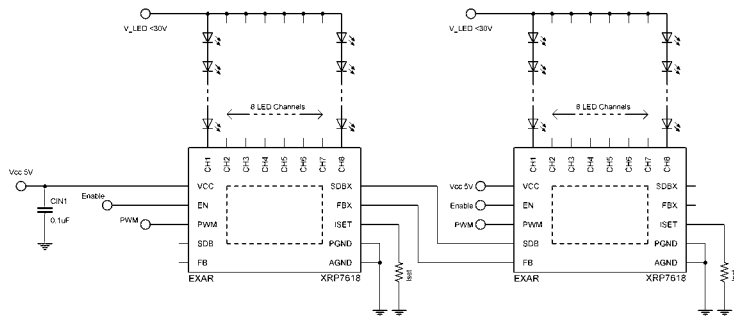
LED LIGHTING → Step-down Controllers

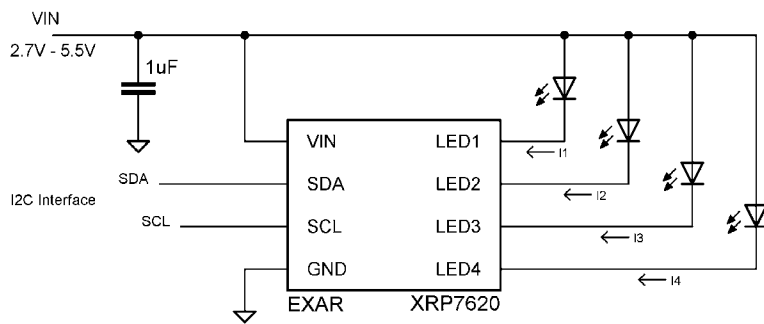
Part Number	Rec. Output Current	Frequency	Operating Voltage		Reference Voltage	Package	Application	Features
			Min.	Max.				
SP7601	<4A	1.2MHz	4.5V	29V	200mV	TSOT-6	High Power LED	Non Synchronous PWM On/Off mode - PWM dimming Adjustable over current protection

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.						
SP7120	2	20mA	1	2.7V	5.5V	160mV	0.8%	TTL	SOT-23-6	General	High side current driver Enable pin - PWM dimming
SP7121	2	25mA	1	2.7V	5.5V	135mV	0.2%	TTL	SOT-23-6	General	High side current driver Enable pin - PWM dimming Programmable LED current
SP7122	3	15/20mA	1	2.7V	5.5V	160mV	0.8%	TTL	SOT-23-6	General	High side current driver Enable pin - PWM dimming
XRP7620	4	31.5mA	1	2.5V	5.5V	100mV	3.0%	I ² C	DFN-8	General	RGBW/RGBA color mixing applications Independent channel current programming Over temperature protection
XRP7618*	8	100mA	7	4.2V	30V	450mV	1.5%	TTL	TSSOP-20	General	Enable pin - PWM dimming Programmable LED current Smart Talk power optimization UVLO, OTP, Open LED & over current pro.

*coming soon





PROGRAMMABLE POWER^{XR} → DIGITAL 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. Exar's Power^{XR} family of highly (re)configurable multi channel digital power step down PWM controllers are fully addressable and configurable via an I²C interface for monitoring, control and management of DC to DC point-of-load power conversions.

Applications

- Multi Channel Power Supplies
- Point of Load Converters
- FPGAs, DSPs and Processor Power Supplies
- Audio-Video Equipment

Part Number	Ch.	Gate Drive Resistance Up/Down (Ω)	Operating Voltage		Min. Output Voltage	Quiescent Current	Frequency	Package	Features
			Min.	Max.					
XRP7713	3	6/3	4.75V	25V	0.9V	9mA	Prog. 0.3MHz to 1.5MHz	TQFN-32	Digital PWM Controller I ² C (re)configurable Built-in 3.3V/5V LDO - Integrated Drivers Full protection
XRP7714	4	6/3	4.75V	25V	0.9V	9mA	Prog. 0.3MHz to 1.5MHz	TQFN-40	Digital PWM Controller I ² C (re)configurable Built-in 3.3V/5V LDO - Integrated Drivers Full protection
XRP7704	4	-/-	6.5V	20V	0.9V	9mA	Prog. 0.3MHz to 1.5MHz	TQFN-40	Digital PWM Controller I ² C (re)configurable Built-in 3.3V/5V LDO - Integrated Drivers Full protection
XRP7708	4	5/1.8	6.5V	20V	0.9V	9mA	Prog. 0.3MHz to 1.5MHz	TQFN-40	Digital PWM Controller I ² C (re)configurable Built-in 3.3V/5V LDO - Integrated Drivers Full protection
XRP7740	4	3/1.8	6.5V	20V	0.9V	9mA	Prog. 0.3MHz to 1.5MHz	TQFN-40	Digital PWM Controller I ² C (re)configurable Built-in 3.3V/5V LDO - Integrated Drivers Full protection
XRP7724	4	4/2	4.75V	25V	0.6V	2mA	Prog. 0.1MHz to 1.2MHz	TQFN-44	Digital PWM Controller with DPFM Mode I ² C (re)configurable Built-in 3.3V/5V LDO - Integrated Drivers Full protection

Single Input Voltage

I²C Interface



POWER^{XR}





www.exar.com

EXAR CORPORATION

48720 Kato Road
Fremont, CA 94538
U.S.A.

T. +1.510.668.7000
F. +1.510.668.7001

EXAR IS A TRADEMARK OF EXAR CORPORATION. ALL OTHER TRADEMARKS AND REGISTERED TRADEMARKS ARE PROPERTY OF THEIR RESPECTIVE OWNERS.
XRPWRMGMTBRO-0311 ©2011 EXAR CORPORATION