



Microsemi®

Microsemi Analog Mixed Signal Group



**Smartmeter
ICs**

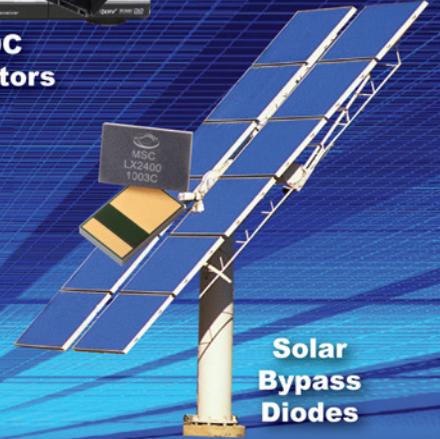
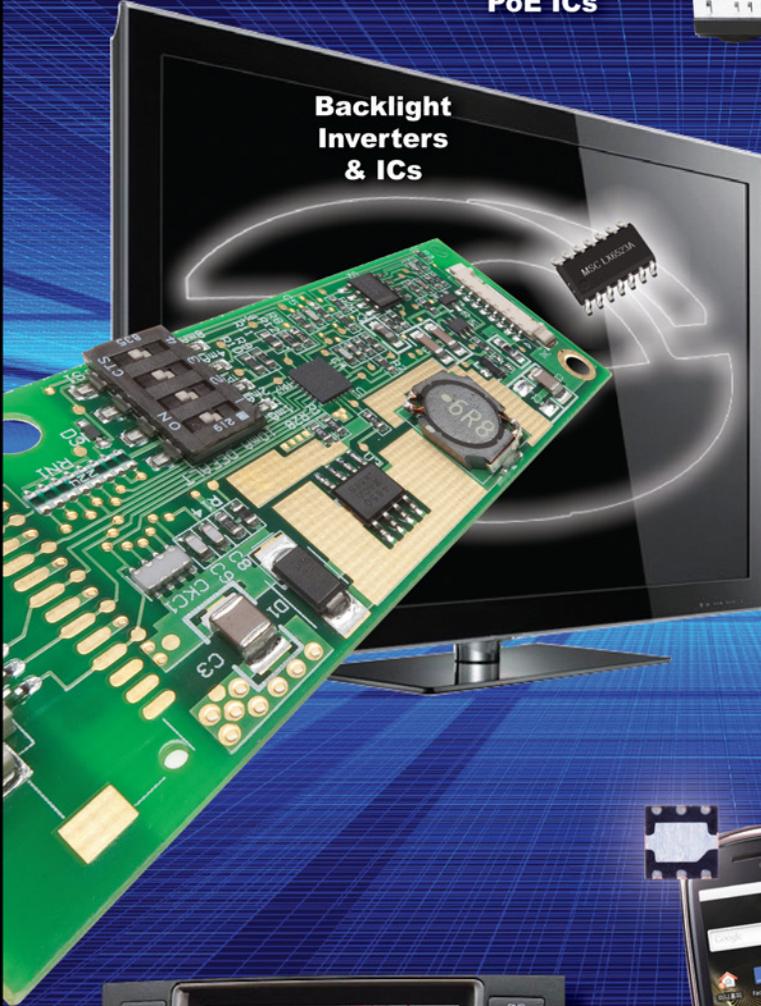


PoE ICs



**DC-DC
Regulators**

**Backlight
Inverters
& ICs**



**Solar
Bypass
Diodes**



**Solid State
Lighting
Drivers**



**WLAN RF
Power Amplifiers**



**Light
Sensors**

VISION

Analog Mixed Signal Group

The vision of Microsemi's Analog Mixed Signal Group (AMSG) is to engineer high performance power management products differentiated for the most demanding applications. The technical teams at AMSG focus on lighting management solutions for displays and general illumination, power management, wireless communications and Power over Ethernet solutions.

By focusing on an in depth understanding of customer needs, Microsemi AMSG technologists apply sophisticated systems-engineering techniques to create innovative solutions with "must-have" benefits for specific customer and niche market applications. With our systems level approach we also supply complete modules for LCD backlighting and general illumination applications, PoE switching solutions, and we offer the industry leading portfolio of PoE midspan products. The results are components and modules that are smaller, perform better, use less power and provide greater value.

The following pages highlight our recent product innovations in the areas of CCFL and LED backlighting for TV, notebook, and display applications; CCFL and LED backlight inverter modules; unique performance ambient light sensing technology and general illumination LED drivers for solid state lighting applications. Our power management competence focuses on our market leading power amplifier portfolio for WLAN applications, PoE solutions, DC-DC controllers and regulators, smart metering, and photovoltaic solar solutions.

An up-to-date listing of our entire portfolio, plus on-going product announcements, can be found at www.microsemi.com.



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LED *Backlight Solutions*



Backlight Management • Backlight Management

Microsemi's new families of LED Backlight Controllers are designed to provide superior performance and functionality in demanding LCD TV, notebook computers, automotive and other display platforms and applications. The third-generation Digital Advanced Zone Lighting (DAZL™) architecture used in these families includes Microsemi's PureBLACK™ mega-contrast dimming technology, which improves PWM-dimming duty-cycle performance in edge-lit LED displays.

Pure **BLACK™**



Microsemi has pioneered a dimming approach called “Adaptive Local Dimming”, which enables the backlight circuitry to light only the image areas that need to be lit, and dim the black areas, resulting in blacker blacks and significantly improved color, contrast, motion sharpness and grey level, plus associated power savings from eliminating unnecessary backlighting.

Selection Guide

Consult **NEW** Factory

Part Number Package	Description	Type	# of LEDs	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA)	Applications
LX24132 8x8mm - QFN56	32 port display backlight Local Dimming (2D) LED controller (LX24132) and 8 port LED driver (LX23108L) chipset.	Chipset with LED controller + FET array drivers	Up to 32 strings and up to 18 LEDs per string	Vcc = 5V VIO = 3.3V or 5V	Up to 72 V per LED string	70mA - typ (100%DC) 140mA - typ (50%DC) 100mA - max (100%DC) 200mA - max (50%DC)	Local dimming TVs and monitors, RGB displays
LX23108L 5x5mm - QFN32							
LX23224 6x6mm - QFN36 SSOP-48	LED driver with integrated DC-DC controller to support a total of 4 LED strings.	LED driver with external high voltage MOSFETS	Up to 120 LEDs per string	12V-250V	Up to 400V	Up to 250mA	D0 edge LED BL architecture
LX23214 7x7mm - QFN48 SSOP-48	LED driver with 2 integrated independent DC-DC controllers to support a total of 4 LED strings with 2 strings per DC-DC section.	LED driver with external high voltage MOSFETS	Up to 120 LEDs per string	12V-250V	Up to 400V	Up to 250mA	D0 edge LED BL architecture
LX23203 7x7mm - QFN48 SSOP-48	LED driver with 3 integrated and fully independent DC-DC controllers to support 3 LED strings with 1 string per DC/DC section.	Non-dissipative LED driver with no LED binning requirements and external high voltage MOSFETS.	Up to 120 LEDs per string	12V-250V	Up to 400V	Up to 350mA	D0 and D1 edge LED BL architecture
LX1996 MLP-6	Integrated LED driver, up to 6 parallel strings with multi-mode dimming and panel temperature compensated LED current.	Switching boost converter with six precision constant current sources with internal FETs up to 25kHz PWM	>60	2.7V - 5.5V	40V	up to 30mA per string	Large LCD panels (notebook size displays)
LX1995-2 MLPQ-16	Integrated LED driver high efficiency and low quiescent current.	Switching boost converter with constant current source with internal FET	up to 5 x 2	4.5V - 5.5V	30V	up to 150mA	Small LCD backlight panels
LX1994 MSOP-8 MLP-8	High efficiency LED driver with OVP	Switching boost converter with external N-FET, Light Sensor and PWM interface	up to 14	1.6V - 6V	60V	up to 150mA	Large LCD panels for portable applications
LX1991 MSOP-10 MLP-10	LED display driver with precision current control and dual-mode dimming	6 channel current sink with LED driver	up to 60	1.6V to 6V Startup 1.6V	40V	up to 30mA per string	Large LCD panels for portable applications

CHIPSET SOLUTION FOR LED BACKLIT TVs

LX23108L™ 8 PORT LED DRIVER

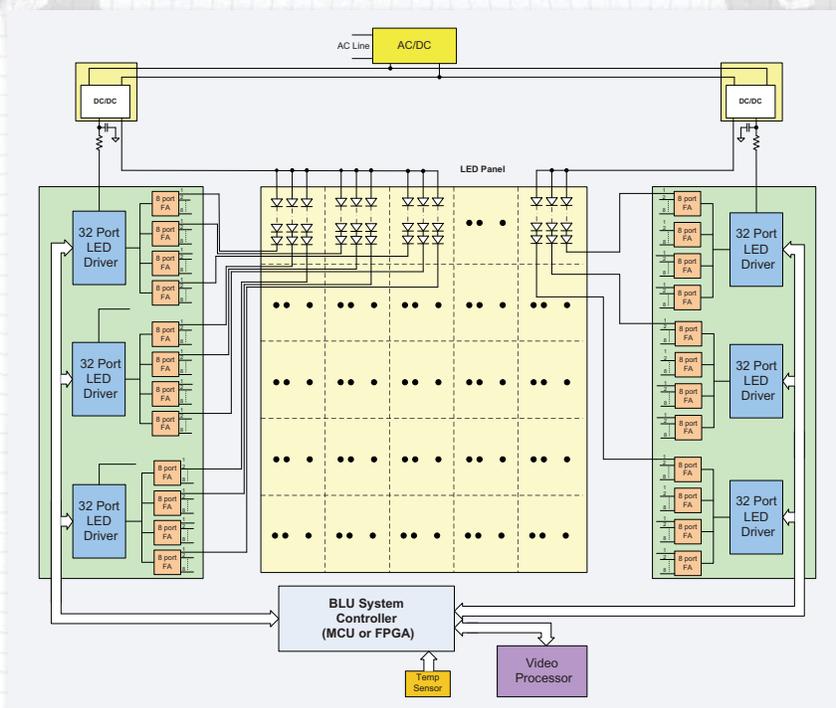
- Excellent thermal performance.
- High current accuracy: $\pm 2\%$ for chipset (LX24132 and LX23108L)
- Driving capability (constant current sink) 0mA to 100mA @ 100% PWM, or 200mA @ 50% PWM
- Per channel PWM signal
- Open string, short LED and over-temperature protection
- 32 pin, 5mm x 5mm QFN package

LX24132™ 32 PORT LED Controller

- Up to 32 LED strings with $\pm 1.5\%$ precision current matching
- Wide dimming ratio with PWM and LED current amplitude control
- 12-bit PWM duty-cycle resolution and 8-bit resolution for LED current setting
- LED power supply voltage control
- SPI communication interface
- Open string, short LED and over-temperature protection
- 56 pin, 8mm x 8mm QFN package

Adaptive Local Dimming

Our Adaptive Local Dimming approach is implemented in Microsemi's LX24132 32-port LED backlight controller and LX23108L 8-port LED driver, which provide scalable, integrated solutions for direct or edge-lit backlight applications in either White LED or RGB LED implementations of flat-panel LCD TV displays. The chipset can easily be integrated with Microsemi's complementary light sensor and color management system solutions to deliver additional quality and functionality.



LED Backlight Controllers

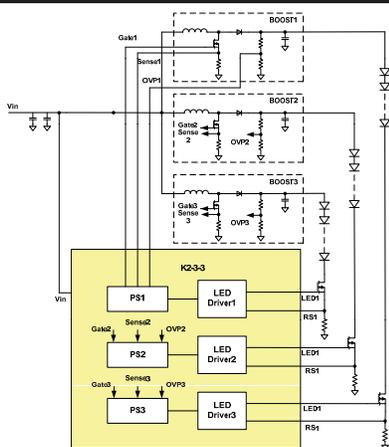
Microsemi's Family of LED backlight controllers is designed for ultra-thin edge-lit LCD TV displays. This new family is our third generation of DAZL™ (Digital Advanced Zone Lighting) products and continues to address the system-level cost and performance issues facing the industry. The products incorporate our PureBLACK™ technology and provide options to support both analog and digital PWM dimming frequencies to 2kHz.



ultra thin

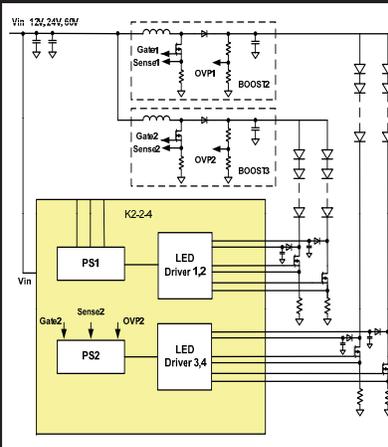
LX23203™

- 1 to 3 PWM input
- Non dissipative
- Per String DC-DC 40-200Vo LED Current Up 350mA
- Does not require LED binning provide low power dissipation
- Two IC can be cascaded for 6 string solution
- Analog and digital dimming signals
- Supporting 1D-3D solutions.
- LED short & OVL protection
- Samples Q3/10



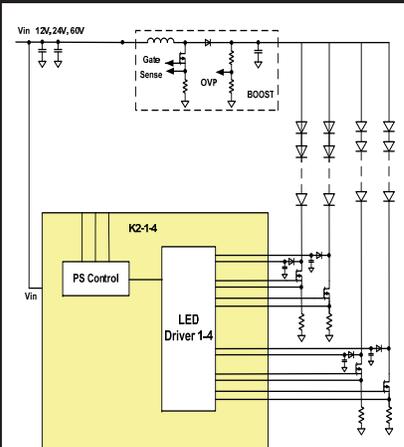
LX23214™

- 1 to 2 PWM input
- Cost effective 4 strings quasi "non dissipative"
- 2 DC-DC controllers for 4 strings. 40-200Vo
- LED current up to 250mA
- Suitable to support 3D solutions
- Analog and digital dimming signals
- Optional Smart Vsync support
- LED Short & OVL protection
- Samples available now.



LX23224™

- 1 to 2 PWM input
- Cost effective 4 strings quasi "non dissipative"
- 1 DC-DC controllers for 4 strings. 40-200Vo
- LED current up to 250mA
- Suitable to support 3D solutions
- Analog and digital dimming signals
- Smart Vsync support
- LED Short & OVL protection
- Samples Q1/11



Multi-string High Precision Integrated LED Driver

LX1996™

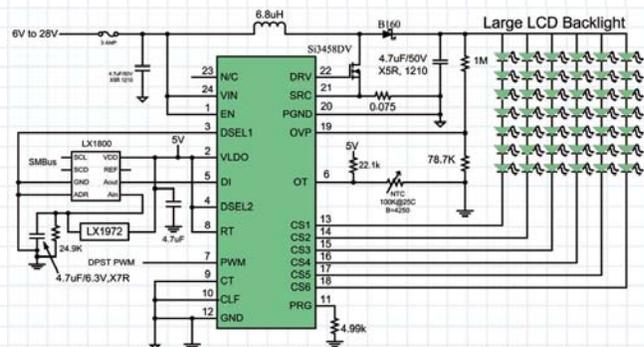
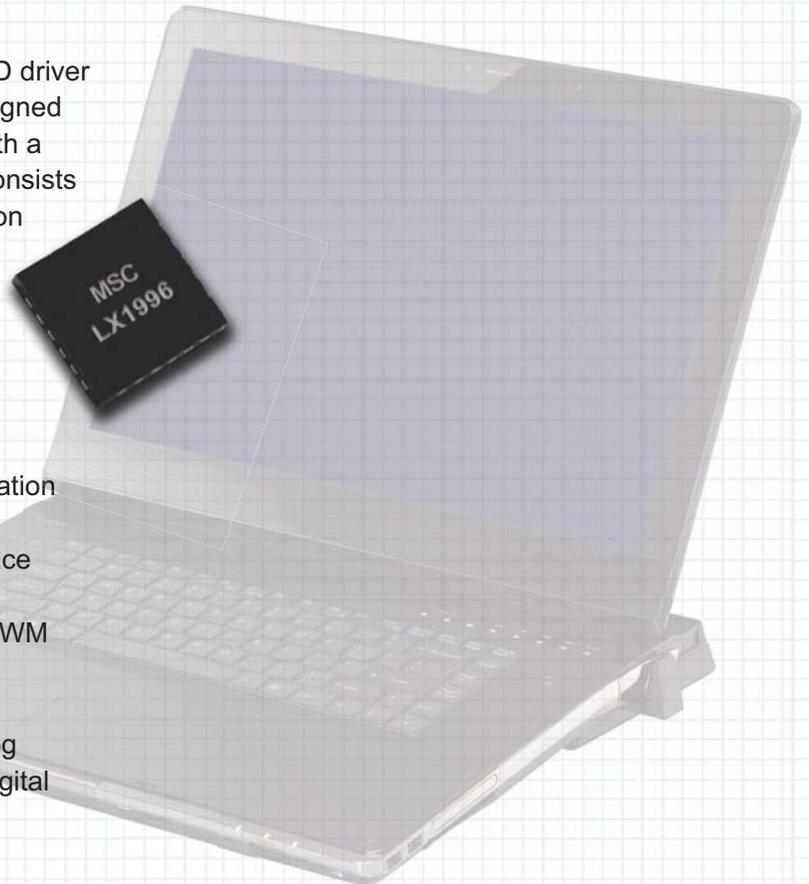
The LX1996 is a compact white LED driver for notebook size displays. It is designed to drive up to six strings of LEDs with a variable DC current. The LX1996 consists of a boost converter and six precision current sources.

Key Features

- Up to 30mA LEDs with +/-0.5% precision current matching
- Wide input range 6.0V to 28V, -40 to +85C
- LED panel temperature compensation of LED current
- Direct ambient light sensor interface for brightness control
- Multi-mode dimming options by PWM or analog signal:
 - Up to 25kHz direct digital
 - Analog to digital or direct analog
 - Combined direct analog and digital
- Low standby current
- On-chip thermal shut-down
- Over-voltage protection
- Short-circuit protection
- Thermally efficient 24 pin 4x4mm MLPQ package

Benefits

- Provide homogenous backlight luminosity by precision current matching
- Eliminate the need for LED binning
- Protect LEDs with a thermal profile
- Save battery power with high efficiency over the full dimming range
- Reduce board space by minimizing external components



LED & CCFL Complete Backlight Driver Solutions



CCFL Inverters

Microsemi is pleased to offer turnkey CCFL inverter module solutions based on our patented technology and best in class CCFL ICs.

- Single, dual and quad lamp LCD panel backlighting solutions
- Input voltage sources options of 3.3V, 5V and 12V
- Output power management up to 6W per lamp (see table for lamp voltage/current combinations)
- Automatic strike voltage generation
- Open and short circuit fault detection with auto shutdown
- Analog or digital dimming versions for dimming ranging from 5:1+ to 100:1+
- Output open circuit voltage regulation to minimize corona discharge for high reliability and efficiency
- RangeMax®: Digital dimming design based on a patented "Burst Drive" concept that energizes the lamp while ensuring that no premature lamp degradation occurs, allowing significant power savings at lower dim levels. This allows smooth, flicker free full range brightness control
- PanelMatch™: an elegant and simple dual pin setting solution that permits the variation of the typical lamp current that can be driven up to 3mA. The same inverter module can then be used to drive different panels (simpler supply

chain and reduced inventory carrying costs specifically for solutions integrators and distributors or customers using multiple displays).

- Wide temperature ranges: at least -20°C to +70°C and up to -30°C to +80°C on the newest designs
- RoHS and UL Certifications: all Microsemi inverter modules are RoHS compliant (LXMG "G"=Green) and UL60950 certified components (File E175910)

LED Inverters

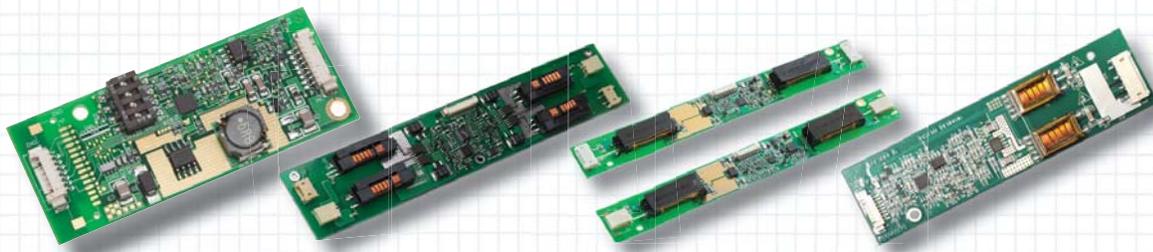
Microsemi also offers integrated solutions for light-emitting diode (LED) backlit panels. These solutions are designed to provide outstanding performance and functionality in demanding LCD TV, notebook computer, automotive, and many other display applications. The products can easily be enhanced with the addition of Microsemi's complementary light sensor and color management system solutions. The LXMG1960-28 solution is based on our high-performance LX1996™ LED driver and can drive up to six-strings in 3.5- to 7-inch LED backlit panels.

Complete Backlight Driver Solutions

Selection Guide

Type	Output Strings**	Range VIN [V]*	Range VOUT [V]*	Progr. IOU [mA]*	String to String I Matching	Max Dimming	Operating Temp [°C]*	Base PN	Status/Highlight	DIMENSIONS (L,W,H) [mm]
LED Driver Modules	Up to 3	[4.75 --> 28]	[VIN --> 35V]	15 to 50mA in 5mA steps	1% Typ	1000:1	[-30,80]	LXMG1930-28-0x	NEW: STAYLIT, LED Over Temperature Protection Available!	69 x 27.9 x 6
	Up to 6			10 to 25mA in 1mA steps				LXMG1960-28-0x		

Type	Typ VIN [V]	Range VIN [V]	V _{LAMP} Range [V]	Typ I _{OLAMP} [mA]	V _{LS} [V] Min/Typ	Max Dimming	Operating Temp [°C]	Base PN	Status	DIMENSIONS (L,W,H) [mm]
CCFL Single Lamp	3.3	[3.0 --> 3.6]	[325,435]	3.5 to 5.0	1000/1200	<5:1	[-30,80]	LXMG1618A-03-2x	NEW - "A" Series	86 x 16 x 4.7
			[465,635]	5.0 to 6.5	1300/1400	<5:1		LXMG1617A-03-2x		
	[545,735]	5.0 to 8.0	1500/1650	<5:1	LXMG1618A-05-2x					
	[300,750]	4.0 to 7.0	1500/1650	50:1	LXMG1617A-05-2x					
	[465,635]	5.0 to 6.5	1300/1400	<5:1	LXMG1618A-05-4x					
	[545,735]	5.0 to 8.0	1500/1650	<5:1	LXMG1617A-05-4x					
	5	[4.75 --> 5.25]	[320,420]	5.0 to 6.0	1250/1400	100:1		LXMG1618A-05-6x		
			[385,485]	5.0 to 6.5	1400/1600	50:1		LXMG1617A-05-6x		
			[350,530]	5.0 to 6.5	1450/1600	100:1		LXMG1618A-05-6x		
			[450,610]	5.0 to 6.5	1400/1600	50:1		LXMG1617A-05-6x		
			[460,620]	5.0 to 7.0	1350/1500	100:1		LXMG1811-05-6x / 6xS		
			[510,690]	5.0 to 6.5	1400/1500	50:1		LXMG1618A-12-4x		
12	[10.8 --> 13.2]	[480,720]	5.0 to 8.0	1400/1650	50:1	LXMG1617A-12-4x				
		[,1250]	3.5 to 5.0	1400/1650	100:1	LXMG1618A-12-4x				
		[320,420]	5.0 to 6.0	1250/1400	100:1	LXMG1617A-12-6x				
		[385,485]	5.0 to 6.0	1250/1400	100:1	LXMG1618A-12-6x				
		[350,500]	6	1500/1650	<5:1	LXMG1617A-12-6x				
		[500,750]	7	1500/1650	100:1	LXMG1618A-12-6x				
CCFL Dual Lamp	5	[4.75 --> 5.25]	[320,420]	5.0 to 6.0	1250/1400	100:1	[-30,80]	LXMG1626-05-46	STAYLIT	113 x 30 x 6.5
			[385,485]	5.0 to 6.5	1400/1600	50:1	LXMG1626-05-45	NEW	134 x 30 x 8	
			[350,530]	5.0 to 6.5	1450/1600	100:1	LXMG1627-05-4x	NEW	108.7 x 22.35 x 10.2	
			[450,610]	5.0 to 6.5	1400/1600	50:1	LXMG1627-05-44	Active	133 x 25 x 7.5	
			[460,620]	5.0 to 7.0	1350/1500	100:1	LXMG1626-05-67	Active	133 x 25 x 7.5	
			[510,690]	5.0 to 6.5	1400/1500	50:1	LXMG1626-05-65	NEW	165 x 21 x 10	
	12	[10.8 --> 13.2]	[480,720]	5.0 to 8.0	1400/1650	50:1	[-30,80]	LXMG1627-05-6x	NEW	165 x 21 x 7.5
			[,1250]	3.5 to 5.0	1400/1650	100:1	[-20,70]	LXMG1626-12-64	Active	113 x 30 x 6.5
			[320,420]	5.0 to 6.0	1250/1400	100:1	[-30,80]	LXMG1626-12-46	STAYLIT	113 x 30 x 6.2
			[385,485]	5.0 to 6.0	1250/1400	100:1	[0,70]	LXMG1626-12-45	See LXMG1626-12-45/46	124 x 32 x 8.5
			[350,500]	6	1500/1650	<5:1	[-30,80]	LXMG1621-02	NEW	134 x 30 x 8
			[500,750]	7	1500/1650	100:1	[-30,80]	LXMG1624-12-4x	NEW	115 x 30 x 6.5
CCFL Quad Lamp	12	[10.8 --> 13.2]	[450,610]	5.0 to 6.5	1400/1600	50:1	[-30,80]	LXMG1627-12-4x	Active	108.7 x 22.35 x 10.2
			[460,620]	5.0 to 7.0	1450/1600	100:1	[-20,70]	LXMG1627-12-44	Active	133 x 25 x 7.5
			[470,640]	6	1500/1650	100:1	[0,70]	LXMG1626-12-66	See LXMG1626-12-66	124 x 32 x 8.5
			[480,720]	5.0 to 8.0	1500/1650	<5:1	[-30,80]	LXMG1621-04	NEW	165 x 21 x 10
			[500,750]	7	1500/1650	50:1	[-30,80]	LXMG1628-12-6x	NEW	165 x 21 x 7.5
			[510,690]	5.0 to 6.5	1450/1650	100:1	[0,70]	LXMG1627-12-6x	See LXMG1626-12-65	124 x 32 x 8.5
CCFL Quad Lamp	12	[10.8 --> 13.2]	[530,720]	5.0 to 6.5	1450/1650	100:1	[-20,70]	LXMG1621-01	Active	133 x 25 x 7.5
			[530,730]	5.0 to 8.0	1500/1650	50:1	[-20,70]	LXMG1626-12-65	Active	188 x 36 x 8
			[530,730]	5.0 to 8.0	1500/1650	50:1	[-20,70]	LXMG1643-12-61	Active	188 x 36 x 8
			[530,730]	5.0 to 8.0	1500/1650	50:1	[-20,70]	LXMG1643-12-62	Active	188 x 42 x 8



Complete Backlight Driver Solutions

StayLIT™

StayLIT™ is a specially designed fault detection and management circuit for multi-lamp LCD panels, initially adopted on dual lamp inverter modules (LXMG1626-05-45, LXMG1626-12-45, LXMG1626-05-46, LXMG1626-12-46).

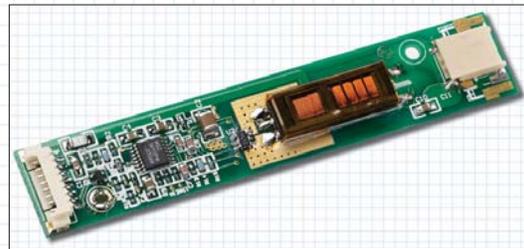
The StayLIT™ circuit detects the abnormal behavior of any of the two lamps (open/short status), resizes and redirects the output power to the remaining working lamp while providing a “fault” signal. The remaining working lamp is not overdriven and therefore it’s not prematurely damaged and can be dimmed as in the normal operation mode. The end customer will see very little difference (lower brightness of the display) but the service group will be notified of the need to change the lamp.



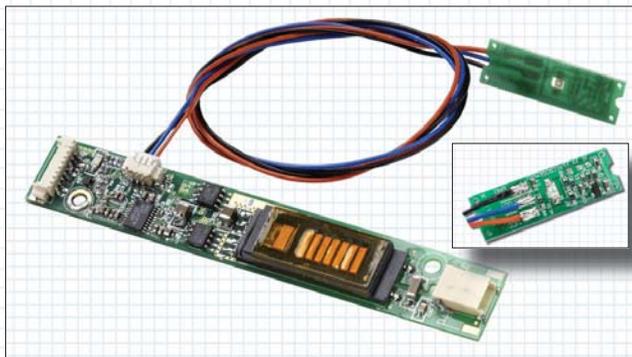
This feature is found to be a must for Medical, Banking and POS systems providers where the continuous operation of the LCD display is of major importance.

“A” Series *New! Single Lamp Inverters*

New single lamp inverters, LXMG1617A/LXMG1618A (“A” Series). A drop-in upgraded replacement of the previous LXMG1617/LXMG1618 offerings. By integrating the newest CCFL IC and the long experience Microsemi is now able to offer wider dimming range and extended temperature range to its customers at a minimal or no re-design cost.



LXMG181X™ & VEasyLIT™ *New! Single Lamp Inverters*



The LXMG181x Series is designed to enhance the current offering: the customer will benefit from a wider input voltage range (VIN) at fully regulated lamp current, and an enhanced Lamp Driving capability (see the range of VLAMP and the Striking capability). Fewer part numbers (4 instead of 24) will be able to drive an extended list of displays thus greatly simplifying the customer supply

change and minimizing the need of re-qualification and redesign of the backlight driving units in case a display is changed. Distributors and integrators dealing with multiple displays will now be able to stock a lower number of parts to meet their needs. When ordering the inverter as a standalone and not as part of the VEasyLIT kit, please use part numbers without the final “S”, i.e. LXMG1811-05-61.

The biggest advantage of the LXMG181X series though lies in its availability in a ready and easy to use kit (VEasyLIT™): the customer can order the inverter (i.e. LXMG1811-05-61S) and a light sensor board (LXMG1800_LS) which can be hooked up to the inverter by simply joining the provided connectors. This small light sensor board can be mounted easily in the product’s bezel with the addition of a small hole or light diffuser so ambient light can be detected. It includes user adjustable gain settings to adjust for the product’s typical ambient lighting conditions.

Complete Backlight Driver Solutions

LXMG1960™ & LXMG1930™

High Performance LED System Solutions



Key Features & Benefits

- All products support a wide input voltage range (4.75V-28V) and output voltage up to 35V
- Flexible Design allows matching to a wide variety of panels
 - 1 to 6 output strings (strings can also be combined or left selectively unused)
 - Current per string can be easily programmed in steps of 1mA (LXMG1960) or 5mA (LXMG1930)
- 1% typical string-to-string current matching
- Multiple dimming methods such as DC voltage, PWM signal and potentiometer
- Combined analog and digital dimming can provide for greater than 1000:1 ratio
- Multiple protections including OVP (Over Voltage) and input to monitor and manage LED over temperature events

Selection Guide

Feature	LXMG1960-28-0X	LXMG1930-28-0X
LED Strings (up to)	6	3
Wide Input Voltage	4.75V-28V	
Output voltage per string up to	35V	
Maximum Current per String	25mA Max/ 10mA min	50mA Max/ 15mA min
Programmable LED string current to match various panel requirements (increments of)	1mA	5mA
Typical string to string current matching	1%	
StayLIT™ - continued operation in case of one or more LED short or open	Yes	
Dimming Method	Supports multiple methods of dimming such as PWM, DC voltage and potentiometer	
Output LED short protection and over voltage protection	Available	
Over LED temperature protection*	Available	

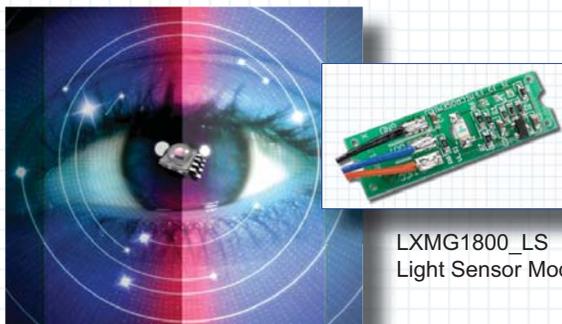
* IC over temperature protection is available and separate

Visible Light Sensors • Visible Light Sensors

Visible Light Sensor Selection Guide

Part Number Package	Useful Light Range (Lux)	Light Output Function	Output Topology	Input Supply Range	Output Current @ 100 Lux	Properties / Applications
LX1980 MSOP-8 (Lens) NEW! <i>Contact Factory for Availability</i>	10 - 1000	RGB Linear	Output Voltage per Red, Green, Blue	3.0V - 3.6V	N/A	High Accuracy, Temperature compensated. RGB displays, Architectural Solid State Lighting.
LX1977 MSOP-8 (Lens) NEW!	0 - 500 0 - 1000 0 - 2500 0 - 5000	Linear	Serial data stream using I2C compatible SMBus interface. Programmable Interrupt pin support.	3.0V - 4.5V	N/A	Human eye spectral response, +/-5% accuracy, 12b ADC, 50/60Hz interference rejection, programmable integration time and gain.
LX1973B MSOP-8 (Lens)	.005 - 400	Quarter Root	Current Source vs. Light	4.5V - 5.5V	410µA	High precision in low lighting. Includes <i>Best Eye™</i> for superior IR and UV immunity. 60% dark current reduction over the LX1973A.
LX1973A MSOP-8	.01 - 500	Quarter Root	Current Source vs. Light	4.5V - 5.5V	360µA	High precision in low lighting. Includes <i>Best Eye™</i> for superior IR and UV immunity.
LX1973 MSOP-8	.01 - 500	Quarter Root	Current Source vs. Light	4.5V - 5.5V	380µA	High precision in ultra low lighting conditions. Internal dark current cancellation.
LX1972A 1206	< 1 - 5K	Linear	Two Terminal Current Source vs. Light	2V - 5.5V	~10µA	Patented <i>Best Eye™</i> technology provides near perfect immunity to non visible light spectra. Applications demanding superior IR and UV immunity.
LX1974 1206	< 1 - 5K	Linear	Two Terminal Current Source vs. Light	2V - 5.5V	~10µA	Same as LX1972, but with tape-and-reel orientation for bottom light applications.
LX1972 1206	< 1 - 5K	Linear	Two Terminal Current Source vs. Light	2V - 5.5V	~10µA	Low cost, small size, high performance general purpose "human eye" response sensor. Packaged for top light applications.
LX1971 MSOP-8	< 1 - 15K	Square Root	Current Sink and Current Source vs. Light	3V - 5.5V	~10µA	Wide dynamic range with extreme sensitivity at low ambient light conditions.
LX1970 MSOP-8	< 1 - 1.2K	Linear	Current Sink and Current Source vs. Light	2V - 5.5V	~38µA	General purpose sensor for illumination and display control applications.

LX1980™ RGB Light Sensor



LXMG1800_LS
Light Sensor Module

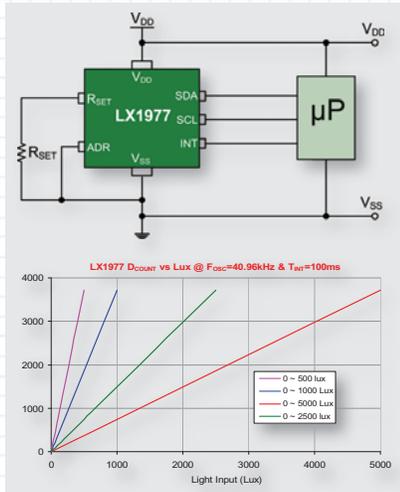
The LX1980 combines three sensors (red, green, blue) in a single IC and offers superior spectral response. It is optimized for RGB LCD backlighting and color sensing systems.

Key Features

- Well shaped spectral response
- Highly accurate & repeatable output voltage vs. input irradiance
- Temperature stable
- Integrated high gain amplifiers
- Adjustable output to input gain

Visible Light Sensors

LX1977™



- Ideal for TVs to improve efficiency and provide Energy Star compliance
- Ideal for notebooks to extend battery life
- Superior performance
- Flexible and easy to use
 - BiC accuracy improves manufacturability and reduces cost
 - Stability over wide temperature range and supply
 - Low IR sensitivity for consistent operation and reduced service costs
 - User settable Integration time for optimal performance/application
 - Wide supply and temp range support
 - Programmable integration time
 - Programmable Interrupt
 - SMBUS interfacing



LX1973™ / LX1973B™

The LX1973 and LX1973A are wide dynamic range light sensors with a very low dark current that are optimized for sensing low level light signals that typically occur under dark or darkening outdoor ambient lighting making them an ideal solution for automotive systems such as headlamp brightness control or rear view mirror contrast control.

The spectral response of the integrated light sensor closely emulates the human eye so it ignores light such as infrared which emits energy but doesn't aid vision. This eliminates the need for an Infrared filter required with competitor light sensors.

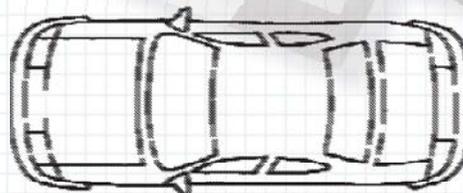
Key Features

- Ideal for TVs to improve efficiency and provide Energy Star compliance
- Ideal for notebooks to extend battery life
- 25C Dark Current < 0.005 lux
- 5 decades compressed output
- 10% accuracy over temperature
- Scalable output voltage
- No optical filters needed

Applications

- Outdoor lighting control
- Automotive lighting control -headlamp, mirrors, displays
- Indoor lighting control for architecture, lighting, appliances
- Consumer electronic displays
- LCD-TV
- Digital cameras

**Perfect for
Automotive
Applications**



Visible Light Sensors • Visible Light Sensors

The LX1972 and the LX1972A are low cost silicon light sensors with spectral response that closely emulates the human eye.

The LX1972A provides improved spectral response using Microsemi's BestEye™ technology.

Patented circuitry produces peak spectral response at 520nm, with IR response less than $\pm 5\%$ of the peak response, about 900nm.

The photo sensor is a pin diode array with a linear, accurate, and very repeat-able current transfer function.

High gain current mirrors on the chips multiply the PIN diode photo-current to a sensitivity level that can be volt-age scaled with a standard value external resistor. Output current from these simple to use two-pin devices can be used directly or converted to a voltage by placing it in series with a single resistor at either of its two pins.

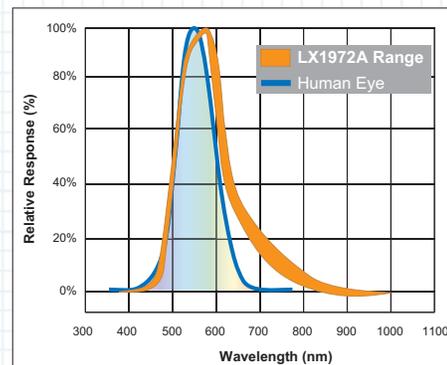
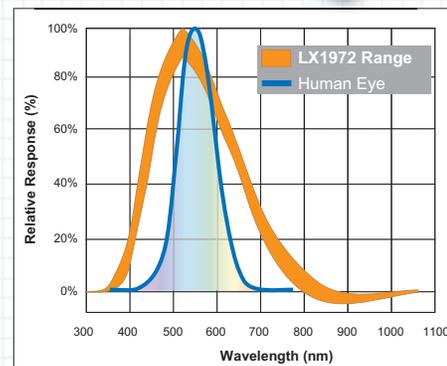
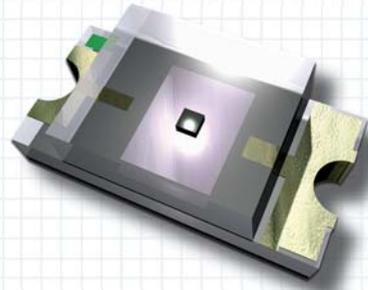
Internal temperature compensation allows dark current to be kept below 200nA over the full specification temperature range (-40°C to +85°C) providing high accuracy at low light levels. Usable ambient light conditions range is from 1 lux to more than 5000 lux.

The LX1972 and LX1972A are optimized for controlling back lighting systems in low cost consumer products such as LCD TV, portable computers, and digital cameras.

Key Features

- Near Human Eye spectral response - LX1972
- Nearly perfect Best Eye™ human eye spectral response - LX1972A
- Very Low IR sensitivity
- Highly accurate & repeatable Output Current vs. Light
- Scalable output voltage
- Temperature stable
- Integrated high gain photo current amplifiers
- No optical filters needed
- Tiny 1206 package
- RoHS Compliant / Pb-free applications
- Portable electronic displays
- LCD TV backlight systems
- Digital still cameras (DCS)
- Desktop monitors
- Notebook computers

LX1972™ LX1972A™



CCFL Backlight Controller ICs

THE INDUSTRY'S WIDEST SELECTION OF CCFL BACKLIGHT CONTROLLERS - PERFORMANCE-PROVEN, PATENTED SOLUTIONS FOR DISPLAY NEEDS

Microsemi offers the most comprehensive family of CCFL controllers to address the varying demands of today's LCD panel applications. Backlight inverter designers can optimize their designs for specific requirements including panel size, single or multiple lamps, lamp technology, input voltage, inverter circuit topology, fault protection, and other key features unique to the application.

Through many years of experience, Microsemi understands these subtle but critical challenges and has developed cost effective, total circuit solutions. Microsemi continues to invent patented, industry recognized lighting techniques and solutions for the future.



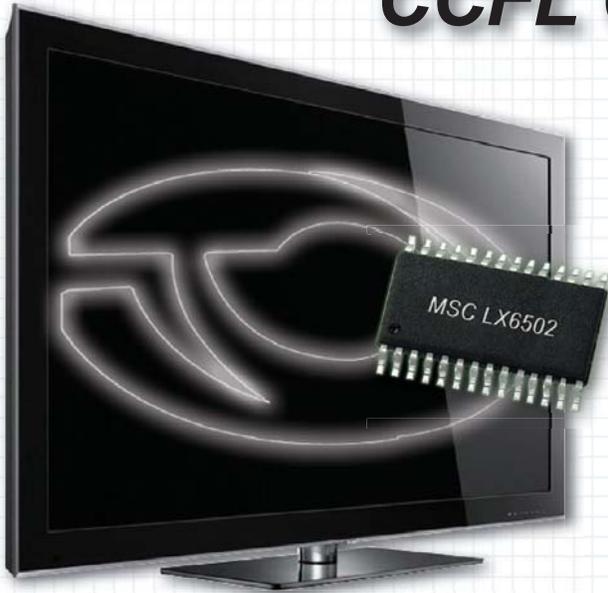
CCFL Controller ICs

Part Number [Package]	Target Application	PureBLACK™ MegaContrast	Inverter Voltage [IC Voltage]	Inverter Topologies [Gate Drivers]	Lamp Strike	Protection Functions	Additional Features / Benefits
LX6503A [SOIC16-NB]	Televisions Monitors All-In-One PCs	Yes integrated	6V to 27V [5.0V – 5.5V]	FB; HB [Push/Pull]	Programmable Strike time / frequency and dimming frequency	OLP, OVP, SC, and OIP; Programmable FAULT time	SYNC Function, Linear Regulator / UVLO, Analog / Analog BURST / Digital BURST dimming, POR, ENABLE, Soft Start, JIN Balancer Optimized
LX6523A [SOIC14-NB]	Televisions Monitors All-In-One PCs	Yes	6V to 27V [5.0V – 5.5V]	FB; HB [Push/Pull]	Programmable Strike time / frequency and dimming frequency	OLP, OVP, SC, and OIP; Programmable FAULT time	Linear Regulator / UVLO, Analog / Analog BURST / Digital BURST dimming, POR, ENABLE, Soft Start, JIN Balancer Optimized
LX6503 [SOIC16-WB]	Televisions Monitors All-In-One PCs	Yes external discrete solution	6V to 27V [5.0V – 5.5V]	FB; HB [Push/Pull]	Programmable Strike time / frequency and dimming frequency	OLP, OVP, SC, and OIP; Programmable FAULT time	SYNC Function, Linear Regulator / UVLO, Analog / Analog BURST / Digital BURST dimming, POR, ENABLE, Soft Start, JIN Balancer Optimized
LX6504 [SOIC20-WB]	Televisions Monitors	No	24V Typical [4.5V – 5.5V]	Full Bridge [P/N FETs]	Programmable Strike time / frequency and dimming frequency	OLP, OVP, SC, and OIP; Programmable FAULT time	Integrated FB gate drivers, SYNC, STATUS Output, Linear Regulator, Soft Start, Digital BURST Dimming, ENABLE, JIN Balancer Optimized
LX6502 [SOIC28-WB]	Televisions Monitors	Yes	24V Typical [4.5V – 5.5V]	Full Bridge [N/N FETs]	Programmable Strike time / frequency and dimming frequency	OLP, OVP, SC, and OIP; Programmable FAULT time, SFC	Integrated FB 12V gate drivers, SYNC, STATUS Output, Linear Regulator, Soft Start, Digital BURST Dimming, ENABLE, JIN Balancer Optimized
LX6501 [SOIC28-WB]	Televisions Monitors	No	10V to 27V [5.0V – 5.5V]	Full Bridge [N/N FETs]	Programmable Strike time / frequency and dimming frequency	OLP, OVP, SC, and OIP; Programmable FAULT time, SFC	Integrated FB gate drivers, SYNC, STATUS Output, Linear Regulator, Soft Start, Analog or Digital BURST Dimming, ENABLE, JIN Balancer Optimized
LX6512 [SOIC16-NB] [QFN16 - 3x3] [TSSOP16]	Monitors Small TVs All-In-One PCs	No	12V / 24V Typical	FB, DD, PP [P/N FETs]	Programmable Strike time / frequency and dimming frequency	OLP, OVP, SC, and OIP; Programmable FAULT time, SFC	Analog or Digital Dimming, Integrated LDO, Unique Strike Topology, ENABLE
LX1692F [SOIC20-WB]	Televisions	No	10V to 27V [4.5V – 5.5V]	Full Bridge [P/N FETs]	Programmable Strike time / frequency and dimming frequency	OLP, OVP, SC, and OIP; Programmable FAULT time, SFC	Integrated 4V LDO, Integrated FB gate drivers, Analog / Analog BURST / or Digital BURST Dimming
LX1699 [QFN20 - 4x4]	Notebook Web Tablet	No	6.5V to 26.5V [5V – 5.5V]	Full Bridge [P/N FETs] [Push-Pull]	Programmable Strike time / frequency and dimming frequency	OLP, OVP, and SC; Programmable FAULT time, SFC	Supports Intel™ DPST for system PWM input, 5.25V LDO, Integrated FB gate drivers, Analog & Digital BURST Dimming, VIN sense input for FB slope control.

Topology: DD = Microsemi patented Direct Drive, FB = Full Bridge, HB = Half Bridge, PP = Push Pull

MSSC Sweep = Microsemi patented lamp strike technique, JIN Balancer = Microsemi patented lamp current balance circuit

LX6502™ *PureBLACK™ Full-Bridge CCFL Controller*



The LX6502, Microsemi's latest addition to its CCFL backlight controller family, offers integrated 12V gate drivers and 3rd generation PureBLACK™ mega contrast dimming technology for traditional 24V inverter/LCD panel display architectures. The LX6502 enables quick design turns with its flexible and user configurable feature set.

Features:

- Full-bridge controller with 12V gate drivers
- Intergrated PureBLACK™ Mega Dimming
- Comprehensive brightness control
- High accuracy, programmability, and SYNC
- Open lamp, over voltage, and short circuit protection
- Operational status indication

- 6.5-26.5 Volt wide input voltage range
- Full Bridge topology, P/N FETs
- Supports Intel™ DPST for notebook saving system power
- Analog and digital burst dimming
- Programmable strike time/frequency and programmable dimming frequency
- Patented lamp strike technique
- Low system level parts count
- Internal 5V regulator for direct operation from the system

LX1699™



Applications

- Notebook LCD displays
- Tablet LCD displays

LX6512A™ *High Performance CCFL Controller*

Microsemi's LX6512A is a cost effective, high performance direct drive CCFL controller that is optimized to drive CCFL lamps using either resonant full bridge inverter topology or push-pull configurations.

The LX6512A contains safety features that limit the transformer secondary voltage and protect against fault conditions including open lamp or broken lamp, over voltage, arcing, and short-circuit fault.

Key Features

- Full-bridge or direct drive push-pull configurable
- Patented striking technology
- Low stress to transformers
- Wide dimming range
- Programmable operating dimming frequency
- Programmable time out protection
- Fixed operating frequency
- Provides protection for open lamp, over voltage, and short circuit
- Compatible with existing transformer design

***General Illumination LED Drivers
for Solid State Lighting***



Solid State Lighting • Solid State Lighting

Microsemi's unique combination of advanced analog mixed signal capabilities, proven light management and power conversion platforms as well as advanced color and digital control IP, allows us to offer optimally designed LED drivers and systems that are crucial to achieve the long life and value promised by LED manufacturers.

Our solutions are supported by a dedicated and robust supply chain and development team which enable a shorter time to market for our customers. Our module customers also have direct access to Microsemi advanced technology expertise and can directly communicate their unique requirements for their next generation products.

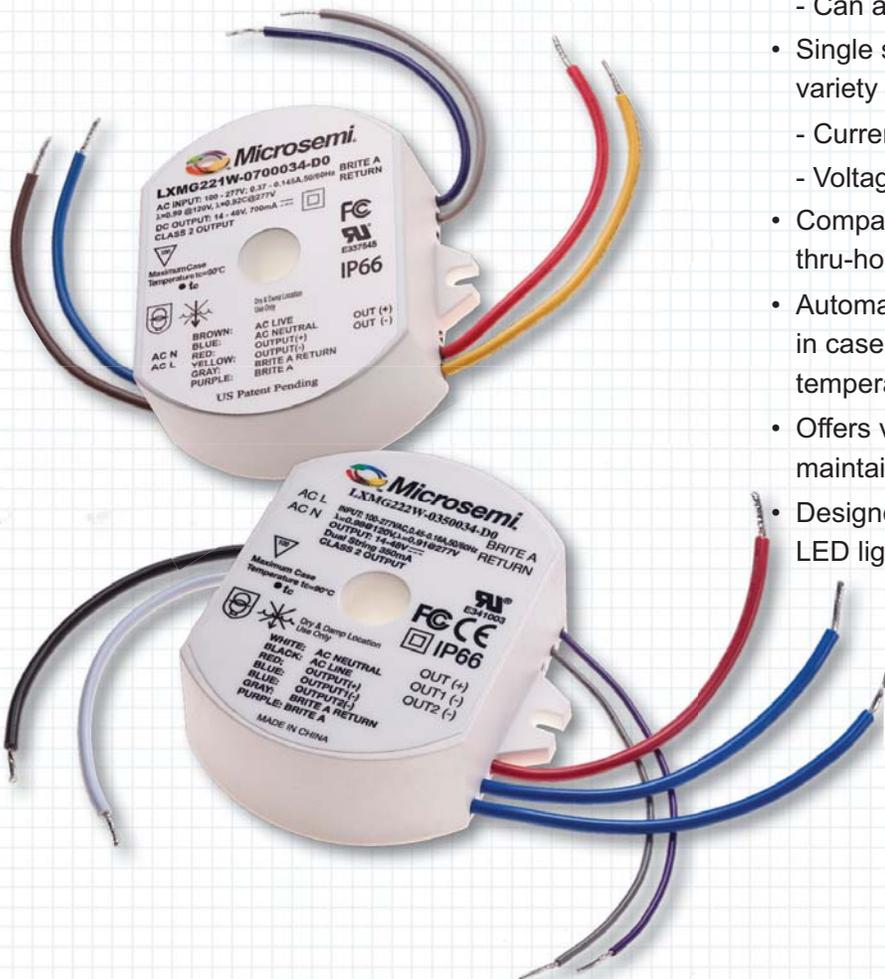
Microsemi's first SSL product family aims to provide high-performance and high-efficiency power conversion in a very compact package and is the first in a series of planned solutions.

LXMG221W™

The LXMG221W-0700034-D0 is a high-efficiency (90%), compact LED lighting driver module designed for next generation LED-lighting in worldwide residential, commercial and industrial applications. It supports a universal AC input ($90V_{AC}$ to $305V_{AC}$, 47Hz or 63Hz) and drives one output string of LED's at $700mA$ up to $48V_{DC}$ ($34W$ typical). Enclosed in a compact IP66 rated plastic package, the LXMG221W-0700034-D0 meets UL1310 class 2 for SSL (File E337545), meets FCC Class B and is SELV compliant.

Features

- Universal input AC voltage range: $90V_{AC}$ - $305V_{AC}$, 47Hz to 63Hz
- Wide power output: Up to $34W$
- Multiple dimming options:
 - $0V$ to $10V$ and potentiometer
 - Can also operate without dimmer
- Single string configurations for a wide variety of loads
 - Current: $1 \times 700mA \pm 5\%$
 - Voltage: 14 to $48V$ (internally limited to $56V$)
- Compact IP66 package plastic case with thru-hole for easier mounting
- Automatic shutdown protection and re-start in case of power loss and over-case temperature events
- Offers versatility and flexibility while maintaining high efficiency
- Designed for a wide variety of worldwide LED lighting fixtures



Wireless LAN RF Solutions

Microsemi offers a broad portfolio of WLAN RF solutions that are used in a variety of applications including wireless access points and half mini-cards for notebooks and netbooks. Our solutions include ICs and Front End Modules that support the fast-growing market for WLAN products used in space-constrained smartphones and other data-enabled cellular handset designs

Selector Guide

Part Number	Applications	Features	Frequency (Ghz)	Supply Voltage	Pout 3% EVM	Gain (db)	Total Current	Package Size
LX5506	802.11a Client/AP UNII -2/-3	Low Current High Linearity High Pout	5.15 - 5.85	3.3V	18dBm	21	190mA	3 x 3 x 0.9
LX5506M	802.11a Client/AP UNII -2/-3	O/P Pre-match High Gain Low Cost	4.9 - 5.9	3.3V	17dBm	30	140mA	3 x 3 x 0.9
LX5511	802.11b/g Client/AP Fixed Radio ISM	Superb EVM Low Current Low Cost	2.4 - 2.5	3.3V	20dBm (2.4% EVM)	26	170mA	3 x 3 x 0.9
LX5514	802.11b/g/n Client/AP Portables	Linear Pout Low Current Ultra-small Package Low Cost	2.4 - 2.5	3.3V	20dBm (2.8% EVM)	28	145mA	2 x 2 x 0.45
LX5514M	802.11b/g/n Client/Portables Handsets	Ultra-small Package Direct Battery Connect	2.4 - 2.5	3.6V (3.0 - 4.2V)	19.5dBm (2.8% EVM)	27	130mA	1.5 x 1.5
LX5516	802.11b/g/n Client/AP Portables	50 Ohm In/Out Ultra-small Package Low cost	2.4 - 2.5	3.3V	18dBm (2.5% EVM)	29	130mA	2 x 2 x 0.45
LX5518	802.11b/g/n AP/Router	High Power Linear Pout	2.4 - 2.5	3.3V 5V	24dBm 26dBm	32 30	345mA 391mA	3 x 3 x 0.9
LX5530	802.11a/n WiMAX 802.16e Client/AP UNII -2/-3	High Linearity Broadband Match High Gain	4.9 - 5.9	3.3V 5V	18dBm (3% EVM, 3.3V) 22dBm (2.5% EVM, 5V)	31 33	230mA 360mA	3 x 3 x 0.9
LX5535	802.11b/g/n AP/Router	High Power Linear Pout	2.4 - 2.5	3.3V 5V	22dBm 24.5dBm	32 31	227mA 275mA	3 x 3 x 0.9
LX5537	WiMAX 802.16e 802.11 b/g WiBro Client/AP	High Gain High OFDM Pout 27dB Step Atten.	2.3 - 2.9	3.6V 4.2V	24dBm (3.6V) 26dBm (4.2V)	31	350mA 435mA	3 x 3 x 0.9
LX5540	802.11b/g/n Client/AP Portables	PA + LNA	2.4 - 2.5	3.3V	20dBm	28	145mA	3 x 3 x 0.45
LX5541	802.11b/g/n Client/AP	PA +LNA+SPDT	2.4 - 2.5	3.3V	19dBm	27	145mA	3 x 3 x 0.45
LX5543	802.11b/g/n Handsets	PAM+SP3T Switch	2.4 - 2.5	3.6V (3.0 - 4.2V)	17.5dBm	26	150mA	3 x 3 x 0.55
LX5551	802.11b/g/n Client/AP Portables	PAM+SPDT Switch	2.4 - 2.5	3.3V	18dBm	27	140mA	3 x 3 x 0.9
LX5552	802.11b/g/n Client/AP Portables	PAM+LNA+SPDT Switch	2.4 - 2.5	3.3V	17dBm	26	140mA	3 x 3 x 0.55
LX5553	802.11b/g/n Handsets	PAM+LNA+SP3T switch	2.4 - 2.5	3.6V (3.0 - 4.2V)	17.5dBm	26	150mA	3 x 3 x 0.55



LX5514M™

World's Smallest WLAN Power Amplifier

Microsemi's LX5514M™ power amplifier supports IEEE 802.11b/g/n WLAN applications in the 2.4-2.5GHz frequency range. It targets the fast-growing market for WLAN products used in space-constrained smartphones and other data-enabled cellular handset designs. The device is based on the company's proven LX5514™ amplifier and has been streamlined to fit into a compact, ultra-low-profile 1.5x1.5mm, 0.4mm high package.

Key Features

- 2.4-2.5GHz operation
- Single-polarity 3.3V supply
- Quiescent current ~ 84mA
- Power gain ~ 27dB
- 19dBm @3% EVM/3.3V
- Total I_c ~ 130mA @19dBm/3.3V
- Complete on-chip input match, simple output match
- Small footprint: 1.5x1.5mm², low profile: 0.4mm



NEW

LX5518™ 2.4 GHz WLAN Power Amplifier

Our LX5518 2.4GHz WLAN Power Amplifier with ultra-high linearity, efficiency, and output power delivers Microsemi's superior performance to challenging environments and is optimized for ultra-high linear output power over a temperature range from -40 to +85°C while delivering world-class low power-added efficiency (PAE). It is designed for high-performance applications such as wireless access points and routers that demand improved broadcast range and data rates to accommodate challenging radio frequency transmission environments. The LX5518 PA meets these challenges by delivering 26.2dBm of orthogonal frequency division multiplexing (OFDM) output power at 3 percent error vector magnitude (EVM) while consuming only 391mA of current for cooler operation.

Key Features

- 2.4 -2.5 GHz operation
- P_{out} 26.2dBm for 3% EVM with 5V supply
- P_{out} 24dBm for 3.5% EVM with 3.3V supply
- 30dB+ OFDM power gain
- Low current consumption: 391mA at 26.2dBm output power
- 50-ohm input match
- Simplified output match
- Temperature-compensated on-chip output power detector with wide dynamic range

WLAN RF Power Solutions

LX5530[™]

4.5 - 6GHz High Power Amplifier

The LX5530 power amplifier is optimized for 802.11a applications and is implemented as a three stage MMIC with active bias, on-chip matching and output pre-matching. At 5V supply it supplies high power gain up to 33dB and provides up to +25dBm linear output for the 802.11a OFDM spectrum and a low EVM of 3% for up to +23dBm output power for the 4.9-5.9GHz band.

- Broadband 4.9-5.9 GHz operation
- Single-polarity 3V - 5V supply
- Power gain ~ 33dB for $V_C = 5V$, $I_{CQ} = 250mA$
- Power gain > ~28dB across 4.9-5.85GHz
- OFDM mask compliance power $P_{out} \sim +25dBm$ over 4.9-5.85GHz
- P_{out} up to +23dBm with EVM ~3% ($V_C = 5V$)
- EVM < ~ 2.5% for $P_{out} = +21dBm$ across 4.9-5.85GHz ($V_C = 5V$)
- EVM < ~ 2.5% for $P_{out} = +19dBm$ across 4.9-5.85GHz ($V_C = 4V$)
- Complete on-chip input match
- Simple output match for optimal broadband EVM
- On-chip RF decoupling
- Temperature-compensated on-chip output
- Power detector with wide dynamic range
- Small footprint, low profile : 3 x 3 x 0.9 mm

LX5535[™]

2.4 - 2.5 GHz Power Amplifier

The LX5535 power amplifier is optimized for 802.11b/g and 802.16 WiMAX applications and is implemented as a three stage MMIC with active bias, on-chip matching and output pre-matching. At 5V supply it supplies high power gain up to 32dB and provides up to +25dBm linear output for the 802.11g specification, and 28dBm power to the 802.11b mask compliant specification. The LX5535 has a low EVM of 3% for up to +25dBm output power for 64QAM / 54Mbps.

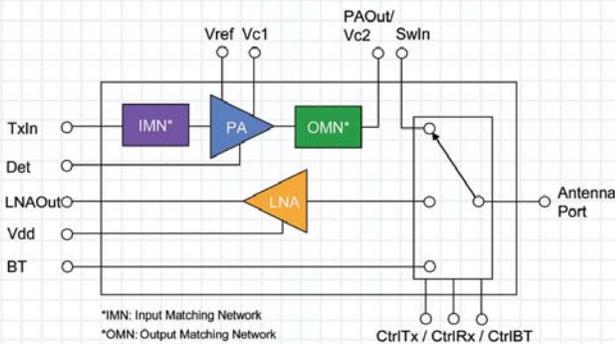
- Advanced InGaP HBT
- 2.3 - 2.4GHz operation
- Single-polarity 3.3 – 5.0V supply
- Quiescent current $I_{CQ} \sim 120mA$
- Power gain ~ 32dB
- Total current ~ 260mA for $P_{out} = 25dBm$ 802.11g
- Total current ~ 370mA for $P_{out} = 28dBm$ 802.11b
- 802.11b mask-compliant power = 28dBm
- Power for EVM = 3.5% for 64QAM / 54Mbps: 25dBm
- Very small footprint: 3 x 3 x 0.9mm
- Suitable for IEEE 802.11b/g applications
- Suitable for IEEE 802.16 WiMAX applications



LX5553TM / LX5543TM

2.4 - 2.5 GHz Front-End Modules

Microsemi's LX5553 802.11b/g/n is a highly integrated front-end module (FEM) that supports Wi-Fi functionality in space-constrained smartphones and other data-enabled cellular handset designs. Designed to deliver excellent performance, the LX5553 integrates an advanced power amplifier with on-chip impedance matching, a fully matched LNA and a SP3T switch that enables the LX5553 to share a single antenna between WLAN and Bluetooth systems, eliminating the need for an additional antenna. The LX5543 is offered to customers who do not need an LNA. Both devices are offered in a 3x3mm package that takes up significantly less space than solutions that use discrete components for these functions.



Microsemi LX5553 Block Diagram

Key Features

- 2.4-2.5GHz 802.11b/g/n front-end solution in a single MLP package
- SP3T for sharing antenna between WLAN and bluetooth systems
- All RF I/O matched to 50
- Single supply voltage 3.0V to 4.2V
- Small Footprint: 3x3mm²
- Low Profile: 0.55mm
- RoHS compliant & Pb-Free
- 2.4-2.5 GHz front-end module

TX Features

- Power gain ~ 25 dB*
- Pout ~ +17 dBm* for 3% EVM at antenna
- Current ~145 mA at +17 dBm*
- Pout ~ +21 dBm* for 11b 1Mbps DSSS mask compliance
- Quiescent current ~ 82 mA

RX Features

- Gain ~ 13 dB*
- Noise Figure ~ 2.1 dB*
- IIP3 ~ +5 dBm*

Bluetooth Path

- Insertion Loss ~ 0.9 dB
- IP1dB ~ +29 dBm
- Includes SP3T switch loss



DC-DC Regulators and Controllers

Microsemi's growing DC-to-DC product family supports up to 40-volt input voltages across a wide range of current output, up to 40 amps. The family includes switching regulators with built-in power field effect transistors (FETs), as well as controllers that use external power FETs and can operate at frequencies up to 2MHz. Microsemi also is an expert in ASIC and PMU development and offers advanced solutions for demanding HDD and smart metering applications



NX7101/7102TM NX4108TM

18V Synchronous Switching Regulators

The NX7101 and NX7102 are 340kHz fixed frequency, current mode, PWM synchronous buck (step-down) DCDC converters. They are capable of driving 2A or 3A loads respectively with high efficiency, and excellent line and load regulation for set-top box, LCD TV, notebook, netbook and PoE powered device applications.

Key Features

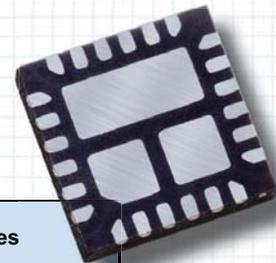
- 2A / 3A synchronous step-down regulator
- Operational input supply voltage range: 4.75V-18V
- 340kHz switching frequency
- Under voltage lock-out (UVLO)
- Over voltage protection (OVP)
- Programmable external soft-start
- Cycle-by-cycle over-current protection
- Frequency fold back under short condition

1 Amp, 1MHz Synchronous Switching Regulator

The NX4108 is a current mode PWM buck switcher with internal compensation and can provide up to 1A output current with FET on board. It operates from 2.8V to 5.5V input and provides output as low as 0.6V which is ideal for the applications using single cell Li-Ion batteries as well as other 3.3V input bus supply applications.

Key Features

- Internal digital soft start
- Internally-compensated Current Mode Controller
- <1uA shut-down current
- Peak current limit with hiccup feature and over temperature protection
- Prebias start-up operation
- Enable available



DC-DC Switching Regulator Selector Guide

Part Number Package	Description	Iout	Vin Range	Vref	Features
NX4108 SOT23-5L	1Amp , 1MHz Synchronous Switching Regulator	1A	2.7V to 5.5V	0.6V	Enable
NX4110 SOT23-5L	1Amp, 1MHz Synchronous Switching Regulator	1A	2.7V to 5.5V	0.6V	Power good
LX13088 3x3 DFN-10L	Dual 1 Amp, 1.3MHz Synchronous Switching Regulator	1A	4V to 5.5V	1.0V	Power good, PFM mode
LX1918 3x3 MLP-8L	1.8Amp Step Down Synchronous Converter	1.8A	2.7V to 6V	0.6V	PFM, external sync
LX13045A 3x3 -MLP-6L	2 Amp, 1.3MHz Synchronous Switching Regulator	2A	4V to 5.5V	0.5V	Power good
LX3005 SOIC-8	2 Amp, 420kHz, Non-synchronous Switching Regulator	2A	6V to 25V	0.8V	Enable
NX7101 SOIC-8	2 Amp, 340kHz, 18V Synchronous Switching Regulator	2A	5V to 18V	0.8V	Enable, adjustable soft start
NX7102 SOIC-8, EXP	3 Amp, 340kHz, 18V Synchronous Switching Regulator	3A	5V to 18V	0.8V	Enable, adjustable soft start
NX9415 4x4 QFN-24L	5 Amp, 2MHz, 22V Synchronous Switching Regulator	5A	8V to 22V	0.8V	Power good, adjustable frequency
NX9511B 5x5 QFN-32L	8 Amp, 1MHz Synchronous Switching Regulator	8A	4.5V to 24V	0.8V	Enable, latched ocp
NX9548 5X5 QFN-32L	8 Amp, PFM Mode Notebook Switching Regulator	8A	4V to 22V	0.75V	Enable, PFM mode with Constant On-Time Approach

DC-DC Switching Controller Selector Guide

Part #	Description	Package	Vin min	Vin max	Single Supply Operation (Note 1)	Freq (Each CH)	PFM	Pgood
LX1675	Triple Synchronous Controller with LDO Controller	QFN 5x7-38L	4.5	24	Yes	Fix 300KHz 600KHz	No	No
LX1752	Dual Synchronous Controller	QFN 4x5-28L	4.5	24	Yes	Adj 800KHz	No	No
NX2114/NX2114A	Single Synchronous Controller	SO8	3	24	No*	Fix 300KHz 600KHz	No	No
NX2116B	High Frequency Single Synchronous Controller	QFN 3x3-16L	3	24	No*	Fix 1MHz	No	Yes
NX2124/NX2124A	Single Synchronous Controller	SO8	3	24	No*	Fix 300KHz	No	No
NX2138	Single PFM Synchronous Controller	QFN 4x4-16L	5.5	22	No*	Adj 500KHz	Yes	Yes
NX2139A	Single PFM Synchronous Controller and LDO Controller	QFN 3x3-16L	5.5	22	No*	Adj 500KHz	Yes	Yes
NX2147	Single PFM Synchronous Controller with Dynamic Voltage Adj	QFN 3x3-16L	5.5	22	No*	Adj 500KHz	Yes	Yes
NX2154	Single High Voltage Synchronous Controller	SO8	3	40	No*	Fix 300KHz	No	No
NX2155H	Adjustable High Frequency Single Synchronous Controller	MSOP-10L	8	22	Yes	Adj 2MHz	No	No
NX2305	Single Synchronous Controller and LDO Controller with Independent Soft Start	SOIC-16L	7	15	Yes	Fix 300KHz	No	Yes
NX2423	Two Phase High Frequency Synchronous Controller	QFN 4x4-24L	3	24	Yes	Adj 800KHz	No	Yes
NX2601	Dual Synchronous Controller and LDO Controller	QFN 5x5-32L	7	24	Yes	Adj 800KHz	No	No
LX2749	Single Synchronous Controller with Adj Frequency and LDO Controller	SOIC-14L	10	16	Yes	Adj 1.5MHz	Yes	No
LX2750	Single Synchronous Controller with Adj Frequency, Adj OCP, Pgood and LDO Controller	QFN 3x3-16L	10	16	Yes	Adj 1.5MHz	Yes	Yes For SW Reg
NX2837	Fixed 5V Single Synchronous Controller + 3.3V/500mA LDO	MSOP-10L	9	22	Yes	Fix 350KHz	No	Yes For LDO
NX2838	Adj HF Single Synchronous Controller + 3.3V/500mA LDO	QFN 3x3-16L	8	30	Yes	Adj 1MHz	No	Yes For LDO

Note 1: * No means product requires a separate 5V biasing supply

NX2155H™ Synchronous PWM Controller

The NX2155H controller IC is a single input supply synchronous buck controller IC designed for step down DC to DC converter applications. The NX2155H is optimized to convert bus voltages from 8V to 22V to an output voltage as low as 0.8V. It is ideal for LCD TV, Hard Disk Drive, Set Top Box applications.

Key Features

- Single supply voltage from 8V to 22V
- Internal 5V regulator
- Programmable operational frequency of 2MHz
- Internal digital soft start function
- Less than 50 nS adaptive deadband
- Current limit hiccup triggering

NX2423™ 2-Phase, Synchronous PWM Controller

The NX2423 is a two-phase PWM controller with an integrated FET driver designed for low voltage, high current applications such as graphic cards with high current Vcore supplies, and high current on-board DC to DC converters.

Key Features

- Low impedance on-board drivers
- Hiccup current limit and IOOUT indication
- Power good for power sequencing
- Programmable frequency
- Prebias start up
- OVP without negative spike at output
- Selectable between internal and external reference
- Internal Schottky diode from PVCC to BST

PoE PSE Managers

Microsemi's PoE PSE manager ICs can be used to develop a wide variety of power sourcing equipment including switches, routers and specialized platforms including PoE-enabled TVs and set-top boxes. These platforms can be used to cost-effectively provide higher levels of managed power to a

broader range of Ethernet devices in small-office, home-office and residential applications including WiMAX transmitters, pan-tilt-zoom cameras, fiber-to-the-home optical network terminators and outdoor xDSL/cable modems.

Selection Guide

P/N	Ports	802.3at	2-events Class	Legacy Detection	Alt	Synch. 4-pairs	Dynamic P.M.	Emergency P.M.	Backplane P.M.	Resilient P.M.	Auto Mode	Enhanced Mode MCU	xCAT Mode	FETs	Rsense
PD64001	1	Yes	Yes	Yes	B only	Yes	No	No	No	No	Yes	N/A	No	External	0.5ohm
PD69101	1	Yes	Yes	Yes	A/B	Yes	Yes	No	No	No	Yes	N/A	No	0.3ohm	0.5ohm
PD69008	8	Yes	Yes	Yes	A/B	Yes	Yes	16 PSUs	Yes	Yes	Yes	PD69000	Yes	External	0.5ohm
PD69012	12	Yes	Yes	Yes	A/B	Yes	Yes	16 PSUs	Yes	Yes	Yes	PD69000	Yes	External	0.5ohm
PD69104	4	Yes	Yes	Yes	A/B	Yes	Yes	16 PSUs	Yes	Yes	No	PD69100	Yes	0.3ohm	0.36ohm
PD69104A	4	Yes	Yes	Yes	A/B	No	Yes	16 PSUs	Yes	Yes	Yes	N/A	No	0.3ohm	0.36ohm
PD69108	8	Yes	Yes	Yes	A/B	Yes	Yes	16 PSUs	Yes	Yes	No	PD69100	Yes	0.3ohm	0.36ohm
PD67124	24	Yes	Yes	Yes	A/B	Yes	Yes	16 PSUs	Yes	Yes	Yes	Built-in	Yes	0.1ohm	0.5ohm
PD67112	12	Yes	Yes	Yes	A/B	Yes	Yes	16 PSUs	Yes	Yes	Yes	Built-in	Yes	0.1ohm	0.5ohm
PD67108	8	Yes	Yes	Yes	A/B	Yes	Yes	16 PSUs	Yes	Yes	Yes	Built-in	Yes	0.1ohm	0.5ohm

PD69101™

Single-port PoE PSE Manager

The PD69101 is a one-port Power-over-Ethernet manager capable of delivering 51 watts to powered devices while still complying with stringent IEEE802.3at-2009 requirements. System designers also can go well beyond the IEEE standard to safely deliver up to 75W of power by using two of the new Microsemi PoE chipset devices over four pairs of Ethernet cable.



Key Features

- Detects and disables disconnected ports, utilizing DC disconnection methods, as specified in the IEEE 802.3af-2003 and IEEE802.3ar-2009 standards
- Can optionally detect legacy/pre-standard PD devices
- Provides PD protection such as over-load, under-load, over-voltage, over-temperature and short-circuiting
- Supports supply voltages ranging from 44 V to 57 VDC with no need for additional power supply sources
- Is a low power device using an internal 0.3 Ω MOSFET and an external 0.5 Ω sense resistor
- 24-pin, plastic QFN package



Thin Clients



P-T-Z Cameras



IP Video Phones



802.11n Access Points



Point of Sale Terminals



Access Controls

PD69108™

The PD69108 is the new flagship multi-port PoE IC from Microsemi. Based on the PD69101, but with improved sense resistor capabilities, and with support for the high end power management capabilities already available with the PD690xx family, but now with internal FET's, the PD69108, PD69104 and PD69104A can be used to build PoE systems taking a dramatically lower amount of space, lower power consumption and lower cost.

Key Features

- Power all PoE PD's including Cisco's inline power
- Highest integration on the market, lowest PCB real estate
- No need for external DC/DC converter
- Minimal power supply stress and EMI noises
- Power management: based on power allocation and priority map, on class value or on both
- Prioritization of ports in case of power reduction
- Logical to physical port map
- User can receive interrupts on status or have automatic LED driving
- System monitoring and per port thermal protection, including PCB protection

PD69108 Features

PD69108 Benefits

8/4-port PSE w/integrated FET QFN-48 8x8mm with built-in 3.3VDC Only 150 components for 24-ports!	Smallest Footprint and lowest total solution cost
IEEE802.3at-2009 w/2 events classification	No need for host or for LLDP software
Dynamic PM with LLDP support: smaller PSU	Low system cost, lower idle consumption
Emergency PM: many PSU's	Low shipping cost, flexibility for full power
Backplane PM: sharing PSU's	Rationalizing the usage of external PSU's
Resilient PM: preventing PD's disconnection	Making sure the IT manager is never fired
Synchronous 4-pairs 60W per port 100% standard compliant Up to 100W per port	Can power Thin Clients/ POS/ Access Control devices Dissipates ½ the power on cable
Lowest solution power dissipation on market 5.5W for 24-port AT 2-pairs	Fanless Gigabit, Energy Star™-compliant Switches
Backwards Compatible with PD690xx Enhanced Mode and xCAT Mode	Low/No migration cost
Legacy detection All Cisco Inline Power™ All Power over LAN™	Compatible with all PoE and pre-standard devices
-40 to +85°C	Commercial and Industrial applications
AEC-Q100 qualified	Automotive designs

PD67100™

Dual In-Line Memory Module Family

The PD67100 PoE DIMMs enable switch designers to reduce the time and cost required to add IEEE802.3at-2009 PoE+ capability to existing switches, while retaining the flexibility to use the same switch for both low power PoE and non-PoE implementation. The modules integrate Microsemi's PD69012 PoE Manager IC into an easy-to-integrate dual in-line memory module (DIMM). The product is offered in 8, 12 and 24 port options as the PD67108, PD67112 and PD67124.

Key Features

- IEEE 802.3AT-2009 and IEEE802.3AF-2003 compliant
- Up to 30W per port power PoE solution
- Supports IETF PoE MIB (RFC 3621)
- Up to 24 power ports per single DIMM
- Up to 96 ports in a system using master and slave configuration
- Thermal protection per port and thermal monitoring capabilities
- Pre-standard detection methods (Cisco Inline Power and Power over LAN Legacy)
- Non-standard terminals supported

PoE PD Controller ICs

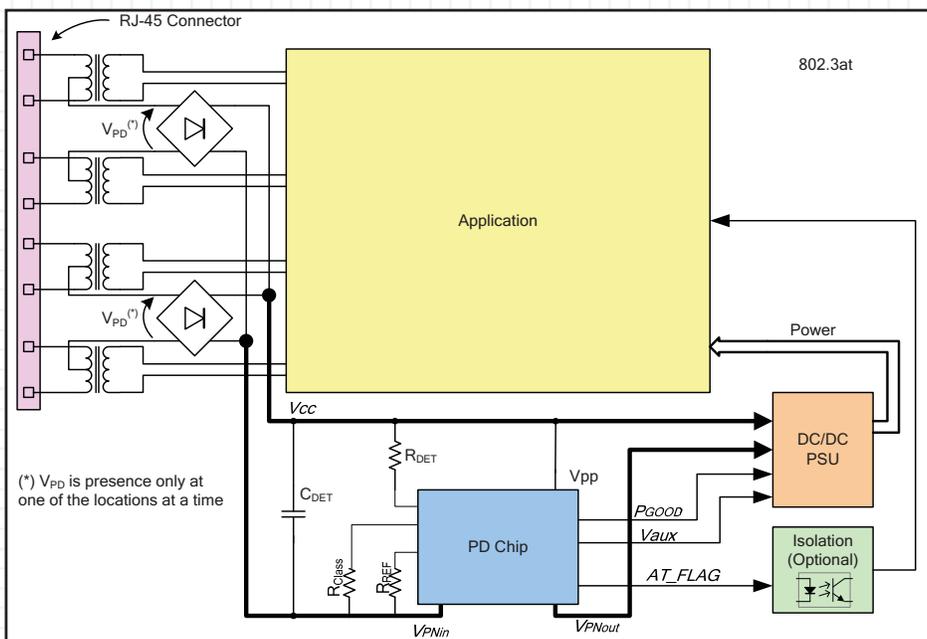
Microsemi has introduced a new family of integrated PoE Powered Device solutions that are ideal for use in powered devices such as IP phones, WLAN access points, network cameras and 48VIN telecom/networks. Our solutions include Front End ICs and Controller solutions that support both IEEE 802.3AF and AT applications

PD70X00 Selection Guide

Part No.	Description	Package
PD70100	IEEE 802.3AF Front End	8 PIN, Low Cost QFD
PD70200	IEEE 802.3AT Front End	8 PIN, Low Cost QFD
PD70101	IEEE 802.3AF Front End + Controller	28 PIN MLPQ
PD70201	IEEE 802.3AT Front End + Controller	28 PIN MLPQ

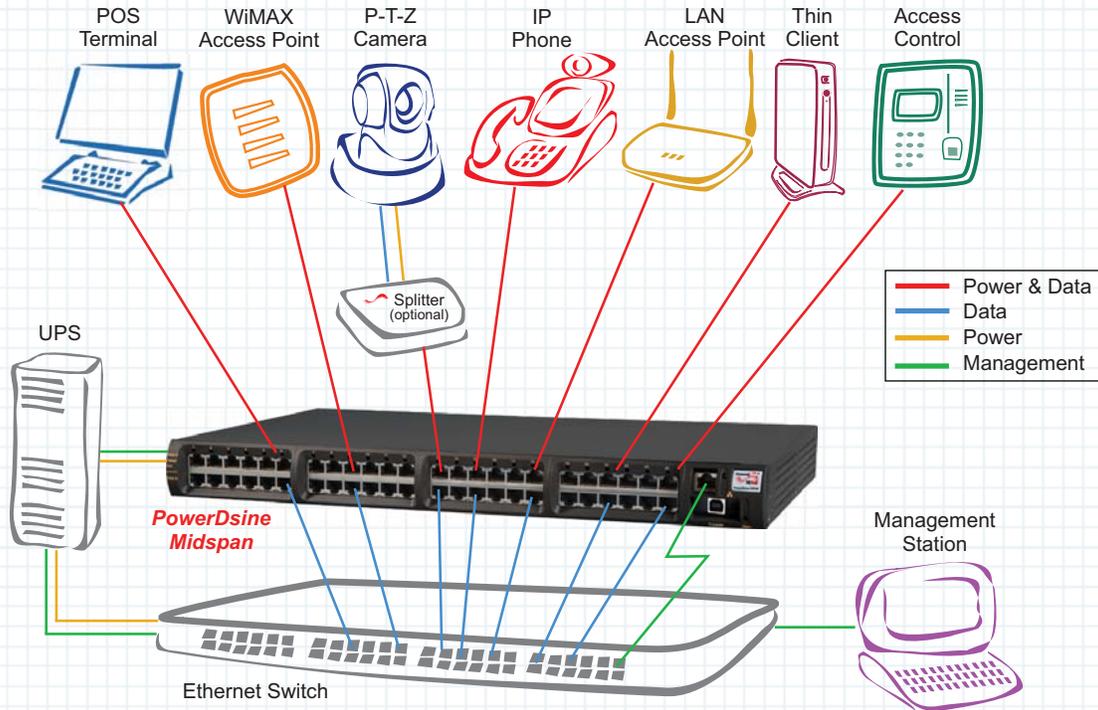
Key Features

- Two-events classification ID with a Level Signal indicating Type 1 or 2 PSE
- Controller supports 4-pair applications of up to 47.7/55.2 W
- PD detection and programmable classification signature
- Less than 10uA offset current during detection
- 100 to 500 kHz adjustable DC-DC switching frequency (controller)
- DC-DC frequency synchronizable to external clock
- Supports low power mode operation for higher efficiency in standby mode
- Over load, short circuit and thermal protection



**Typical 4 Pairs
IEEE802.3AT
application**

PowerDsine® PoE Midspans



Microsemi's PowerDsine Midspan is the first system on the market to supply reliable, uninterrupted power to IP phones, wireless LAN access points, network security cameras, and other ethernet devices using your existing CAT-5, CAT-5E and CAT-6 LAN cable infrastructure. Ideal for both new and legacy installations, PowerDsine systems eliminate the time, cost and inconvenience of installing separate power cabling. This patented technology, when used

in conjunction with a centralized Uninterruptible Power Supply (UPS), ensures continuous operation of phones, access points and cameras – even during power failures.



Midspan Comparison Chart & Selection Guide													
Midspan Model	Ports				Output Watts (max)					Power View Pro	Data Rate**		Warranty
	1	6	12	24	15	30	36	40	60		10/100	10/100/1000	
9501G	◆									◆		◆	1-year
9506G		◆								◆		◆	Lifetime*
9512G			◆							◆		◆	Lifetime*
9001G	◆					◆						◆	1-year
9001G-40/SP	◆							◆				◆	1-year
9006G		◆								◆		◆	Lifetime*
9012G			◆							◆		◆	Lifetime*
9024G				◆						◆		◆	Lifetime*
6506/6506G		◆			◆					◆		◆	Lifetime*
6512/6512G			◆		◆					◆		◆	Lifetime*
6524/6524G				◆	◆					◆		◆	Lifetime*
3506/3506G		◆			◆					◆		◆	1-year
3512/3512G			◆		◆					◆		◆	1-year
3524/3524G				◆	◆					◆		◆	1-year
3001/3001GC	◆				◆					◆		◆	1-year

**Pass through switch rate

*See Terms and conditions on website

LX2400 IDEAL™ Solar Bypass Solution



The LX2400 IDEAL™ Solar Bypass Device with Microsemi's patented CoolRUN™ technology provides a bypass path in PV module applications with the industry's lowest forward voltage drop resulting in negligible heat generation and temperature rise during operation for best in class reliability and robustness. A scalable architecture provides future-proofing for next generation PV modules operating at higher than 10A currents.

Developed with Microsemi's 30-year high reliability design methodology, the LX2400's typical forward voltage drop of 50mV at 10A generates a negligible 10°C temperature rise for the coolest operating solar bypass solution available on the market. In addition, the device is fully functional from -50°C to +150°C and extreme operating environment survivability is enhanced with bi-direction lightning protection support up to 1.4 Joules significantly exceeding existing market solutions.

- Negligible Heat Generation – CoolRUN™ Technology

- Less than 10°C rise at 10A
- Future proof support for higher current modules
- No need for heat sink

- 30 Year, High Reliability Design Rule Methodology

- Supports long-life warranties
- Supports steady state current of 20A
- Low reverse leakage
- Bi-directional lightning survivability per IEC

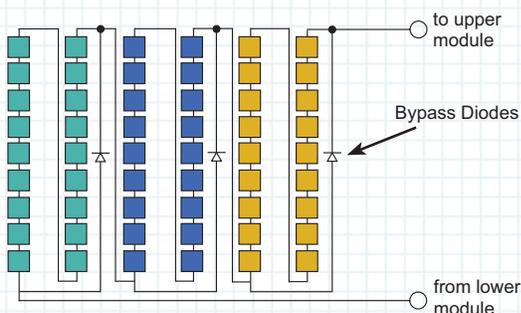
- Extreme Environment Survivability

- Fully functional from -50°C to +150°C
- Passes 1.4 Joule lightning tests

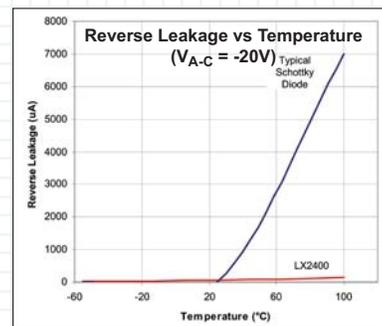
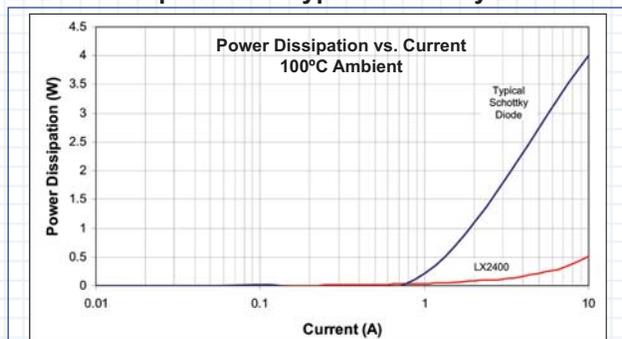
- IEC61215, Section 10.18 Compliant

Forward Voltage: 50mV, 10A @90°C typ.

Reverse Current: 100uA Leakage @ 90°C



LX2400 Comparison to Typical Schottky Diode





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