

Linear Constant-Current HB-LED Drivers

Maxim offers linear, constant-current, high-brightness LED drivers that are ideal for automotive and general lighting applications. These rugged devices come in very small footprints, reduce cost, and minimize EMI.

Features ▶

MAX16806

- EEPROM or I²C dynamically programmable LED current
- On-board 200 Hz ramp generator
- Flexible analog or PWM dimming control
- 5.5V to 40V input voltage range
- 35 mA to 350 mA, adjustable LED current

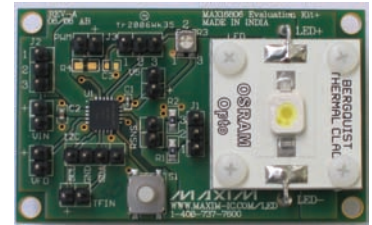
Benefits ▶

MAX16806

- Programmable LED current foldback for high input voltage and high temperature minimizes power dissipation
- Programmable LED current reference simplifies binning adjustment
- Analog control signal for PWM dimming eliminates the need for a μ C
- Wetting current and debounce for momentary switch minimizes the number of components
- Waveshaping minimizes EMI during dimming

Applications ▶

- Automotive interior lighting (map, dome, courtesy, and mood)
- Automotive exterior lighting (side markers, RCL, and DRL)
- Emergency vehicle warning lights
- Navigation and marine indicators
- Architectural and decorative lighting



MAX16806 evaluation kit (EV kit)

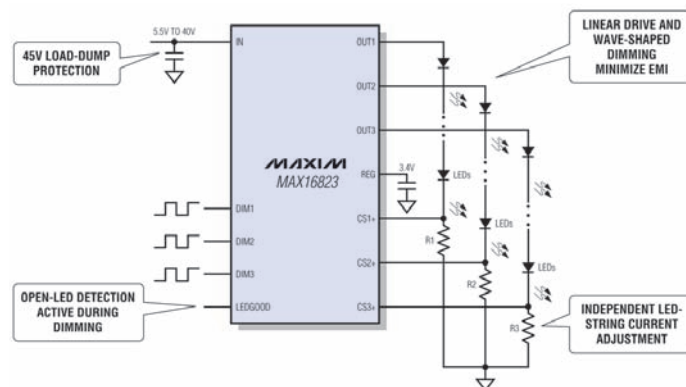
Product Specifications ▶

Part Number	Type	Dimming Type	Number of LEDs**	LED Configuration	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA/#ch.)	Peak Efficiency (%)	Diagnostic Capabilities*	Interface	Operating Temperature (°C)	Markets	
MAX16800	Linear	PWM	1-10	Series	6.5-40	38.6	35-350	>90	TSD	PWM signal	-40 to +125	CL TR	
MAX16803		PWM	1-10	Series	6.5-40	38.6	35-350	>90	TSD	PWM signal	-40 to +125	CL TR BL	
MAX16804		Analog/PWM	1-10	Series	5.5-40	38.7	35-350	>90	TSD	Analog/PWM signal	-40 to +125	CL TR BL	
MAX16805		Analog/PWM	1-10	Series	5.5-40	38.7	35-350	>90	TSD	I ² C/analog/PWM signal	-40 to +125	CL TR BL	
MAX16806		Analog/PWM	1-10	Series	5.5-40	38.7	35-350	>90	TSD	I ² C/analog/PWM signal	-40 to +125	CL TR BL	
MAX16823		PWM	1-10	3 strings	3 strings	5.5-40	39.1	70 x 3	>90	TSD/LOD	PWM signal	-40 to +125	CL TR BL
MAX16824		PWM	1-9	3 strings	3 strings	6.5-28	34.8	150 x 3	>90	TSD	SPI™/PWM signal	-40 to +125	CL TR BL

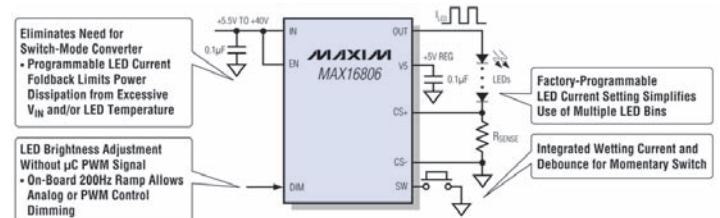
MARKETS LEGEND CL COMMERCIAL LIGHTING FL FLASHLIGHTS TR TRANSPORTATION BL BACKLIGHTING SI SIGNAGE

*Diagnostic capabilities: WDT: Watchdog timer, TSD: Thermal Shutdown, TEF: Thermal error flag, OVM: Output Voltage monitoring, LOD: LED open detection

**Assumes each LED V_F max.=4V



3-channel driver has open-LED detection and independent LED string-current adjustment

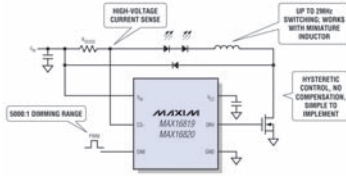


High-current linear LED driver eliminates the need for a μ C and switch-mode converter; reduces cost and EMI in automotive lighting applications



Switch-Mode HB-LED Drivers for 150 mA to 30A LED Current

Maxim's single-channel, switch-mode, HB-LED drivers are tailored to enable new frontiers in automotive and general lighting. The device's highly integrated, high-efficiency operation minimizes board-space requirements, component count, and cost while enabling optimized thermal and EMI design.



Ideal for LED MR16 lamp

Features ▶

MAX16831

- Integrated differential LED current-sense amplifier
- Wide 5.5V to 76V input range
- Floating dimming driver capable of driving an n-channel MOSFET
- Analog or PWM dimming control signal
- Low 107 mV LED current sense

Benefits ▶

MAX16831

- Suitable for buck, boost, and buck-boost topologies
- Load-dump and cold-start automotive compliance
- Simplified dimming control
- 5 percent LED current accuracy for brightness consistency
- Over 92% efficiency

Applications ▶

- Automotive exterior lighting (side markers, adaptive front-light systems, fog lights, low beams, RCL, and DRL)
- Industrial and architectural lighting
- Projectors with RGB LED light sources
- Emergency lighting
- Navigation and marine indicators

Product Specifications ▶

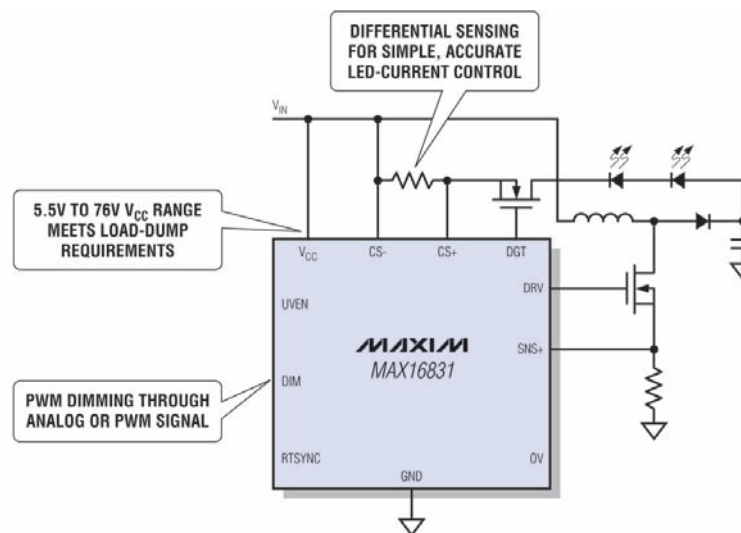
Part Number	Type	Dimming Type	Number of LEDs**	LED Configuration	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA/#ch.)	Peak Efficiency (%)	Diagnostic Capabilities*	Interface	Operating Temperature (°C)	Markets
MAX16801	Boost, flyback, SEPIC	Analog/PWM	Set externally	Series	Offline with external bias	Limited by external FET	10,000	>90	NA	PWM signal	-40 to +85	CL BL
MAX16802		Analog/PWM	Set externally	Series	10.8-24	Limited by external FET	10,000	>90	NA	PWM signal	-40 to +85	CL BL
MAX16818	Buck, boost, buck-boost, SEPIC	Analog/PWM	Set externally	Series	4.5-5.5 and 7-28	Limited by external FET	30,000	>94	TSD/OVM	Analog or PWM signal	-40 to +125	CL TR BL
MAX16820	Buck	PWM	1-7	Series	4.5-28	26	3,000	>94	TSD	PWM signal	-40 to +125	CL FL TR BL
MAX16821	Synchronous buck, boost, buck-boost, common-anode buck	Analog/PWM	Set externally	Series	4.5-5.5 and 7-28	Limited by external FET	30,000	96	TSD/OVM	Analog or PWM signal	-40 to +125	CL TR BL
MAX16831	Buck, boost, buck-boost, SEPIC	Analog/PWM	Set externally	Series	5.5-76	Limited by external FET	10,000	>92	TSD	Analog or PWM signal	-40 to +125	CL TR BL

MARKETS LEGEND

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**Assumes each LED V_F max.=4V



Switch-Mode/Linear Multichannel HB-LED Drivers for LCD Backlighting



Maxim offers highly-integrated, high-efficiency LCD white and RGB LED backlight drivers for the full range of display sizes. Optimized voltage preregulation, a wide dimming ratio, accurate LED current regulation, and tight channel-to-channel matching are all included for high-quality LED backlight driving.



Features ▶

- 6, 8, or 16 constant-current output channels
- $\pm 1.5\%$ or $\pm 3\%$ current-matching among outputs
- Paralleling of the channels allows for higher current per LED string
- Outputs rated for up to 36V continuous voltage
- Wide dimming ratio up to 5,000:1

Benefits ▶

- Switch-mode preregulator provides optimized voltages for the LED array
- Constant-current sinking and channel-to-channel matching ensure brightness uniformity
- Brightness optimization with a wide dimming range for all ambient light levels
- Environmentally friendly, mercury-free backlighting
- High-frequency operation for compact designs

Applications ▶

- Automotive navigation, heads-up, and infotainment displays
- Notebook and desktop LED backlighting
- Industrial and medical displays
- Ambient, mood, and accent lighting

Product Specifications ▶

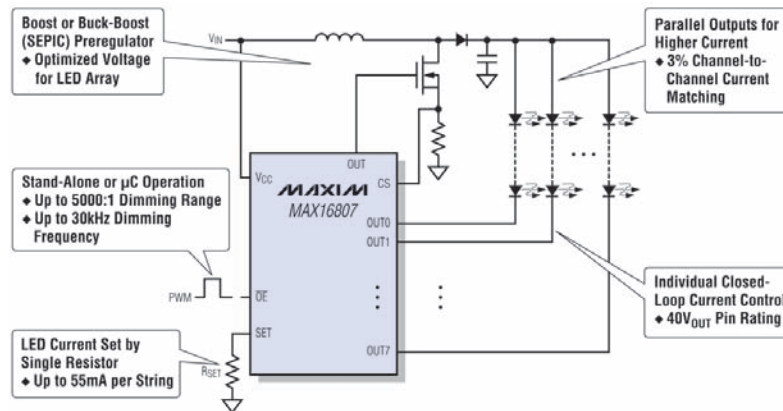
Part Number	Type	Dimming Type	Number of LEDs**	LED Configuration	Input Voltage (VDC)	Output Voltage (VDC)	Output Current (mA/#ch.)	Peak Efficiency (%)	Diagnostic Capabilities*	Interface	Operating Temperature (°C)	Markets
MAX16807	Boost, SEPIC/linear	PWM	1-10	Series/parallel	8-26.5	36	55 x 8	>90	TSD	PWM/SPI™	-40 to +125	CL TR BL SI
MAX16808		PWM	1-10	Series/parallel	8-26.5	36	55 x 8	>90	TSD/LOD	PWM/SPI	-40 to +125	CL TR BL SI
MAX16809		PWM	1-10	Series/parallel	8-26.5	36	55 x 16	>90	TSD	PWM/SPI	-40 to +125	CL TR BL SI
MAX16810		PWM	1-10	Series/parallel	8-26.5	36	55 x 16	>90	TSD/LOD/WDT	PWM/SPI	-40 to +125	CL TR BL SI
MAX8790	Boost/linear	Analog or PWM	1-8	Series/parallel	4.5-26	28	25 x 6	>90	TSD/OVM	Analog/PWM	-40 to +85	TR BL

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EEPW Analog/Mixed-Signal IC Market Application Award winners: MAX16807-MAX16810