



60V Step-Down Drives 3 Strings of Ten 100mA LEDs with 10,000:1 True Color PWM Dimming

MILPITAS, CA – July 7, 2010 – Linear Technology announces the [LT3596](#), a 60V, 1MHz step-down DC/DC converter designed to operate as a constant current LED driver for up to 30 LEDs. From a 48V input, the LT3596 can drive up to three strings of LEDs, each with up to ten 100mA LEDs in series, delivering efficiencies of over 90%. The LT3596's multichannel capability makes it ideal for LED billboards as well as industrial and medical displays. Its input voltage range of 6V to 60V makes it well suited for automotive and industrial applications. The LT3596 offers $\pm 1.5\%$ LED current matching to insure uniform display brightness and True Color PWM™ dimming offers dimming ratios as high as 10,000:1. A programmable 200kHz to 1MHz fixed frequency operation and current-mode architecture ensures stable operation over a wide range of supply and output voltages, minimizing the size of external components. Additionally, the switching frequency is synchronizable to an external clock. The LT3596's thermally enhanced 5mm x 8mm QFN package provides a highly compact solution footprint for LED backlighting applications.

The LT3596 uses a single 800mA, 60V internal switch to provide a step-down constant current source. The internal buck converter uses an adaptive feedback loop to regulate the output voltage slightly higher than the required LED voltage to ensure maximum efficiency. If any of the LED strings experience an open or short-circuit, it will continue to regulate the other strings and signal the FAULT pin. Additional features include LED current derating based on junction temperature and/or LED temperature and LED disconnect in shutdown.

The LT3596EUHG is available in a 39-lead 5mm x 8mm QFN package. Pricing starts at \$3.65 each in 1,000-piece quantities. An industrial grade version, the LT3596IUHG is tested and guaranteed to operate from a -40°C to 125°C operating junction temperature and is priced at \$4.29 each in 1,000-piece quantities. All versions are available from stock. For more information, visit www.linear.com/pr/3596.


Photo Caption: 60V Step-Down LED Driver with 10,000:1 True Color PWM™ Dimming

Summary of Features: LT3596

- 300mA Buck Regulator, Drives Up to 10 100mA LEDs per Channel with Fast NPN Current Sources
- Fast Current Sources for <1us Pulse Widths (10,000:1 True Color PWM™ Dimming at 100Hz)
- LEDs Disconnected in Shutdown
- Adaptive V_{OUT} for Increased Efficiency
- 6V to 60V Input Voltage Range
- $\pm 1.5\%$ Accurate LED Current Matching
- External Resistors Set LED Current for Each Channel
- Requires No External Compensation
- Programmable Switching Frequency (200kHz to 1MHz)
- Synchronizable to External Clock
- Open, Short LED Detection and Reporting
- Programmable LED Thermal Derating and Reporting
- Programmable Temperature Protection
- $5 \times 8\text{mm}^2$ Thermally Enhanced QFN Package with 0.6mm High Voltage Pin Spacing

About Linear Technology

Linear Technology Corporation, a manufacturer of high performance linear integrated circuits, was founded in 1981, became a public company in 1986 and joined the S&P 500 index of major public companies in 2000. Linear Technology products include high performance amplifiers, comparators, voltage references, monolithic filters, linear regulators, DC-DC converters, battery chargers, data converters, communications interface circuits, RF signal conditioning circuits, uModule® products, and many other analog functions. Applications for Linear Technology's high performance circuits include telecommunications, cellular telephones, networking products such as optical switches, notebook and desktop computers, computer peripherals, video/multimedia, industrial instrumentation, security monitoring devices, high-end consumer products such as digital cameras and MP3 players, complex medical devices, automotive electronics, factory automation, process control, and military and space systems.

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