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Drive up to Four Strings of Ten 120mA LEDs with 3000:1 True Color PWM Dimming

MILPITAS, CA – January 22, 2009 – Linear Technology announces the LT3599, a 45V, 2.1MHz DC/DC boost mode converter designed to operate as a constant current LED driver for up to 40 white LEDs. From a 12V input, the LT3599 can drive up to four strings of LEDs, each with up to ten 120mA white LEDs in series while delivering efficiencies up to 90%. Its multichannel capability makes it ideal for medium-sized TFT-LCD backlighting applications. The LT3599's input voltage range of 3.1V to 30V is well-suited for automotive, medical and industrial applications. The device offers 1.5% LED current matching to ensure uniform brightness of the display. Dimming ratios as high as 3,000:1 can be attained by using True Color PWM™ dimming. A programmable 200kHz to 2.1MHz fixed frequency operation and current mode architecture offers stable operation over a wide range of supply and output voltages while minimizing the size of the external components. Additionally, the switching frequency is synchronizable to an external clock for improved noise immunity. The LT3599's thermally enhanced 5mm x 5mm QFN or TSSOP-28E package provides a highly compact solution footprint for LED backlighting applications.

The LT3599 uses a single 2A, 45V internal switch to provide a boost mode constant current source. However, even when V_{IN} exceeds V_{OUT} , the LT3599 will continue to regulate the LED current. The internal boost 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 experiences an open circuit, it will continue to regulate the existing strings and signals the OPENLED alert pin. If higher current LEDs are required, multiple strings can be combined, enabling it to drive up to two strings of ten 240mA LEDs. Additional features include LED current derating based on junction temperature and/or LED temperature and programmable overvoltage protection when all LED strings are disconnected.

The LT3599EUH is available in a 32-lead 5mm x 5mm QFN package and the LT3599EFE is offered in a TSSOP-28E. 1,000-piece pricing starts at \$3.25 each and \$3.35 each, respectively. Industrial grade versions, the LT3599IUF and LT3599IFE, are tested and guaranteed to operate to the -40°C to 125°C operating junction temperature and are priced at \$3.82 each and \$3.94 each, respectively, in 1,000-piece quantities. All versions are available from stock. For more information, visit www.linear.com.


Photo Caption: 45V, 4-Channel Boost Mode LED Driver

Summary of Features: LT3599

- True Color PWM Dimming Ratio up to 3000:1
- Drives Four Strings of LEDs up to 120mA
- $\pm 1.5\%$ Accurate LED Current Matching
- Wide Input Voltage Range: 3.1V to 30V
- Output Voltage Up to 44V
- Regulates LED Current Even When $V_{IN} > V_{OUT}$
- Disconnects LEDs in Shutdown
- Programmable Maximum V_{OUT} (Regulated)
- Open/Short LED Protection & Fault Flags
- Programmable LED Current Derating
- Adjustable Frequency: 200kHz to 2.1MHz
- Synchronizable to an External Clock
- Analog Dimming up to 20:1
- Programmable Input UVLO with Hysteresis
- Thermally Enhanced 32-Pin (5mm x 5mm) QFN & 28-Pin TSSOP Packages

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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