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60V Step-Down LED Driver Drives Three Independent LED Strings of 100mA LEDs & Offers 10,000:1 True Color PWM Dimming

MILPITAS, CA – March 21, 2011 – Linear Technology announces the [LT3597](#), a 60V, 1MHz, step-down DC/DC converter designed to operate as a three channel, constant current LED driver. Each channel of the LT3597 contains a constant current sink LED driver with a dedicated adaptive-output buck converter. This design offers maximum efficiency for applications, such as RGB displays, which require different output voltages for each LED string. From a 48V input, the LT3597 can drive up to three strings of LEDs, each with up to ten 100mA LEDs in series, delivering efficiencies of over 90%. The LT3597's multichannel capability makes it ideal for backlighting LED billboards as well as industrial, automotive and medical displays. Similarly, its input voltage range of 6V to 60V makes it well suited for industrial, automotive and medical applications. Each LED string can be independently programmed to deliver up to 100mA of LED current with $\pm 2\%$ current matching between strings. Furthermore, each channel can be independently dimmed with True Color PWM™ dimming, offering 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 LT3597's thermally enhanced 5mm x 8mm QFN package provides a highly compact solution footprint for LED lighting applications.

The LT3597 uses three independent 400mA, 60V internal switches to provide step-down constant current sources. The internal buck converters use 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, the LT3597 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 LT3597EUHG is available in a 39-lead 5mm x 8mm QFN package. Pricing starts at \$3.95 each in 1,000-piece quantities. An industrial grade version, the LT3597IUHG is tested and guaranteed to operate from a -40°C to 125°C operating junction temperature and is priced at \$4.54 each in 1,000-piece quantities. All versions are available from stock. For more information, visit www.linear.com/product/LT3597


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

Summary of Features: LT3597

- Three 100mA Buck Regulators, Each Drives Up to 10 LEDs with Fast NPN Current Sources
- Fast Current Sources for <1μs 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
- ± 2% LED Current Matching
- External Resistor Sets LED Current for Each Channel
- Internal Compensation & Soft-Start
- Programmable Switching Frequency (200kHz to 1MHz)
- Synchronizable to External Clock
- Open LED Detection & Reporting
- Shorted LED Pin Protection & Reporting
- Programmable LED Thermal Derating
- Programmable Temperature Protection
- 5mm × 8mm Thermally Enhanced QFN Package with 0.6mm High Voltage Pin Spacing

About Linear Technology

Linear Technology Corporation, a member of the S&P 500, has been designing, manufacturing and marketing a broad line of high performance analog integrated circuits for major companies worldwide for three decades. The Company's products provide an essential bridge between our analog world and the digital electronics in communications, networking, industrial, automotive, computer, medical, instrumentation, consumer, and military and aerospace systems. Linear Technology produces power management, data conversion, signal conditioning, RF and interface ICs, and μ Module[®] subsystems.

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