



## Dual String 2MHz Boost 50mA LED Driver

MILPITAS, CA – October 20, 2015 – Linear Technology announces the [LT3909](#), a high efficiency, constant current LED driver that can drive two strings of up to 10 LEDs at 50mA. To ensure constant brightness, each LED string contains an accurate high side current source with  $\pm 1.8\%$  current matching. Its input voltage range of 2.9V to 40V makes it ideal for applications ranging from single/multiple Li-Ion inputs to automotive and industrial applications.

The LT3909 offers PWM dimming ratios up to 40,000:1, providing an LED backlighting solution in applications such as automotive and avionic displays subject to a wide range of ambient lighting conditions. The LT3909 delivers up to 36V of LEDs per string, and its output voltage adapts to any variation in LED  $V_F$  for optimum efficiency. Although designed to drive LEDs in a boost topology, LED current is accurately regulated even when  $V_{IN}$  is greater  $V_{OUT}$ . The LT3909 operates at a constant switching frequency of 2MHz, enabling the use of very small externals while avoiding critical frequency bands such as AM radio in automotive applications. The combination of its tiny externals and 3mm x 3mm DFN (or MSOP-12E) package offers a very compact solution footprint for LED applications requiring two strings of 50mA LEDs.

The LT3909 utilizes an internal 400m $\Omega$ , 40V, 1A switch with an integrated Schottky diode on-chip, eliminating both the added cost and space required of an external diode. A unique high side LED current sense topology enables the LED cathode to be connected directly to ground, creating a single wire current source. A single resistor sets LED current from 10mA to 50mA for both high side current sources. The LT3909 offers both open and shorted LED

protection with a fault flag to indicate these conditions. Even if one LED string experiences an open-LED or short-to-GND failure, the other string will remain in regulation. Other features include internal compensation, soft-start and micropower shutdown.

The LT3909EDD is available in a 12-lead 3mm x 3mm DFN package and the LT3909EMSE is available in a thermally enhanced 12-lead MSOP package. Industrial temperature versions, the LT3909IDD and LT3909IMSE, are tested and guaranteed to operate from a  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$  operating junction temperature. High temperature versions, the LT3909HDD and LT3909HMSE, are tested and guaranteed to operate from a  $-40^{\circ}\text{C}$  to  $150^{\circ}\text{C}$  operating junction temperature. Pricing starts at \$2.50 each for 1,000-piece quantities and all versions are available from stock. For more information, visit [www.linear.com/product/LT3909](http://www.linear.com/product/LT3909).

**Photo Caption:** Dual String 2MHz Boost LED Driver


### Summary of Features: LT3909

- Up to 36V of LEDs, 2-String x 50mA LED Driver
- Wide Input Range: 2.9V to 40V
- Up to 40,000:1 PWM Dimming
- $\pm 1.8\%$  LED Current Matching (Typ  $\pm 0.3\%$ )
- Integrated Schottky Diode
- Internal 400m $\Omega$ , 40V, 1A Switch
- Single Resistor Sets LED Current (10mA to 50mA) for Both High Side Current Sources
- Output Adapts to LED  $V_F$  for Optimum Efficiency
- LED Current Regulated Even for  $V_{IN} > V_{OUT}$
- Fault Flag + Protection for Open-LED and LED-Short-to-GND (Other String Remains in Regulation)
- Programmable Maximum  $V_{OUT}$  (Regulated)
- Internal Compensation, Soft-Start and Thermal Regulation
- Accurate EN/UVLO Threshold
- Fixed 2MHz Switching Frequency
- Low Profile 12-Lead 3mm x 3mm DFN or MSOP-12E Package

The USA list pricing shown is for budgetary use only. International prices may differ due to local duties, taxes, fees and exchange rates.

## 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 over 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,  $\mu$ Module<sup>®</sup> subsystems, and wireless sensor network products. For more information, visit [www.linear.com](http://www.linear.com)

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