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## **Single Inductor High Efficiency Synchronous Buck-Boost DC/DC Controller**

MILPITAS, CA – December 13, 2010 – Linear Technology Corporation announces the [LTC3789](#), a very high efficiency (up to 98%) synchronous buck-boost DC/DC controller that operates from input voltages above, below or equal to the regulated output voltage. High power circuits that step-up and-down typically rely on transformers or two DC/DC converters, one for step-up (boost) and the other for step-down (buck) conversion. The LTC3789 operates using a single inductor with 4-switch synchronous rectification and can deliver output power up to 150W with a single device. Even higher output power can be achieved when multiple circuits are paralleled.

The LTC3789 operates with a selectable fixed frequency between 200kHz and 600kHz, and can be synchronized to an external clock over the same range with its integrated phase-locked loop (PLL). Its wide 4V to 38V input range, 0.8V to 38V output range and seamless transitions between operating modes make it ideal for a wide range of industrial controls, automotive, solar and high power battery-supplied systems.

The LTC3789 employs a proprietary current-mode control architecture for constant frequency operation in buck or boost mode and has powerful onboard quad N-channel MOSFET gate drivers. The LTC3789 also provides an accurate, constant-current regulation loop for either input or output current, over a wide input voltage range. The input current limit function prevents overloading of the input source, and the output current limit provides an easy solution for

regulated output current applications such as battery charger or LED drivers. Fault protection is provided for overvoltage, overcurrent and short circuit conditions in all operating modes. In addition, the LTC3789 disconnects the input voltage from the output when in shutdown. The user can select continuous or pulse skip mode to maximize light load efficiency. Furthermore, the LTC3789 has adjustable soft-start, a power good output and maintains  $\pm 1.5\%$  reference voltage accuracy over an operating junction temperature range of  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ .

The LTC3789 is available in 28-pin 4mm x 5mm QFN and 28-lead SSOP packages. Pricing starts at \$4.65 each in 1,000-piece quantities. For more information, visit [www.linear.com/3789](http://www.linear.com/3789).

**Photo Caption:** 38V Synchronous Buck-Boost Controller

### **Summary of Features: LTC3789**

- Single Inductor Architecture
- Operation with Input Voltages Above, Below or Equal to the Output Voltage
- 4V to 38V Input Voltage Range
- 0.8V to 38V Output Voltage Range
- Programmable Input or Output Current Limit
- Synchronous Rectification
- Up to 98% Efficiency
- On Chip MOSFET Gate Drivers
- 150 Watts Output Power Capable
- Output Disconnect During Shutdown
- PLL Fixed Operating Frequency from 200kHz to 600kHz
- Power Good Output Signal
- $\pm 1.5\%$  Reference Voltage Accuracy over  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
- Current-Mode Control for Fast Transient Response & Easy Loop Compensation
- Overvoltage and Overcurrent Protection
- 5.5V Internal & External  $V_{\text{CC}}$  LDOs

## 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  $\mu$ Module<sup>®</sup> subsystems.

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