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Dual Output, High Power 60V Synchronous Boost Controller Eliminates Heat Sink with 97% Efficiency

MILPITAS, CA – January 20, 2010 – Linear Technology Corporation announces the LTC3788/-1, a dual output, high power synchronous step-up switching DC/DC controller that replaces the boost diode with a high efficiency N-Channel MOSFET. This eliminates the heat sink normally required in medium to high power boost converters. The LTC3788/-1 can produce a 24V at 5A output with up to 97% efficiency, making it ideal for high power automotive audio amplifiers, industrial and medical applications where a step-up DC/DC converter must deliver high power with low heat dissipation in a small solution size.

The LTC3788/-1 operates from an input voltage ranging from 4.5V to 38V during start-up, maintains operation down to 2.5V after start-up and can regulate an output voltage as high as 60V. The powerful 1.5Ohm onboard N-channel MOSFET gate drivers are capable of slewing large MOSFET gates quickly, minimizing transition losses and allowing for up to a 10A per channel output current. In addition, the LTC3788/-1 draws only 125uA when one output is active and only 200uA when both outputs are enabled.

The constant frequency current mode architecture allows for paralleled outputs. The LTC3788 includes a clock output, phase modulation (for multiphase applications), two separate power good outputs and an adjustable current limit. The LTC3788/-1 has a phase-lockable frequency from 75kHz to 850kHz or a selectable fixed frequency from 50kHz to 900kHz. It has adjustable cycle-by-cycle current limit protection and uses either a sense resistor or monitors the

voltage drop across the inductor (DCR) for current sensing. In applications where the input voltage may sometimes exceed the regulated output voltage, the LTC3788/-1 is able to keep the synchronous MOSFET on continuously so that the output voltage follows the input voltage with minimal power loss. Furthermore, the LTC3788/-1 has adjustable soft-start and maintains $\pm 1\%$ reference voltage accuracy over an operating temperature range of -40°C to 125°C .

The LTC3788-1 is available in an SSOP-28 package and the LTC3788 is housed in a 32-lead 5mm x 5mm QFN. The 1,000-piece price starts at \$4.12 each. Both versions are available from stock. For more information, visit www.linear.com.


Photo Caption: Dual 60V Synchronous Step-Up DC/DC Controller

Summary of Features: LTC3788/-1

- Up to 97% Efficiency
- Eliminates Heat Sink in Medium to High Power Boost Converters
- Up to 60V V_{OUT} Operation
- Wide V_{IN} Ranging from 4.5V to 38V, Maintains Operation down to 2.5V After Start-Up
- Powerful 1.5 Ohm Gate Drivers
- 100% Duty Cycle Capability for Synchronous MOSFET
- Phase Lockable Frequency from 75kHz to 850kHz
- Programmable Fixed Frequency from 50kHz to 900kHz
- R_{SENSE} or Inductor DCR Current Sensing
- Current Mode Control
- $\pm 1\%$ Reference Voltage Accuracy over -40°C to $+125^{\circ}\text{C}$
- Programmable Soft-Start
- Phase Modulation
- Power Good Outputs

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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