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## **Synchronous Boost Controller with up to 98% Efficiency Eliminates Heat Sink**

MILPITAS, CA – October 25, 2010 – Linear Technology Corporation announces the [LTC3786](#), a synchronous step-up 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. In applications where the input voltage may exceed the regulated output voltage, the LTC3786 is able to keep the synchronous MOSFET on continuously so that the output voltage follows the input voltage with minimal power loss. The LTC3786's low 55µA quiescent current extends the run time in battery-powered applications when in standby mode. This controller can produce a 24V at 5A output from a 12V input with up to 98% efficiency, making it ideal for automotive, industrial, and medical applications where a step-up DC/DC converter must have low heat dissipation in a small solution size.

The LTC3786 operates from an input voltage ranging from 4.5V to 38V during start-up, maintaining operation down to 2.5V after start-up and can regulate an output voltage as high as 60V. The powerful 1.2 Ohm onboard N-channel MOSFET gate drivers are capable of slewing large MOSFET gates quickly, minimizing transition losses and allowing for up to a 10A output current.

The LTC3786 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. The LTC3786 has a phase-lockable switching frequency range of 75kHz to 850kHz and a fixed frequency operating range from 50kHz to 900kHz. Furthermore, the LTC3786 has adjustable soft-start and maintains  $\pm 1\%$  reference voltage accuracy over an operating temperature range of -40°C to 125°C.

The LTC3786 is available in a thermally enhanced MSOP-16 package and a 3mm x 3mm QFN. The 1,000-piece price starts at \$2.80 each and is available from stock. For more information, visit [www.linear.com/3786](http://www.linear.com/3786).


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

**Summary of Features: LTC3786**

- Up to 98% 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
- Low 55 $\mu$ A Quiescent Current Extends the Run-Time in Battery-Powered Applications
- 8 $\mu$ A Shut Down Current
- Powerful 1.2 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  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
- Programmable Soft-Start
- Power Good Output

**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<sup>®</sup> 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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**Press Contacts:**

**North America / Worldwide**

John Hamburger, Director Marketing  
Communications  
[jhamburger@linear.com](mailto:jhamburger@linear.com)  
Tel 408-432-1900 ext 2419

Doug Dickinson, Media Relations Manager  
[ddickinson@linear.com](mailto:ddickinson@linear.com)  
408-432-1900 ext 2233

**UK & Nordic**

Alan Timmins  
[alan@ezwire.com](mailto:alan@ezwire.com)  
Tel: +44-1-252-629937