



## **60V Multiphase Synchronous Boost Controller Delivers High Currents with 97% Efficiency**

MILPITAS, CA – February 19, 2014 – Linear Technology Corporation announces the [LTC3784](#), a high power two phase single output synchronous step-up DC/DC controller that replaces rectifying boost diodes with high efficiency N-channel MOSFETs. This device can produce a 24V output at 10A from a 12V input at up to 97% efficiency without any heat sink. The LTC3784 operates from an input voltage ranging from 4.5V to 60V during start-up, maintains operation down to  $2.3V_{IN}$  after start-up and can regulate an output voltage as high as 60V.

When configured for Burst Mode<sup>®</sup> operation, the LTC3784's 28 $\mu$ A quiescent current makes it ideal for "Always-on" automotive applications to extend battery run-time during standby mode while keeping the output voltage in regulation. The powerful 1.2 Ohm onboard N-channel MOSFET gate drivers are capable of slewing large MOSFETs quickly. The device's current mode architecture, clock output and phase modulation enable easy paralleling of multiple devices for up to 12-phase operation for very high power applications. The LTC3784 has a phase-lockable switching frequency from 75kHz to 850kHz or a selectable fixed frequency from 50kHz to 900kHz. In addition, this device features adjustable cycle-by-cycle current limit and can use a sense resistor or the voltage drop across the inductor (DCR) for current sensing. In keep alive applications where the input voltage may exceed the regulated output voltage, the LTC3784 allows the synchronous MOSFET to be kept on continuously so that the output voltage follows the input voltage with minimal power loss. Furthermore, the LTC3784 has adjustable

soft-start, a power good output and maintains  $\pm 1\%$  reference voltage accuracy over an operating junction temperature range of  $-55^{\circ}\text{C}$  to  $150^{\circ}\text{C}$  (MP grade).

The LTC3784 is available in SSOP-28 and 4mm x 5mm QFN-28 packages. The LTC3784E and LTC3784I versions operate from a  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$  junction temperature. The LTC3784H grade is guaranteed to operate from a  $-40^{\circ}\text{C}$  to  $150^{\circ}\text{C}$  operating junction temperature. The LTC3784MP is guaranteed to operate over a  $-55^{\circ}\text{C}$  to  $150^{\circ}\text{C}$  operating junction temperature range. The 1,000-piece price starts at \$3.76 each. For more information, visit [www.linear.com/product/LTC3784](http://www.linear.com/product/LTC3784)


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

### Summary of Features: LTC3784

- Wide  $V_{\text{IN}}$  Range from 4.5V to 60V, Maintains Operation down to 2.3V after Start-Up
- Up to 60V  $V_{\text{OUT}}$  Operation
- Low 28 $\mu\text{A}$  Quiescent Current Regulating  $V_{\text{OUT}}$  at no load
- Powerful 1.2 Ohm Gate Drivers
- Up to 97% Efficiency
- 100% Duty Cycle Capability for Synchronous MOSFET
- Phase-Lockable Frequency from 75kHz to 850kHz
- Programmable Fixed Frequency from 50kHz to 900kHz
- $R_{\text{SENSE}}$  or Inductor DCR Current Sensing
- Current Mode Control
- $\pm 1\%$  Reference Voltage Accuracy over  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Programmable Soft-Start
- Phase Modulation for up to 12 Phases
- Power Good Output
- Extended & Industrial Grades:  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$  Operating Junction Temp
- Automotive Temp Grade:  $-40^{\circ}\text{C}$  to  $150^{\circ}\text{C}$  Operating Junction Temp
- Military Temp Grade:  $-55^{\circ}\text{C}$  to  $150^{\circ}\text{C}$  Operating Junction Temp

## 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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