



## **High Efficiency $\pm 6\text{A}$ Switching Regulator for DDR Termination Complies with DDR/DDR2/DDR3 Standards**

MILPITAS, CA – July 7, 2011 – Linear Technology Corporation introduces the [LTC3617](#), a high efficiency, monolithic synchronous step-down switching regulator, capable of generating a bus termination voltage for DDR/DDR2/DDR3 and future standard memory applications requiring sourcing and sinking of current. An internal resistor divider sets the  $V_{TT}$  DDR termination supply and  $V_{TTR}$  reference voltages equal to half the voltage applied to the input, with output current capability of  $\pm 6\text{A}$  (sinking/sourcing) at  $V_{TT}$  and  $\pm 10\text{mA}$  at  $V_{TTR}$ . The outputs are capable of operation down to  $0.5\text{V}$ . The device operates from an input voltage range of  $2.25\text{V}$  to  $5.5\text{V}$  and allows switching frequencies as high as  $4\text{MHz}$ , allowing for very small externals. This creates a small, compact solution footprint that is preferred for laptop computers and graphics card applications, which need  $\pm 6\text{A}$  or less for DDR termination. The internal synchronous top and bottom power switches have an  $R_{DS(ON)}$  of only  $35\text{m}\Omega$  and  $25\text{m}\Omega$  respectively, enabling the LTC3617 to attain efficiencies as high as  $93\%$ , eliminating the need for an external catch diode while minimizing external component count and board space.

The LTC3617 utilizes a constant frequency, current-mode architecture. The switching frequency can be set between  $300\text{kHz}$  and  $4\text{MHz}$  by a single external resistor. This high frequency capability enables use of smaller capacitor values, while maintaining low output voltage ripple. For noise-sensitive switching applications, the LTC3617 can be synchronized to an external clock up to  $4\text{MHz}$ . Forced continuous mode operation helps reduce noise and RF interference. Optional external compensation allows optimization of transient response over a wide range of loads and output capacitors. The device uses an input overvoltage lockout circuit to protect the input supply from back-boosting.

For optimal thermal performance, the LTC3617 is offered in a thermally enhanced 24-pin  $3\text{mm} \times 5\text{mm}$  QFN package. The device is guaranteed for operation from  $-40^\circ\text{C}$  to  $125^\circ\text{C}$ . 1,000-piece pricing starts at  $\$3.80$  for the E grade and  $\$4.20$  for the I grade. For more information, visit [www.linear.com/product/LTC3617](http://www.linear.com/product/LTC3617)


## **Photo Caption: $\pm 6A$ DDR Switching Regulator for DDR/DDR2/DDR3 & Future Standards**

### **Summary of Features: LTC3617**

- $\pm 6A$  Output Current for  $V_{TT}$  Termination Supply
- 2.25V to 5.5V Input Voltage Range
- $\pm 10mV$  Output Voltage Accuracy
- Optimized for Low Output Voltages Down to 0.5V
- High Efficiency Synchronous Operation
- Integrated Buffer for  $V_{TTR} = V_{DDQIN} \cdot 0.5$ ,  $\pm 10mA$  Output, Termination Reference
- Shutdown Current:  $< 1\mu A$
- Adjustable Switching Frequency: Up to 4MHz
- Optional Internal Compensation
- Internal Soft-Start
- Power Good Status Output
- Input Overvoltage Protected
- Thermally Enhanced 24-Pin 3mm  $\times$  5mm QFN Package

### **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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