



## **Multiphase DC/DC Controller with 6-Bit VID, $\pm 1\%$ $V_{OUT}$ Accuracy & $\pm 2.5\%$ Phase Current Matching for High Current FPGAs, ASICs & Processors**

MILPITAS, CA – August 18, 2015 – Linear Technology Corporation introduces the [LTC3877](#), a dual output multiphase synchronous step-down DC/DC controller with 6-bit voltage identification (VID) control that enables 10mV output voltage step resolution, a necessary feature when powering FPGAs and ASICs with tight input voltage requirements. The LTC3877 operates over an input voltage range of 4.5V to 38V and produces a fixed output voltage from 0.6V to 1.23V when using VID and up to 5V without VID. Up to 12 phases can be paralleled and clocked out-of-phase to minimize filtering. When outputs are paralleled, the LTC3877 maintains better than  $\pm 2.5\%$  current mismatch between phases, making it ideal for very high current requirements up to 300A. Applications include high current power distribution, redundant (n+1) supplies, industrial systems and processor power.

The LTC3877 maintains  $\pm 1\%$  output voltage accuracy (including internal resistor divider and differential remote sense amplifier errors) over a  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$  temperature range. Dual onboard differential amplifiers enable remote output voltage sensing for both outputs. High step-down ratios at high operating frequencies are possible with its 40ns minimum on-time. The LTC3877 has a selectable fixed operating frequency from 250kHz to 1MHz or it can be synchronized to an external clock. Powerful  $1.1\Omega$  onboard all N-channel gate drivers minimize MOSFET switching losses.

The LTC3877 operates with true current mode control and can be used with very low DC resistance (DCR) power inductors down to  $0.3\text{m}\Omega$  with its novel sensing scheme that enhances the signal-to-noise ratio of the current sense signal. This sensing scheme dramatically reduces the switching jitter normally associated with low DCR resistance applications and its adjustable current limit can be configured for very low sense voltages from  $10\text{mV}$  to  $30\text{mV}$  to minimize power loss. DCR temperature compensation maintains a constant current limit threshold over a broad temperature range. Additional features include adjustable soft-start or tracking, foldback current limit, short-circuit soft recovery, output overvoltage protection and two power good output voltage signals.

The LTC3877 is available in a 44-lead  $7\text{mm} \times 7\text{mm}$  QFN package. The 1,000-piece price starts at \$3.94 each. For more information, visit [www.linear.com/product/LTC3877](http://www.linear.com/product/LTC3877).

**Photo Caption:** Multiphase Step-Down VID Controller


### Summary of Features: LTC3877

- 6-Bit Parallel VID Inputs Provides  $10\text{mV}$  Output Voltage Resolution &  $\pm 1\%$  Accuracy over Temperature
- Less than  $\pm 2.5\%$  Current Mismatch when Both Outputs Are Paralleled
- Dual High Speed Differential Remote  $V_{OUT}$  Sense Amplifiers
- Wide  $V_{IN}$  Range:  $4.5\text{V}$  to  $38\text{V}$
- $V_{OUT}$  Range:  $0.6\text{V}$  to  $1.23\text{V}$  with VID Control
- $V_{OUT}$  Range:  $0.6\text{V}$  to  $5\text{V}$  without VID Control
- Up to 12-Phase Operation
- Selectable Fixed Operating Frequency from  $250\text{kHz}$  to  $1\text{MHz}$
- $40\text{ns}$  Minimum On-Time
- Sub-Milliohm DCR Current Sensing As Low as  $0.3\text{ Milliohms}$
- Novel DCR Sensing Current Mode Control Provides Very Low Jitter
- Adjustable Current Sense Threshold from  $10\text{mV}$  to  $150\text{mV}$
- Temperature Compensated
- Output Voltage Tracking or Programmable Soft-Start
- Overvoltage Protection and Short-Circuit Soft Recovery
- Two Power Good Output Signals
- $7\text{mm} \times 7\text{mm}$  QFN-44 Package

The USA list pricing shown is for budgetary use only. International prices may differ due to local duties, taxes, fees and exchange rates.

## 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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### 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)  
Tel: 408-432-1900 ext 2233

#### UK & Nordic

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