



## **Dual 3A, 4MHz, Synchronous Step-Down Regulators with DDR Memory Now Offered in High Reliability H Grade & Military MP Grade to +150°C**

MILPITAS, CA – December 19, 2013 – Linear Technology introduces new high reliability H grade and military MP grade versions of the [LTC3615](#) and [LTC3615-1](#), high efficiency, 4MHz synchronous buck regulators that incorporate a constant frequency, current-mode architecture. Low resistance internal switches enable the LTC3615 to deliver up to 3A of continuous output current from each channel while its low dropout operation provides an output voltage ranging from 0.6V to just millivolts below  $V_{IN}$ . The LTC3615 operates from an input voltage of 2.25V to 5.5V, making it ideal for single-cell Li-Ion applications as well as 3.3V and 5V intermediate bus systems. Its switching frequency is user programmable from 400kHz to 4MHz, enabling the use of tiny, low cost capacitors and inductors. The LTC3615 offers selectable 0°/90°/180° phase shift while the LTC3615-1 offers selectable 140°/180° phase shift between channels. The combination of its fast switching capability and the very small 4mm x 4mm QFN-24, or thermally enhanced TSSOP-24 package, offer a highly compact solution footprint for applications requiring dual outputs up to 3A.

The LTC3615 uses internal switches with  $R_{DS(ON)}$  of only 55mOhms and 75mOhms to deliver efficiencies up to 94%. Burst Mode<sup>®</sup> operation reduces no-load quiescent current to only 130μA, maximizing both light-load efficiency and run time in battery-powered applications. An adjustable Burst Mode clamp enables designers to optimize light load efficiency. For applications requiring the lowest possible noise, the LTC3615 can be configured to run in either pulse-skipping or forced continuous modes, reducing noise and potential RF interference. Programmable switching slew rates further reduce potential noise concerns. Selectable 0°, 90° or 180° of phase shift between its two channels minimize input current ripple as well as output voltage ripple. The LTC3615 offers inputs for tracking capability as well as a DDR memory mode in which the device can source/sink ±1.5A. Additional features include optional active voltage positioning (AVP), a Power Good voltage monitor, external synchronization capability and thermal protection.

The LTC3615 and LTC3615-1 are available in a 4mm x 4mm QFN-24, and a 24-lead, thermally enhanced TSSOP package. The high reliability H grade versions are guaranteed to meet specifications over the -40°C to 150°C operating junction temperature range and are priced at \$5.00 and \$5.35 each, respectively in 1,000-piece quantities. The military MP grade versions are guaranteed to meet specifications over the -55°C to 150°C operating junction temperature range and are priced at \$12.55 and \$13.00 each, respectively in 1,000-piece quantities. All versions are available from stock. For more information, visit [www.linear.com/product/LTC3615](http://www.linear.com/product/LTC3615)


**Photo Caption:** Dual 3A, 4MHz Monolithic Synchronous Step-Down Regulator

### Summary of Features: LTC3615 and LTC3615-1

- -55°C to +150°C Operation (MP Grade), -40°C to +150°C Operation (H Grade)
- High Efficiency: Up to 94%
- Dual Outputs with 2 × 3A Output Current Capability
- DDR Memory Mode  $I_{OUT} = \pm 1.5A$
- Low Output Ripple Burst Mode® Operation:  $I_Q = 130\mu A$
- 2.25V to 5.5V Input Voltage Range
- Low Dropout Operation: 100% Duty Cycle
- Output Voltages Down to 0.6V
- 1.33% Output Voltage Accuracy
- Programmable Slew Rate at Switch Pins
- Shutdown Current  $\leq 1\mu A$
- Adjustable Switching Frequency up to 4MHz
- Internal or External Compensation
- Selectable Pulse-Skipping/Forced Continuous/Burst Mode Operation with Adjustable Burst Clamp
- Optional Active Voltage Positioning (AVP) with Internal Compensation
- Selectable 0°/90°/180° (LTC3615) or selectable 140°/180° (LTC3615-1) Phase Shift Between Channels
- Fixed Internal & Programmable External Soft-Start
- Accurate Start-Up Tracking Capability
- Available in Thermally Enhanced 4mm × 4mm QFN-24 & TSSOP-24 Packages

**About Linear Technology**

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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