



## **42V, 5A ( $I_{OUT}$ ), Synchronous Step-Down Silent Switcher Delivers 95% Efficiency at 2MHz & Ultralow EMI/EMC Emissions**

MILPITAS, CA – December 10, 2014 – Linear Technology Corporation announces the [LT8640](#), a 5A, 42V input capable synchronous step-down switching regulator. A unique Silent Switcher™ architecture, combined with spread spectrum frequency modulation, reduces EMI/EMC emissions by more than 25dB even with switching frequencies in excess of 2MHz, enabling it to easily pass the automotive CISPR25, Class 5 peak limits. Synchronous rectification delivers efficiency as high as 95% with a switching frequency of 2MHz. Its 3.4V to 42V input voltage range makes it ideal for automotive and industrial applications.

The LT8640's internal high efficiency switches deliver up to 5A of continuous output current and peak loads of 7A to voltages as low as 0.97V. The device's Burst Mode® operation keeps quiescent current under 2.5µA in no-load standby conditions, making it well suited for applications such as automotive "always-on" systems, which need to extend operating battery life. The LT8640's unique design maintains a minimum dropout voltage of only 100mV at 1A under all conditions, enabling it to excel in scenarios such as automotive cold-crank. Furthermore, a fast minimum on-time of only 40ns enables 2MHz constant frequency switching from a 16V input to a 1.5V output, equipping designers to optimize efficiency while avoiding critical noise-sensitive frequency bands. The LT8640's 20-lead 3mm x 4mm QFN package and high switching frequency keep external inductors and capacitors small, providing a compact, thermally efficient footprint.

The LT8640 utilizes internal top and bottom high efficiency power switches with the necessary boost diode, oscillator, control and logic circuitry integrated into a single die. Low ripple Burst Mode operation maintains high efficiency at low output currents while keeping output ripple below 10mV<sub>PK-PK</sub>. Special design techniques and a new high speed process enable high efficiency over a wide input voltage range, and the LT8640's current-mode topology enables fast transient response and excellent loop stability. Other features include internal compensation, a power good flag, output soft-start/tracking and thermal protection.

The LT8640EUDC is packaged in a 3mm x 4mm QFN package and is priced at \$4.35 each. An industrial temperature version, the LT8640IUDC, is tested and guaranteed to operate from a  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$  operating junction temperature and is priced at \$4.79 each. An automotive temperature version, the LT8640HUDC, is tested and guaranteed to operate from a  $-40^{\circ}\text{C}$  to  $150^{\circ}\text{C}$  operating junction temperature and is priced at \$5.04 each. All pricing is for 1,000-piece quantities and all versions are available from stock. For more information, visit [www.linear.com/product/LT8640](http://www.linear.com/product/LT8640)

**Photo Caption:** 42V, 4( $I_{OUT}$ ), 2.2MHz Synchronous Step-Down Reduces EMI/EMC Emissions by Over 25dB

### Summary of Features: LT8640

- Silent Switcher™ Architecture:
  - Ultralow EMI/EMC Emissions
  - Spread Spectrum Frequency Modulation
- High Efficiency at High Frequency
  - Up to 96% Efficiency at 1MHz
  - Up to 95% Efficiency at 2MHz
- Wide Input Voltage Range: 3.4V to 42V
- Ultralow Quiescent Current Burst Mode® Operation:
- 2.5µA IQ Regulating 12V<sub>IN</sub> to 3.3V<sub>OUT</sub>, Output Ripple < 10mV<sub>P-P</sub>
- Fast Minimum Switch-On Time: 40ns
- Low Dropout Under All Conditions: 100mV at 1A
- Safely Tolerates Inductor Saturation in Overload
- Adjustable & Synchronizable: 200kHz to 3MHz
- Peak Current Mode Operation
- Accurate 1V Enable Pin Threshold
- Internal Compensation
- Output Soft-Start & Tracking
- Small 18-Lead 3mm × 4mm QFN

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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