



2A Synchronous Step-Down DC/DC Converter Delivers 93% Efficiency at 2MHz and Operates from 3.0V to 42V Inputs

MILPITAS, CA – October 27, 2014 – Linear Technology Corporation announces the [LT8609](#), a 2A, 42V input synchronous step-down switching regulator. A unique synchronous rectification topology delivers 93% efficiency while switching at 2MHz enabling designers to avoid critical noise-sensitive frequency bands, such as AM radio, while providing a highly compact solution footprint. Burst Mode® operation keeps quiescent current under 2.5µA in no-load standby conditions, making it ideal for always-on systems. The LT8609's 3.0V to 42V input voltage range makes it ideal for automotive applications which must regulate through cold-crank and stop-start scenarios with minimum input voltages as low as 3.0V and load dump transients in excess of 40V. Its internal 3.5A switches can deliver up to 2A of continuous output current with peak load currents of 3A.

The LT8609 maintains a minimum dropout voltage of only 200mV (at 1A) under all conditions, enabling it to excel in scenarios such as automotive cold-crank. Spread spectrum frequency modulation and special design techniques offer low-EMI operation to minimize noise concerns in automotive and industrial environments. Furthermore, a fast minimum on-time of only 45ns enables 2MHz constant frequency switching from a 16V input to a 1.5V output. The LT8609's 10-lead thermally enhanced MSOP package and high switching frequency keeps external inductors and capacitors small, providing a compact, thermally efficient footprint.

The LT8609 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 $10\text{mV}_{\text{PK-PK}}$. Unique design techniques and a new high speed process enable high efficiency over a wide input voltage range, and the LT8609'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 LT8609EMSE is packaged in thermally enhanced MSOP-10 package and is priced at \$2.50 each. An industrial temperature version, the LT8609IMSE, is tested and guaranteed to operate from a -40°C to 125°C operating junction temperature and is priced at \$2.75. All pricing is for 1,000 piece quantities and all versions are available from stock. For more information, visit www.linear.com/product/LT8609

Photo Caption: 42V, 2A, 2.2MHz Synchronous Step-Down DC/DC Converter Operates from 3.0V to 42V


Summary of Features: LT8609

- Wide Input Voltage Range: 3.0V to 42V
- 2A of Continuous Output Current with 3A Peak Capability
- Ultralow Quiescent Current Burst Mode® Operation: $2.5\mu\text{A } I_{\text{Q}}$ Regulating 12V_{IN} to 3.3V_{OUT} , Output Ripple $< 10\text{mV}_{\text{P-P}}$
- High Efficiency Synchronous Operation at $f_{\text{SW}} = 2\text{MHz}$: 93% Efficiency at 1A, 5V_{OUT} from 12V_{IN}
- Fast Minimum Switch-On Time: 45ns
- Spread Spectrum Frequency Modulation for Low EMI
- Low Dropout Under All Conditions
- Minimum Output Voltage of 0.8V
- Allows Use of Small Inductors
- Adjustable & Synchronizable: 200kHz to 2.2MHz
- Current Mode Operation
- Accurate 1V Enable Pin Threshold
- Internal Compensation
- Output Soft-Start & Tracking
- Small Thermally Enhanced 10-Lead MSOP 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, μ Module[®] subsystems, and wireless sensor network products. For more information, visit www.linear.com

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Press Contacts:

North America / Worldwide

John Hamburger, Director Marketing
Communications
jhamburger@linear.com
Tel: 408-432-1900 ext 2419

Doug Dickinson, Media Relations Manager
ddickinson@linear.com
Tel: 408-432-1900 ext 2233

UK & Nordic

Alan Timmins
alan@ezwire.com
Tel: +44-1-252-629937