



42V Quad Synchronous Step-Down DC/DC Converter Delivers 93% Efficiency & Operates from 3V to 42V Inputs

MILPITAS, CA – July 27, 2015 – Linear Technology Corporation announces the [LT8602](#), a 42V input capable, high efficiency quad output synchronous monolithic step-down switching regulator. Its quad channel design combines two high voltage 2.5A and 1.5A channels with two lower voltage 1.8A channels to provide four independent outputs, delivering voltages as low as 0.8V. Its synchronous rectification topology delivers up to 93% efficiency while Burst Mode[®] operation keeps quiescent current under 30 μ A (all channels) in no-load standby conditions, making it ideal for always-on systems. For noise-sensitive applications, the LT8602 utilizes its pulse-skipping mode to minimize switching noise and meet the CISPR25, Class 5 EMI requirements. Switching frequency can be programmed from 250kHz to 2.2MHz and is synchronizable throughout this range.

The LT8602's 60ns minimum on-time enables 16V_{IN} to 0.8V_{OUT} step-down conversions while switching at 2MHz, enabling designers to avoid critical noise-sensitive frequency bands such as AM radio, while using a very compact solution footprint. Its 3V to 42V input voltage range makes it ideal for automotive applications that must regulate through cold-crank and stop-start scenarios with minimum input voltages as low as 3V and load dump transients in excess of 40V. Each channel of the LT8602 maintains a minimum dropout voltage of only 200mV (at 1A) under all conditions, enabling it to excel in scenarios such as automotive cold-crank.

Programmable power-on reset and power good indicators for each channel ensure overall system reliability. The LT8602's 40-lead thermally enhanced

6mm x 6mm QFN package and high switching frequency keep external inductors and capacitors small, providing a compact, thermally efficient footprint.

The LT8602 utilizes quad internal top and bottom high efficiency power switches with the necessary boost diodes, oscillator, control and logic circuitry integrated into a single die. Channel 1 and 3 switch 180° out of phase with channels 2 and 4 to reduce output ripple. Each channel has a separate input for added design flexibility, but most applications will run the two low voltage channels directly from the two high voltage channels to provide a very simple, high frequency quad output design. Low ripple Burst Mode operation maintains high efficiency at low output currents while keeping output ripple below 15mV_{p-p}. Unique design techniques and a new high speed process enable high efficiency over a wide input voltage range, and the LT8602's current-mode topology enables fast transient response and excellent loop stability. Other features include internal compensation, power good flags, output soft-start/tracking, short-circuit and thermal protection.

The LT8602 is available in a thermally enhanced 40-lead 6mm x 6mm QFN package. Three temperature grades are available, with operation from -40°C to 125°C (junction) for the extended E- and industrial I-grades. The 1,000 piece price starts at \$5.35 each. All versions are available from stock. For more information, visit www.linear.com/product/LT8602.

Photo Caption: 42V, Quad Output 2.2MHz Synchronous Step-Down DC/DC Converter

Summary of Features: LT8602


- Flexible Power Supply System Provides Four Outputs with a Wide Input Range
- Two High Voltage Synchronous Buck Regulators:
 - 3V to 42V Input Voltage Range
 - Output Currents Up to 2.5A and 1.5A
 - High Efficiency Up to 93%
- Two Low Voltage Synchronous Buck Regulators:
 - 2.6V to 5.5V Input Voltage Range
 - Output Currents Up to 1.8A & 94% Efficiency
- Resistor Programmable and Synchronizable: 250kHz to 2.2MHz Switching Frequency

- Low Ripple Burst Mode® Operation:
 - 30µA I_Q at 12V_{IN}
 - Output Ripple < 15mV
- Programmable Power-On Reset
- Power Good Indicators
- 2-Phase Clock Reduces Input Current Ripple
- Available in Thermally Enhanced 40-Lead 6mm × 6mm QFN 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, µModule® 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