



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

MILPITAS, CA – March 8, 2016 – Linear Technology Corporation announces the [LT8601](#), a 42V input capable, high efficiency triple output synchronous monolithic step-down switching regulator. Its triple channel design combines two high voltage 2.5A and 1.5A channels with a lower voltage 1.8A channel to deliver three independent voltage outputs as low as 0.8V. Its synchronous rectification topology delivers up to 93% efficiency while Burst Mode<sup>®</sup> operation keeps quiescent current under 30µA (all channels) in no-load standby conditions, ideal for always-on systems. For noise sensitive applications, the LT8601 can utilize its pulse-skipping mode to minimize switching noise and it meets the CISPR25, Class 5 EMI requirements. Switching frequency can be programmed from 250kHz to 2.2MHz and is synchronizable throughout this range.

The LT8601's 60ns minimum on-time enables 16V<sub>IN</sub> to 0.8V<sub>OUT</sub> 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 is ideal for automotive applications which 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 LT8601 maintains a minimum dropout voltage of only 250mV 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 LT8601's 40-lead thermally enhanced 6mm x 6mm QFN package and high switching frequency keeps external inductors and capacitors small, providing a compact, thermally efficient footprint.

The LT8601 utilizes triple 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 switches 180° out-of-phase with channels 2 and 3 to reduce output ripple. Each channel has a separate input for added design flexibility, but most applications will run the low voltage channel directly from one of the two high voltage channels to offer a very simple, high

frequency triple output design. Low ripple Burst Mode operation maintains high efficiency at low output currents while keeping output ripple below  $15\text{mV}_{\text{p-p}}$ . Unique design techniques and a new high speed process enable high efficiency over a wide input voltage range, and the LT8601'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 LT8601 is available in a thermally enhanced 40-lead 6mm x 6mm QFN package. Two temperature grades are available, with operation from  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$  junction for the extended E and industrial I grades. The industrial grade's electrical parameters are guaranteed throughout the  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$  junction temperature range. The 1,000-piece price starts at \$5.15 each. All versions are available from stock. For more information, visit [www.linear.com/product/LT8601](http://www.linear.com/product/LT8601).

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


### Summary of Features: LT8601

- Flexible Power Supply System Providing Three Outputs Over a Wide Input Voltage Range
- Two High Voltage Synchronous Buck Regulators
  - o 3V to 42V Input Voltage Range
  - o Output Currents up to 2.5A & 1.5A
  - o High Efficiency up to 93%
- One Low Voltage Synchronous Buck Regulator
  - o 2.6V to 5.5V Input Voltage Range
  - o Output Current up to 1.8A & 95% Efficiency
- Resistor Programmable & Synchronizable from 250kHz to 2.2MHz Switching Frequency
- Low Ripple Burst Mode® Operation:
  - o  $30\mu\text{A } I_Q$  at  $12\text{V}_{\text{IN}}$  to  $3.3\text{V}_{\text{OUT2}}$
  - o Output Ripple < 15mV
- Programmable Power-On Reset
- Power Good Indicators
- 2-Phase Clock Reduces Input Current Ripple
- Available in Thermally Enhanced 40-Lead QFN 6mm × 6mm Package

Pricing shown is for budgetary use only and 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](http://www.linear.com)

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