



USB 5V, 2.5A, 42V Input Synchronous Buck with Cable Drop Compensation

MILPITAS, CA – September 24, 2013 – Linear Technology Corporation announces the [LT8697](#), a 2.5A, 42V input capable synchronous step-down switching regulator designed to power 5V USB applications. The LT8697 delivers precise 5V regulation at a remote USB port using programmable cable drop compensation to accurately correct the voltage drop from a long connecting cable regardless of variations in load current. The LT8697's forced continuous operation enables the LT8697 to sink current, maintaining full frequency operation at zero load, further enhancing accurate 5V regulation during load transients. Initial 5V output accuracy is $\pm 1.3\%$ over the -40°C to 125°C temperature range. An accurate and programmable output current limit, a power good indicator and an output current monitor pin improve system reliability and safety. These features enable the user to implement latching or auto-retry functionality which can eliminate the need for a USB switch IC. Internal synchronous rectification delivers 95% efficiency while switching at a 2MHz switching frequency, keeping switching noise out of critical frequency bands such as AM radio. The combination of its 24-lead 3mm x 5mm QFN package and high switching frequency keeps external inductors and capacitors small, providing a very compact, thermally efficient footprint.

The LT8697 utilizes internal top and bottom high efficiency power switches with the necessary boost diode, oscillator, control, and cable compensation circuitry integrated into a single die. Its unique design maintains a minimum dropout voltage of only 450mV (at 2.1A) making it ideal for applications subjected to scenarios such as automotive cold-crank/start-stop.

Internal cable compensation is programmable to accommodate the length and gauge of the cable while dual input feedback allows an additional level of protection during fault conditions, further protecting USB devices. Other features include internal compensation, a power good flag, output voltage soft start/tracking and thermal protection.

The LT8697EUDD is packaged in a 3mm x 5mm QFN package and is priced at \$3.55 each. An industrial temperature version, the LT8697IUDD, is tested and guaranteed to operate from a -40°C to 125°C operating junction temperature and is priced at \$3.91. All pricing is for 1,000 piece quantities and both versions are available from stock. For more information, visit www.linear.com/product/LT8697


Photo Caption: 42V Input, USB 5V 2.5A Output 2.2MHz Synchronous Buck with Cable Drop Compensation

Summary of Features: LT8697

- Wide Input Range: 5V to 42V
- Low Dropout Under All Conditions: 450mV at 2.1A
- Accurate 5V Output: $\pm 1.3\%$ Over Full Temperature Range
- Programmable Cable Drop Compensation
- Programmable Output Current Limit
- Output Current Monitor
- Dual Input Feedback Permits Regulation on Output of USB Switch
- Forced Continuous Mode for Fast Load Step Response
- High Efficiency Synchronous Operation at 2MHz:
 - 93% Efficiency at 2.1A, $5V_{OUT}$ from $12V_{IN}$
 - 95% Efficiency at 0.9A, $5V_{OUT}$ from $12V_{IN}$
- Fast Minimum Switch-On Time: 45ns
- Adjustable Output from 5.0V to 5.25V
- Adjustable & Synchronizable: 300kHz to 2.2MHz
- Small Thermally Enhanced 3mm x 5mm 24-Lead QFN Package

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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