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4MHz Synchronous Step-Down DC/DC Converter Delivers up to 1.25A from a 3mm x 3mm DFN

MILPITAS, CA – January 28, 2009 – Linear Technology announces the LTC3565, a high efficiency synchronous step-down regulator which can deliver up to 1.25A of continuous output current from a 3mm x 3mm DFN (or MSOP-10E) package. Using a constant frequency of (up to 4MHz) and current mode architecture, the LTC3565 operates from an input voltage range of 2.5V to 5.5V making it ideal for single cell Li-Ion, or multi-cell Alkaline/NiCad/NiMH applications. It can generate output voltages as low as 0.6V, enabling it to power the latest generation of low voltage DSPs and microcontrollers. An independent RUN pin enables simple turn-on and shutdown. Its switching frequency is user programmable from 400kHz to 4MHz, enabling the designer to optimize efficiency while avoiding critical noise-sensitive frequency bands. The combination of its 3mm x 3mm DFN-10 (or MSOP-10) package and high switching frequency keeps external inductors and capacitors small, providing a very compact, thermally efficient footprint.

The LTC3565 uses internal switches with an $R_{DS(ON)}$ of only 0.13Ohm (N-Channel lower FET) and 0.15Ohm (P-Channel upper FET) to deliver efficiencies as high as 95%. It also utilizes low dropout 100% duty cycle operation to allow output voltages equal to V_{IN} , further extending battery run-time. The LTC3565 utilizes Automatic Low Ripple (< 25mV_{PK-PK}) Burst Mode[®] operation to offer only 40uA no load quiescent. If the application is noise sensitive, the BurstMode can be disabled using a lower noise pulse-skipping mode which still offers only 330uA of quiescent current. The LTC3565 can be synchronized to an external clock throughout its entire frequency range. Other features include $\pm 2\%$ output voltage accuracy and over-temperature protection.

The LTC3565EDD is available from stock in a 3mm x 3mm DFN-10, and the LTC3565EMSE is offered in a 10-lead, thermally enhanced MSOP package. Pricing starts at

\$2.00 each in 1,000-piece quantities. Industrial grade versions, the LTC3565IDD and LTC3565IMSE are tested and guaranteed to operate from a -40°C to 125°C operating junction temperature and are priced at \$2.30 each in 1,000-piece quantities. All versions are available from stock. For more information, visit www.linear.com.


Photo Caption: 4MHz, 1.25A (I_{OUT}) Synchronous Step-Down Switching Regulator in 3x3 DFN

Summary of Features: LTC3565

- Uses Tiny Capacitors & Inductor
- Independent RUN Pin
- High Frequency Operation: Up to 4MHz
- Low $R_{DS(ON)}$ Internal Switches: 0.15Ohm
- High Efficiency: Up to 95%
- Selectable Low Ripple (< 25mV_{P-P}) Burst Mode[®] Operation: $I_Q = 40\mu A$
- Stable with Ceramic Capacitors
- Current Mode Operation for Excellent Line and Load Transient Response
- Short-Circuit Protected
- Low Dropout Operation: 100% Duty Cycle
- Low Shutdown Current: $I_Q \leq 1\mu A$
- Output Voltages from 0.6V to 5V
- Synchronizable to External Clock
- Supports Pre-Biased Outputs
- Small 10-Lead (3mm × 3mm) DFN or MSOP Package

About Linear Technology

Linear Technology Corporation, a manufacturer of high performance linear integrated circuits, was founded in 1981, became a public company in 1986 and joined the S&P 500 index of major public companies in 2000. Linear Technology products include high performance amplifiers, comparators, voltage references, monolithic filters, linear regulators, DC-DC converters, battery chargers, data converters, communications interface circuits, RF signal conditioning circuits, uModule[™] products, and many other analog functions. Applications for Linear Technology's high performance circuits include telecommunications, cellular telephones, networking products such as optical switches, notebook and desktop computers, computer peripherals, video/multimedia, industrial instrumentation, security monitoring devices, high-end consumer products such as digital cameras and MP3 players, complex medical devices, automotive electronics, factory automation, process control, and military and space systems.

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