



36V Input with 60V Transient 700mA, Micropower Step-Down Regulator Has On-Chip Power-On Reset & Watchdog Timer

MILPITAS, CA – August 27, 2009 – Linear Technology Corporation announces the LT3689, a 700mA, 36V input step-down switching regulator with a power-on reset and watchdog timer. Its Burst Mode[®] operation keeps quiescent current under 85uA in no load standby conditions. The LT3689's 3.6V to 36V input voltage range, with 60V transient ride through, makes it ideal for load dump and cold crank conditions commonly found in automotive applications. Its 1.2A internal switch can deliver up to 700mA of continuous output current at voltages as low as 0.8V. The LT3689's Burst Mode[®] operation provides ultralow quiescent current, well suited for applications such as automotive or telecom systems, which demand always-on operation and optimum battery life. Switching frequency is user programmable from 350kHz to 2.2MHz, enabling the designer to optimize efficiency while avoiding critical noise-sensitive frequency bands. The LT3689's 3mm x 3mm QFN-14 (or thermally enhanced MSOP-16) package and high switching frequency keeps external inductors and capacitors small, providing a very compact, thermally efficient footprint.

The integrated microprocessor supervisor functions support high reliability applications such as automotive electronic control units. The reset and watchdog timeout periods are independently adjustable using external capacitors. Tight accuracy specifications and glitch immunity ensure reliable reset operation of a system without false triggering. The open collector RST will pull down if output voltage drops 10% below the programmed value. The watchdog timer is pin-selectable for window or timeout modes. In timeout mode, WDO pulls low if too long a period passes before a watchdog transition is detected. In window mode, the LT3689 monitors for WDI falling edges grouped too close together or too far apart.

The LT3689 utilizes a high efficiency 1.2A, 450mV switch, with an integrated 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

15mV_{PK-PK}. Special design techniques and a new high voltage process enable high efficiency over a wide input voltage range, and current mode topology enables fast transient response and excellent loop stability. Other features include external synchronization (from 350kHz to 2.2MHz), a power good flag and soft-start capability.

The LT3689EUD and LT3689EMSE are priced starting at \$3.20 and \$3.25 each, respectively, for 1,000 piece quantities. The LT3689IUD and LT3689IMSE are tested and guaranteed to operate from a -40°C to 125°C operating junction temperature and are priced at \$3.56 and \$3.61 each, respectively, in 1,000 piece quantities. Finally, the LT3689HMSE is tested and guaranteed to operate from a -40°C to 150°C operating junction temperature and is priced at \$3.86 each in 1,000 piece quantities. All versions are available from stock. For more information, visit www.linear.com.


Photo Caption: 36V (60V Transient Protection), 700mA Step-Down Regulator with Power-On Reset and Watchdog Timer

Summary of Features: LT3689

- Wide Input Range: Operation from 3.6V to 36V, Overvoltage Lockout Protects Circuits through 60V Transients
- 700mA Output Switching Regulator with Internal Power Switch
- Low Ripple (<15mV_{P-P}) Burst Mode[®] Operation: I_Q= 85uA I_Q at (12V_{IN} to 3.3V_{OUT})
- Programmable, Defeatable Watchdog Timer with Window or Timeout Control
- Programmable Power-On Reset Timer (POR)
- Synchronizable, Adjustable 350kHz to 2.2MHz Switching Frequency
- Adjustable Output Voltage
- 800mV Feedback Voltage
- Programmable Input Undervoltage Lockout with Hysteresis
- 16-Pin 3mm x 3mm QFN & 16-Pin MSOP Packages

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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