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Switch Mode USB Power Manager, Buck-Boost & Dual Buck Regulator PMIC Maximizes Battery Runtime & Minimizes Heat

MILPITAS, CA – January 16, 2008 – Linear Technology Corporation announces the LTC3556, the latest in a family of smaller next-generation, multi-function power management solutions for Li-Ion/Polymer battery applications. The LTC3556 integrates a switching PowerPath™ manager, a stand-alone battery charger, an ideal diode, I²C control, a synchronous buck-boost regulator, two high efficiency synchronous buck regulators plus an always-on LDO, all in a compact, low-profile 4mm x 5mm QFN package. The LTC3556's PowerPath control feature seamlessly manages power flow between multiple input sources such as a wall adapter or USB port and the Lithium battery while preferentially providing power to the system load. In addition, its “instant-ON” operation ensures system load power even with a dead or missing battery. For fast charging, the LTC3556's switching input stage converts nearly all of the 2.5W available from the USB port to charging current, enabling up to 700mA from a 500mA limited USB supply or up to 1.5A when wall powered. An internal 180milliohm ideal diode plus optional external ideal diode controller provide a low loss power path, further minimizing heat generation and maximizing efficiency. The LTC3556's onboard synchronous buck-boost regulator can deliver up to 1A continuously and is ideal for efficiently regulating a 3.3V output voltage over the full Lithium battery voltage range, down to 2.75V input. The LTC3556's two integrated synchronous buck regulators feature 100% duty cycle operation and are capable of delivering output currents of 400mA each, with adjustable output voltages down to 0.8V.

The LTC3556 switching regulator's internal low $R_{DS(ON)}$ switches enable efficiency as high as 94%, maximizing battery run time. In addition, Burst Mode® operation optimizes efficiency at light loads with a quiescent current of only 20uA for the buck-boost regulator and only 35uA for each buck regulator (<1uA each in shutdown for all). The high 2.25MHz switching frequency allows the use of tiny low cost capacitors and inductors less than 1mm in

height. Furthermore, the regulators are stable with ceramic output capacitors, achieving very low output voltage ripple.

The LTC3556 features USB-compatible programmable current limiting to 100mA/500mA/1A, while its Bat-Track™ adaptive output control enables high efficiency battery charging and reduces power dissipation. Stand-alone autonomous operation simplifies design, eliminating the need for an external microprocessor for battery charge termination. To preserve battery energy, the LTC3556 draws only 44uA in suspend mode. The charger is compatible with inputs up to 5.5V (7V absolute maximum transient for added robustness).

The LTC3556 is available from stock in a compact, low-profile (0.75mm) 4mm x 5mm QFN-28 package. Pricing starts at \$4.80 each for 1,000-piece quantities.

Photo Caption: Multi-Function PMIC: Switching Power Manager + Battery Charger + Buck-Boost + Dual Sync Buck + LDO


Summary of Features: LTC3556

- Complete Multi-Function PMIC: Switching Power Manager, Li-Ion/Polymer Battery Charger, Buck-Boost Regulator, Dual Buck Regulators & LDO
- Thermally Enhanced, Low Profile (0.75mm) 28-Lead 4mm x 5mm QFN Package
- **Power Manager & Battery Charger**
- High Efficiency Switching PowerPath Controller with Bat-Track Adaptive Output Control
- Maximum Charge Current Programmable up to 1.5A from Wall Adapter
- Up to 700mA Charge Current from USB Port
- **DC/DC Converters**
- High Efficiency Buck-Boost Regulator: 1A I_{OUT}
- Buck-Boost Regulator Adjustable Output Voltage Range: 2.75V to 5.5V
- Two High Efficiency 2.25MHz Synchronous Buck Regulators: 400mA/400mA I_{OUT}
- Buck Regulator Adjustable Output Voltage Range: 0.8V to V_{BAT}
- Burst Mode Operation for Low I_Q : 20uA for Buck-Boost, 35uA per Buck Regulator
- Always-On 3.3V/25mA LDO

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. For more information, visit www.linear.com.

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