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High Efficiency USB Power Manager & Battery Charger in Compact 12mm² Package

MILPITAS, CA – April 10, 2007 – Linear Technology Corporation introduces the LTC4088, an autonomous high efficiency power manager, ideal diode controller and battery charger for portable USB devices. The LTC4088's switching front-end topology features PowerPath™ control that optimizes the power available from the USB port to charge the battery and power the application device with minimum power dissipation. This feature eases thermal management issues in space-constrained media players, digital cameras, PDAs, GPS units and smart phones. The IC also allows the load current to exceed the current drawn from the USB port while conforming to USB load specifications.

Featuring an input voltage range of 4.25V to 5.5V, the LTC4088 automatically limits its input current to a maximum of 1x (for USB 100mA), 5x (for USB 500mA) or 10x for wall-adaptor powered applications (1A). If the power source is removed, the IC ensures that system power is available from the battery to the application's load via current flow through an internal low loss 200mOhm ideal diode, minimizing voltage drop and power dissipation. An optional external ideal diode controller is provided for driving a PFET to reduce the overall ideal diode impedance below 40mOhm.

The LTC4088's full-featured single-cell Li-Ion/Polymer battery charger has a constant-voltage, constant-current topology and allows for up to 1.2A charge current capability. Its Bat-Track™ operation keeps power dissipation low in the battery charger for optimum charge time and less heat. "Instant-on" operation allows the portable product to run immediately when power is applied without waiting for a discharged battery to charge. Furthermore, the charger includes thermal limiting, automatic recharge, standalone operation with automatic charge termination and fixed duration safety timer, low voltage trickle charging, bad battery cell

detection and a thermistor input for temperature-qualified charging. Additional features of the IC are an “always-on” 3.3V, 25mA LDO for system microprocessor rails, and a suspend LDO that prevents battery drain when a device is connected to a suspended USB port.

The LTC4088 is housed in a low-profile (0.75mm) 14-pin 3mm x 4mm DFN package and is guaranteed for operation from -40°C to 85°C. 1,000-piece pricing starts at \$2.20 each.


Photo Caption: High Efficiency USB Power Manager and Battery Charger

Summary of Features: LTC4088

- High Efficiency USB Power Manager, Ideal Diode Controller & Battery Charger
- 200mOhm Internal Ideal Diode plus Optional External Ideal Diode Controller Seamlessly Provides Low-Loss Power Path when Input Power is Limited or Unavailable
- V_{BUS} Operating Range: 4.25V to 5.5V (7V Absolute Maximum – Transient)
- 100mA, 500mA or 1A Input Current Limit
- Standalone Battery Charger – No Need for External uC for Charge Termination
- 1.2A Maximum Charge Current with Thermal Limiting
- Bat-Track Keeps Power Dissipation Low in the Battery Charger for Optimum Charge Time and Less Heat
- “Instant-On” Operation Allows End Application to Run Immediately without Waiting for Battery to Charge
- NTC Thermistor Input for Temperature-Qualified Charging
- Regulated “Always-On” 3.3V, 25mA LDO for System Microprocessor
- Suspend LDO Prevents Battery Drain
- Compact, Low Profile (0.75mm) 3mm x 4mm DFN-14 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, 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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