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Breakthrough 2A Solar Battery Charger Matches Peak Power Tracking with Simple Control Loop

MILPITAS, CA – August 20, 2009 – Linear Technology Corporation introduces the LT3652, an innovative, solar power directed monolithic buck battery charger IC for modern battery chemistries. The LT3652 features an innovative input voltage regulation loop, which controls charge current to hold the input voltage at a programmed level. When the LT3652 is connected to a solar panel, the input regulation loop maintains the panel at peak output power. According to Steve Pietkiewicz, Vice President and General Manager of Power Products, “The LT3652’s simple but unique input voltage regulation loop circuitry delivers virtually the same charging efficiency as more complex and expensive Maximum Peak Power Tracking (MPPT) techniques.”

The LT3652 accepts a wide range of inputs from 4.95V to 32V with a 40V absolute maximum rating for added system margin. The input voltage regulation loop also allows optimized charging from poorly regulated sources where the input can collapse under overcurrent conditions. It charges a variety of battery pack configurations, including 1 to 3 Li-Ion / Polymer cells in series, 1 to 4 LiFePO₄ (Lithium Iron Phosphate) cells in series and sealed lead acid (SLA) batteries up to 14.4V. Applications include solar powered systems, 12V to 24V automotive equipment and battery chargers.

The LT3652’s charge current is programmable up to 2A. This stand-alone battery charger requires no external microcontroller, and features user-selectable termination, including C/10 or

an onboard timer. The device's 1MHz fixed switching frequency enables small solution sizes.

Float voltage feedback accuracy is specified at $\pm 0.5\%$, charge current accuracy is $\pm 5\%$ and C/10 detection accuracy is $\pm 2.5\%$. Once charging is terminated, the LT3652 automatically enters a low current standby mode, which reduces the input supply current to 85uA. In shutdown, the input bias current is reduced to 15uA. For autonomous charge control, an auto-recharge feature starts a new charging cycle if the battery voltage falls 2.5% below the programmed float voltage.

The LT3652 is available in a low-profile (0.75mm) 12-pin 3mm x 3mm DFN package, and is offered in both E and I grade versions, guaranteed from -40°C to 125°C . Pricing starts at \$3.05 and \$3.36 each, respectively in 1,000-piece quantities.

For more information, visit www.linear.com.


Photo Caption: 32V (40V max), 2A Solar Powerable Multi-Chemistry Charger

Summary of Features: LT3652

- Solar Power Supply Voltage Regulation Loop for Peak Tracking in Solar Applications
- Wide Input Voltage Range: 4.95V to 32V (40V Absolute Maximum Rated)
- Programmable Charge Current up to 2A
- Multi-Chemistry: Resistor Programmable Float Voltage Up to 14.4V Accommodates Li-Ion/Polymer, LiFePO₄, SLA, NiMH / NiCd Chemistries
- User-Selectable Termination: C/10 or Onboard Termination Timer
- Draws <1uA from the Battery During Non-Charging Periods
- 1MHz Switching Frequency Enables Small External Components
- $\pm 0.5\%$ Float Voltage Feedback Reference Accuracy
- $\pm 5\%$ Charge Current Accuracy
- NTC Resistor Temperature Monitor
- Bad Battery Detection with Auto-Reset
- Low-Profile (0.75mm) 3mm x 3mm DFN-12 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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