



News Release | [www.linear.com](http://www.linear.com)

## **Versatile 55V<sub>IN</sub>/55V<sub>OUT</sub> Buck-Boost Battery Charging Controller Offers Multi-Chemistry Operation & PowerPath Control**

MILPITAS, CA – November 5, 2013 – Linear Technology Corporation introduces the [LTC4020](#), an advanced high voltage power manager and multi-chemistry battery charger designed to efficiently transfer power from a variety of sources to a system power supply rail and a battery. The device offers precision charge current regulation,  $\pm 0.5\%$  charge voltage regulation and operates across a wide 4.5V to 55V input voltage range compatible with a variety of different input voltage sources. With an output voltage range up to 55V and three selectable termination algorithms, the LTC4020 accommodates an equally wide variety of battery stack voltages and chemistries. The LTC4020 contains a step-up/step-down DC/DC controller, enabling operation with battery voltages that are above, below or equal to the input voltage ( $V_{IN}$ ). Typical applications include portable industrial and medical equipment, solar-powered systems, military communications equipment, plus 12V to 24V embedded automotive systems.

The LTC4020 features an intelligent PowerPath™ topology that reduces the voltage range required by downstream system components to that of the expected battery voltage range rather than the full extent of the input voltage source. However, instant-on operation still ensures system load power with a fully discharged battery. Furthermore, this topology preferentially provides power to the system load when input power is limited – the device's ideal diode controller guarantees that ample power is always available to  $V_{OUT}$  if there is insufficient power available from the DC/DC converter. A maximum power point control (MPPC) circuit features

an input voltage regulation loop, which controls charge current to hold the input voltage at a programmed level, ideal for high impedance input or solar panel-powered applications. When no input supply is present, the battery drain current is reduced to only 10μA, maintaining maximum stored capacity.

The LTC4020's three pin-selectable charging profiles are optimized for a variety of battery chemistries. The LTC4020 can provide a constant-current/constant-voltage (CC/CV) charge characteristic with either C/10 or timed termination for use with lithium-based battery systems including Li-Ion, Li-polymer and LiFePO<sub>4</sub>. A constant-current (CC) characteristic with timed termination can be used for charging supercapacitors or trickle charging nickel-based batteries. Finally, a 4-step, 3-stage lead-acid charge profile works well with all types of lead-acid batteries including sealed, AGM and flooded. An integrated timer controls termination during CC/CV charging, as well as additional protection during battery preconditioning and absorption charging for lead-acid batteries. Two digital open-drain outputs provide charger status and signal fault conditions. These binary coded pins signal battery charging, standby or shutdown modes, battery temperature faults and bad battery faults. Other features of the battery charger include: temperature-qualified charging using an NTC thermistor, automatic recharge and precondition low current charging for deeply discharged cells.

The LTC4020 is housed in a low profile (0.75mm) 38-pin 5mm x 7mm QFN package with a backside metal pad for excellent thermal performance. The device is guaranteed for operation from -40°C to 125°C. 1,000-piece pricing starts at \$4.95 each. For more information, visit [www.linear.com/product/LTC4020](http://www.linear.com/product/LTC4020)

## Photo Caption: 55V<sub>IN</sub>/55V<sub>OUT</sub> Buck-Boost Power Manager Charger Controller

### Summary of Features: LTC4020

- Wide Voltage Range: 4.5V to 55V Input, 2.5V to 55V Output (60V Absolute Maximum)
- Synchronous Buck-Boost DC/DC Controller
- Lithium-based & Lead-Acid Charge Algorithms
- ±0.5% Float Voltage Accuracy
- ±5% Charge Current Accuracy
- Instant-On Operation for Heavily Discharged Batteries
- Ideal Diode Controller Provides Low Loss PowerPath™ When Input Power is Limited
- Input Voltage Regulation for High Impedance Input Supplies & Solar Panel Peak Power Operation
- Onboard Timer for Protection & Termination
- Bad Battery Detection with Auto-Reset
- NTC Input for Temperature Qualified Charging
- Binary Coded Open-Collector Status Pins
- 38-Pin 5mm × 7mm x 0.75mm QFN Package

### About Linear Technology

Linear Technology Corporation, a member of the S&P 500, has been designing, manufacturing and marketing a broad line of high performance analog integrated circuits for major companies worldwide for over three decades. The Company's products provide an essential bridge between our analog world and the digital electronics in communications, networking, industrial, automotive, computer, medical, instrumentation, consumer, and military and aerospace systems. Linear Technology produces power management, data conversion, signal conditioning, RF and interface ICs, µModule® subsystems, and wireless sensor network products. For more information, visit [www.linear.com](http://www.linear.com)

 , LT, LTC, LTM, Linear Technology, the Linear logo and µModule are registered trademarks and PowerPath is a trademark of Linear Technology Corp. All other trademarks are the property of their respective owners.

#### Press Contacts:

##### North America / Worldwide

John Hamburger, Director Marketing  
Communications  
[jhamburger@linear.com](mailto:jhamburger@linear.com)  
Tel: 408-432-1900 ext 2419

Doug Dickinson, Media Relations Manager  
[ddickinson@linear.com](mailto:ddickinson@linear.com)  
Tel: 408-432-1900 ext 2233

##### UK & Nordic

Alan Timmins  
[alan@ezwire.com](mailto:alan@ezwire.com)  
Tel: +44-1-252-629937

