



## **2A Single-Inductor Bidirectional Power Backup Supply Provides Continuous Power During Input Supply Disruption**

MILPITAS, CA – January 5, 2016 – Linear Technology Corporation introduces the [LTC3643](#), a bidirectional, high voltage boost capacitor charger that automatically converts to a buck regulator for system backup. The proprietary, single-inductor topology with integrated PowerPath™ functionality does the work of two separate switching regulators, reducing size, cost and complexity. The LTC3643 operates in two modes – boost charge mode and buck backup mode. The charging mode efficiently charges an electrolytic capacitor array up to 40V with an internal switch current rating of 2A from an input supply between 3V to 17V. In backup mode, when the input supply falls below the programmable power-fail (PFI) threshold, the step-up charger operates in reverse as a synchronous step-down regulator to power and hold up the system rail from the backup capacitor. During backup, the current limit can be programmed from 2A to 4A, making this device ideal for high energy, relatively short duration backup capacitor systems, power failure backup systems, solid-state drives and battery stack charging applications.

When charging the backup capacitor, an external low-value sense resistor can be used by the LTC3643 to maintain an accurate current limit from the input supply while prioritizing power delivery to the system load. Input current limit can be programmed with the 50mV threshold across a current sense resistor, preventing system power source by reducing capacitor charging current. The step-down converter operates at a 1MHz frequency, minimizing the size of external components. Low quiescent current Burst Mode® operation during regulation maximizes the energy usage from the backup capacitor. The LTC3643 provides ideal diode operation at the

input supply by providing the gate drive signal to an external PMOS switch. This enables efficient power delivery while providing complete isolation between the input supply and the system load during backup mode. Other features include an integrated power N-channel MOSFET for output/CAP disconnect,  $\pm 1\%$  reference accuracy for system voltage regulation, and indicator outputs for charge status and input power fail.

The LTC3643 is housed in compact, thermally enhanced 24-lead 3mm x 5mm QFN package, featuring E- and I-grade operation from  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . Pricing for the E-grade device starts at \$4.45 each in 1,000-piece quantities, and all are available from stock. For more information, visit [www.linear.com/product/LTC3643](http://www.linear.com/product/LTC3643).

**Photo Caption:** 2A Bidirectional Buck & Boost Backup Supply


### Summary of Features: LTC3643

- Bidirectional Synchronous Boost Capacitor Charger/Buck Regulator for System Backup
- Wide Input Voltage Range: 3V to 17V
- Up to 40V Capacitor Voltage Storage for High Energy Backup
- 2A Maximum CAP Charge Current
- Integrated Power N-Channel MOSFETs (150mOhm Top and 75mOhm Bottom)
- Integrated Power N-Channel MOSFET for Output/CAP Disconnect (50mOhm)
- Input Current Limit During Charging
- Fast 1MHz Switching Frequency
- $\pm 1\%$  Reference Accuracy for System Voltage Regulation
- Indicator Outputs for Charge Status & Input Power Fail
- Low Profile 24-Lead 3mm x 5mm QFN Package

The USA list pricing shown is for budgetary use only. International prices may differ due to local duties, taxes, fees and exchange rates.

## 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,  $\mu$ Module<sup>®</sup> subsystems, and wireless sensor network products. For more information, visit [www.linear.com](http://www.linear.com)

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