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3A Buck-Boost Super Capacitor Charger Features Active Capacitor Balancing for Fast Charging

MILPITAS, CA – February 17, 2014 – Linear Technology Corporation introduces the [LTC3128](#), a high efficiency, input current-limited buck-boost supercapacitor charger with active charge balancing for 1 or 2 series supercapacitors. The LTC3128 features an average input current limit that can be programmed up to 3A with +/-2% accuracy, preventing power source overload while minimizing capacitor recharge time. Highly efficient active charge balancing eliminates dissipative external ballast resistors, ensuring balanced operation and charging with mismatched capacitors, and less frequent recharge cycles. A programmable maximum capacitor voltage clamp actively monitors and enforces the voltage across each capacitor in the series stack, ensuring reliable operation as capacitors age and develop mismatched capacities. The low noise buck-boost topology allows the output supercapacitor to be charged whether above or below the input. The low- $R_{DS(on)}$, low gate charge synchronous switches provide high efficiency conversion to minimize the charging time of storage elements. This combination of features makes the LTC3128 ideal for safely charging and protecting large capacitors in backup power applications.

The LTC3128's input current limit and maximum capacitor voltage are each programmed using a single resistor. Average input current is accurately controlled over a 0.5A to 3A programming range, and the individual maximum capacitor voltage can be set from 1.6V to 3.0V. Other features of the LTC3128 include <1 μ A quiescent current from V_{OUT} in Burst Mode[®] operation, accurate power good and power failure indicators, and thermal overload protection.

The LTC3128 is housed in compact, thermally enhanced 4mm x 5mm QFN and 24-lead TSSOP packages, both featuring operation from -40°C to 125°C. Pricing for the E-grade device starts at \$3.95 each in 1,000-piece quantities. For more information, visit www.linear.com/product/LTC3128


Photo Caption: 3A Buck-Boost Supercap Charger with 2% Accurate Input Current Limit

Summary of Features: LTC3128

- $\pm 2\%$ Accurate Average Input Current Limit Programmable up to 3A
- Programmable Maximum Capacitor Voltage Limit
- Active Charge Balancing for Fast Charging of Unmatched Capacitors
- V_{IN} Range: 1.72V to 5.5V
- V_{OUT} Range: 1.8V to 5.5V
- $<1\mu A$ Quiescent Current from V_{OUT} when Charged
- Up to 96% Efficiency
- Output Disconnect in Shutdown: $<1\mu A I_Q$
- Accurate Power Good Comparator
- Accurate Power Failure Indicator
- Thermally Enhanced 20-Lead 4mm \times 5mm \times 0.75mm QFN & 24-Lead TSSOP Packages

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 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, μ Module[®] subsystems, and wireless sensor network products. For more information, visit www.linear.com

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