

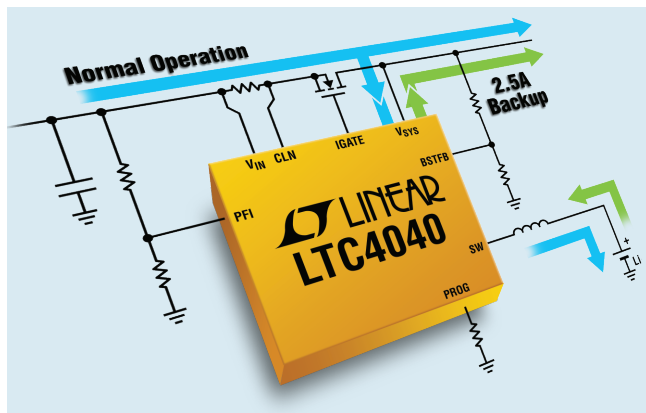
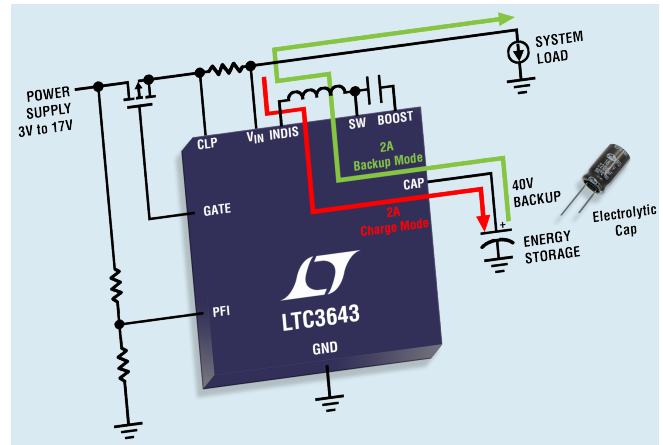
Backup Power Solutions

Supercapacitor, Capacitor and Battery Backup ICs

These do the hard stuff, with their simple and full-featured solutions, providing backup power if the main supply rail should fail. When a system rail is powered, our ICs can charge and balance multiple supercaps, capacitors or a battery, for backup energy storage. Should the system power fail, these ICs can immediately use their stored energy to power the downstream load. We have a broad range of device topologies, with wide input voltage ranges and high charge currents, so it's easy to select the right product for your system's backup power needs.

LTC3643: 2A Bidirectional Power Backup Supply and Capacitor Charger

- 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 (150mΩ Top and 75mΩ Bottom)
- Integrated Power N-Channel MOSFET for Output/CAP Disconnect (50mΩ)
- Input Current Limit During Charging

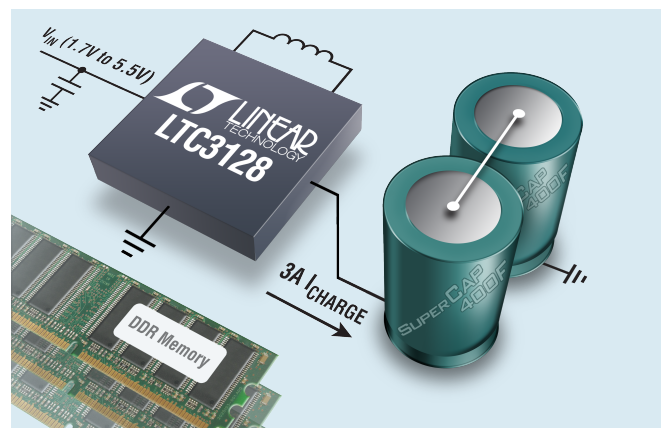


LTC4040: 2.5A Battery Backup Power Manager

- Step-Up Backup Supply and Step-Down Battery Charger
- 6.5A Switches for 2.5A Backup from 3.2V Battery
- Input Current Limit Prioritizes Load Over Charge Current
- Input Disconnect Switch Isolates Input During Backup
- Automatic Seamless Switchover to Backup Mode
- Input Power Loss Indicator
- System Power Loss Indicator
- Pin-Selectable Battery: Li-Ion (3.95V/4.0V/4.05V/4.1V) or LiFePO₄ (3.45V/3.5V/3.55V/3.6V)

LTC3128: 3A Monolithic Buck-Boost Supercapacitor Charger and Balancer with Accurate Input Current Limit

- $\pm 2\%$ Accurate Average Input Current Limit Programmable Up to 3A
- Programmable Maximum Capacitor Voltage Limit
- Active Charge Balancing for Fast Charging of Unmatched Capacitors
- Charges Single or Stacked Capacitors
- V_{IN} Range: 1.73V to 5.5V
- V_{OUT} Range: 1.8V to 5.5V
- $< 2\mu A$ Quiescent Current from V_{OUT} When Charged



Supercapacitor/Capacitor Chargers and Backup Power ICs

Supercapacitors, which are capacitors with up to 100s of farads in value, are emerging as an alternative to batteries in applications where power delivery supercedes total energy storage. Supercapacitors have several advantages over batteries that make them a superior solution when short-term high power is needed, such as in power ride-through applications. These advantages include lower effective series resistance (ESR) and enhanced durability in the face of repeated charging.

Linear Technology offers a portfolio of linear, switching and switched-capacitor ICs designed to charge supercapacitors (also known as ultracapacitors) as well as capacitors or batteries. These devices offer input or output current limiting, automatic cell balancing and a range of protection features that make them uniquely suited for backup applications.

LTC3350: High Current Supercapacitor Backup Controller and System Monitor

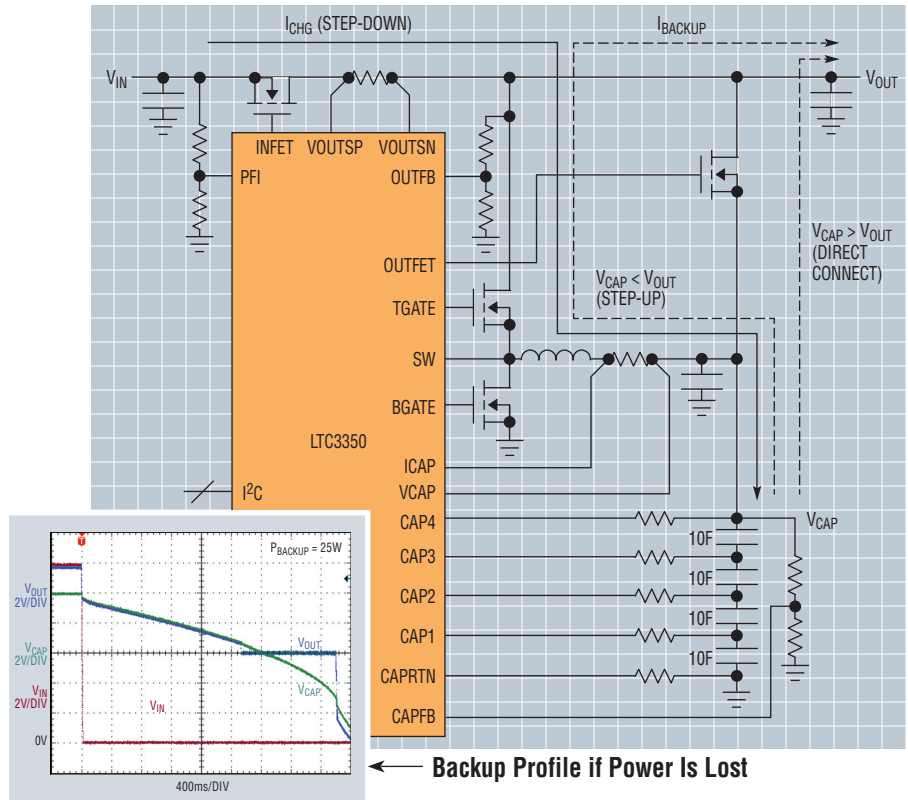
Features

- High Efficiency Synchronous Step-Down CC/CV Charging of One to Four Series Supercapacitors
- Step-Up Mode in Backup Provides Greater Utilization of Stored Energy in Supercapacitors
- 14-Bit ADC for Monitoring System Voltages/ Currents, Capacitance and ESR
- Active Overvoltage Protection Shunts
- Internal Active Balancers—No Balance Resistors
- V_{IN} : 4.5V to 35V, $V_{CAP(n)}$: Up to 5V per Capacitor, Charge/Backup Current: 10+A
- Programmable Input Current Limit Prioritizes System Load Over Capacitor Charge Current
- Dual Ideal Diode PowerPath™ Controller
- All NFET Charger Controller and PowerPath Controller
- Compact 38-Lead 5mm × 7mm QFN Package

Applications

- High Current 12V Ride-Through UPS
- Servers/Mass Storage/High Availability Systems

High Current Supercapacitor Charger and Backup Supply



Part Number	Topology	Input Voltage (V)	VCAP (Max) (V)	Storage Element	Quiescent Current (µA)	Charge Current	PowerPath Control	Automatic Balancing	Overvoltage Protection	Package
Backup Power ICs										
LTC3225/-1	Charge Pump - Boost	2.8-5.5	5.5	2 SCaps	20	150mA	–	✓***	✓	2x3 DFN-10
LTC3226	Charge Pump - Boost + 2 LDOs	2.5-5.5	5.5	2 SCaps	20	360mA	✓	✓***	✓	3x3 QFN-16
LTC3625/-1	Switching Buck & Boost	2.7-5.5	5.5	2 SCaps	23	1A*	–	✓***	✓	3x4 DFN-12
LTC4225	Linear	2.7-5.5	5.5	2 SCaps	20	1A	–	✓	✓	3x3 DFN-12 MSOP-12
LTC3355	Buck + LDO + Charger + Boost Backup	3-20	5	1 SCap	120	1A	✓	✓	✓	4x4 QFN-20
LTC3110	Bi-Dir Buck-Boost	1.71-5.25	5.5	1-2 SCaps	48	2A	–	✓	✓	4x4 QFN-20, TSSOP-24
LTC3128	Buck-Boost	1.73-5.5	5.5	1-2 SCaps	600	3A	–	✓	✓	4x5 QFN-20, TSSOP-24
LTC3350	Buck Charger, Boost Backup, Balancer + OVP, Health Monitor	4.5-35	V_{IN}	1-4 SCaps	4mA	10A+	✓	✓	✓	5x7 QFN-38
LTC3643	Bi-Dir Boost Charger/Buck Backup, Capacitors	3-17	Up to 40V Cap	Electrical Cap	400	2A	✓	n/a	✓	3x5 QFN-24
LTC4040	Buck Charger + Boost Backup, Batteries	3.5-5.5	5V Battery	Li-Ion LiFePO ₄	40	2.5A	✓	n/a	✓	4x5 QFN-24

* in 2-inductor circuit; 500mA in 1-inductor configuration ** ideal diode V_{IN} to V_{OUT} *** while charging