DESCRIPTION

Demonstration Circuit DC398 is a micropower boost converter that guarantees to start up at 1V. Once it starts up, the chip is powered from the output; therefore the input voltage can go lower. DC398 version A uses the LTC3400ES6; version B uses the LTC3400BES6. The LTC3400 shifts automatically to low power Burst Mode™ operation at light loads; whereas the LTC3400B operates at a fixed frequency for all loads. Both LTC3400 and LTC3400B switch at 1.2MHz to allow up to 95% efficiency with a tiny PCB footprint, which will fit nicely in many battery powered applications such as GPS receivers, PDAs, pagers and toys. The converter produces 3.3 volts with current guaranteed up to 90mA from a single AA cell. When JP1 is closed, the IC is turned off, which draws less than 1µA current.

On the bench test, an electrolytic capacitor is recommended at the input posts to dump the voltage overshoot when first powered up. The spike is caused by the energy stored in the parasitic inductance of the connection wire. In real applications, since the connection to the source is short and the battery internal impedance also provides damping, the damping capacitor is usually not needed. The Vin pin is rated for 6V.

QUICK START PROCEDURE

Refer to Figure 1 for proper equipment setup and follow the procedure below.

1. Apply a voltage source to the input of the circuit between the Vin and GND terminals. The circuit is guaranteed to start up at input voltages higher than 1V. Do not apply more than 5 volts. The boost circuit will only regulate the output voltage when the input voltage is less than the output.
2. Attach a voltmeter or oscilloscope probe between the Vout and GND terminals of the circuit to monitor the output.
3. To start the circuit, open the jumper, JP1.
4. Attach a load to the output. The available output power depends on the input voltage. Please refer to the performance summary for maximum current at different input voltages.

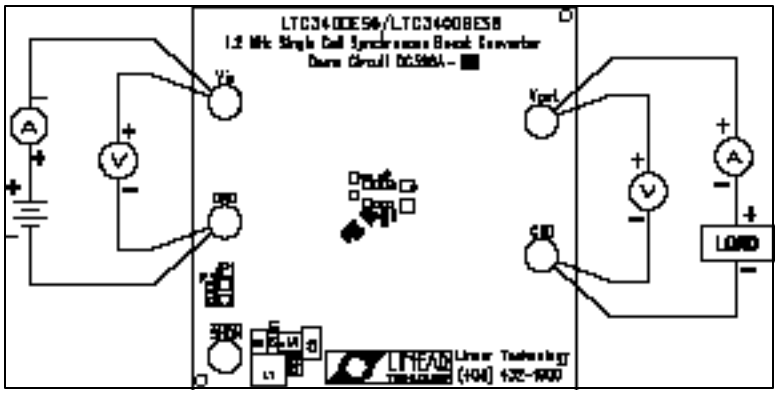

Figure 1. Proper Measurement Equipment Setup

Table 1. Performance Summary

PARAMETER	CONDITION	VALUE
Maximum Load Current, Min	V_{OUT} = 3.3V, V_{IN} = 1.0V	90mA
Maximum Load Current, Min	V_{OUT} = 3.3V, V_{IN} = 2.0V	250mA
Switching Frequency, Typ		1.2MHz
Efficiency, Typ	V_{IN} = 2.4V, V_{OUT} = 3.3V, I_{OUT} = 100mA	92%
Output Ripple, Typ	V_{IN} = 1.2V, V_{OUT} = 3.3V, I_{OUT} = 90mA	20mV