DESCRIPTION

Demonstration circuit 877 is a high efficiency synchronous Buck-Boost converter using the LTC3531-3.3. The input range is from 1.8V to 5.5V making it ideal for single-cell Lithium-Ion, multicell alkaline or nickel battery applications. This converter can provide 200mA when the input voltage is above 2.9V.

The DC877 features the LTC3531-3.3 in a tiny 6-pin ThinSOT package. The converter operates in Burst Mode, which provides conversion efficiency over a wide range of load currents. It has minimum component count and tiny solution size. Other features include current limiting, thermal shutdown and output disconnect. In shutdown, the IC itself draws less than 1uA. The DC877A is ideal for battery powered, handheld applications such as MP3 players, handheld computers and PDAs.

Design files for this circuit board are available. Call the LTC factory.

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Table 1. Performance Summary ($T_A = 25^0C$)

PARAMETER FOR LED DRIVER	CONDITION	VALUE
Minimum input voltage		1.8V
Maximum input voltage		5.5V
Output voltage V_{OUT}		3.3V +/- 4%
Maximum output current	V_{IN}=1.8V	90mA
Maximum output current	V_{IN}=2.5V	150mA
Maximum output current	V_{IN}=2.9V	200mA

QUICK START PROCEDURE

DC877 is easy to set up for evaluating the performance of the LTC3531. See Figure 1 for proper measurement equipment setup and follow the test procedure outlined below.

1. Place JP1 in the RUN position.

2. Connect a bench supply to the VIN and GND terminals.

3. Turn on the input power supply and make sure that the input voltage does not exceed 5.5V.

4. Check for the proper output voltage. If there is no output, temporarily disconnect the load to make sure that the load is not set too high.

5. Once the proper output voltage is established, adjust the load within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters. See Figure 2 for proper scope probe placement for measuring input or output ripple.
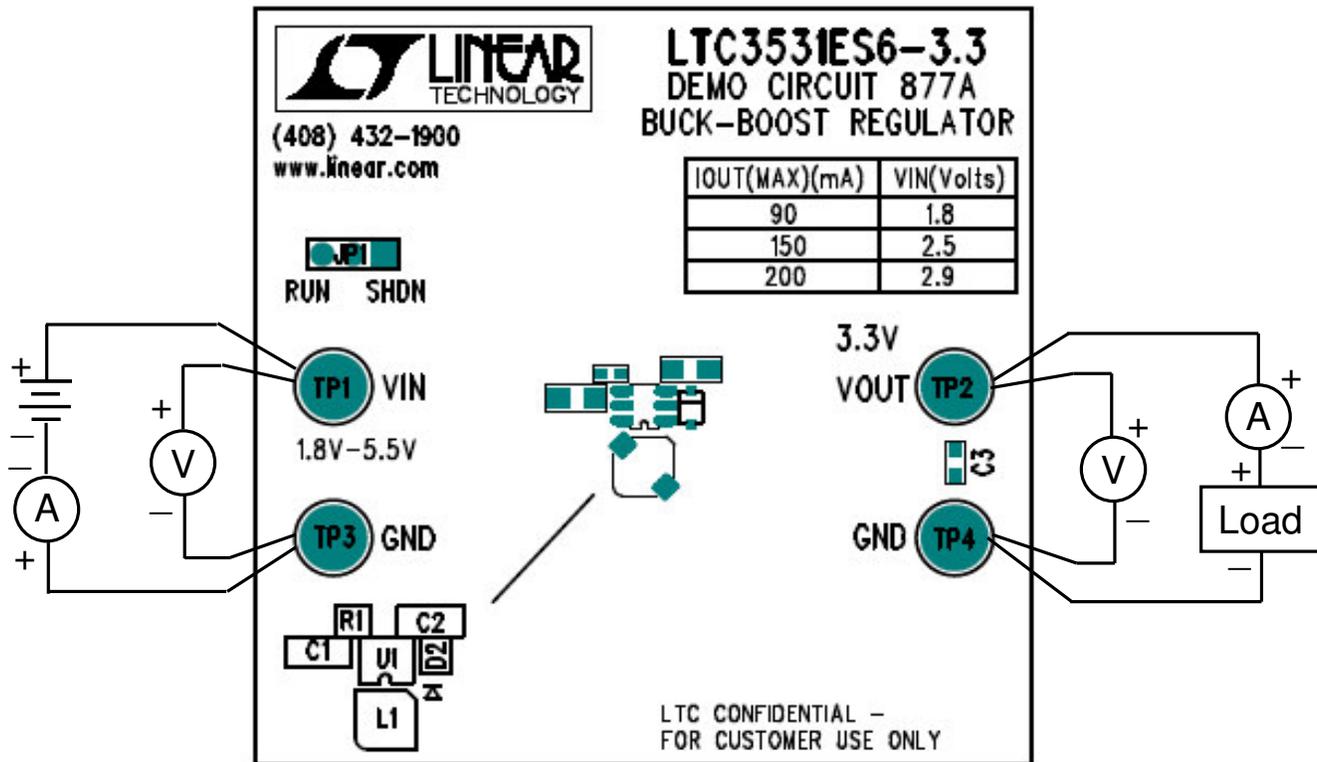
**Figure 1. Proper Measurement Equipment Setup**
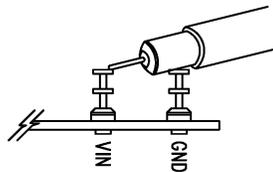
Figure 2. Scope Probe Placement for Measuring Input or Output Ripple

REVISION HISTORY

ECO	REV	DESCRIPTION	DATE	APPROVED
	2	PROTO	08/15/05	
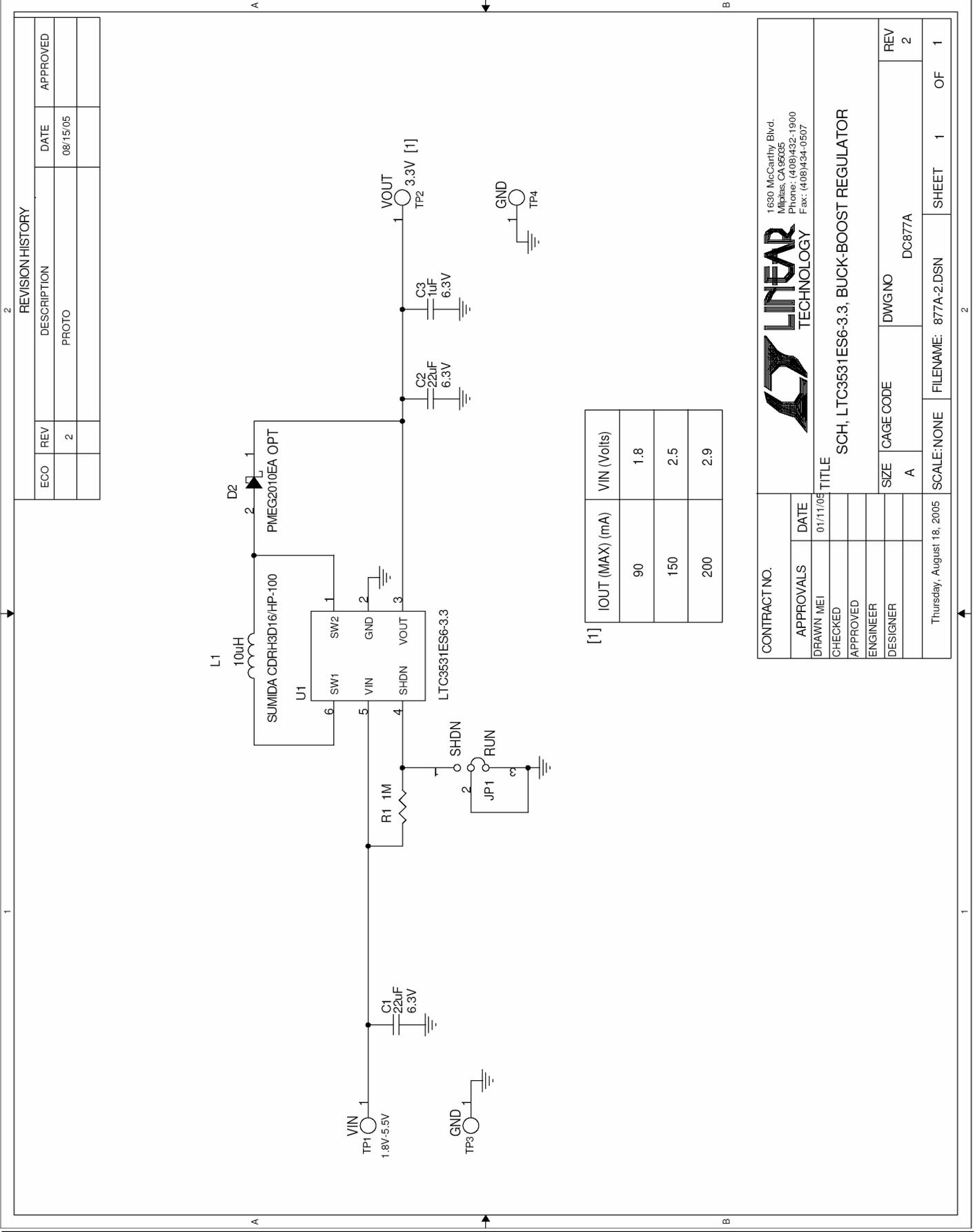
[1]

IOUT (MAX) (mA)	VIN (Volts)
90	1.8
150	2.5
200	2.9

L1 10uH
SUMIDA CDRH3D16/HP-100

D2 PMEG2010EA OPT

U1 LTC3531ES6-3.3
SW1 6
VIN 5
SHDN 4
SW2 1
GND 2
VOUT 3

R1 1M

SHDN
RUN
JP1

C1 22uF 6.3V
VIN TP1 1.8V-5.5V
GND TP3

C2 22uF 6.3V
C3 1uF 6.3V
VOUT 3.3V [1] TP2
GND TP4

CONTRACT NO.

APPROVALS	DATE
DRAWN MEI	01/11/05
CHECKED	
APPROVED	
ENGINEER	
DESIGNER	

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LINEAR TECHNOLOGY

TITLE
SCH, LTC3531ES6-3.3, BUCK-BOOST REGULATOR

SIZE A
CAGE CODE
DWG NO DC877A
REV 2

SCALE:NONE
FILENAME: 877A-2.DSN
SHEET 1 OF 1

Thursday, August 18, 2005