QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 841
CONSTANT CURRENT BOOST CONVERTER WITH INPUT CURRENT AND OUTPUT VOLTAGE PROTECTION

LT3477

DESCRIPTION

Demonstration circuit 841 is a constant LED current boost converter with input current and output voltage protection featuring the LT®3477. The board is optimized to drive 330mA LED arrays with a total LED voltage between the maximum input voltage and 36V. The high input voltage range, high-efficiency low-side internal 3A NPN power switch, two floating current sense amplifiers and overvoltage/voltage feedback amplifier, shutdown control pin, Iadj LED current dimming control, externally programmable switching frequency and soft-start capacitor make the LT3477 an extremely powerful and versatile LED driving IC.

DC841 has overvoltage protection below 36V if the LEDs are open or not properly attached to the terminals on the PCB. The shutdown function is activated by pulling the shutdown terminal to ground, but in shutdown the boost configuration allows the input voltage to be seen on the output and if the attached LED array leaks current at the input voltage, the LEDs may not completely turn off in shutdown although IC switching has ceased. The Iadj terminals can be used to dim the LED current. In order to activate the Iadj terminals, the resistors shorting the Iadj pins to VIN must be removed and the resistors between the Iadj terminals and pins must be stuffed.

A few simple modifications can be made to DC841 in order to convert the board from a boost converter to a buck converter or any type of step-up and step-down converter. Please consult the datasheet for schematic details and the factory for customization details.

The LT3477 datasheet gives a complete description of the part, operation and applications information. The datasheet must be read in conjunction with this Quick Start Guide for demonstration circuit 841. The LT3477 is assembled in a small 20-lead plastic TSSOP FE package with a thermally enhanced ground pad. Proper board layout is essential for maximum thermal performance. See the datasheet section 'Layout Considerations'.

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

LT is a trademark of Linear Technology Corporation
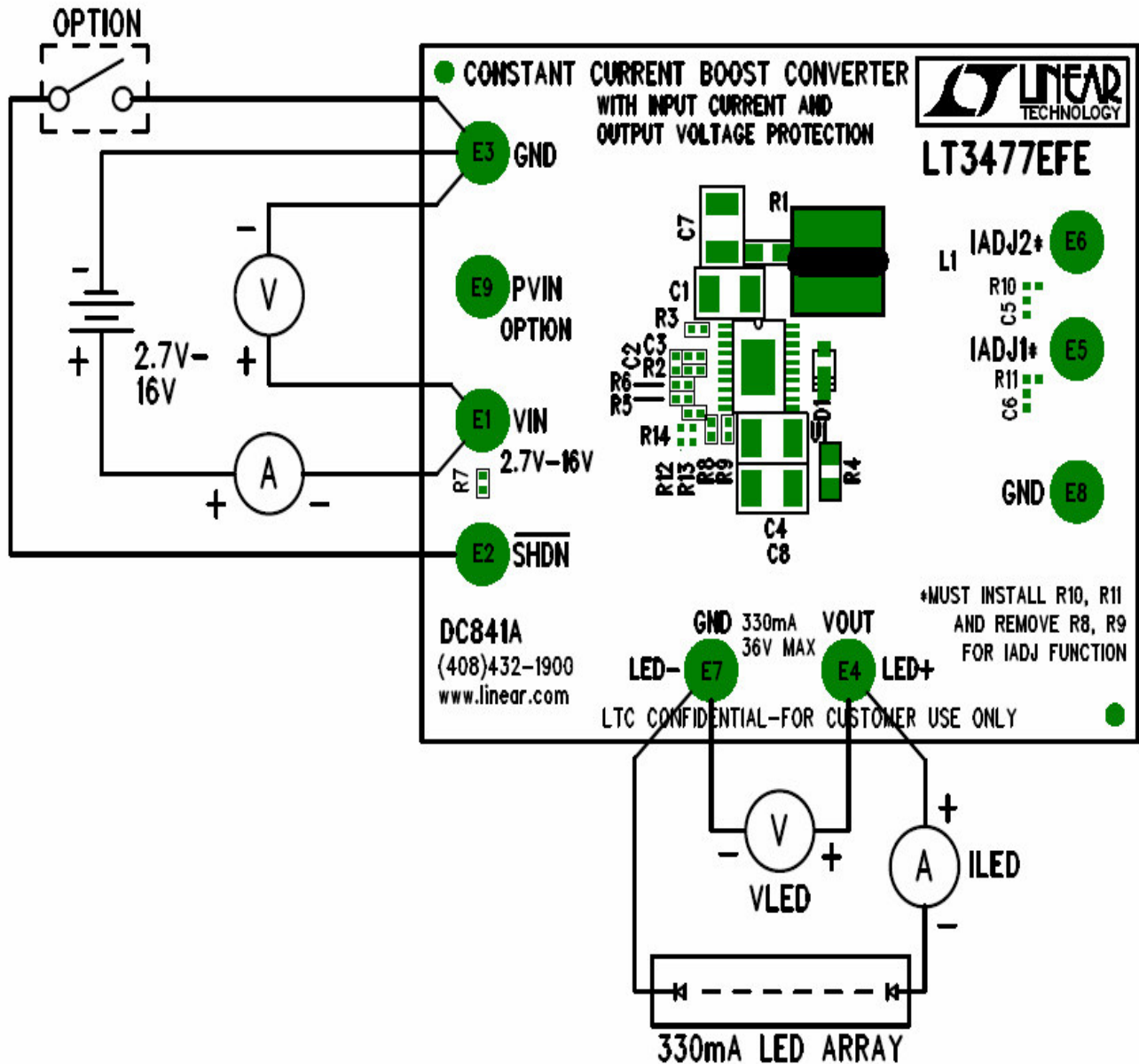
QUICK START PROCEDURE

Demonstration circuit 841 is easy to set up to evaluate the performance of the LT3477. Follow the procedure below:

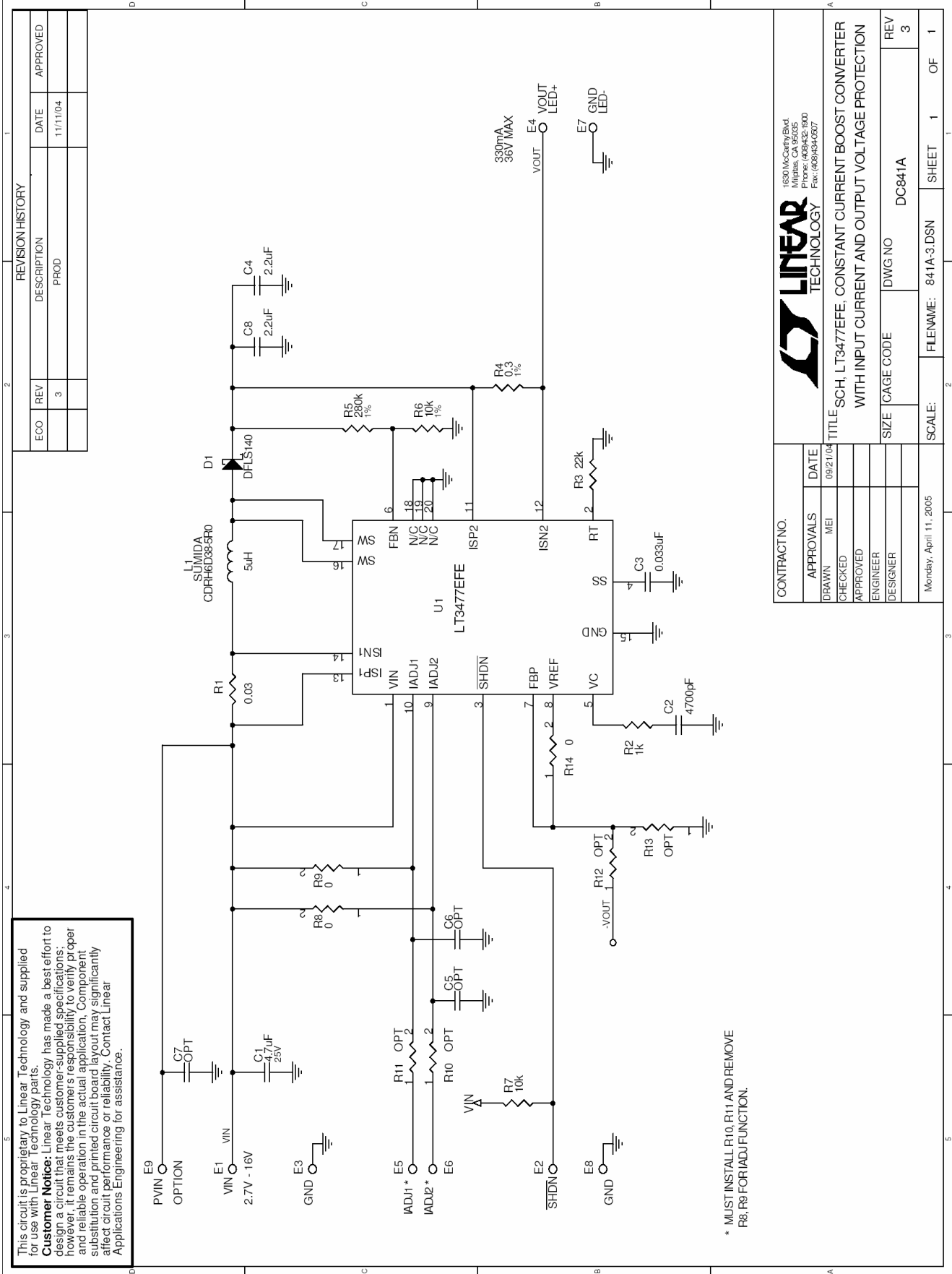**NOTE:** Make sure that the input voltage does not exceed 16V.

1. Connect an array of LEDs with forward voltage less than 36V, but greater than the input voltage, to the LED+ and LED- terminals on the PCB as shown.

2. Connect a 2.7V to 16V input power supply to the VIN and GND terminals on the PCB and observe the bright LEDs and the constant LED current.

REVISION HISTORY

ECO	REV	DESCRIPTION	DATE	APPROVED
	3	PROD	11/11/04	

This circuit is proprietary to Linear Technology and supplied for use with Linear Technology parts.

Customer Notice: Linear Technology has made a best effort to design a circuit that meets customer-supplied specifications; however, it remains the customer's responsibility to verify proper and reliable operation in the actual application. Component substitution and printed circuit board layout may significantly affect circuit performance or reliability. Contact Linear Applications Engineering for assistance.

* MUST INSTALL R10, R11 AND REMOVE R8, R9 FOR IADJ FUNCTION.

U1
LT3477EFE

L1
SUMIDA
CDRH6D38-5R0
5uH

D1
DFLS140

R1 0.03

R4 0.3 1%

R5 280k 1%

R6 10k 1%

R3 22k

C4 2.2uF

C8 2.2uF

C3 0.033uF

C2 4700pF

R2 1k

R14 0

R13 OPT

R12 OPT

R9 0

R8 0

C6 OPT

C5 OPT

R11 OPT

R10 OPT

R7 10k

C7 OPT

C1 4.7uF 25V

330mA
36V MAX

E4 VOUT LED+

E7 GND LED-

VOUT

E9 PVIN
OPTION

E1 VIN
2.7V - 16V

E3 GND

E5 IADJ1 *

E6 IADJ2 *

E2 SHDN

E8 GND

VIN

-VOUT

SW 17
SW 16
ISN1 14
ISP1 13
VIN 1
IADJ1 10
IADJ2 9
SHDN 3
FBN 6
N/C 18
N/C 19
N/C 20
ISP2 11
ISN2 12
RT 2
SS 4
GND 15
FBP 7
VREF 8
VC 5

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