

## LT3757EDD

# HIGH EFFICIENCY CUK CONVERTER

## DESCRIPTION


Demonstration circuit 1548A features LT3757EDD in a 300kHz CUK converter circuit, designed for -15V output from a 7V to 28V input.

The LT3757EDD operates over an input range of 2.9V to 40V, suitable for applications from single-cell lithium-ion battery portable electronics up to high voltage automotive and industrial power supplies. It also exhibits low shutdown quiescent current of 1 $\mu$ A, making them an ideal fit for battery-operated systems. Thanks to a novel FBX pin architecture, the LT3757EDD can be connected directly to a divider from either the positive output or the negative output to ground. It also packs many popular features such as soft-start, input undervoltage lockout, adjustable

frequency and synchronization in a small 10-lead MSOP package or a 3mm  $\times$  3mm QFN package.

The LT3757EDD datasheet gives a complete description of the part, operation and application information. The datasheet must be read in conjunction with this quick start guide for demo circuit 1548A.

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

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**Table 1. Performance Summary for 300kHz CUK Regulator ( TA = 25°C )**

PARAMETER	CONDITION	VALUE
Minimum Input Voltage		7V
Maximum Input Voltage		28V
Output Voltage V <sub>OUT</sub>		-15V +/-3%
Maximum Output Current		1A
Typical Switching Frequency		300kHz

## QUICK START PROCEDURE

Demonstration circuit 1548A is easy to set up to evaluate the performance of the LT3757EDD. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

**NOTE.** When measuring the input or output voltage ripple, care must be taken to avoid a long ground lead on the oscilloscope probe. Measure the input or output voltage ripple by touching the probe tip directly across the Vin or Vout and GND terminals. See Figure 2 for proper scope probe technique.

1. Place JP1 on the ON position.

2. With power off, connect the input power supply to Vin and GND.
3. Turn on the power at the input.

**NOTE.** Make sure that the input voltage does not exceed the maximum input voltage.

4. Check for the proper output voltages.

**NOTE.** If there is no output, temporarily disconnect the load to make sure that the load is not set too high.

Once the proper output voltages are established, adjust the loads within the operating

range and observe the output voltage regulation, ripple voltage, efficiency and other pa-

rameters.

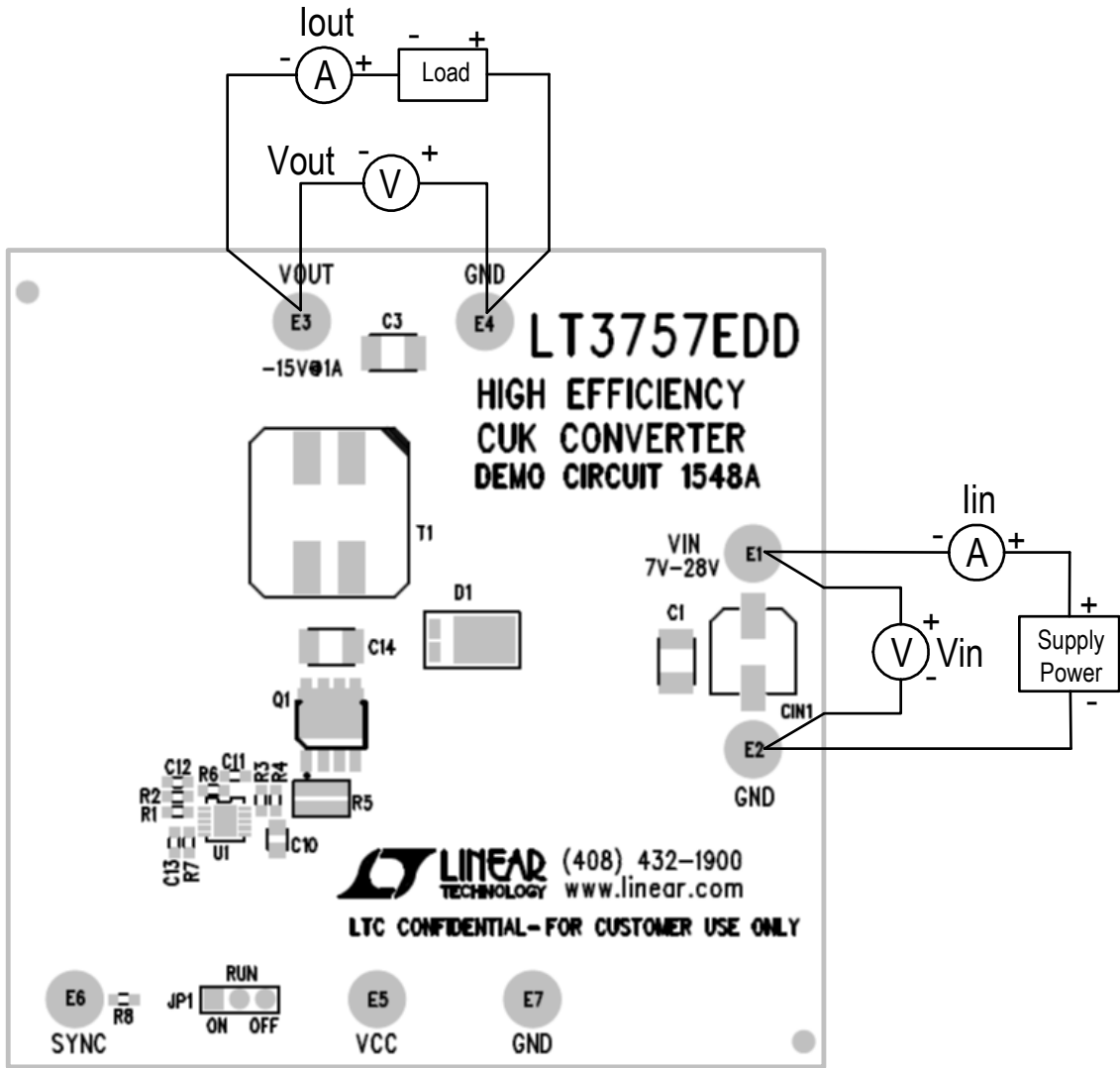


Figure 1. Proper Measurement Equipment Setup

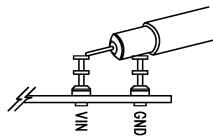
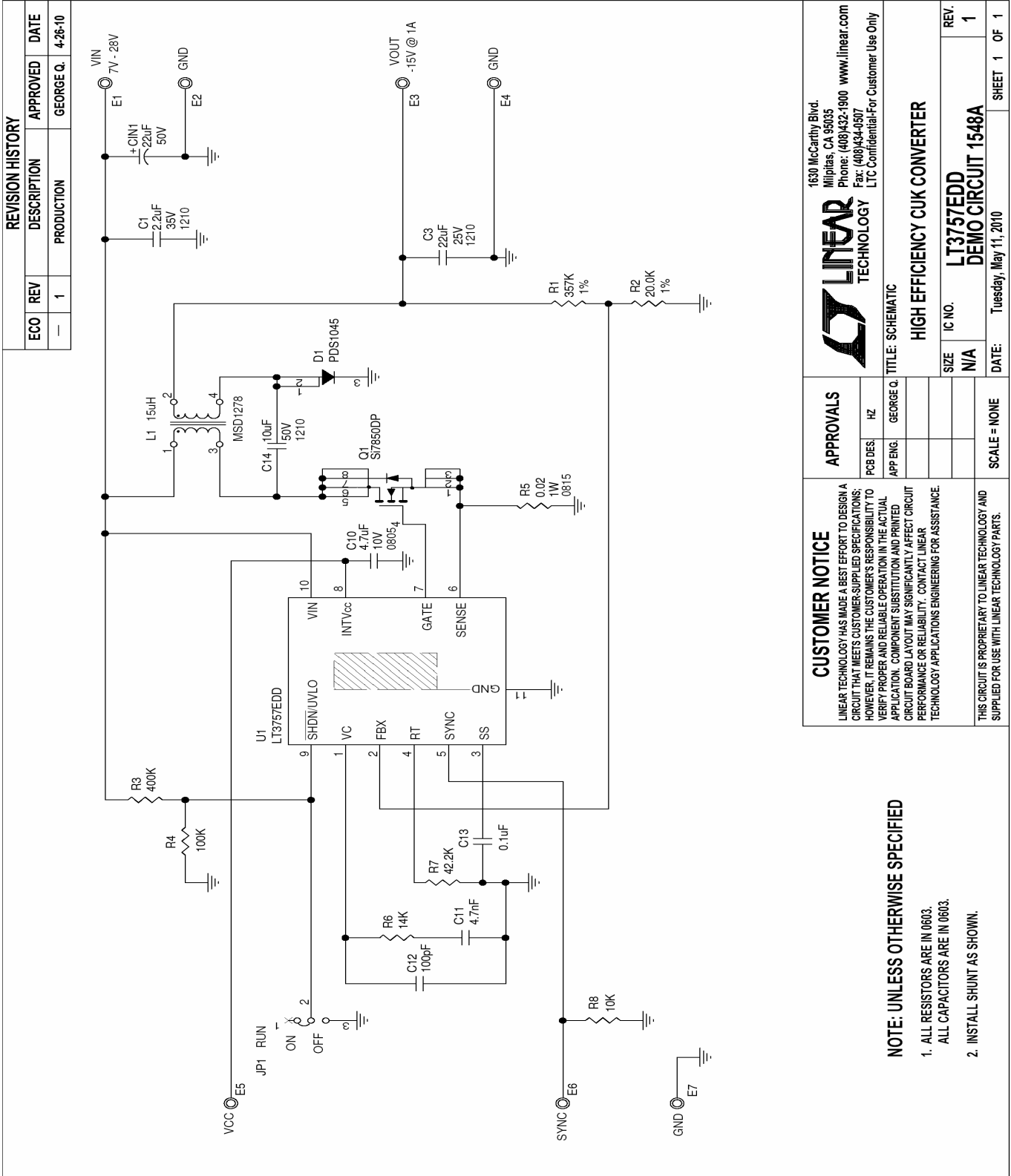


Figure 2. Measuring Input or Output Ripple



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THIS CIRCUIT IS PROPRIETARY TO LINEAR TECHNOLOGY AND SUPPLIED FOR USE WITH LINEAR TECHNOLOGY PARTS.

**APPROVALS**

PCB DES.	HZ
APP ENG.	GEORGE Q.

SCALE = NONE

**NOTE: UNLESS OTHERWISE SPECIFIED**

- ALL RESISTORS ARE IN 0603.
- ALL CAPACITORS ARE IN 0603.
- INSTALL SHUNT AS SHOWN.

**LINEAR TECHNOLOGY**

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**TITLE: SCHEMATIC**

**HIGH EFFICIENCY CUK CONVERTER**

SIZE	IC NO.	REV.
N/A	LT3757EDD	1

DATE: Tuesday, May 11, 2010

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