DESCRIPTION

Demonstration circuit 1341A features LT3757EDD in a 300kHz SEPIC converter circuit, designed for 5V output from a 4.5V to 36V 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 1µA, making them an ideal fit for battery-operated systems. The IC integrates a high voltage, low dropout linear (LDO) regulator. 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. They also pack many popular features such as soft-start, input undervoltage lockout, adjustable frequency and synchronization in a small 10-lead MSOP package or a 3mm × 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 1341A.

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

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

PARAMETER	CONDITION	VALUE
Minimum Input Voltage		4.5V
Maximum Input Voltage		36V
Output Voltage V_{OUT}		5V +/-3%
Maximum Output Current		3A
Typical Switching Frequency		300kHz

QUICK START PROCEDURE

Demonstration circuit 1341A 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 RUN 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 parameters.
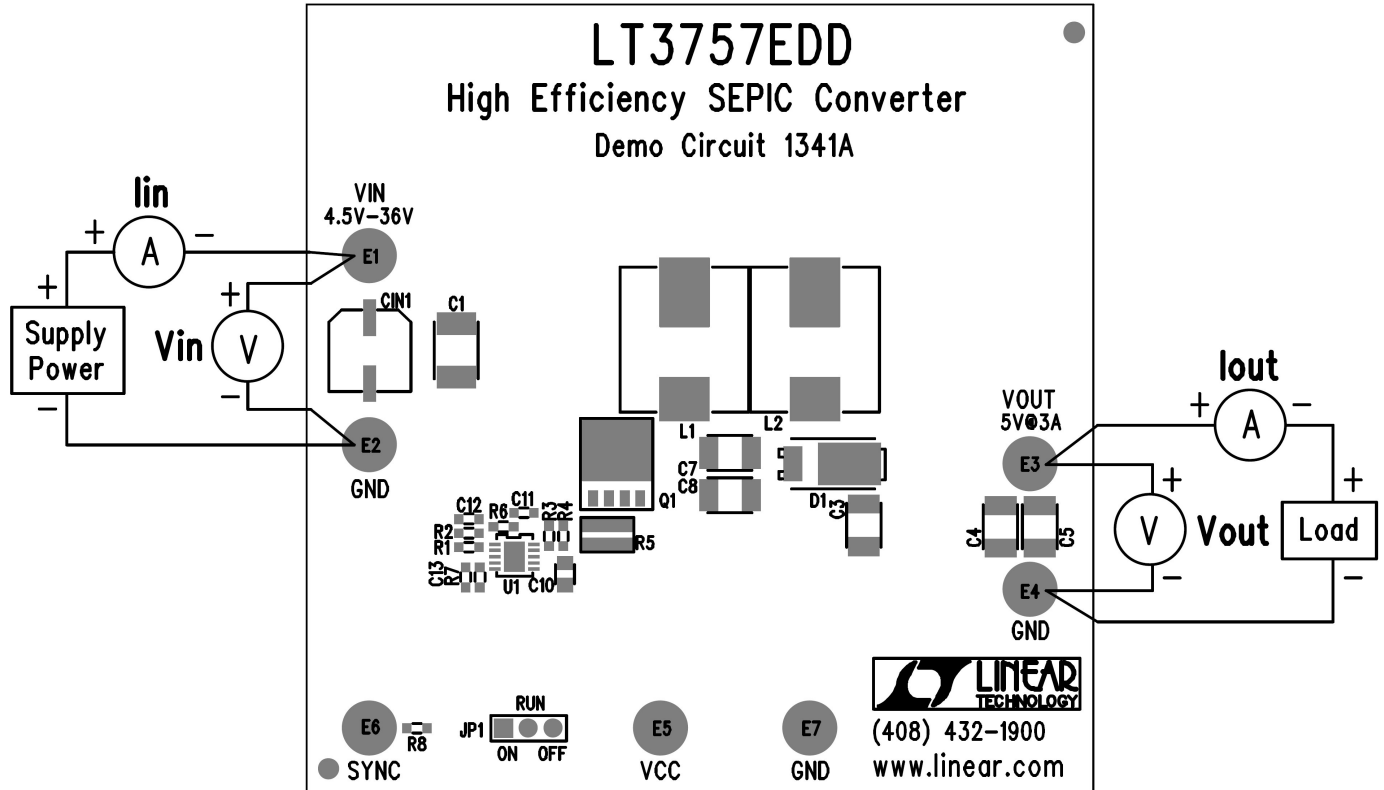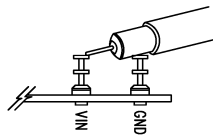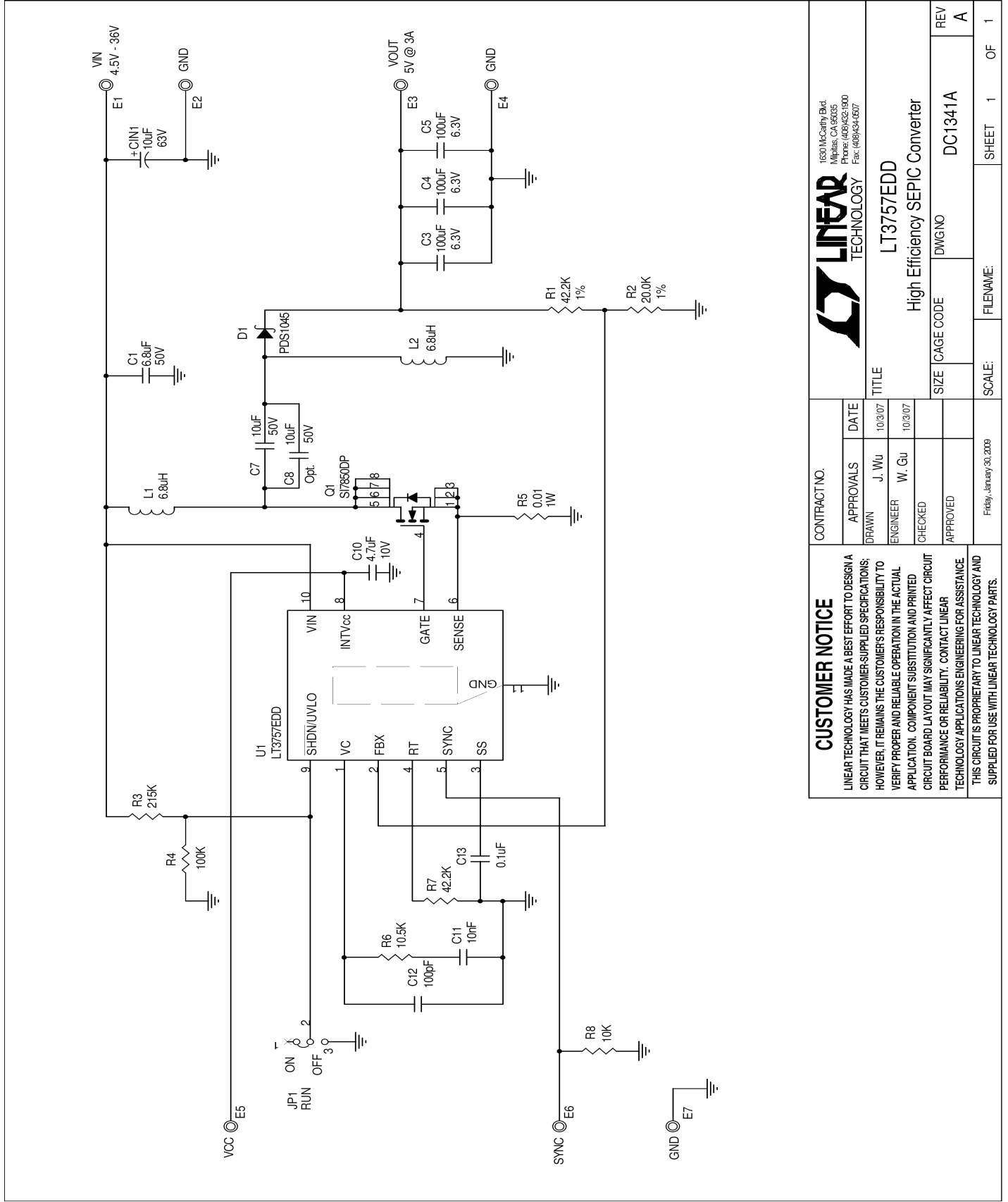
Figure 1. Proper Measurement Equipment Setup

Figure 2. Measuring Input or Output Ripple

High Efficiency SEPIC Converter

LT3757EDD

DWG NO. DC1341A

REV A

SIZE CAGE CODE

SCALE:

FILENAME:

SHEET 1 OF 1

TITLE

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