

LTC3854EDDB
SMALL FOOTPRINT BUCK CONVERTER

DESCRIPTION

Demonstration circuit 1450A is a small foot print, high efficiency synchronous buck converter with 4.5V to 26V input range. It can supply 5A maximum load current at 2.5V output. The demo board features the LTC®3854EDDB controller. The controller features a 400kHz constant frequency current mode architecture. With a wide input range and output range, the LTC3854 is ideal for automotive, telecom, industrial and distributed DC power systems. This board has a compact solution size with dual So-8 MOSFETs, small inductor and capacitor footprints. The package of LTC3854EDDB is a small, low thermal impedance, 12-Lead (3mm x 2mm) plastic DFN.

The RUN/SS pin (JP1) provides both soft-start and enable features. To shut down the converter, one simple way is to force the RUN pin below 0.4V (JP1: OFF).

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

Table 1. Performance Summary ($T_A = 25^\circ\text{C}$)

PARAMETER	CONDITION	VALUE
Input Voltage Range		4.5V to 26V
Output Voltage, V_{OUT}	$V_{IN} = 4.5\text{-}26\text{V}$, $I_{OUT} = 0\text{A to } 5\text{A}$	$2.5\text{V} \pm 2\%$
Maximum Output Current, I_{OUT}	$V_{IN} = 4.5\text{-}26\text{V}$, $V_{OUT} = 2.5\text{V}$	5A
Typical Efficiency	$V_{IN} = 15\text{V}$, $V_{OUT} = 2.5\text{V}$, $I_{OUT} = 5\text{A}$	89.5%
Typical Switching Frequency		400kHz

QUICK START PROCEDURE

Demonstration circuit 1450A is easy to set up to evaluate the performance of the LTC3854EDDB. Refer to Figure 1 for the proper measurement equipment setup and follow the procedure below:

1. With power off, connect the input power supply to Vin (4.5V-26V) and GND (input return).
2. Connect the 2.5V output load between Vout and GND (Initial load: no load).
3. Connect the DVMs to the input and outputs.
4. Turn on the input power supply and check for the proper output voltages. Vout should be 2.5V $\pm$ 2%.
5. Once the proper output voltages are established, adjust the loads within the operating range and observe the output voltage regulation, ripple voltage and other parameters.

Note: When measuring the output or input voltage ripple, do not use the long ground lead on the oscilloscope probe. See Figure 2 for the proper scope probe technique. Short, stiff leads need to be soldered to the (+) and (-) terminals of an output capacitor. The probe's ground ring needs to touch the (-) lead and the probe tip needs to touch the (+) lead.

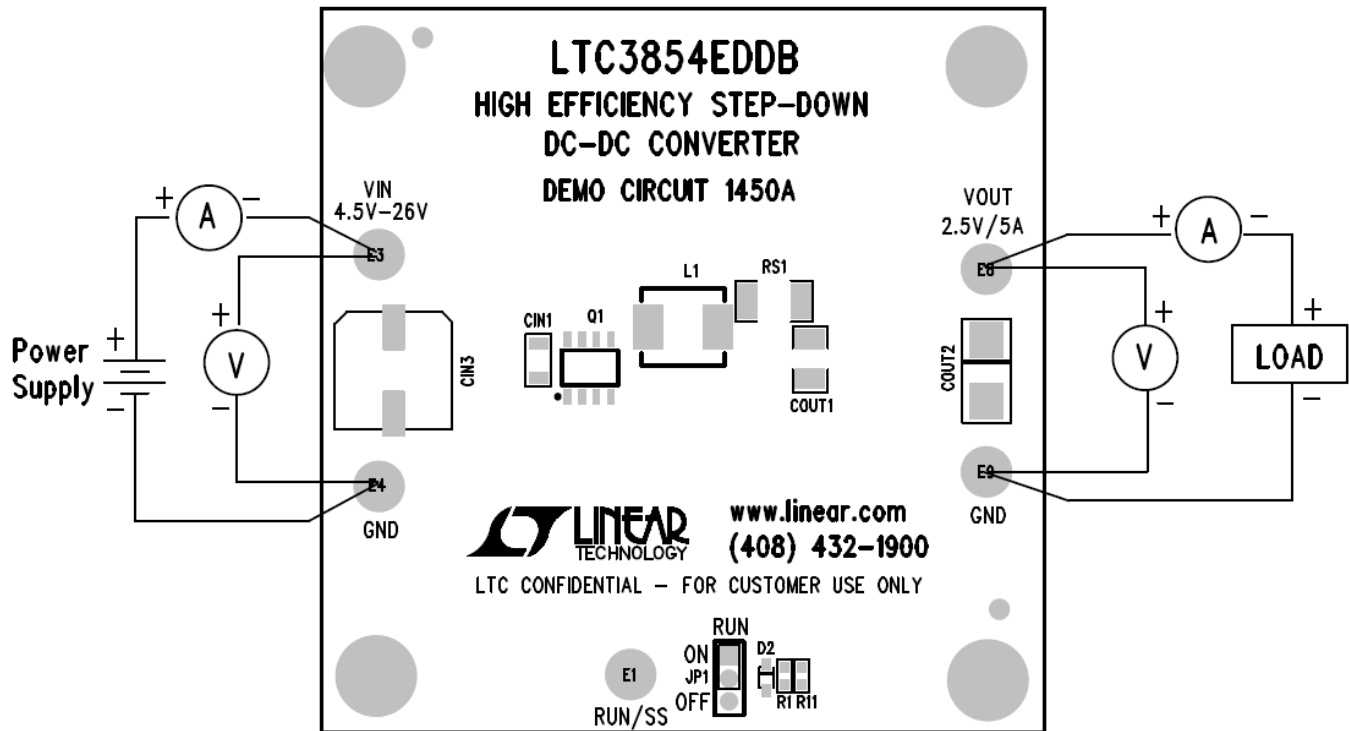


Figure 1. Proper Measurement Equipment Setup

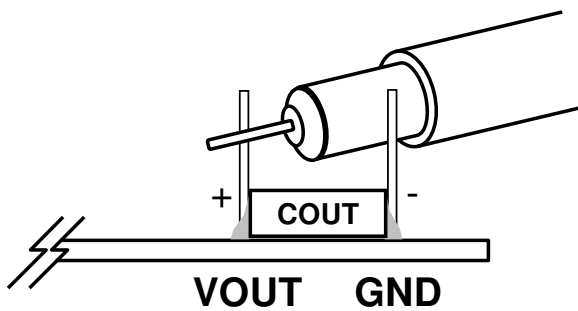


Figure 2. Measuring Output Voltage Ripple

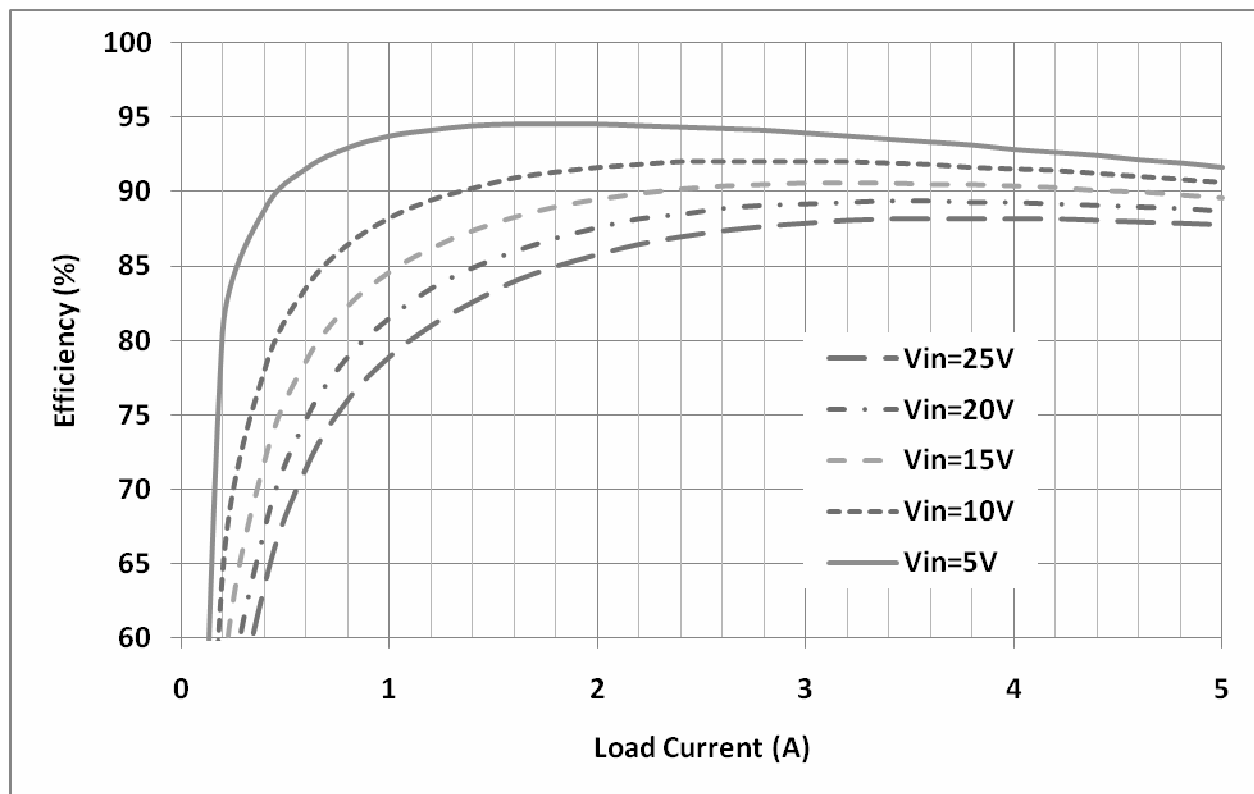


Figure 3. Efficiency vs load current

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