

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 1289

NO RSENSE STEP-DOWN DC/DC CONVERTER

LTC3879EUD

DESCRIPTION

Demonstration circuit 1289 is a no rsense step-down dc/dc converter featuring the LTC3879EUD. Its output supplies 1.2V @ 15A and its input voltage range is from 4.5V to 14V. The demo board uses a high density, two sided drop-in layout. The power components, excluding the bulk output capacitors and bulk input capacitors, fit within a 0.94" x 0.69" area on the top layer. The control circuit on the bottom layer has a footprint of 0.40" x 0.50".

The fixed on-time valley current mode architecture of the LTC3879EUD provides a very fast load step response. Other features of the board include a RUN pin, a TRACK pin, a PGOOD pin and a MODE jumper to select either CCM or DCM operation at light load.

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
Minimum Input Voltage		4.5V
Maximum Input Voltage		14V
Output Voltage V_{OUT}	$V_{IN} = 4.5\text{V to } 14\text{V}$, $I_{OUT} = 0\text{A to } 15\text{A}$	1.2V $\pm 2\%$
Maximum Output Current		15A
Typical Output Voltage Ripple	$V_{IN} = 12\text{V}$, $I_{OUT} = 15\text{A}$ (20MHz BW)	18mV _{P-P}
Nominal Switching Frequency	100% load	430kHz
Efficiency (see Figure 3 for efficiency curves)	$V_{IN} = 12\text{V}$, 100% load	87.7% Typical

QUICK START PROCEDURE

Demonstration circuit 1289 is easy to set up to evaluate the performance of the LTC3879EUD. 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. See Figure 2 for proper scope probe technique. Short, stiff leads should 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.

- Place jumpers in the following positions:
RUN ON
MODE CCM
- With power off, connect the input power supply to V_{IN} and GND.
- Turn on the power at the input.
- Check for the proper output voltages.
 $V_{out} = 1.176\text{V to } 1.224\text{V}$
- 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.

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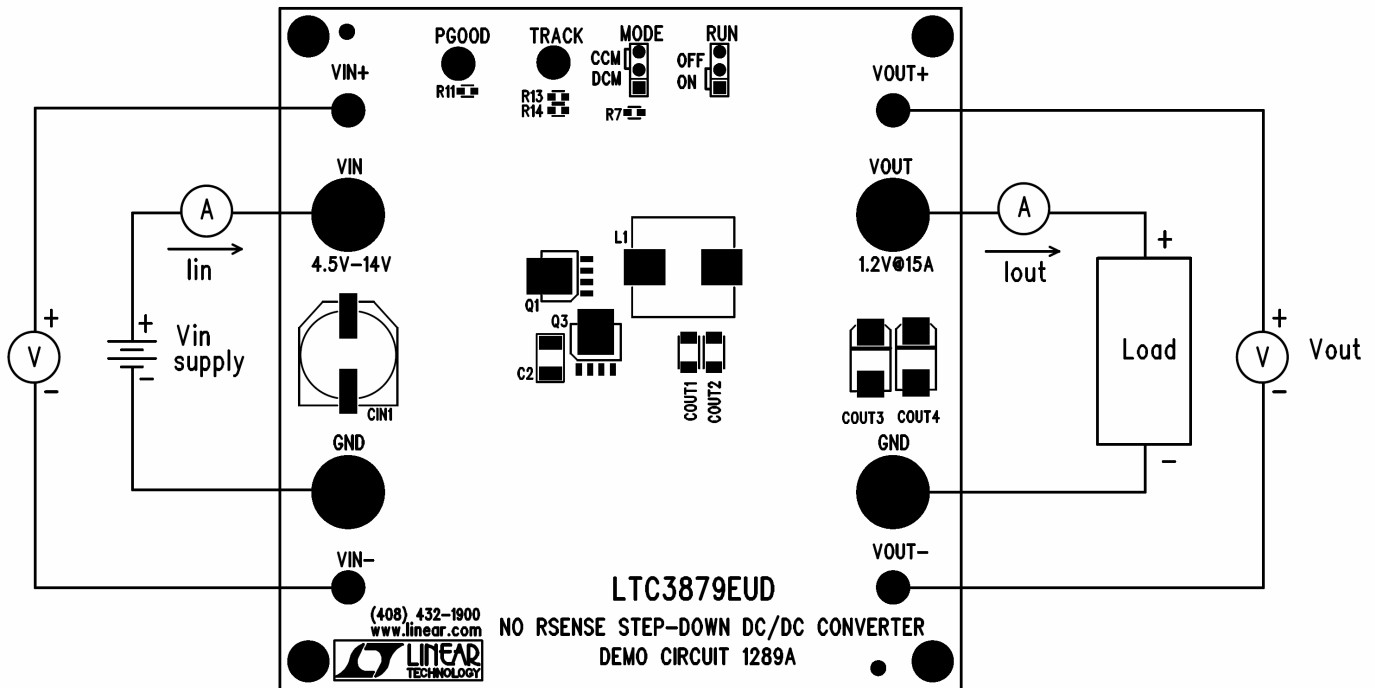


Figure 1. Proper Measurement Equipment Setup

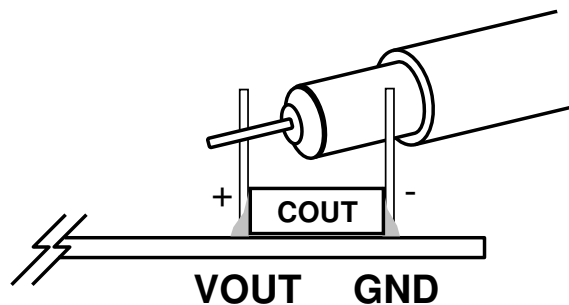


Figure 2. Measuring Output Voltage Ripple

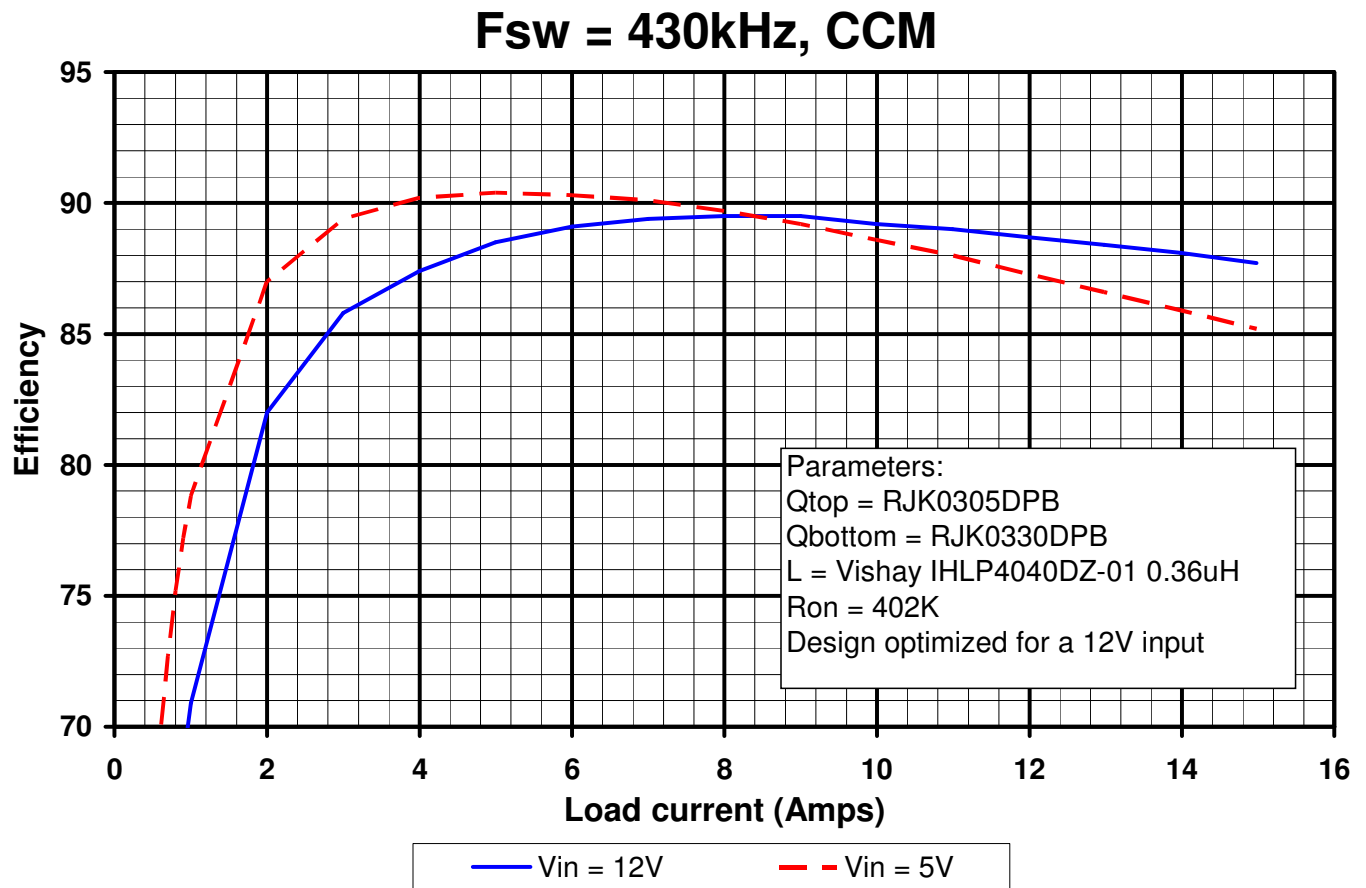


Figure 3. Typical Efficiency Curves

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