DEMO CIRCUIT 1280
QUICK START GUIDE

LT3471EDD

Dual 1.3A, 1.2MHz Boost/Inverter in 3mmx3mm DFN

DESCRIPTION

Demonstration circuit 1280A is a dual output converter featuring the LT3471EDD in Boost and Inverter configurations. Both converters are powered from the same 4.5V to 10V input source. The Boost converter puts out 12V at 300mA and the Inverter -12V at 200mA. The demo circuit demonstrates small size and low component count.

The LT3471 operates with inputs as high as 16V but in this demo board the input is limited by the magnitude of the Boost output. In a Boost converter the input needs to be less than the output.

The DC1280A is designed so that the Inverting converter can easily be configured as a Boost. Instructions are included in the schematic.

Both circuits are designed to demonstrate the soft start feature, advantages of the 1.2MHz switching frequency and the internal 42V/1.3A switches. Both outputs on this demo board can be modified for higher voltages. These circuits are intended for space-conscious applications such as digital cameras, cellular phones, palmtop computers PC cards, miniature disk drives, xDSL power supplies, flash memory products, local 5V or 12V supplies and LCD displays.

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

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PERFORMANCE SUMMARY FOR BOOST CONVERTER

Specifications are at TA = 25°C

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_{IN}	Input Supply Range		4.5		10	V
V_{OUT}	Output Voltage Range	V_{IN} = 4.5V, I_{LOAD} = 300mA	11.64	12	12.36	V
RIPPLE		V_{IN} = 4.5V, I_{LOAD} = 300mA		40		mV
EFFICIENCY		V_{IN} = 4.5V, I_{LOAD} = 300mA		84		%

PERFORMANCE SUMMARY FOR INVERTING REGULATOR

Specifications are at TA = 25°C

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_{IN}	Input Supply Range		4.5		12	V
V_{OUT}	Output Voltage Range	V_{IN} = 4.5V, I_{LOAD} = 200mA	-11.64	-12	-12.36	V
RIPPLE		V_{IN} = 4.5V, I_{LOAD} = 200mA		10		mV
EFFICIENCY		V_{IN} = 4.5V, I_{LOAD} = 200mA		74		%

QUICK START PROCEDURE

Demonstration circuit 1280 is easy to set up to evaluate the performance of the LT3471EDD. 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 jumpers in the following positions:

JP1 ON

JP2 ON

2. With power off, connect the input power supply (4.5V to 10V) to Vin and GND.

3. Turn on the power at the input.

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.

5. Once the proper output voltages are established, adjust the loads within the operating range and observe the output voltage regulation, ripple voltages, efficiency and other parameters.

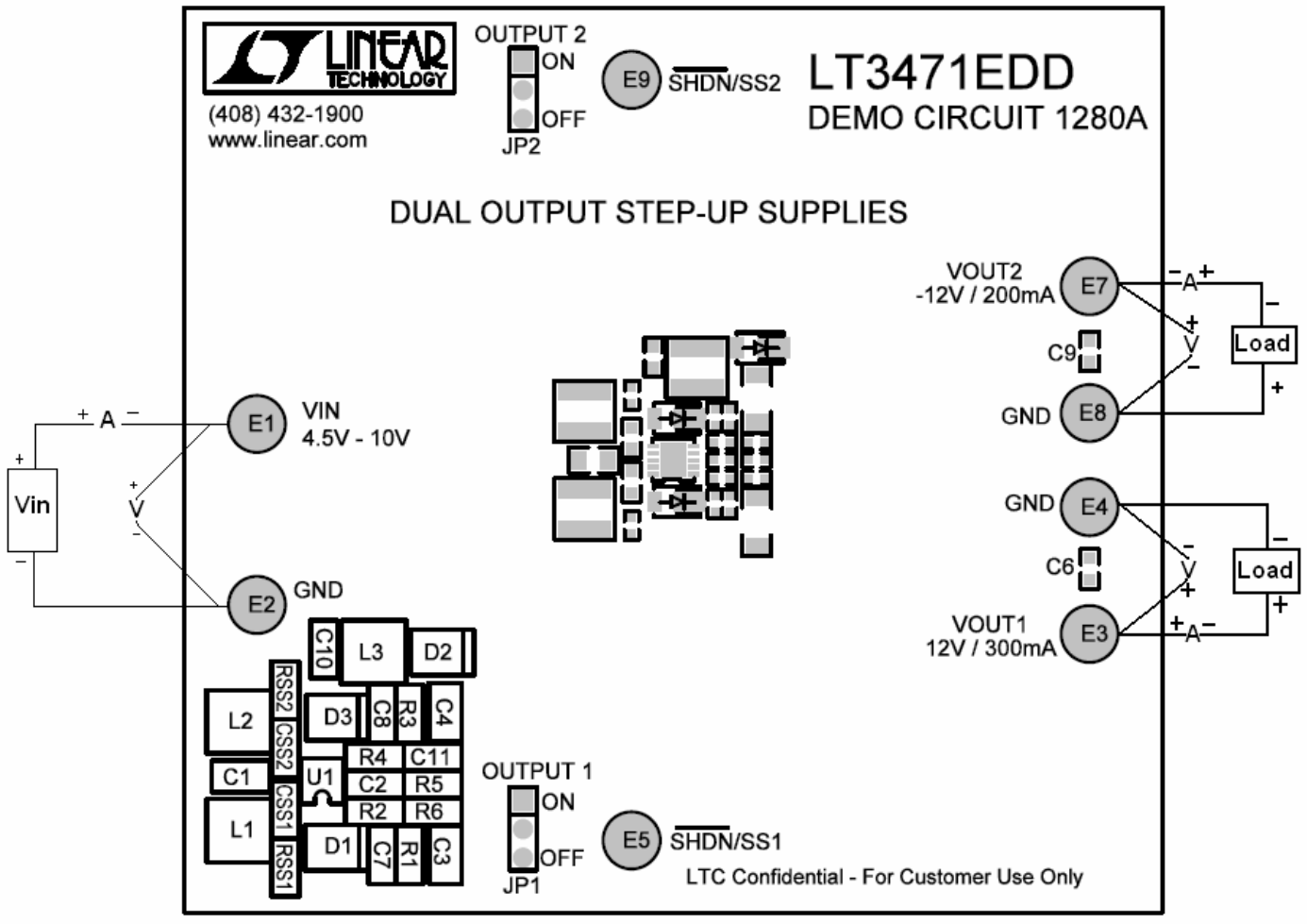


Figure 1. Proper Measurement Equipment Setup for DC1280A

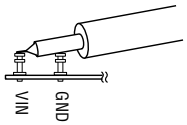


Figure 2. Measuring Input or output Ripple

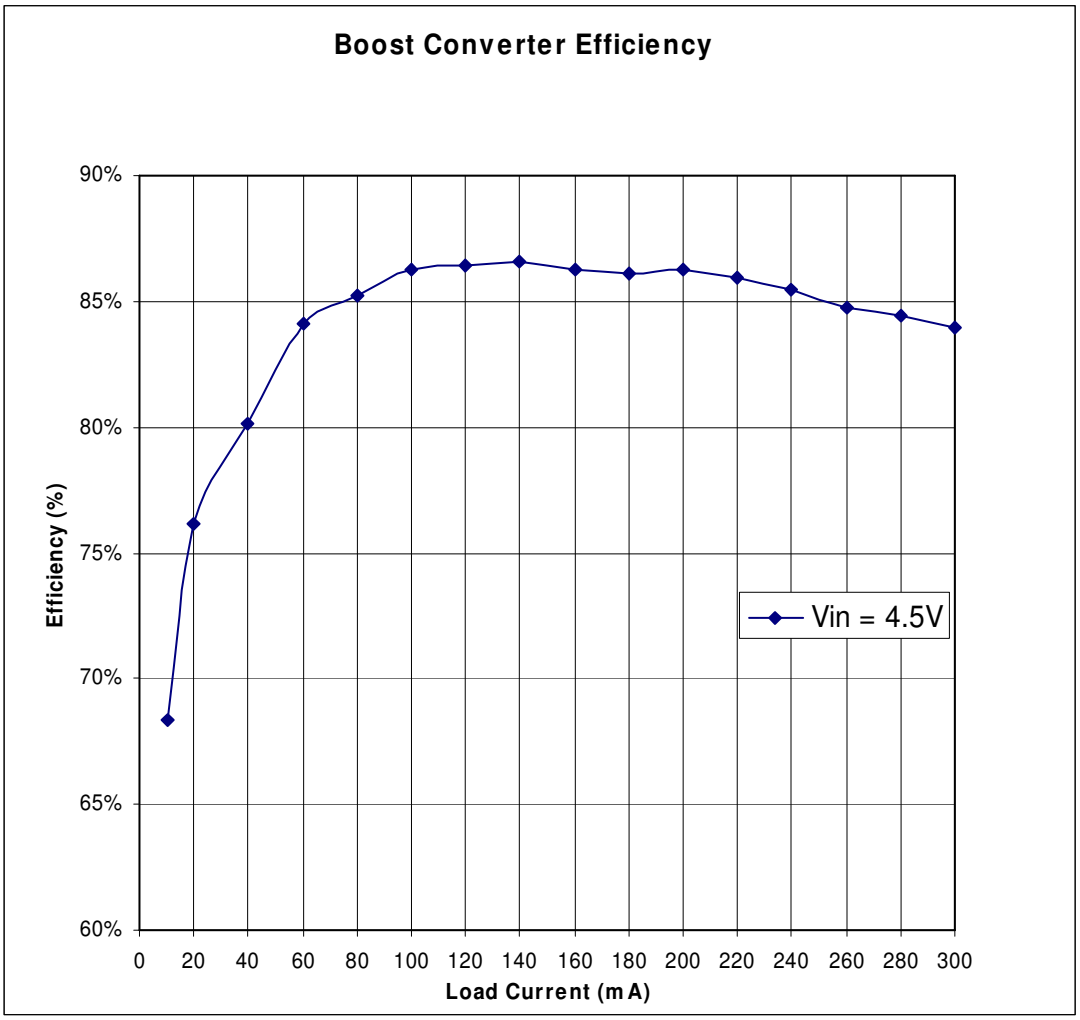


Figure 3. Boost Converter Efficiency at 4.5Vin

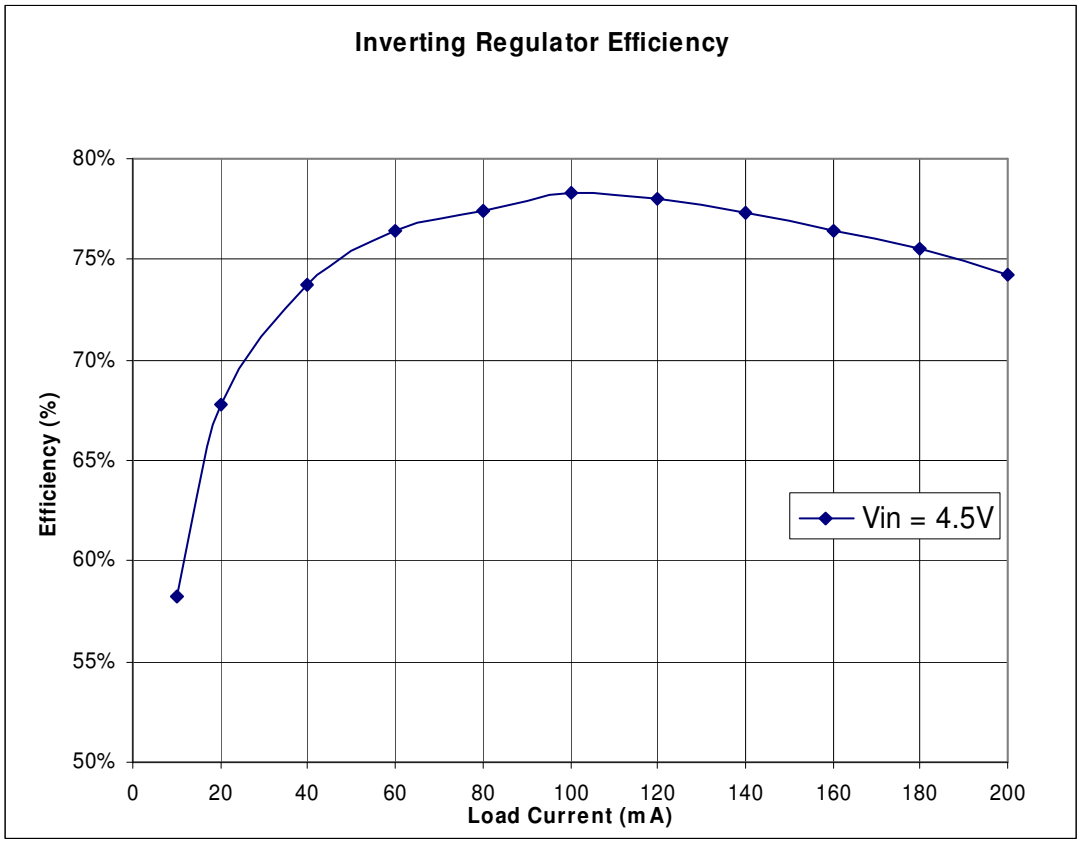
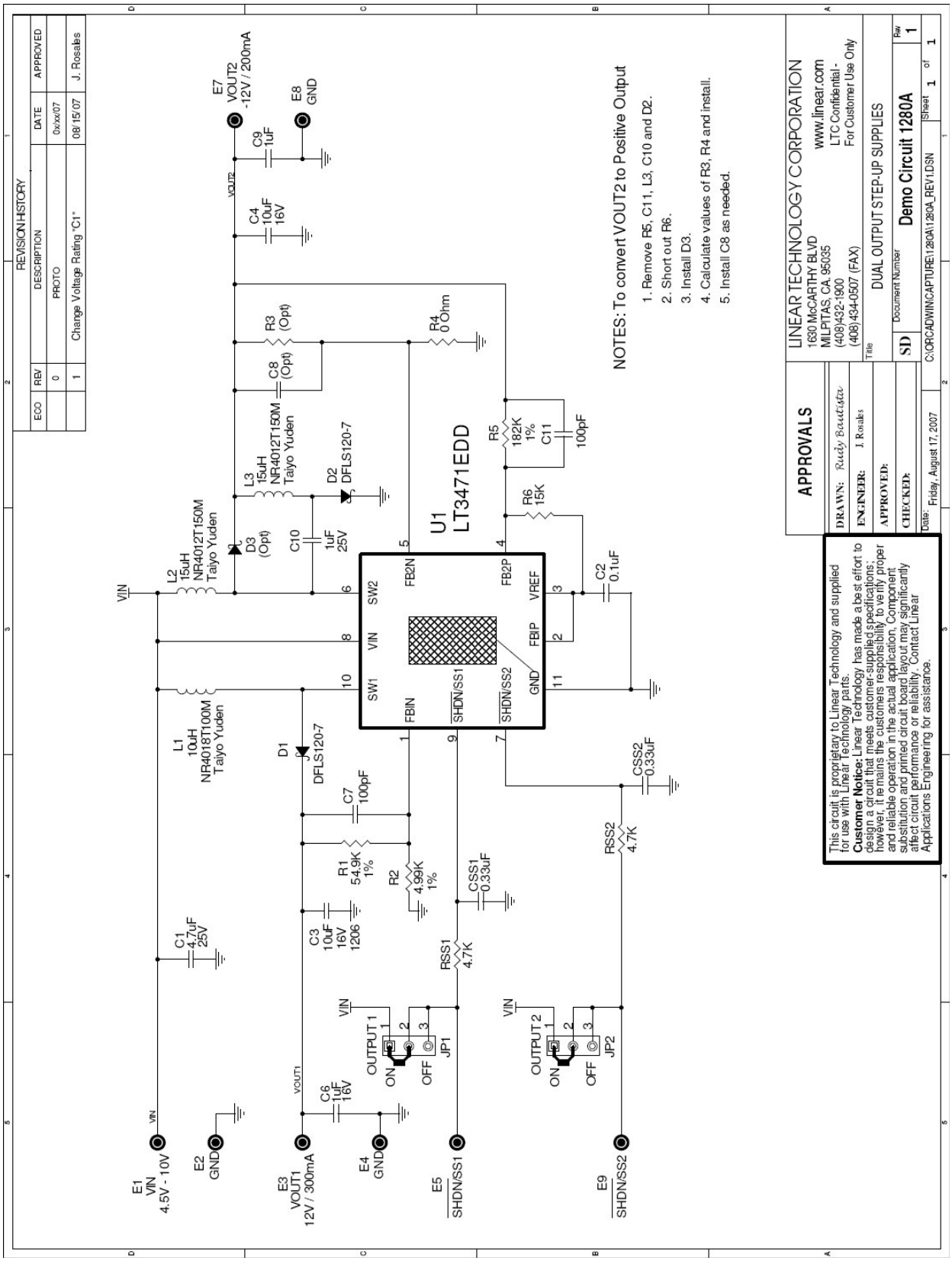


Figure 4. Inverting Regulator Efficiency at 4.5Vin


REVISION HISTORY
ECO
REV
DESCRIPTION
DATE
APPROVED
0
PROTO
0x/xx/07
1
Change Voltage Rating "C1"
08/15/07
J. Rosales
NOTES: To convert VOUT2 to Positive Output
1. Remove R5, C11, L3, C10 and D2.
2. Short out R6.
3. Install D3.
4. Calculate values of R3, R4 and install.
5. Install C8 as needed.
U1
LT3471EDD
VIN
VOUT1
VOUT2
SHDN/SS1
SHDN/SS2
OUTPUT 1
OUTPUT 2
ON
OFF
JP1
JP2
APPROVALS
DRAWN: Rudy Bautista
ENGINEER: J. Rosales
APPROVED:
CHECKED:
Date: Friday, August 17, 2007
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DUAL OUTPUT STEP-UP SUPPLIES
SD
Document Number
Demo Circuit 1280A
Rev
1
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Sheet 1 of 1
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 customers 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.