DEMO CIRCUIT 1449
QUICK START GUIDE

Ultralow Power Boost Converter with Dual Half-Bridge Switches

DESCRIPTION

Demonstration circuit 1449A is an Ultralow Power Boost Converter with Dual Half-Bridge Switches featuring the LT8415. It converts a 3V-10V source to 16V supplying 1.6mA at 3Vin and 10mA at 10Vin. The 16V output is used to bias the Dual Half-Bridges which are activated by IN1 and IN2 and are pinned out at VOUT1 and VOUT2. IN1 controls VOUT1 with the same polarity and IN2 controls VOUT2. Each Half-Bridge drives a 200pF on-board capacitor.

The LT8415 features a low noise control scheme, integrated power switch, dual half-bridge switches, schottky diode and output disconnect function, ultra-low quiescent current, built in soft-start and overvoltage protection. The LT8415 datasheet gives a complete description of the part, its operation and application information. The datasheet must be read in conjunction with this quick start guide for working on or modifying the demo circuit 1449.

This circuit is intended for space-conscious applications such as Sensor Power, RF Mems, Low Power Actuator Bias/Control, Liquid Lens Drivers and General Purpose Bias Supplies.

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

PERFORMANCE SUMMARY FOR DC1387A-A/LT8410 Specifications are at TA = 25°C

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_{IN}	Input Supply Range		3		10	V
V_{OUT}	Output Voltage Range	V_{IN} = 3V, I_{LOAD} = 1.6mA	15.54	16	16.48	V
V_{OUT}	Output Voltage Range	V_{IN} = 10V, I_{LOAD} = 10mA	15.54	16	16.48	V
RIPPLE		V_{IN} = 10V, I_{LOAD} = 10mA		20		mV
EFFICIENCY		V_{IN} = 3V, I_{LOAD} = 1.6mA		73		%
EFFICIENCY		V_{IN} = 10V, I_{LOAD} = 10mA		83		%

QUICK START PROCEDURE

Demonstration circuit 1449 is easy to set up to evaluate the performance of the LT8415. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

1. Place jumpers in the following positions:

   JP1 Run

2. With power off, connect the input power supply to Vin and GND.

3. Turn on the power at the input.

   Check for the proper output voltages. Vout = 15.52V to 16.48V.

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

4. Once the proper output voltage is established, adjust the load within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.

5. To test the VOUT1 and VOUT2 outputs, apply a logic level square wave signal (typically 0V to 2V) at IN1 and/or IN2 and observe the amplitude levels and associated delays at VOUT1 and VOUT2. See datasheet for response driving external capacitors.

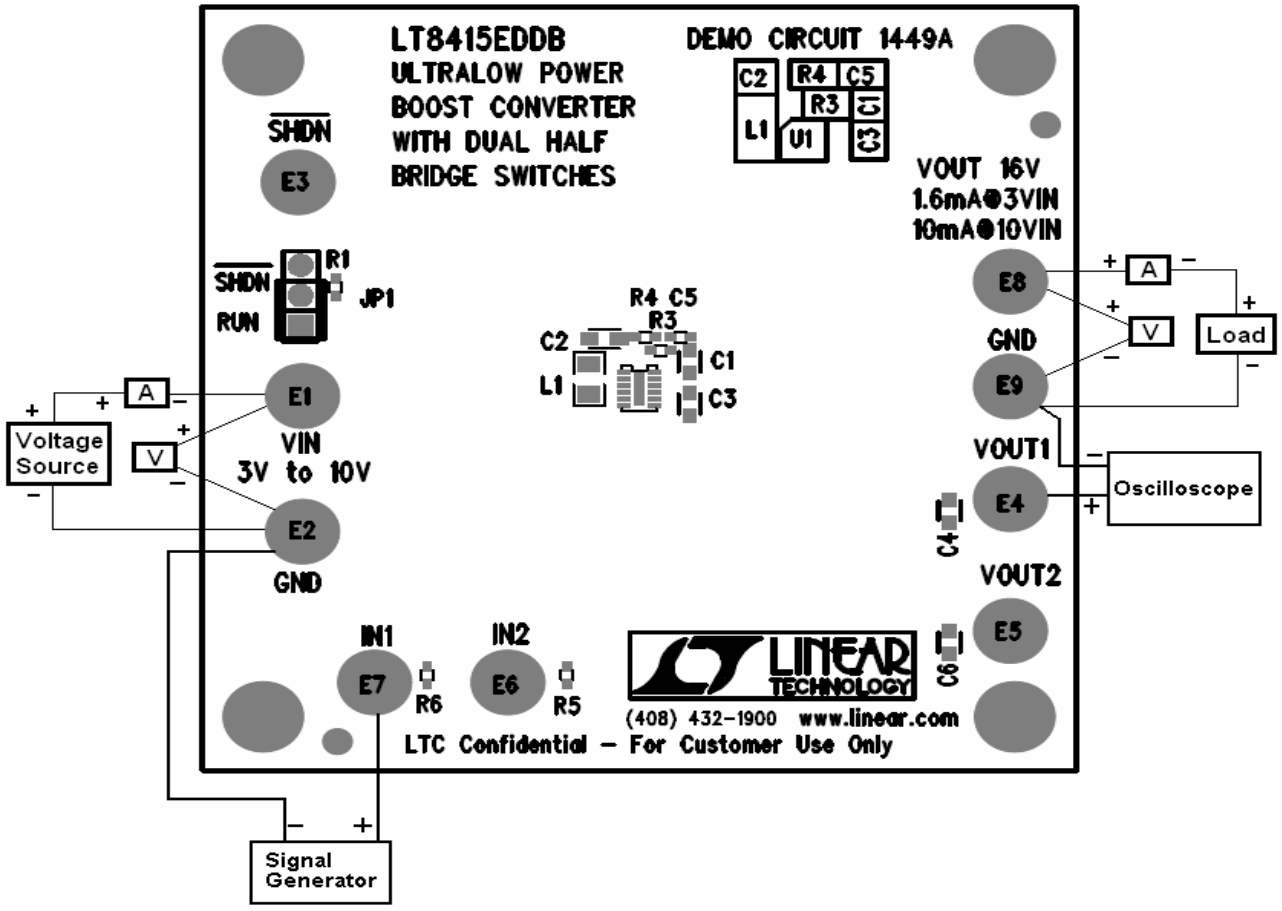
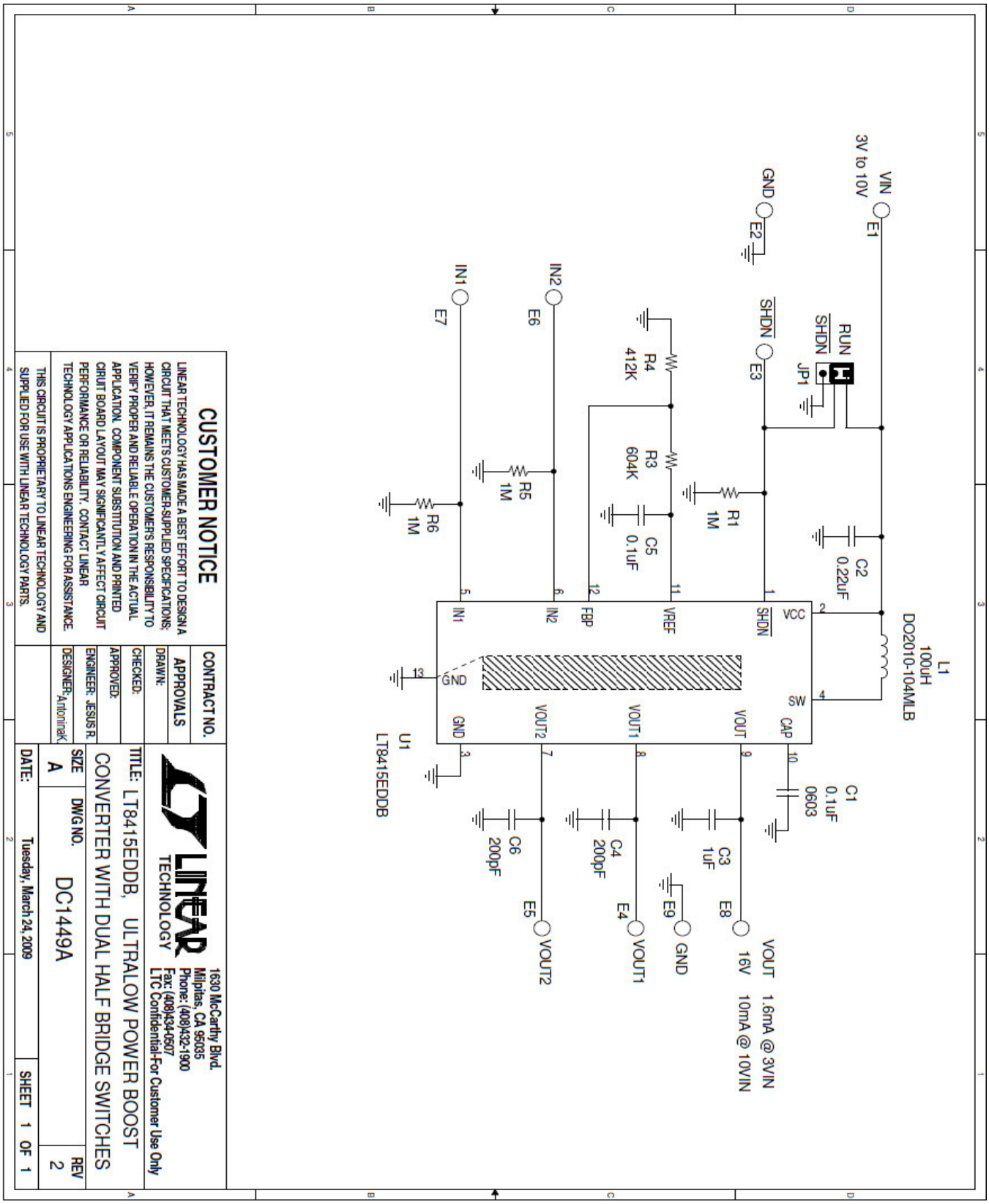


Figure 1. Proper Measurement Equipment Setup


VIN
3V to 10V
E1
GND
E2
RUN
SHDN
JP1
SHDN
E3
L1
100uH
DO2010-104MLB
C2
0.22uF
C1
0.1uF
0603
VOUT 1.6mA @ 3VIN
16V 10mA @ 10VIN
E8
C3
1uF
E9
GND
E4
VOUT1
C4
200pF
E5
VOUT2
C6
200pF
R1
1M
R4
412K
R3
604K
C5
0.1uF
R5
1M
R6
1M
IN1
E7
IN2
E6
VCC
SHDN
VREF
FBP
IN2
IN1
SW
CAP
VOUT
VOUT1
VOUT2
GND
GND
U1
LT8415EDDB
CUSTOMER NOTICE
LINEAR TECHNOLOGY HAS MADE A BEST EFFORT TO DESIGN A CIRCUIT THAT MEETS CUSTOMER-SUPPLIED SPECIFICATIONS; HOWEVER, IT REMAINS THE CUSTOMER'S RESPONSIBILITY TO VERIFY PROPER AND RELIABLE OPERATION IN THE ACTUAL APPLICATION. COMPONENT SUBSTITUTION AND PRINTED CIRUIT BOARD LAYOUT MAY SIGNIFICANTLY AFFECT CIRCUIT PERFORMANCE OR RELIABILITY. CONTACT LINEAR TECHNOLOGY APPLICATIONS ENGINEERING FOR ASSISTANCE.
THIS CIRCUIT IS PROPRIETARY TO LINEAR TECHNOLOGY AND SUPPLIED FOR USE WITH LINEAR TECHNOLOGY PARTS.
CONTRACT NO.
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LTC Confidential-For Customer Use Only
TITLE: LT8415EDDB, ULTRALOW POWER BOOST CONVERTER WITH DUAL HALF BRIDGE SWITCHES
SIZE A
DWG NO. DC1449A
REV 2
DATE: Tuesday, March 24, 2009
SHEET 1 OF 1