DEMO CIRCUIT 1387
QUICK START GUIDE

Ultralow Power Boost Converters with Output Disconnect

DESCRIPTION

Demonstration circuits 1387A-A, and –B are Ultralow Power Boost Converters with Output Disconnect featuring the LT8410 and LT8410-1 . Both versions convert a 3V-10V source to 16V. The –A version supplies 1.6mA at 3Vin and the -B supplies 0.5mA.

Both versions feature a low noise control scheme, integrated schottky diode and output disconnect function, ultra-low quiescent current, built in soft-start and overvoltage protection. The LT8410 datasheet gives a complete description of the parts, their operation and application information. The datasheet must be read in conjunction with this quick start guide for working on or modifying the demo circuit 1387.

These circuits are intended for space-conscious applications such as Sensor Power, RF Mems and General Purpose Bias Supplies.

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

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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		%

PERFORMANCE SUMMARY FOR DC1387A-B/LT8410-1

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} = 0.5mA	15.52	16	16.48	V
V_{OUT}	Output Voltage Range	V_{IN} = 10V, I_{LOAD} = 3mA	15.52	16	16.48	V
RIPPLE		V_{IN} = 10V, I_{LOAD} = 3mA		10		mV
EFFICIENCY		V_{IN} = 3V, I_{LOAD} = 0.5mA		69		%
EFFICIENCY		V_{IN} = 10V, I_{LOAD} = 3mA		83		%

QUICK START PROCEDURE

Demonstration circuit 1387 is easy to set up to evaluate the performance of the LT8410 and LT8410-1. 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 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.

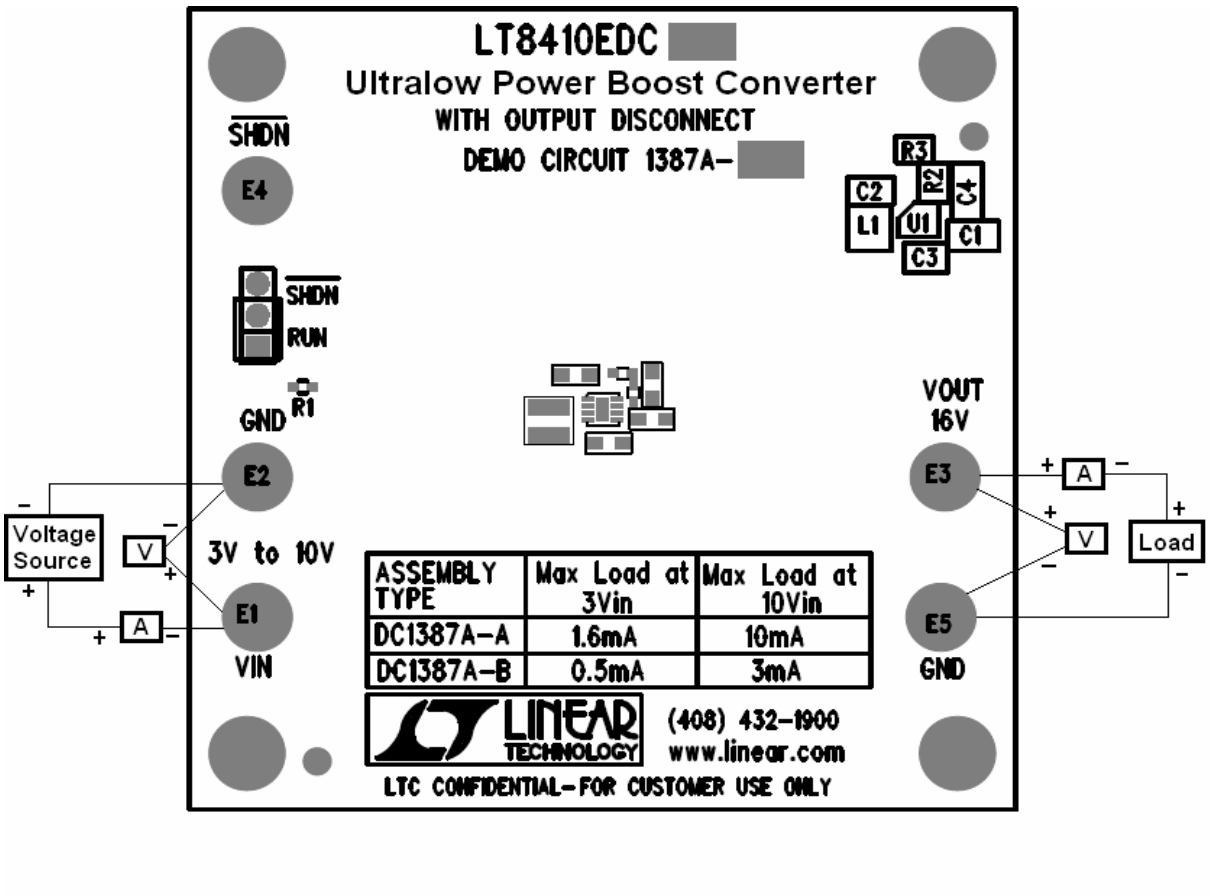


Figure 1. Proper Measurement Equipment Setup

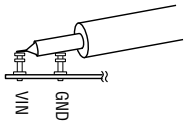
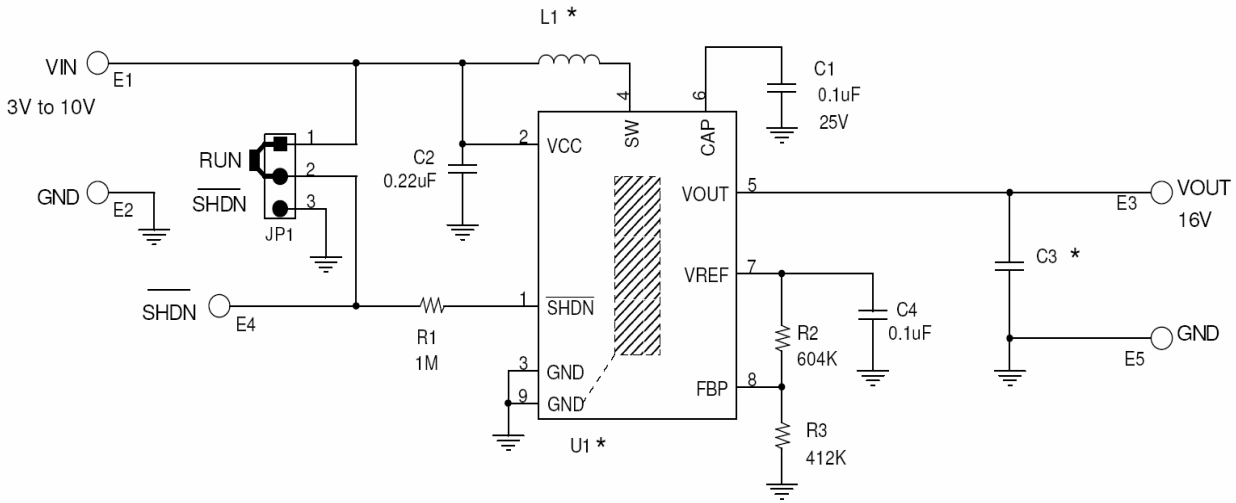


Figure 2. Measuring Input or output Ripple



* VERSION TABLE

ASSEMBLY TYPE	Max Load at 3 Vin	Max Load at 10 Vin	U1	L1	C3
DC1387A-A	1.6 mA	10 mA	LT8410EDC	DO2010-104MLB	1uF
DC1387A-B	0.5 mA	3 mA	LT8410EDC-1	DO2010-224MLB	0.1uF

NOTES: UNLESS OTHERWISE SPECIFIED

1. ALL RESISTORS ARE IN OHMS, 0402.
2. INSTALL SHUNT ON JP1 PIN 1 AND 2.

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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TITLE: LT8410EDC, LT8410EDC-1

ULTRALOW POWER BOOST CONVERTER WITH OUTPUT DISCONNECT

SIZE	DWG NO.	REV
A	DC1387A	2

DATE: Wednesday, October 15, 2008 SHEET 1 OF 1