QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 856A
500MA, 1.25MHZ SYNCHRONOUS BOOST CONVERTER
LTC3427EDC

DESCRIPTION

Demonstration circuit 856A is a 500mA, 1.25MHz Synchronous Boost Converter featuring the LTC®3427EDC. The demo circuit demonstrates a DC/DC boost converter, with a 500mA switch current limit, providing 3.3V at 180mA from a 1.8V to 3.6V input voltage. The input voltage of this supply can go higher than the output, but thermal limitations reduce the output current that can be delivered. See **Vin>Vout Operation** section on the datasheet. The circuit demonstrates the advantages of output disconnect and inrush current limiting. Small circuit size and low component count make the LTC3427 suitable for use in many space-conscious applications such as Hand-Held Instruments, Cordless Phones, Wireless Handsets, GPS Receivers, MP3 players and other Portable Devices. Other integrated features include externally programmable burst mode threshold, internal compensation, peak current limit, soft-start, antiringing control and thermal shutdown. For customers who do not need the output disconnect feature of the LTC3427, an efficiency gain of about 3% can be achieved by adding a small Schottky diode between the SW and Vout pins.

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

Table 1. Performance Summary (T_A = 25°C)

PARAMETERS	CONDITION	VALUE
Minimum Input Voltage		1.8V
Maximum Input Voltage		3.6V
Output Voltage V_{OUT}	V_{IN} = 1.8V, I_{OUT} =0mA to 180mA	3.3V ±3%
Output Voltage V_{OUT}	V_{IN} = 3.0V, I_{OUT} =0mA to 180mA	3.3V ±3%
Typical Output Ripple V_{OUT}	V_{IN} = 1.8V, I_{OUT} = 180mA	20mV_{P-P}
Typical efficiency	V_{IN} =3V , I_{OUT} = 180mA	90%
Typical efficiency	V_{IN} =2V , I_{OUT} = 180mA	85%

QUICK START PROCEDURE

Demonstration circuit 856A is easy to set up to evaluate the performance of the LTC3427EDC. 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.

NOTE: Make sure that the input voltage does not exceed 3.6V.

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.

NOTE: 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.

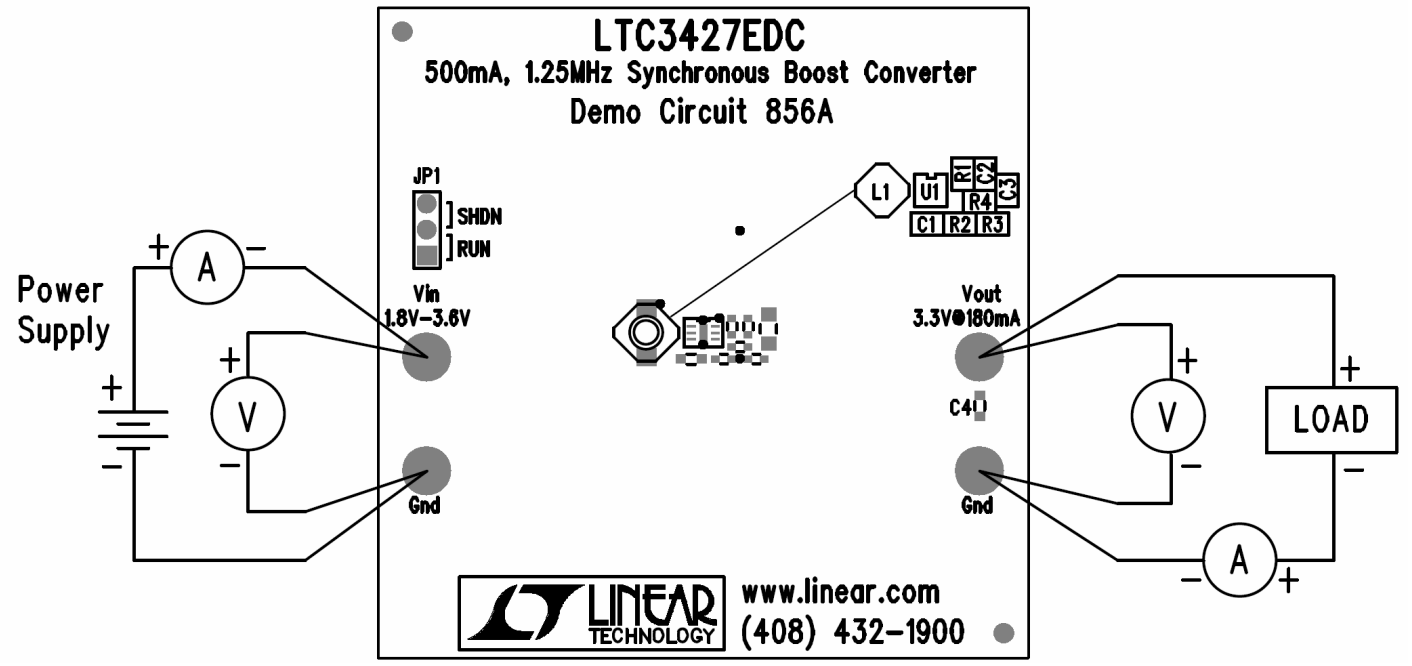


Figure 1. Proper Measurement Equipment Setup

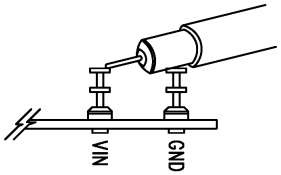
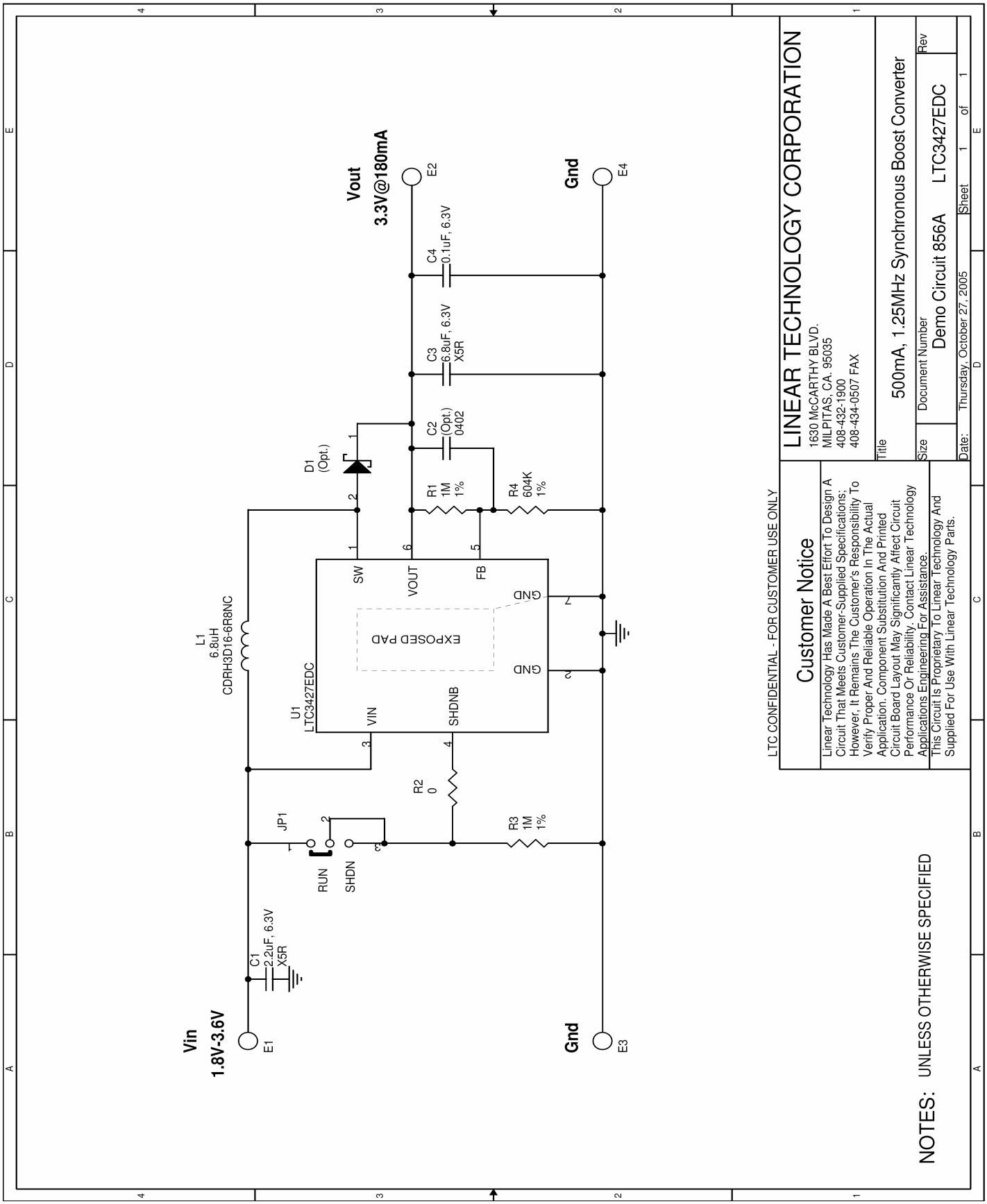


Figure 2. Measuring Input or Output Ripple


Vin
1.8V-3.6V
E1
C1
2.2uF, 6.3V
X5R
JP1
RUN
SHDN
L1
6.8uH
CDRH3D16-6R8NC
U1
LTC3427EDC
VIN
SHDNB
SW
VOUT
FB
GND
GND
EXPOSED PAD
D1
(Opt.)
R1
1M
1%
R2
0
R3
1M
1%
R4
604K
1%
C2
(Opt.)
0402
C3
6.8uF, 6.3V
X5R
C4
0.1uF, 6.3V
Vout
3.3V@180mA
E2
Gnd
E4
Gnd
E3
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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 Circuit 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.
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NOTES: UNLESS OTHERWISE SPECIFIED