

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 860

1.5A, 1MHz SYNCHRONOUS BOOST CONVERTER

LTC3422EDD

DESCRIPTION

Demonstration circuit 860 is a 1.5A, 1MHz Synchronous Boost Converter featuring the LTC3422EDD. It produces 3.3V at 600mA from 1.8 to 3Vin.

The LTC3422 is a high efficiency, current mode, fixed frequency, step up DC/DC converter with true output disconnect and inrush current limiting. The device includes a 0.20Ω N-channel MOSFET switch and a 0.24Ω P-channel MOSFET synchronous rectifier. The output voltage, switched frequency, soft-start time, Burst Mode threshold and loop compensation are all simply programmed using tiny external passive components.

The LTC3422 quiescent current is only 25uA during Burst Mode® operation, maximizing battery life in portable applications. The oscillator can be programmed up to 3MHz and can be synchronized to an external clock applied to the SYNC pin.

For further details about the operation of the LTC3422EDD, please refer to the LTC3422 data sheet.

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

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

PARAMETER	CONDITION	VALUE
Minimum Input Voltage		1.8V
Maximum Input Voltage		3.0V
Output Voltage VOUT	VIN = 1.8 to 3.0V, IOUT = 0 to 600mA	3.3V
Maximum Output Current	VIN = 1.8 to 3.0V	600mA
Typical Output Ripple VOUT	VIN = 1.8V, IOUT = 600mA, 20MHz BWL	20mVp-p
Nominal Switching Frequency		1 MHz

QUICK START PROCEDURE

Demonstration circuit 860 is easy to set up to evaluate the performance of the LTC3422EDD. 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. Set JP1 (VOUT ENABLE) to the OFF position.
2. Set JP2 (Mode selector) to the AUTO ON position.

3. With power off, set the output of the external power supply to its minimum positive value. Connect the external power supply to Vin (E1) and GND (E3) terminals.
4. Turn on the power at the input, taking care to ensure that the voltage does not exceed 3.0V.
5. Verify that the output power is off.
6. Set JP1 (VOUT ENABLE) to the ON position.
7. Check for the proper output voltages. VOUT should be 3.3V.

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

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

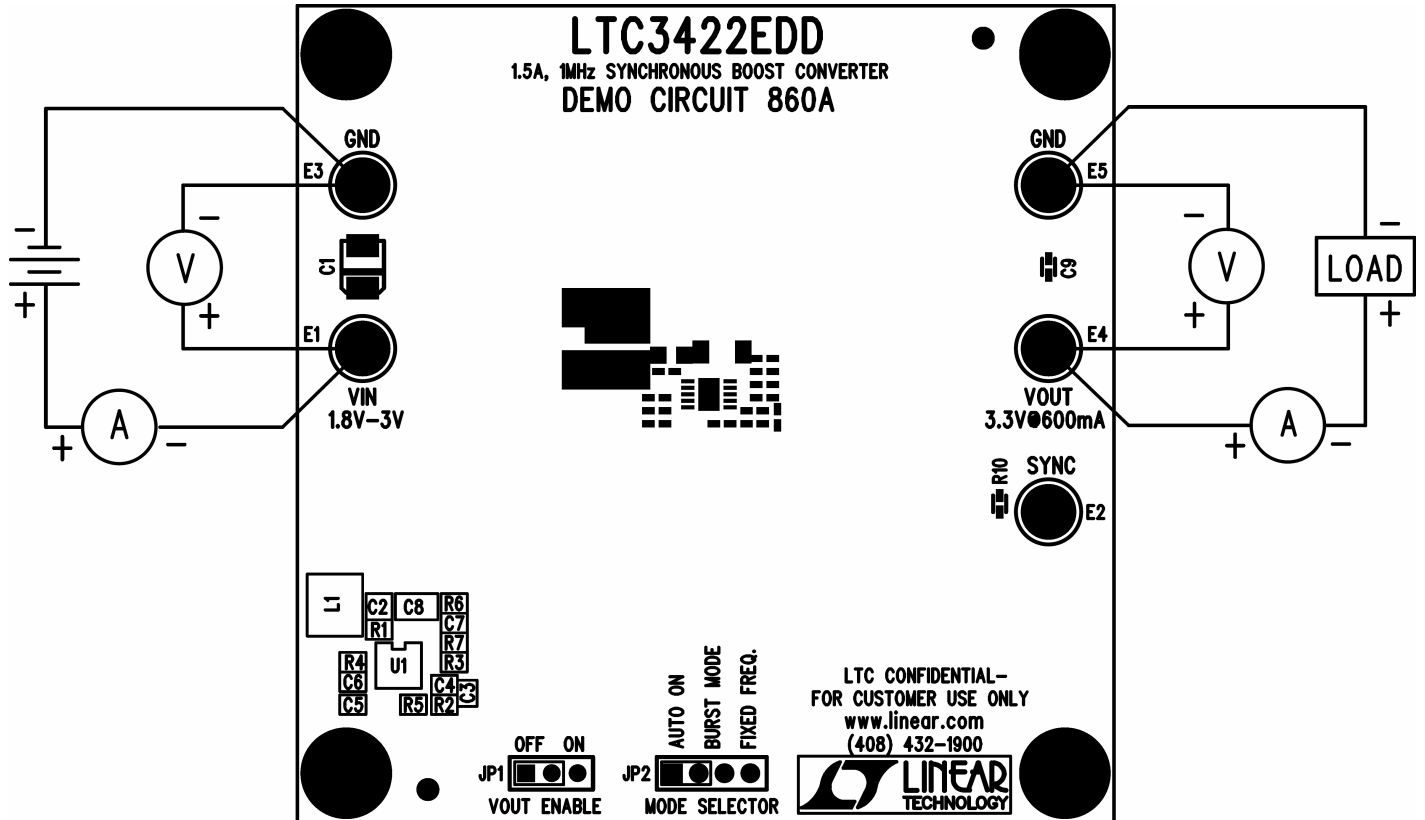


Figure 1. Proper Measurement Equipment Setup

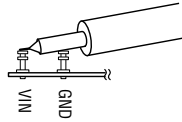
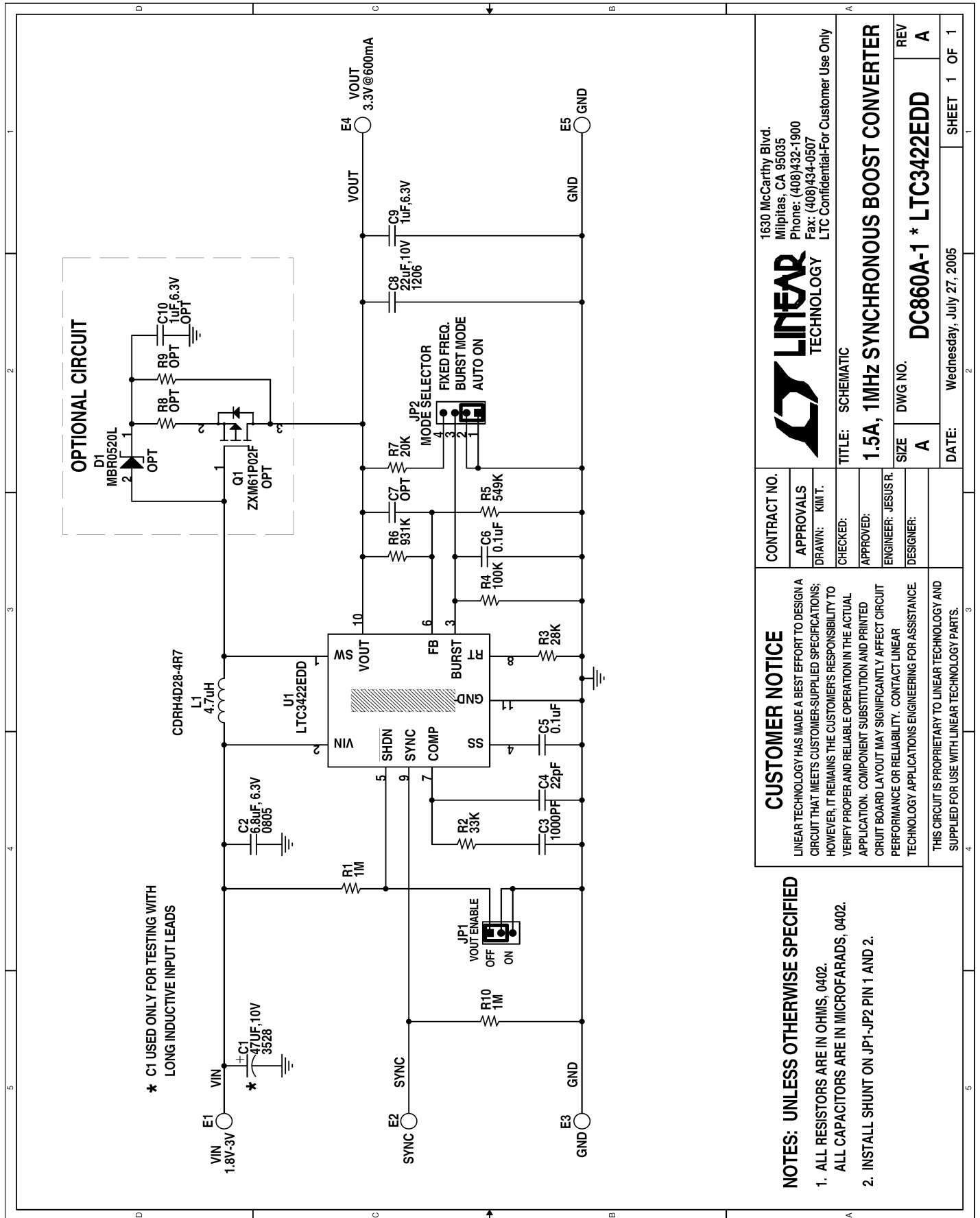


Figure 2. Measuring Input or Output Ripple

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1630 McCarthy Blvd.
Milpitas, CA 95035
Phone: (408)432-1900
Fax: (408)434-0507
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CONTRACT NO.		TITLE: SCHEMATIC	
APPROVALS		1.5A, 1MHz SYNCHRONOUS BOOST CONVERTER	
DRAWN: KIM T.		SIZE DWG NO. DC860A-1 * LTC3422EDD	
CHECKED:		REV A	
APPROVED:		DATE: Wednesday, July 27, 2005	
ENGINEER: JESUS R.		SHEET 1 OF 1	
DESIGNER:			

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.

NOTES: UNLESS OTHERWISE SPECIFIED

- ALL RESISTORS ARE IN OHMS, 0402.
- ALL CAPACITORS ARE IN MICROFARADS, 0402.
- INSTALL SHUNT ON JP1-JP2 PIN 1 AND 2.