

## DESCRIPTION

Demonstration circuit 728 is a 1MHz Synchronous Step-Up DC/DC Converter featuring the LTC<sup>®</sup>3458EDE. The demo circuit demonstrates a DC/DC boost converter, with a 1.5A switch, providing 7V at 200mA to 800mA depending on input voltage. The circuit demonstrates the advantages of output disconnect and inrush current limiting. Small circuit size and low component count make the LTC3458 suitable for use in many space-conscious applications such as handheld instruments, point-of-load converters, USB VBUS Power and OLED

displays. Other integrated features include externally programmable burst mode threshold, peak current limit, soft-start, anti-ringing control and thermal shutdown. **NOTE:** If supply is going to be used in **Fixed Frequency Mode**, use a 50K Ohm resistor to tie the Burst pin to the output voltage.

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

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**Table 1. Performance Summary (T<sub>A</sub> = 25°C)**

PARAMETERS	CONDITION	VALUE
Minimum Input Voltage		2.0V
Maximum Input Voltage		6V
Output Voltage V <sub>OUT</sub>	V <sub>IN</sub> = 2V, I <sub>OUT</sub> = 200mA	7V ±3%
Output Voltage V <sub>OUT</sub>	V <sub>IN</sub> = 2.7V, I <sub>OUT</sub> = 300mA	7V ±3%
Output Voltage V <sub>OUT</sub>	V <sub>IN</sub> = 3.3V, I <sub>OUT</sub> = 400mA	7V ±3%
Output Voltage V <sub>OUT</sub>	V <sub>IN</sub> = 4.2V, I <sub>OUT</sub> = 550mA	7V ±3%
Output Voltage V <sub>OUT</sub>	V <sub>IN</sub> = 5V, I <sub>OUT</sub> = 700mA	7V ±3%
Output Voltage V <sub>OUT</sub>	V <sub>IN</sub> = 6V, I <sub>OUT</sub> = 800mA	7V ±3%
Typical Output Ripple V <sub>OUT</sub>	V <sub>IN</sub> = 3.3V, I <sub>OUT</sub> = 400mA	20mV <sub>p-p</sub>
Typical efficiency	V <sub>IN</sub> = 4.2V, I <sub>OUT</sub> = 300mA	87.5%

C9 used only when operating supply with long inductive input leads.

## QUICK START PROCEDURE

Demonstration circuit 728 is easy to set up to evaluate the performance of the LTC3458EDE. 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.

- Place jumpers in the following positions:

**JP1 On, JP2 Auto On.**

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## 1MHz SYNCHRONOUS STEP-UP DC/DC CONVERTER

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 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.

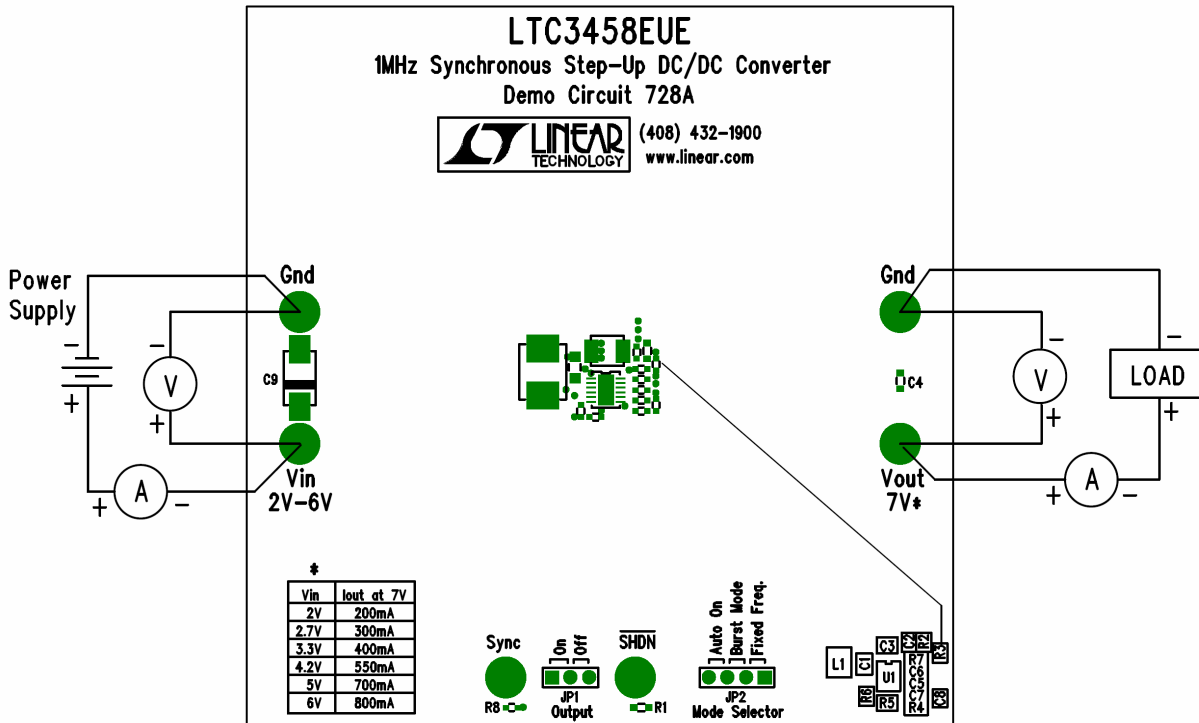


Figure 1. Proper Measurement Equipment Setup

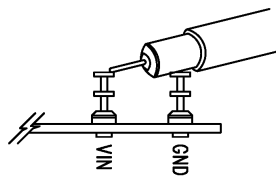
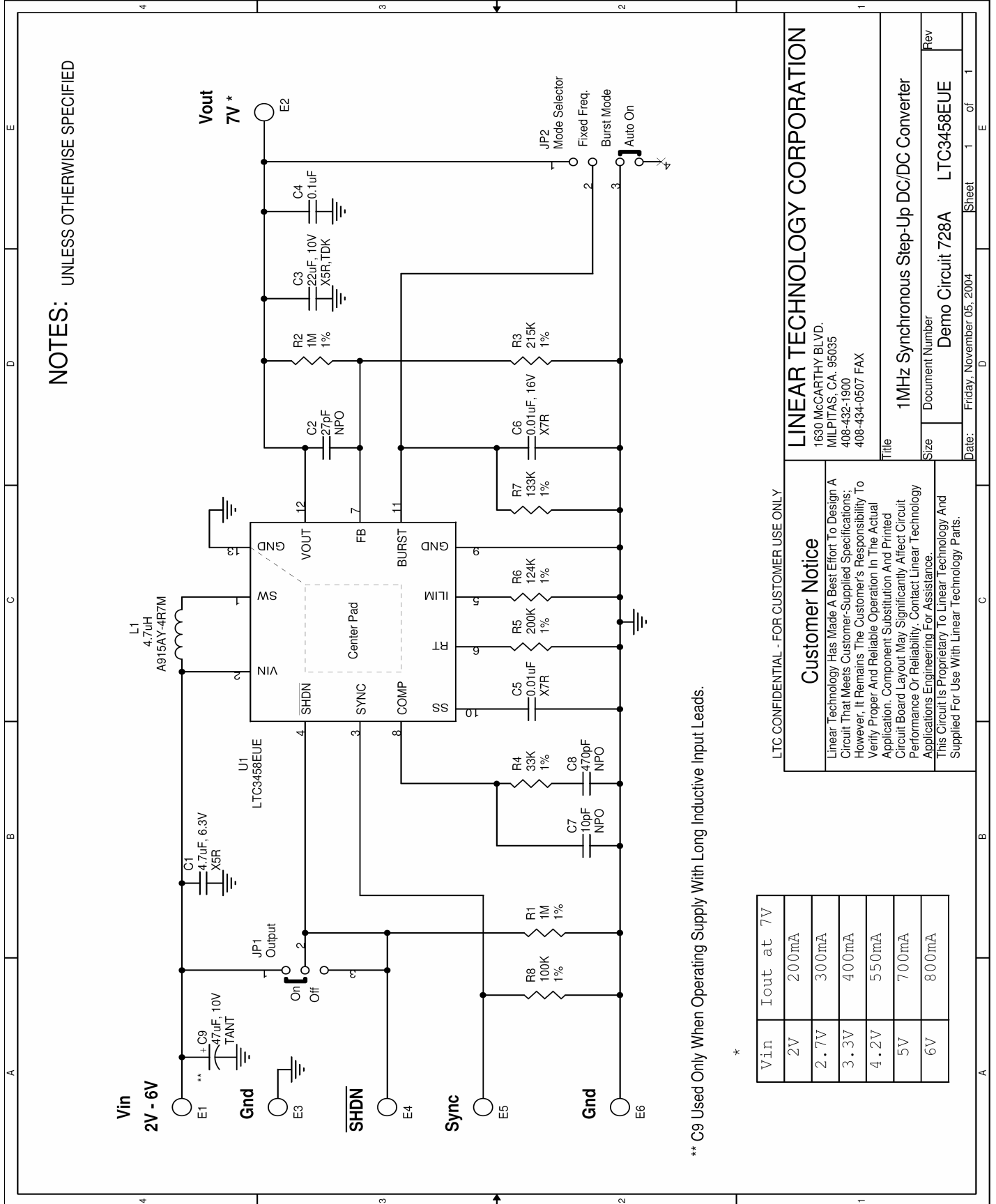


Figure 2. Measuring Input or Output Ripple

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## 1MHz SYNCHRONOUS STEP-UP DC/DC CONVERTER



\*\* C9 Used Only When Operating Supply With Long Inductive Input Leads.

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Vin	Iout at 7V
2V	200mA
2.7V	300mA
3.3V	400mA
4.2V	550mA
5V	700mA
6V	800mA

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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.

### LINEAR TECHNOLOGY CORPORATION

1630 McCARTHY BLVD.  
MILPITAS, CA. 95035  
408-432-1900  
408-434-0507 FAX

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1MHz Synchronous Step-Up DC/DC Converter

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