DESCRIPTION

Demonstration circuit 728 is a 1MHz Synchronous Step-Up DC/DC Converter featuring the LTC®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_A = 25°C)

PARAMETERS	CONDITION	VALUE
Minimum Input Voltage		2.0V
Maximum Input Voltage		6V
Output Voltage V_{OUT}	V_{IN} = 2V, I_{OUT} =200mA	7V ±3%
Output Voltage V_{OUT}	V_{IN} = 2.7V, I_{OUT} =300mA	7V ±3%
Output Voltage V_{OUT}	V_{IN} = 3.3V, I_{OUT} =400mA	7V ±3%
Output Voltage V_{OUT}	V_{IN} = 4.2V, I_{OUT} =550mA	7V ±3%
Output Voltage V_{OUT}	V_{IN} = 5V, I_{OUT} =700mA	7V ±3%
Output Voltage V_{OUT}	V_{IN} = 6V, I_{OUT} =800mA	7V ±3%
Typical Output Ripple V_{OUT}	V_{IN} = 3.3V, I_{OUT} = 400mA	20mV_{P-P}
Typical efficiency	V_{IN} =4.2V , I_{OUT} = 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.

1. Place jumpers in the following positions:

   JP1 On, JP2 Auto On.

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.

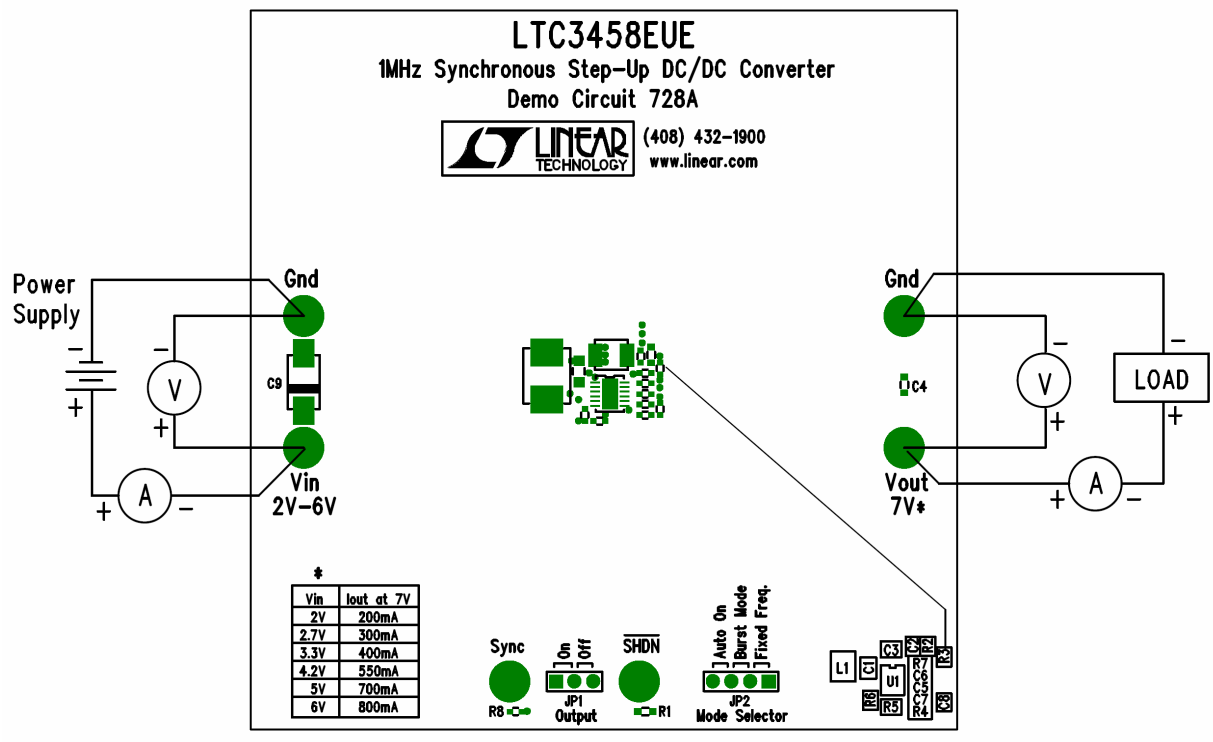


Figure 1. Proper Measurement Equipment Setup

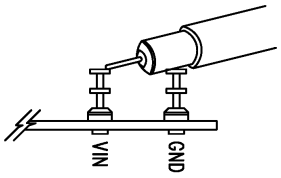
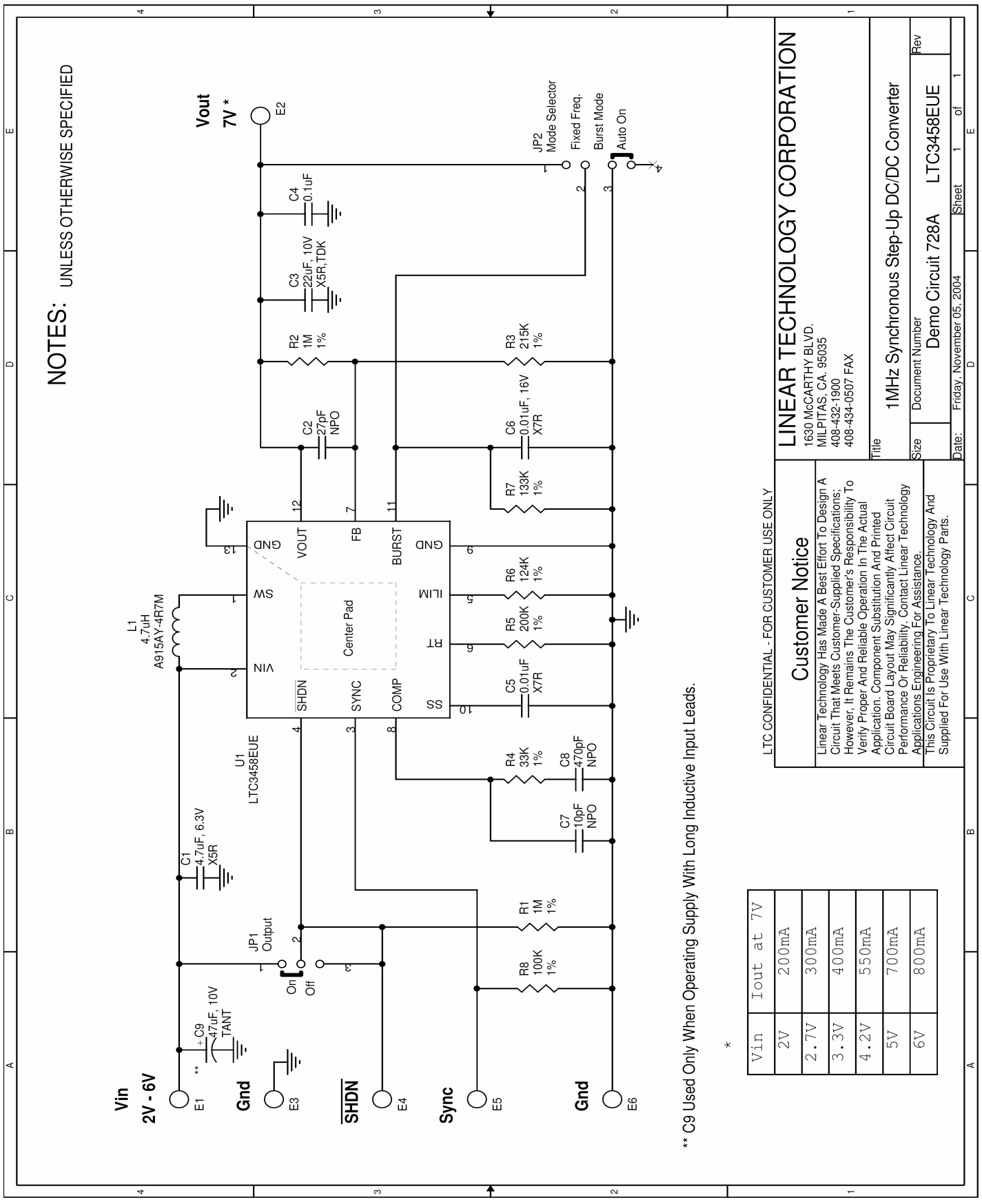


Figure 2. Measuring Input or Output Ripple


NOTES: UNLESS OTHERWISE SPECIFIED
Vin
2V - 6V
E1
Gnd
E3
SHDN
E4
Sync
E5
Gnd
E6
Vout
7V *
E2
JP1
Output
On
Off
JP2
Mode Selector
Fixed Freq.
Burst Mode
Auto On
L1
4.7uH
A915AY-4R7M
U1
LTC3458EUE
Center Pad
SW
VIN
SHDN
SYNC
COMP
SS
RT
ILIM
BURST
FB
VOUT
GND
C1
4.7uF, 6.3V
X5R
C2
27pF
NPO
C3
22uF, 10V
X5R,TDK
C4
0.1uF
C5
0.01uF
X7R
C6
0.01uF, 16V
X7R
C7
10pF
NPO
C8
470pF
NPO
C9
47uF, 10V
TANT
R1
1M
1%
R2
1M
1%
R3
215K
1%
R4
33K
1%
R5
200K
1%
R6
124K
1%
R7
133K
1%
R8
100K
1%
** C9 Used Only When Operating Supply With Long Inductive Input Leads.
*
Vin | Iout at 7V
2V | 200mA
2.7V | 300mA
3.3V | 400mA
4.2V | 550mA
5V | 700mA
6V | 800mA
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Sheet 1 of 1