DESCRIPTION

Demonstration circuit 611 is a dual, spread-spectrum, step down charge pump DC/DC converter featuring the LTC®3252EDE. It produces regulated 1.5V and 1.2V output voltages at up to 250mA of output current each from 2.7V to 5.5V input. The unique spread spectrum architecture of the LTC3252 provides highly efficient and low noise operation. The circuit has a low external parts count and requires only five small surface mount capacitors and four tiny surface mount resistors. DC611 demonstrates appropriate layout techniques for the LTC3252 inductorless DC-DC converter. This power supply circuit is ideally suited for space-constrained battery-powered applications that require small size and low operating current.

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

QUICK START PROCEDURE

Demonstration circuit 611 is easy to set up and evaluate the performance of the LTC3252. 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 V_{IN}, V_{OUT1} or V_{OUT2} and GND terminals. See Figure 2 for proper scope probe technique.

1. With power off, connect input power source to V_{IN} and GND terminals. Input voltage range is limited to between 2.7V and 5.5V for the 1.2V output and between 3.21V and 5.5V for the 1.5V output.
2. Place selector jumper JP1 in the ON position to enable V_{OUT1} (1.5V), and jumper JP2 in the ON position to enable V_{OUT2}.
3. If desired, loads may be connected from V_{OUT1} to GND and from V_{OUT2} to GND. The following V_{IN} (min) vs. load chart must be followed to ensure correct regulation of V_{OUT1} and V_{OUT2}:

Table 1. V_{IN} VS. LOAD CHART

V_{IN} (min) vs load		
V_{IN} (MIN)	I_{OUT1}	I_{OUT2}
3.5V	250mA	250mA
3.2V	100mA	250mA
3.1V	50mA	250mA
2.9V	---	250mA
2.7V	---	150mA

NOTE: V_{OUT1} is in dropout for V_{IN} < 3.0V and will cause the LTC3252 to operate in continuous mode instead of the more efficient burst mode. To monitor the actual performance of V_{OUT2} for V_{IN} <3.1V, V_{OUT1} should be disabled by placing jumper JP1 in the OFF position.

4. Turn on the power at the input.

NOTE: Make sure that the input voltage does not exceed 5.5V.

5. Check for the proper output voltages. V_{OUT1} = 1.5V and V_{OUT2} = 1.2V. If there is no output, temporarily disconnect the load to make sure that the load is not set too high.

6. Once the proper output voltages are established, adjust the loads up to 250mA and observe the output voltage regulation, input and output ripple voltage, efficiency and other parameters. Remember to follow the V_{IN} (min) vs. load chart for correct regulation of V_{OUT1} and V_{OUT2}.

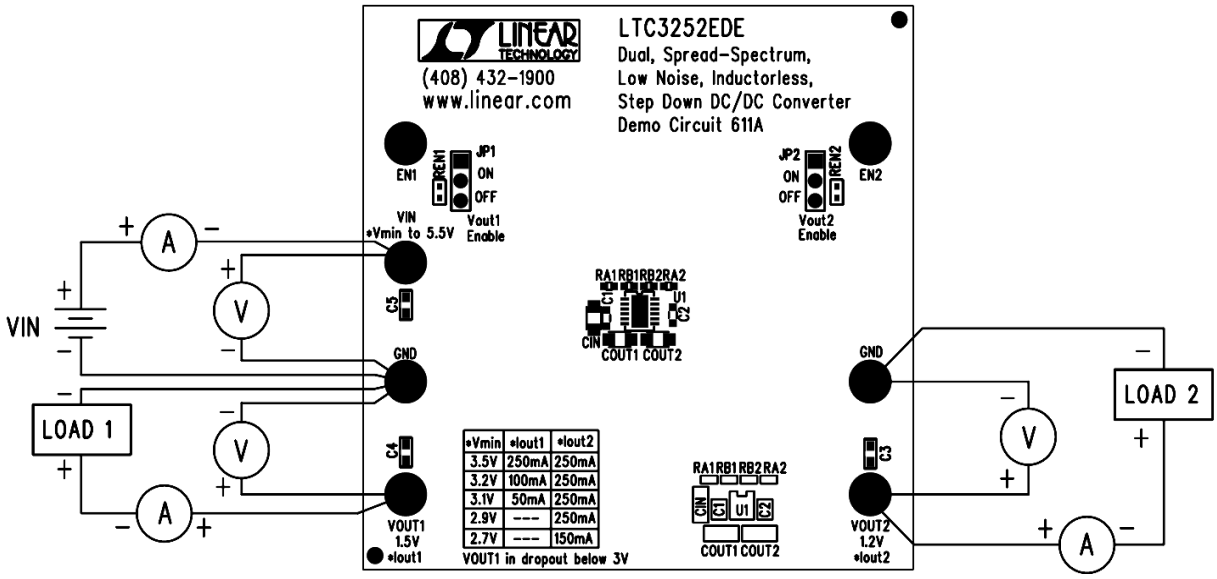


Figure 1. Proper Measurement Equipment Setup

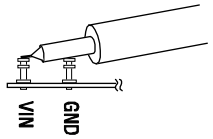
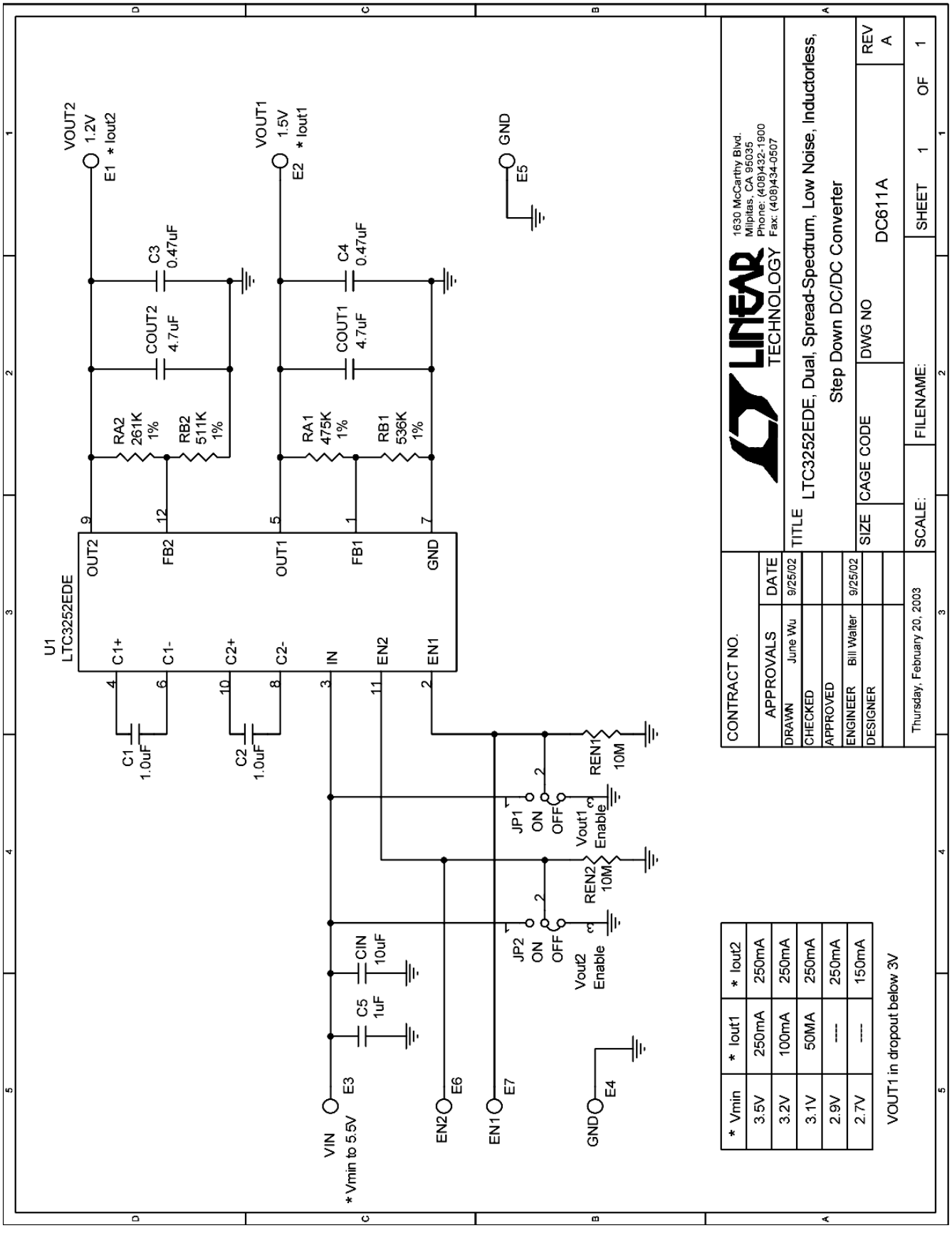


Figure 2. Scope Probe Placement for Measuring Input or Output Ripple



* Vmin	* Iout1	* Iout2
3.5V	250mA	250mA
3.2V	100mA	250mA
3.1V	50MA	250mA
2.9V	----	250mA
2.7V	----	150mA

VOUT1 in dropout below 3V

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