DEMO CIRCUIT 1247
QUICK START GUIDE

I2C Programmable Boost and Single Inductor Inverting DC/DC Converters with OTP

DESCRIPTION

Demonstration circuit 1247A features the LT3582 an I2C Programmable Boost and Single Inductor Inverting DC/DC Converters with OTP. It converts a 2.7V-5.5V source to two outputs, a positive and a negative. The positive output can be programmed from 3.2V to 12.775V at 25mV intervals and the negative from -1.2V to -13.95V at 50mV intervals, all via the QuickEval™ System. A DC590B is needed for evaluation of this demo board. Table 1 below shows the maximum expected load currents for some output/input combinations. Check Maximum Load Current section on datasheet for other combinations.

The LT3582 features all integrated switches and feedback resistors, a low noise control scheme, positive output disconnect function, low quiescent current, built in soft-start. The LT3582 datasheet gives a complete description of the part, its operation and application information. The datasheet must be read in conjunction with this quick start guide for working on or modifying the demo circuit 1247.

This circuit is intended for space-conscious applications such as AMOLED Power, CCD Power and General Purpose Bias Supplies.

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

PERFORMANCE SUMMARY FOR DC1247A Specifications are at TA = 25°C

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_{IN}	Input Supply Range		2.7		5.5	V
$V_{OUT\ POS}$	Output Voltage Tolerance		-2		+2	%
$V_{OUT\ NEG}$	Output Voltage Tolerance		-3		+3	%
RIPPLE POS		Over Inputs, Outputs and Loads per Table 1		10mV		mV
RIPPLE NEG		Over Inputs, Outputs and Loads per Table 1		40mV		mV

QUICK START PROCEDURE

Demonstration circuit 1247 is easy to set up to evaluate the performance of the LT3582. 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 jumper in the following position:

   JP1 On

2. With power off, connect the input power supply to Vin and GND.

3. Insure the QuickEval™ System software has been properly installed in the host computer to be used as well as the software for DC590B.

4. Connect demo board to DC590B with ribbon cable as shown in Figure 1 below.

5. Apply 2.7V-5.5V to DC1247A input.

6. Open QuickEval™ Sytem software.

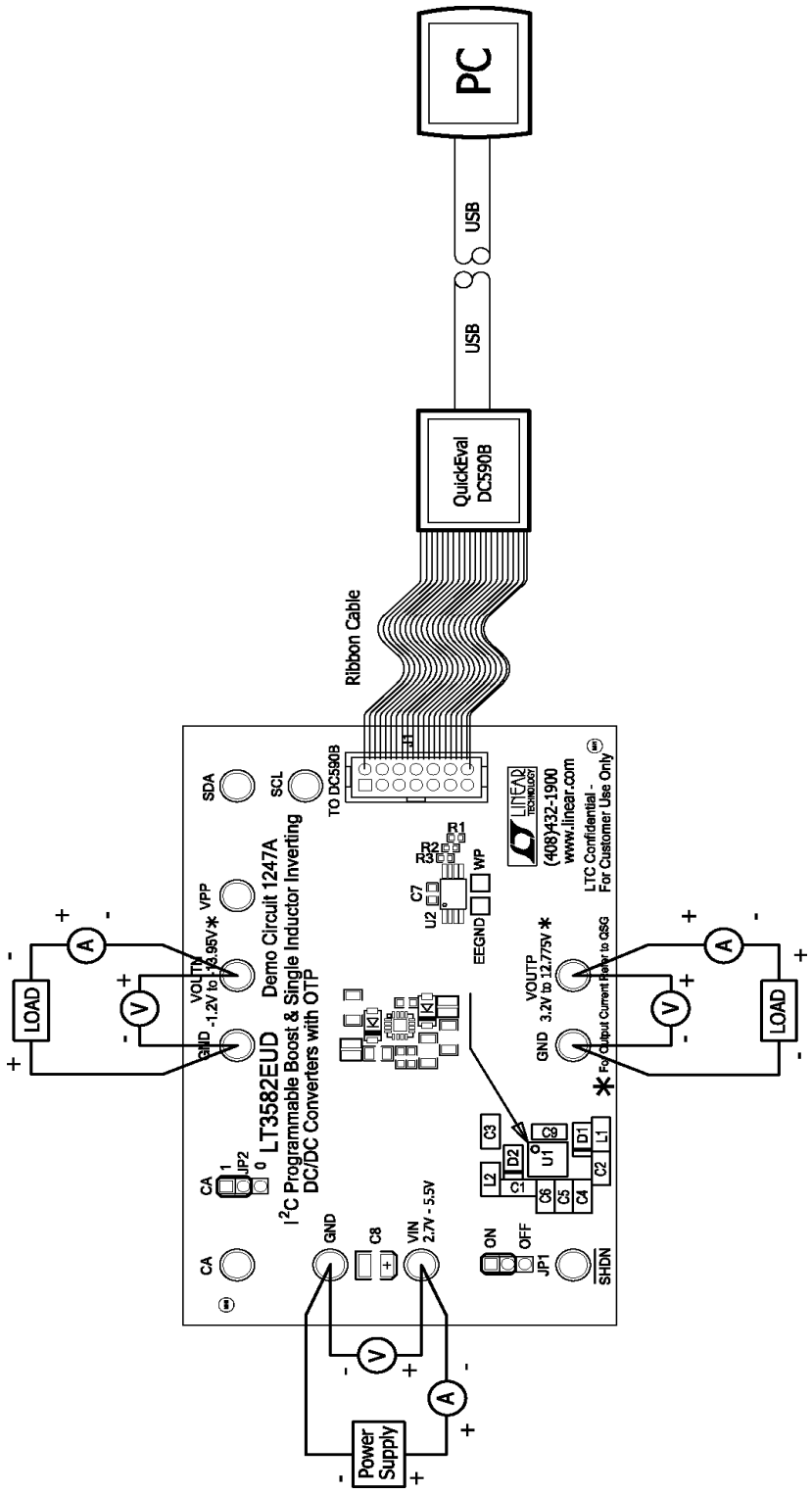
7. At this point, DC1247A is recognized. Click “Open”. Turn switcher ON, enable Outputs, set output voltage levels, power up sequencing, output voltage ramp rates, and power down discharge, all via the QuickEval™ System inter-phase, and proceed with board evaluation.

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.

8. Once the proper output voltage is 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



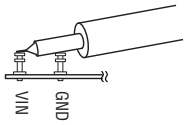


Figure 2. Measuring Input or output Ripple

Vout	2.7Vin	5.5Vin
-12V	45mA	95mA
-10V	56mA	110mA
-8V	71mA	130mA
-6V	92mA	164mA
-4V	126mA	208mA
-2V	189mA	276mA
Vout	2.7Vin	5.5Vin
12V	45mA	93mA
10V	54mA	112mA
8V	68mA	141mA
6V	91mA	n/a
4V	137mA	n/a
3.2V	n/a	n/a

Table 1. Expected load currents for different output voltages at 2.7Vin or 5.5Vin.

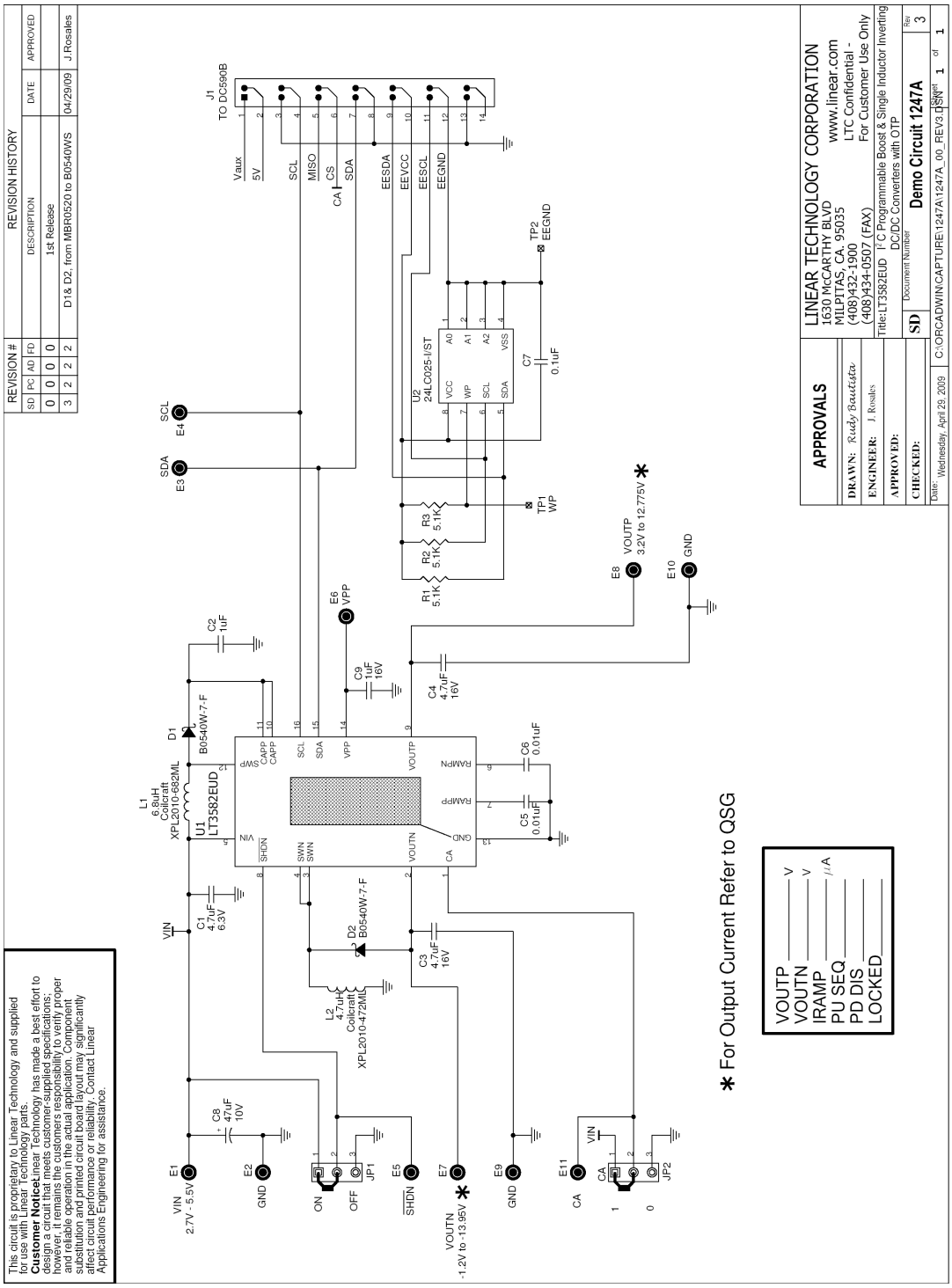


Figure 3. Schematic Diagram