

DESCRIPTION

Demonstration circuit 1447A is an adjustable 200mA linear regulator featuring LT[®]3082. Architected as a precision current source and voltage follower, it allows this new regulator to be used in many applications with adjustability to zero output. Also LT3082 withstands reverse input voltages and reverse output-to-input voltages without reverse-current flow.

A key feature of the LT3082 is the capability to supply a wide output voltage range. By using a reference current through a single resistor, the output voltage can be programmed to any level between zero and 38.5V. DC1447A is capable of delivering up to 200mA output current. Therefore, the DC1447A can be used as an all surface mount linear regulator, post regulator for switching supply, low parts count variable voltage supply, low output voltage power supply or battery powered regulator.

Internal protection circuitry includes reverse-battery and reverse-current protection, current limiting and thermal limiting.

LT3082 regulator is offered in the thermally enhanced 8-lead TSOT-23, 3-lead SOT-223 and 8-lead 3mm×3mm DFN packages.

The LT3082 datasheet gives a complete description of the part, operation and application information. The datasheet should be read in conjunction with this quick start guide for working on or modifying the demo circuit 1447A.

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


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Table 1. Performance Summary ($T_A = 25^{\circ}\text{C}$)

PARAMETER	CONDITION	VALUE
Minimum Vin Voltage	Vout=1.2V	2.8V
Maximum Vin Voltage		35V
Output Voltage	JP1, Vout=1.2V	1.2V ±3%
	JP1, Vout=1.8V	1.8V ±3%
	JP1, Vout=2.5V	2.5V ±3%
	JP1, Vout=3.3V	3.3V ±3%
	JP1, Vout=5.0V	5.0V ±3%
Minimum Output Current		0.5mA
Maximum Output Current		200mA

QUICK START PROCEDURE

The DC1447A is easy to set up to evaluate the performance of the LT3082. Refer to Figure 1. for proper measurement equipment setup and following the procedures below:

1. Before proceeding to test, use jumper JP1 for the desired output voltage (1.2V, 1.8V, 2.5V, 3.3V or 5.0V). If the output voltage is different from the above values, use the USER option and install R6. Select R6 according to the following equation: $R_6 = \frac{V_{OUT}}{10\mu A}$.

2. Assume 1.2V is the desired output. Apply 2.8V across V_{in} (to Gnd). Draw 200mA of load current. The measured V_{out} should be $1.2V \pm 3\%$ (1.174V to 1.246V).
3. Vary V_{in} from 2.8V to 35V and the load current from 0.5mA to 200mA. V_{out} should measure $1.2V \pm 3\%$ (1.174V to 1.246V).

Note: Make sure the power dissipation is limited below the thermal limit.

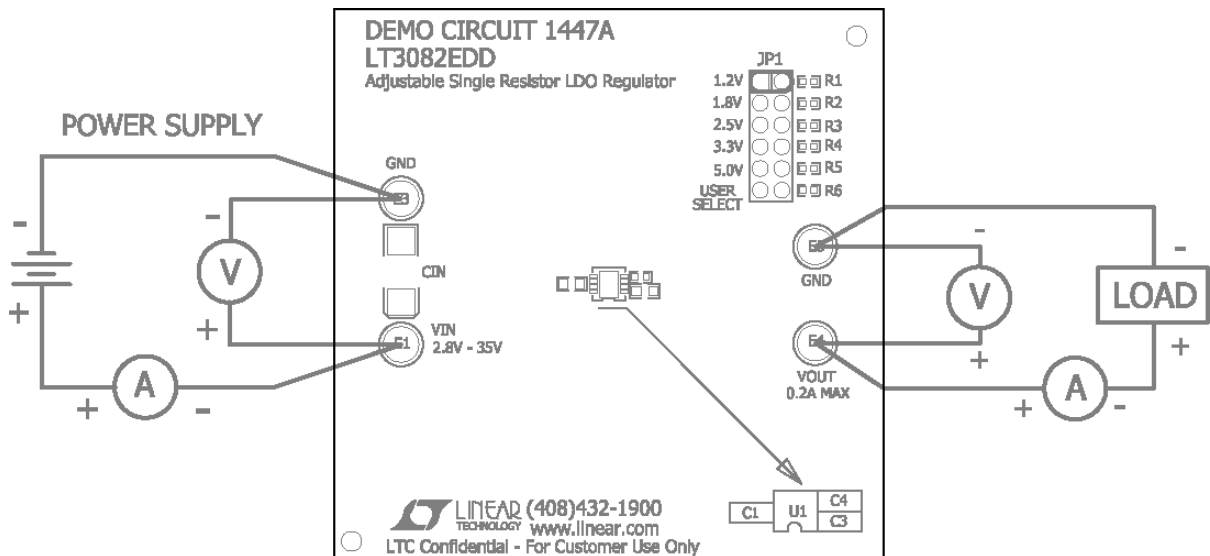


Figure 1. Proper Measurement Equipment Setup

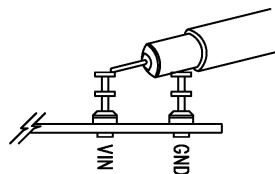
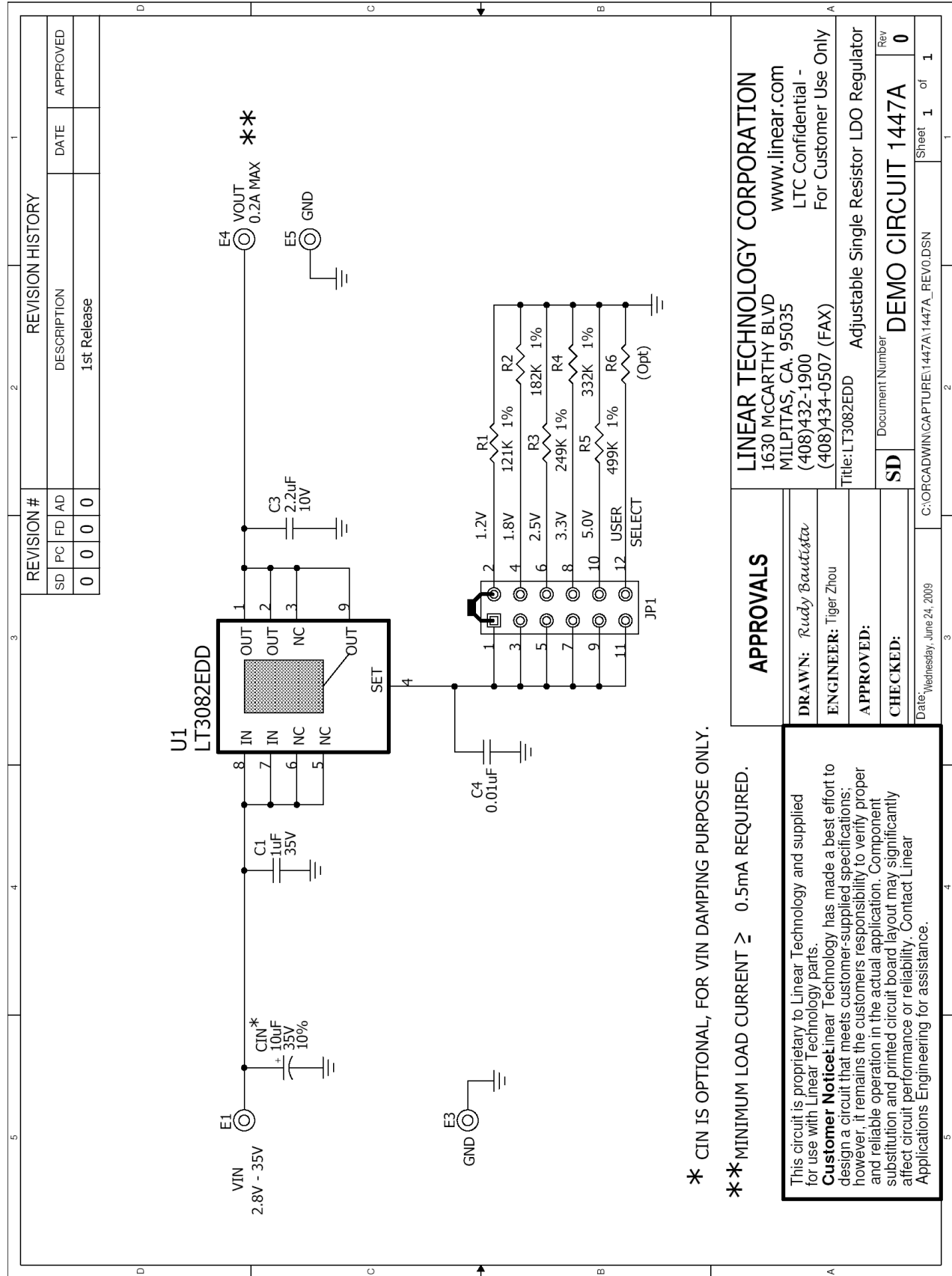


Figure 2. Measuring Input or Output Ripple



* C1N IS OPTIONAL, FOR VIN DAMPING PURPOSE ONLY.

** MINIMUM LOAD CURRENT \geq 0.5mA REQUIRED.

This circuit is proprietary to Linear Technology and supplied for use with Linear Technology parts.
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 Applications Engineering for assistance.