DESCRIPTION

Demonstration circuit 534 is a fast transient response, very low dropout linear regulator featuring the LT3150 linear regulator. The DC534 generates fixed output voltages of 1.2V, 1.5V, and 1.8V, and is capable of delivering 4A (max.) of output current. With the LT3150 driving external N-channel MOSFETs as source followers, the DC534 can produce very fast transient response. The proper selection of the Rds(on) of the MOSFETs allows dropout voltages below 300 mV. These capabilities, plus its ability of maintaining stable operation with ceramic output capacitors, make the DC534 voltage regulator ideally suited for low Vin to Vout applications, such as microprocessor power supplies.

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

Table 1. Performance Summary

PARAMETER	CONDITION	VALUE
Minimum Input Voltage		1.1V
Maximum Input Voltage		10V
V_{OUT1}	V_{IN} = 1.5V, I_{OUT1} = 0A to 4A	1.2V ±2%
V_{OUT2}	V_{IN} = 1.8V, I_{OUT2} = 0A to 4A	1.5V ±2%
V_{OUT3}	V_{IN} = 2.5V, I_{OUT3} = 0A to 1.7A	1.8V ±2%
Typical Output Ripple	$I_{OUT(MAX)}$	$10mV_{P-P}$

QUICK START PROCEDURE

Demonstration circuit 534 is easy to set up to evaluate the performance of the LT3150. 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 VIN1 or VOUT and GND terminals. See Figure 2 for proper scope probe technique.

1. Connect the input power supply and voltmeter to the VIN1 and GND terminals on the right side of the board.
2. Connect the load and voltmeter between the VOUT and GND terminals on the right side of the board.
3. For oscilloscope observations, connect a BNC cable from the oscilloscope to connector J1, located on the right side of the board.
4. Before proceeding to test, set the output voltage to 1.2V, using the Output Voltage Table on the schematic.
5. Apply 1.5V across VIN (to GND) with 100mA of load current. Measure V_{OUT}; it should be 1.23V ±1% (1.218V to –1.242V).
6. Increase the load current to 4A. Measure V_{OUT} again; it should be 1.22V ±2% (1.205V to 1.255V). When finished, return I_{OUT} to 100mA.
7. Increase the input voltage to 1.8V. Change the jumpers for an output voltage of 1.5V (again see the Output Voltage Table below). Measure V_{OUT}; it should be 1.5 ±1% (1.485V to 1.515V).

8. Increase the load current to 4A. Measure V_{OUT} again; it should be 1.5V ±2% (1.470V to 1.530V). When finished, return I_{OUT} to 100mA.
9. Increase the input voltage to 2.5V. Change the jumpers for an output voltage of 1.8V (again see the Output Voltage Table below). Measure V_{OUT}; it should be 1.8 ±1% (1.782V to 1.818V).
10. Increase the load current to 1.7A. Measure V_{OUT} again; it should be 1.8V ±2% (1.764V to 1.836V). When finished, return I_{OUT} to 100mA.

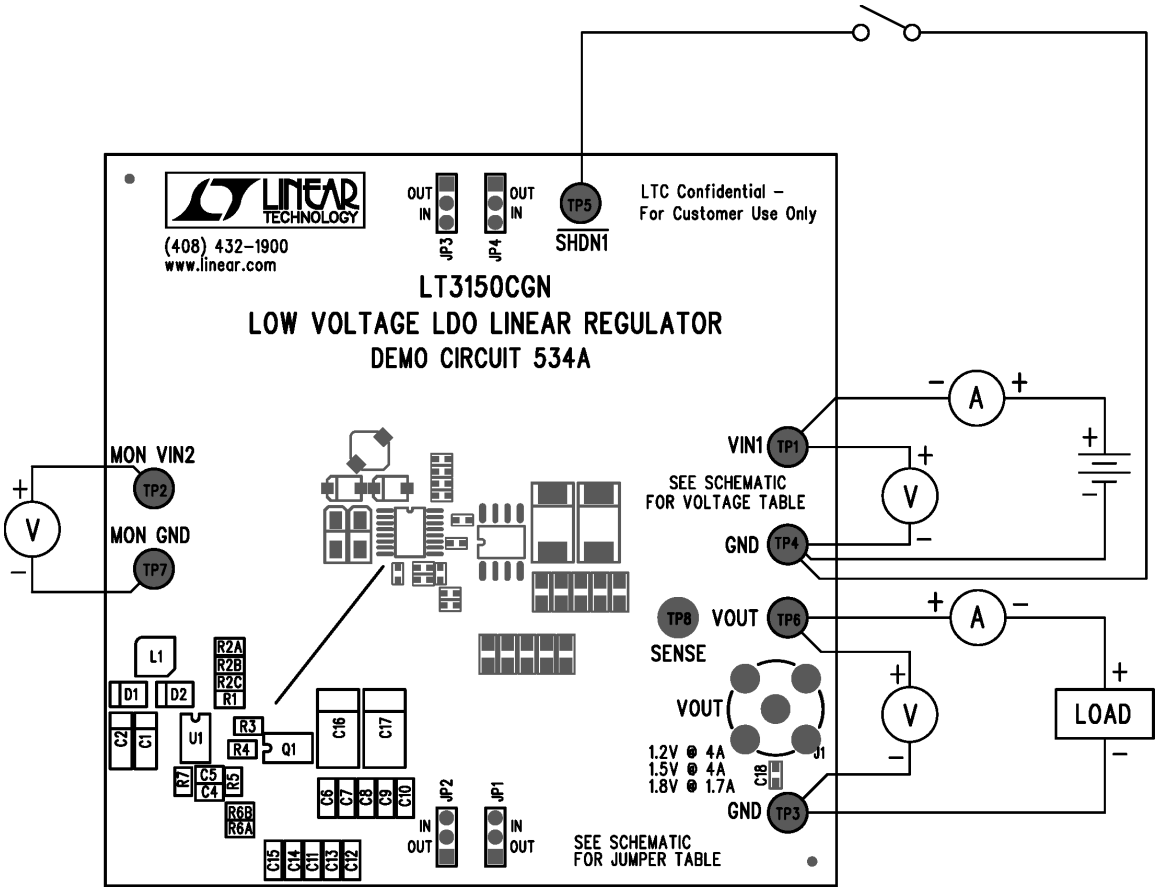


Figure 1. Proper Measurement Equipment Setup

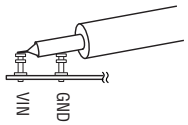
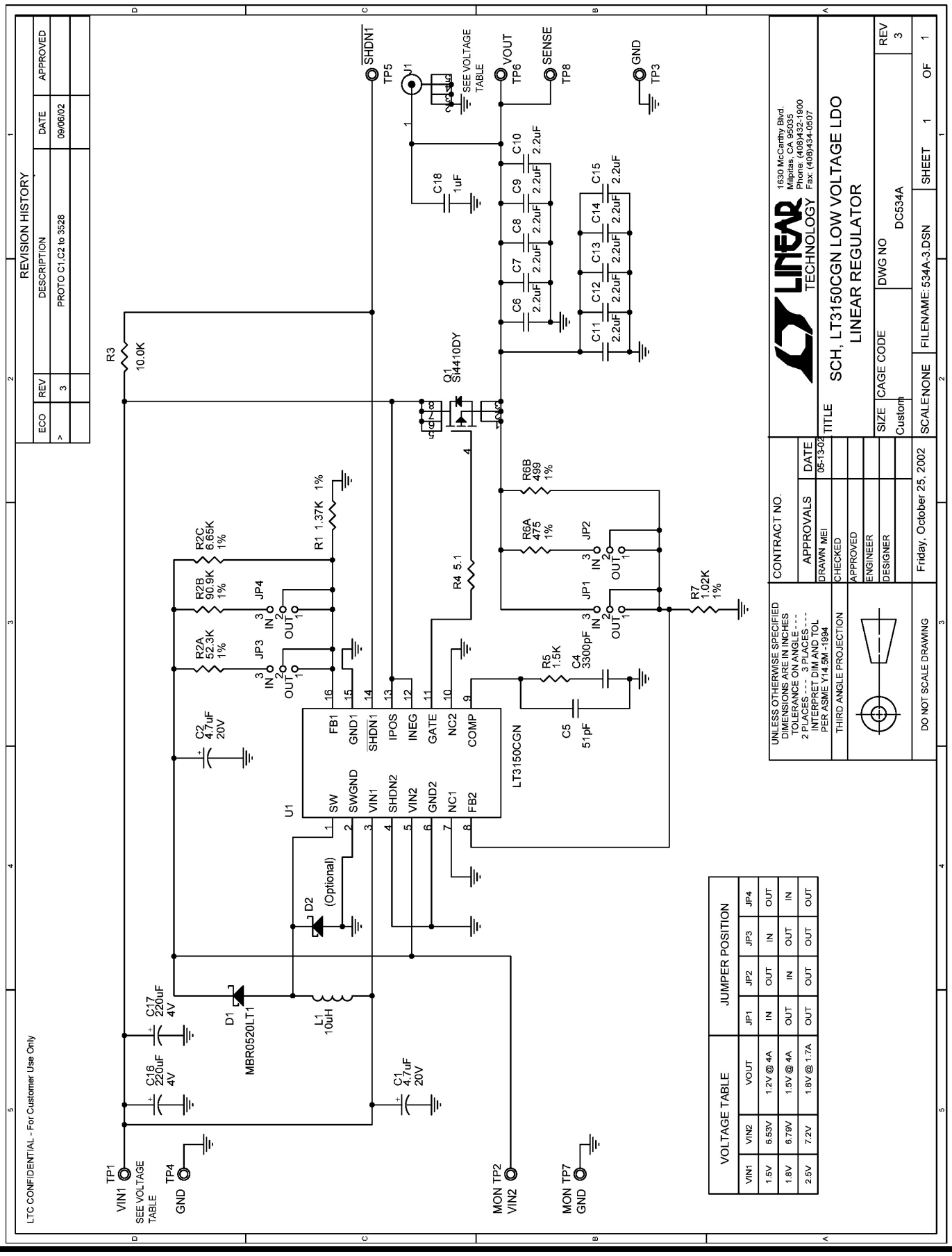


Figure 2. Measuring Input or Output Ripple


REVISION HISTORY
ECO | REV | DESCRIPTION | DATE | APPROVED
> | 3 | PROTO C1,C2 to 3528 | 09/06/02 |
LTC CONFIDENTIAL - For Customer Use Only
VOLTAGE TABLE
VIN1 | VIN2 | VOUT | JP1 | JP2 | JP3 | JP4
1.5V | 6.53V | 1.2V @ 4A | IN | OUT | IN | OUT
1.8V | 6.79V | 1.5V @ 4A | OUT | IN | OUT | IN
2.5V | 7.2V | 1.8V @ 1.7A | OUT | OUT | OUT | OUT
LT3150CGN
SCH, LT3150CGN LOW VOLTAGE LDO LINEAR REGULATOR
LINEAR TECHNOLOGY
1630 McCarthy Blvd. Milpitas, CA 95035 Phone: (408)432-1900 Fax: (408)434-0507
DC534A
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