

## 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  $R_{ds(on)}$  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  $V_{in}$  to  $V_{out}$  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
$V_{OUT1}$	$V_{IN} = 1.5V, I_{OUT1} = 0A \text{ to } 4A$	1.2V $\pm 2\%$
$V_{OUT2}$	$V_{IN} = 1.8V, I_{OUT2} = 0A \text{ to } 4A$	1.5V $\pm 2\%$
$V_{OUT3}$	$V_{IN} = 2.5V, I_{OUT3} = 0A \text{ to } 1.7A$	1.8V $\pm 2\%$
Typical Output Ripple	$I_{OUT(MAX)}$	10mV <sub>P-P</sub>

## 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  $V_{IN1}$  or  $V_{OUT}$  and GND terminals. See Figure 2 for proper scope probe technique.

1. Connect the input power supply and voltmeter to the  $V_{IN1}$  and GND terminals on the right side of the board.
2. Connect the load and voltmeter between the  $V_{OUT}$  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  $V_{IN}$  (to GND) with 100mA of load current. Measure  $V_{OUT}$ ; it should be 1.23V  $\pm 1\%$  (1.218V to 1.242V).
6. Increase the load current to 4A. Measure  $V_{OUT}$  again; it should be 1.22V  $\pm 2\%$  (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  $\pm 1\%$  (1.485V to 1.515V).

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## LOW VOLTAGE LDO LINEAR REGULATOR

8. Increase the load current to 4A. Measure  $V_{OUT}$  again; it should be  $1.5V \pm 2\%$  (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  $1.8 \pm 1\%$  (1.782V to 1.818V).
10. Increase the load current to 1.7A. Measure  $V_{OUT}$  again; it should be  $1.8V \pm 2\%$  (1.764V to 1.836V). When finished, return  $I_{OUT}$  to 100mA.

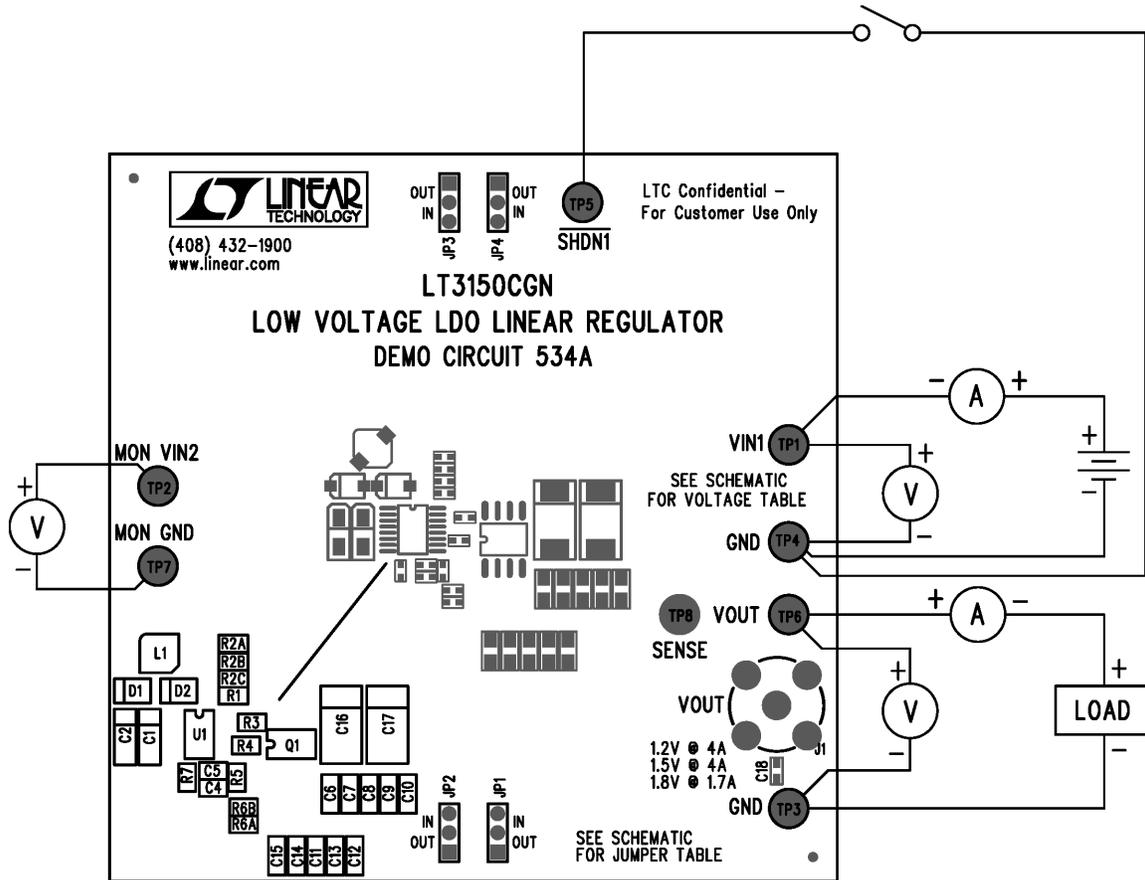


Figure 1. Proper Measurement Equipment Setup

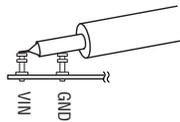
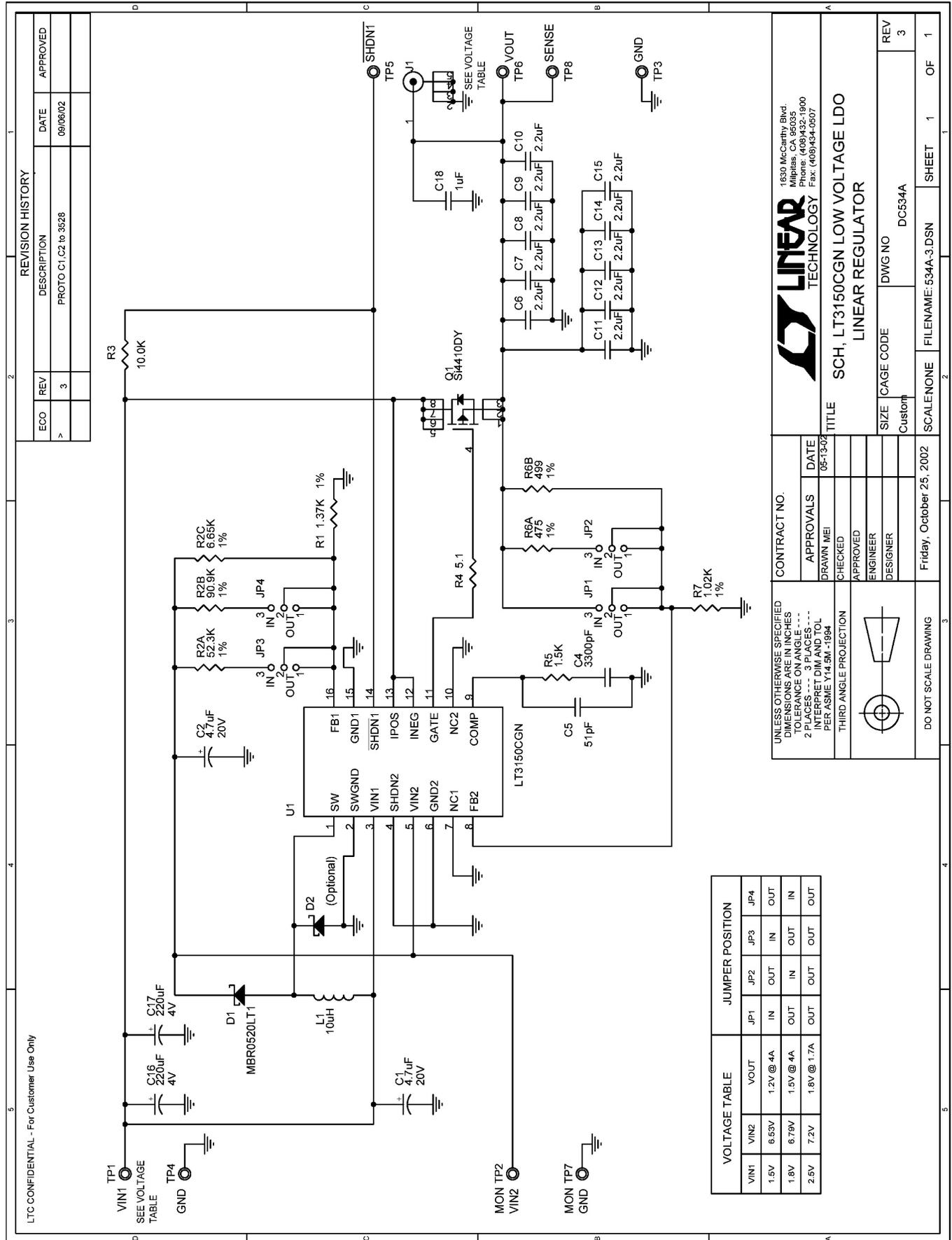


Figure 2. Measuring Input or Output Ripple

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## LOW VOLTAGE LDO LINEAR REGULATOR



ECO	REV	DESCRIPTION	DATE	APPROVED
>	3	PROTO C1, C2 to 3628	09/05/02	

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**LINEAR TECHNOLOGY**

SCH, LT3150CGN LOW VOLTAGE LDO  
LINEAR REGULATOR

CONTRACT NO. DATE 05-13-02

APPROVALS DRAWN MEI CHECKED APPROVED ENGINEER DESIGNER

SIZE (CAGE CODE) DWG NO DC534A

SCALE NONE FILENAME: 534A\_3.DSN SHEET 1 OF 1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ON ANGLES --- 2 INTERPRET ON FUNDAMENTAL PER ASME Y14.5M-1994

THIRD ANGLE PROJECTION

DO NOT SCALE DRAWING

Friday, October 25, 2002

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