

## DESCRIPTION

Demonstration circuit 717 is a dual output supply consisting of two linear regulators, based on the LT3024 IC. The DC717 has an input voltage range of 2.3V to 20V, with one output capable of delivering up to 500 mA of output current, and the other output capable of delivering 100 mA. The DC supply current is typically only 50  $\mu$ A (for both regulators) at no load. The LT3024 comes in a 12-lead DFN package or a 16-pin TSSOP package - both of which have an exposed pad on the bottom-side for better thermal per-

formance. The DC717 comes installed with ceramic capacitors, because of the LT3024 ability of maintaining stability with ceramic output capacitors. There are ceramic bypass capacitors on each output for ultra-low noise performance. These features make the DC717 an ideal circuit for use in battery-powered, hand-held applications or noise sensitive applications. **Gerber files for this circuit are available. Call the LTC Factory.**

## QUICK START PROCEDURE

The DC717 is easy to set up to evaluate the performance of the LT3024. For a proper measurement equipment configuration, set up the circuit according to the diagram in Figure 1.

Please follow the procedure outlined below for proper operation.

1. Connect the input power supply to the Vin and GND terminals. Connect the loads between the Vout and GND terminals. Refer to figure 1 for the proper measurement equipment setup.
2. Before proceeding to operation, insert jumpers JP1 and JP2 into the OFF positions, jumpers JP3 and JP4 into the voltage options of choice (2.5V, 3.3V, and 5V).
3. Apply 6.5V at Vin. Measure both Vouts; they should read 0V.
4. Turn on Vout1 and Vout2 by changing jumpers JP3 and JP4 from the OFF positions to the ON positions. Both output voltages should be within a tolerance of  $\pm 2\%$ .
5. Vary the input voltage from 6.5V to 20V. Both output voltages should be within  $\pm 3.3\%$  tolerance.
6. Vary Vout1 load current from 0 to 500mA. Its output voltages should be within a tolerance of  $\pm 4\%$ .

7. Vary Vout2 load current from 0 to 100mA. Its output voltages should be within a tolerance of  $\pm 4\%$ .
8. Observe both output voltages AC-coupled; they should measure noise voltages of less than 5 mVAC each. Refer to Figure 2 for proper measurement technique.
9. When finished, insert jumpers JP1 and JP2 to the OFF position(s) and disconnect the power.

Warning - If the power for the demo board is carried in long leads, the input voltage at the part could “ring”, which could affect the operation of the circuit or even exceed the maximum voltage rating of the IC. To eliminate the ringing, insert a small tantalum capacitor (for instance, an AVX part # TAJW106M025R) on the pads between the input power and return terminals on the bottom of the demo board. The (greater) ESR of the tantalum will dampen the (possible) ringing voltage due to the use of long input leads. On a normal, typical PCB, with short traces, the capacitor is not needed

# QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 717

## DUAL OUTPUT LOW NOISE LDO REGULATORS

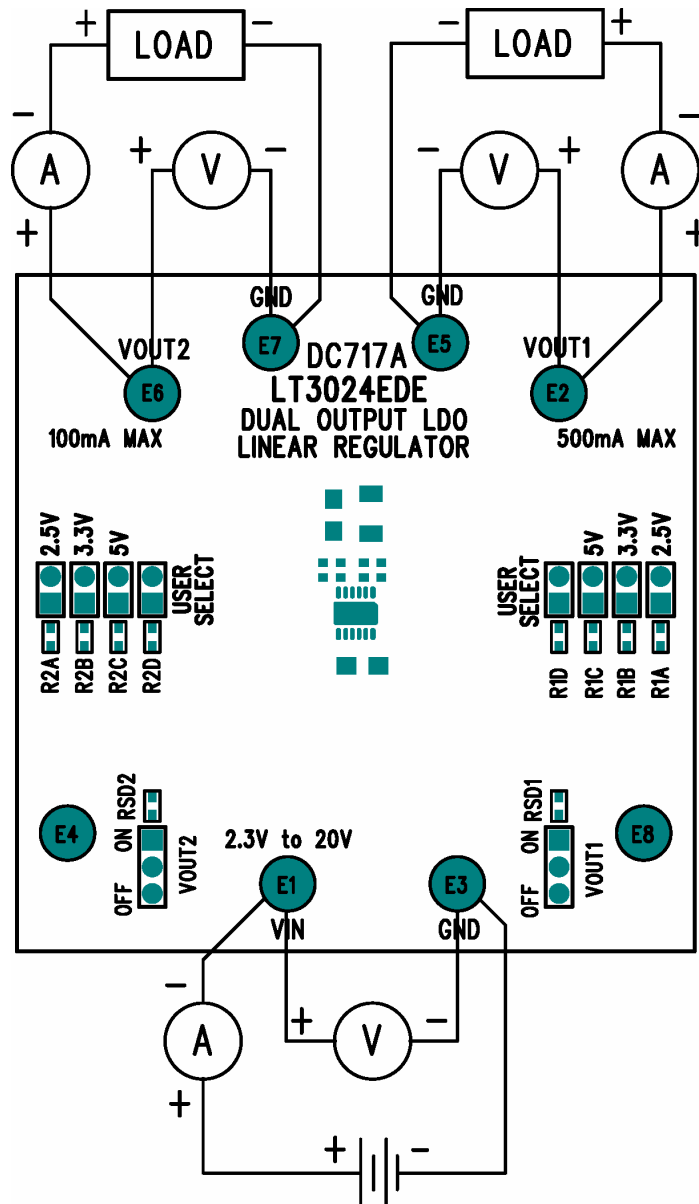


Figure1. Proper Measurement Equipment Setup

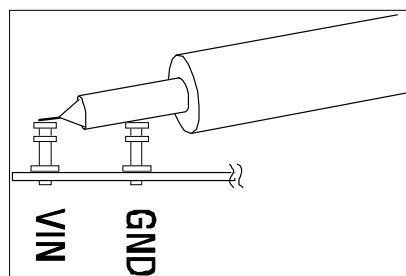


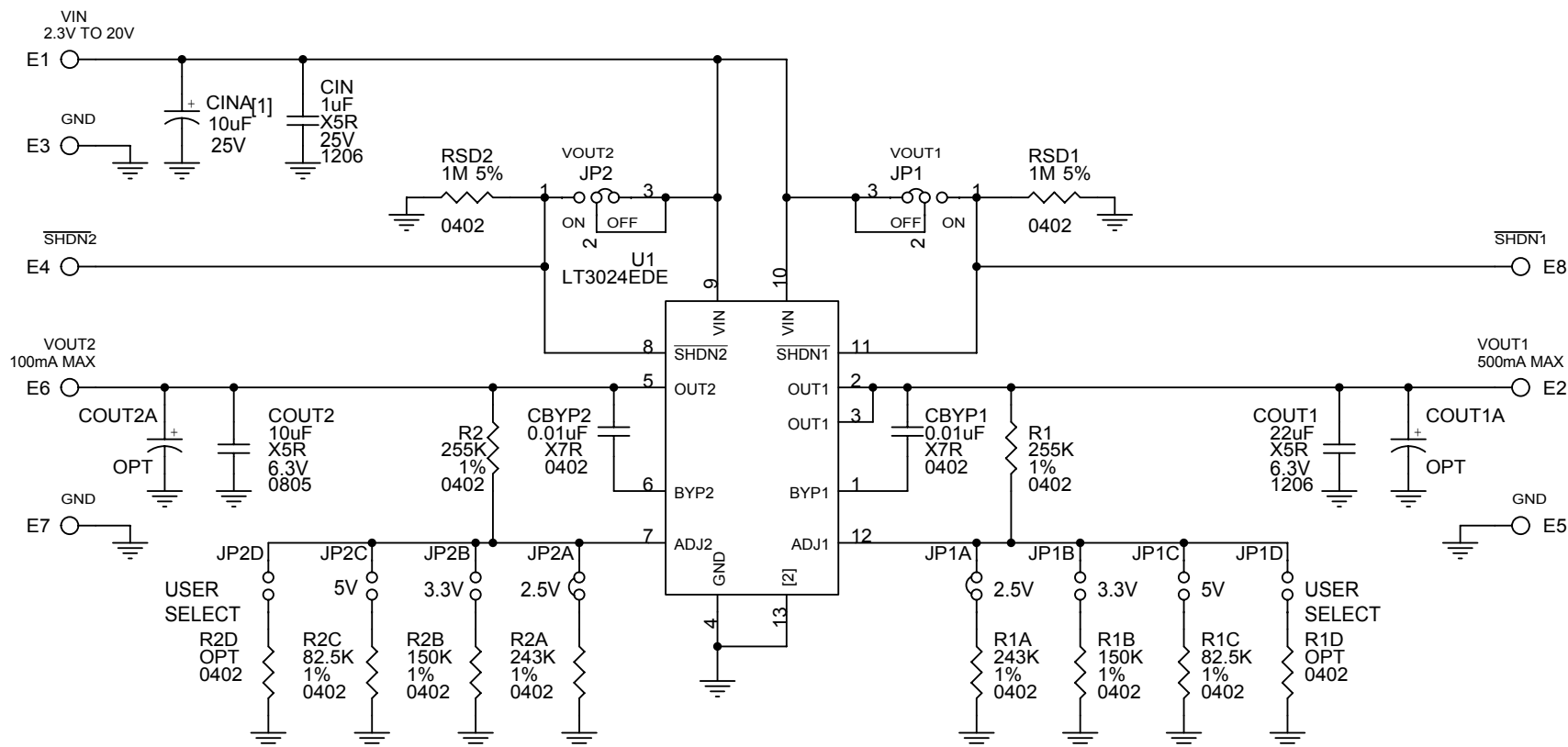
Figure 2. Measuring Input or Output Ripple

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.

# REVISION HISTORY

ECO	REV	DESCRIPTION	DATE	APPROVED
	3	PROTO	05/19/04	



## NOTES: UNLESS OTHERWISE SPECIFIED,

[1] CAPACITOR CINA IS AN OPTIONAL PART. IT WAS INSERTED ON THE DC717A TO DAMPEN THE (POSSIBLE) RINGING VOLTAGE DUE TO THE USE OF LONG INPUT LEADS. ON A NORMAL, TYPICAL PCB, WITH SHORT TRACES, THE CAPACITOR IS NOT NEEDED.

[2] PIN 13 IS THE EXPOSED PAD ON THE BOTTOM OF LT3024EDE.

## CONTRACT NO.

APPROVALS	DATE
DRAWN MEI	09/23/03
CHECKED	
APPROVED	
ENGINEER	
DESIGNER	

Thursday, May 20, 2004



1630 McCarthy Blvd.  
Milpitas, CA 95035  
Phone: (408)432-1900  
Fax: (408)434-0507

TITLE  
SCH, LT3024EDE, DUAL OUTPUT LDO LINEAR REGULATOR

SIZE	CAGE CODE	DWG NO	REV
		DC717A	3

SCALE:	FILENAME: 717A-3.DSN	SHEET 1 OF 1
--------	----------------------	--------------

Item	Qty	Ref-Des	Desc	Manufacturer's Part Number
1	2	CBYP1,CBYP2	CAP, X7R 0.01uF 25V 10% 0402	AVX 04023C103KAT
2	1	CIN	CAP, X7R 1uF 6.3V 20% 1206	TDK C3216X7R1E105M
3	1	CINA*	CAP, TANT 10uF 25V 20% 6032	AVX TAJW106M025N
4	0	R1D,COUT1A,R2D,COUT2A	DO NOT STUFF	OPTION
5	1	COUT1	CAP, X5R 22uF 6.3V 20% 1206	TAIYO YUDEN JMK316BJ226ML
6	1	COUT2	CAP, X5R 10uF 6.3V 20% 0805	TDK C2012X5R0J106M
7	8	E1,E2,E3,E4,E5,E6,E7,E8	TURRETS	MILLMAX 2501-2
8	8	JP1D,JP1C,JP1B,JP1A,JP2D, JP2C,JP2B,JP2A	HEADER,2PIN, 2mm	COMM CON 2802S-02G2
9	2	JP1,JP2	HEADER, 3PIN, 2mm	COMM CON 2802S-03G2
10	2	RSD2,RSD1	RES, 1M OHM 5% 1/16W 0402	ACC CR05-105JM
11	2	R2A,R1A	RES, 243K OHM 1% 1/16W 0402	ACC CR05-2433FM
12	2	R1B,R2B	RES, 150K OHM 1% 1/16W 0402	AAC CR05-1503FM
13	2	R2,R1	RES, 255K OHM 1% 1/16W 0402	ACC CR05-2553FM
14	2	R1C,R2C	RES, 82.5K OHM 1% 1/16W 0402	ACC CR05-8252FM
15	1	U1	IC, LT3024EDE	LINEAR TECH. LT3024EDE
16	4	JP2,JP1,JP2C,JP1C	SHUNT	COMM CON CCIJ2MM-138G
			*CINA is an optional Part. It was inserted on the	
			DC717A to dampen the (possible) ringing voltage	
			due to the use of long input leads. On a normal,	
			typical PCB, with short traces, the Capacitor is	
			not needed.	

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Analog Devices Inc.:](#)

[DC717A](#)