

LTM8027: 60V, 4A DC/DC μModule® Regulator

DESCRIPTION

Demonstration circuit 1307A features the LTM®8027 configured to deliver 12V from a 16V to 60V input. The wide input range of the LTM8027 allows a variety of input sources such as automotive batteries, wall adaptors and industrial supplies. The LTM8027 is a step down converter, so a minimum amount of headroom is required to keep the output in regulation. A soft-start feature controls the output voltage slew rate at start-up, reducing current surges and voltage overshoots. The current mode control scheme creates fast transient response and good loop stability.

The LTM8027 data sheet gives a complete description of the part, operation and application information. The data sheet must be read in conjunction with this manual before working on or modifying demo circuit 1307A.

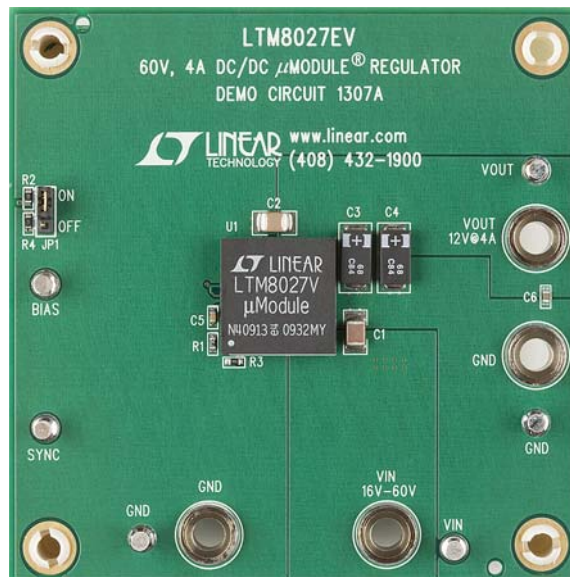
Design files for this circuit board are available at <http://www.linear.com/demo>

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PERFORMANCE SUMMARY (T_A = 25°C)

PARAMETER	VALUE
Input Voltage Range	16V to 60V
Output Voltage V _{OUT}	12V ±3%
Maximum Output Current	4A
Typical Switching Frequency	300kHz

DEMO BOARD PHOTO



QUICK START PROCEDURE

Demonstration circuit 1307A is an easy way to evaluate the performance of the LTM8027. 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_{IN} or V_{OUT} and GND terminals. See Figure 2 for proper scope probe technique.

1. Place JP1 on the ON position.
2. With power off, connect the input power supply to V_{IN} and GND. Preset the power supply within the input voltage range.
3. Connect the load and preset to 0A.
4. Turn on the power at the input.
5. Check for the proper output voltage.
6. Once the proper output voltages are established, adjust the loads within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.

QUICK START PROCEDURE

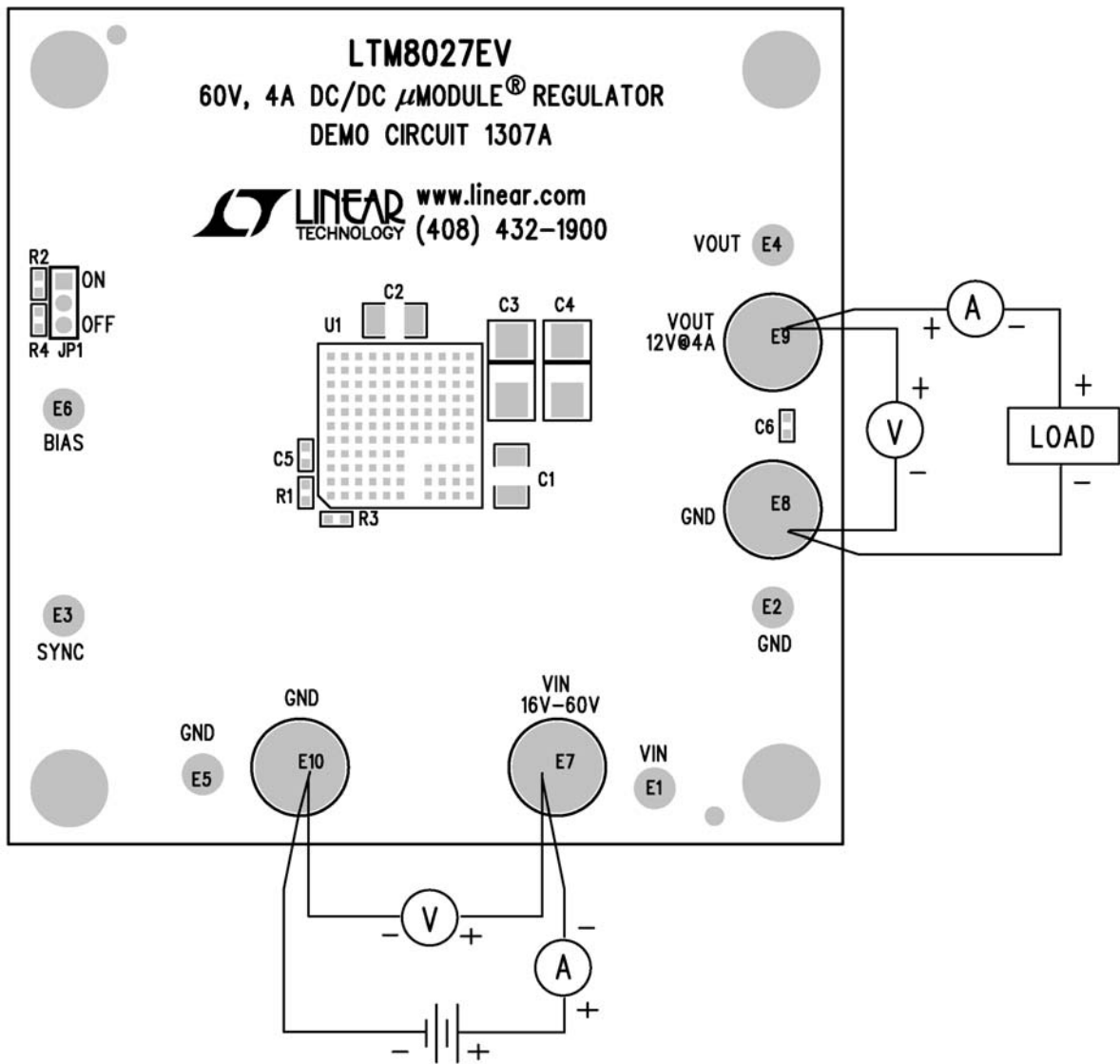


Figure 1. Proper Measurement Equipment Setup

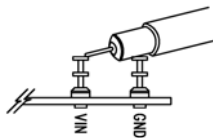


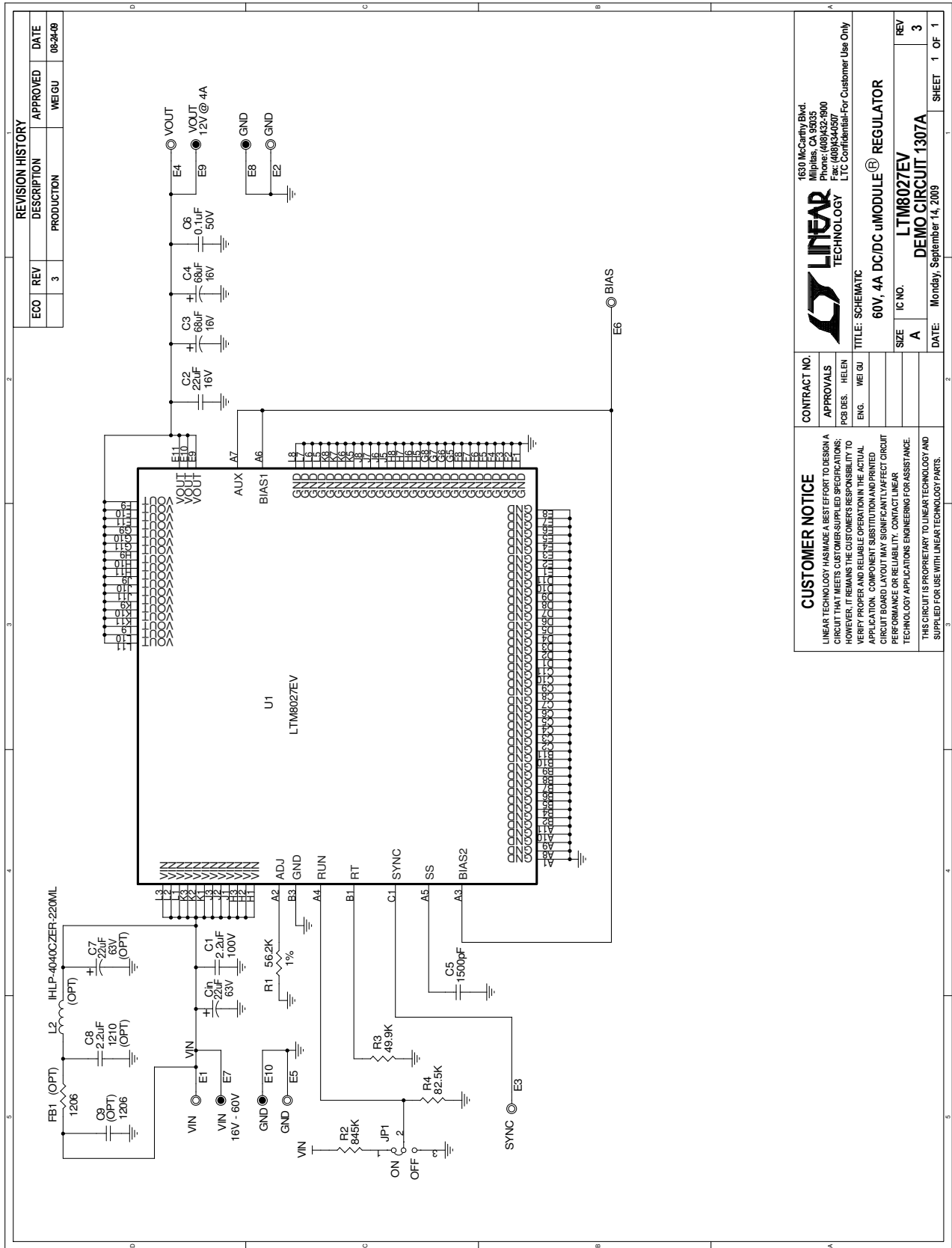
Figure 2. Measuring Input or Output Ripple

DEMO MANUAL DC1307A

PARTS LIST

ITEM	QUANTITY	REFERENCE	DESCRIPTION	MANUFACTURER'S PART NUMBER
Required Circuit Components				
1	1	C5	Capacitor, COG, 1500pF, 100V, 5%, 0603	AVX, 06031A152JAT2A
2	1	C1	Capacitor, X5R, 2.2 μ F, 100V, 10%, 1210	TDK, C3225X5R2A225K
3	1	C2	Capacitor, X5R, 22 μ F, 16V, 20%, 1210	AVX, 1210YC226MAT2A
4	2	C3, C4	Capacitor, TQC, 68 μ F, 16V	SANYO, 16TQC68M
5	1	R1	Resistor, Chip, 56.2k, 1/16W, 1%, 0603	Vishay, CRCW060356K2FKEA
6	1	R2	Resistor, Chip, 845k, 1/16W, 1%, 0603	Vishay, CRCW0603845KFKEA
7	1	R3	Resistor, Chip, 49.9k, 1/16W, 1%, 0603	Vishay, CRCW060349K9FKEA
8	1	R4	Resistor, Chip, 82.5k, 1/16W, 5%, 0603	Vishay, CRCW060382K5FKEA
9	1	U1	I.C., LTM8027EV#PBF, LGA, 113-Pin	Linear Technology, LTM8027EV#PBF
Additional Demo Board Circuit Components				
1	1	C _{IN}	Capacitor, Aluminum, 22 μ F, 63V	Sun Electronic, 63CE22BS
2	1	C6	Capacitor, X7R, 0.1 μ F, 50V, 10%, 0603	Murata, GRM188R71H104KA93D
3	0	C7 (Optional)	Capacitor, Aluminum, 63V 22 μ F	
4	0	C8 (Optional)	Capacitor, 1210	
5	0	C9 (Optional)	Capacitor, 1206	
6	0	L2 (Optional)	Inductor, 22 μ H	Vishay, IHLP-4040DZER22R0M11
7	0	FB1 (Optional)	Resistor, Chip, 1206	
Hardware, for Demo Board Only				
1	6	E1-E6	Testpoint, Turrent, .095"	MILL-MAX, 2501-2-00-80-00-00-07-0
2	1	JP1	2mm Single Row Header, 3-Pin	Samtec, TMM-103-02-L-S
3	1	JP1	Shunt	Samtec, 2SN-BK-G
4	4	E7-E10	Banana Jack	Keystone, 575-4
5	4	(Stand-Off)	Stand-Off, Nylon 0.50" Tall	Keystone, 8833(Snap On)

SCHEMATIC DIAGRAM



REVISION HISTORY			
ECO	REV	DESCRIPTION	APPROVED
	3	PRODUCTION	WEIGU
			DATE
			08-24-09

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 LTM802TEV
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CONTRACT NO.
APPROVALS
 PBR DES. HELEN
 ENG. WEIGU

TITLE: SCHEMATIC
60V, 4A DC/DC uMODULE® REGULATOR

IC NO. LTM802TEV
SIZE A
REV 3

DEMO CIRCUIT 1307A
DATE: Monday, September 14, 2009
SHEET 1 OF 1

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