

LTM8021

36V, 500mA Step-Down μModule Regulator

DESCRIPTION

Demonstration circuit 1238A features the LTM[®]8021, a 36V 500mA step-down μModule[®] regulator. The output has been preset to 5V by a single resistor within the LTM8021's output voltage range of 0.8V to 5V. An adjustable soft-start period may be implemented with the addition of a capacitor at C3. The input voltage range is from 7.5V to 36V for the default operating conditions. The LTM8021 may need more input voltage to start up than to run in steady state.

The data sheet gives a complete description of the part, operation and applications information. The LTM8021 data sheet must be read in conjunction with this demo manual prior to working on or modifying demo circuit DC1238A.

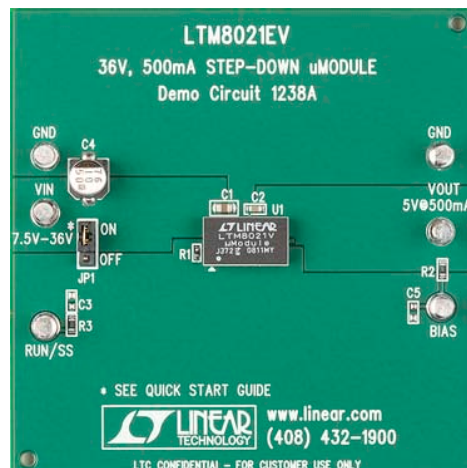
Design files for this circuit board are available at <http://www.linear.com/demo>

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PERFORMANCE SUMMARY (T_A = 25°C)

PARAMETER	CONDITIONS	VALUE
Input Voltage Range	V _{OUT} = 5V	7.5V to 36V
Output Voltage	V _{IN} = 12V, I _{LOAD} = 500mA, R1 = 19.1k	5V ±3%
Maximum Continuous Output Current		500mA
Switching Frequency		1.1MHz

BOARD PHOTO



QUICK START PROCEDURE

Demonstration circuit 1238 is an easy way to evaluate the performance of the LTM8021. 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 VIN or VOUT 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 VIN and GND.

3. Turn on the power at the input.

NOTE. Make sure that the input voltage does not exceed the maximum rated input voltage of the LTM8021.

4. Check for the proper output voltage. $V_{OUT} = 5V \pm 3\%$

NOTE. If there is no output, temporarily disconnect the load to make sure that the load is not set too high.

5. Once the proper output voltage is established, adjust the load within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.

QUICK START PROCEDURE

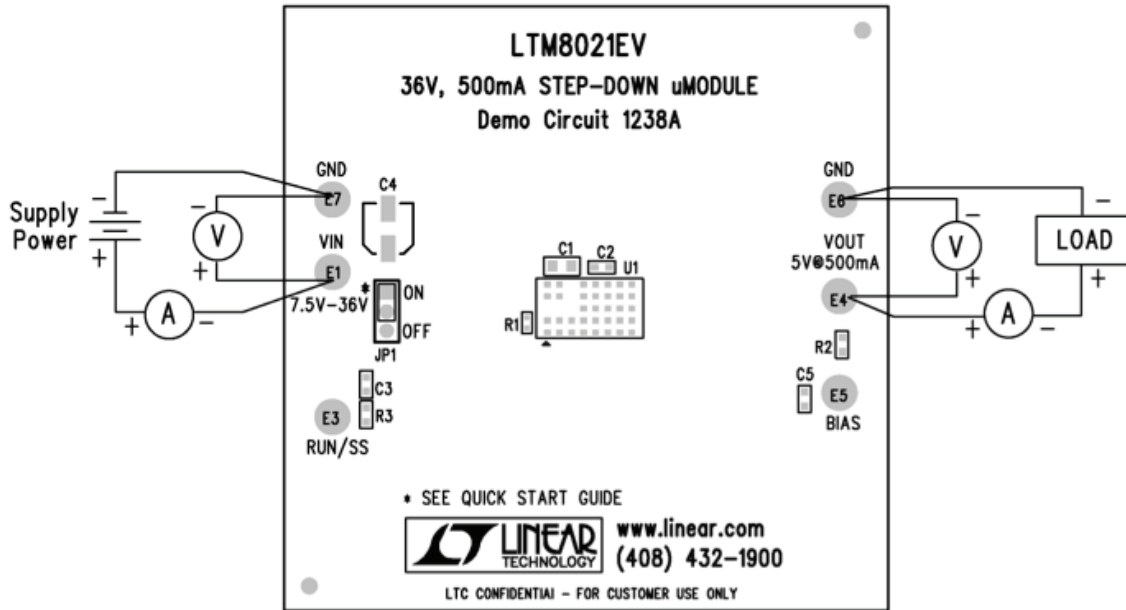


Figure 1. Proper Measurement Equipment Setup

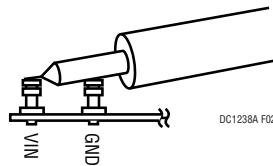


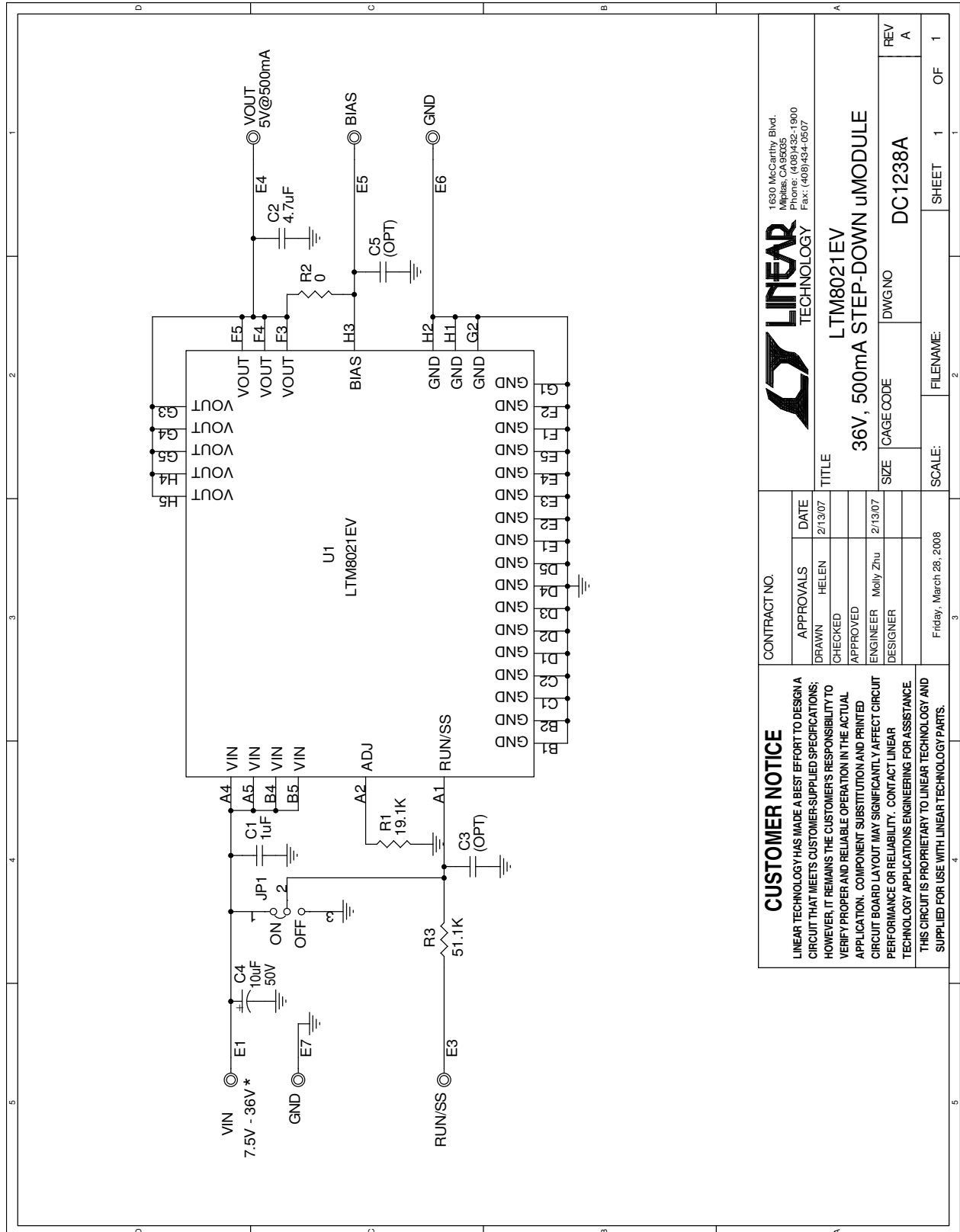
Figure 2. Measuring Input or Output Voltage Ripple

DEMO MANUAL DC1238A

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
Required Circuit Components				
1	1	C2	CAP, X5R, 4.7µF, 6.3V, 10%, 0603	AVX, 06036D475KAT2A
2	1	C1	CAP, X7R, 1µF, 50V, 10%, 0805	MURATA, GRM21BR71H105K
3	1	R1	RES, CHIP, 19.1k, 1/16W, 1% ,0402	VISHAY, CRCW040219K1FKED
4	1	R2	RES, CHIP, 0, 1/16W, 1% ,0603	VISHAY, CRCW06030000Z0ED
5	1	R3	RES, CHIP, 51.1k 1/16W, 1% ,0603	VISHAY, CRCW060351K1FKED
6	1	U1	IC, LTM8021EV	LINEAR TECHNOLOGY, LTM8021EV#PBF
Additional Demo Board Circuit Components				
1	1	C4	CAP, SMT, 10µF, 50V	SANYO, 50CE10BSS
2	0	C3, C5 (OPT)	CAP, 0603	
Hardware For Demo Board Only				
1	1	E1, E3 TO E7	TESTPOINT, TURRET, 0.095"	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

SCHEMATIC DIAGRAM



CONTRACT NO.		APPROVALS	DATE
		DRAWN HELEN	2/13/07
		CHECKED	
		APPROVED	
		ENGINEER Molly Zhu	2/13/07
		DESIGNER	

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TITLE		LTM8021EV	
36V, 500mA STEP-DOWN uMODULE		DC1238A	
SIZE	CAGE CODE	DWG NO	REV
			A
SCALE:	FILENAME:	SHEET	OF
Friday, March 28, 2008		1	1

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This notice contains important safety information about temperatures and voltages. For further safety concerns, please contact a LTC application engineer.

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