

LTM8064 58V_{IN}, 6A CVCC Step-Down μModule Regulator

DESCRIPTION

Demonstration circuit 2237A is a 58V_{IN}, 6A, CVCC Step-Down μModule® Regulator featuring the [LTM8064](#). The demo circuit is designed for a 5V output from an input voltage range of 7.5V to 58V. The output can source 7A (typical) or sink 9.1A (typical). The circuit can be operated in either constant voltage mode or constant current mode.

Two or more LTM8064s can be paralleled to share load current equally. In this configuration, a master part determines the output currents of the slave parts. The MODE pin of the master part should be floating and all MODE pins of slave parts should be grounded.

When the output sinks current, the circuit maintains its output voltage regulation by power conversion, not

power dissipation. This means that the energy provided to LTM8064 is in turn delivered to its input power bus. There must be something on the input power bus to accept or use the energy.

The LTM8064 data sheet gives a complete description of the part, operation and application information. The data sheet must be read in conjunction with this quick start guide for demo circuit 2237A.

Design files for this circuit board are available at <http://www.linear.com/demo/DC2237A>

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BOARD PHOTO

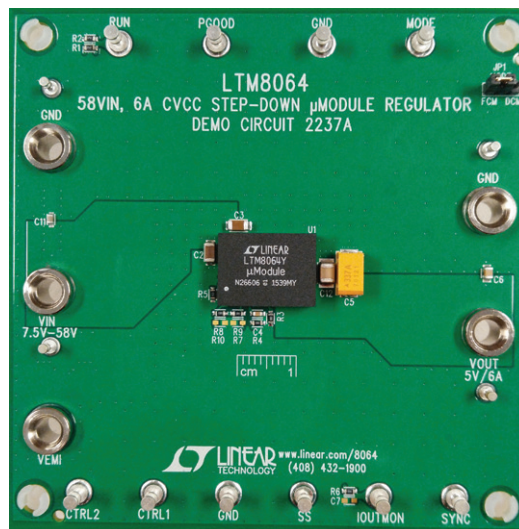


Figure 1. DC2237A Board Picture

DEMO MANUAL DC2237A

PERFORMANCE SUMMARY

Specifications are at $T_A = 25^{\circ}\text{C}$

PARAMETER	CONDITIONS		UNITS
Minimum Input Supply Voltage		7.5	V
Maximum Input Supply Voltage		58	V
Output Voltage	Sourcing Current	$5 \pm 5\%$	V
Switching Frequency		325	kHz
Maximum Output Current	Sourcing Current	6	A
Efficiency	$V_{IN} = 12\text{V}, I_{OUT} 6\text{A}$	86	%

QUICK START PROCEDURE

Demonstration circuit 2237A is easy to set up to evaluate the performance of the LTM8064. Refer to Figure 2 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} and GND or V_{OUT} and GND terminals.

1. With power off, connect the input power supply to V_{IN} and GND.

2. Connect a load to V_{OUT} and GND.
3. Turn on the power at the input.
4. Check for the proper output voltage and current.

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 and input within the operating ranges and observe the output voltage regulation, output current regulation, ripple voltage, efficiency and other parameters.

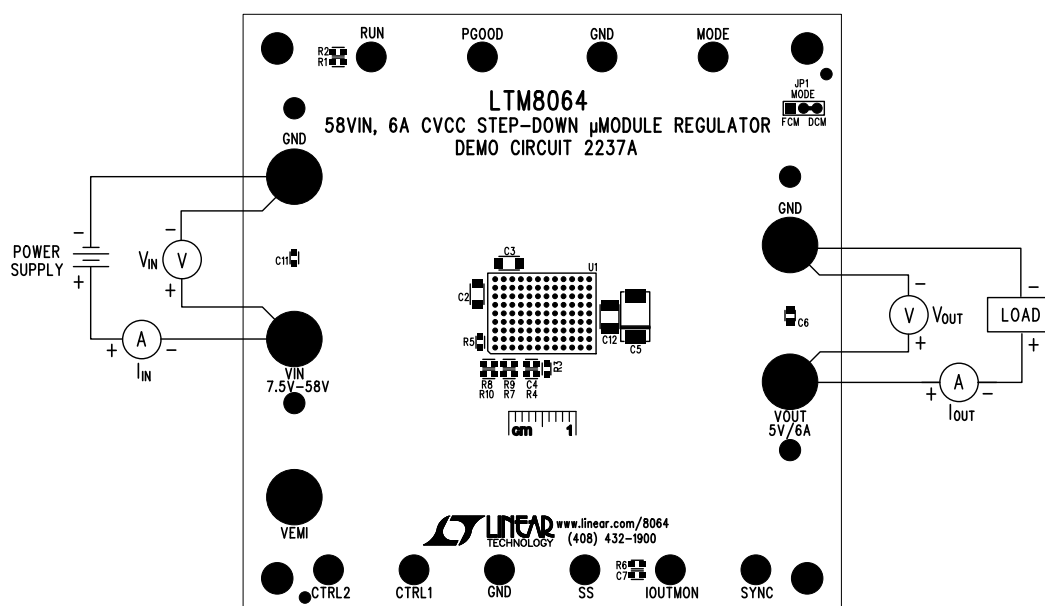


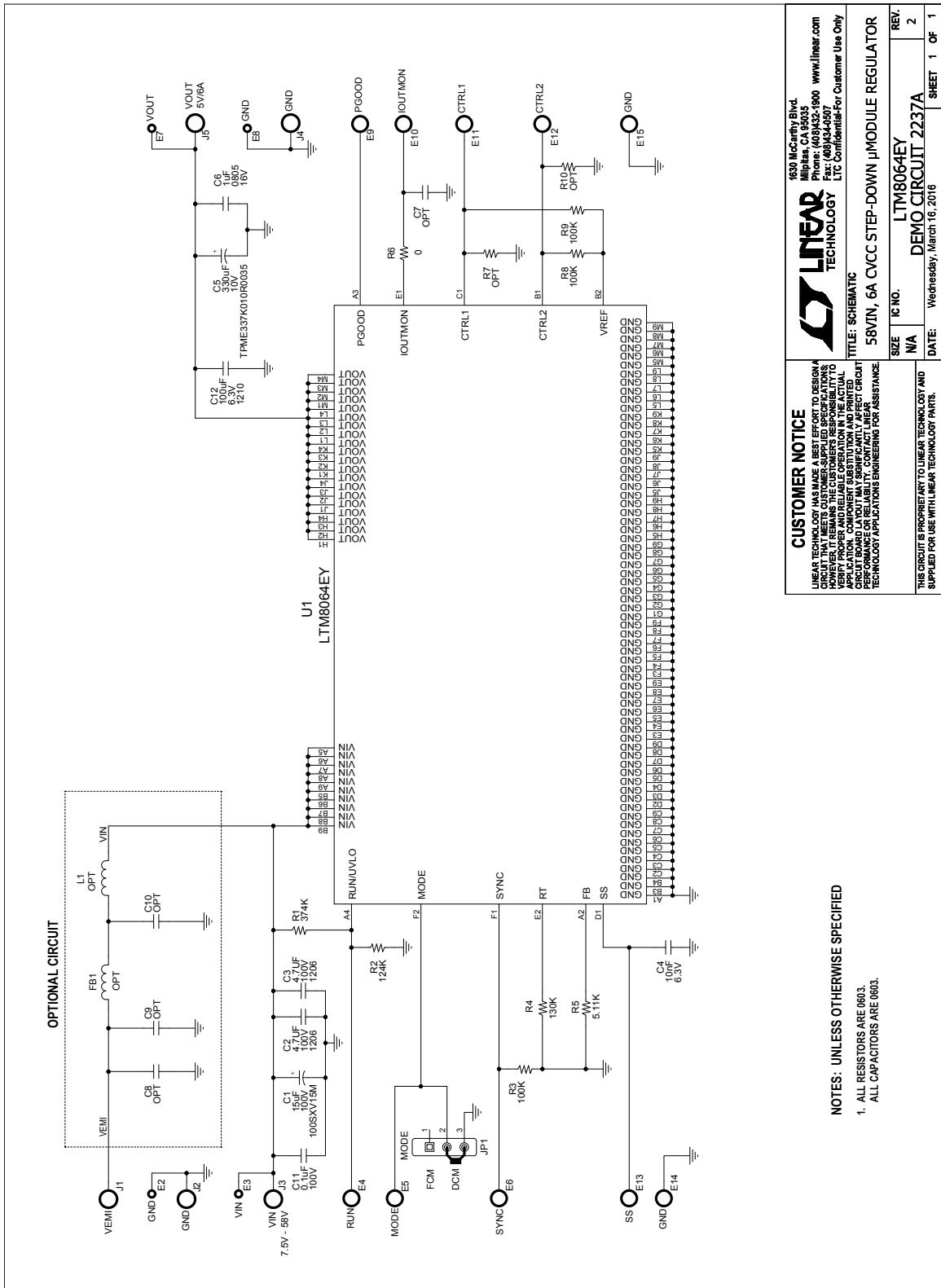
Figure 2. Proper Measurement Equipment Setup. Board Can Sink Current from the Load.

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PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
Required Circuit Components				
1	1	C1	CAP POLYMER 15 μ F 20% 100V RAD	PANASONIC, 100SXV15M
2	2	C2,C3	CAP CER 4.7 μ F 100V X7S 1206	AVX, 12061Z475MAT2A
3	1	C4	CAP., X7R, 0.01 μ F, 6.3V, 10%, 0603	MURATA, GRM188R70J103KA01D
4	1	C5	CAP TANT 330 μ F 10V 10% 2917	AVX, TPME337K010H0035
5	1	C6	CAP., X7R, 1 μ F, 16V, 10%, 0805	MURATA, GRM21BR71C105KA01L
8	1	C11	CAP., X7R, 0.1 μ F, 100V, 10%, 0603	MURATA, GRM188R72A104KA35D
9	1	C12	CAP CER 100 μ F 6.3V X5R 1210	MURATA, GRM32ER60J107ME20L
17	1	R1	RES., CHIP, 374k, 1/10W, 1%, 0603	VISHAY, CRCW0603374KFKEA
18	1	R2	RES., CHIP, 124k, 1/10W, 1%, 0603	VISHAY, CRCW0603124KFKEA
19	3	R3,R8,R9	RES., CHIP, 100k, 1/10W, 1%, 0603	VISHAY, CRCW0603100KFKEA
20	1	R4	RES., CHIP, 130k, 1/10W, 1%, 0603	VISHAY, CRCW0603130KFKEA
21	1	R5	RES., CHIP, 5.11k, 1/10W, 1%, 0603	VISHAY, CRCW06035K11FKEA
22	1	R6	RES., CHIP, 0 Ω , 1/10W, 0603	VISHAY, CRCW06030000Z0EA
24	1	U1	I.C., REGULATOR, BGA-108-16 $\times$ 11.9 $\times$ 5.01	LINEAR TECHNOLOGY., LTM8064EY#PBF
Additional Demo Board Circuit Components				
6	0	C7, C8 (OPT)	CAP., 0603	OPTION
7	0	C9, C10 (OPT)	CAP., 1210	OPTION
12	0	FB1 (OPT)	FERRITE CHIP 30 Ω 6A 0805	OPTION
16	0	L1 (OPT)	IND., IHLP2525	OPTION
23	0	R7, R10 (OPT)	RES., CHIP, 0603	OPTION
Hardware for Demo Board Only				
10	4	E2, E3, E7, E8	TESTPOINT, TURRET, 0.061" PBF	MILL-MAX, 2308-2-00-80-00-00-07-0
11	10	E4-E6, E9-E15	TESTPOINT, TURRET, 0.094" PBF	MILL-MAX, 2501-2-00-80-00-00-07-0
13	5	J1-J5	JACK BANANA	KEYSTONE, 575-4
14	1	JP1	HEADER 3-PIN 0.079" SINGLE ROW	WURTH ELEKTRONIK, 62000311121
15	1	XJP1	SHUNT, 0.079" CENTER	WURTH ELEKTRONIK, 60800213421
25	4	MH1-MH4	STAND-OFF, NYLON 0.50"	WURTH ELEKTRONIK, 702935000

SCHEMATIC DIAGRAM



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