

LTM8026

36V, 5A, CVCC Step-Down μ Module Regulator

DESCRIPTION

Demonstration circuit 1696 is a 36V, 5A, CVCC step-down μ Module regulator featuring the LTM8026. The demo circuit is designed for a 3.3V output from an input voltage range of 6V to 36V. The output can source 5A. The circuit can be operated in either constant voltage mode or constant current mode.

The LTM8026 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 prior to working on or modifying demo circuit 1696.

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

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PERFORMANCE SUMMARY ($T_A = 25^\circ\text{C}$)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input Supply Voltage Range		6		36	V
Output Voltage	$I_{OUT} = 5A$	3.135	3.3	3.465	V
Switching Frequency			550		kHz
Maximum Output Current		5			A
Efficiency	$V_{IN} = 12V, I_{OUT} = 5A$		86		%

BOARD PHOTO



QUICK START PROCEDURE

Demonstration circuit 1696 is an easy way to evaluate the performance of the LTM8026. 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} 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.

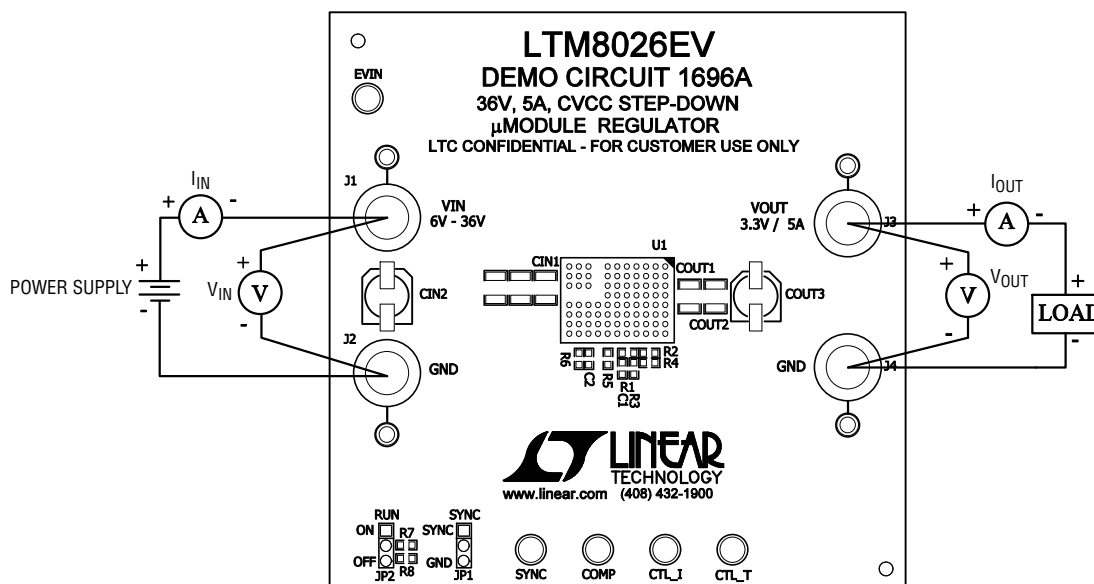


Figure 1. Proper Measurement Equipment Setup

QUICK START PROCEDURE

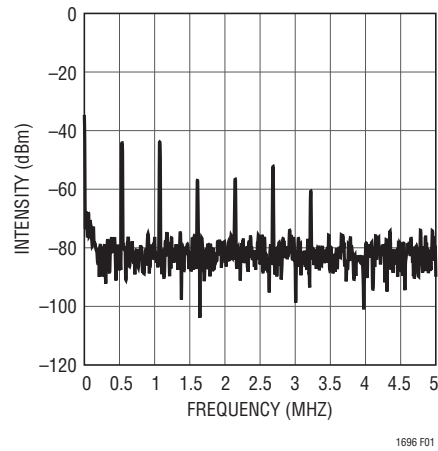


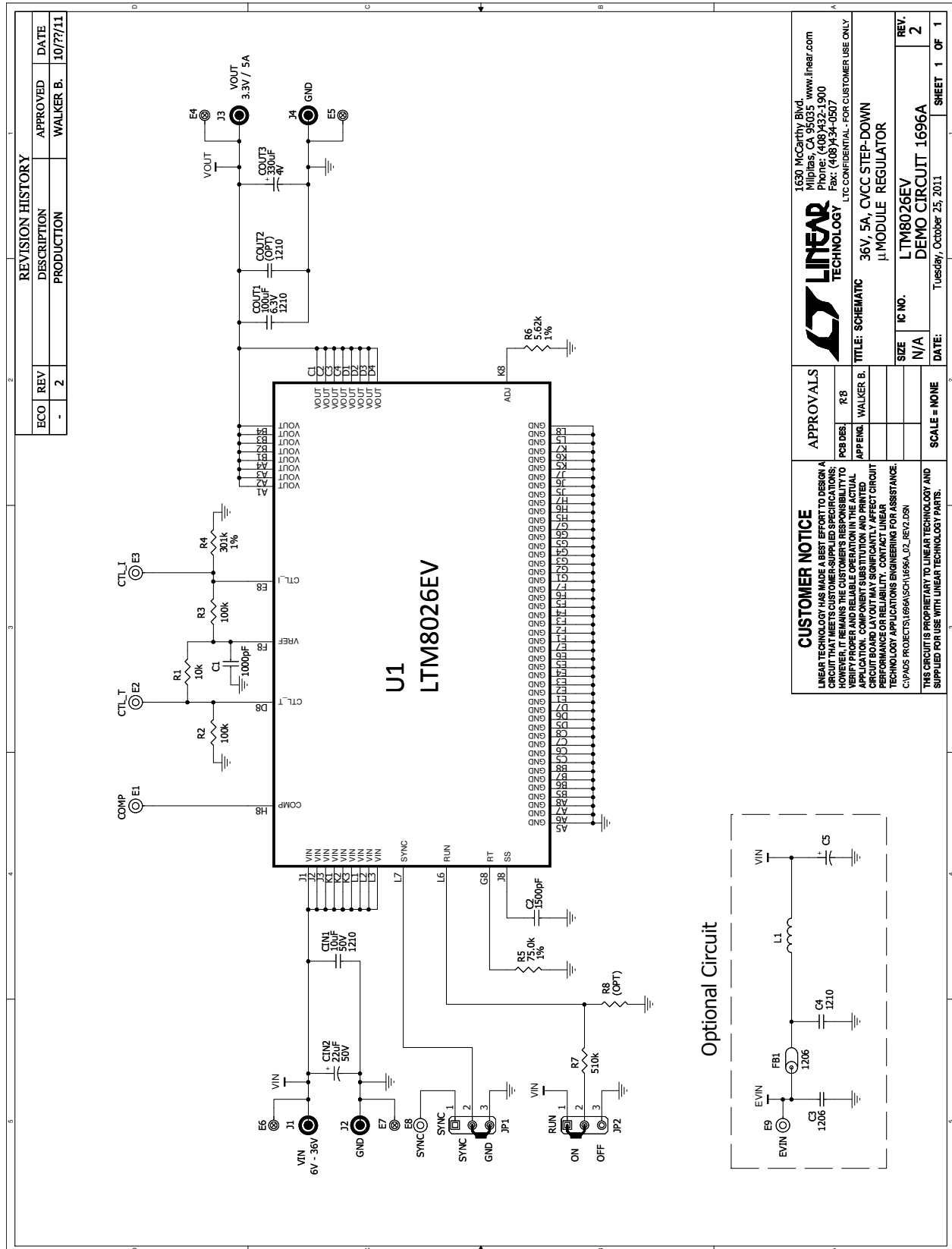
Figure 2. DC1696A Output Noise Spectrum. ($V_{IN} = 12V$, $V_{OUT} = 3.3V$, $I_{OUT} = 5A$)

DEMO MANUAL DC1696

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
Required Circuit Components				
1	1	CIN1	Cap., Ceramic 10 μ F, 50V, 10%, 1210	Murata GRM32ER71H106K
2	1	CIN2	Cap., Alum 22 μ F, 50V, 10%, OSCON-CE-6.3	SUNCON 50CE22BSS
3	1	COUT1	Cap., X5R 100 μ F 6.3V, 20%, 1210	TDK C3225X5R0J107M
4	1	COUT3	Cap., OSCON 330 μ F, 4V, 20%, OSCON-C6	SANYO 4SVPC330M
5	1	C1	Cap., NPO 1000pF, 50V, 20%, 0603	AVX 06035A102MAT1A
6	1	C2	Cap., X7R 1500pF, 25V, 10%, 0603	AVX 06033C152KAT1A
7	1	R1	Res., Chip 10k, 0.06W, 5%, 0603	Vishay CRCW060310K0JNEA
8	2	R2, R3	Res., Chip 100k, 0.06W, 5%, 0603	Vishay CRCW0603100KJNEA
9	1	R4	Res., Chip 301k, 0.06W, 1%, 0603	Vishay CRCW0603301KFKEA
10	1	R5	Res., Chip 75.0k, 0.06W, 1%, 0603	Vishay CRCW060375K0FKEA
11	1	R6	Res., Chip 5.62k, 0.06W, 1%, 0603	Vishay CRCW060335K62FKEA
12	1	R7	Res., Chip 510k, 0.06W, 5%, 0603	Vishay CRCW0603510KJNEA
13	1	U1	I.C., Step-Down Converter. LGA(81)15mm $\times$ 11.25mm $\times$ 2.82mm	Linear Tech. Corp. LTM8026EV
Additional Demo Board Circuit Components				
1	0	COUT2 (OPT)	Cap., 1210	
2	0	C3 (OPT)	Cap., 1206	
3	0	C4 (OPT)	Cap., 1210	
4	0	C5 (OPT)	Cap.	
5	0	FB1 (OPT)	Ferrite Bead, 1206	
6	0	L1 (OPT)	Inductor	
7	0	R8 (OPT)	Res., 0603	
Hardware For Demo Board Only				
1	5	E1, E2, E3, E8, E9	Turret, Testpoint	MILL-MAX 2501-2-00-80-00-00-07-0
2	4	E4, E5, E6, E7	Turret, Testpoint	MILL-MAX 2308-2-00-80-00-00-07-0
3	2	JP1, JP2	Headers, Single Row 3 Pins 2mm Ctrs.	SAMTEC TMM-103-02-L-S
4	4	J1, J2, J3, J4	Connector, Banana Jack	KEYSTONE 575-4
5	2	XJP1, XJP2	Shunt, 2mm Ctrs.	SAMTEC 2SN-BK-G

SCHEMATIC DIAGRAM



DEMO MANUAL DC1696

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