

LTM8025EV 36V, 3A Step-Down μ Module Regulator

DESCRIPTION

Demonstration circuit 1379B is a step-down DC/DC switching regulator featuring the LTM[®]8025 μ Module[®] regulator. The demo board is designed to deliver a 3.3V output from a 5.5V to 36V input. The wide input range of the LTM8025 allows a variety of input sources such as automotive batteries, wall adaptors and industrial supplies. The modes of operation (Burst Mode[®] operation or synchronization) are jumper-selectable. Burst Mode operation improves efficiency at light loads. The LTM8025 can be synchronized over a 250kHz to 2MHz range.

The current mode control scheme creates fast transient response and good loop stability. The RUN/SS pin can be used to set the part in micropower shutdown mode,

reducing the supply current to less than 1 μ A. The RUN/SS pin can also be used to program soft-start. In this mode, the RUN/SS pin is driven through an external RC filter to create a voltage ramp on this pin reducing the input current surge during start-up.

The LTM8025 data sheet gives a complete description of the part, operation and applications information. The data sheet must be read in conjunction with this manual prior to working on or modifying demo circuit 1379B.

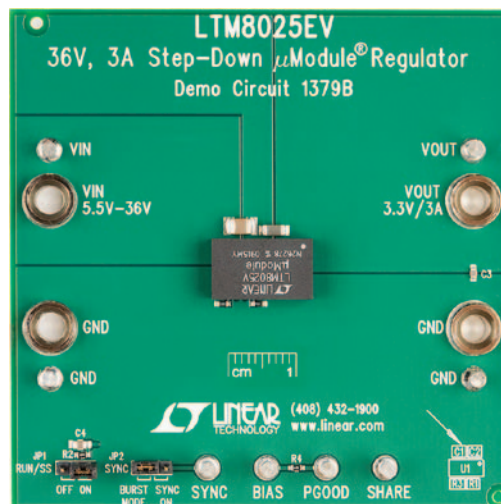
Design files for this circuit board are available at <http://www.linear.com/demo>

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PERFORMANCE SUMMARY (T_A = 25°C)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input Supply Voltage Range		5.5		36	V
Output Voltage	I _{OUT} = 3A	3.135	3.3	3.465	V
Switching Frequency			750		kHz
Output Current				3	A

BOARD PHOTO



dc1379bfa

QUICK START PROCEDURE

Demonstration circuit 1379B is easy to set up to evaluate the performance of the LTM8025. Refer to Figure 1 for proper measurement equipment set-up 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.

1. Place JP1 on the ON position.
2. Preset the power supply within the input voltage range of DC1379B. With power off, connect the input power supply to V_{IN} and GND.

3. Turn on the power at the input.

4. Check for the proper output voltage.

NOTE. If there is no output, temporarily disconnect the load to ensure 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.
6. An external clock can be added to the SYNC pin when JP2 is in the SYNC ON position. See the synchronization section in the data sheet for details.

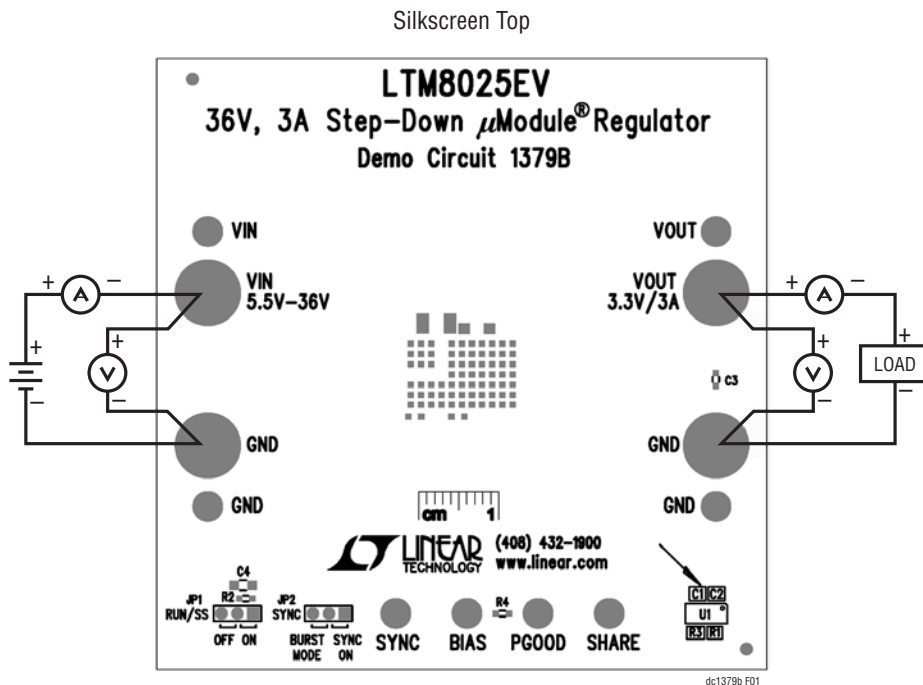
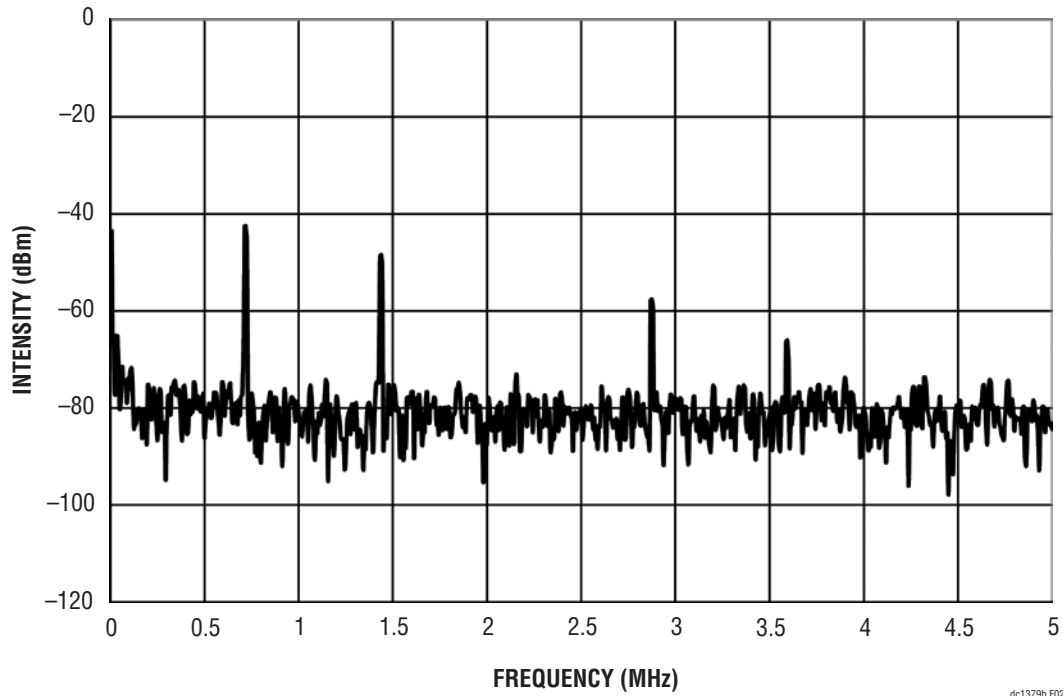


Figure 1. Proper Measurement Equipment Set-Up

QUICK START PROCEDURE



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Figure 2. DC1379B Output Noise Spectrum ($V_{IN} = 12V$, $V_{OUT} = 3.3V$, $I_{OUT} = 3A$)

DEMO MANUAL DC1379B

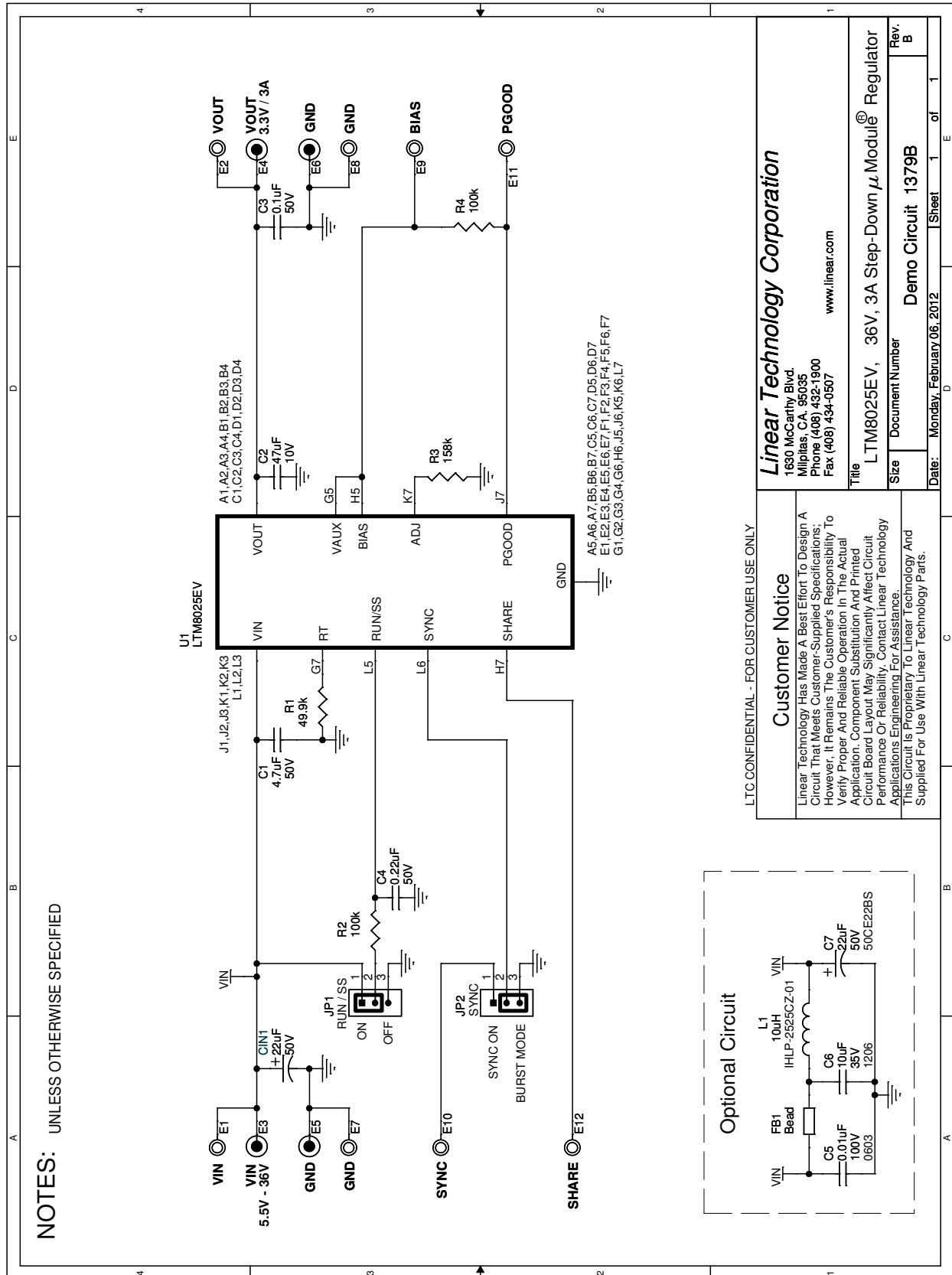
PARTS LIST

ITEM	QUANTITY	REFERENCE-DESCRIPTION	DESCRIPTION	MANUFACTURER/PART NUMBER
Required Circuit Components				
1	1	C3	Cap., Chip X7R, 0.1 μ F, 50V, 0603	NIC, NMC0603X7R104K50TRF
2	1	C4	Cap., Chip X5R, 0.22 μ F, 50V, 0805	Taiyo Yuden, UMK212BJ224MG-T
3	1	C2	Cap., Chip X5R, 47 μ F, 10V, 1206	Taiyo Yuden, LMK316ABJ476ML
4	1	C1	Cap., Chip X7R, 4.7 μ F, 50V, 1210	Murata, GRM32ER71H475KA88L
5	2	R2, R4	Res., Chip 100k, 5%, 0603	Vishay, CRCW0603100KJNEA
6	1	R1	Res., Chip 49.9k, 1%, 0603	Vishay, CRCW060349K9FKED
7	1	R3	Res., Chip 158k, 1%, 0603	Vishay, CRCW0603158KFKED
8	1	U1	IC., Linear LTM8025EV#PBF	Linear Technology, LTM8025EV#PBF
Additional Demo Board Circuit Components				
1	1	C _{IN1}	Cap., Aluminum Elec., 22 μ F, 50V	Sun Elect., 50CE22BS
2	0	C5, C6, C7	(Optional)	
3	0	FB1	Ferrite Bead, M-Type (Optional)	Taiyo Yuden, FBMJ3216HS800T
4	0	L1	Ind., 10 μ H, (Optional)	Vishay, IHLP-2525CZ-01
Hardware for Demo Board Only				
1	8	E1, E2, E7, E8 to E12	Turret, Testpoint	Mill-Max, 2501-2-00-80-00-00-07-0
2	4	E3 to E6	Banana Jack	Keystone, 575-4
3	2	JP1, JP2	Header, 1 $\times$ 3 Pins, 2mm	Samtec, TMM-103-01-L-S
4	2	JP1, JP2	Shunt, 2 Pins, 2mm	Samtec, 2SN-BK-G

Notes:

1. Required Circuit Components are those parts that are required to implement the circuit function.
2. Additional Demo Board Circuit Components are those parts that provide added functionality for the demo board but are not required in the actual circuit.

SCHEMATIC DIAGRAM



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DEMO MANUAL DC1379B

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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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