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EV2371DG-00A

1.8A, 24V, 700KHz Step-Down Converter Evaluation Board

DESCRIPTION

The EV2371DG-00A is an evaluation board for the MP2371DG, a monolithic step-down switch mode converter with a built-in internal power MOSFET.

The MP2371 achieves 1.8A continuous output current over a wide input supply range with excellent load and line regulation.

Current mode operation provides fast transient response and eases loop stabilization. Fault condition protection includes cycle-by-cycle current limiting and thermal shutdown.

The MP2371 requires a minimum number of readily available standard external components. It is available in a 2mm x 2mm QFN8 package.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	4.5 – 24	V
Output Voltage	V_{OUT}	1.8	V
Output Current	I_{OUT}	1.8	A

FEATURES

- 1.8A Continuous Output Current
- 0.3Ω Internal Power MOSFET Switch
- Stable with Low ESR Output Ceramic Capacitors
- Fixed 700KHz Frequency
- Wide 4.5V to 24V Operating Input Range
- Output Adjustable from 0.81V to 15V
- Available in a QFN8 (2mmx2mm) Package
- Fully Assembled and Tested

APPLICATIONS

- Broadband Communications Equipment
- Digital Entertainment Systems
- Distributed Power Systems
- Battery Charger
- DSL Modems
- Pre-Regulator for Linear Regulators

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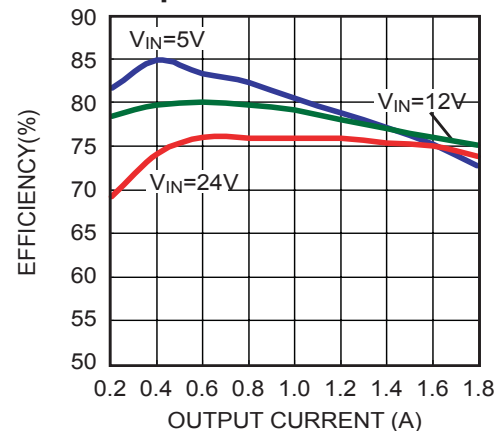
EV2371DG-00A EVALUATION BOARD



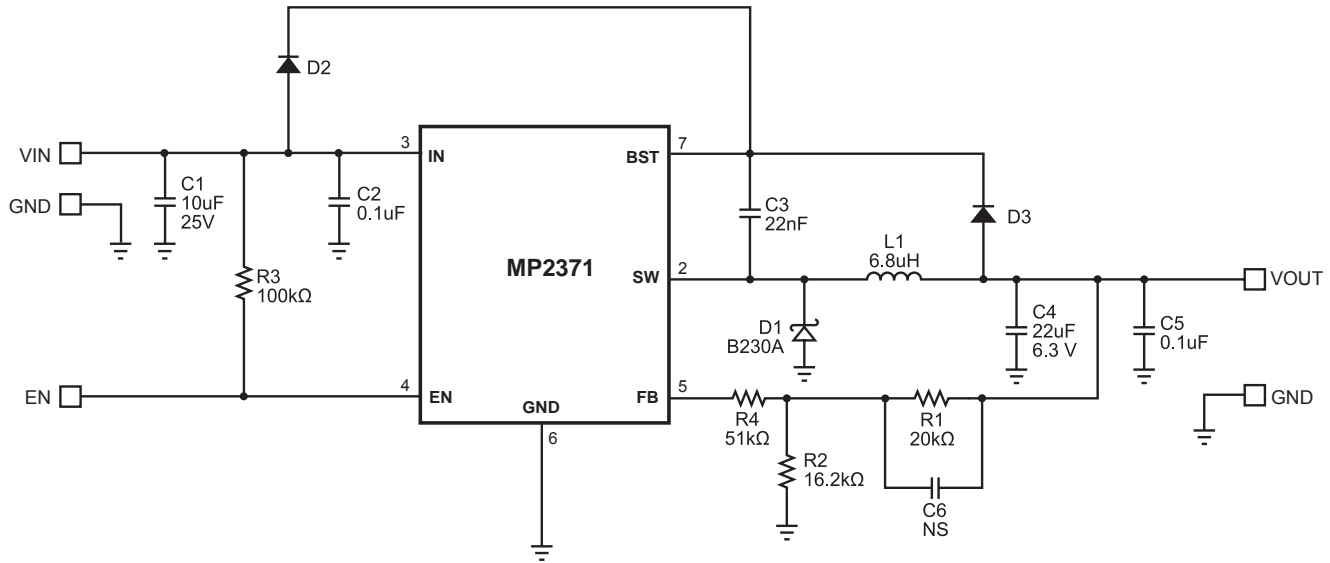
(L x W x H) 1.9" x 1.8" x 0.5"
(4.9cm x 4.7cm x 1.2cm)

Board Number	MPS IC Number
EV2371DG-00A	MP2371DG

Efficiency vs Output Current



EVALUATION BOARD SCHEMATIC



EV2371DG-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	10µF	Ceramic Cap, X7R, 25V	1210	MuRata	GRM32DR71E106KA12
2	C2,C5	0.1µF	Ceramic Cap, X7R, 50V	0805	MuRata	GRM21BR71H104KA01L
1	C3	22nF	Ceramic Cap, X7R, 50V	0603	MuRata	GRM188R71H223KA01D
1	C4	22µF	Ceramic Cap, X5R, 6.3V	1210	MuRata	GRM32DR60J226KA01L
1	C6	NS	Not Stuffed			
1	D1		Diode Schottky, 30V, 2A	SMA	Diodes Inc.	B230A-13
2	D2,D3	NS	Not Stuffed			
1	L1	6.8µH	Inductor, 3.2A, DS84LC	SMD	TOKO	B1015AS-6R8N
1	R1	20kΩ	Film Resistor, 1%	0603	Yageo	RC0603FR-0720KL
1	R2	16.2kΩ	Film Resistor, 1%	0603	Yageo	RC0603FR-0716K2L
1	R3	100kΩ	Film Resistor, 5%	0603	Any	
1	R4	51kΩ	Film Resistor, 5%	0603	Any	
1	U1	Out1.8V,1.8A	DC-DC Converter	QFN-8	MPS	MP2371DG

PRINTED CIRCUIT BOARD LAYOUT

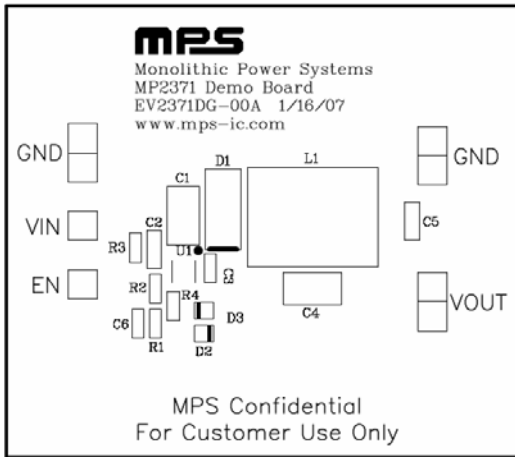


Figure 1—Top Silk Layer

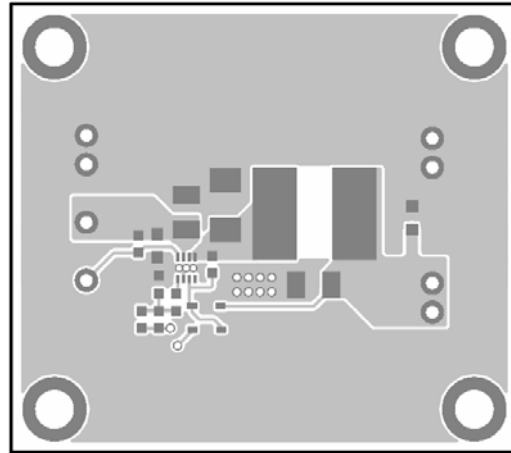


Figure 2—Top Layer

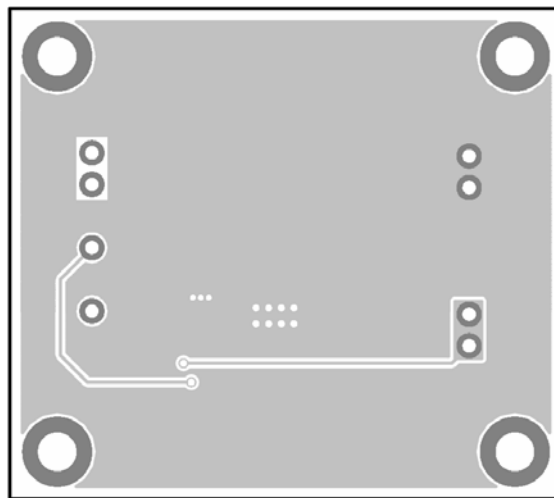


Figure 3—Bottom Layer

QUICK START GUIDE

1. Connect the positive terminal of the load to VOUT pin, and the negative terminal of the load to GND pin.
2. Preset the power supply output to 4.5V – 24V and turn off the power supply.
3. Connect the positive terminal of the power supply output to the VIN pin and the negative terminal of the power supply output to the GND pin.
4. Turn the power supply on. The board will automatically startup.
5. To use the Enable function, apply a digital input to EN pin. Drive EN higher than 1.5V to turn on the regulator, drive EN less than 0.4V to turn it off.
6. The output voltage VOUT can be changed by varying R1. Calculate the new values by the following formula:

$$R1 = R2 \times \left(\frac{V_{out}}{0.81} - 1 \right)$$

Where R2=16.2kΩ

Example:

$$R1 = 16.2 \times \left(\frac{1.8}{0.81} - 1 \right) = 19.8$$

Therefore, use a 20kΩ standard 1% value resistor.

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