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EV2270DH-00A

1.8A, 8V, 700kHz Step-Down Converter Evaluation Board

DESCRIPTION

The EV2270DH-00A is an evaluation board for the MP2270DH, a monolithic step-down switch mode converter with a built-in internal power MOSFET.

The MP2270 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 MP2270 requires a minimum number of readily available standard external components. It is available in a 10-pin exposed pad MSOP package.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	4.5 – 8	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 8V Operating Input Range
- Output Adjustable from 0.81V to 5V
- Available in a 10-pin exposed pad MSOP 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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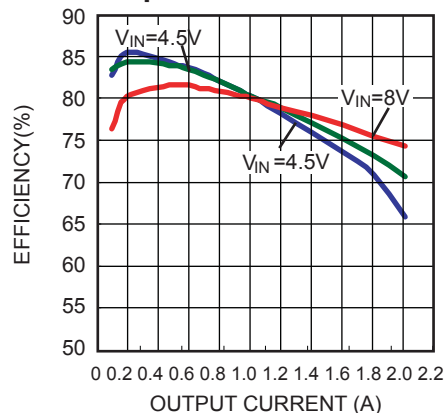
EV2270DH-00A EVALUATION BOARD



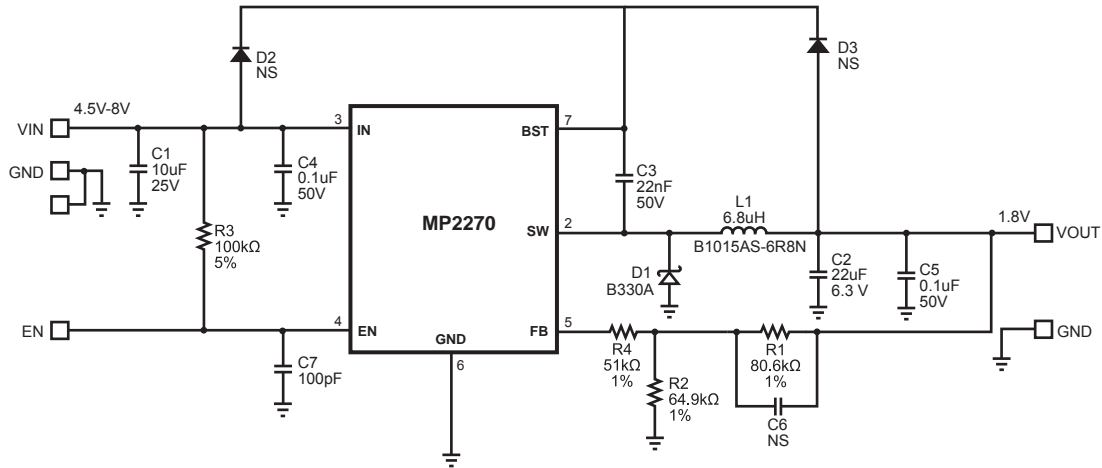
(L x W x H) 1.9" x 1.8" x 0.5"
(4.9cm x 4.7cm x 1.2cm)

Board Number	MPS IC Number
EV2270DH-00A	MP2270DH

Efficiency vs Output Current



EVALUATION BOARD SCHEMATIC



EV2270DH-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	10uF	Ceramic Cap. 25V X7R	1210	muRata	GRM32DR71E106K
1	C2	22uF	Ceramic Cap. 6.3V X5R	1210	muRata	GRM32DR60J226K
1	C3	22nF	Ceramic Cap. 50V X7R	0603	muRata	GRM188R71H223K
2	C4,C5	0.1uF	Ceramic Cap. 50V X7R	0805	muRata	GRM21BR71H104K
	C6	NS	Not Stuffed	0603		
1	C7	100pF	Ceramic Cap. 50V X7R	0603	muRata	GRM188R71H101K
1	D1	3A,30V	SCHOTTKY DIODE	SMA	Diodes Inc	B330A-13
	D2,D3	NS	Not Stuffed, Optional	SOD323		
1	R1	80.6KΩ	Film Resistor, 1%	0603	Panasonic	ERJ-3EKF8062V
1	R2	64.9KΩ	Film Resistor, 1%	0603	Panasonic	ERJ-3EKF6492V
1	R3	100KΩ	Film Resistor, 5%	0603	Panasonic	ERJ-3GEYJ104V
1	R4	51.1KΩ	Film Resistor, 1%	0603	Panasonic	ERJ-3EKF5112V
1	L1	6.8uH	Inductor Is=3.2A DCR=51mΩ	DS84LC	TOKO	B1015AS-6R8N
1	U1		DC/DC Step Down Converter	MSOP10	MPS	MP2270DH (M9826- R12)

PRINTED CIRCUIT BOARD LAYOUT

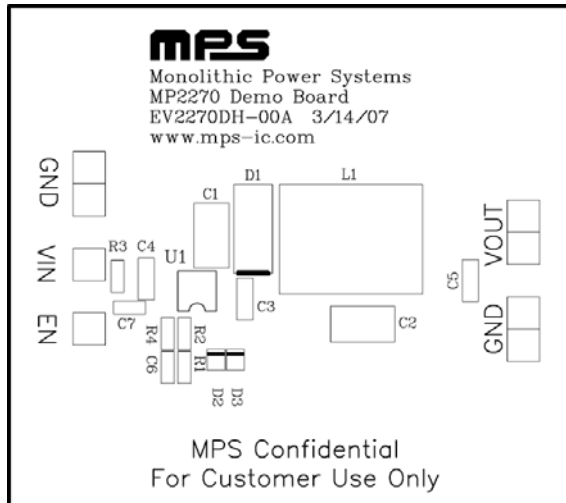


Figure 1—Top Silk Layer

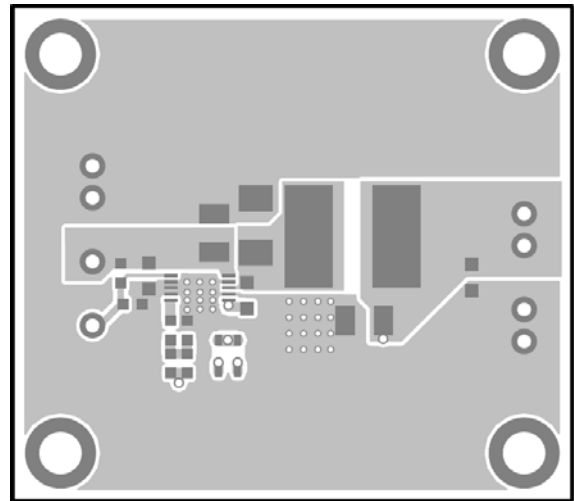


Figure 2—Top Layer

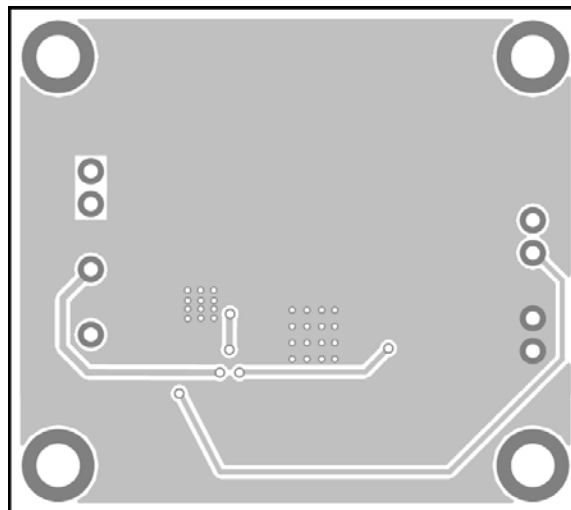


Figure 3—Bottom Layer

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 – 8V 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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