

### DESCRIPTION

The MP8709 is a high frequency synchronous rectified step-down switch mode converter with built in internal power MOSFETs. It offers a very compact solution to achieve 4A continuous output current over a wide input supply range with excellent load and line regulation. The MP8709 has synchronous mode operation for higher efficiency over output current load range.

Current mode operation provides fast transient response and eases loop stabilization.

Full protection features include OCP and thermal shut down.

The MP8709 requires a minimum number of readily available standard external components and is available in a space saving 8-pin SOIC package with an exposed pad.

### FEATURES

- Wide 8V to 21V Operating Input Range
- 4A Output Current
- OCP Protection and Hiccup
- Thermal Shutdown

### APPLICATIONS

- Notebook Systems and I/O Power
- Networking Systems
- Digital Set Top Boxes
- Personal Video Recorders
- Flat Panel Television and Monitors
- Distributed Power Systems

"MPS" and "The Future of Analog IC Technology" are Registered Trademarks of Monolithic Power Systems, Inc.

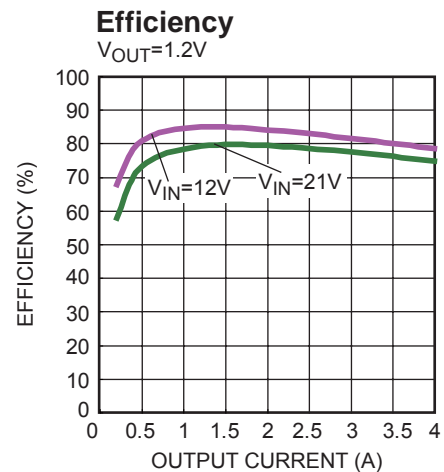
### ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	$V_{IN}$	8 – 21	V
Output Voltage	$V_{OUT}$	1.2	V
Output Current	$I_{OUT}$	4	A

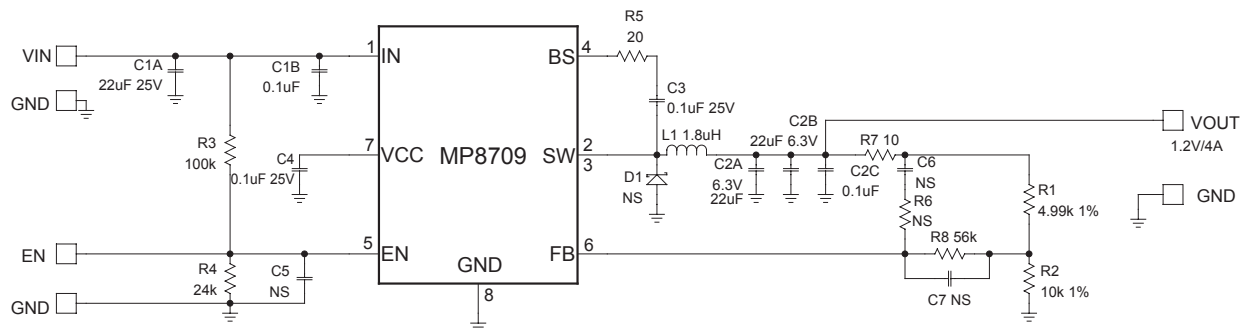
### EV8709EN-00A EVALUATION BOARD



Board Number	MPS IC Number
EV8709EN-00A	MP8709EN



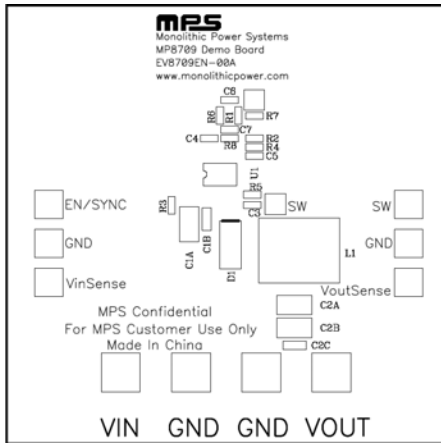
## EVALUATION BOARD SCHEMATIC



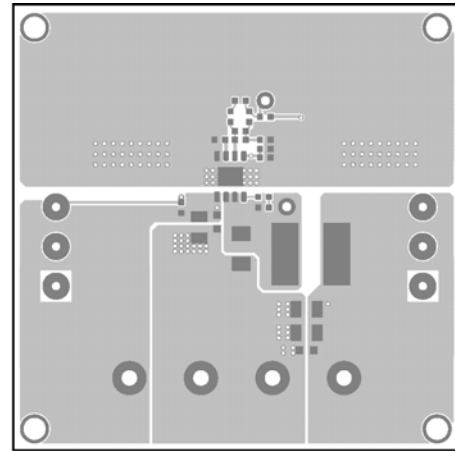
## EV8709EN-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
1	C1A	22uF	Ceramic Cap., 25V, X5R	1210	Murata	GRM32ER61E226KE15L
1	C1B	0.1uF	Ceramic Cap., 25V, X7R	0805	Any	
2	C2A,C2B	22uF	Ceramic Cap., 6.3V, X5R	1210	Murata	GRM32DR60J226KA01L
1	C2C	0.1uF	Ceramic Cap., 16V, X7R	0805	Murata	GRM219R71C104KA01D
1	C3, C4	0.1uF	Ceramic Cap., 25V, X7R	0603	Murata	GRM188R71E104KA01
0	C5, C6, C7	NS		0603		
1	R1	4.99kΩ	Film Res., 1%	0603	Yageo	RC0603FR-074K99L
1	R2	10kΩ	Film Res., 1%	0603	Yageo	RC0603FR-0710KL
1	R3	100kΩ	Film Res., 5%	0603	Any	
1	R4	24kΩ	Film Res., 5%	0603	Any	
1	R5	20Ω	Film Res., 5%	0603	Any	
0	R6	NS		0606		
1	R7	10Ω	Film Res., 5%	0603	Any	
1	R8	56kΩ	Film Res., 5%	0603	Any	
1	L1	1.8uH	7.6mΩ, DCR, 10.4A		TOKO	D104C-#919AS-1R8N
		2uH	7.3mΩ,DCR,13A		Würth	7443552200
0	D1	NS				SMA
1	U1		Step-Down Converter	SOIC8E	MPS	MP8709EN

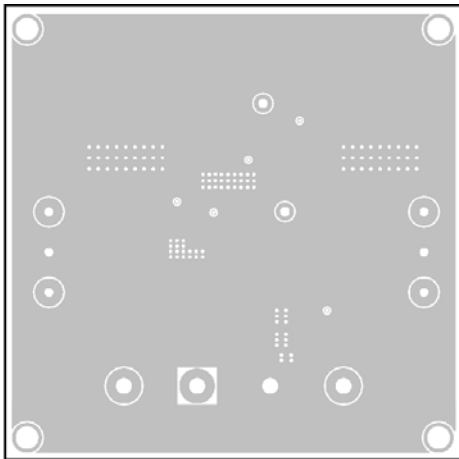
**PRINTED CIRCUIT BOARD LAYOUT**



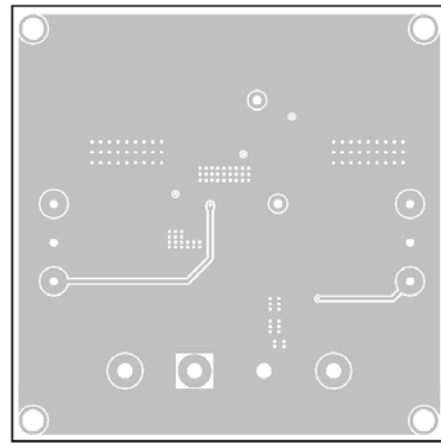
**Figure 1—Top Silk Layer**



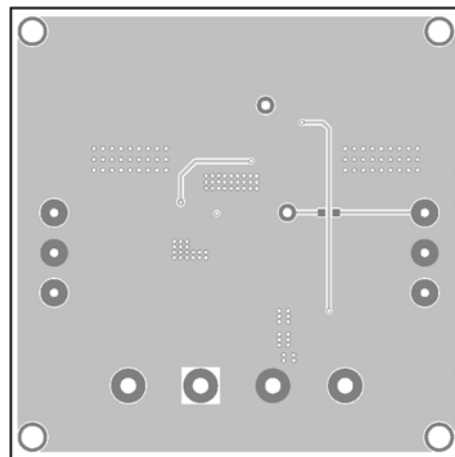
**Figure 2—Top Layer**



**Figure 3—Inner Layer 1**



**Figure 4—Inner Layer 2**



**Figure 5—Bottom Layer**

## QUICK START GUIDE

1. Connect the positive and negative terminals of the load to the VOUT and GND pins, respectively.
2. Preset the power supply output between 8V and 21V, then turn off the power supply.
3. Connect the positive and negative terminals of the power supply output to the VIN and GND pins, respectively.
4. Turn the power supply on. The board will automatically startup.
5. To use the Enable function, apply a digital input to the EN pin. Drive EN higher than 2V to turn on the regulator or less than 0.4V to turn it off.
6. Apply up to 2MHz frequency logic level clock signal to the EN pin to synchronize the device to an external clock. The duty cycle is not critical.

**NOTICE:** The information in this document is subject to change without notice. Users should warrant and guarantee that third party Intellectual Property rights are not infringed upon when integrating MPS products into any application. MPS will not assume any legal responsibility for any said applications.