

### DESCRIPTION

The EVQ28261-L-00A is for demonstrating MPS's MPQ28261, a high frequency synchronous rectified step-down switch mode converter with built in internal power MOSFETs. MPQ28261 offers a very compact solution to achieve 3A continuous output current over a wide input supply range with excellent load and line regulation. The MPQ28261 operates at high efficiency over a wide output current load range.

Current mode operation provides fast transient response and eases loop stabilization. The full protection features include OCP and thermal shutdown.

The MPQ28261 requires a minimum number of readily available standard external components and comes in a space saving 3x4mm 14-pin QFN package.

### ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Input Voltage	$V_{IN}$	7 – 21	V
Output Voltage	$V_{OUT}$	1.2	V
Output Current	$I_{OUT}$	3	A

### FEATURES

- Wide 7V to 21V Operating Input Range
- 0.6V Internal Reference with 2% Accuracy
- 3A Output Current
- Low  $R_{ds(ON)}$  Internal Power MOSFETs
- Fixed 500kHz Switching Frequency
- External Soft Start
- OCP and Thermal Shutdown
- Available in 14-pin QFN3x4 Package

### APPLICATIONS

- DSL Modems
- Cable Modems
- Set Top Boxes

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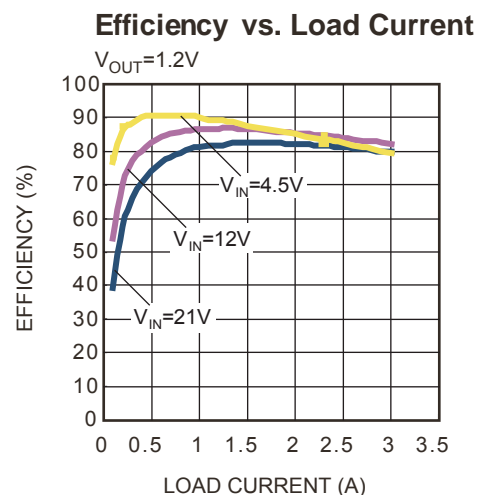
ADAM (Analog Digital Adaptive Modulation), AAM (...) are Trademarks of Monolithic Power Systems, Inc.

The EVQ28261-L-00A is covered by US Patents,

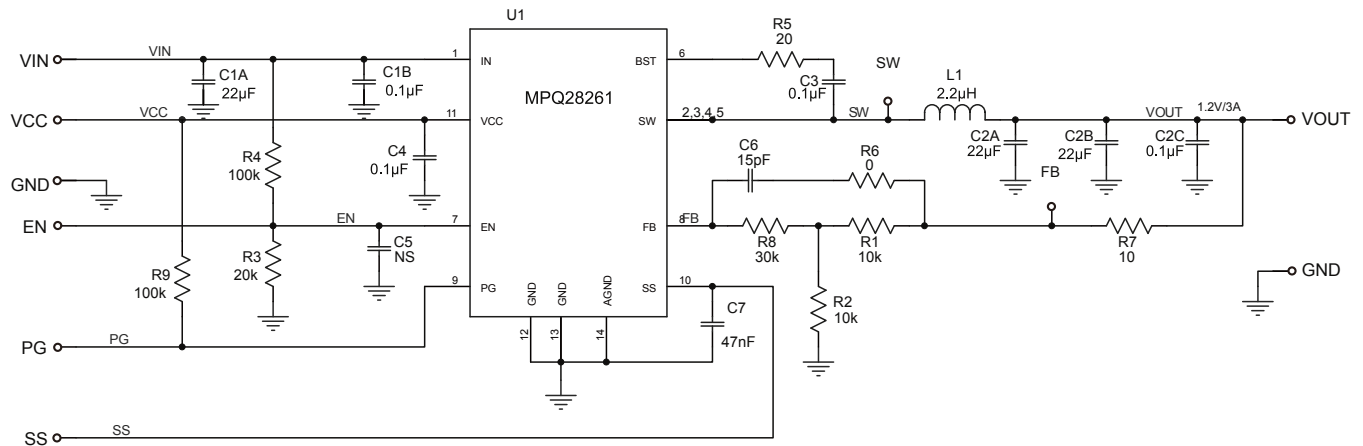
### EVQ28261-L-00A EVALUATION BOARD



Board Number	MPS IC Number
EVQ28261-L-00A	MPQ28261DL



## EVALUATION BOARD SCHEMATIC



## EVQ28261-L-00A BILL OF MATERIALS

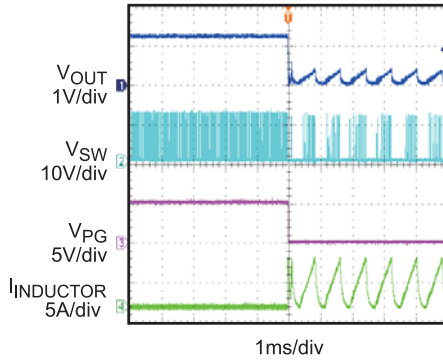
Qty	Ref	Value	Description	Package	Manufacturer	Part Number
1	C1A	22µF	Ceramic Cap., 25V, X5R	1210	Murata	GRM32ER61E226KE15L
1	C1B	0.1µF	Ceramic Cap., 25V, X7R	0805	HHEC	C0805X104K025T
2	C2A,C2B	22µF	Ceramic Cap., 6.3V, X5R	1210	Murata	GRM32DR60J226KA01L
1	C2C	0.1µF	Ceramic Cap., 16V, X7R	0805	Murata	GRM219R71C104KA01D
2	C3,C4	0.1µF	Ceramic Cap., 25V, X7R	0603	Yageo	CC0603KRX7R8BB104
0	C5	NS		0603		
1	C6	15pF	Ceramic Cap., 50V,C0G	0603	TDK	C1608C0G1H150J
1	C7	47nF	Ceramic Cap., 50V,X7R	0603	Murata	GRM188R71H473KA61D
1	R1	10k	Film Res., 1%	0603	Yageo	RC0603FR-0710KL
1	R2	10k	Film Res., 1%	0603	Yageo	RC0603FR-0710KL
1	R3	20 kΩ	Film Res., 5%	0603	Any	
2	R4,R9	100 kΩ	Film Res., 5%	0603	Any	
1	R8	30 kΩ	Film Res., 5%	0603	Any	
1	R5	20Ω	Film Res., 5%	0603	Any	
1	R6	0Ω	Film Res., 5%	0603	Any	
1	R7	10Ω	Film Res., 5%	0603	Any	
1	L1	1.8µH	7.6mΩ, 10.4A	SMD	TOKO	D104C-919AS-1R8N
		2.2µH	14mΩ, 13A	SMD	Würth	744311220
1	U1		Step-Down Converter	QFN14	MPS	MPQ28261DL

## EVB TEST RESULTS

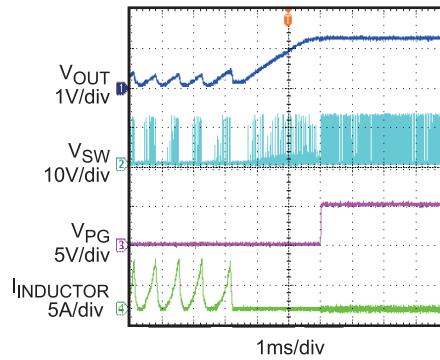
Performance waveforms are tested on the evaluation board.

$V_{IN} = 12V$ ,  $V_{OUT} = 1.2V$ ,  $L = 2.2\mu H$ ,  $T_A = 25^\circ C$ , unless otherwise noted.

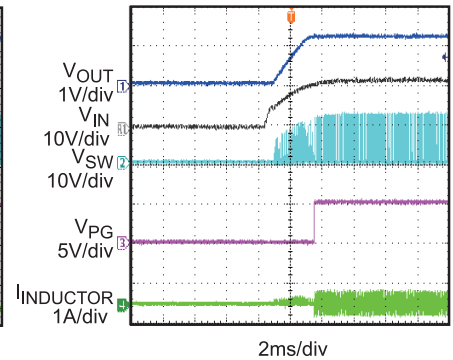
**Short Entry**



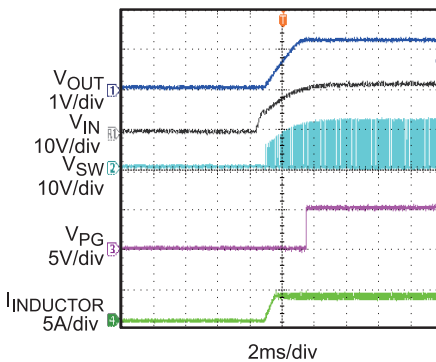
**Short Recovery**



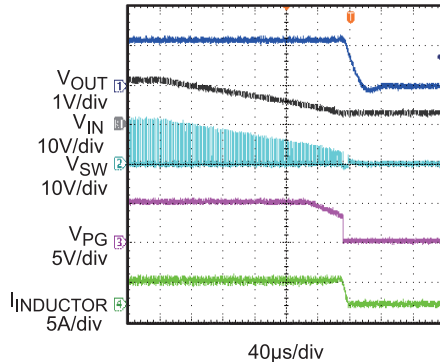
**Power Up without Load**



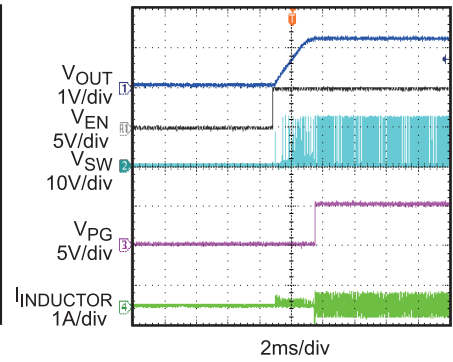
**Power Up with 3A Load**



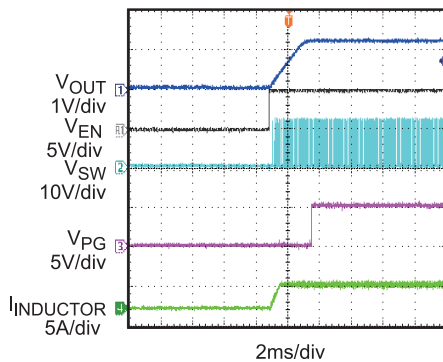
**Power Off with 3A Load**



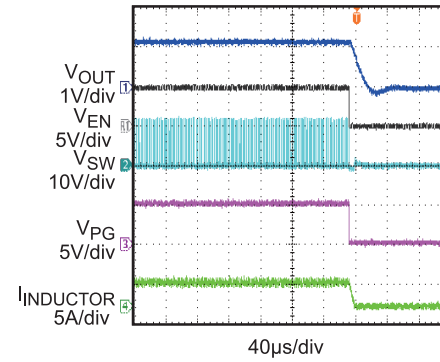
**Enable Startup without Load**



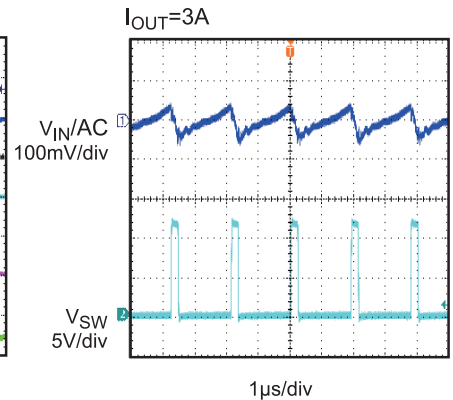
**Enable Startup with 3A Load**



**Enable Shutdown with 3A Load**

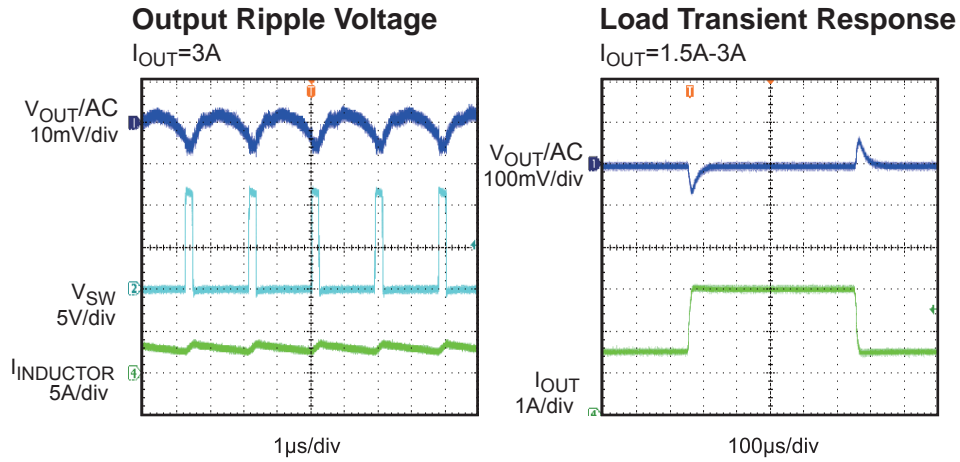


**Input Ripple Voltage**



**EVB TEST RESULTS (continued)**

Performance waveforms are tested on the evaluation board.

 $V_{IN} = 12V$ ,  $V_{OUT} = 1.2V$ ,  $L = 2.2\mu H$ ,  $T_A = 25^\circ C$ , unless otherwise noted.


## PRINTED CIRCUIT BOARD LAYOUT

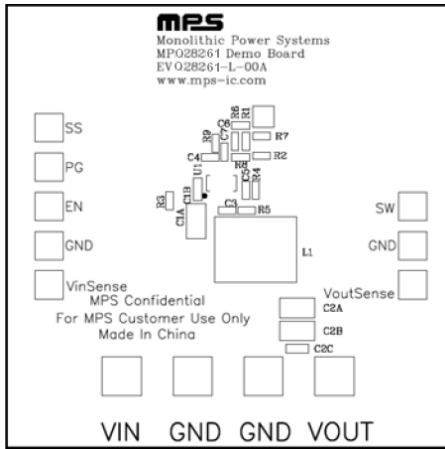


Figure 1—Top Silk Layer

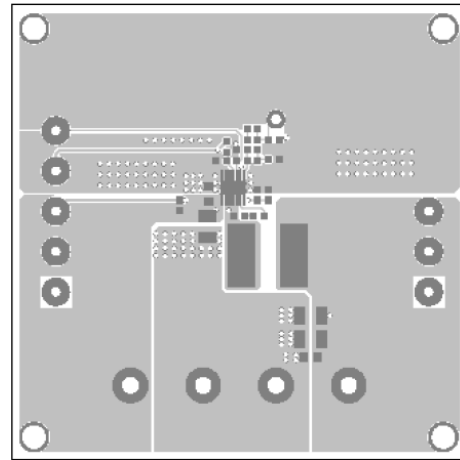


Figure 2—Top Layer

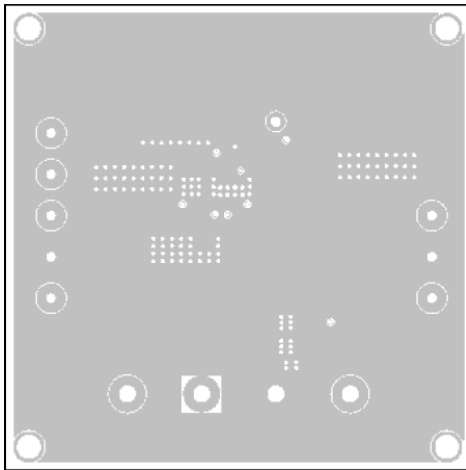


Figure 3—Inner 1 Layer

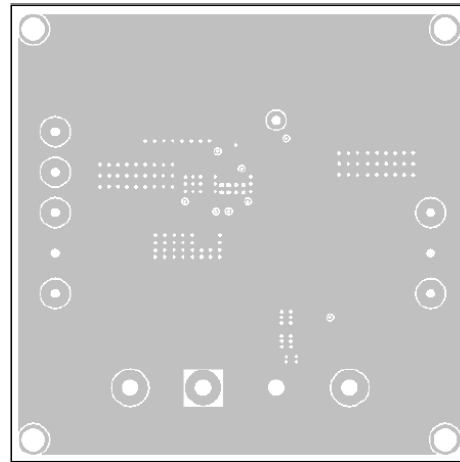


Figure 4— Inner 2 Layer

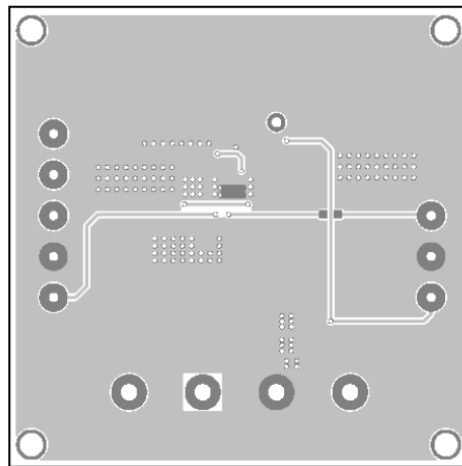


Figure 5—Bottom Layer