

### DESCRIPTION

The EVM3515-QV-02A is an evaluation board for MPM3515, a synchronous rectified, step-down Mini-Module regulator with built-in power MOSFETS, inductor and two capacitors.

The Evaluation Board can deliver a 1.5A continuous output current with excellent load and line regulation over a wide input supply range.

Full protection features include over-current protection and thermal shut down.

The MPM3515 is available in a space-saving QFN-17 (3mmx5mmx1.6mm) package.

### ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Input Voltage	V <sub>IN</sub>	4 -36	V
Output Voltage	V <sub>OUT</sub>	3.3	V
Output Current	I <sub>OUT</sub>	1.5	A

### FEATURES

- Complete Switch Mode Power Supply
- 4V-to-36V Wide Operating Input Range
- 1.5A Continuous Load Current
- Low R<sub>DS(ON)</sub> Internal Power MOSFETS
- Fixed 2.2MHz Switching Frequency
- 450kHz-2.2MHz Frequency Sync
- Forced CCM mode
- Power Good Indicator
- OCP Protection with Valley Current Detection and Hiccup
- Thermal Shutdown
- Output Adjustable from 0.8V
- Available in QFN-17 (3mmx5mmx1.6mm) Package
- Available in AEC-Q100 Grade 1

### APPLICATIONS

- Industrial Controls
- Automotive
- Medical and Imaging Equipment
- Telecom Applications
- Distributed Power Systems

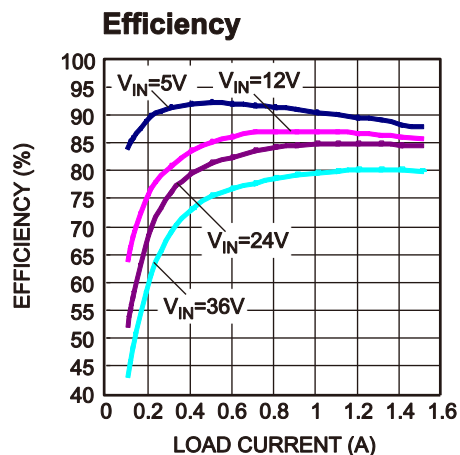
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### EVM3515-QV-02A EVALUATION BOARD

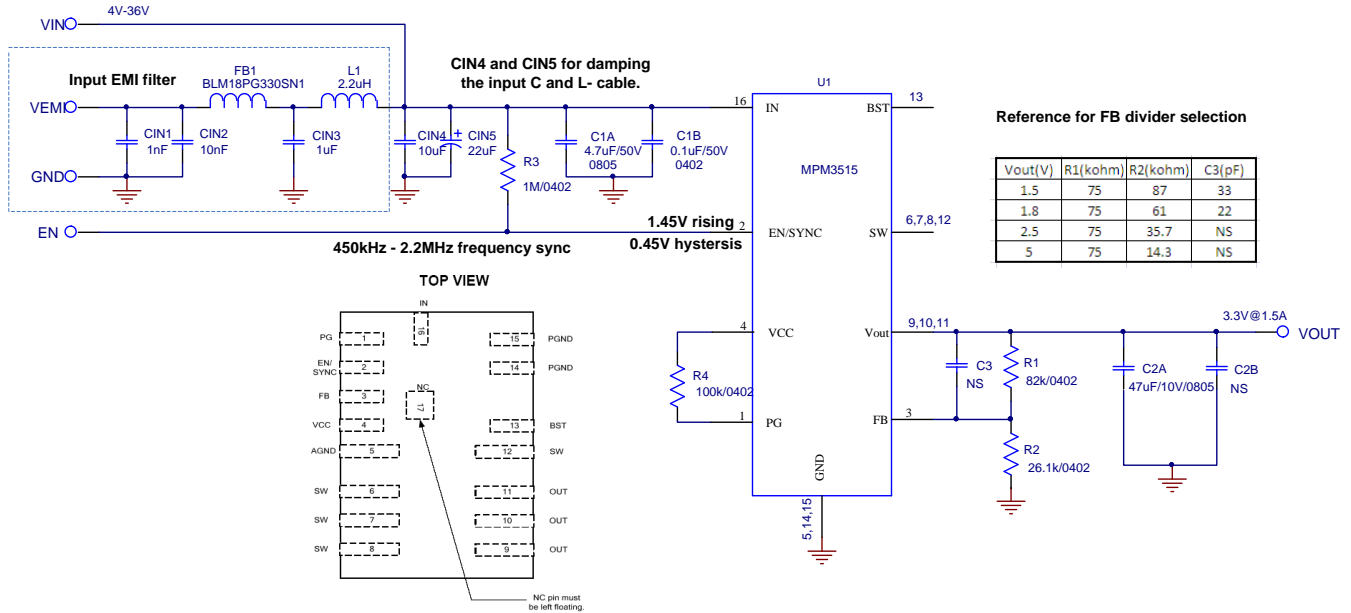


(L x W x H) 6.35cm x 6.35cm x 0.3cm

Board Number	MPS IC Number
EVM3515-QV-02A	MPM3515GQV



## EVALUATION BOARD SCHEMATIC



## EVM3515-QV-02A BILL OF MATERIALS

Qty	RefDes	Value	Description	Package	Manufacturer	Manufacturer_P/N
1	CIN1	1nF	Ceramic Cap., 50V, X7R	0603	muRata	GRM188R71H102KA01D
1	CIN2	10nF	Ceramic Cap., 50V, X7R	0603	muRata	GRM188R71H103KA01D
1	CIN3	1 $\mu$ F	Ceramic Cap., 50V, X7R	1206	muRata	GRM31MR71H105KA88L
1	CIN4	10 $\mu$ F	Ceramic Cap., 50V, X7R	1210	muRata	GRM32ER71H106KA12L
1	CIN5	22 $\mu$ F	Electrolytic Cap., 63V	SMD	Jianghai	VTD-63V22
1	C1A	4.7 $\mu$ F	Ceramic Cap., 50V, X7R	0805	muRata	GRM21BC71H475KE1
1	C1B	0.1 $\mu$ F	Ceramic Cap., 50V, X7R	0402	TDK	C1005X7R1C104K
1	C2A	47 $\mu$ F	Ceramic Cap., 10V, X5R	0805	muRata	GRM21BR61A476ME15L
0	C2B ,C3	NS				
1	R1	82k	Film Res., 1%	0402	Yageo	RC0402FR-0782KL
1	R2	26.1k	Film Res., 1%	0402	Yageo	RC0402FR-0726K1L
1	R3	1M	Film Res., 5%	0402	Yageo	RC0402JR-071ML
1	R4	100k	Film Res., 1%	0402	Yageo	RC0402FR-07100KL
1	FB1		Magnetic Bead; 3A	0603	muRata	BLM18PG330SN1
1	L1	2.2uH	Inductor; 82mohm; 3.3A	SMD	TOKO	DFE252012F-2R2M=P2
1	U1		module		MPS	MPM3515GQV-AEC1

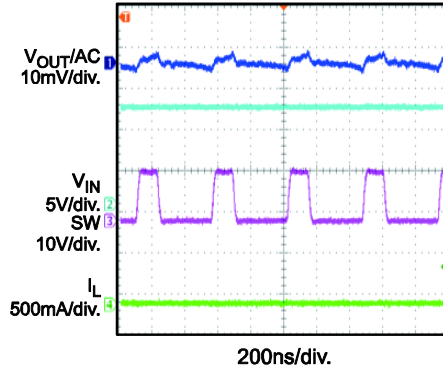
## EVB TEST RESULTS

Performance waveforms are tested on the evaluation board.

$V_{IN} = 12V$ ,  $V_{OUT} = 3.3V$ ,  $T_A = 25^\circ C$ , unless otherwise noted.

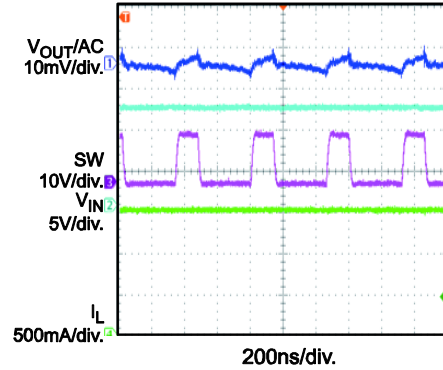
### Output Ripple

$I_{OUT} = 0A$



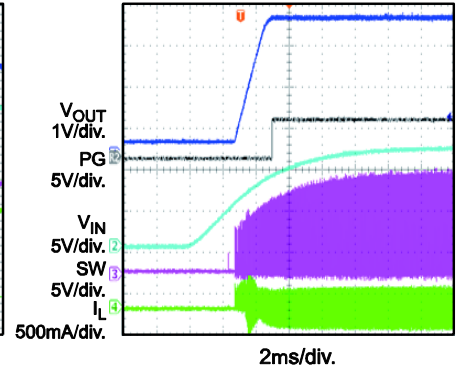
### Output Ripple

$I_{OUT} = 1.5A$



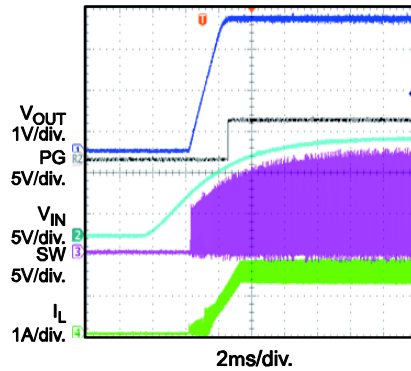
### V<sub>IN</sub> Start-Up

$I_{OUT} = 0A$



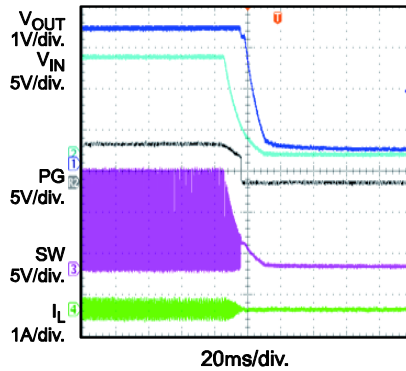
### V<sub>IN</sub> Start-Up

$I_{OUT} = 1.5A$



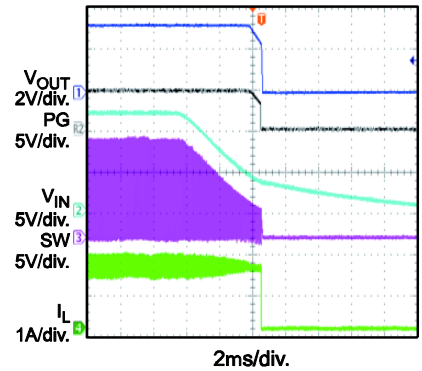
### V<sub>IN</sub> Shutdown

$I_{OUT} = 0A$



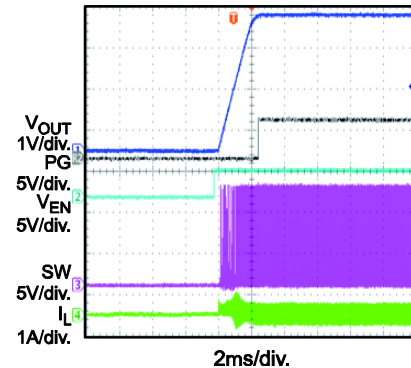
### V<sub>IN</sub> Shutdown

$I_{OUT} = 1.5A$



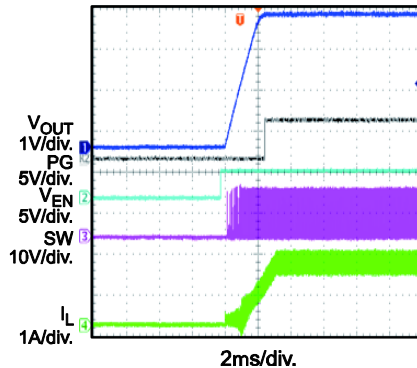
### EN Start-Up

$I_{OUT} = 0A$



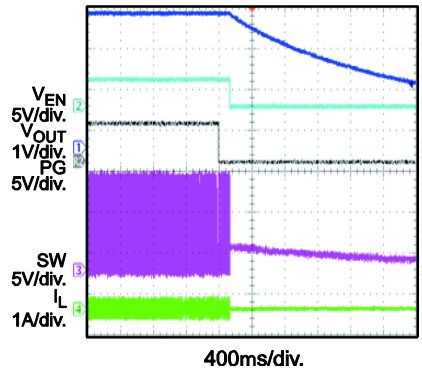
### EN Start-Up

$I_{OUT} = 1.5A$



### EN Shutdown

$I_{OUT} = 0A$



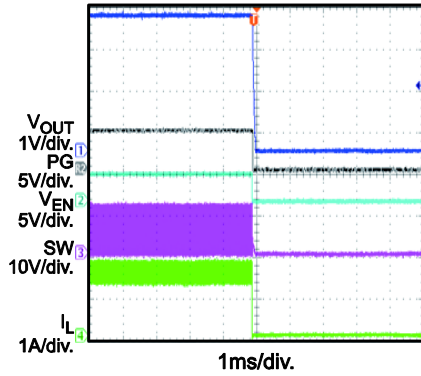
## EVB TEST RESULTS

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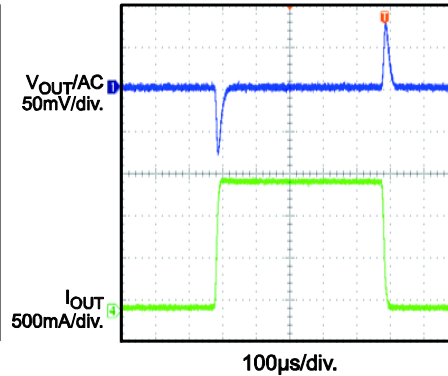
### EN Shutdown

$I_{OUT} = 1.5A$



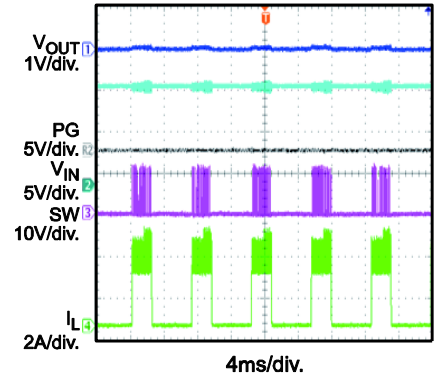
### Load Transient

$I_{OUT} = 0A-1.5A$



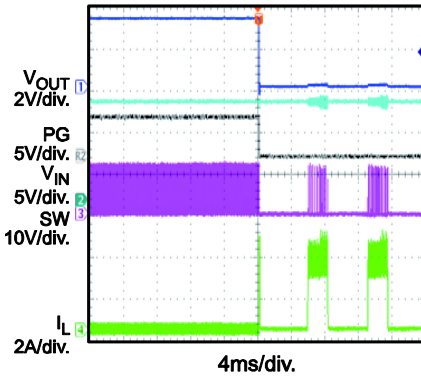
### SCP Steady State

$I_{OUT} = 0A$



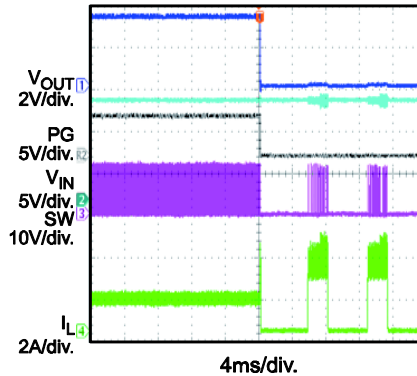
### SCP Entry

$I_{OUT} = 0A$



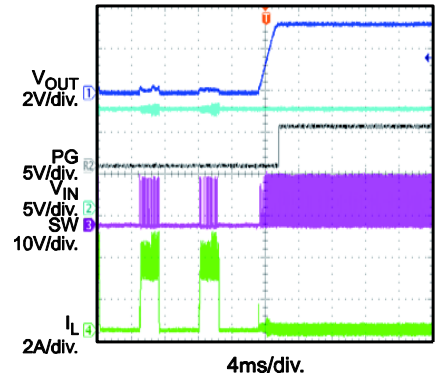
### SCP Entry

$I_{OUT} = 1.5A$



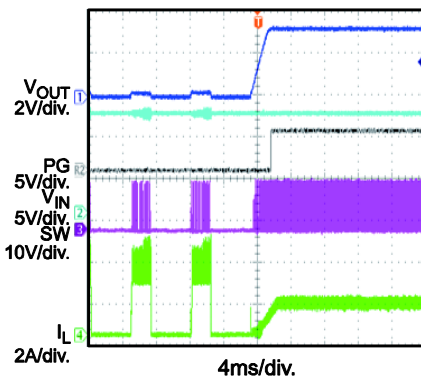
### SCP Recovery

$I_{OUT} = 0A$



### SCP Recovery

$I_{OUT} = 1.5A$



### PRINTED CIRCUIT BOARD LAYOUT

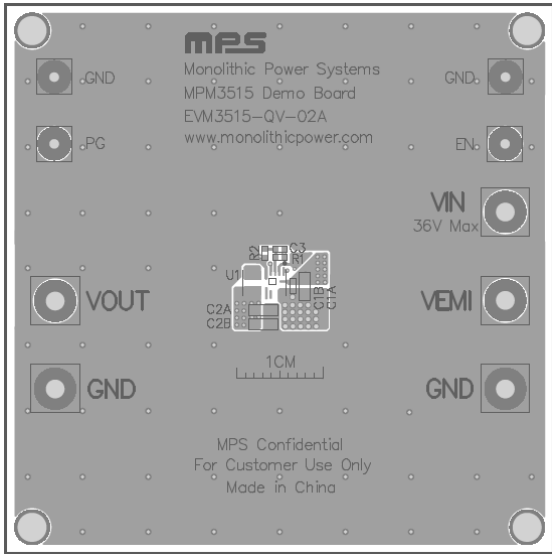


Figure 1-Top Silk Layer & Top layer

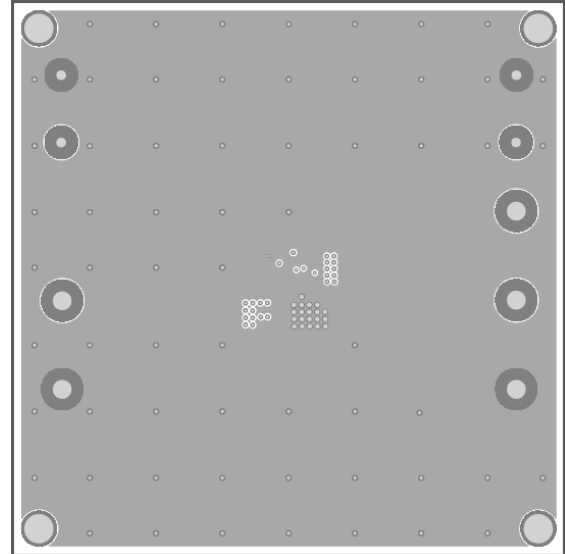


Figure 2-IN1 Layer

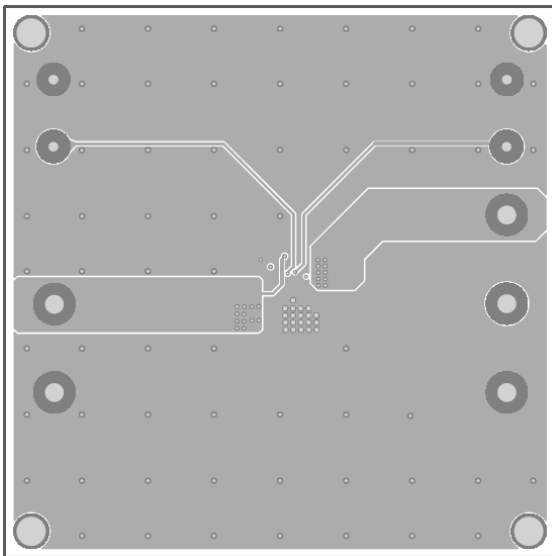


Figure 3-IN2 Layer

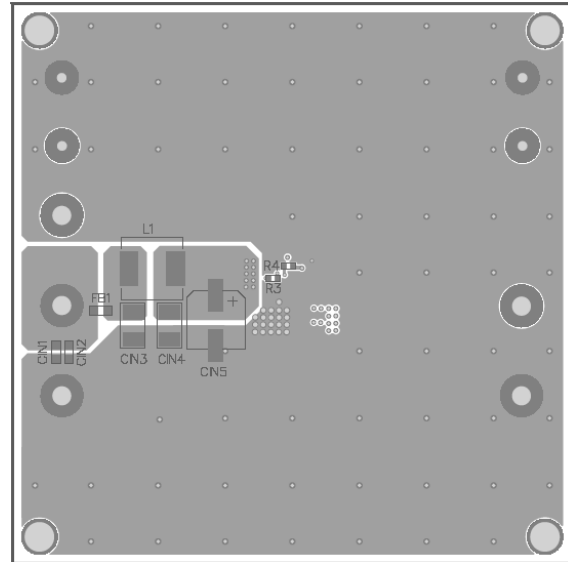


Figure 4-Bottom Silk Layer & Bottom Layer