EVM3506A-QV-00A

36V/600mA Mini- Module Regulater with Intergrated Inductor Evaluation Board

The Future of Analog IC Technology

DESCRIPTION

The EVM3506A-QV-00A is an evaluation board for MPM3506A, a synchronous rectified, step-down Mini-Module regulator with built-in power MOSFETS, inductor and two capacitors.

The Evaluation Board can deliver a 600mA 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 MPM3506A is available in a space-saving QFN-19 (3mmx5mmx1.6mm) package.

ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	4.5-36	V
Output Voltage	V_{OUT}	3.3	V
Output Current	I_{OUT}	600	mA

FEATURES

- Complete Switch Mode Power Supply
- 4.5V-to-36V Wide Operating Input Range
- 600mA Continuous Load Current
- Low $R_{DS(ON)}$ Internal Power MOSFETs
- Fixed 1.15MHz Switching Frequency
- 800kHz-2MHz Frequency Sync
- Power Save Mode for Light Load
- Power Good Indicator
- OCP Protection with Valley Current detection and Hiccup
- Thermal Shutdown
- Output Adjustable from 0.8V
- Available in QFN-19 (3x5x1.6mm) Package

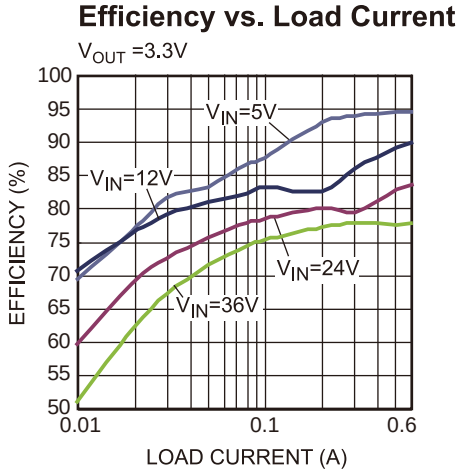
APPLICATIONS

- Industrial Controls
- Automotive
- Medical and Imaging Equipment
- Telecom Applications
- LDO Replacement
- Space and Resource-limited Applications
- Distributed Power Systems

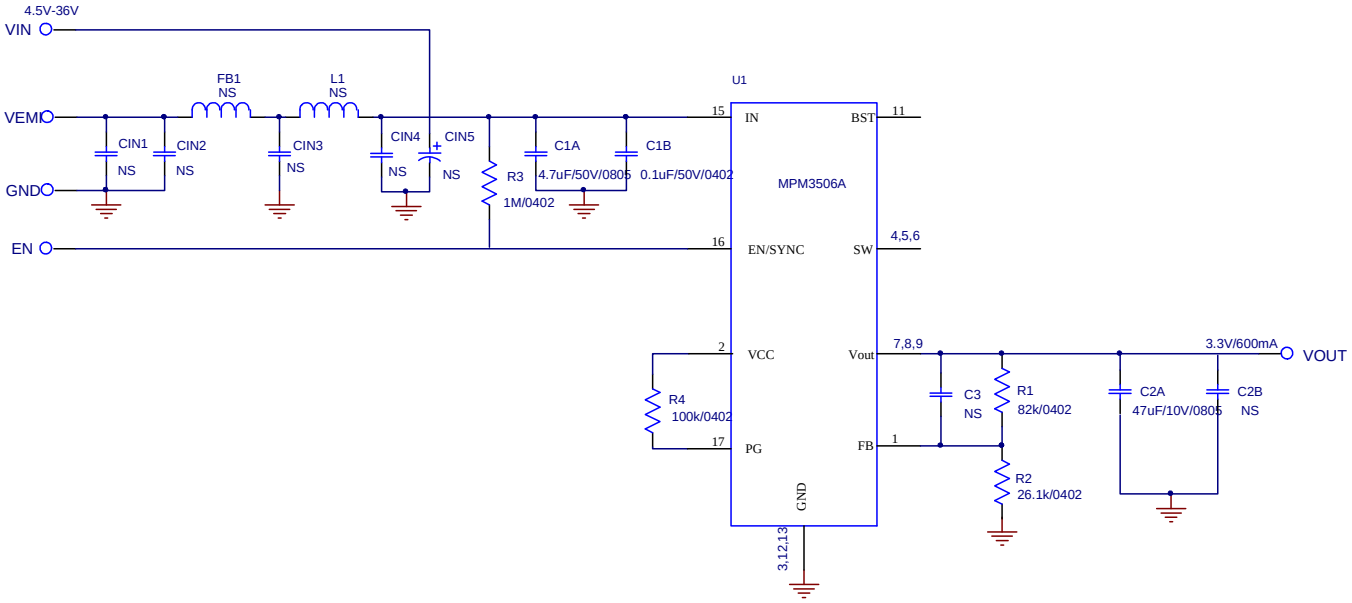
EVM3506A-QV-00A EVALUTION BOARD

(L × W × H) 6.35cm × 6.35cm × 0.3cm

Board Number	MPS IC Number
EVM3506A-QV-00A	MPM3506AGQV



EVALUATION BOARD SCHEMATIC



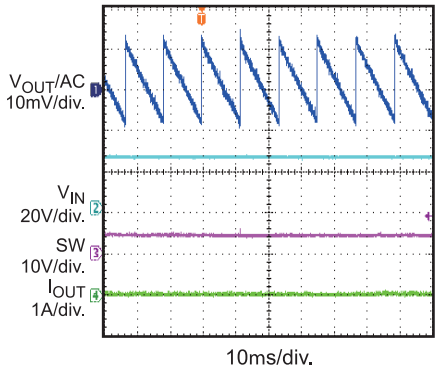
EVM3506A-QV-00A BILL OF MATERIALS

Qty	RefDes	Value	Description	Package	Manufacturer	Manufactuer_P/N
1	C1A	4.7uF	Ceramic Cap., 50V, X7R	0805	muRata	GRM21BC71H475KE1
1	C1B	0.1uF	Ceramic Cap., 50V, X7R	0402	TDK	C1005X7R1C104K
1	C2A	47uF	Ceramic Cap., 10V, X5R	0805	muRata	GRM21BR61A476ME15L
7	C2B, CIN1, CIN2, CIN3, CIN4, CIN5, 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	NS				
1	L1	NS				
1	U1		module		MPS	MPM3506A

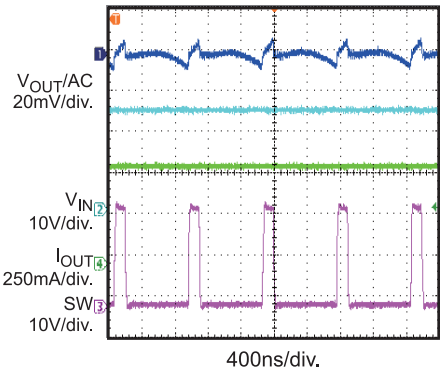
EVB TEST RESULTS

Performance waveforms are tested on the evaluation board.
V_{IN} = 24V, V_{OUT} = 3.3V, T_A = 25°C, unless otherwise noted.

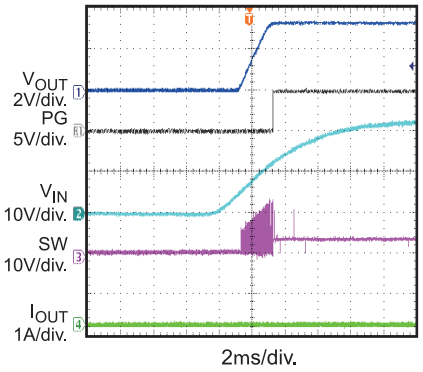
Output Ripple
I_{OUT} = 0A



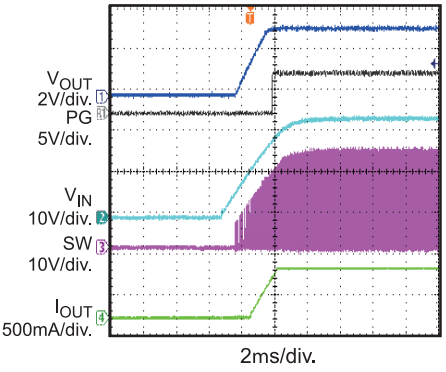
Output Ripple
I_{OUT} =600mA



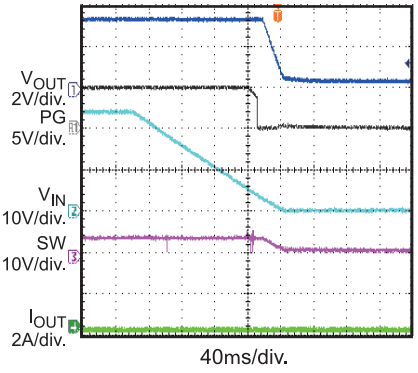
V_{IN} Startup
I_{OUT}=0A



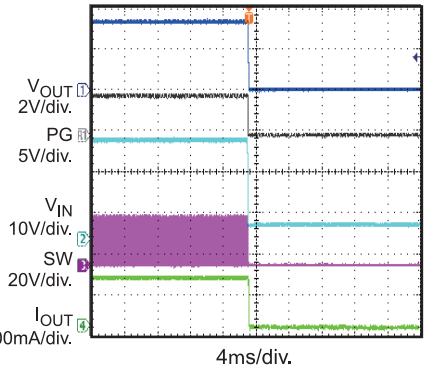
V_{IN} Startup
I_{OUT}=600mA



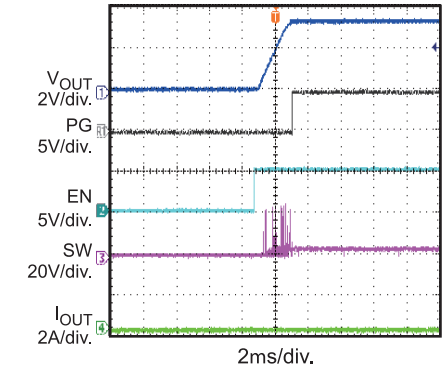
V_{IN} Shutdown
I_{OUT} = 0A



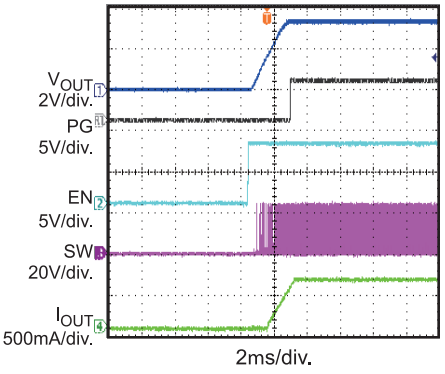
V_{IN} Shutdown
I_{OUT}=600mA



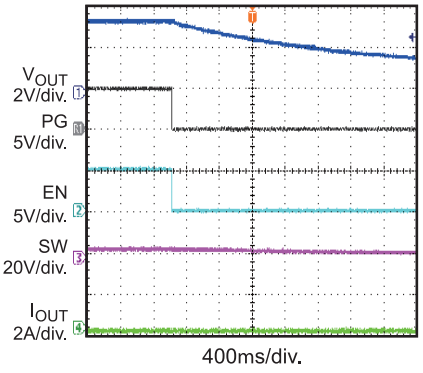
EN Startup
I_{OUT} = 0A



EN Startup
I_{OUT}=600mA



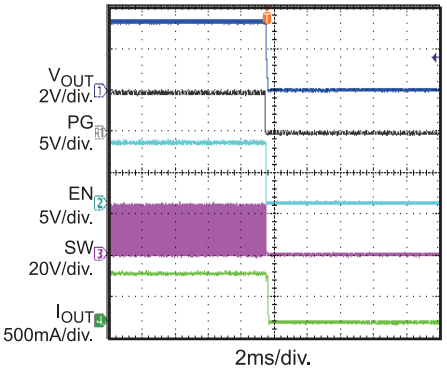
EN Shutdown
I_{OUT} = 0A



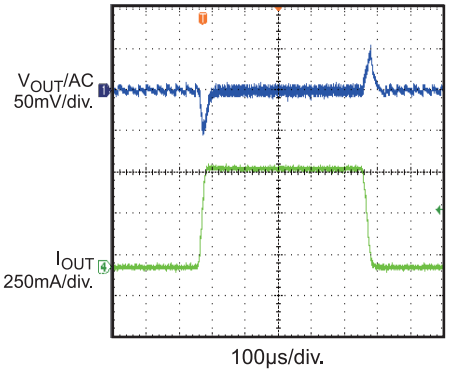
EVB TEST RESULTS

Performance waveforms are tested on the evaluation board.
V_{IN} = 24V, V_{OUT} = 3.3V, T_A = 25°C, unless otherwise noted.

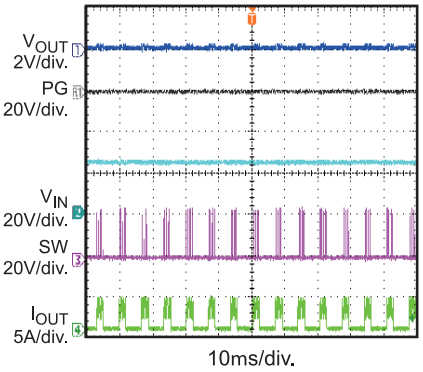
EN Shutdown
I_{OUT} = 600mA



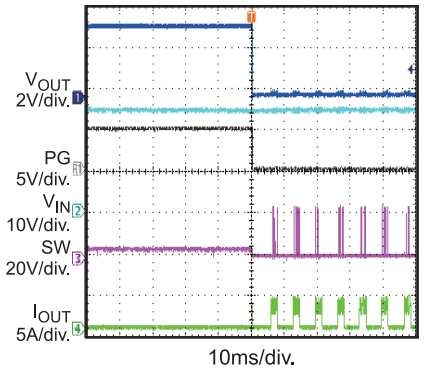
Load Transient
I_{OUT} = 0A-600mA



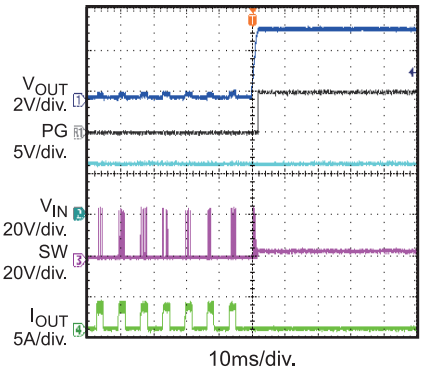
SCP Steady State
I_{OUT} = 0A



SCP Entry
I_{OUT} = 0A



SCP Recovery
I_{OUT} = 0A



PRINTED CIRCUIT BOARD LAYOUT

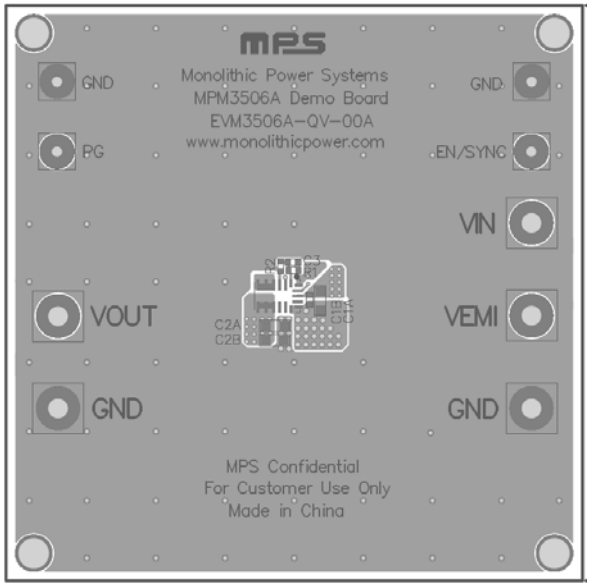


Figure 1-Top Silk Layer & Top layer

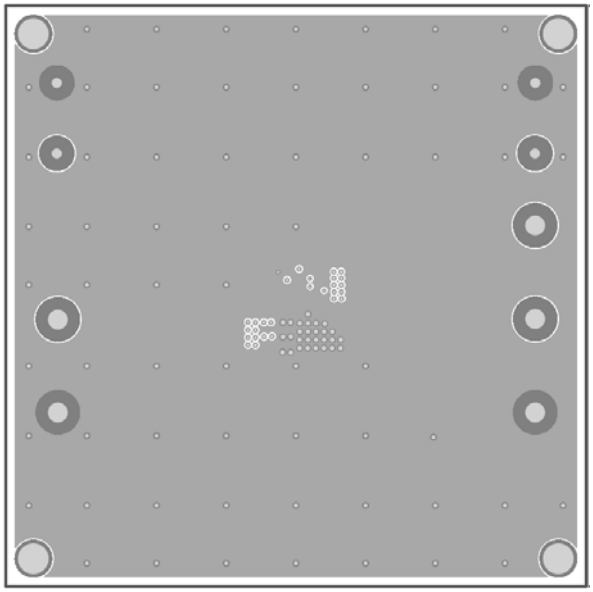


Figure 2-IN1 Layer

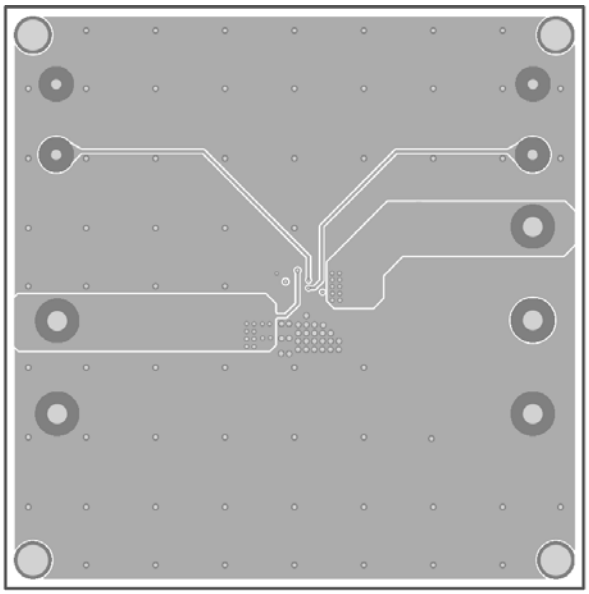


Figure 3-IN2 Layer

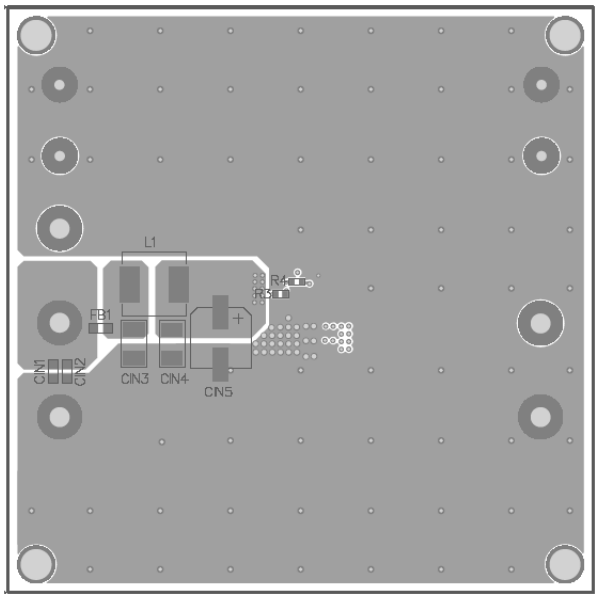


Figure 4-Bottom Silk Layer& Bottom Layer

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 4.5V and 36V, and 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 start up.
5. To get better EMI performance, add the EMI components at bottom layer of the board and connect the input power supply between VEMI and GND.
6. To use the SYNC function, connect an external clock with a range of 800kHz to 2MHz to synchronize the internal clock rising edge to the external clock rising edge.