



EVM3620-Q-00B

24V/2A Mini-Module Regulator with Integrated Inductor Evaluation Board

DESCRIPTION

The EVM3620-Q-00B is an evaluation board for MPM3620, a synchronous rectified, step-down Mini-Module regulator with built-in power MOSFETs, inductor and two capacitors.

The Evaluation Board can deliver a 2A continuous output current with excellent load and line regulation over a wide input supply range. External AAM pin provides selectable power save mode or force PWM mode.

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

The MPM3620 is available in a space-saving QFN20 (3mm x5mmx1.6mm) package.

ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	4.5 – 24	V
Output Voltage	V_{OUT}	3.3	V
Output Current	I_{OUT}	2	A

FEATURES

- Complete Switch Mode Power Supply
- 4.5V-to-24V Operating Input Range
- 2A Continuous Load Current
- 200 μ A Low Quiescent Current
- Low $R_{DS(ON)}$ Internal Power MOSFETs
- Fixed 2MHz Switching Frequency
- External AAM pin for Power-Save Mode Programming
- OCP Protection and Hiccup
- Thermal Shutdown
- Output Adjustable from 0.8V
- Available in QFN20 (3x5x1.6mm) Package

APPLICATIONS

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

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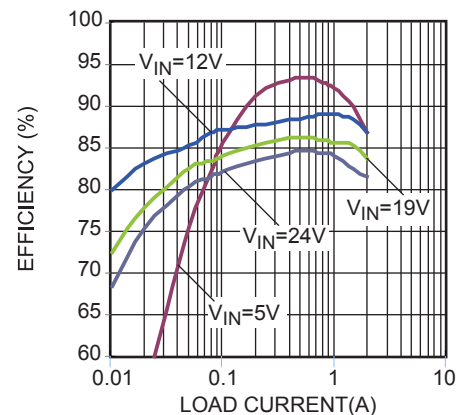
EVM3620-Q-00B EVALUATION BOARD



Board Number	MPS IC Number
EVM3620-Q-00B	MPM3620GQV

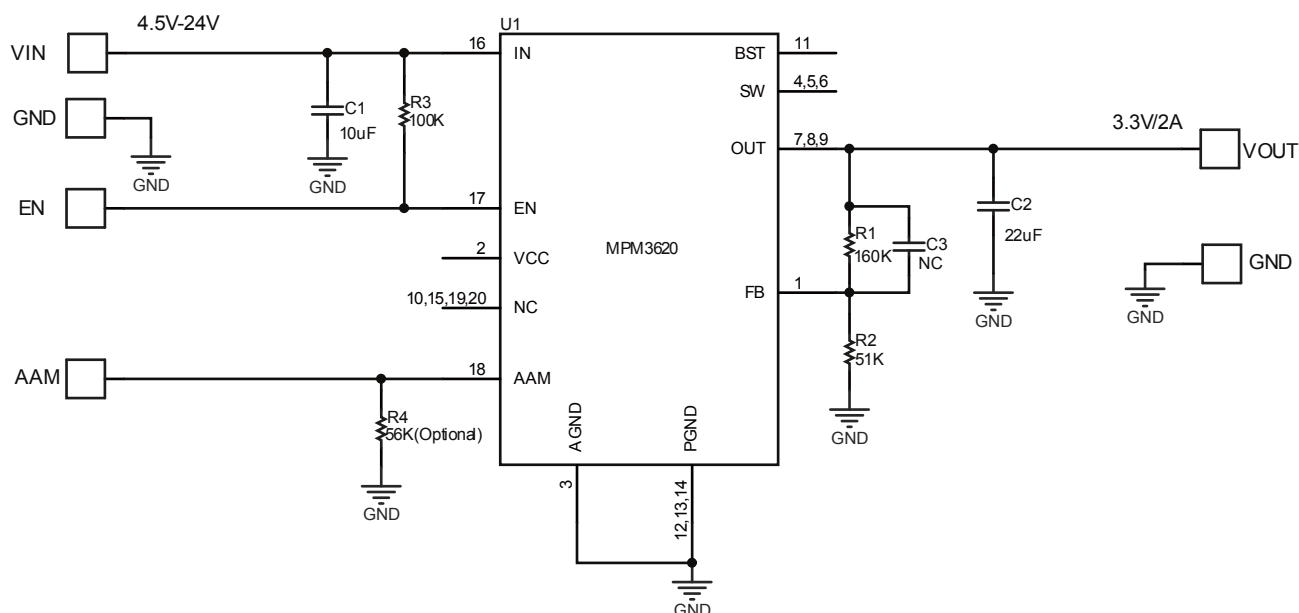
Efficiency

$V_{IN}=5V$ to 24V, $V_{OUT}=3.3V$





EVALUATION BOARD SCHEMATIC



EVM3620-Q-00B BILL OF MATERIALS

Qty	RefDes	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	10 μ F	Ceramic Cap, 25V, X5R	0805	muRata	GRM21BR61E106KA73L
1	C2	22 μ F	Ceramic Cap, 16V, X5R	0805	muRata	GRM219R61C226ME15L
1	C3	NS		0402		
1	R1	160k	Thick Film Res., 1%	0402	Any	
1	R2	51k	Thick Film Res., 1%	0402	Any	
1	R3	100k	Thick Film Res., 1%	0402	Any	
1	R4	56k	Thick Film Res., 1%	0402	Any	
1	U1	MPM3620	Synchronous Step-Down Mini-Module	QFN-20	MPS	MPM3620GQV



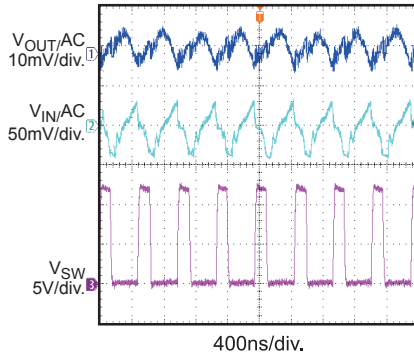
EVB TEST RESULTS

Performance waveforms are tested on the evaluation board.

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

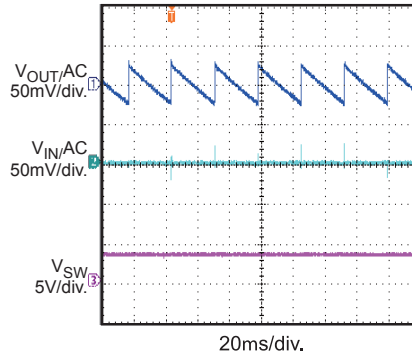
Input/Output Ripple

$I_{OUT} = 2A$



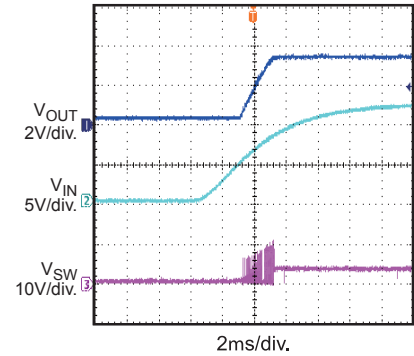
Input/Output Ripple

$I_{OUT} = 0A$



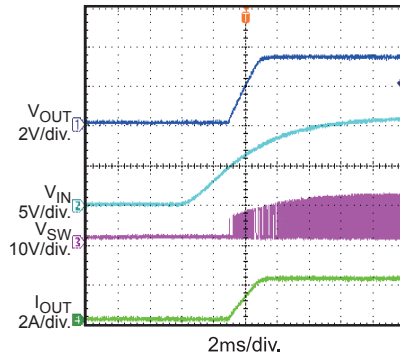
VIN Startup

$I_{OUT} = 0A$



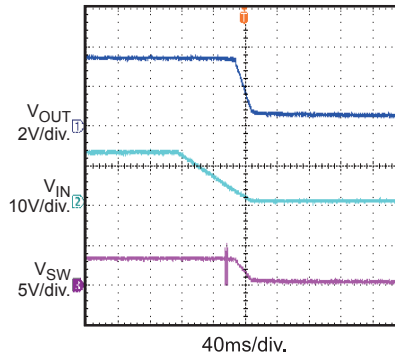
VIN Startup

$I_{OUT} = 2A$



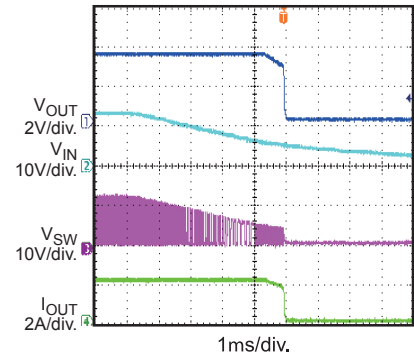
VIN Shutdown

$I_{OUT} = 0A$



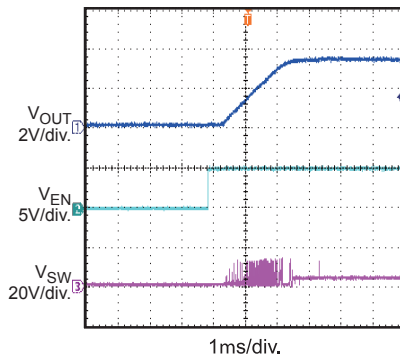
VIN Shutdown

$I_{OUT} = 2A$



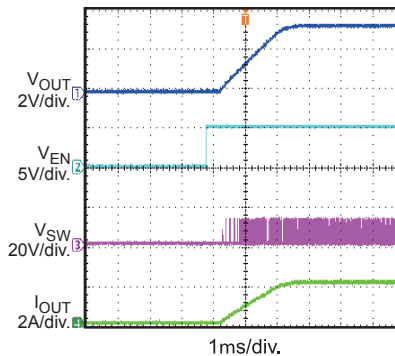
EN Startup

$I_{OUT} = 0A$



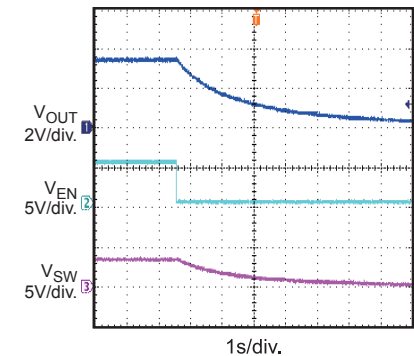
EN Startup

$I_{OUT} = 2A$



EN Shutdown

$I_{OUT} = 0A$





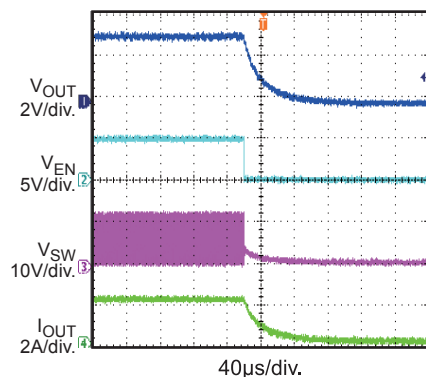
EVB TEST RESULTS

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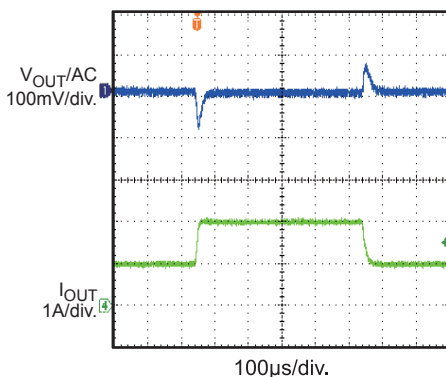
EN Shutdown

$I_{OUT} = 2A$



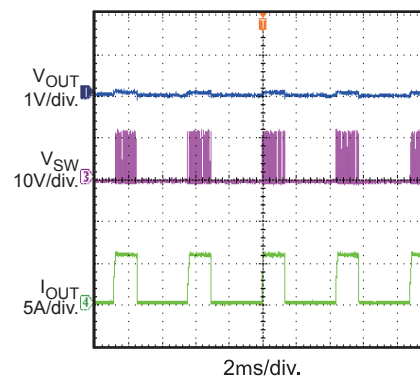
Transient Response

$I_{OUT} = 1A$ to $2A$



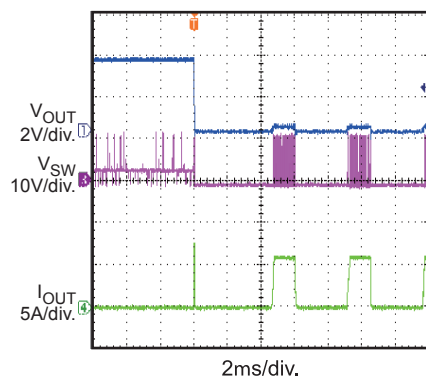
Short Circuit Steady

$I_{OUT} = 0A$



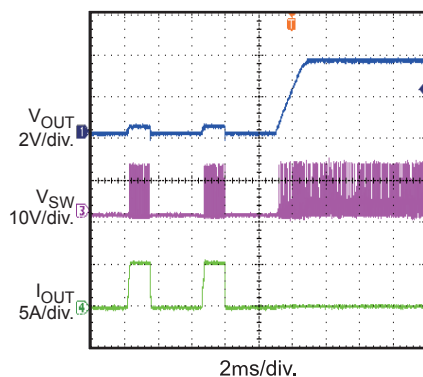
Short Circuit Entry

$I_{OUT} = 0A$



Short Circuit Recovery

$I_{OUT} = 0A$



PRINTED CIRCUIT BOARD LAYOUT

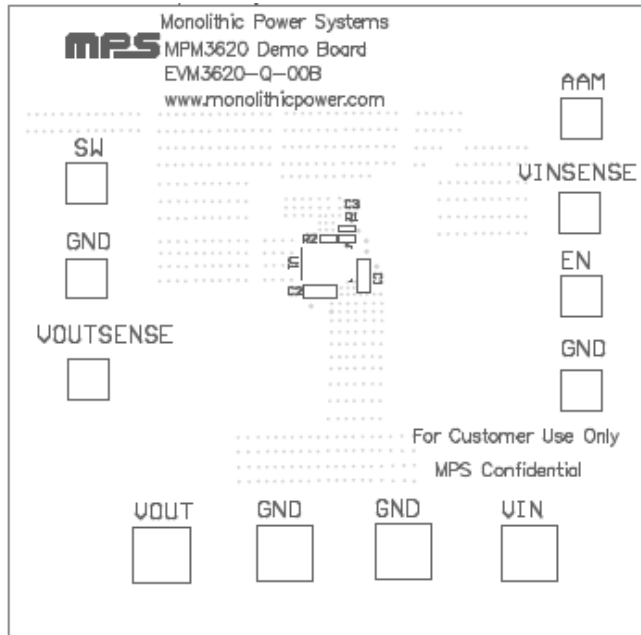


Figure 1—Top Silk Layer

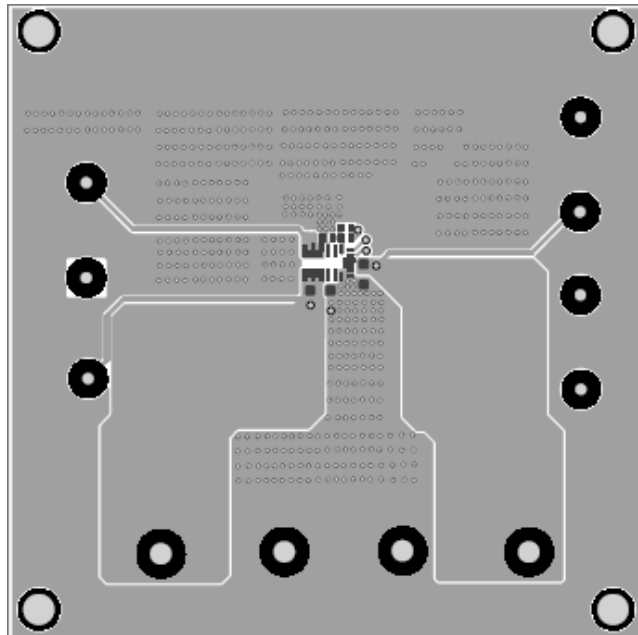


Figure 2—Top Layer

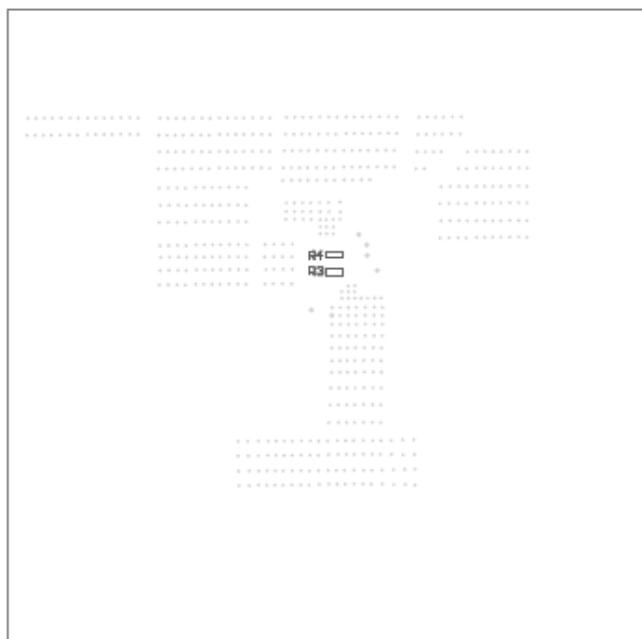


Figure 3—Bottom Silk Layer

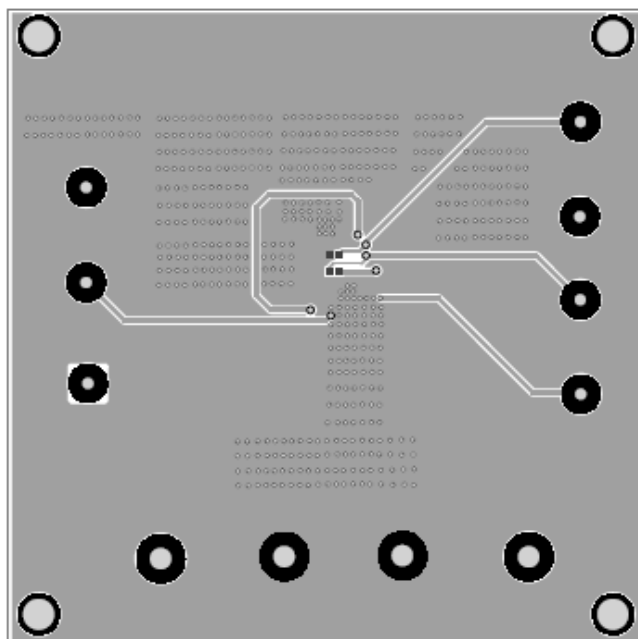


Figure 4—Bottom Layer



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 24V, 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 use the Enable function, apply a digital input to the EN pin. Drive EN higher than 1.4V to turn on the regulator, or less than 1.25V to turn it off.
6. Float AAM pin or drive AAM to a high level voltage to set MPM3620 work at force PWM mode.

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