

DESCRIPTION

The EVM3606-QV-00A is an evaluation board for MPM3606, a synchronous rectified, step-down module converter with built-in power MOSFETs, inductor and two capacitors.

The evaluation board can deliver a 0.6A 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 MPM3606 is available in a space-saving QFN20 (3mm x5mmx1.6mm) package.

ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	4.5 – 21	V
Output Voltage	V_{OUT}	3.3	V
Output Current	I_{OUT}	0.6	A

FEATURES

- 4.5V-to-21V Operating Input Range
- 0.6A Continuous Load Current
- 200 μ A Low Quiescent Current
- 100m Ω /50m Ω Low $R_{DS(ON)}$ Internal Power MOSFETs
- Integrated Inductor
- Integrated VCC and Bootstrap Capacitors
- External AAM pin for Power-Save Mode Programming
- OCP Protection with Hiccup
- Thermal Shutdown
- Output Adjustable from 0.8V
- Available in QFN-20 (3mmx5mmx1.6mm) Package
- Total Solution Size 6.7mm x 6.3mm

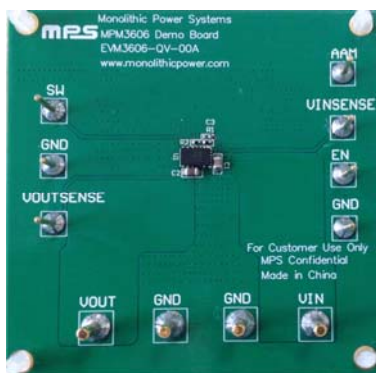
APPLICATIONS

- Industrial Controls
- Medical and Imaging Equipment
- Telecom and Networking Applications
- LDO Replacement
- Space and Resource-limited Applications

All MPS parts are lead-free and adhere to the RoHS directive. For MPS green status, please visit MPS website under Products, Quality Assurance page.

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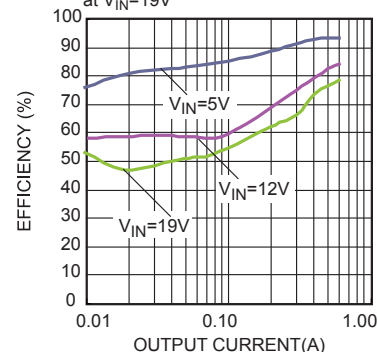
EVM3606-QV-00A EVALUATION BOARD

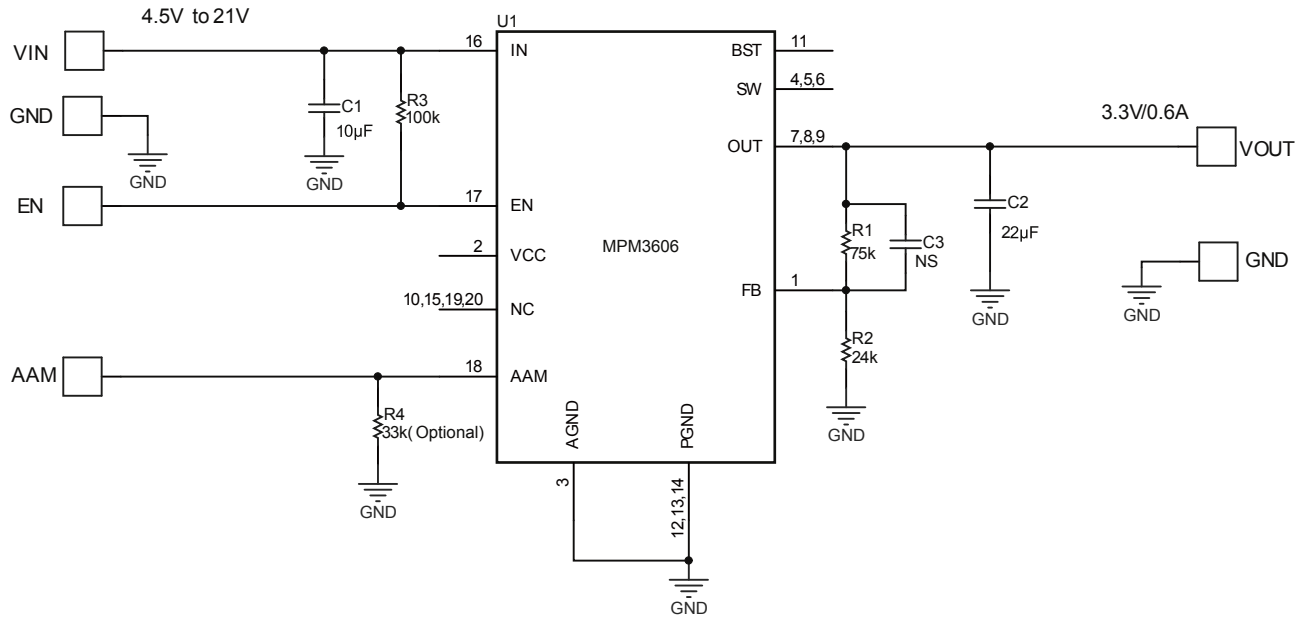


Board Number	MPS IC Number
EVM3606-QV-00A	MPM3606GQV

Efficiency vs. Output Current

$V_{OUT}=3.3V, R_{AAM}=75k$ at $V_{IN}=5V$,
 $R_{AAM}=33k$ at $V_{IN}=12V, R_{AAM}=20.5k$
 at $V_{IN}=19V$



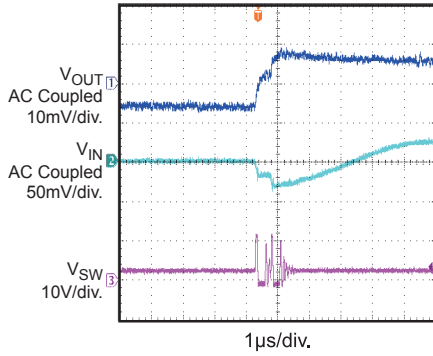
EVALUATION BOARD SCHEMATIC

EVM3606-QV-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	10µF	Ceramic Cap,25V,X5R	0805	muRata	GRM21BR61E106KA73L
1	C2	22µF	Ceramic Cap,16V,X5R	0805	muRata	GRM219R61C226ME15L
1	C3	NS		0402		
1	R1	75k	Thick Film Res., 1%	0402	Any	
1	R2	24k	Thick Film Res., 1%	0402	Any	
1	R3	100k	Thick Film Res., 1%	0402	Any	
1	R4	33k	Thick Film Res., 1%	0402	Any	
1	U1	MPM3606	Synchronous Step-Down Module	QFN-20	MPS	MPM3606GQV

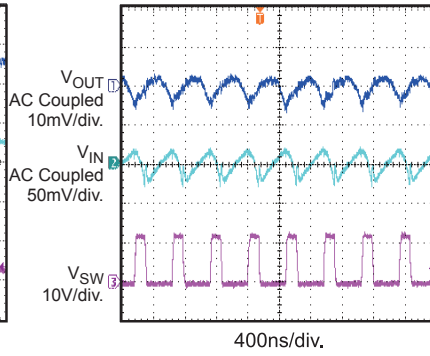
EVB TEST RESULTS

Performance waveforms are tested on the evaluation board.
 $V_{IN} = 12V$, $V_{OUT} = 3.3V$, $T_A = 25^\circ C$, unless otherwise noted.

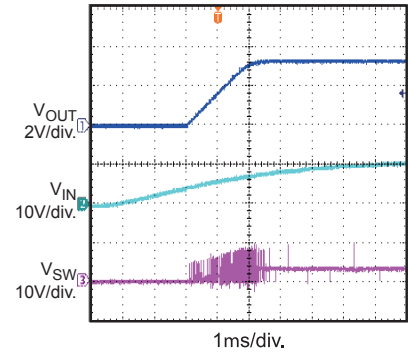
Input/Output Ripple
 $I_{OUT} = 0A$



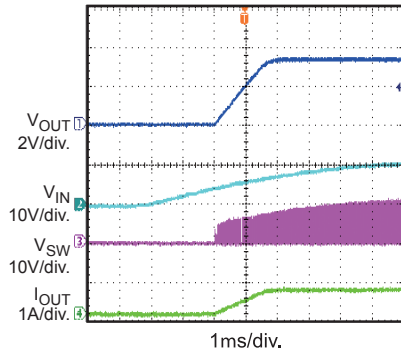
Input/Output Ripple
 $I_{OUT} = 0.6A$



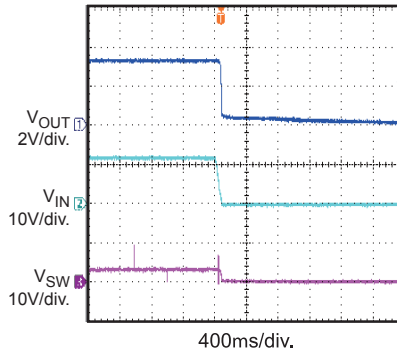
VIN Startup
 $I_{OUT} = 0A$



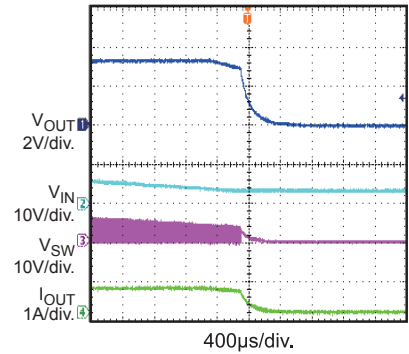
VIN Startup
 $I_{OUT} = 0.6A$



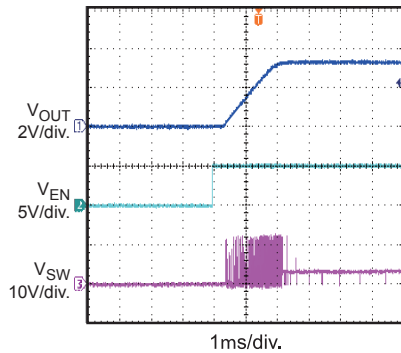
VIN Shutdown
 $I_{OUT} = 0A$



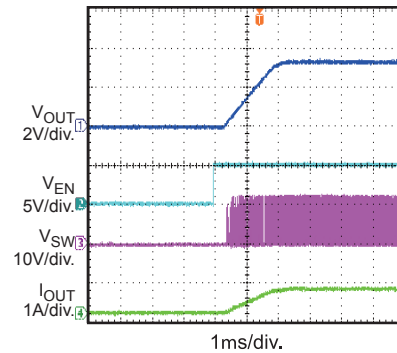
VIN Shutdown
 $I_{OUT} = 0.6A$



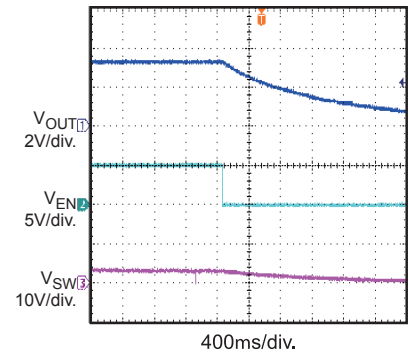
EN Startup
 $I_{OUT} = 0A$



EN Startup
 $I_{OUT} = 0.6A$



EN Shutdown
 $I_{OUT} = 0A$



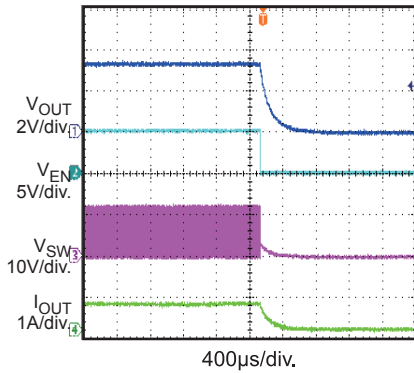
EVB TEST RESULTS (continued)

Performance waveforms are tested on the evaluation board.

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

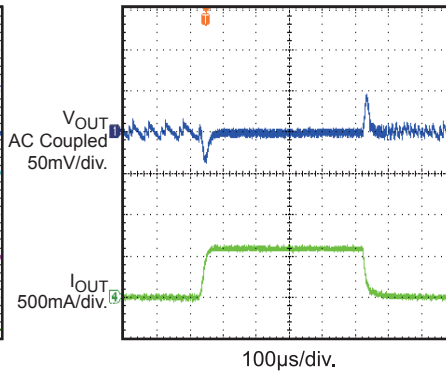
EN Shutdown

$I_{OUT} = 0.6A$

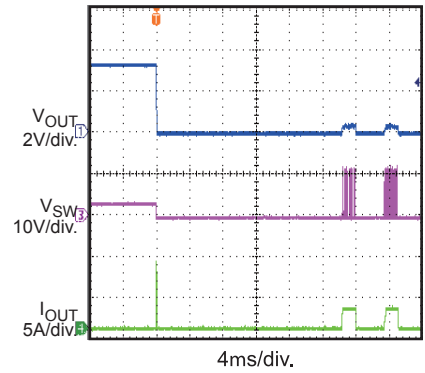


Transient Response

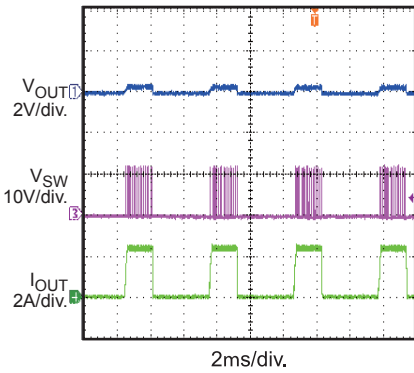
$I_{OUT} = 0A$ to $0.6A$



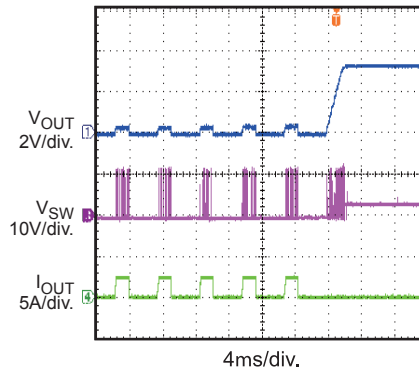
Short Circuit Entry



Short Circuit Steady State



Short Circuit Recovery



PRINTED CIRCUIT BOARD LAYOUT

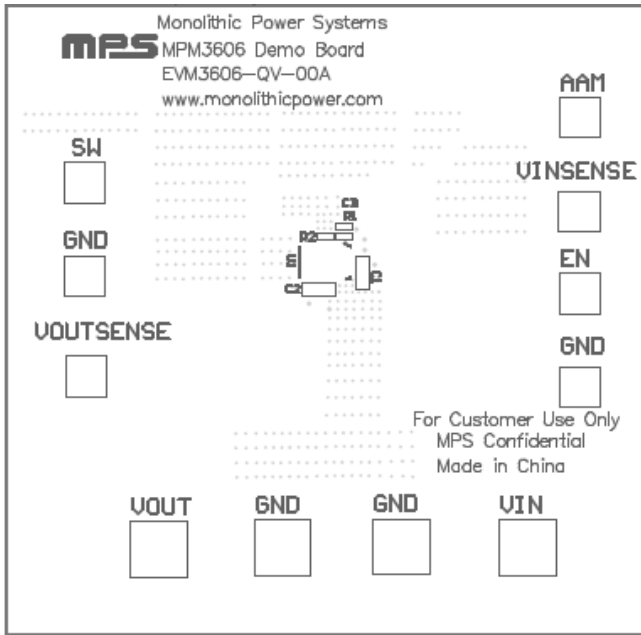


Figure 1—Top Silk Layer

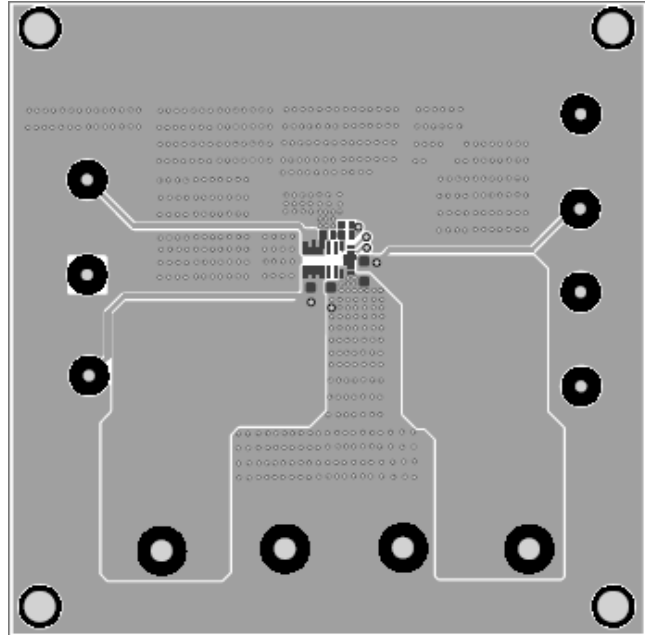


Figure 2—Top Layer

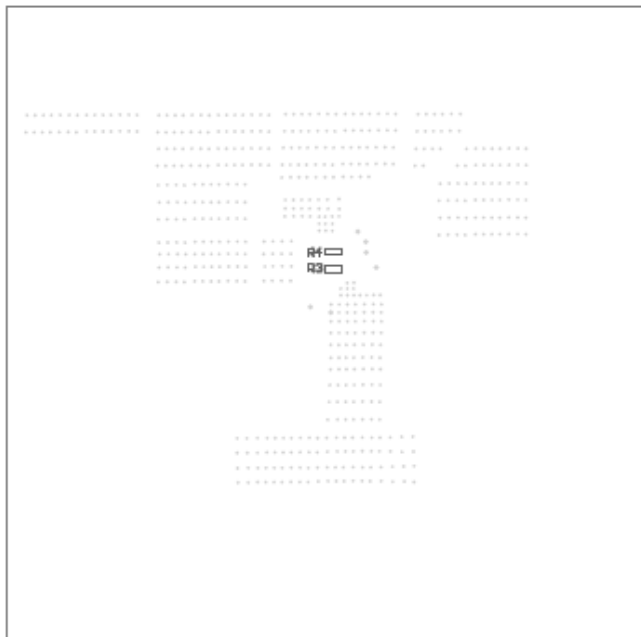


Figure 3—Bottom Silk Layer

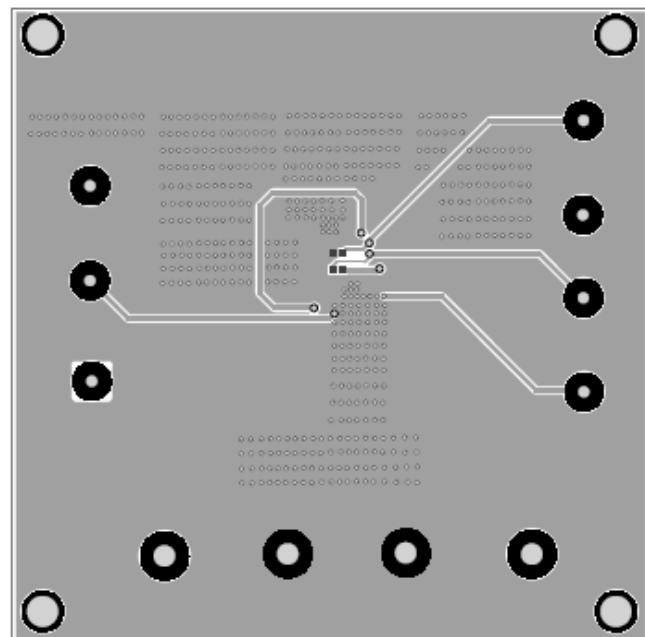


Figure 4—Bottom Layer