

## DESCRIPTION

The EV2269-D-00A demonstrates MPS's MP2269, a fully-integrated, high efficiency, synchronous step-down switch mode converter with built-in high-side and low-side power MOSFETs. MP2269 provides up to 1A continuous output current over a wide input supply range with current mode control for fast loop response.

Full protection features include over-current protection (OCP) and thermal shutdown (TSD).

The Evaluation Board can deliver 1A continuous load current over a wide input range with excellent load and line regulation.

This part requires minimum number of external components and is available in QFN15 (2mmx3mm) package

## ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Input Voltage	V <sub>IN</sub>	12	V
Output Voltage	V <sub>OUT</sub>	3.3	V
Output Current	I <sub>OUT</sub>	1	A
Switching Frequency	f <sub>SW</sub>	500	kHz

## FEATURES

- Wide 3.3V to 30V Operating Input Range
- 1A Continuous Output Current
- 1µA Low Shutdown Supply Current
- 12µA Sleep Mode Quiescent Current
- 180mΩ/80mΩ High Side/Low Side RDS(ON) for Internal Power MOSFETs
- 350kHz to 2.5MHz Programmable Switching Frequency
- Power Good Output
- External Soft Start
- 80ns Minimum On Time
- Selectable Forced PWM Mode and Auto PFM/PWM Mode
- Low Dropout Mode
- Hiccup Over Current Protection
- QFN-15 (2mmx3mm)

## APPLICATIONS

- Battery Powered Systems
- Smart Home
- Wide Input Range Power Supply
- Standby Power Supply

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.

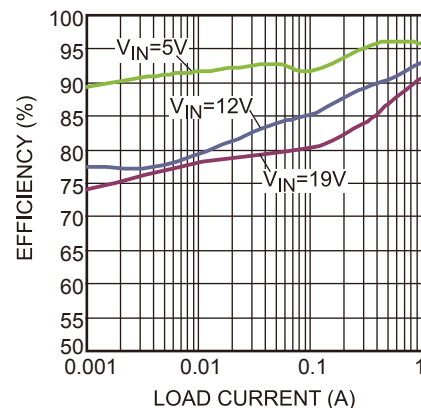
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## EV2269-D-00A EVALUATION BOARD

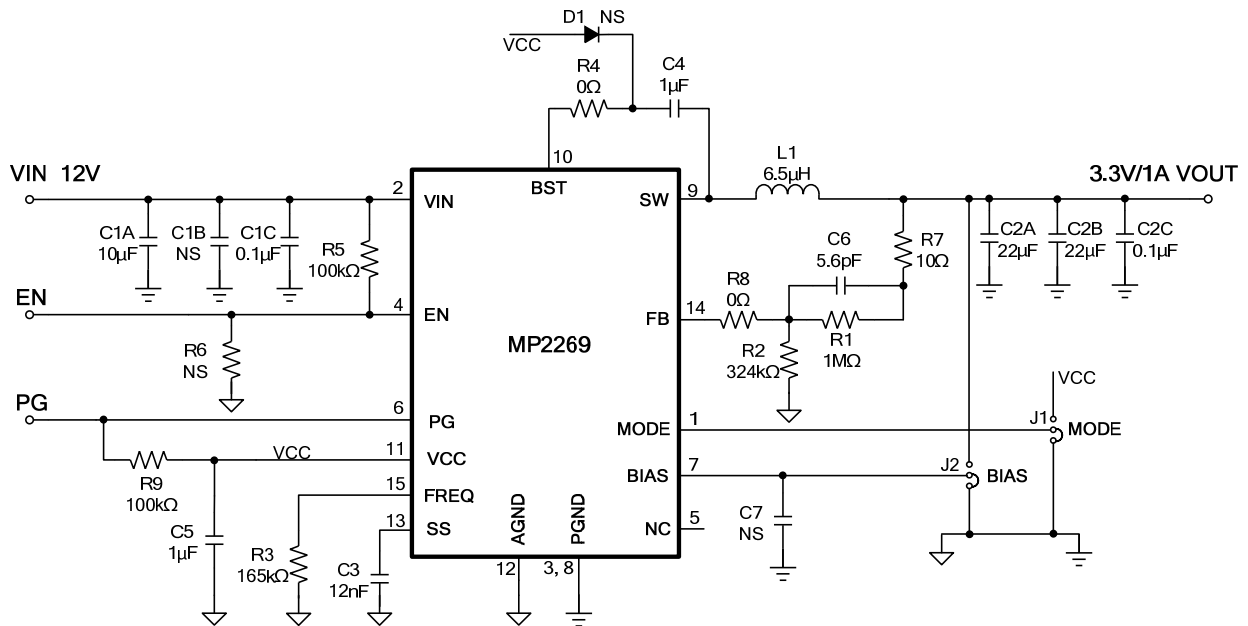


Board Number	MPS IC Number
EV2269-D-00A	MP2269GD

Efficiency vs. Load Current  
V<sub>OUT</sub>=3.3V, L=6.5µH



## EVALUATION BOARD SCHEMATIC



## EV2269-D-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1A	10µF	Ceramic Cap, 50V, X5R	1206	TDK	C3216X5R1H106K
0	C1B, C7	NS				
2	C1C,C2C	0.1µF	Ceramic Cap, 350V, X7R	0603	TDK	C1608X7R1H104K
2	C2A,C2B	22µF	Ceramic Cap, 16V, X5R	1206	Murata	GRM31CR61C226ME15L
1	C3	12nF	Ceramic Cap, 50V, X7R	0603	Murata	GRM188R71H123KA01D
2	C4,C5	1µF	Ceramic Cap, 25V, X7R	0603	Murata	GRM188R71E105KA12D
1	C6	5.6pF	Ceramic Cap, 50V, C0G	0603	Murata	GRM1885C1H5R6DZ01D
0	D1	NS				
1	L1	6.5µH	DCR=21.5mΩ, Isat=6A	SMD	Würth	744314650
1	R1	1MΩ	Film Res, 1%	0603	ROYAL	RL0603FR-071ML
1	R2	324kΩ	Film Res, 1%	0603	ROYAL	RL0603FR-07324KL
1	R3	165kΩ	Film Res, 1%	0603	ROYAL	RL0603FR-07165KL
2	R4,R8	0Ω	Film Res, 1%	0603	ROYAL	RL0603FR-070RL
2	R5,R9	100kΩ	Film Res, 1%	0603	ROYAL	RL0603FR-07100KL
0	R6	NS				
1	R7	10Ω	Film Res, 1%	0603	ROYAL	RL0603FR-0710RL
1	U1	MP2269GD	DC-DC Converter	QFN2×3	MPS	MP2269GD

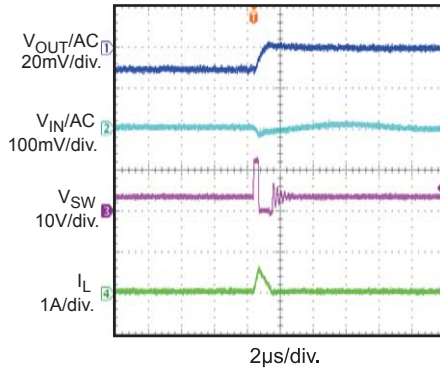
## EVB TEST RESULTS

Performance waveforms are tested on the evaluation board.

V<sub>IN</sub> = 12V, V<sub>OUT</sub> = 3.3V, L = 6.5μH, F<sub>SW</sub> = 500kHz, T<sub>A</sub> = 25°C, BIAS and MODE are connected to GND, unless otherwise noted.

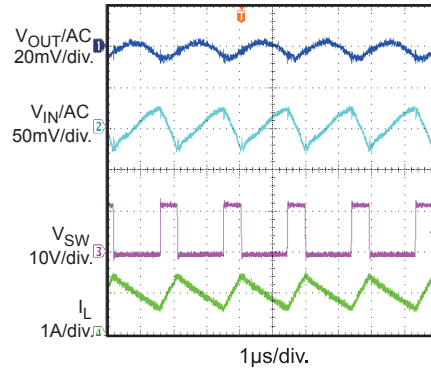
**Input/Output Ripple**

I<sub>OUT</sub> = 0A



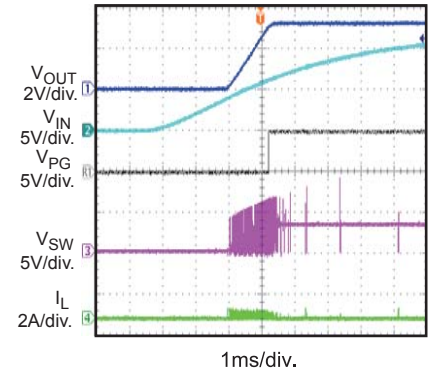
**Input/Output Ripple**

I<sub>OUT</sub> = 1A



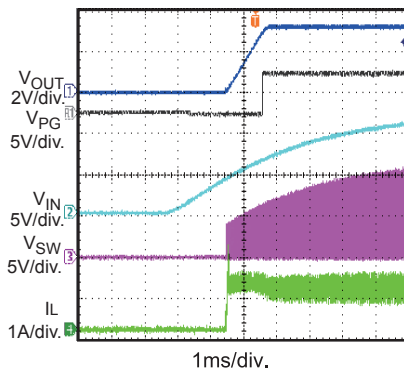
**Start-Up through Input Voltage**

I<sub>OUT</sub> = 0A



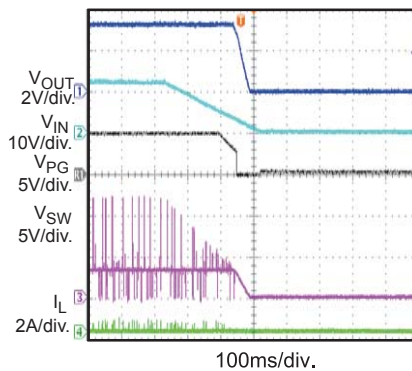
**Start-Up through Input Voltage**

I<sub>OUT</sub> = 1A



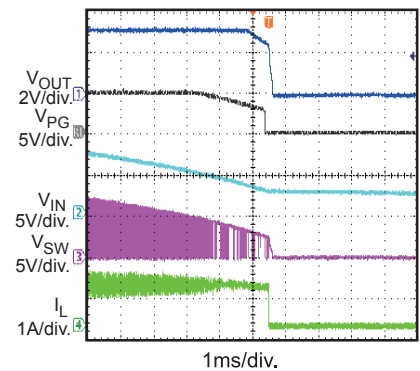
**Shutdown through Input Voltage**

I<sub>OUT</sub> = 0A



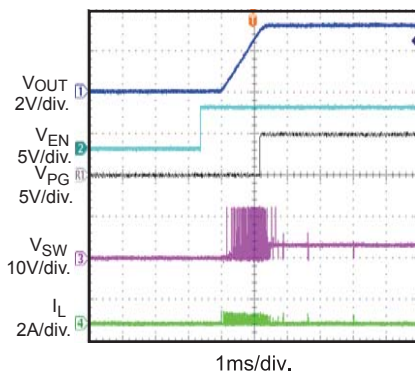
**Shutdown through Input Voltage**

I<sub>OUT</sub> = 1A



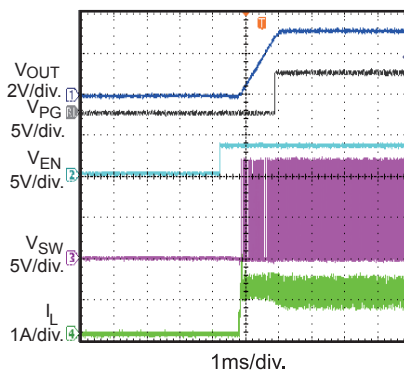
**Start-Up through EN**

I<sub>OUT</sub> = 0A



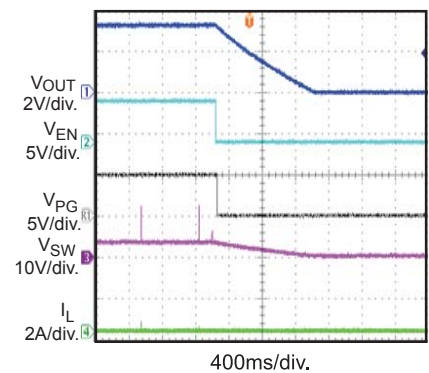
**Start-Up through EN**

I<sub>OUT</sub> = 1A



**Shutdown through EN**

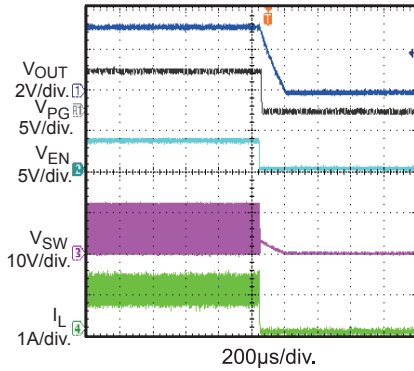
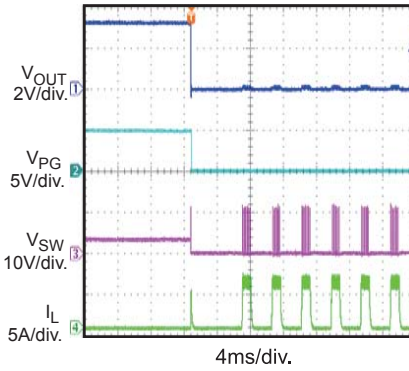
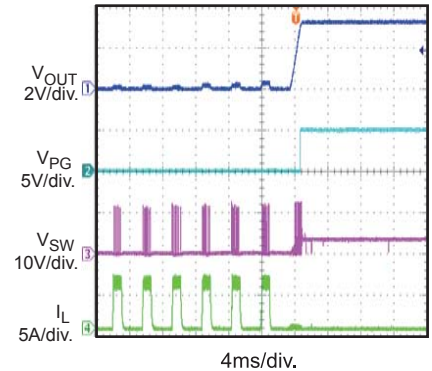
I<sub>OUT</sub> = 0A

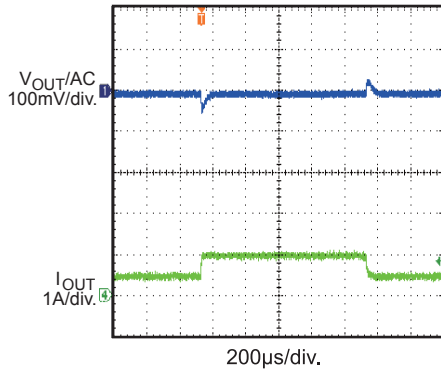


**EVB TEST RESULTS (continued)**

Performance waveforms are tested on the evaluation board.

**V<sub>IN</sub> = 12V, V<sub>OUT</sub> = 3.3V, L=6.5μH, F<sub>SW</sub>=500kHz, T<sub>A</sub> = 25°C, BIAS and MODE are connected to GND, unless otherwise noted.**
**Shutdown through EN**

 I<sub>OUT</sub> = 1A

**Short Circuit Protection Entry**

**Short Circuit Protection Recovery**

**Load Transient Response**

 I<sub>OUT</sub> = 0.5A to 1A


## PRINTED CIRCUIT BOARD LAYOUT

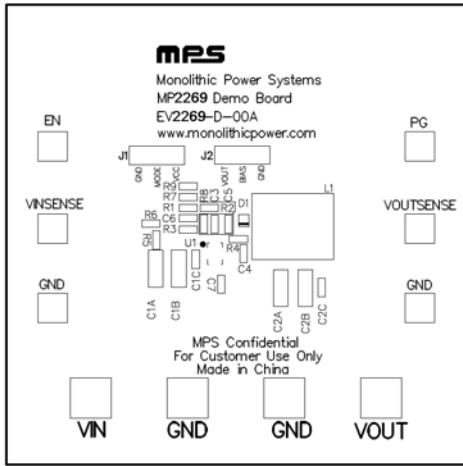


Figure 1: Top Silk Layer

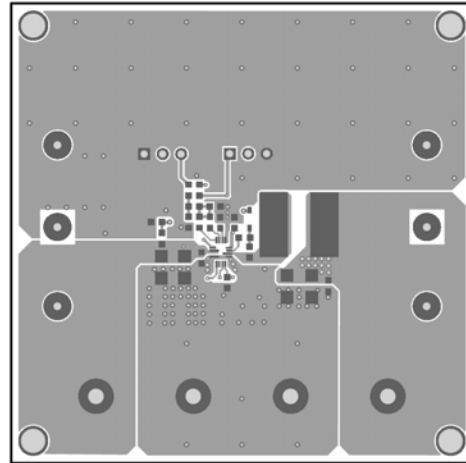


Figure 2: Top Layer

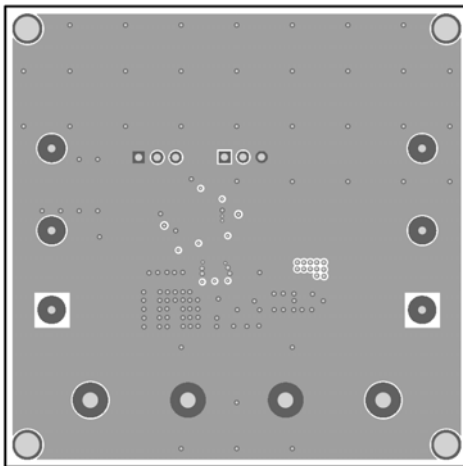


Figure 3: Inner1 Layer

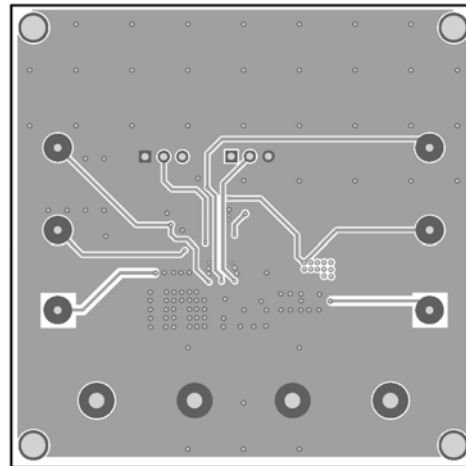


Figure 4: Inner2 Layer

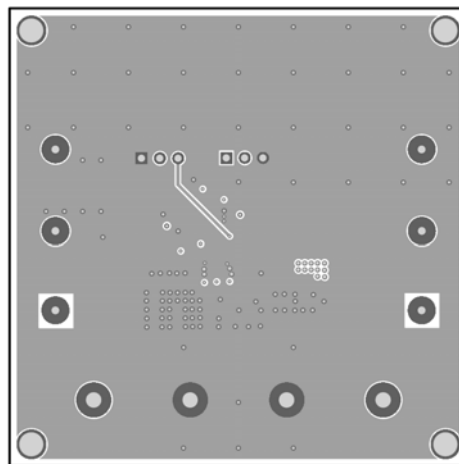


Figure 5: Bottom Layer