EV2345-J-00A

26V/2.5A, 600KHz, Step Down Converter Evaluation Board

DESCRIPTION

The MP2345 is a high frequency synchronous rectified step-down switch mode converter with built in internal power MOSFETs. It offers a very compact solution to achieve 2.5A continuous output current over a wide input supply range with excellent load and line regulation.

The Evaluation Board can deliver a 2.5A 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 MP2345 requires a minimum number of readily-available standard external components and is available in a space saving 6-pin TSOT23 package.

FEATURES

- Wide 7.5V to 26V Operating Input Range
- 2.5A Load Current
- 90mΩ/40mΩ Low Rds(on) Internal Power MOSFETs
- Power Save Mode for Light Load Condition
- 600kHz Fixed Switching Frequency at CCM
- Switching Node Ringing Reduction
- Internal Soft Start
- OCP Protection and Hiccup
- Thermal Shutdown
- Output Adjustable from 3.3V
- Available in a 6-pin TSOT23 package

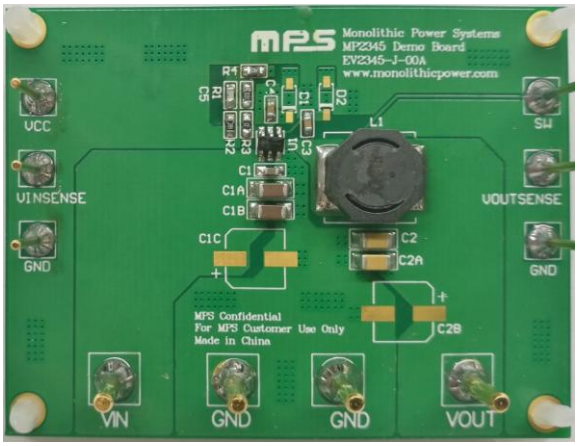
APPLICATIONS

- Standby Power Supply
- White Goods
- Flat Panel Television and Monitors

ELECTRICAL SPECIFICATION

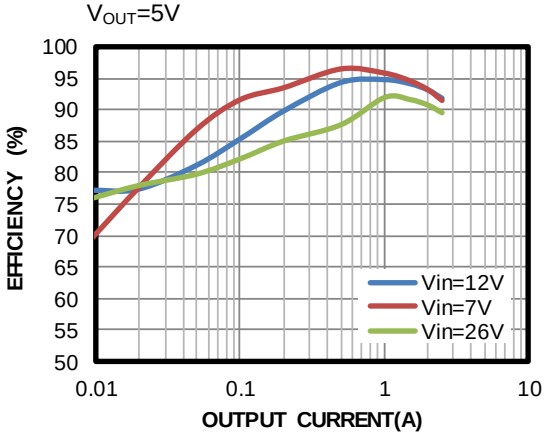
Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	7.5 – 26	V
Output Voltage	V_{OUT}	5	V
Output Current	I_{OUT}	2.5	A

EV2345-J-00A EVALUATION BOARD

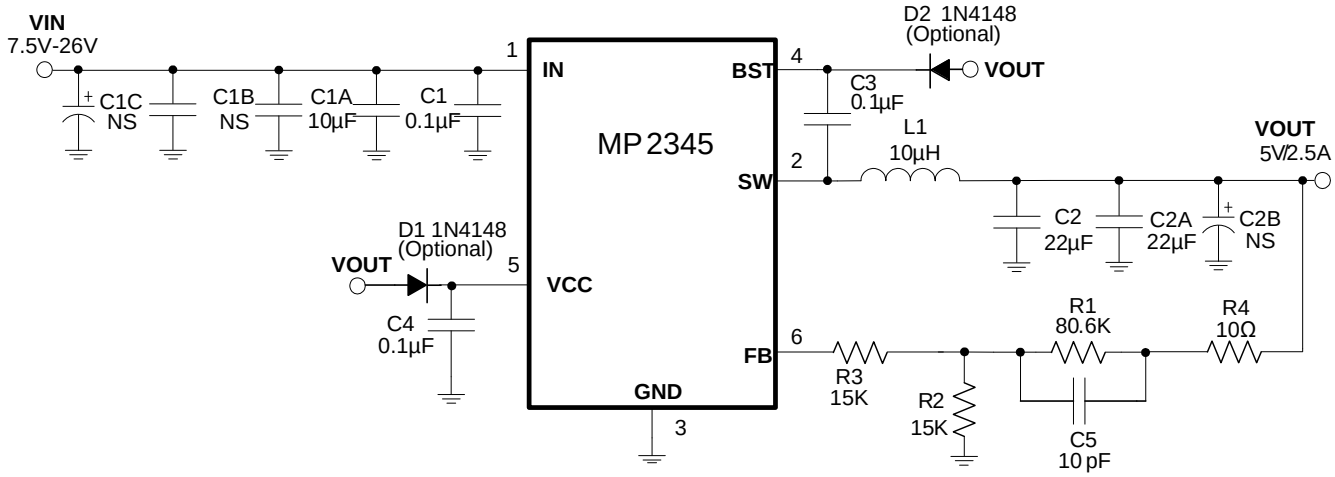


Board Number	MPS IC Number
EV2345-J-00A	MP2345GJ

Efficiency vs. output current



EVALUATION BOARD SCHEMATIC



EV2345-J-00A BILL OF MATERIALS

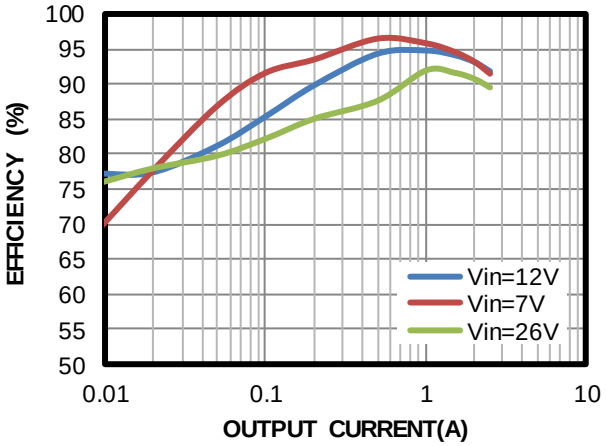
Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	0.1µF	Ceramic Cap, 50V,X7R	0603	Murata	GRM188R71H104KA93D
2	C3, C4	0.1µF	Ceramic Cap, 25V,X7R	0603	Murata	GRM188R71E104KA01D
1	C1A	10µF	Ceramic Cap, 50V,X5R	1206	Murata	GRM31CR61H106KA12L
2	C2, C2A	22µF	Ceramic Cap, 25V, X5R	1206	Murata	GRM31CR61E226KE15L
0	C1C, C2B, C1B	NS				
1	C5	10pF	Ceramic Cap, 50V,C0G	0603	Murata	GRM1885C1H100JA01D
0	D1, D2	NS				
1	R1	80.6kΩ	Film Res., 1%	0603	Yageo	RC0603FR-0780K6L
2	R2, R3	15kΩ	Film Res., 1%	0603	Yageo	RC0603FR-0715KL
1	R4	10Ω	Film Res., 1%	0603	Yageo	RC0603JR-0710RL
1	L1	10µH	DCR=35mΩ, Isat=4A	SMD	Wurth	744 066 100
1	U1	MP2345	Step-Down Converter	TSOT23-6	MPS	MP2345GJ

EVB TEST RESULTS

V_{IN} = 12V, V_{OUT} = 5V, L = 10µH, T_A = 25°C, unless otherwise noted.

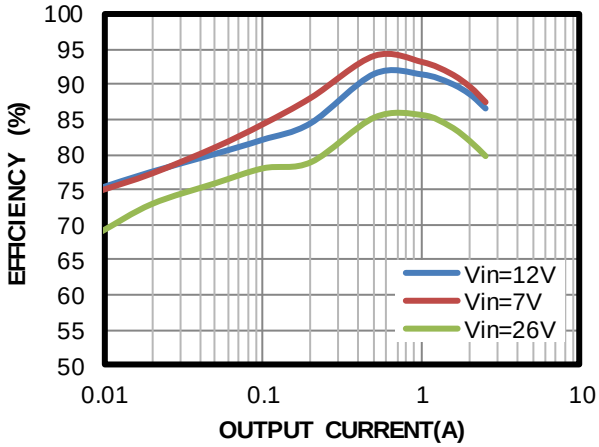
Efficiency vs. output current

V_{OUT}=5V

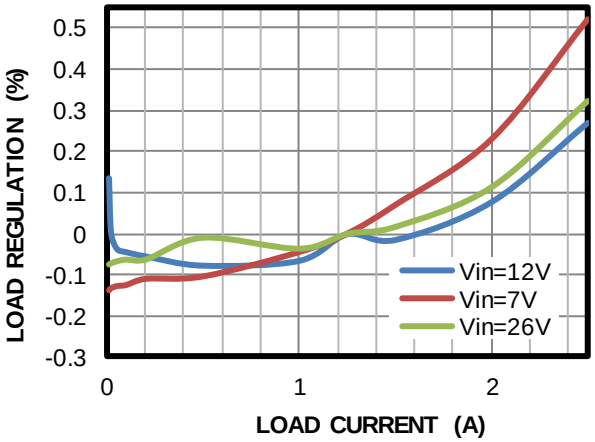


Efficiency vs. output current

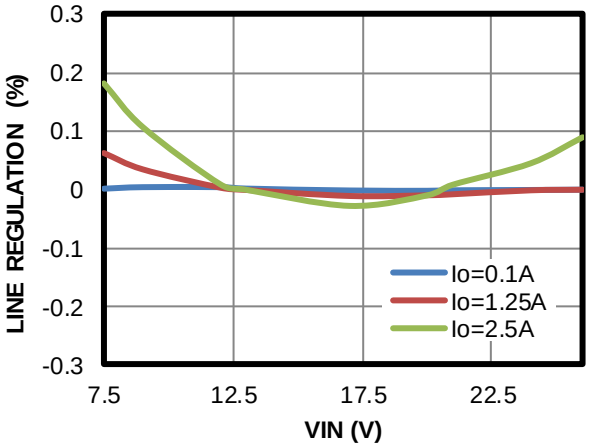
V_{OUT}=3.3V



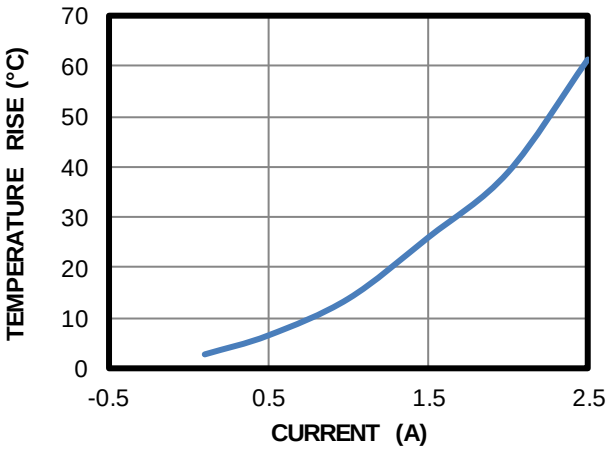
Load regulation



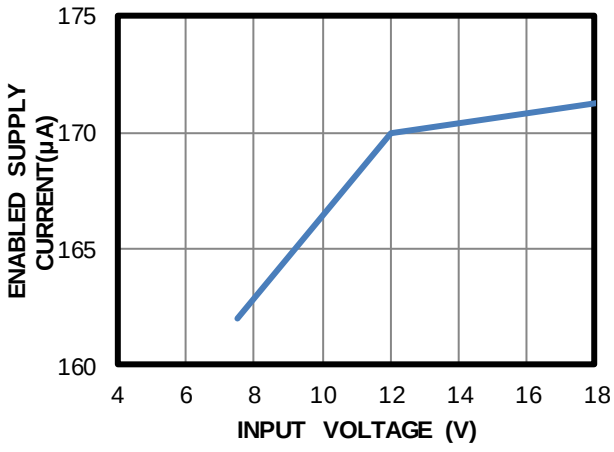
Line regulation



Case temperature rise



Enabled Supply Current vs. input Voltage

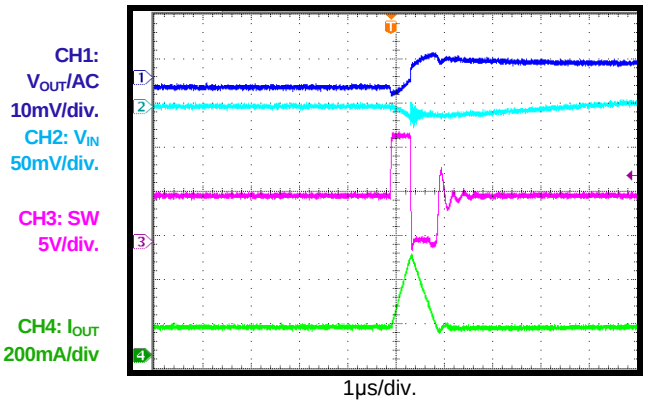


EVB TEST RESULTS *(continued)*

V_{IN} = 12V, V_{OUT} = 5V, L = 10µH, T_A = 25°C, unless otherwise noted.

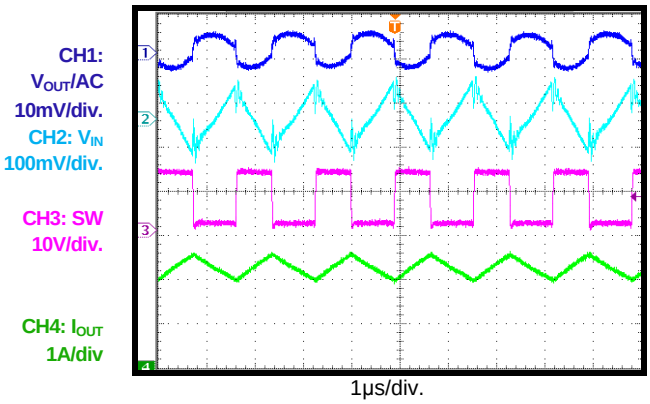
input/output ripple

I_{OUT}=0A



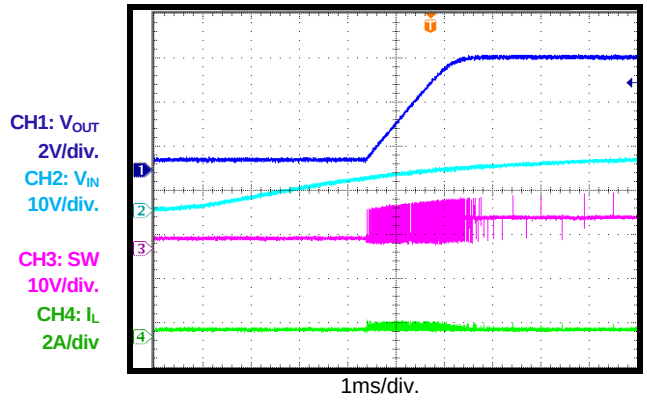
input/output ripple

I_{OUT}=2.5A



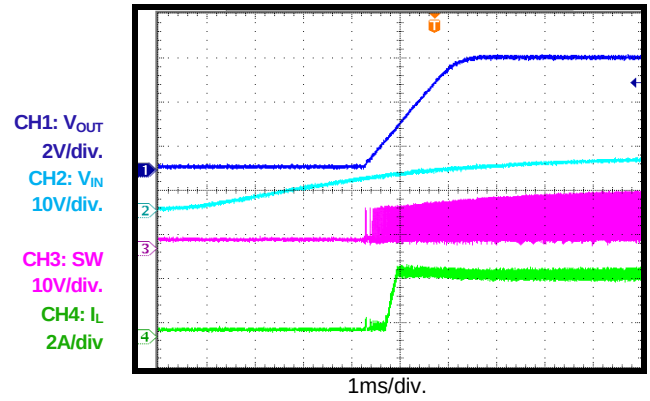
Start-Up through input voltage

I_{OUT}=0A



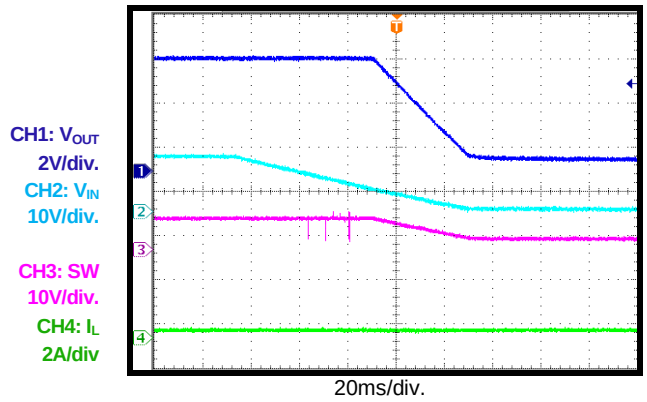
Start-Up through input voltage

I_{OUT}=2.5A



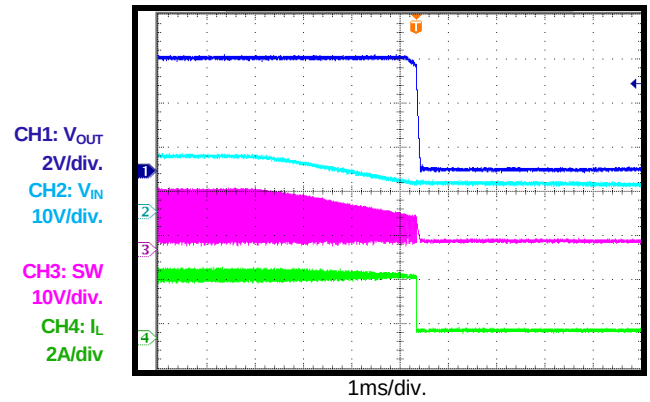
Shutdown through input voltage

I_{OUT}=0A



Shutdown through input voltage

I_{OUT}=2.5A

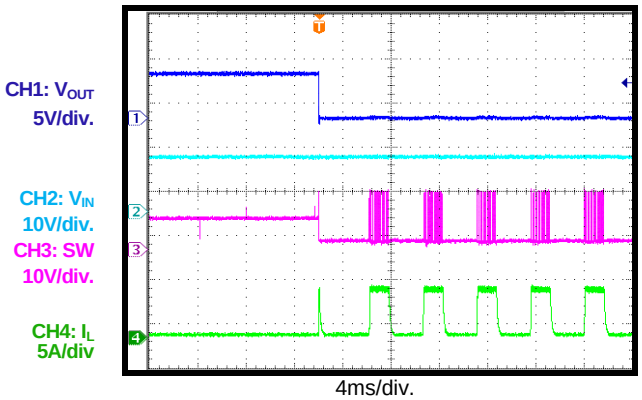


TYPICAL PERFORMANCE CHARACTERISTICS *(continued)*

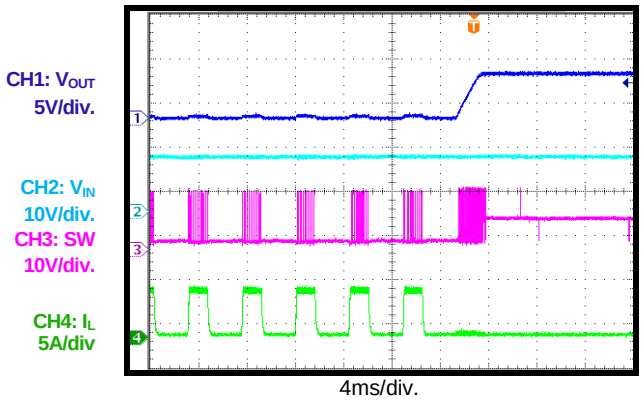
V_{IN} = 12V, V_{OUT} = 5V, L = 10µH, T_A = 25°C, unless otherwise noted.

OCP Entry

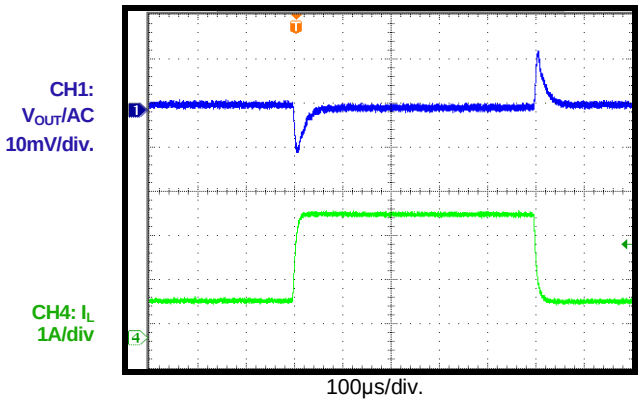
I_{OUT}=0A



OCP Recovery



Load transient response



PRINTED CIRCUIT BOARD LAYOUT

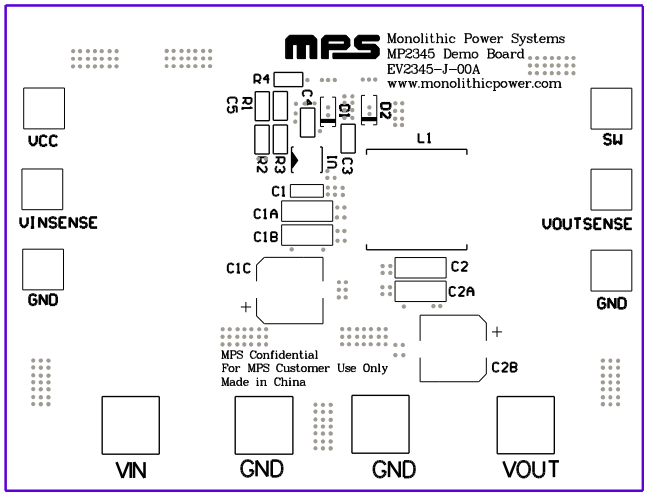


Figure 1—Top Silk Layer

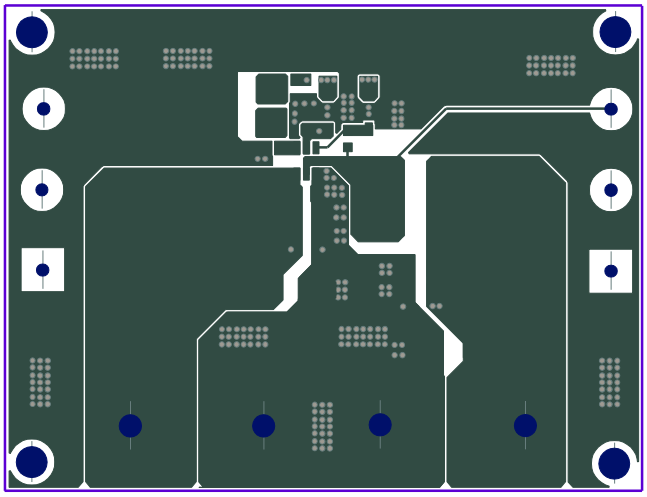


Figure 2—Top Layer

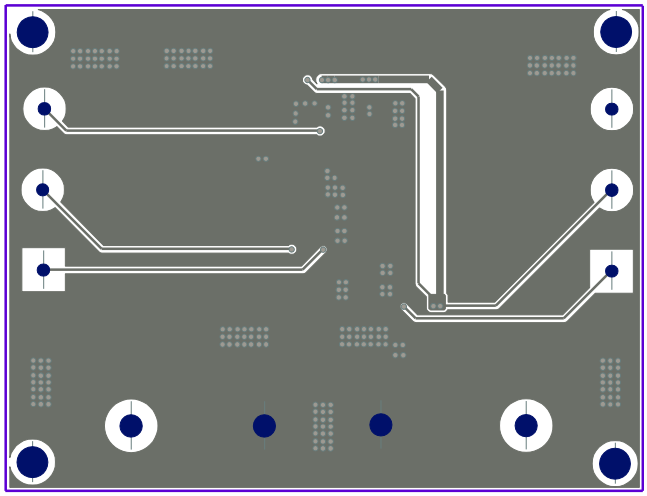


Figure 3—Bottom Layer