

DESCRIPTION

The EV9473-L-00A is an evaluation board for the MP9473, a high-efficiency step-down regulator with integrated power MOSFETs.

MP9473 offers a very compact solution to achieve a 3.5A, continuous-output current over a wide input-supply range with excellent load and line regulation. It also provides fast transient response and good stability for wide input-supply and load range.

The EV9473-L-00A is a fully assembled and tested evaluation board. It generates a +3.3V output voltage at load current up to 3.5A from a 7V to 36V input range. Switching frequency is set at 500kHz.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	4.5 – 36	V
Output Voltage	V_{OUT}	3.3	V
Output Current	I_{OUT}	3.5	A

FEATURES

- Wide 4.5V-to-36V Operating Input Range
- Guaranteed 3.5A, Continuous Output Current
- Internal 65mΩ High-Side, 30mΩ Low-Side Power MOSFETs
- Proprietary Switching-Loss-Reduction Technology
- 1.5% Reference Voltage
- Programmable Soft-Start Time
- Low Drop-out Mode
- SCP, OCP, UVP and Thermal Shutdown

APPLICATIONS

- General Consumer
- USB Power Supplies
- Cigarette Lighter Adapters
- Power Supply for Chargers

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

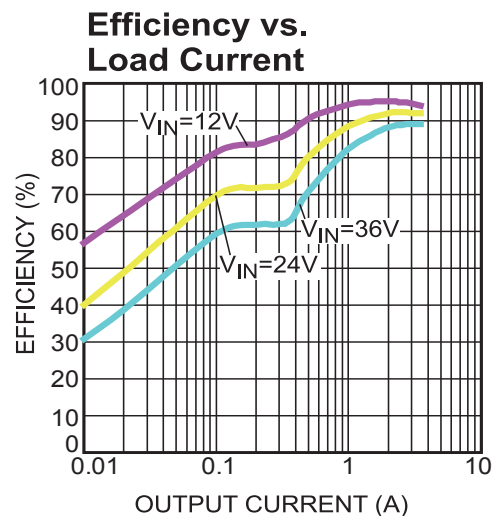
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EV9473-L-00A EVALUATION BOARD

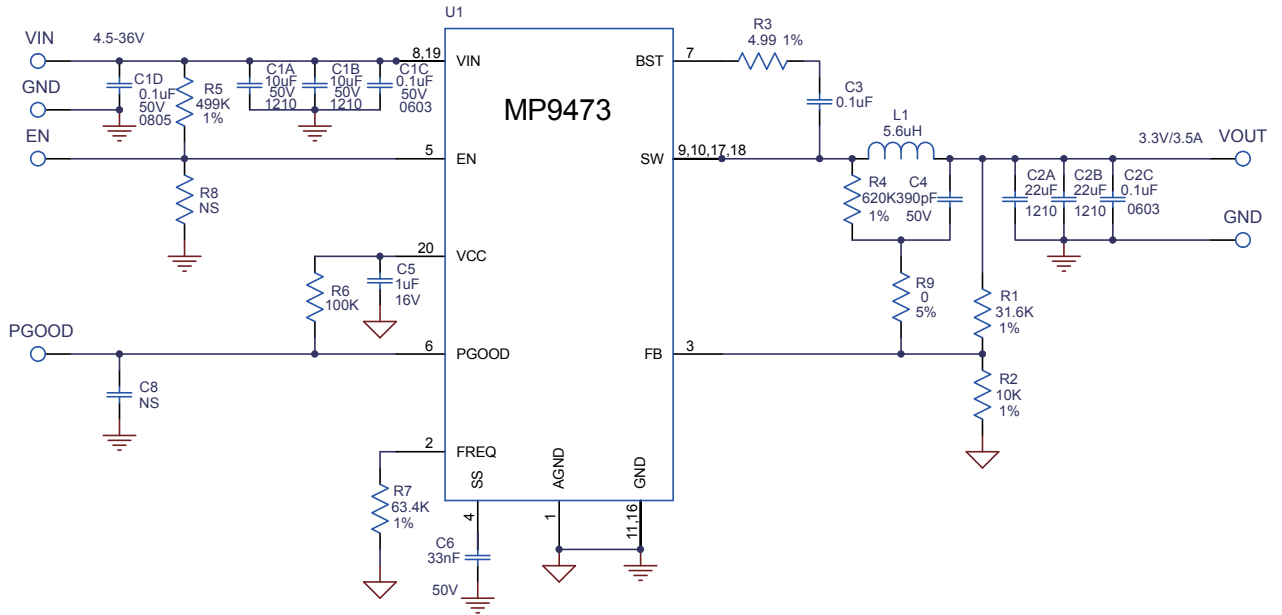


(L x W x H) 2.5" x 2.5" x 0.4"
(6.4cm x 6.4cm x 1.0cm)

Board Number	MPS IC Number
EV9473-L-00A	MP9473GL



EVALUATION BOARD SCHEMATIC



EV9473-L-00A BILL OF MATERIALS

Qty	RefDes	Value	Description	Package	Manufacturer	Manufacturer_P/N
2	C1A,C1B	10 μ F	Ceramic Cap., 50V, X7R	1210	muRata	GRM32ER71H106KA12L
3	C1C,C2C,C3	0.1 μ F	Ceramic Cap., 50V, X7R	0603	TDK	C1005X7R1C104K
1	C1D	0.1 μ F	Ceramic Cap., 50V, X7R	0805	muRata	GRM21BR72A104KAC4L
2	C2A,C2B	22 μ F	Ceramic Cap., 16V, X7R	1210	muRata	GRM32ER71C226KE79
1	C4	390pF	Ceramic Cap., 50V, C0G	0402	muRata	GRM1885C1H391JA01D
1	C5	1 μ F	Ceramic Cap., 25V, X7R	0402	muRata	GRM188R71C105KA12D
1	C6	33nF	Ceramic Cap., 16V, X7R	0402	muRata	GRM188R71H333KA61D
1	L1	5.6 μ H	Inductor, 15mOhm DCR, 10A	SMD	Coilcraft	XAL6060-562ME
1	R1	31.6k	Film Res., 1%	0402	Yageo	RC0603FR-0731K6L
1	R2	10k	Film Res., 1%	0402	Yageo	RC0603FR-0710KL
1	R3	4.99 Ω	Film Res., 1%	0402	Yageo	RC0603FR-074R99L
1	R4	620k	Film Res., 1%	0402	Yageo	RC0603FR-07620KL
1	R5	499k	Film Res., 1%	0402	Yageo	RC0603FR-07499KL
1	R6	100k	Film Res., 5%	0402	Yageo	RC0603FR-07100KL
1	R7	63.4k	Film Res., 1%	0402	Yageo	RC0603FR-0763K4L
1	R9	0 Ω	Film Res., 5%	0402	Yageo	RC0603FR-070RL
	R8	NS				
1	U1	MPQ4473	Step-Down Regulator	QFN20- 3x4	MPS	MPQ4473GL

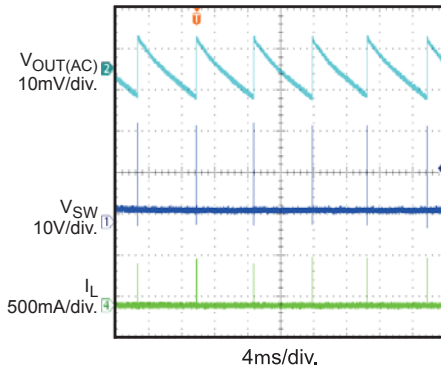
EVB TEST RESULTS

Performance waveforms are tested on the evaluation board.

$V_{IN} = 24V$, $V_{OUT} = 3.3V$, $T_A = 25^\circ C$, unless otherwise noted.

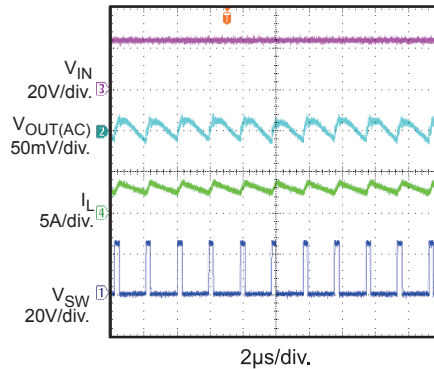
Output Voltage Ripple

$I_{OUT} = 0A$



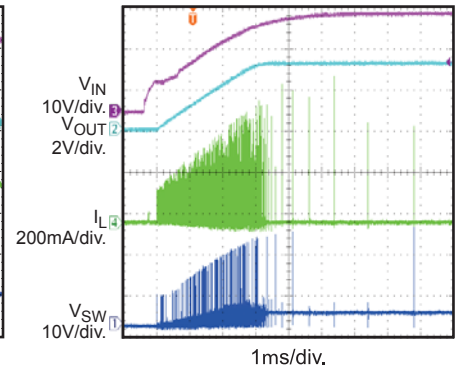
Output Voltage Ripple

$I_{OUT} = 3.5A$



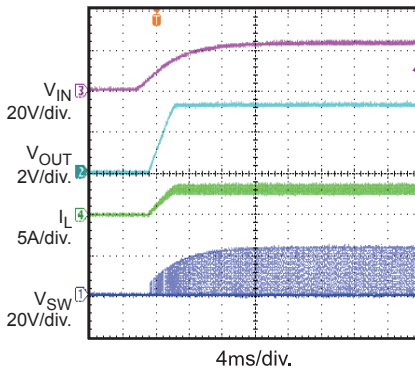
Start-up Through V_{IN}

$I_{OUT} = 0A$



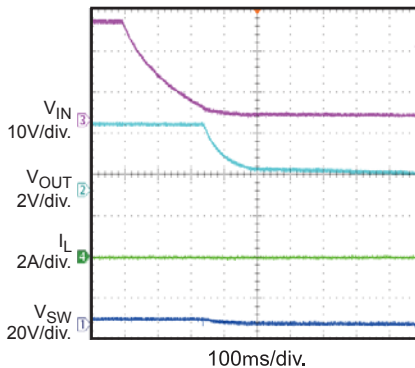
Start-up Through V_{IN}

$I_{OUT} = 3.5A$



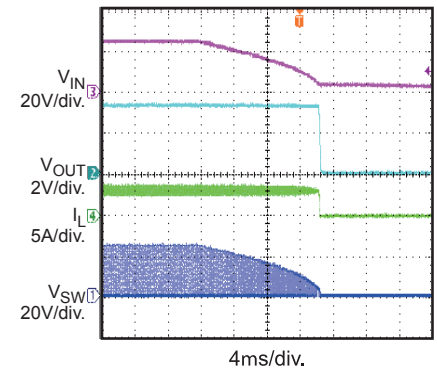
Shutdown Through V_{IN}

$I_{OUT} = 0A$



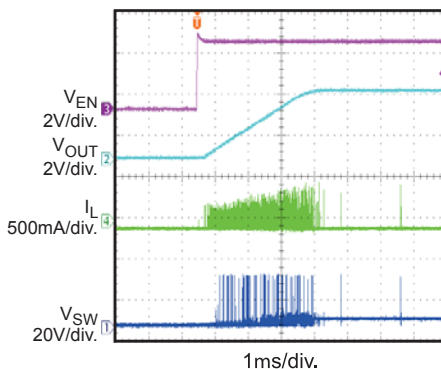
Shutdown Through V_{IN}

$I_{OUT} = 3.5A$



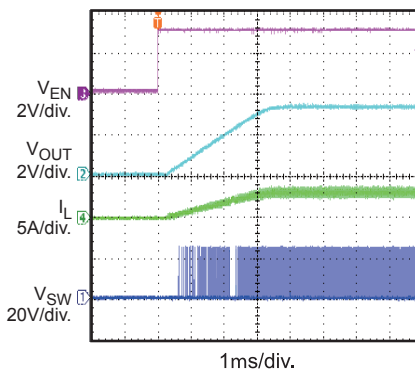
Start-up Through EN

$I_{OUT} = 0A$



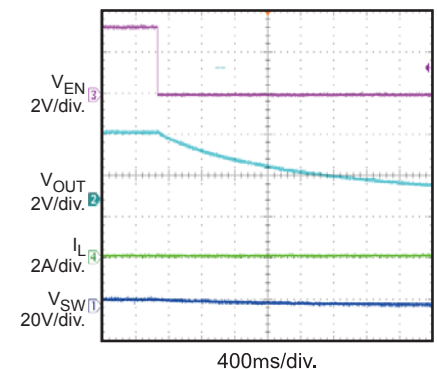
Start-up Through EN

$I_{OUT} = 3.5A$



Shutdown Through EN

$I_{OUT} = 0A$



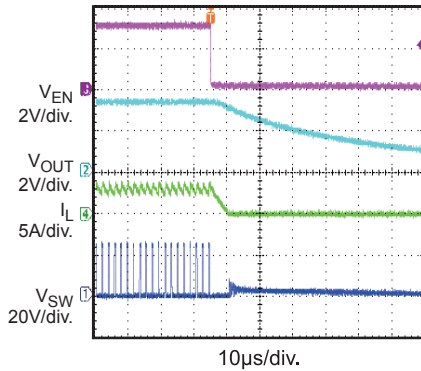
EVB TEST RESULTS *(continued)*

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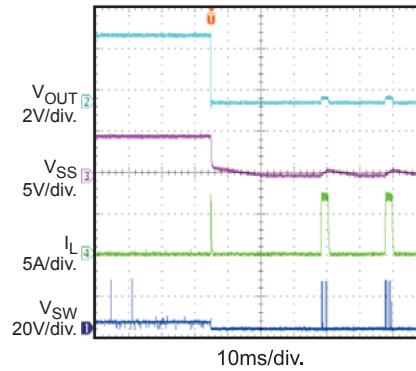
Shutdown Through EN

$I_{OUT} = 3.5A$



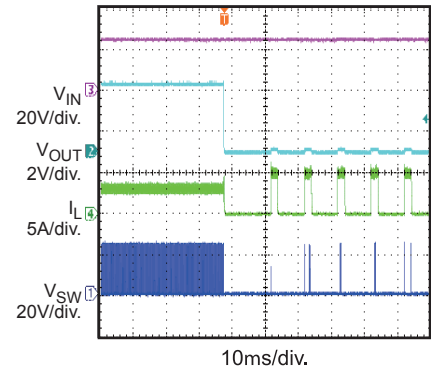
Short Circuit Entry

$I_{OUT} = 0A$

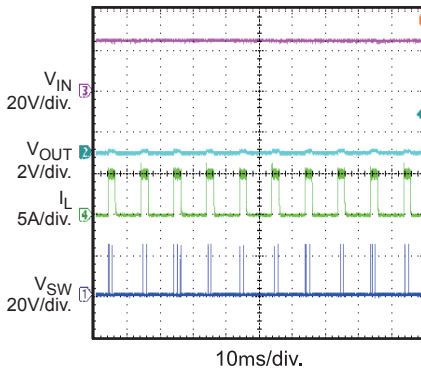


Short Circuit Entry

$I_{OUT} = 3.5A$

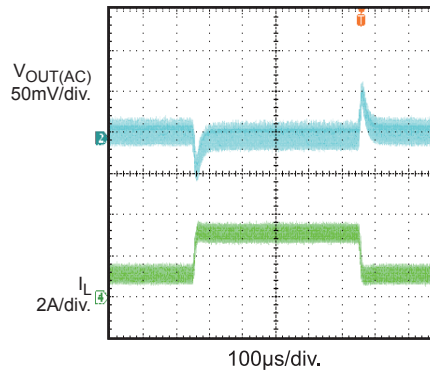


Short Circuit Steady State



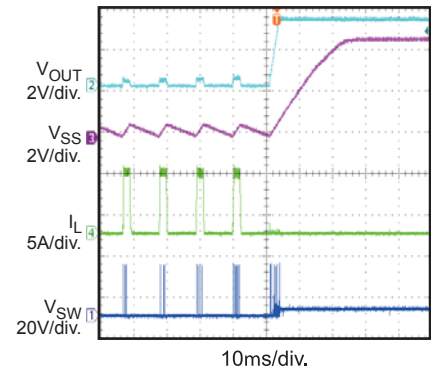
Load Transient

$I_{OUT} = 1A-3.5A$



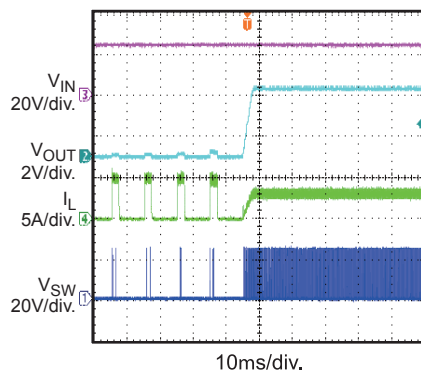
Short Circuit Recovery

$I_{OUT} = 0A$

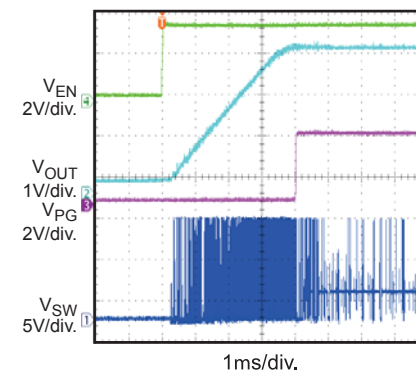


Short Circuit Recovery

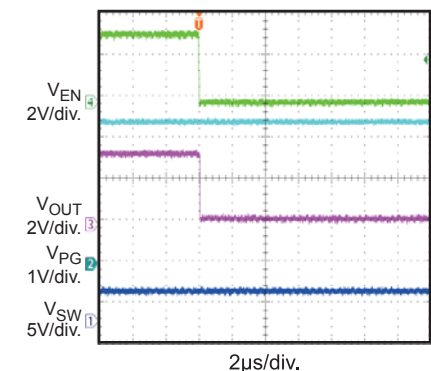
$I_{OUT} = 3.5A$



Power Good Through EN Start-up



Power Good Through EN Shutdown



PRINTED CIRCUIT BOARD LAYOUT

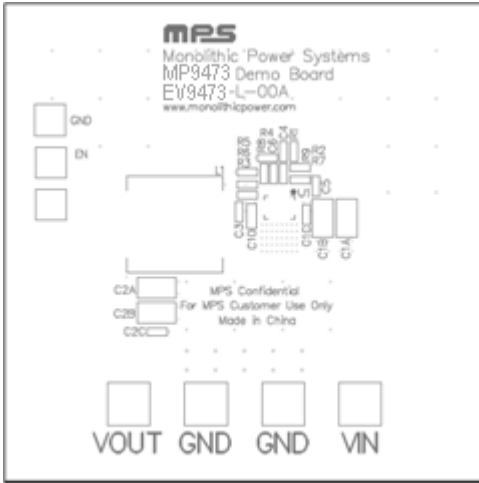


Figure 1—Top Silk Layer

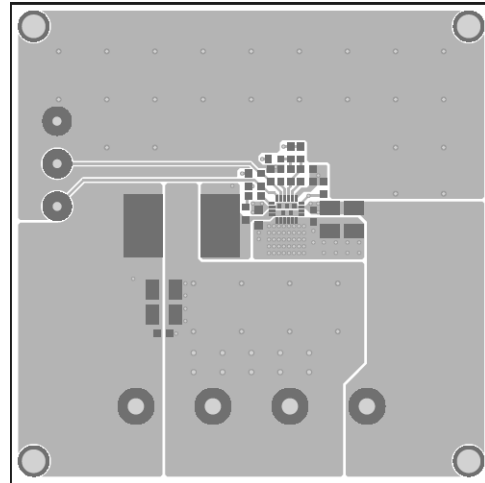


Figure 2—Top Layer

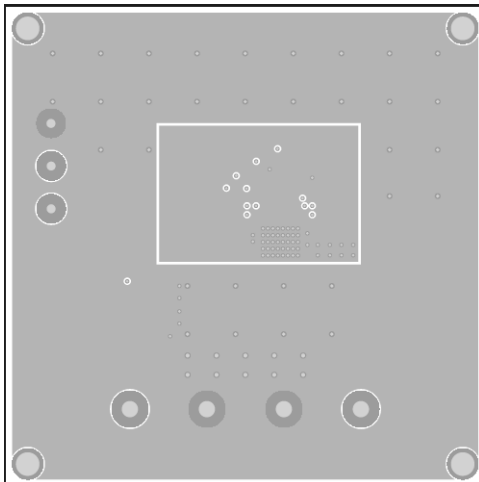


Figure 3—Inner1 Layer

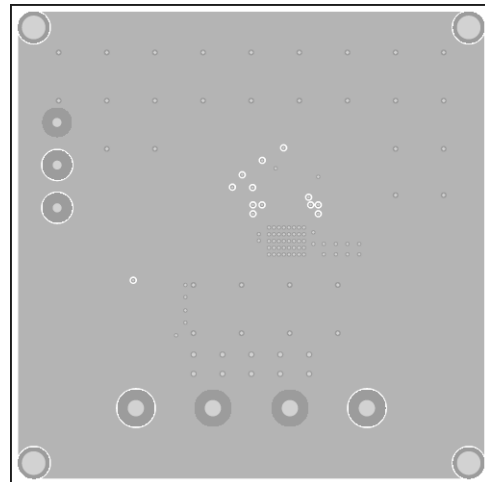


Figure 4—Inner2 Layer

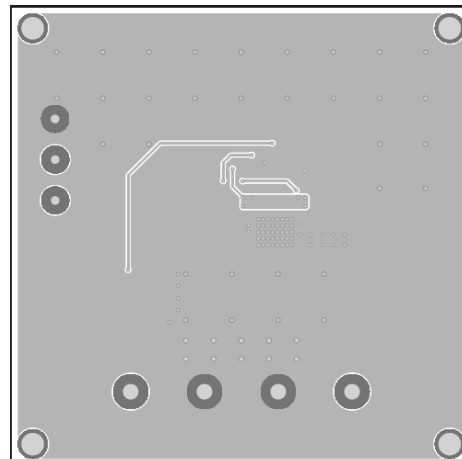


Figure 5—Bottom Layer