

### DESCRIPTION

The EV4410-Q-00A Evaluation Board is designed to demonstrate the capabilities of MP4410. The MP4410 is a high-frequency, step-down, switching regulator with integrated high-side/ low-side, high-voltage power MOSFETs. It provides a highly efficient output of up to 100mA.

42V rated MOSFETs and 4.5V to 36V operation range accommodates a variety of step-down applications in automotive input environment. A 5µA shutdown mode quiescent current allows use in battery-powered applications.

It allows for high power conversion efficiency over a wide load range by scaling down the switching frequency under light-load condition to reduce the switching and gate driver losses.

### ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Input Voltage	V <sub>IN</sub>	4.5 – 36	V
Output Voltage	V <sub>OUT</sub>	3.3	V
Output Current	I <sub>OUT</sub>	100	mA

### FEATURES

- 20µA Quiescent Current
- <5µA Shutdown Mode Current
- Wide 4.5V to 36V Operating Range
- 42V Integrated MOSFETs
- Stable with Ceramic Output Capacitors
- Programmable Soft-Start
- Adjustable Input UVLO Hysteresis
- Precision Peak Current Limit without Current-Sensing Resistor
- Programmable Peak Current Limit

### APPLICATIONS

- 4mA to 20mA Current Loops
- Automotive Systems
- Industrial Power Systems
- Distributed Power Systems
- Battery Powered Systems

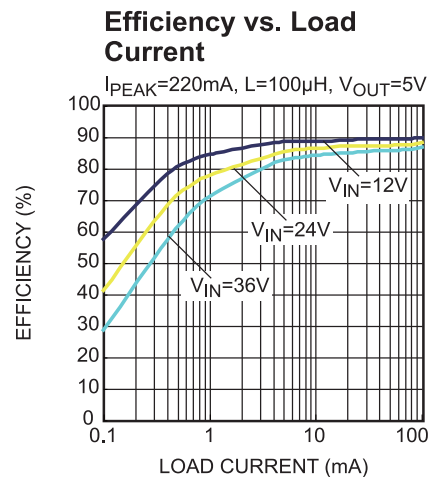
All MPS parts are lead-free, halogen free, and adhere to the RoHS directive. For MPS green status, please visit MPS website under Quality Assurance. "MPS" and "The Future of Analog IC Technology" are Registered Trademarks of Monolithic Power Systems, Inc.

## EV4410-Q-00A EVALUATION BOARD

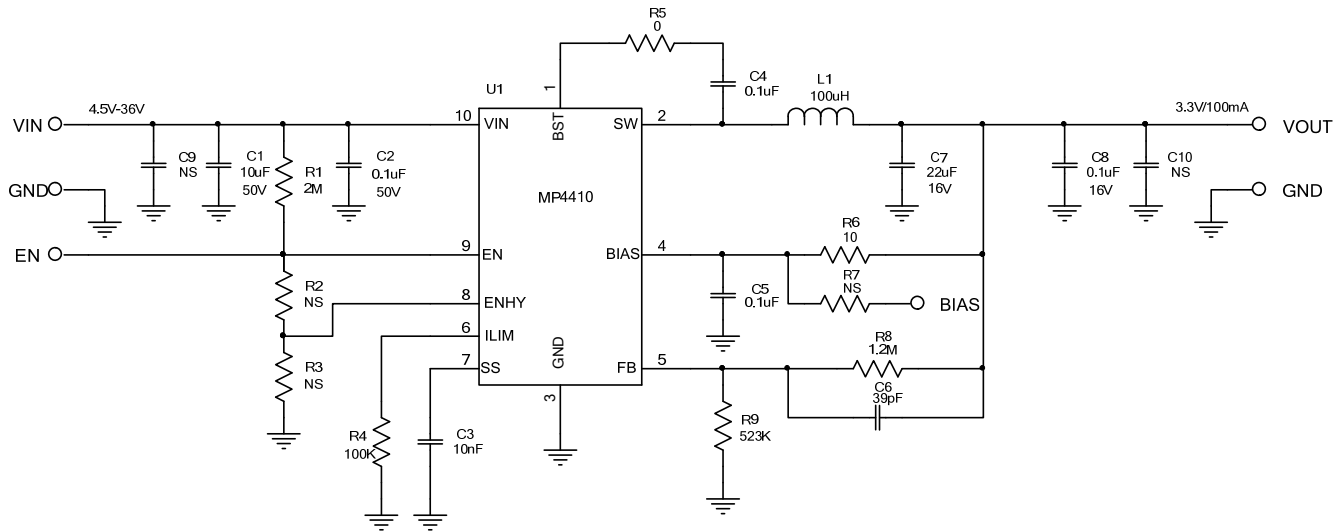


(L × W × H) 6.35cm × 6.35cm × 1cm

Board Number	MPS IC Number
EV4410-Q-00A	MP4410GQ



## EVALUATION BOARD SCHEMATIC

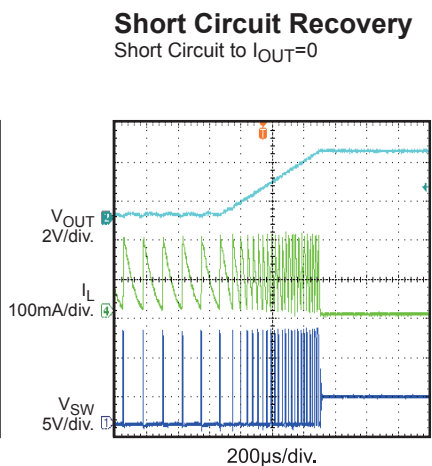
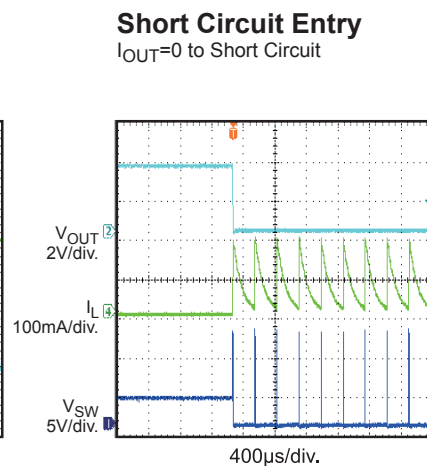
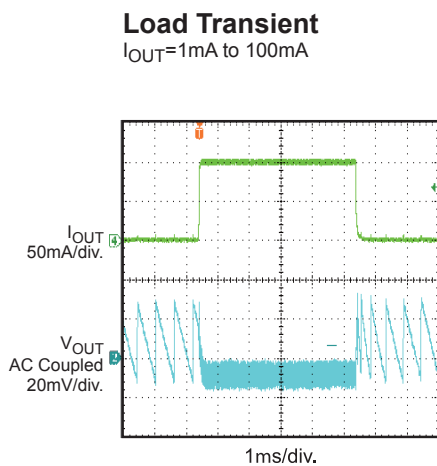
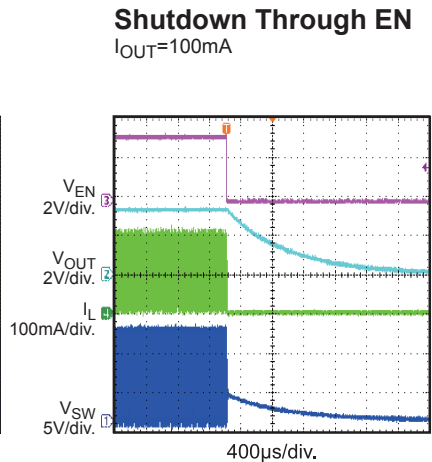
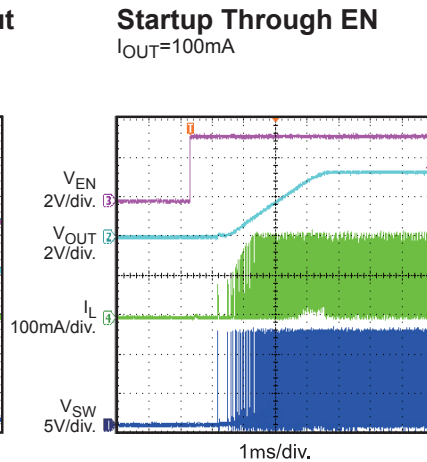
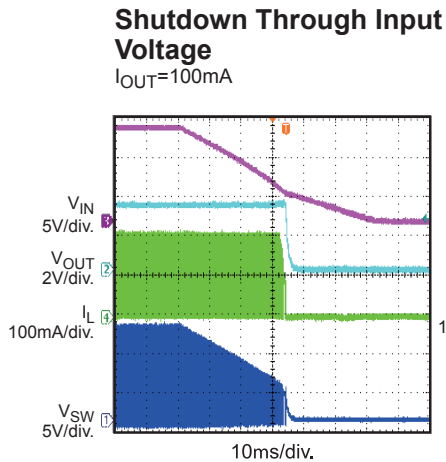
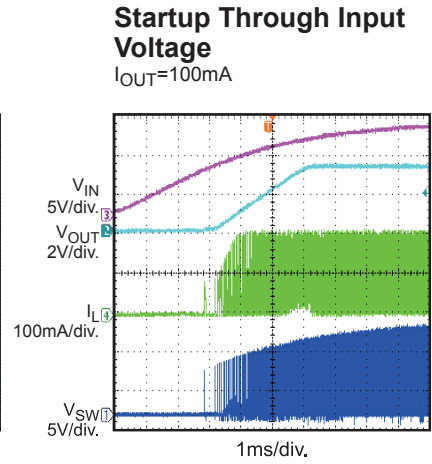
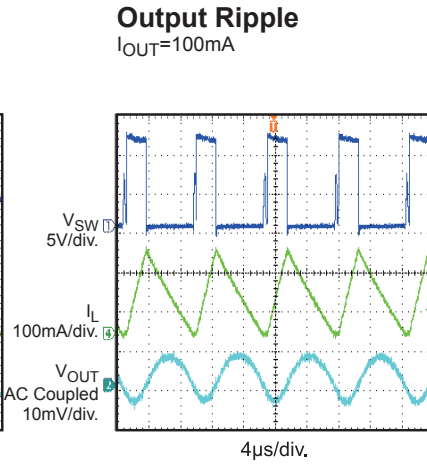
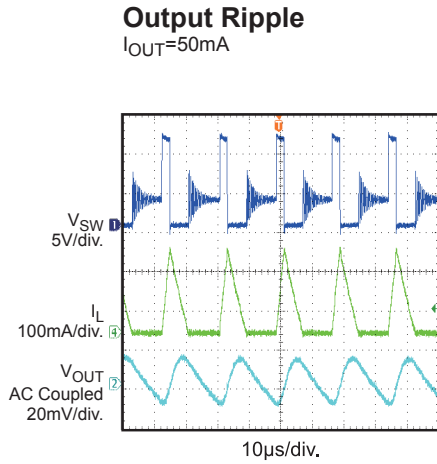


## EV4410-Q-00A BILL OF MATERIALS

Qty.	RefDes	Value	Description	Package	Manufacture	Manufacture_PN
1	C1	10uF	Ceramic Capacitor;50V;X7R;1210	1210	muRata	GRM32ER71H106KA12L
2	C2, C4	0.1uF	Ceramic Capacitor;50V;X7R;0603	0603	muRata	GRM188R71H104KA93D
1	C3	10nF	Ceramic Capacitor;50V;X7R;0603	0603	muRata	GRM188R71H103KA01D
2	C5,C8	0.1uF	Ceramic Capacitor;16V;X7R;0603	0603	muRata	GRM188R71C104KA01D
1	C6	39pF	Ceramic Capacitor;50V;C0G;0603	0603	muRata	GRM1885C1H390JA01
1	C7	22uF	Ceramic Capacitor;16V;X7R;1210	1210	muRata	GRM32ER71C226KEA8L
2	C9, C10	NS		0603		
1	L1	100uH	Inductor;100uH;430mΩ;0.42A	SMD	TDK	SLF6028T-101MR42
1	R1	2M	Film Resistor;1%	0603	Yageo	RC0603FR-072ML
1	R4	100K	Film Resistor;1%	0603	Yageo	RC0603FR-07100KL
1	R5	0	Film Resistor;5%	0603	Yageo	RC0603JR-070RL
1	R6	10	Film Resistor;1%	0603	Yageo	RC0603FR-0710RL
1	R8	1.2M	Film Resistor;1%	0603	Yageo	RC0603FR-071M2L
1	R9	523K	Film Resistor;1%	0603	Yageo	RC0603FR-07523KL
3	R2, R3, R7	NS		0603		
1	U1		Step-Down Regulator	QFN-10	MPS	MP4410GQ

## EVB TEST RESULTS

$V_{IN} = 12V$ ,  $V_{OUT} = 3.3V$ ,  $L = 100\mu H$ ,  $T_A = 25^\circ C$ , unless otherwise noted.



## PRINTED CIRCUIT BOARD LAYOUT

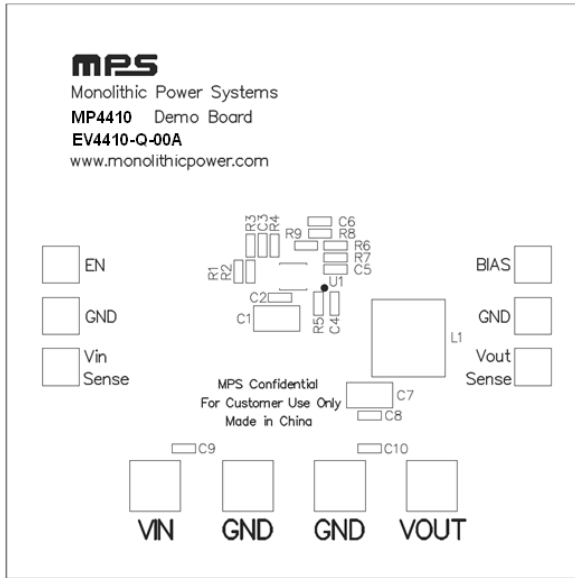


Figure 1: Top Silkscreen Layer

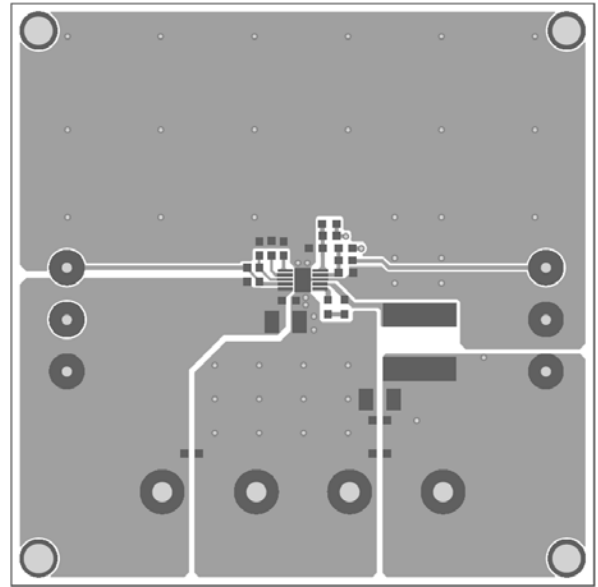


Figure 2: Top Layer

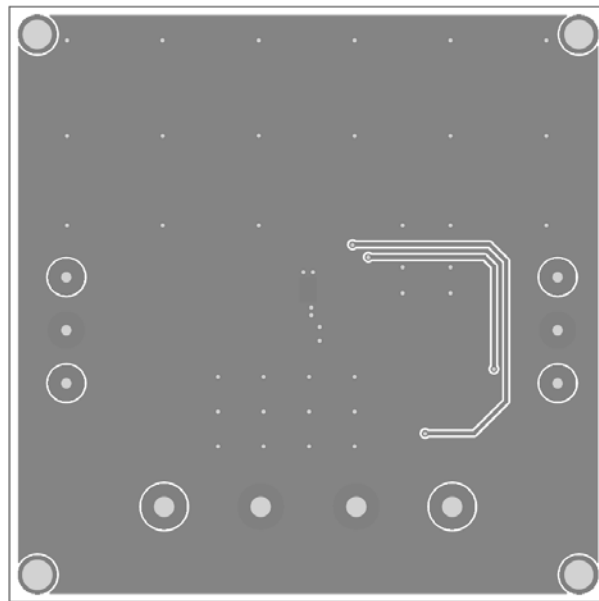


Figure 3: Bottom Layer

## QUICK START GUIDE

1. Connect the positive terminal of the load to VOUT pin, and the negative terminal of the load to GND pin.
2. Preset the power supply output to 4.5V-36V and turn off the power supply.
3. Connect the positive terminal of the power supply output to the VIN pin and the negative terminal of the power supply output to the GND pin.
4. Turn on the power supply. The EV4410 will automatically start up.
5. To use the Enable function, apply a digital input to the EN pin. Drive EN higher than 1.6V to turn on the regulator or less than 1.2V to turn it off. Note that floating the EN pin will turn it off.
6. To adjust the output voltage, change the values of R8 and R9. Generally, to reduce the divider current, it is suggested to keep R8=1.2M and change R9 following below equation to adjust the output voltage.

$$R9 = R8 \times \frac{V_{FB}}{V_{OUT} - V_{FB}}$$

Where  $V_{FB}=1V$ .

For example, if keep R8=1.2M, chose R9=300k can get 5V output voltage.

**NOTICE:** The information in this document is subject to change without notice. Please contact MPS for current specifications. Users should warrant and guarantee that third party Intellectual Property rights are not infringed upon when integrating MPS products into any application. MPS will not assume any legal responsibility for any said applications.