EV2109DQ-00A

Dual 800mA, 6V, 1.2MHz Synchronous Step-Down Converter Evaluation Board

The Future of Analog IC Technology™

DESCRIPTION

The EV2109DQ-00A is the evaluation board for the MP2109. The MP2109 contains two independent 1.2MHz constant frequency, current mode, PWM step-down converters.

Each converter integrates a main switch and a synchronous rectifier for high efficiency without an external Schottky diode. The MP2109 is ideal for powering portable equipment that runs from a single cell Lithium-Ion (Li+) battery. Each converter can supply 800mA of load current from a 2.5V to 6V input voltage. The output voltage can be regulated as low as 0.6V. It can also run at 100% duty cycle for low dropout applications.

FEATURES

- Up to 95% Efficiency
- 800mA Load Current on Each Channel
- 2.5V to 6V Input Voltage Range
- Output Voltage as Low as 0.6V

APPLICATIONS

- Cellular and Smart Phones
- Microprocessors and DSP Core Supplies
- PDAs
- MP3 Players
- Digital Still and Video Cameras
- Portable Instruments

ELECTRICAL SPECIFICATIONS

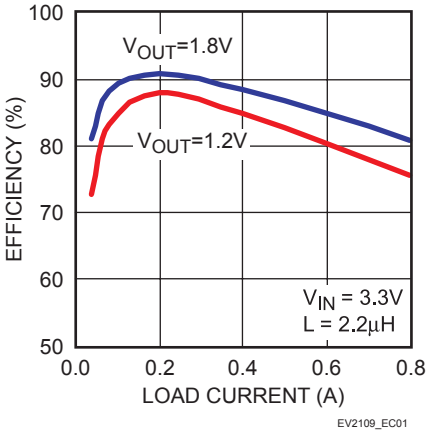
Parameter	Symbol	Value	Units
Input Voltage	$V_{IN1/IN2}$	2.5 to 6	V
Output Voltage 1	V_{OUT1}	1.8	V
Output Voltage 2	V_{OUT2}	1.2	V
Load Max	$I_{OUT1/OUT2}$	800	mA

EV2109DQ-00A EVALUATION BOARD

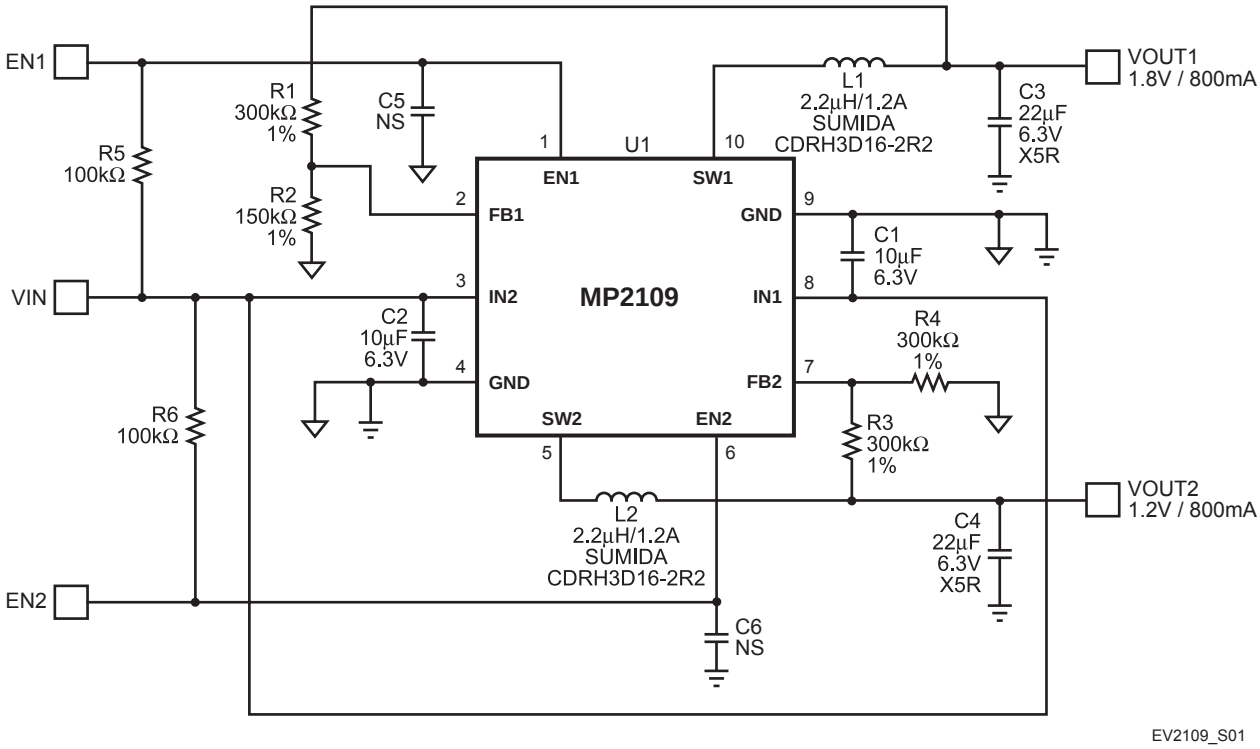
(L x W x H) 2.0" x 1.6" x 0.4"
(5.0cm x 4.0cm x 1.0cm)

Board Number	Package	MPS IC Number
EV2109DQ-00A	QFN10 (3mm x 3mm)	MP2109DQ

Efficiency vs Load Current



EVALUATION BOARD SCHEMATIC



EV2109DQ-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
2	C1, C2	10µF	Ceramic Capacitor, 6.3V, X5R	1206	Any	
2	C3, C4	22µF	Ceramic Capacitor, 6.3V, X5R	1206	Any	
2	C5, C6	NS	Do Not Stuff			
2	L1, L2	2.2µH	Inductor, 1.2A	SMD	Sumida	CDRH3D16-2R2
3	R1, R3, R4	300kΩ	Resistor, 1%	0603	Any	
2	R2	150kΩ	Resistor, 1%	0603	Any	
2	R5, R6	100kΩ	Resistor, 5%	0603	Any	
1	U1		DC-DC Converter	QFN10 (3mm x 3mm)	MPS	MP2109DQ

PRINTED CIRCUIT BOARD LAYOUT

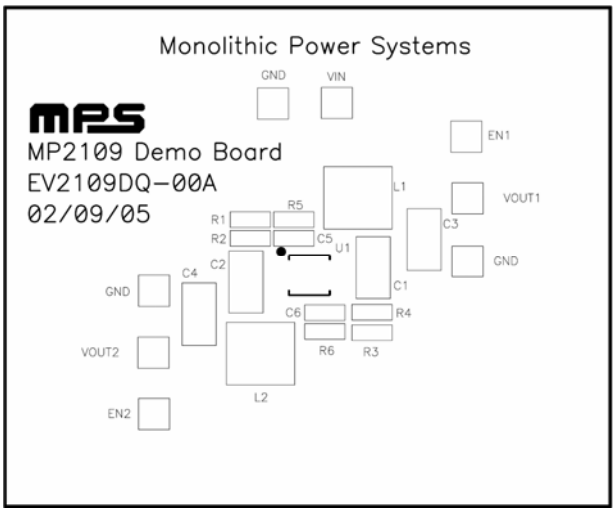


Figure 1—Top Silk Layer

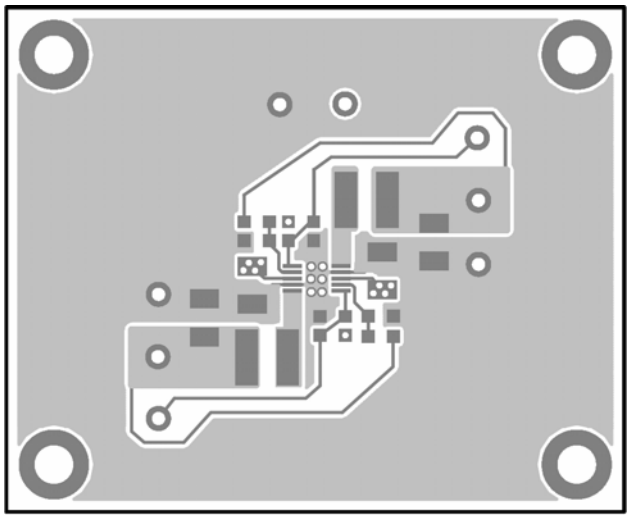


Figure 2—Top Layer

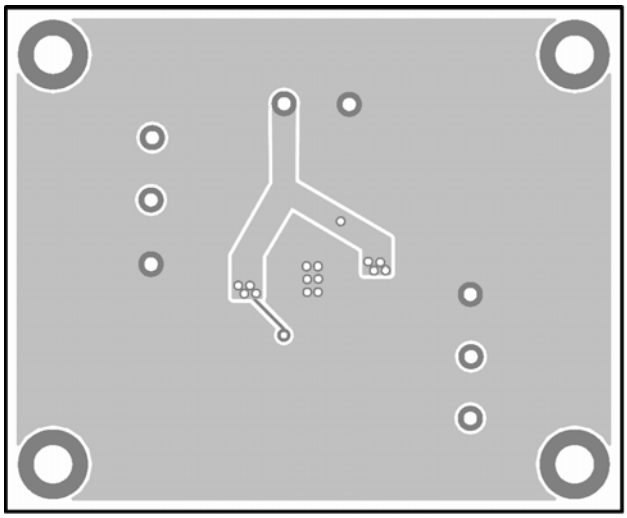


Figure 3—Bottom Layer

QUICK START GUIDE

The output voltages of this board are set to 1.8V (VOUT1) and 1.2V (VOUT2). The board layout accommodates most commonly used inductors and output capacitors.

1. Attach the positive and negative ends of the first load to the VOUT1 and GND pins, respectively. If using both outputs, attach the positive and negative ends of the second load to the VOUT2 and GND pins, respectively.
2. Attach the input voltage $2.5V \le V_{IN} \le 6V$ and input ground to VIN and GND pins respectively.
3. A 100kΩ pull-up resistor has been connected to both the EN1 and EN2 pins, so both VOUT1 and VOUT2 will turn on without applying any external voltage to the EN1 and EN2 pins.
4. To turn on VOUT1/VOUT2 by using the EN1/EN2 functions, apply a voltage, $1.5V \le V_{EN1/EN2} \le 6V$, to the EN1/EN2 pin. To disable VOUT1/VOUT2, apply a voltage, $V_{EN1/EN2} < 0.3V$, to the EN1/EN2 pin.
5. The output voltages V_{OUT1} and V_{OUT2} can be changed by varying R2 and R4, respectively. Calculate the new values by the following formulae:

$$R2 = \frac{R1}{\left(\frac{V_{OUT1}}{V_{FB}}\right) - 1}$$

$$R4 = \frac{R3}{\left(\frac{V_{OUT2}}{V_{FB}}\right) - 1}$$

Where V_{FB} = 0.6V, R1 = 300kΩ and R3 = 300kΩ.

Example:

For V_{OUT1} = 1.8V:

$$R2 = \frac{300k\Omega}{\left(\frac{1.8V}{0.6V}\right) - 1} = 150k\Omega$$

Therefore, use a 150kΩ standard 1% value.