EV9115DQT-00A

2.7V-6V Input, 2.5A, 1.2MHz Synchronous Step-Down Converter

The Future of Analog IC Technology

DESCRIPTION

The EV9115DQT-00A evaluation board is designed for MP9115, which is a fully integrated, internally compensated 1.2MHz fixed frequency PWM step-down converter. It is ideal for powering portable equipment that runs from a single cell Lithium-Ion (Li+) Battery, with an input range from 2.7V to 6V. The MP9115 can provide up to 2.5A of load current with output voltage as low as 0.8V. It can also operate at 100% duty cycle for low dropout applications.

With peak current mode control and internal compensation, the MP9115 is stable with ceramic capacitors and small inductors. Fault condition protection includes cycle-by-cycle current limiting and thermal shutdown.

MP9115 is available in the small 10-pin 3mmx3mm TQFN package.

ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	2.7 – 6	V
Output Voltage	V_{OUT}	1.2	V
Output Current	I_{OUT}	2.5	A

FEATURES

- Output Adjustable from 0.8V to V_{IN}
- Up to 95% Efficiency
- 100% Duty Cycle for Low Dropout Applications
- 1.2MHz Fixed Switching Frequency
- 2.7V-6V Input Operation Range
- Stable with Low ESR Output Ceramic Capacitors
- Thermal Shutdown
- Cycle-by-Cycle Over Current Protection
- Short Circuit Protection
- No Reverse Current of LS MOS for Pre-bias Start up

APPLICATIONS

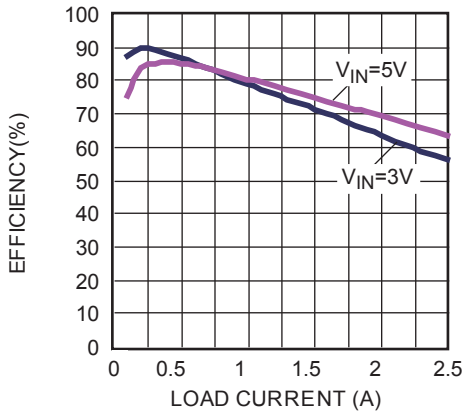
- Smart Phones
- PDA's
- DVD+/-RW Drives
- Digital Cameras
- Portable Instruments

EV9115DQT-00A EVALUATION BOARD

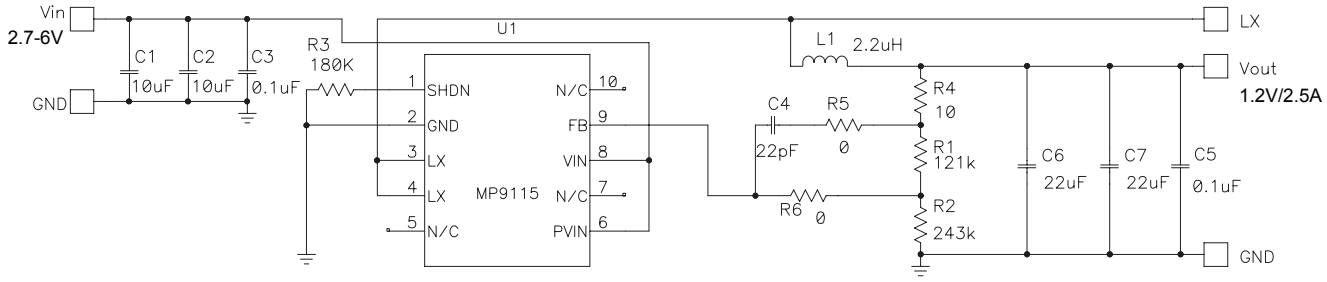
(L x W x H) 6.4cm x 6.4cm x 0.64cm

Board Number	MPS IC Number
EV9115DQT-00A	MP9115DQT

Efficiency



EVALUATION BOARD SCHEMATIC



EV9115DQT-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
2	C1,C2	10µF	Ceramic Cap., 16V, X7R	1210	Murata	GRM32DR71C106KA01L
2	C3,C5	0.1µF	Ceramic Cap., 16V, X7R	0805	Murata	GRM219R71C104KA01D
1	C4	22pF	Ceramic Cap., 50V, COG	0603	Murata	GRM1885C1H220JA01D
2	C6,C7	22µF	Ceramic Cap., 10V, X7R	1210	Murata	GRM32ER71A226KE20L
1	R1	121kΩ	Resistor, 1%	0603	YAGEO	RC0603FR-07121KL
1	R2	243kΩ	Resistor, 1%	0603	YAGEO	RC0603FR-07243KL
1	R3	180kΩ	Resistor, 5%	0603	Any	
1	R4	10Ω	Resistor, 5%	0603	Any	
2	R5,R6	0	Resistor, 5%	0603	Any	
1	L1	2.2µH	Inductor, 6.5A, 20mΩ	SMD	Wurth	744777002
		2.2µH	Inductor, 5.5A, 12mΩ	SMD	TDK	RLF7030T-2R2M5R4
1	U1		Step-Down Converter	TQFN10	MPS	MP9115DQT

PRINTED CIRCUIT BOARD LAYOUT

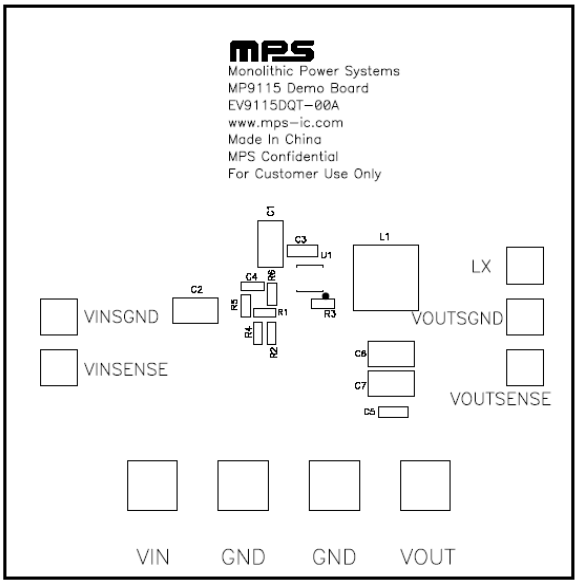


Figure 1—Top Silk Layer

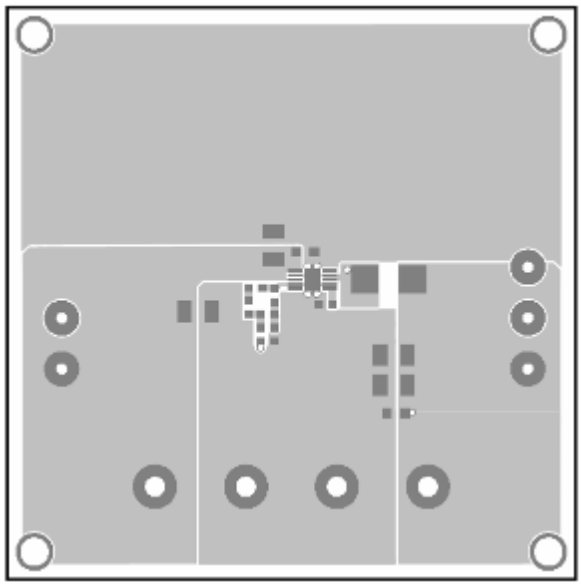


Figure 2—Top Layer

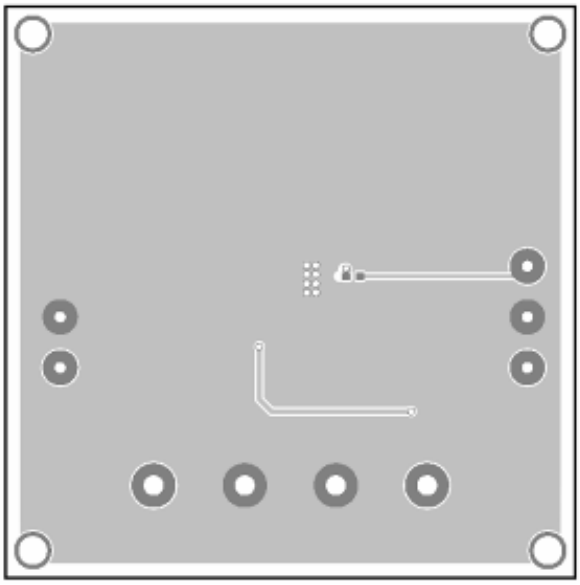


Figure 3—Bottom Layer

QUICK START GUIDE

The output voltage of this board is set to 1.2V. The board layout accommodates most commonly used inductors and output capacitors.

1. Connect the positive and negative ends of the load to the OUT and GND pins respectively.
2. Preset the power supply output betweens 2.7~6V and turn off the power supply.
3. Connect the positive and negative terminals of the power supply output to the VIN and GND pins, respectively.
4. Turn the power supply on. The board will automatically startup.
5. The output voltage V_{OUT} can be changed by varying R1 and R2. Calculate the new value using the formula:

$$R2 = \frac{R1}{\frac{V_{OUT}}{0.8V} - 1}$$

For example, for V_{OUT} = 1.2V:
R1=121 kΩ and R2=243kΩ
Therefore use a standard 1% value 121kΩ and 243 kΩ resistor.