

DESCRIPTION

The EV28119 evaluation board is designed for low dropout step down converter applications. It implements the MP28119 1.7MHz fixed frequency, current-mode, PWM step-down converter. The device integrates a main switch and a synchronous rectifier for high efficiency without an external Schottky diode. It is ideal for powering portable equipment that runs from a single cell Lithium-Ion (Li+) Battery. It can supply 600mA of load current from a 2.5V to 6V input voltage. The output voltage can be regulated as low as 0.6V. In 100% Duty Cycle Dropout operation, it works with minimum input voltage as low as output voltage. It can output voltage as low as 1V from 6V input due to its very small minimum on-time. Furthermore, with the output discharge function, even at no load, the output voltage falls quickly when disabled.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage Range	V_{IN}	2.5 – 6.0	V
Output Voltage	V_{OUT}	1	V
Load Max	I_{OUT}	600	mA

FEATURES

- High Efficiency: Up to 89%
- 600mA Available Load Current
- 2.5V to 6V Input Voltage Range
- Output Voltage as Low as 0.6V
- Short Circuit Protection
- Thermal Fault Protection
- Programmable Enable Control
- Output discharge

APPLICATIONS

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

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EV28119EG-00A EVALUATION BOARD

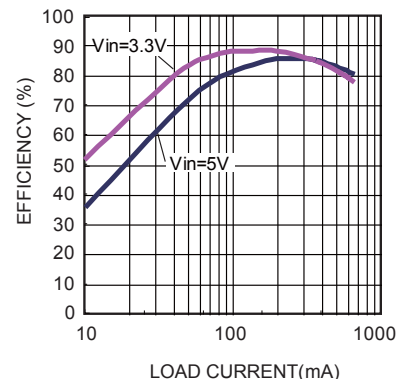


Dimensions (2.5"X x 2.5"Y x 0.5"Z)

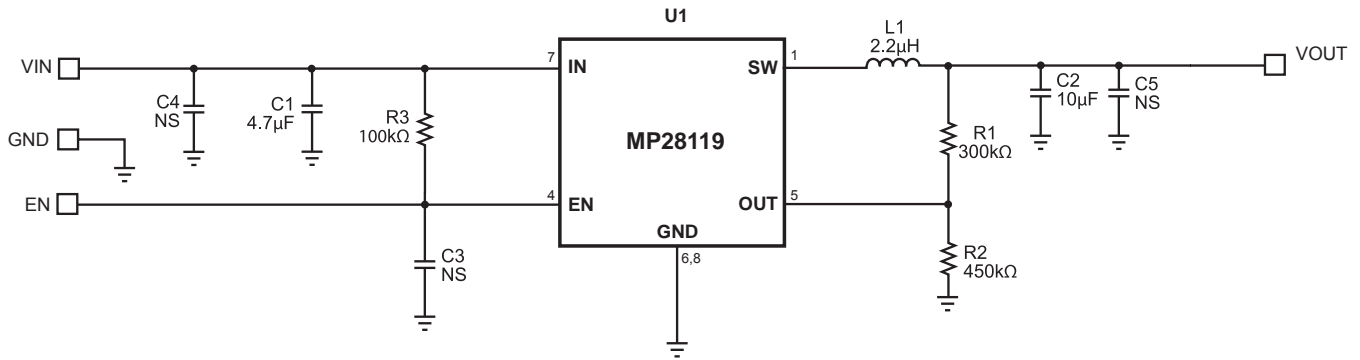
Board Number	MPS IC Number
EV28119EG-00A	MP28119EG

Efficiency vs. Load Current

$V_{OUT}=1V, L=2.2\mu H$



EVALUATION BOARD SCHEMATIC



EV28119EG-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	4.7µF	Ceramic Cap., 10V, X5R	SM0805	TDK	C2012X5R1A475K
1	C2	10µF	Ceramic Cap., 6.3V, X5R	SM0805	KYOCERA	CM21X5R106K06AT
3	C3,C4, C5		Do Not Stuff			
1	L1	2.2µH	1.63A	SMD	TOKO	D52LC-#A914BYW-2R2M
1	R1	300kΩ	Film Res., 1%	SM0603	Yageo	RC0603FR-07300KL
1	R2	450kΩ	Film Res., 1%	SM0603	Yageo	RC0603FR-07450KL
1	R3	100kΩ	Film Res., 1%	SM0603	Yageo	RC0603FR-07100KL
1	U1		DC-DC Converter	QFN8	MPS	MP28119EG

PRINTED CIRCUIT BOARD LAYOUT

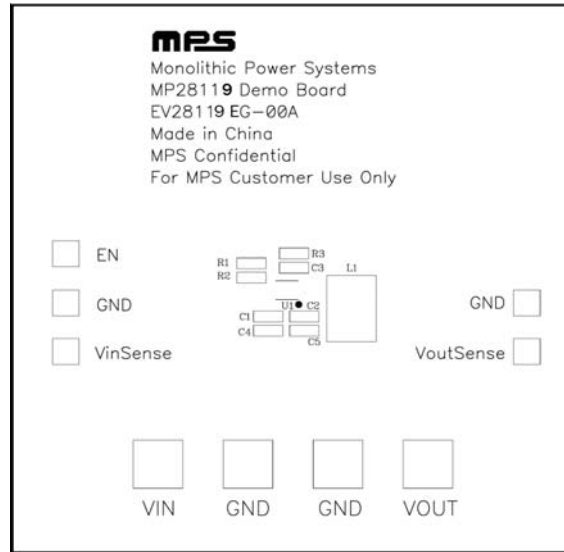


Figure 1—Top Silk Layer

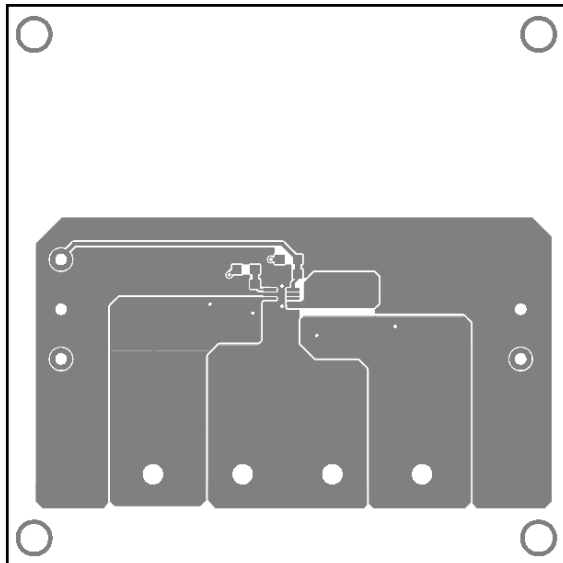


Figure 2—Top Layer

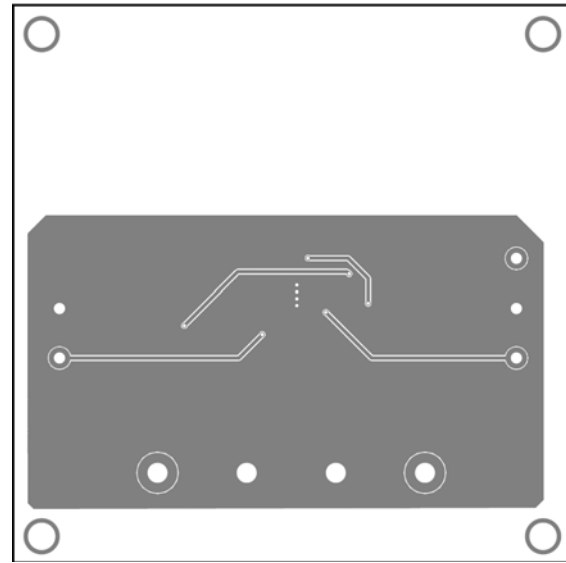


Figure 3—Bottom Layer

QUICK START GUIDE (MP28119EG, ADJUSTABLE OUTPUT)

The board layout accommodates most commonly used inductors and output capacitors.

1. Attach the positive and negative ends of the load to the V_{OUT} and GND pins, respectively.
2. Attach the Input Voltage ($2.5V \leq V_{IN} \leq 6V$) and Input Ground to the VIN and GND pins, respectively.
3. To enable the MP28119 apply a voltage, $1.5V \leq V_{EN} \leq 6V$, to the EN pin. To disable the MP28119 apply a voltage, $V_{EN} < 0.3V$, to the EN pin. A 100K Ω resistor can be set in R3 to connect the EN pin to the IN pin, so the part will operate without applying any external voltage to the EN pin.
4. The Output Voltage V_{OUT} can be changed by varying R2. Calculate the new value by formula:

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

Where V_{FB} = 0.6V and R1 = 300k Ω .

Example:

For V_{OUT} = 1.0V:

$$R2 = \frac{300k\Omega}{\left(\frac{1.0V}{0.6V}\right) - 1} = 450K\Omega$$

Therefore, use a 450k Ω standard 1% value.

QUICK START GUIDE (MP28119EG-1.0, MP28119EG-1.2, FIXED OUTPUT)

For modifying the EV28119EG-00A to accommodate a fixed output voltage version of the MP28119:

1. Verify that a fixed output version of the MP28119 chip is on the evaluation board. Refer to MP28119 datasheet for fixed voltage package codes.
2. Remove both R1 and R2.
3. Short R1 while leaving R2 open.
4. Attach the positive and negative ends of the load to the V_{OUT} and GND pins, respectively.
5. Attach the Input Voltage ($2.5V \leq V_{IN} \leq 6V$) and Input Ground to the VIN and GND pins, respectively.
6. To enable the MP28119 apply a voltage, $1.5V \leq V_{EN} \leq 6V$, to the EN pin. To disable the MP28119 apply a voltage, $V_{EN} < 0.3V$, to the EN pin. A 100K Ω resistor can be set in R3 to connect the EN pin to the IN pin, so the part will operate without applying any external voltage to the EN pin.

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