

DESCRIPTION

The EV20048DJ-00A evaluation board demonstrates the performance of MP20048, a kind of new low-dropout (LDO) voltage regulators which uses an NMOS as pass element in a voltage-follower configuration. It operates from a 1.7V to 5.5V input voltage and the output voltage can be set externally which ranges from 1.25V to 5V.

The EV20048DJ-00A can supply up to 250mA of load current, and features current limiting, over temperature protection.

MP20048 also delivers very low dropout voltages and low ground pin current, making the part suitable for battery-power devices.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	3 – 5.5	V
Output Voltage	V_{OUT}	2.5	V
Operating Temperature		-40 to +85	°C

FEATURES

- Stable with No Output Capacitor or Any Capacitors
- Input Voltage Range: 1.7V to 5.5V
- 1% Accuracy for Initial Reference
- Thermal shutdown and Current Limit Protection

APPLICATIONS

- VCOs
- Portable/Battery-Powered Equipment
- Post-Regulation for Switching Supplies
- Point of Load Regulation for DSPs, FPGAs, ASICs, and Microprocessors

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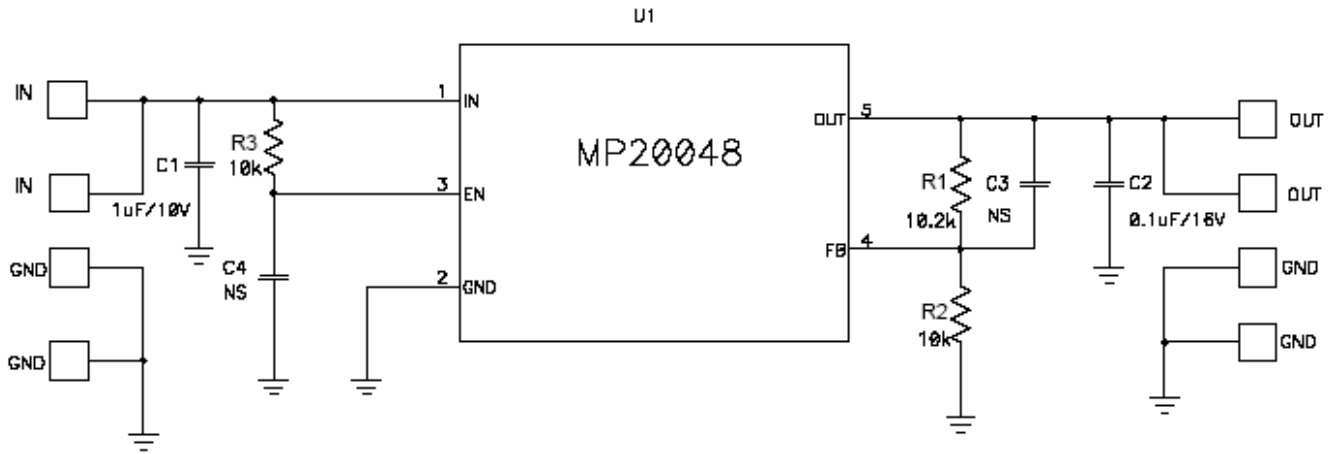
EV20048DJ-00A EVALUATION BOARD



(L x W x H) 2.5" x 2.5" x 0.4"
(6.35cm x 6.35cm x 1.1cm)

Board Number	MPS IC Number
EV20048DJ-00A	MP20048DJ

EVALUATION BOARD SCHEMATIC



EV20048DJ-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
1	C1	1µF	Ceramic Capacitor X7R/ X5R, 10V	0805	TDK	C2012X7R1A105K
1	C2	0.1µF	Ceramic Capacitor X7R/ X5R, 16V	0805	Murata	GRM219R71C104KA0
2	C3,C4	NS				
1	R1	10.2k	Film Res, 1%	0603	Any	
1	R2	10k	Film Res, 1%	0603	Any	
1	R3	10k	Film Res, 5%	0603	Any	
1	U1		LDO Regulator	TSOT23-5	MPS	MP20048DJ

PRINTED CIRCUIT BOARD LAYOUT

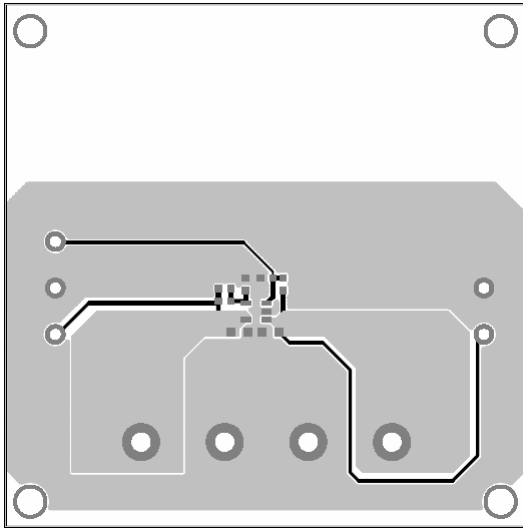


Figure 1—Top Layer

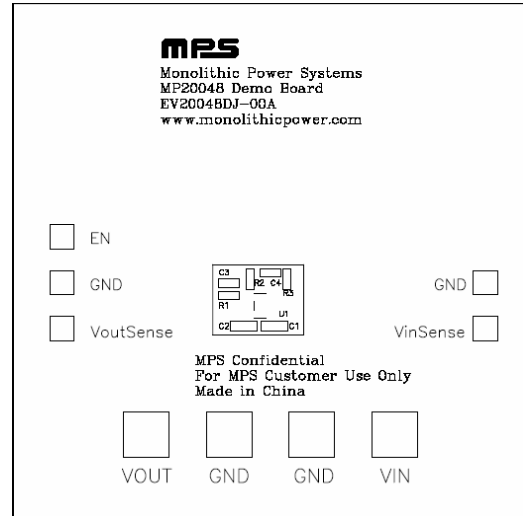


Figure 2—Top Silk Layer

QUICK START GUIDE

The MP20048 does not require the output capacitor for stable operation. It is specifically designed to be stable with any type and value capacitor including ceramic and electrolytic.

Although an output capacitor is not required for stability, the output capacitor, C2, is optional to be connected at the output side. Output capacitor of larger values will help to improve load transient response and reduce output noise with the drawback of increasing size.

The output voltage of this board is set to 2.5V. The EN pin is connected to V_{IN} with a 10k Ω resistor for automatic startup. You can connect EN to GND to disable the MP20048.

1. Attach the positive and negative ends of the load to the VOUT and GND pins, respectively.
2. Attach the input voltage ($2.9V \leq V_{IN} \leq 6V$) and input ground to the VIN and GND pins, respectively.
3. Connecting a feedback capacitor, C_{FB}, from the output noise and improve load transient performance. This capacitor should be limited to 0.1 μ F.

The output voltage of this board is set externally which ranges from 1.25V to 5V by operating from +1.7V to +5.5V input as the figure 3. The voltage divider divides the output voltage down to the feedback voltage by the ratio: $V_{FB} = V_{OUT} \frac{R2}{R1 + R2}$, Where V_{FB} is the feedback threshold voltage ($V_{FB} = 1.234V$), and V_{OUT} is the output voltage. Thus the output voltage is: $V_{OUT} = 1.234 \times \frac{R1 + R2}{R2}$.

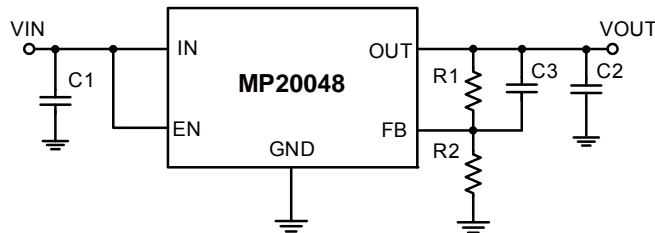


Figure 3 Application Circuit of MP20048

Please refer to the datasheet for the detailed information of the different output voltage option of MP20048.

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