



The Future of Analog IC Technology®

EV2030DQ-00A

3A High-Current LDO Linear Regulator EV Board

DESCRIPTION

The EV2030DQ-00A evaluation board demonstrates the performance of MP2030, a monolithic high-current, low-dropout LDO linear regulator.

The MP2030 can supply up to 3A of load current with a typical dropout voltage of 150mV. It requires a bias supply (2.5V to 5.5V) separate from V_{IN} to run the internal reference and LDO drive circuitry. The output current comes directly from the input voltage supply for high efficiency regulation. The 0.9V internal reference voltage allows the output to be programmed to a range of 0.9V to 3.6V.

The MP2030 features thermal protection and current limit protection, stability with ultra low ESR ceramic capacitors as low as 1uF, and fast transient response. The MP2030 is available in a 10-pin QFN (3mm x 3mm) package.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	1 – 3.6	V
Bias Voltage	V_{BIAS}	5	V
Dropout Voltage	$V_{DROPOUT}$	150	mV
Output Current	I_{OUT}	3	A

FEATURES

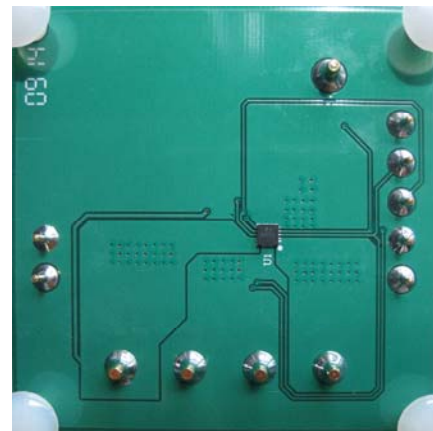
- Wide 1.1V to 5V Input Voltage Range
- Stable with Very Small Ceramic Capacitors
- 150mV Dropout at 3A Output
- 2% Accurate Output Voltage
- Adjustable Output Range from 0.9V to 3.6V
- Low Noise: 80 μ V_{RMS} (10Hz to 100KHz)
- Stable With Low-ESR Output Capacitors
- Low 220 μ A Ground Current
- Internal Thermal Protection
- Current Limit Protection
- Fully Assembled and Tested

APPLICATIONS

- Network, Telecom, Equipment: Routers and Switches
- Servers, Storage Equipment
- Set-Top Box
- Post Regulation for Switch Mode
- Televisions

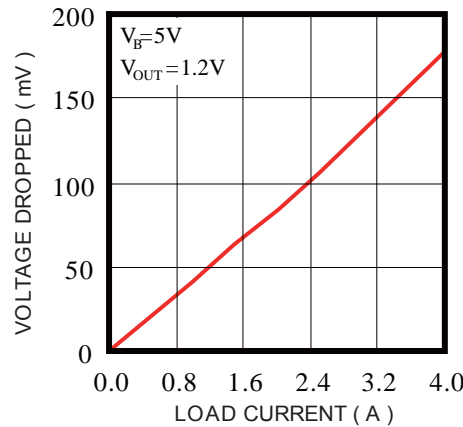
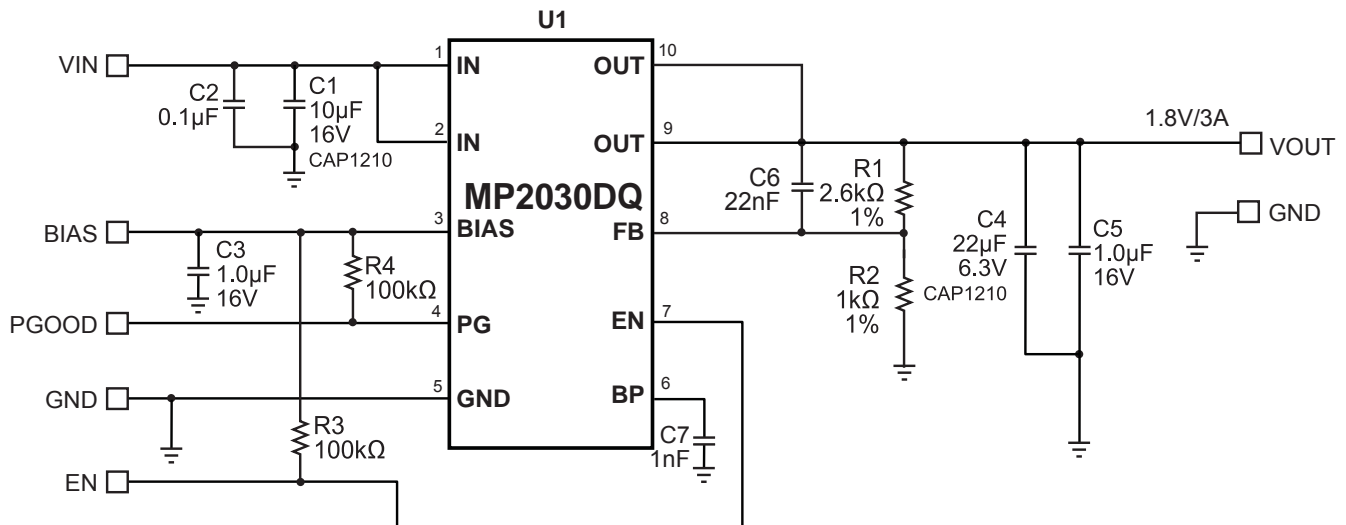
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EV2030DQ-00A EVALUATION BOARD



(L x W x H) 2.5" x 2.5" x 0.5"
(6.5cm x 6.5cm x 1.2cm)

Board Number	MPS IC Number
EV2030DQ-00A	MP2030

Dropout Voltage vs. Load Current

EVALUATION BOARD SCHEMATIC

EV2030DQ-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	10uF	Ceramic Cap., 16V, X7R	1210	muRata	GRM32ER71C106K
1	C2	0.1uF	Ceramic Cap., 16V, X7R	0603	muRata	GRM188R71C104K
2	C3, C5	1uF	Ceramic Cap., 16V, X7R	0805	muRata	GRM21BR71C105K
1	C4	22uF	Ceramic Cap., 6.3V, X7R	1210	muRata	GRM32DR70J226K
1	C6	22nF	Ceramic Cap., 50V, X7R	0603	muRata	GRM188R71H223K
1	C7	1nF	Ceramic Cap., 50V, X7R	0603	muRata	GRM188R71H102K
1	R1	2.6kΩ	Film Res., 1%	0603	Yageo	RT0603DRE072K6L
1	R2	1kΩ	Film Res., 1%	0603	Yageo	RT0603FRE071KL
2	R3,R4	100kΩ	Film Res., 5%	0603	Yageo	RC0603JR-07100KL
1	U1		LDO Converter	QFN10 3X3mm	MPS	MP2030DQ
1	U2	NS	Not Stuffed			

PRINTED CIRCUIT BOARD LAYOUT

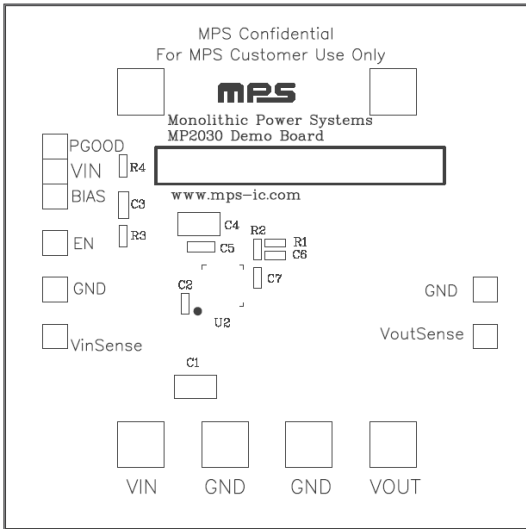


Figure 1—Top Silk Layer

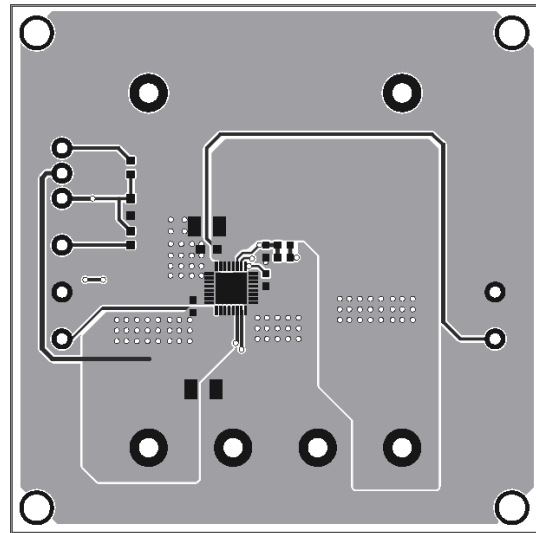


Figure 2—Top Layer

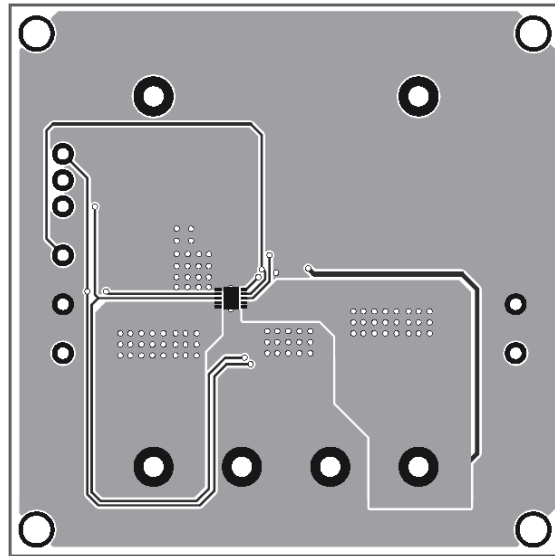


Figure 3—Bottom Layer

QUICK START GUIDE

The output voltage of this board is set to 1.8V. The EN pin is connected to BIAS with a jumper for automatic startup. You can connect EN to GND to disable the MP2030.

1. Attach the positive and negative ends of the load to the VOUT and GND pins, respectively.
2. Attach the input voltage ($2V \leq V_{IN} \leq 5V$) and input ground to the VIN and GND pins, respectively.
3. Attach the BIAS voltage ($3.5V \leq V_{BIAS} \leq 5.5V$) and BIAS ground to the BIAS and GND pins, respectively.
4. The VIN voltage and BIAS voltage can be set up to same voltage but for maximum output current, it has to meet :

$$V_{IN} > 0.2V + V_{OUT}, \text{ and } V_{BIAS} > 2V + V_{OUT}$$

5. The default resistor values on the board are $R1=26.1k\Omega$ and $R2=10k\Omega$. Changing these resistor values will change the output voltage. Use the following equation to determine resistor values for different output voltages:

$$V_{OUT} = 0.5V \times \left(1 + \frac{R1}{R2}\right)$$

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