EV2005DD-01B

500mA Low-Current LDO Linear Regulator EV Board

The Future of Analog IC Technology

DESCRIPTION

The EV2005DD-01B evaluation board demonstrates the performance of MP2005, a monolithic low-current, low-dropout LDO linear regulator. It operates from a 2.5V to 5V input bias voltage and regulates the output voltage from as low as 0.5V.

The EVB can supply up to 500mA of load current with a typical dropout voltage of 75mV. 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 0.5V internal reference voltage allows the output to be programmed to a range of 0.5V to 5V.

The EV2005DD-01B provides thermal overload and current limit protection, stability with ultra low ESR ceramic capacitors, and fast transient response. The MP2005 is available in a 8-pin QFN (2mm x 3mm) package and is also available in fixed output voltage versions.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	1.0 – 5	V
Blas Voltage	VB	5	V
Output Current	I_{OUT}	0.5	A
Output Voltage	V_{OUT}	1.8	V

FEATURES

- Wide 1.0V to 5V Input Voltage Range
- Stable with Very Small Ceramic Capacitors
- 75mV Dropout at 500mA Output
- 2% Accurate Output Voltage
- Adjustable Output Range from 0.5V to 5V
- Low Noise: 80μV_{RMS} (10Hz to 100kHz)
- High PSRR: 40dB at 1MHz
- Stable With Low-ESR Output Capacitors
- Low 100μA Ground Current
- Internal Thermal Protection
- Current Limit Protection
- Fully Assembled and Tested

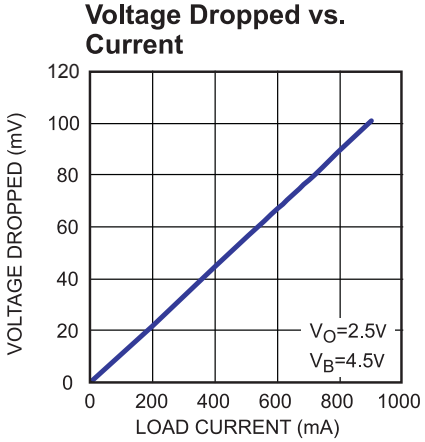
APPLICATIONS

- Low Current Regulators
- Low Power Handheld Devices
- Battery Powered Systems
- Cellular Phones
- Portable Electronic Equipment
- Post Regulation for Switching Power Supplies
- Power Supplies

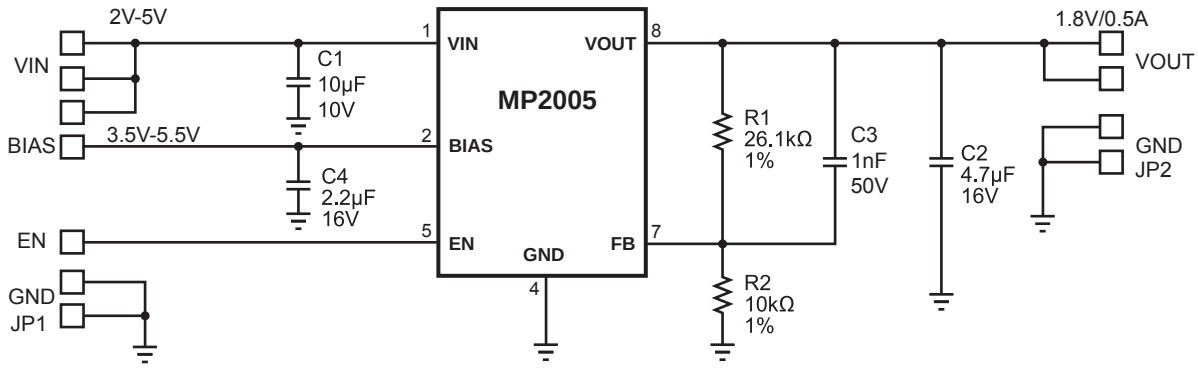
EV2005DD-01B EVALUATION BOARD

L x W x H) 2.9" x 2.9" x 0.5"
(7.5cm x 7.5cm x 1.2cm)

Board Number	MPS IC Number
EV2005DD-01B	MP2005



EVALUATION BOARD SCHEMATIC



EV2005DD-01B BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	10µF	Ceramic Cap., X7R, 10V	1206	TDK	C3216X7R1C106K
1	C4	2.2µF	Ceramic Cap., X7R, 16V	0805	TDK	C2012X7R1C225K
1	C2	4.7µF	Ceramic Cap., X7R, 16V	1206	TDK	C3216X7R1C475K
1	C3	1nF	Ceramic Cap X7R, 50V	0603	muRata	GRM188R71H102KA01D
1	R1	26.1kΩ	Film Res., 1%	603	Panasonic	ERJ-3EKF2612V
1	R2	10kΩ	Film Res., 1%	603	Panasonic	ERJ-3EKF1002V
1	JP		10-Pin Header, 0.1"		Sullins	PTC08SAAN
1	JP		5-Pin Header, 0.1"		Sullins	PTC08SAAN
1	U1		Linear Regulator	QFN-8	MPS	MP2005DD

PRINTED CIRCUIT BOARD LAYOUT

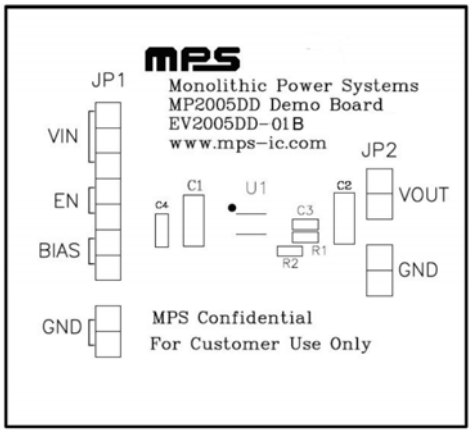


Figure 1—Top Silk Layer

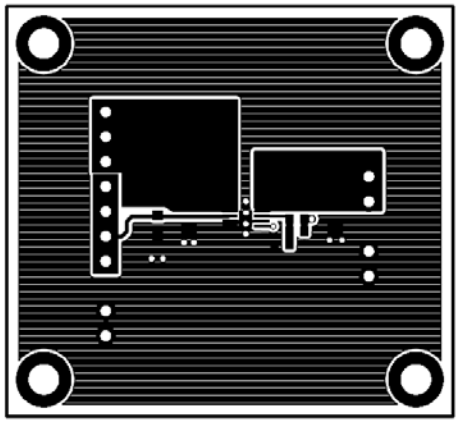


Figure 2—Top Layer

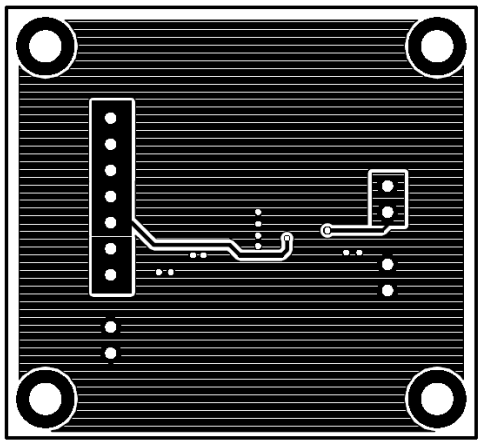


Figure 3—Bottom Layer

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 MP2005

1. Attach the positive and negative ends of the load to the VOUT and GND pins, respectively.
2. Attach the input voltage ($2V \leqslant V_{IN} \leqslant 5V$) and input ground to the VIN and GND pins, respectively.
3. Attach the BIAS voltage ($3.5V \leqslant V_{BIAS} \leqslant 5.5V$) 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 it has to meet :

$$V_{IN}=V_{BIAS}>(1.8V + V_{OUT})\text{and } V_{BIAS}>2.7V$$

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

$$V_{OUT} = 0.5Vx(1+\frac{R1}{R2})$$

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