EVQ20056-J-00A

Fast Transient Response, Ultra-Small 250mA Linear Regulator EV Board

DESCRIPTION

The EVQ20056-J-00A evaluation board demonstrates the performance of MPQ20056-33, a low noise, low dropout and high PSRR linear regulator. It operates from a 3.7V to 5.5V input voltage and the output voltage is preset internallyat 3.3V.

The EVQ20056-J-00A can supply up to 250mA of load current, and features current limiting, over temperature protection.

An internal PMOS pass element is used to allow a low 150uA ground current, making the MPQ20056-J suitable for battery-power devices.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	3.7 – 5.5	V
Output Voltage	V_{OUT}	3.3	V
Load Current	I_{OUT}	250	mA

FEATURES

- Up to 250mA Output Current
- Low 100mV Dropout at 250mA
- Fast Transient Response
- 70dB PSRR at 1kHz
- 13μVRMS Low Noise Output
- Fixed output voltage 3.3V
- Current Limit and Thermal Protection

APPLICATIONS

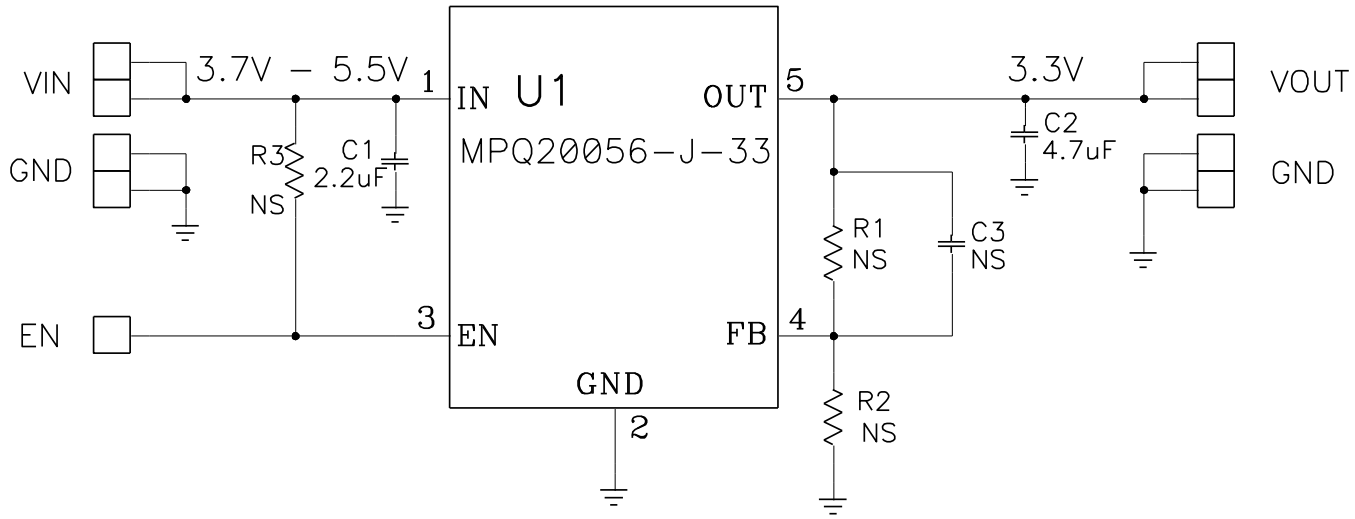
- Telecom
- Cellular Phones
- DSP, FPGA Supplies
- Hand –Held Instruments
- Notebook Computers

EVQ20056-J-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
EVQ20056-J-00A	MPQ20056-J-33

EVALUATION BOARD SCHEMATIC



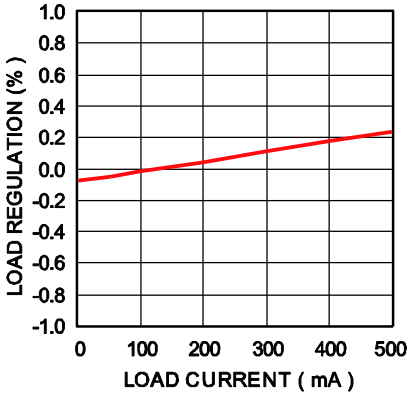
EVQ20056-J-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
1	C1	2.2μF	Ceramic Cap., 6.3V, 10%, X5R	0603	muRata	GRM188R60J225KE19D
1	C2	4.7μF	Ceramic Cap., 6.3V, 10%, X5R	0603	muRata	GRM188R60J475KE19D
	C3	NS				
	R1,R2,R3	NS		0603		
1	U1		Linear Regulator	QFN8(2X2mm)	MPS	MPQ20056-J-33
4	VIN, VOUT, GND	Test Point	Test Point	2x2.54mm	HZ	China market
1	EN	Test Point	Test Point	Test Point	HZ	China market

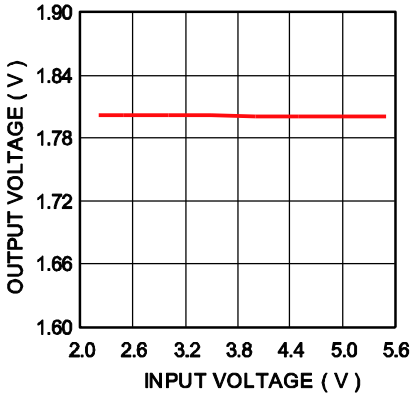
EVB TEST RESULTS

Performance waveforms are tested on the evaluation board.
V_{IN}=3.6V, V_{OUT}=3.3V, T_A=25°C, unless otherwise noted.

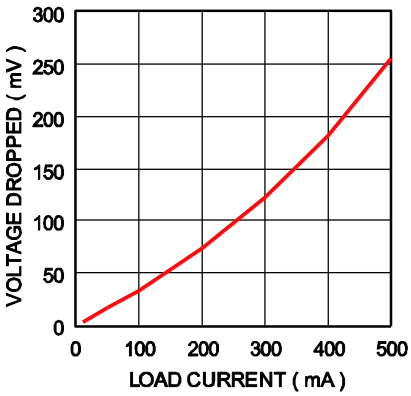
Load Regulation
V_{IN}=2.5V, V_{OUT}=1.8V



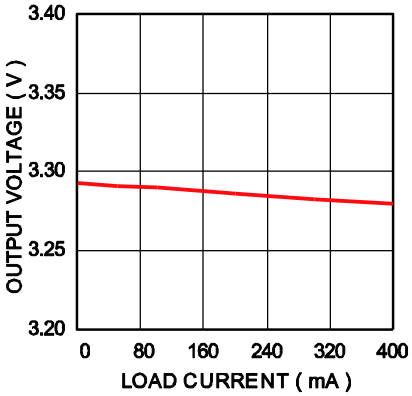
Line Regulation
I_{OUT}=50mA



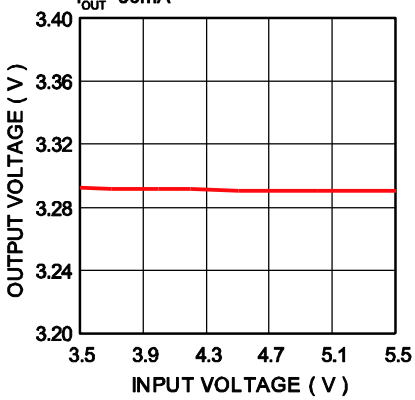
Voltage Dropped
V_{OUT}=3.3V



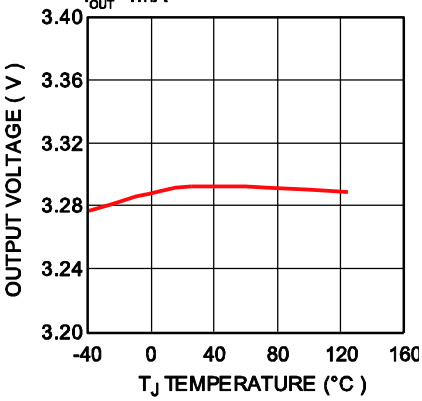
Load Regulation
V_{IN}=3.5V, V_{OUT}=3.3V



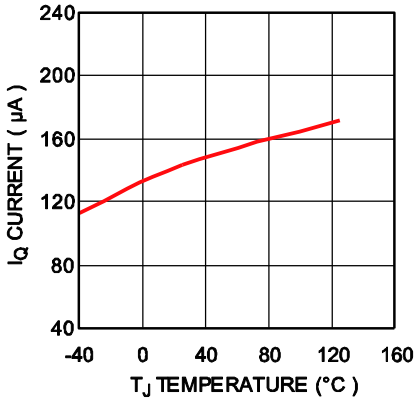
Line Regulation
I_{OUT}=50mA



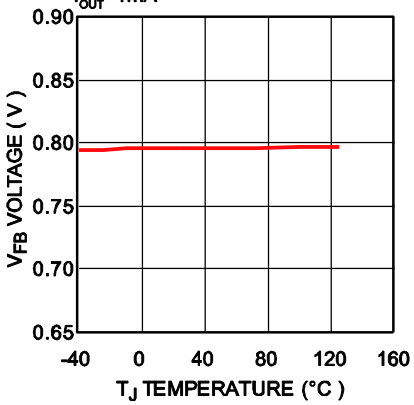
V_{OUT} vs. T_J
I_{OUT}=1mA



I_Q vs. T_J
I_{OUT}=0mA, V_{OUT}=3.3V



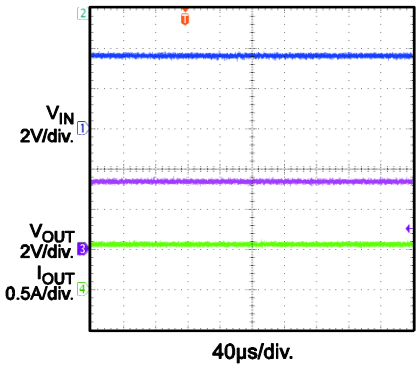
V_{FB} vs. T_J
I_{OUT}=1mA



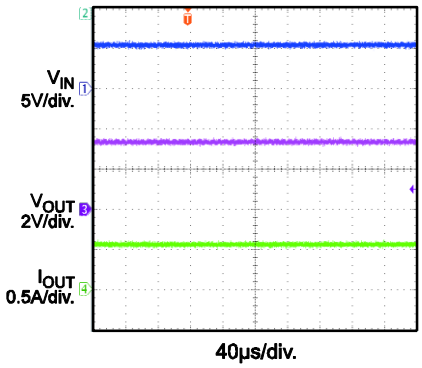
EVB TEST RESULTS *(continued)*

Performance waveforms are tested on the evaluation board.
V_{IN}=3.6V, V_{OUT}=3.3V, T_A=25°C, unless otherwise noted.

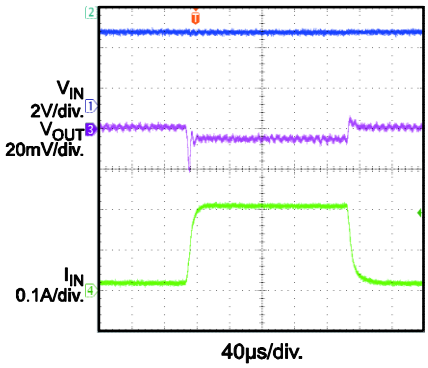
Steady State
I_{OUT} = 0.5A



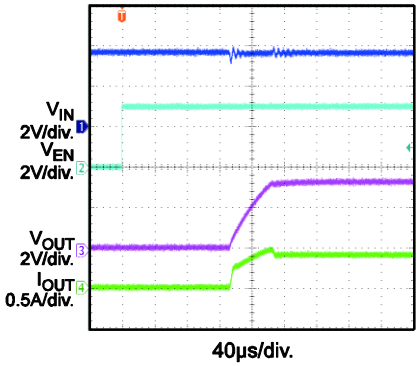
Steady State
I_{OUT} = 0.5A



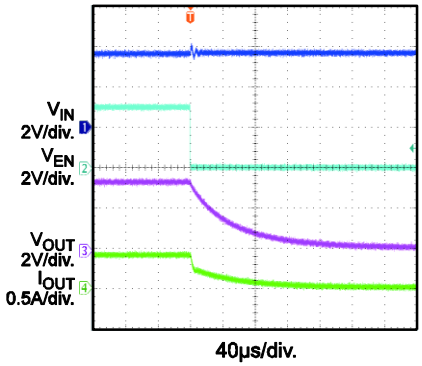
Load Transient
I_{OUT} = 50mA-0.2A



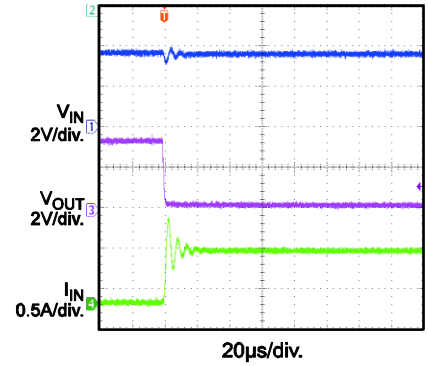
Enable On
I_{OUT} = 0.4A



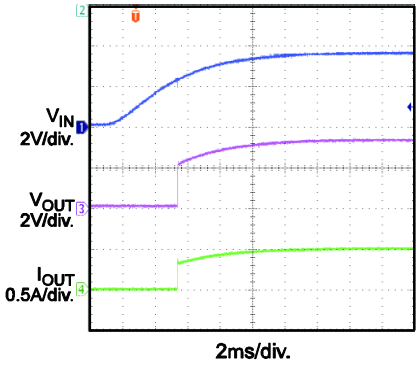
Enable Off
I_{OUT} = 0.4A



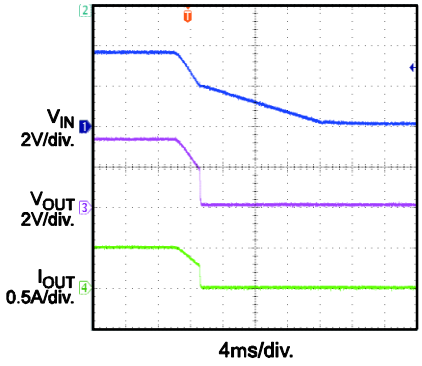
Short Output



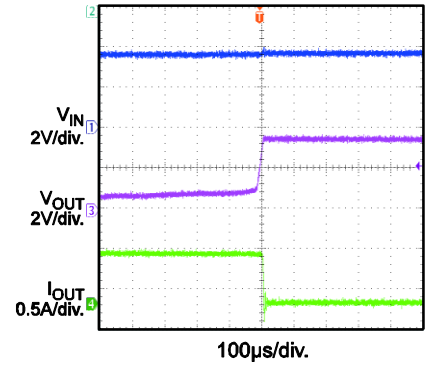
Power Ramp Up
I_{OUT} = 0.5A



Power Ramp Down
I_{OUT} = 0.5A



Short Output Recovery



PRINTED CIRCUIT BOARD LAYOUT

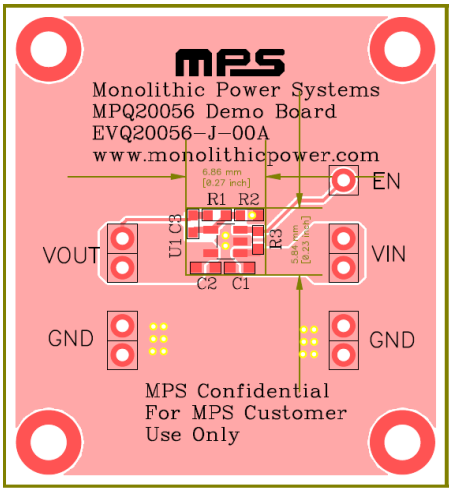


Figure 1—Top and Top Silk Layer

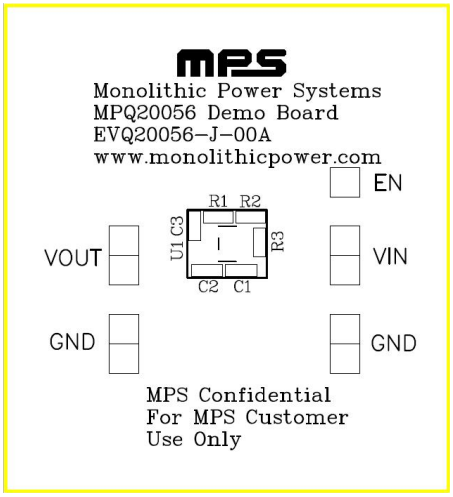


Figure 2—Top Silk Layer

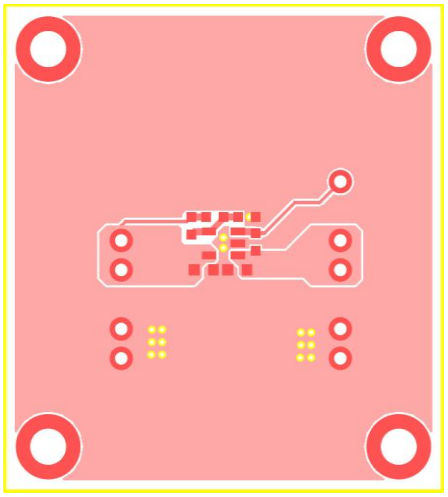


Figure 3—Top Layer

QUICK START GUIDE

1. Connect the positive terminal of the load to VOUT pins, and the negative terminal of the load to GND pins.
2. Preset the power supply output to 3.7V <VIN<5.5V and turn off the power supply.
3. Connect the positive terminal of the power supply output to the VIN pin and the negative terminal of the power supply output to the GND pin.
4. To use the Enable function, apply a digital input to the EN pin. Drive EN higher than 1.5V to turn on the regulator or less than 0.4V to turn it off.
5. Turn on the power supply. The EVQ20056-J-00A will automatically start up.
6. The output voltage is fixed 3.3V.