EV2019-N-00A

40V, 300mA, Low Quiescent Current Linear Regulator Evaluation Board

The Future of Analog IC Technology

DESCRIPTION

The EV2019-N-00A is an evaluation board for the MP2019 and MPQ2019, a low linear regulator that supplies power to systems with high voltage batteries.

MP2019 and MPQ2019 includes a wide 2.5V to 40V input range, low dropout voltage and low quiescent supply current. The low quiescent current and low dropout voltage allow operations at extremely low power levels. Therefore, the MP2019 and MPQ2019 is ideal for the low power microcontrollers and the battery-powered equipments.

The EV2019-N-00A is a fully assembled and tested evaluation board. It generates a +5V output voltage at load current up to 300mA from a 6V to 40V input range.

ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	6 – 40	V
Output Voltage	V_{OUT}	5	V
Output Current	I_{OUT}	300	mA

FEATURES

- 6V to 40V Input Range
- 10µA Quiescent Supply Current
- 300mA specified current
- 420mV Dropout at 300mA Load
- Output ±2% Accuracy
- Specified current limit
- Thermal Shutdown
- -40°C to +125°C Specified Junction Temperature Range
- Includes SOIC8-EP Package

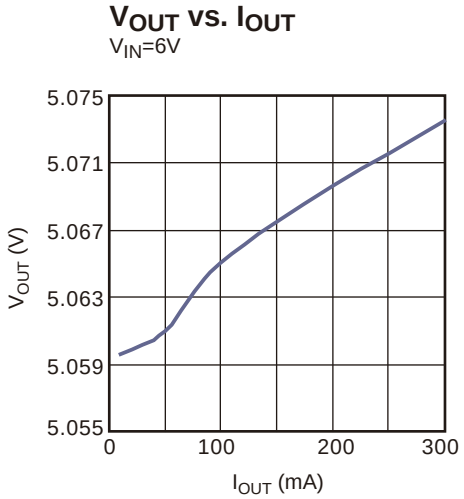
APPLICATIONS

- Industrial/Automotive Applications
- Portable/Battery-Powered Equipment
- Ultra low power Microcontrollers
- Cellular Handsets
- Medical Imaging

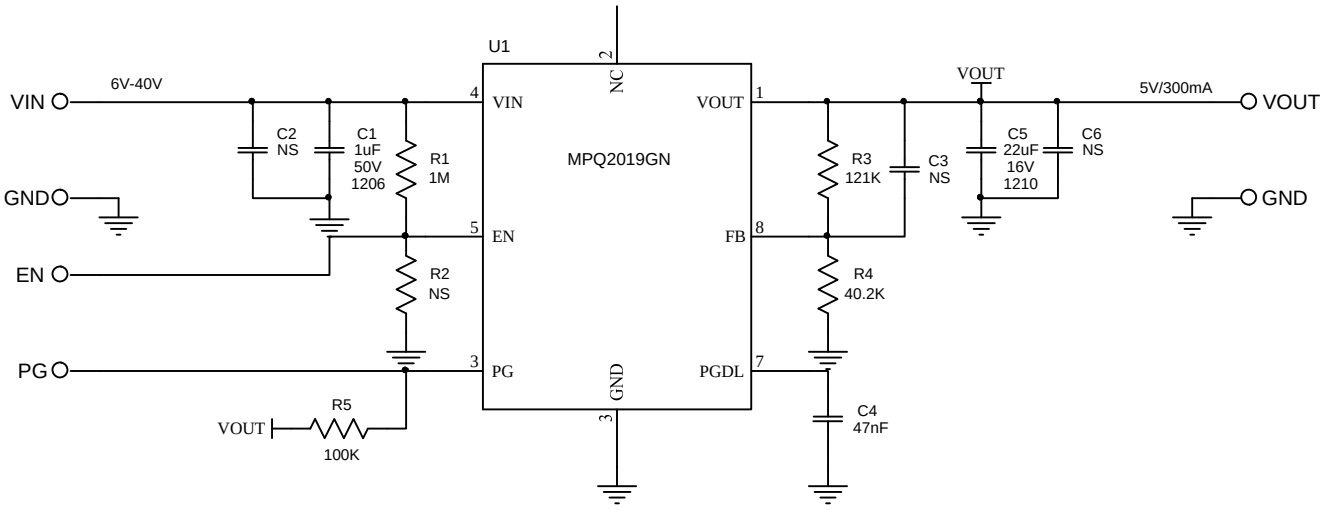
EV2019-N-00A EVALUATION BOARD

(L x W x H) 2.5” x 2.5” x 0.4”
(6.35cm x 6.35cm x 1.0cm)

Board Number	MPS IC Number
EV2019-N-00A	MPQ2019GN



EVALUATION BOARD SCHEMATIC



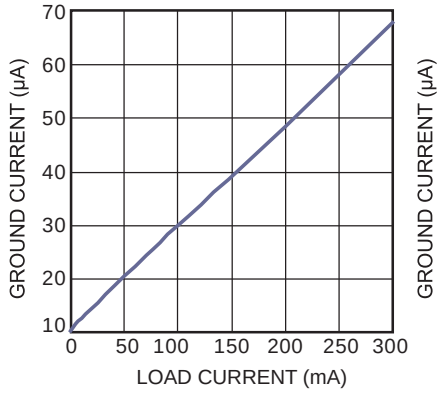
EV2019-N-00A BILL OF MATERIALS

Qty	RefDes	Value	Description	Package	Manufacturer	Manufactuer_P/N
1	C1	1uF	Ceramic Cap, 50V, X7R	1206	Murata	GRM31CR71H225KA88L
3	C2, C3, C6	NS				
1	C4	47nF	Ceramic Cap, 50V, X7R	0603	Murata	GRM188R71H473KA61D
1	C5	22uF	Ceramic Cap, 16V, X7R	1210	Murata	GRM32ER71C226KEA8L
1	R1	1M	Film Res,5%	0603	Yageo	RC0603JR-071ML
1	R2	NS				
1	R3	121K	Film Res,1%	0603	Yageo	RC0603FR-07121KL
1	R4	40.2K	Film Res,1%	0603	Yageo	RC0603JR-0740K2L
1	R5	100K	Film Res,1%	0603	Yageo	RC0603FR-07100KL
1	U1		Linear Regulator	SOIC8E	MPS	MPQ2019GN
4	VIN, GND, GND, VOUT		2.0 Golden Pin		HZ	
3	PG, GND, EN		2.54mm Test Pin		Any	

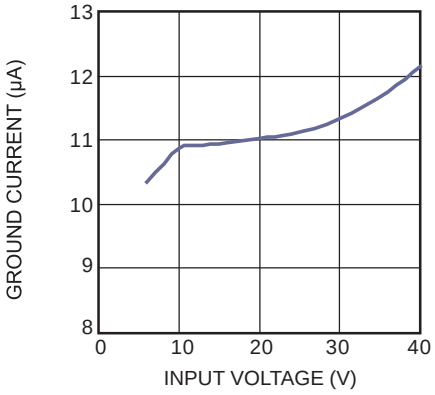
EVB TEST RESULTS

Performance waveforms are tested on the evaluation board.
V_{OUT} = 5V, T_A = 25°C, unless otherwise noted.

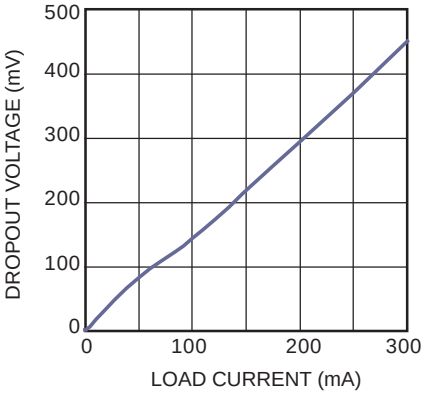
Ground Current vs. Load Current
V_{IN}=6V



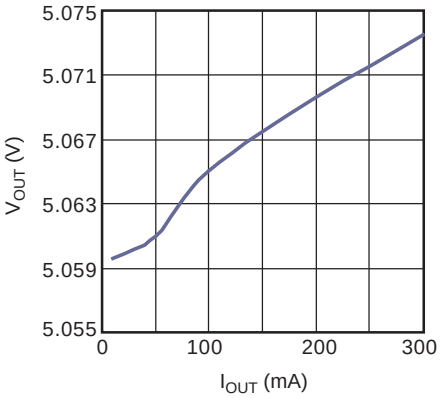
Ground Current vs. V_{IN}
I_{OUT}=0mA



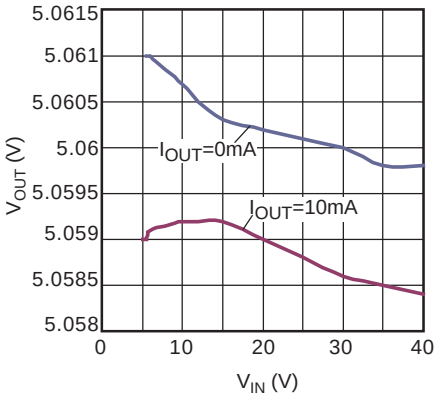
Dropout Voltage vs. Load Current



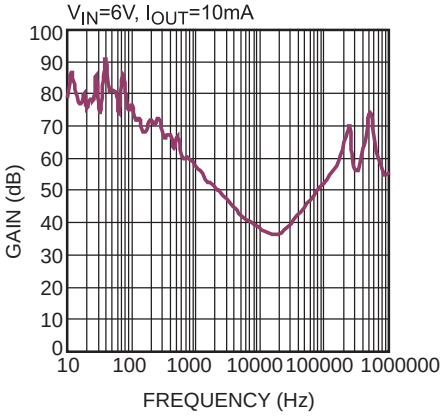
V_{OUT} vs. I_{OUT}
V_{IN}=6V



V_{OUT} vs. V_{IN}



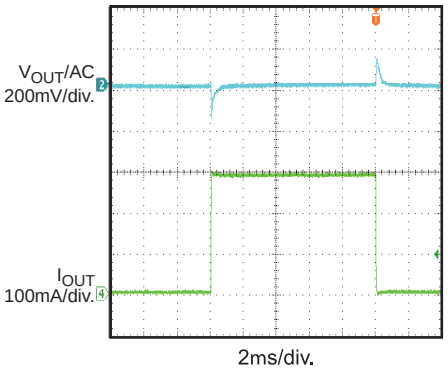
PSRR vs. Frequency
C_{IN}=100pF, C_{OUT}=10µF,
V_{IN}=6V, I_{OUT}=10mA



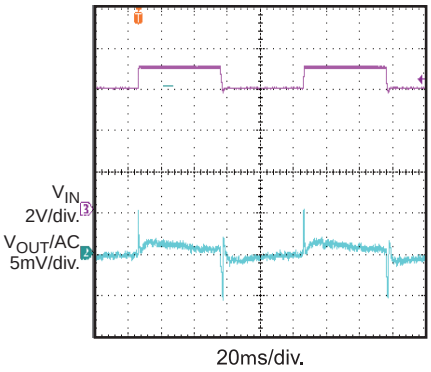
EVB TEST RESULTS *(continued)*

Performance waveforms are tested on the evaluation board.
V_{OUT} = 5V, T_A = 25°C, unless otherwise noted.

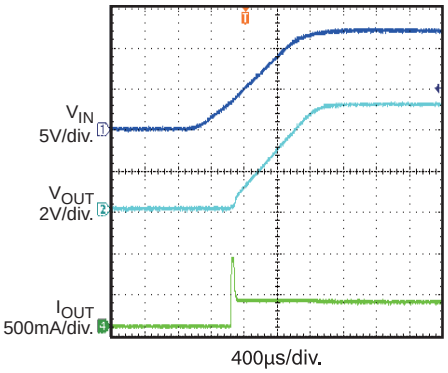
Load Transient
V_{IN} = 12V, I_{OUT} = 300mA



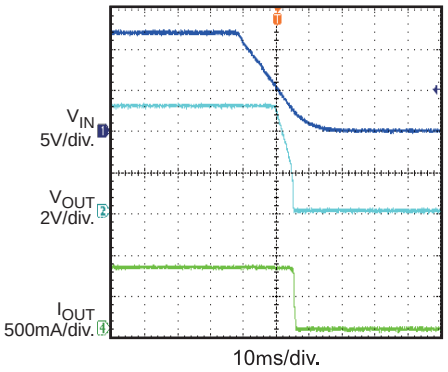
Line Transient
V_{IN} = 6V-7V, I_{OUT} = 300mA



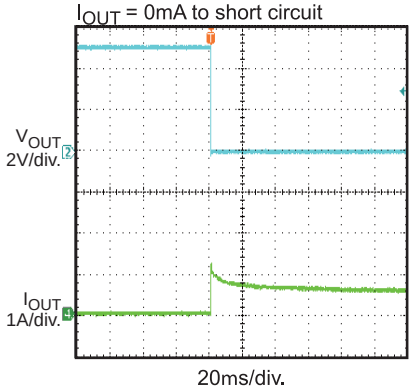
Startup through V_{IN}
V_{IN} = 12V, I_{OUT} = 300mA



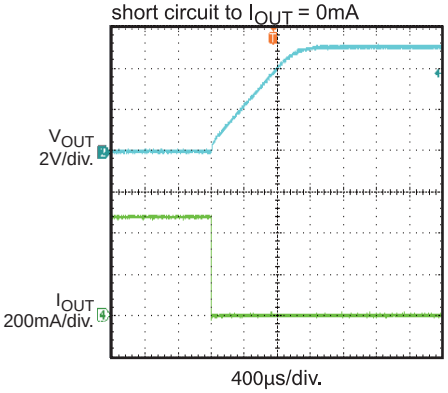
Shutdown through V_{IN}
V_{IN} = 12V, I_{OUT} = 300mA



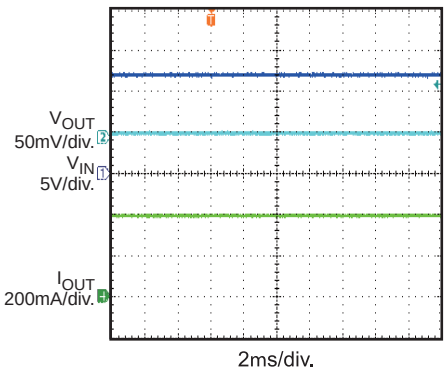
Short Circuit Entry
V_{IN} = 12V,
I_{OUT} = 0mA to short circuit



Short Circuit Recovery
V_{IN} = 12V,
short circuit to I_{OUT} = 0mA



Short Circuit Steady State
V_{IN} = 12V



PRINTED CIRCUIT BOARD LAYOUT

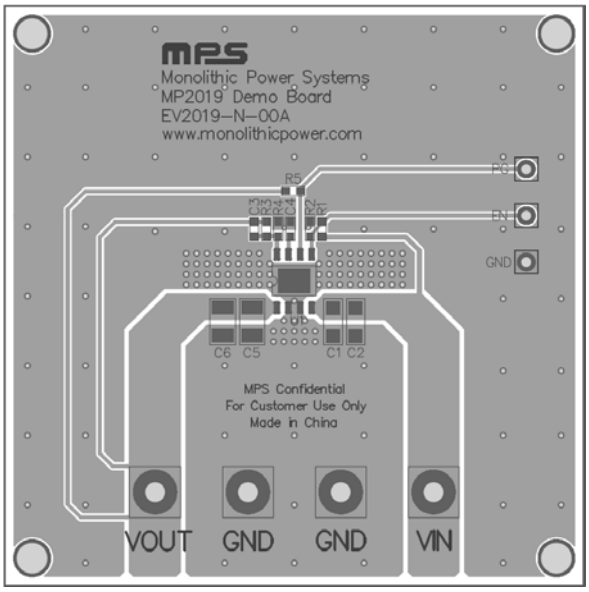


Figure 1—Top Silk Layer & Top Layer

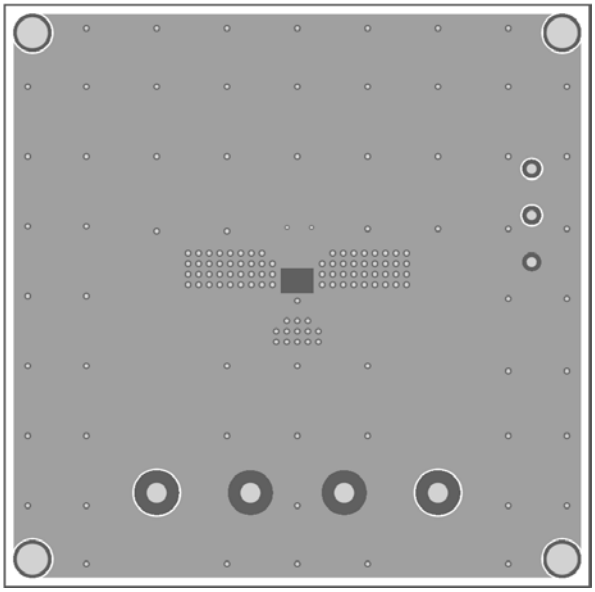


Figure 2—Bottom Layer

QUICK START GUIDE

1. Connect the positive and negative terminals of the load to the VOUT and GND pins, respectively.
2. Preset the power supply output between 6V and 40V, and then turn it off.
3. Connect the positive and negative terminals of the power supply output to the VIN and GND pins, respectively.
4. Turn the power supply on. The MP2019 and MPQ2019 will automatically startup.