# EV2019-33-N-00A

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

The Future of Analog IC Technology

## DESCRIPTION

The EV2019-33-N-00A is an evaluation board for the MP2019-33/MPQ2019-33, a low linear regulator that supplies power to systems with high voltage batteries.

MP2019-33/MPQ2019-33 includes a wide 4.3V 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 MP2019-33/MPQ2019-33 is ideal for the low power microcontrollers and the battery-powered equipments.

The EV2019-33-N-00A is a fully assembled and tested evaluation board. It generates a +3.3V output voltage at load current up to 300mA from a 4.3V to 40V input range.

## FEATURES

- 4.3V 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



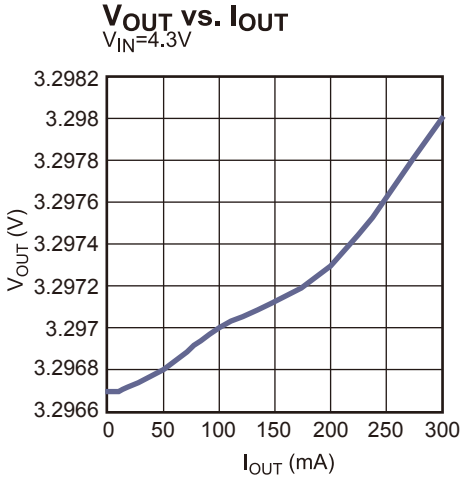
## ELECTRICAL SPECIFICATIONS

| Parameter | Symbol | Value | Units |
|---|---|---|---|
| Input Voltage | $V_{IN}$ | 4.3 – 40 | V |
| Output Voltage | $V_{OUT}$ | 3.3 | V |
| Output Current | $I_{OUT}$ | 300 | mA |

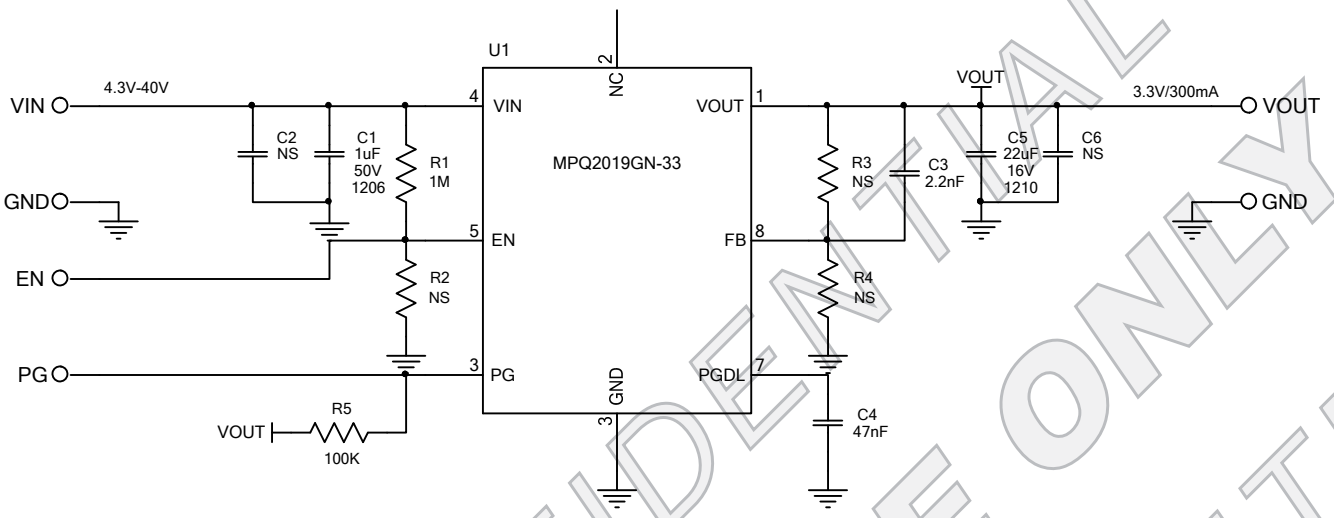
## EV2019-33-N-00A EVALUATION BOARD


**(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 |
|---|---|
| EV2019-33-N-00A | MP2019GN-33 |



## EVALUATION BOARD SCHEMATIC



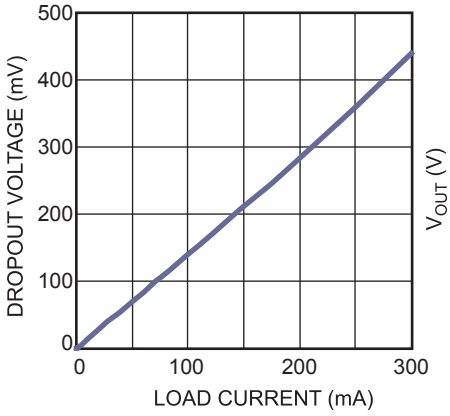

## EV2019-33-N-00A BILL OF MATERIALS

| Qty | RefDes | Value | Description | Package | Manufacturer | Manufactuer_P/N |
|---|---|---|---|---|---|---|
| 1 | C1 | 1μF | Ceramic Cap, 50V, X7R | 1206 | Murata | GRM31CR71H225KA88L |
| 2 | C2, C6 | NS | | | | |
| 1 | C3 | 2.2nF | Ceramic Cap, 50V, X7R | 0603 | muRata | GRM188R71H222KA01D |
| 1 | C4 | 47nF | Ceramic Cap, 50V, X7R | 0603 | Murata | GRM188R71H473KA61D |
| 1 | C5 | 22μF | Ceramic Cap, 16V, X7R | 1210 | Murata | GRM32ER71C226KEA8L |
| 1 | R1 | 1M | Film Res,5% | 0603 | Yageo | RC0603JR-071ML |
| 3 | R2, R3, R4 | NS | | | | |
| 1 | R5 | 100k | Film Res,1% | 0603 | Yageo | RC0603FR-07100KL |
| 1 | U1 | | Linear Regulator | SOIC8E | MPS | MPQ2019GN-33 |
| 4 | VIN, GND, GND, VOUT | | 2.0 Golden Pin | | HZ | |
| 3 | PG, GND, EN | | 2.54mm Test Pin | | Any | |

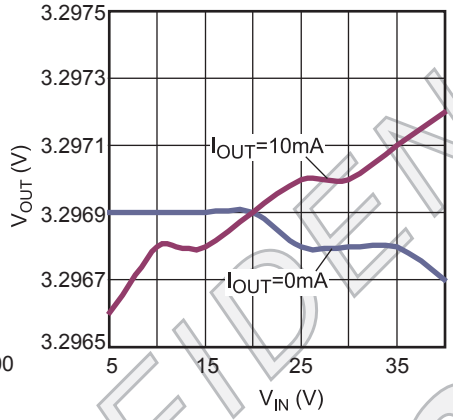
## EVB TEST RESULTS

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

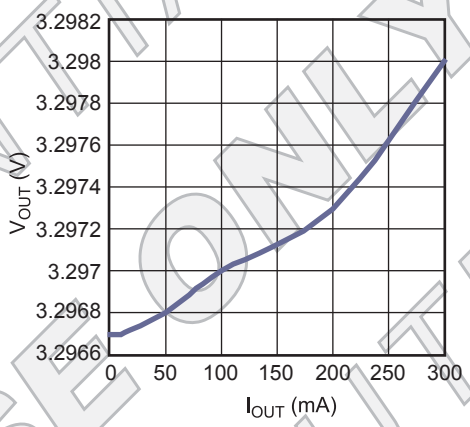
**Dropout vs. Load Current**



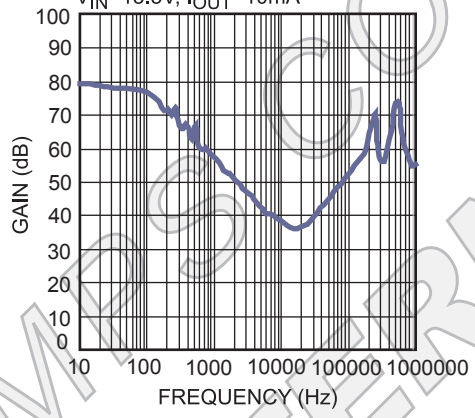

**$V_{OUT}$ vs. $V_{IN}$**




**$V_{OUT}$ vs. $I_{OUT}$**
$V_{IN}$=4.3V



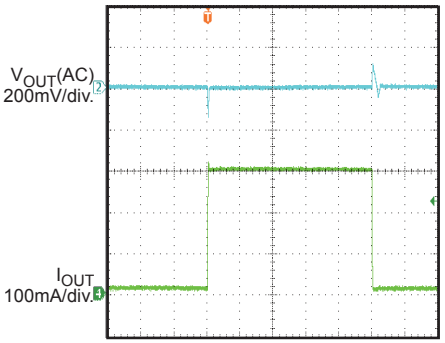

**PSRR**
$C_{IN}$=100pF, $C_{OUT}$=10µF,
$V_{IN}$=13.5V, $I_{OUT}$=10mA



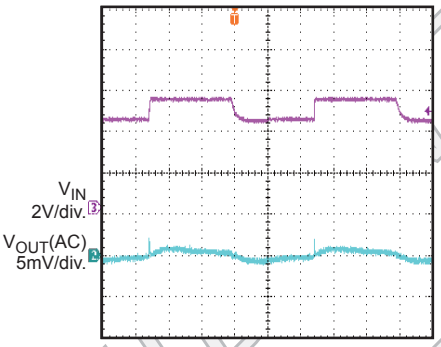
## EVB TEST RESULTS *(continued)*

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

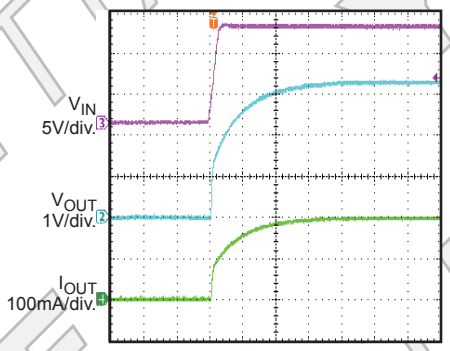
### Load Transient
$V_{IN}$ = 12V, $I_{OUT}$ = 10mA-300mA



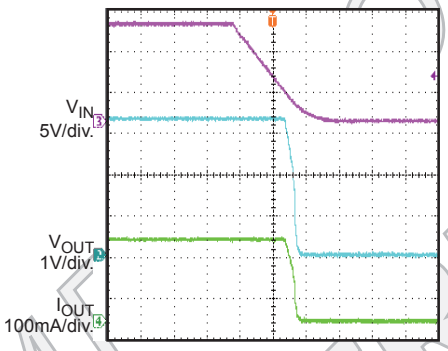

### Line Transient
$V_{IN}$ = 4.3V-5.3V, $I_{OUT}$ = 300mA



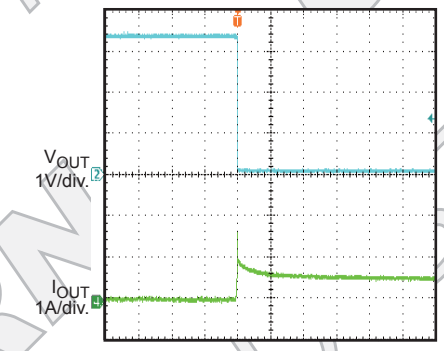

### Start-Up through $V_{IN}$
$V_{IN}$ = 12V, $I_{OUT}$ = 300mA



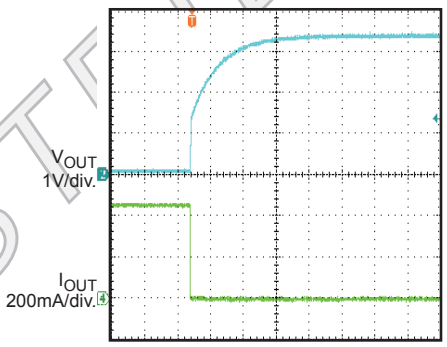

### Shutdown through $V_{IN}$
$V_{IN}$ = 12V, $I_{OUT}$ = 300mA



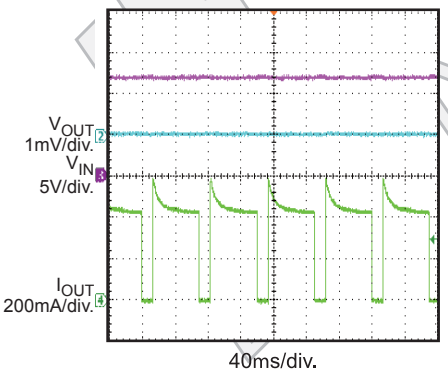

### Short Circuit Entry
$V_{IN}$ = 12V,
$I_{OUT}$ = 0mA to Short Circuit




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




### Short Circuit Steady State
$V_{IN}$ = 12V



## PRINTED CIRCUIT BOARD LAYOUT

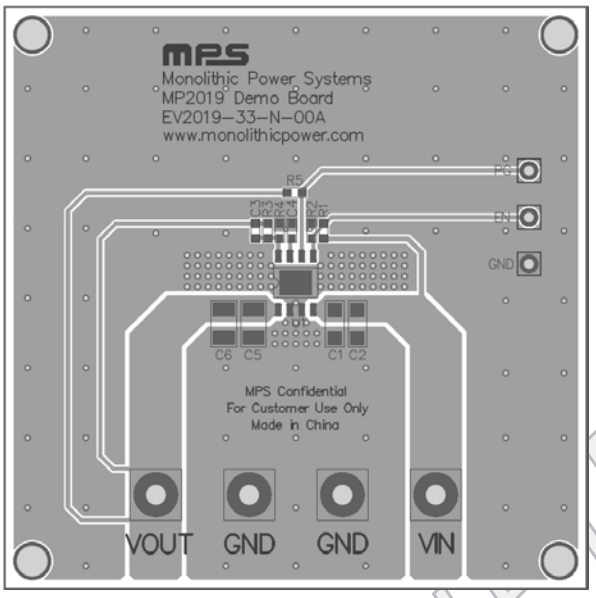



**Figure 1—Top Silk Layer & Top Layer**

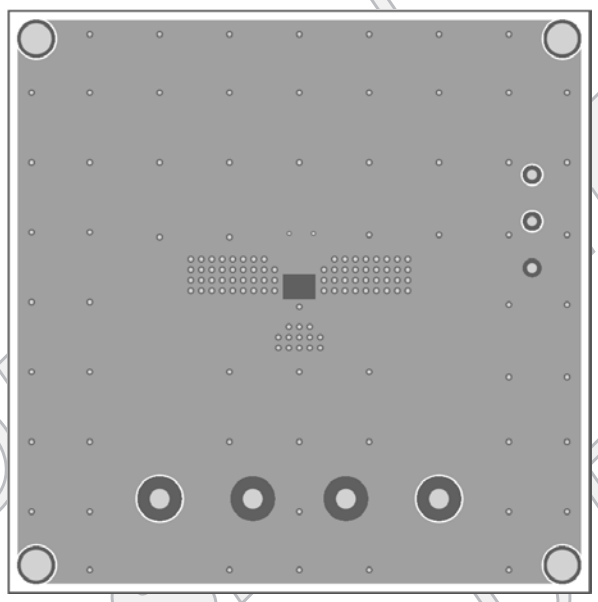


**Figure 2—Bottom Layer**

## 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 4.3V 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 MP2019-33/MPQ2019-33 will automatically startup.
5. PG pin is the test point for power good, which high level (equals output voltage) represents output voltage is higher than 92% of its set value.