



EVQ20082-5-H-00A

**40V, 300mA, Fixed 5V V_{OUT} ,
Low Quiescent Current
Linear Regulator Evaluation Board**

DESCRIPTION

The EVQ20082-5-H-00A is an evaluation board designed to demonstrate the capabilities of the MPQ20082-5, a low quiescent current (I_Q) linear regulator that supplies power to systems with high-voltage batteries.

The MPQ20082-5 features a wide 3V to 40V input voltage (V_{IN}) range, fixed 5V output voltage (V_{OUT}), a low dropout voltage, and a low I_Q . The low I_Q and low dropout voltage allow the device to operate at low power levels. This makes the MPQ20082-5 ideal for low-power microcontroller units (MCUs) and battery-powered equipment.

The MPQ20082-5's output current (I_{OUT}) is limited internally, and the device is protected against short-circuit (SC), overload, and over-temperature (OT) conditions.

Full protection features include thermal shutdown (TSD) and current-limiting fault protection.

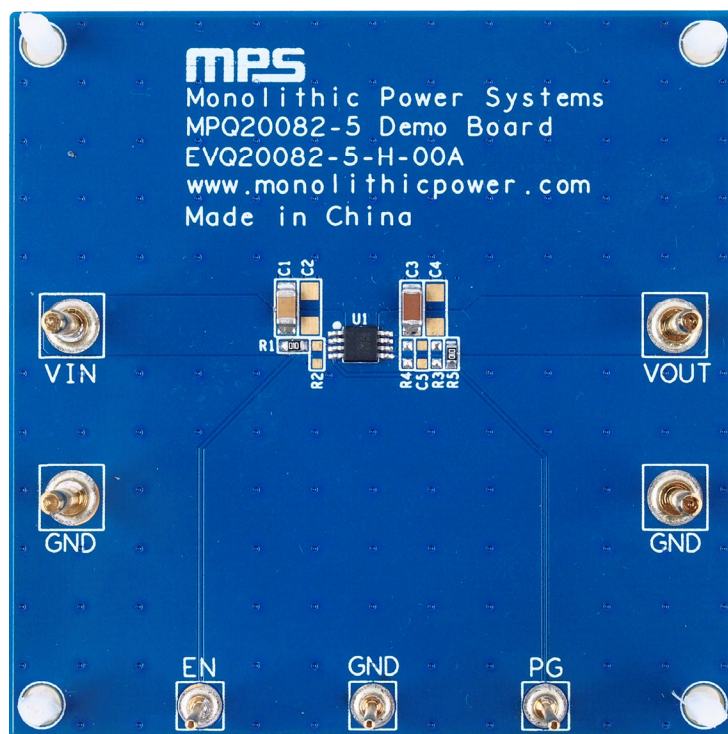
The EVQ20082-5-H-00A is a fully assembled and tested evaluation board. It generates a 5V V_{OUT} at load currents up to 300mA from a 6V to 40V V_{IN} range.

It is recommended to read the datasheet for the MPQ20082-5 prior to making any changes to the EVQ20082-5-H-00A.

PERFORMANCE SUMMARY

Parameter	Conditions	Value
Recommended input voltage (V_{IN}) range		6V to 40V
Output voltage (V_{OUT})	$V_{IN} = 6V$ to 40V, $I_{OUT} = 5mA$ to 300mA	5V
Maximum output current (I_{OUT})	$V_{IN} = 6V$ to 40V	300mA

EVALUATION BOARD



LxWxH (6.35cmx6.35cmx1cm)

Board Number	MPS IC Number
EVQ20082-5-H-00A	MPQ20082GH-5-AEC1

QUICK START GUIDE

The EVQ20082-5-H-00A evaluation board is easy to set up and use to evaluate the performance of the MPQ20082-5. For proper measurement equipment set-up, refer to Figure 1 and follow the steps below.

1. Connect the load terminals to:
 - a. Positive (+): V_{OUT}
 - b. Negative (-): GND
2. Preset the power supply output to be between 6V and 40V, then turn it off. If longer cables (>0.5m total) are used between the source and the evaluation board, a damping capacitor should be installed at the input terminals, especially if the input voltage (V_{IN}) is 24V or greater.
3. Connect the power supply terminals to:
 - a. Positive (+): V_{IN}
 - b. Negative (-): GND
4. Turn the power supply on. The EVQ20082-5-H-00A should start up automatically.

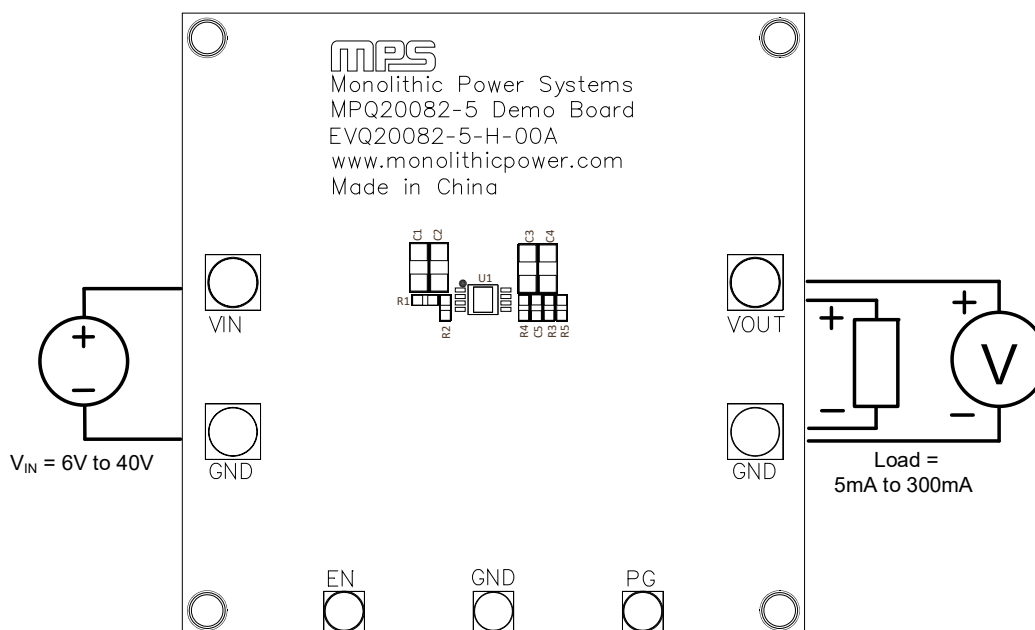


Figure 1: Measurement Equipment Set-Up

EVALUATION BOARD SCHEMATIC

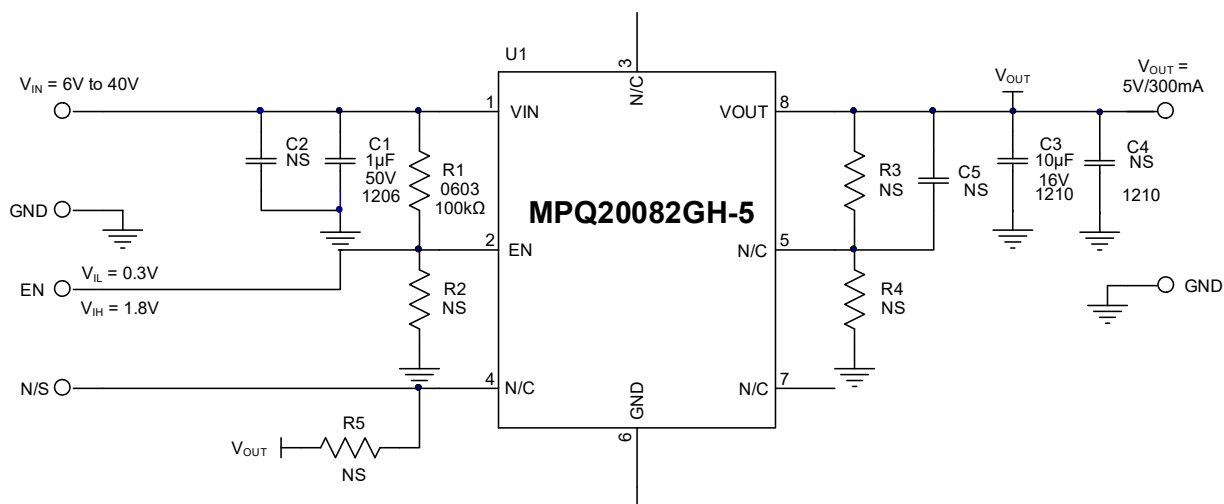
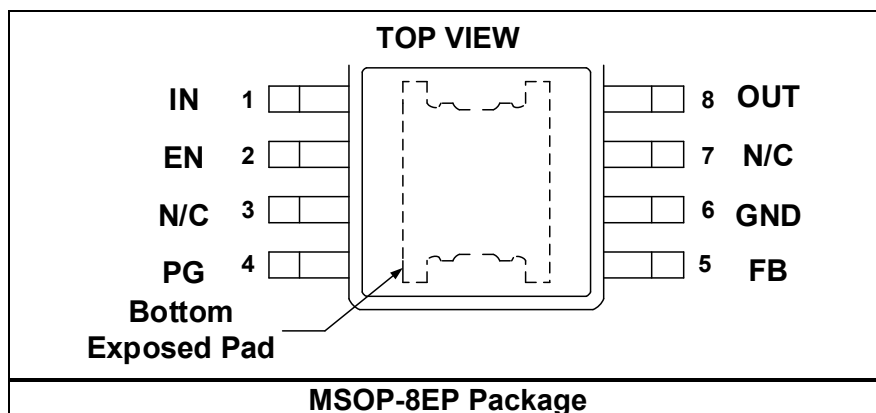


Figure 2: Evaluation Board Schematic

PACKAGE REFERENCE

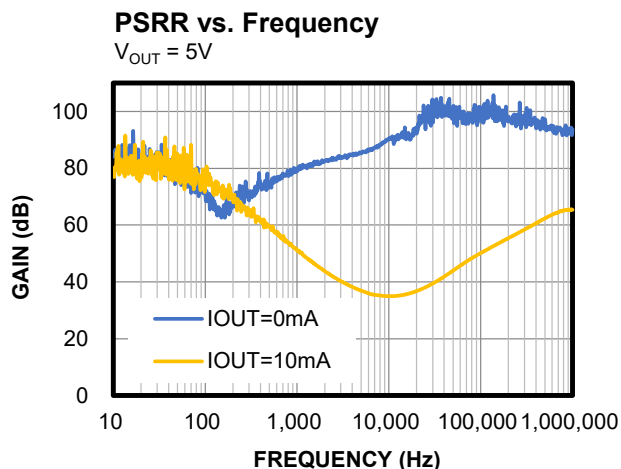
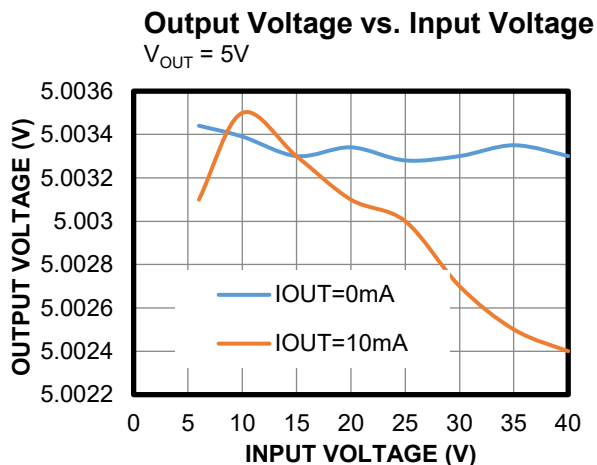
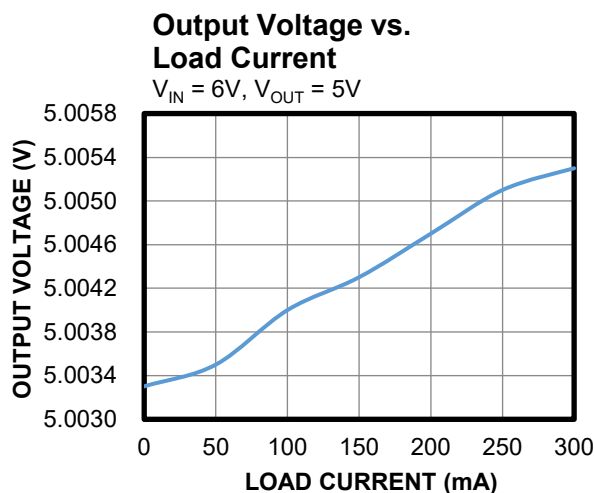
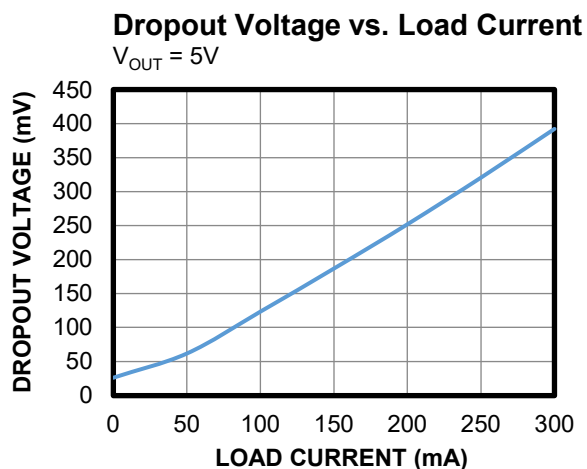
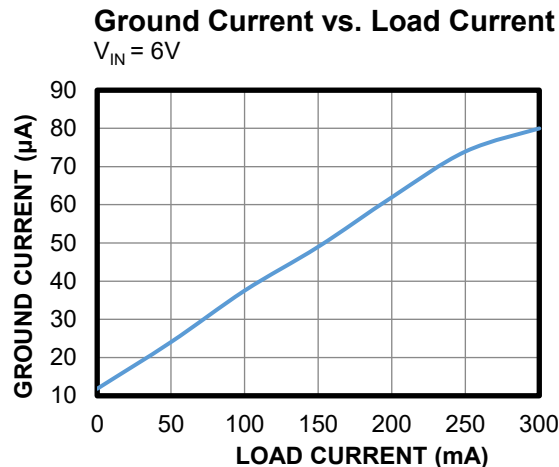
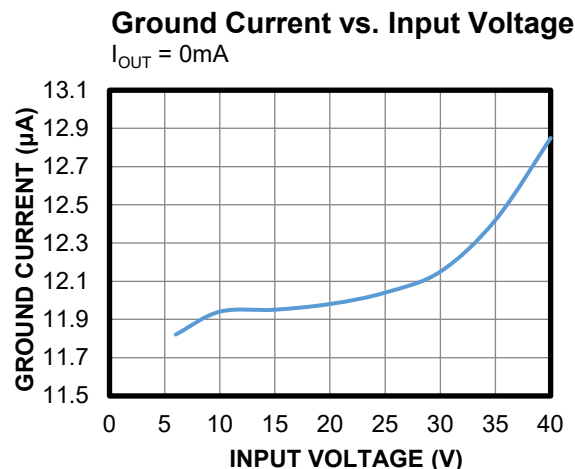


EVQ20082-5-H-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer PN
1	C1	1 μ F	Ceramic capacitor, 50V, X7R	1206	Murata	885012208093
3	C2, C4, C5	NS				
1	C3	10 μ F	Ceramic capacitor, 16V, X7R	1206	Samsung	CL31B106MOHNNNE
2	R1, R5	100k Ω	Film resistor, 1%	0603	Yageo	RC0603FR-07100KL
3	R2, R3, R4	NS				
4	VIN, GND, GND, VOUT	2mm male	Connector	DIP	Any	
3	PG, GND, EN	2.54mm	2.54mm test pin	2.54mm	Any	
1	U1	MPQ20082-5- AEC1	40V, 300mA, low-I _Q linear regulator	MSOP- 8EP	MPS	MPQ20082GH-5-AEC1

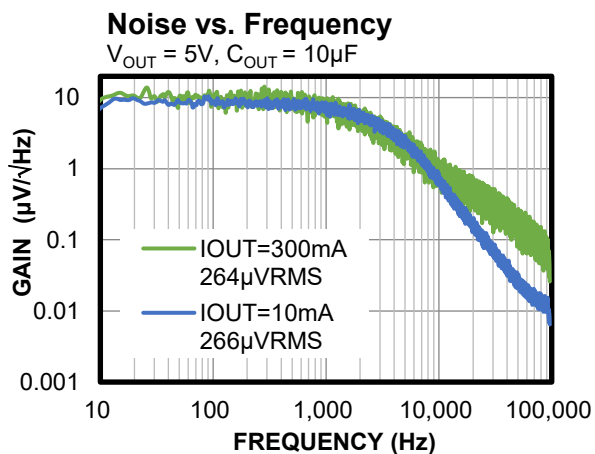
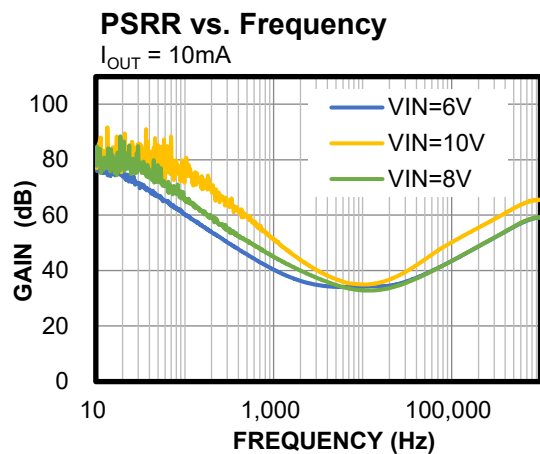
EVB TEST RESULTS

Performance curves and waveforms are tested on the evaluation board. $V_{OUT} = 5V$, $T_A = 25^\circ C$, unless otherwise noted.



EVB TEST RESULTS *(continued)*

Performance curves and waveforms are tested on the evaluation board. $V_{OUT} = 5V$, $T_A = 25^\circ C$, unless otherwise noted.

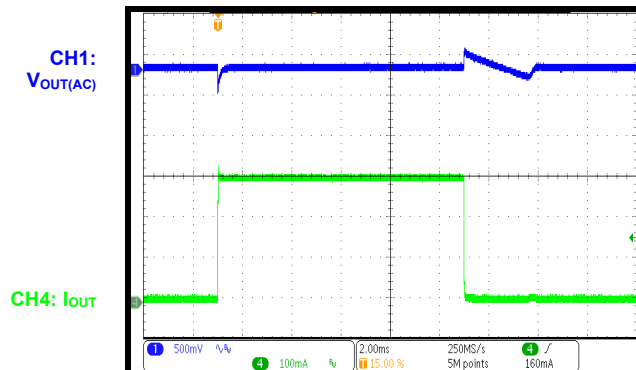


EVb TEST RESULTS (continued)

Performance curves and waveforms are tested on the evaluation board. $V_{OUT} = 5V$, $T_A = 25^\circ C$, unless otherwise noted.

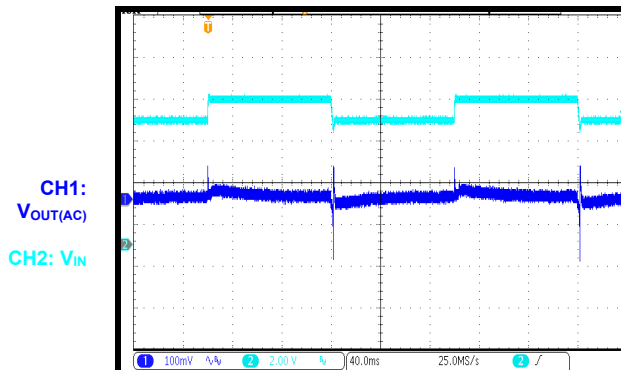
Load Transient Response

$V_{IN} = 12V$, $I_{OUT} = 0mA$ to 300mA



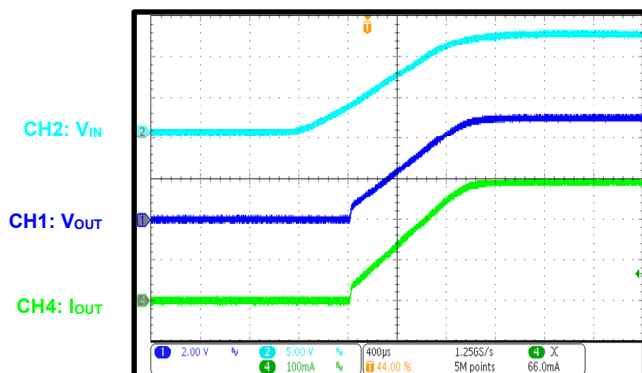
Line Transient Response

$V_{IN} = 6V$ to 7V, $I_{OUT} = 300mA$



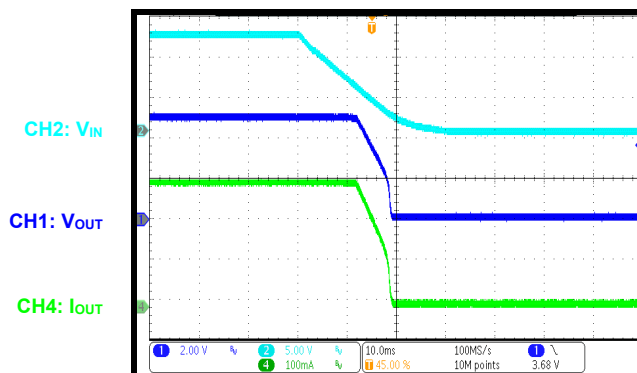
Start-Up through V_{IN}

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



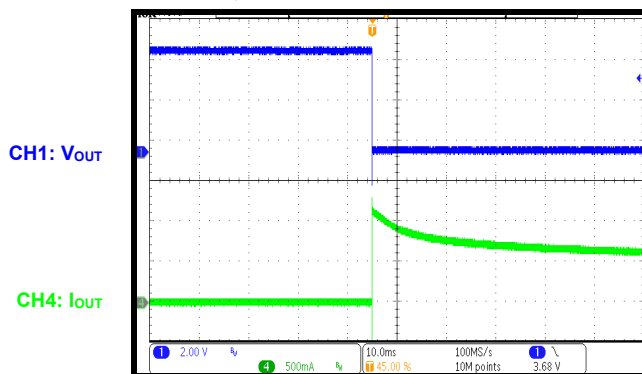
Shutdown through V_{IN}

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



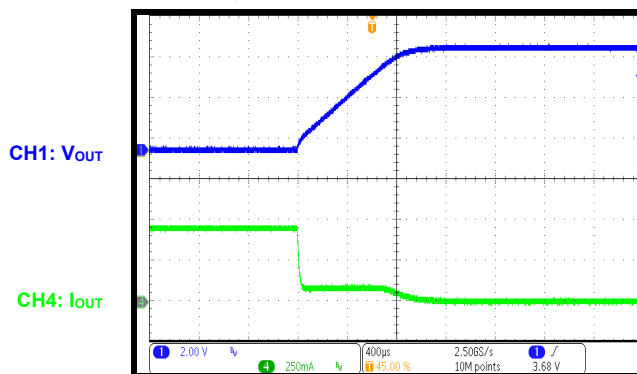
Short-Circuit Entry

$V_{IN} = 12V$, $I_{OUT} = 0mA$ to short circuit



Short-Circuit Recovery

$V_{IN} = 12V$, short circuit to $I_{OUT} = 0mA$

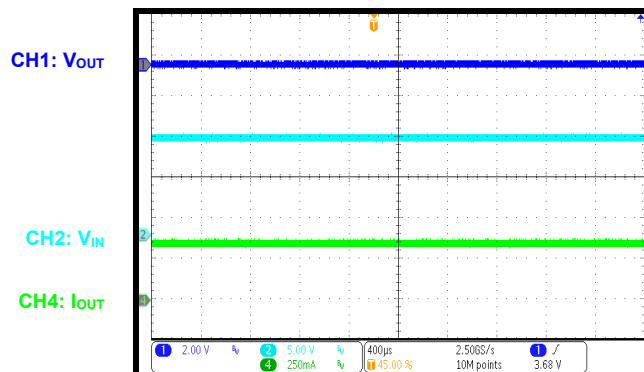


EVB TEST RESULTS *(continued)*

Performance curves and waveforms are tested on the evaluation board. $V_{OUT} = 5V$, $T_A = 25^\circ C$, unless otherwise noted.

Short-Circuit Steady State

$V_{IN} = 12V$



PCB LAYOUT

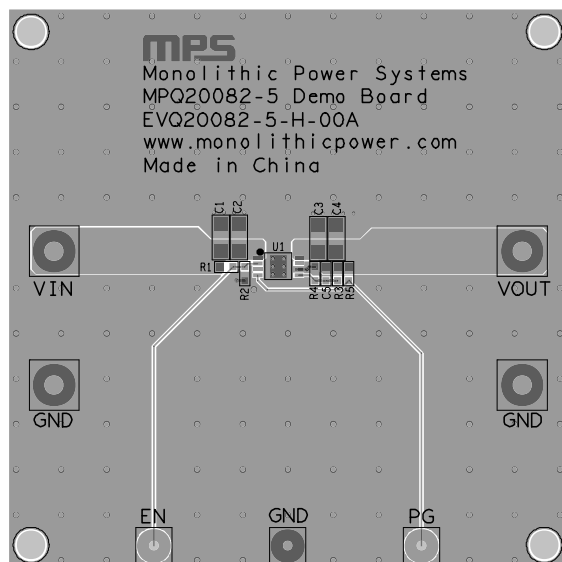


Figure 3: Top Layer

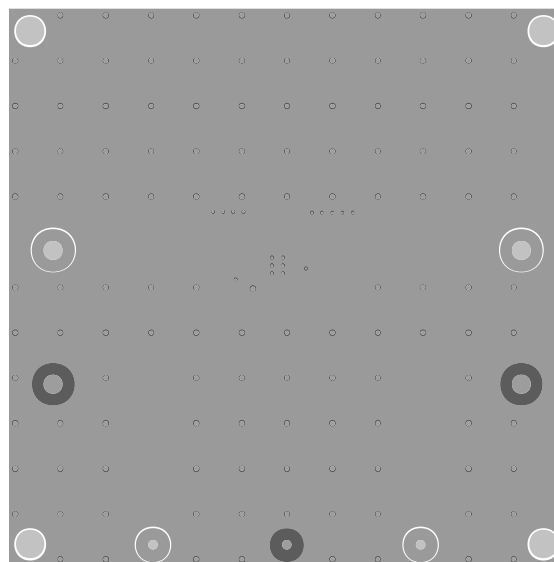


Figure 4: Bottom Layer



REVISION HISTORY

Revision #	Revision Date	Description	Pages Updated
1.0	1/21/2025	Initial Release	-

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