# EV04W0503A-2-Y-00B

**0.4W, Regulated, 1.5kV$_{DC}$ Isolated DC/DC Converter Evaluation Board**

## DESCRIPTION

The EV04W0503A-2-Y-00B is an evaluation board designed to demonstrate the capabilities of the MID04W0503AGY-2R, a regulated, isolated DC to DC converter module.

The MID04W0503AGY-2R integrates a power MOSFET, transformer, and feedback circuit all in one chip, supporting a 1.5kV$_{DC}$ isolation voltage. This converter provides a small size and higher reliability operation compared to traditional isolated power modules.

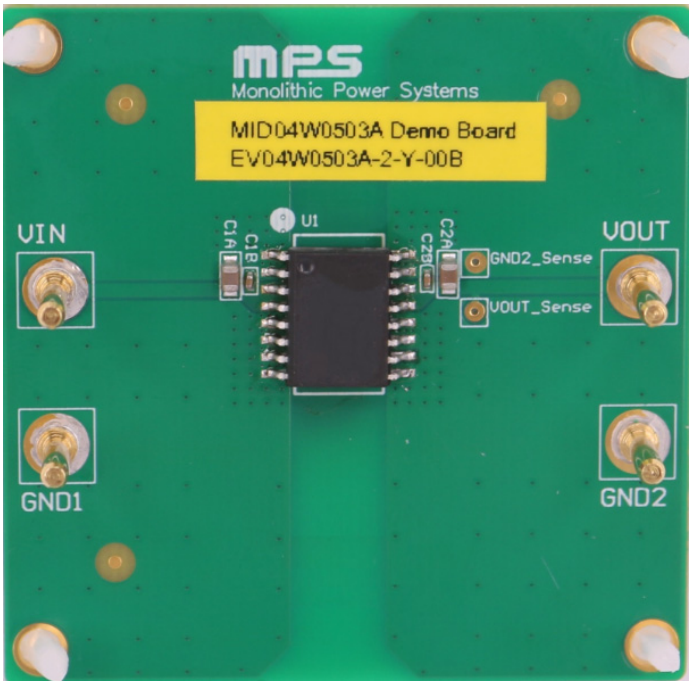
It is recommended to read the datasheet for the MID04W0503A prior to making any changes to the EV04W0503A-2-Y-00B.

## PERFORMANCE SUMMARY

Specifications are at $T_A$ = 25°C, unless otherwise noted.

| Parameters | Conditions | Value |
|---|---|---|
| Input voltage ($V_{IN}$) range | | 4.5V to 5.5V |
| Output voltage ($V_{OUT}$) | $V_{IN}$ = 4.5V to 5.5V, $I_{OUT}$ = 0A to 0.12A | 3.3V |
| Maximum output current ($I_{OUT}$) | $V_{IN}$ = 4.5V to 5.5V | 0.12A |

## EVALUATION BOARD




**LxWxH (5.1cmx5.1cmx0.3cm)**
**2 Layers, 1oz/1oz**

| Board Number | MPS IC Number |
|---|---|
| EV04W0503A-2-Y-00B | MID04W0503AGY-2R |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## QUICK START GUIDE

1. Preset the power supply ($V_{IN}$) between 4.5V and 5.5V, then turn off the power supply.
2. Connect the power supply terminals to:
   a. Positive (+): VIN
   b. Negative (-): GND1
3. Connect the load terminals to:
   a. Positive (+): VOUT
   b. Negative (-): GND2
4. After making the connections, turn on the power supply. The board should start up automatically.

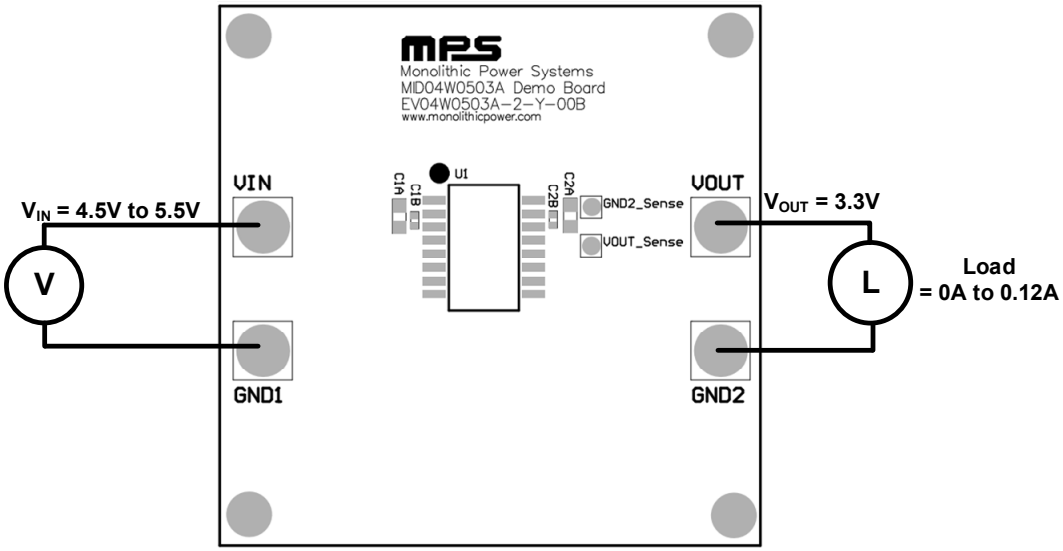


**Figure 1: Measurement Equipment Set-Up**


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## EVALUATION BOARD SCHEMATIC

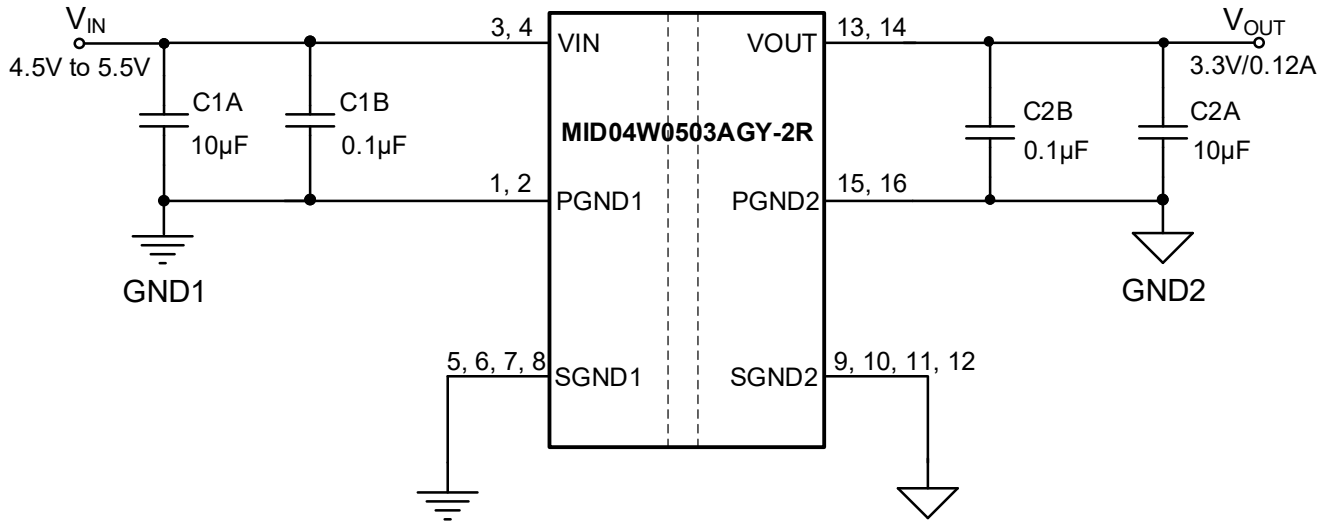


**Figure 2: Evaluation Board Schematic**


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## EV04W0503A-2-Y-00B BILL OF MATERIALS

| Qty | Ref | Value | Description | Package | Manufacturer | Manufacturer PN |
|---|---|---|---|---|---|---|
| 2 | C1A, C2A | 10µF | Ceramic capacitor, 10V, X5R | 0805 | TDK | C2012X5R1A106KT000E |
| 2 | C2A, C2B | 100nF | Ceramic capacitor, 16V, X7R | 0402 | Samsung | CL05B104KO5NNNC |
| 1 | U1 | MID04W0503A | 0.4W, 1.5kV$_{DC}$ isolated DC/DC converter module | SOIC-16 WB | MPS | MID04W0503AGY-2R-Z |


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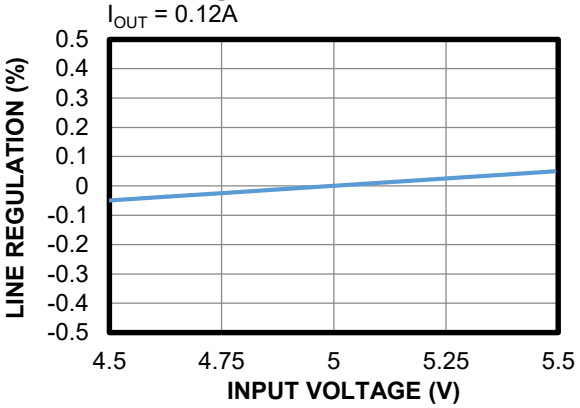
## EVB TEST RESULTS

**Performance curves and waveforms are tested on the evaluation board. $V_{IN}$ = 5V, $V_{OUT}$ = 3.3V, $T_A$ = 25°C, $I_{OUT}$ = 0A to 0.12A, $C_{IN}$ = $C_{OUT}$ = 0.1µF + 10µF, unless otherwise noted.**

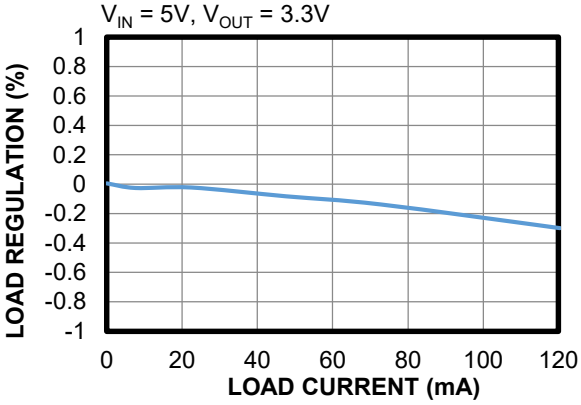
**Line Regulation**

$I_{OUT}$ = 0.12A

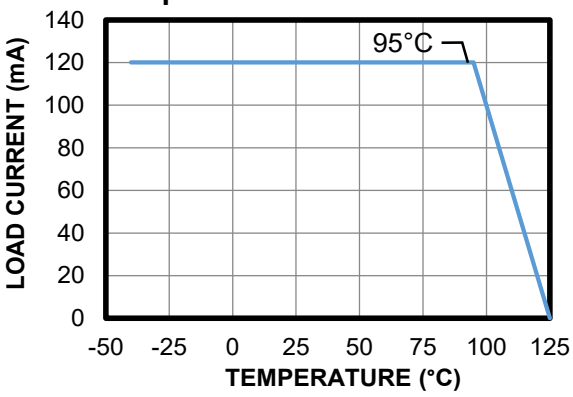



**Load Regulation**

$V_{IN}$ = 5V, $V_{OUT}$ = 3.3V




**Load Current vs. Temperature**





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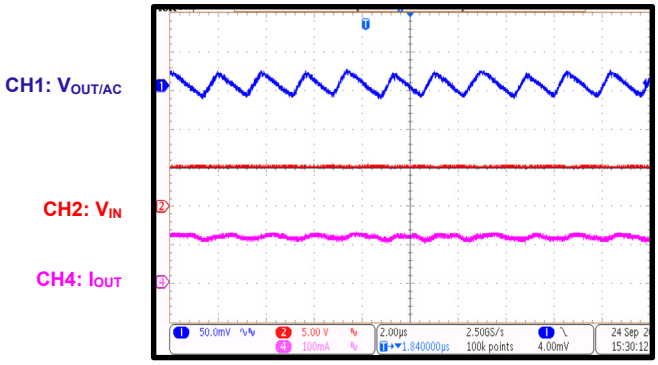
## EVB TEST RESULTS *(continued)*

**Performance curves and waveforms are tested on the evaluation board. $V_{IN}$ = 5V, $V_{OUT}$ = 3.3V, $T_A$ = 25°C, $I_{OUT}$ = 0A to 0.12A, $C_{IN}$ = $C_{OUT}$ = 0.1µF + 10µF, unless otherwise noted.**

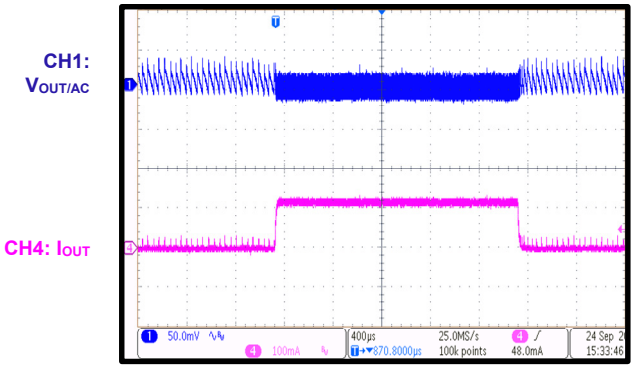
### $V_{OUT}$ Ripple

$I_{OUT}$ = 0.12A

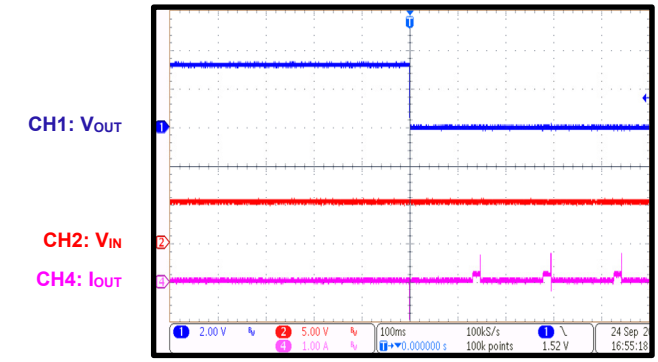



### Load Transient

$I_{OUT}$ = 0A to 0.12A




### SCP Entry





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# PCB LAYOUT

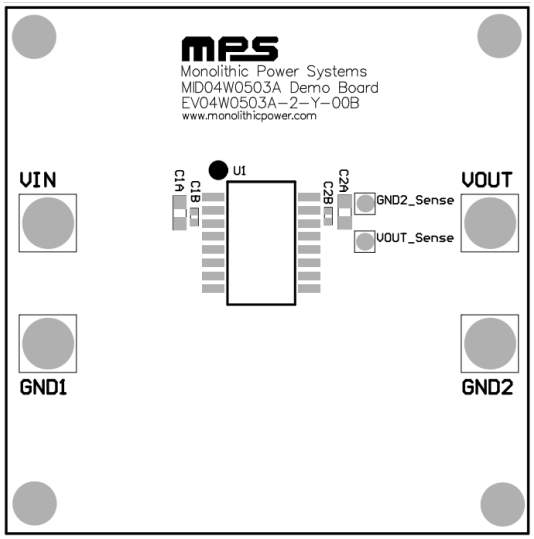


Figure 1: Top Silk

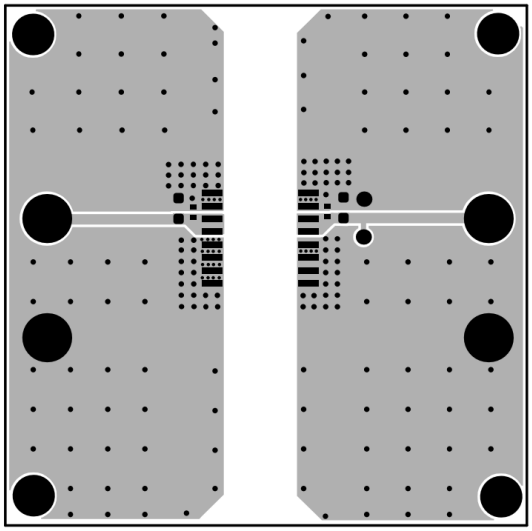

Figure 2: Top Layer

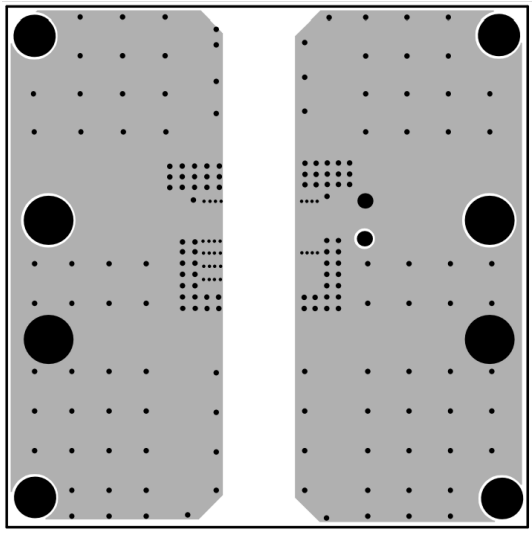

Figure 3: Bottom Layer


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## REVISION HISTORY

| Revision # | Revision Date | Description | Pages Updated |
|---|---|---|---|
| 1.0 | 6/6/2024 | Initial Release | - |

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