



# EV1924-R-00A

## 100V, 4A Half-Bridge Gate Driver Evaluation Board

### DESCRIPTION

The EV1924-R-00A is an evaluation board for the MP1924, a high frequency Half-Bridge gate driver. Its high-side and low-side driver channels are independently controlled and matched with a time delay of less than 5ns.

The demo board is configured as a buck converter. INH and INL are independent signals of each other. Complementary PWMs with proper dead time should be implemented for INH and INL.

### ELECTRICAL SPECIFICATION

| Parameter                   | Symbol          | Value  | Units |
|-----------------------------|-----------------|--------|-------|
| Driver Power Supply Voltage | V <sub>DD</sub> | 9 - 16 | V     |
| Input Power Supply Voltage  | V <sub>IN</sub> | 0-100  | V     |

### FEATURES

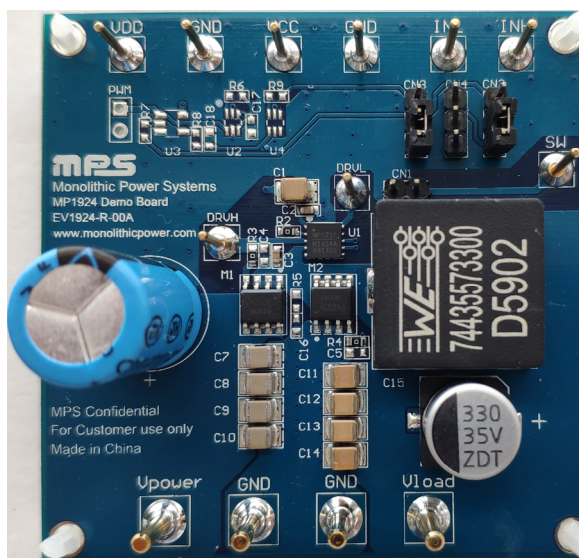
- 118V Bootstrap Voltage Range
- On-Chip Bootstrap Diode
- Quiescent Current of Less than 150uA
- Typical Propagation Delay of 20ns
- Gate Driver Matching of Less than 5ns
- UVLO for Both High-Side and Low-Side Gate Drivers
- TTL Compatible Input
- Available in a QFN-10 (4mmx4mm) and SOIC-8 Package

### APPLICATIONS

- Motor Drivers
- Telecom Half-Bridge Power Supplies
- Avionics DC/DC converters

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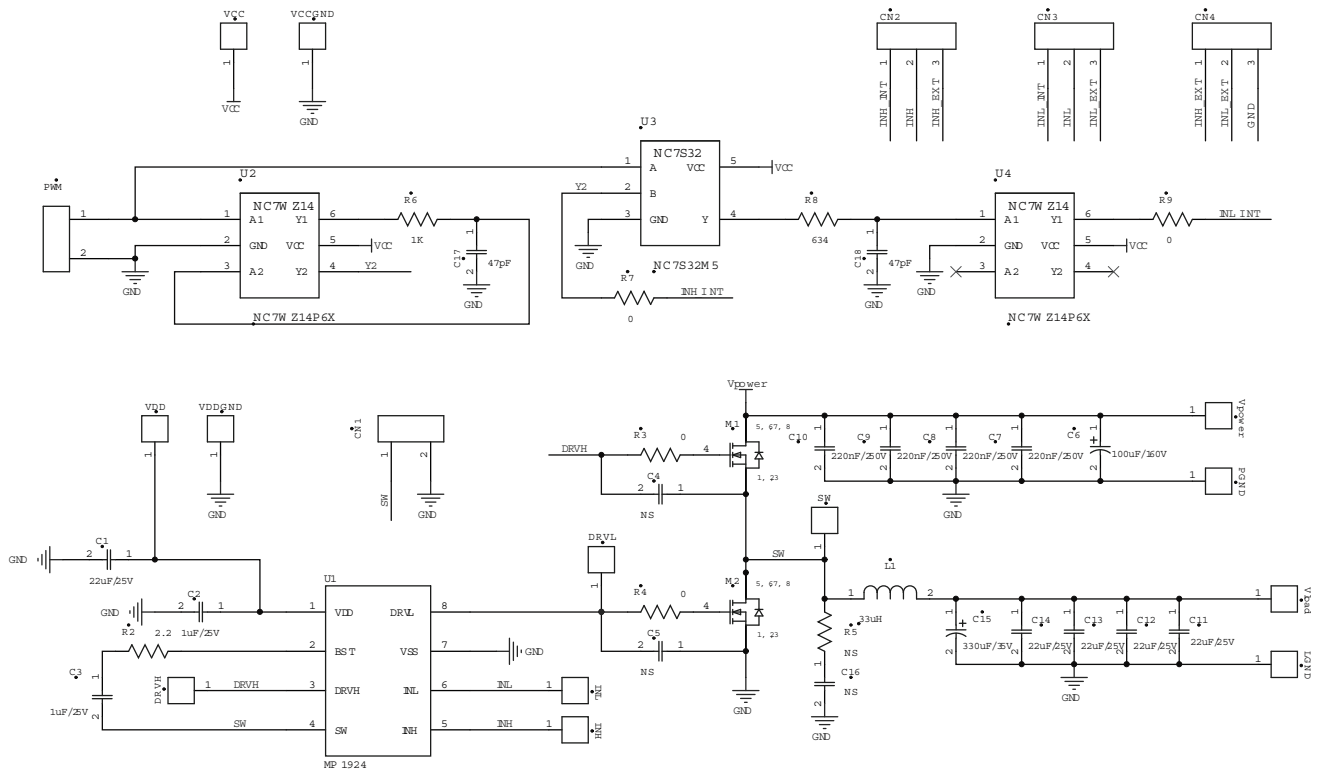
## EV1924-R-00A EVALUATION BOARD



(L × W × H) 6.35cm x 6.35cm x 1cm

| Board Number | MPS IC Number |
|--------------|---------------|
| EV1924-R-00A | MP1924HR      |

## EVALUATION BOARD SCHEMATIC





## EV1924-R-00A BILL OF MATERIALS

| Qty | RefDes   | Value                | Description                    | Package           | Manufacturer | Manufacturer P/N   |
|-----|--|----------------------|--------------------------------|-------------------|--------------|--------------------|
| 5   | C1, C11,<br>C12, C13,<br>C14                             | 22 $\mu$ F/<br>25V   | Ceramic Cap., 25V,<br>X5R      | 1210              | Murata       | GRM32ER71E226KE15L |
| 2   | C2, C3   | 1 $\mu$ F/<br>25V    | Ceramic Cap., 25V,<br>X5R      | 0603              | TDK          | C1608X5R1E105K     |
| 3   | C4, C5,<br>C16   | NS                   |                                |                   |              |                    |
| 1   | C6   | 100 $\mu$ F/<br>160V | Electrolytic Cap.,<br>160V     | DIP               | 江海           | CD110-160V100      |
| 4   | C7, C8, C9,<br>C10                                       | 220nF/<br>250V       | Ceramic Cap.,<br>250V, X7R     | 1210              | Murata       | GRM32DR72E224KW01L |
| 1   | C15  | 330 $\mu$ F/<br>35V  | Electrolytic Cap.,<br>35V      | SMD               | 江海           | VZ1-35V330         |
| 1   | L1   | 33 $\mu$ H           | Inductor, 33 $\mu$ H,<br>8.5A; | SMD               | Würth        | 74435573300        |
| 1   | R5   | NS                   |                                |                   |              |                    |
| 3   | R2, R3, R4   | 0                    | Film Resistor, 5%,             | 0603              | Yageo        | RC0603JR-070RL     |
| 2   | M1, M2   | AM4490N              | N-channel MOS                  | PowerPA<br>K SO-8 | Analog Power | AM4490N            |
| 1   | U1   | MP1924               | Integrated Gate<br>Driver      | QNF4x4            | MPS          | MP1924HR           |
| 4   | Vpower,<br>Vload,<br>GNDx2                               |                      | 2mm 金针                         |                   |              |                    |
| 9   | VDD, GND,<br>VCC, GND,<br>INL, INH,<br>DRVH,<br>DRVL, SW |                      | 1mm 金针                         |                   |              |                    |

## PRINTED CIRCUIT BOARD LAYOUT

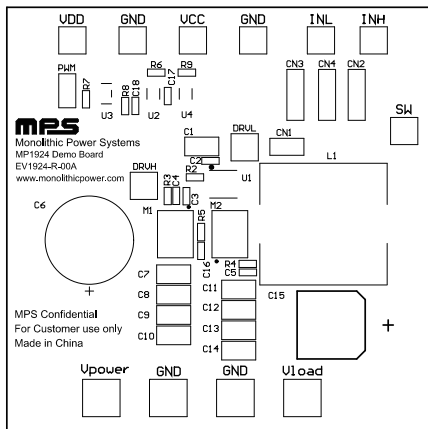


Figure 1: Top Silkscreen Layer

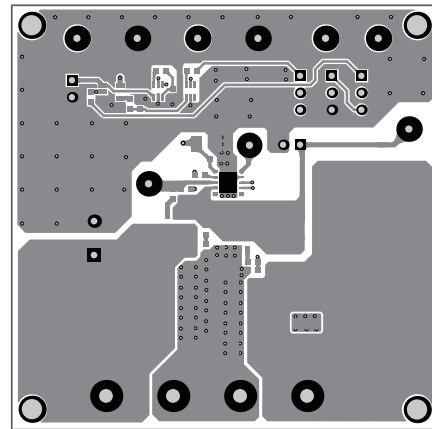


Figure 2: Top Layer

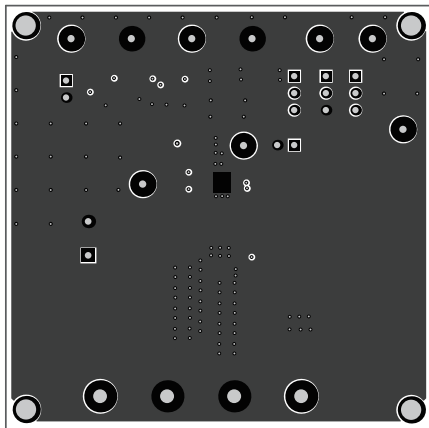


Figure 3: Mid-Layer1

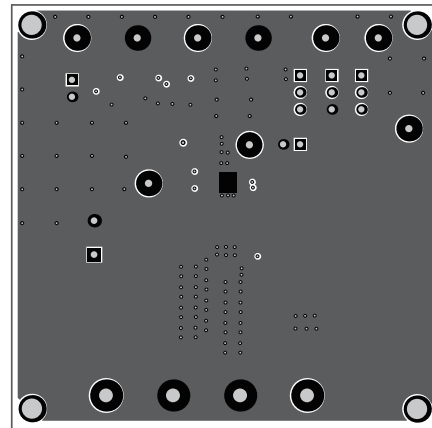


Figure 4: Mid-Layer2

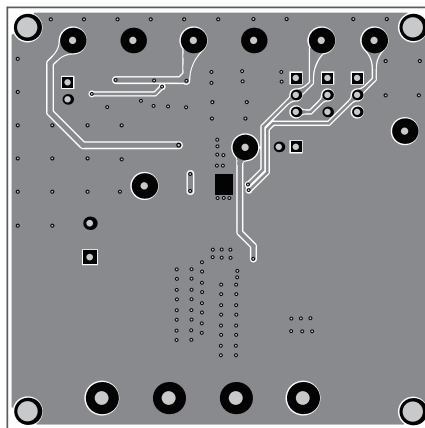


Figure 5: Bottom Layer

## QUICK START GUIDE

1. Preset driver power supply voltage range of 9V-16V.
2. Preset input power supply voltage range of 0V-100V.
3. Attach a couple of complementary PWMs with proper dead time to the CN4.
4. Attach driver power supply to the VDD and GND terminals respectively.
5. Attach input power supply to the VIN and GND terminals respectively.
6. Attach load to the LOAD and GND terminals respectively.
7. Turn on driver power supply.

Check INH, INL, DRVH and DRVL signals, make sure a sufficient dead time of DRVH and DRVL has been established before following steps:

8. Turn on input power supply.
9. Turn on the load, check output voltage and current.
10. To turn off the system, please follow these steps:
  - a. Turn off load.
  - b. Turn off VIN.
  - c. Turn off VDD.

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