

## MOS H-bridge

### Features

- Simple H-bridge motor control module
- Low resistance MOSFET switches
- 2 PWM control interfaces compatible with 3.3V logic
- Up to 30V, 2.5A

This module utilises the [DMHC3025](#) quad MOSFET from Diodes Incorporated to implement an H-bridge. The 4 gate inputs of the MOSFET are grouped and 2 PWM inputs are needed. The DMHC3025 has low threshold voltage and is compatible with 3.3V logic.

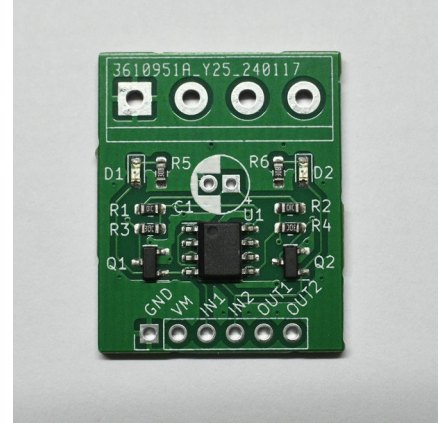


Figure 1: PCB of the MOS H-bridge.

### Pin Configurations

This module has 6 I/Os: 2 for power input, 2 for PWM control, 2 for the load.

Pin name	Description
GND	Ground connection for both logic and load.
VM	Power supply for the H-bridge and load. This voltage need not be the same as the logic voltage.
IN1	PWM input 1. Setting this pin high will cause current to flow from OUT1 to OUT2.
IN2	PWM input 2. Setting this pin high will cause current to flow from OUT2 to OUT1.
OUT1	H-bridge output 1.
OUT2	H-bridge output 2.

Note that logic voltage supply is not required to operate this module.

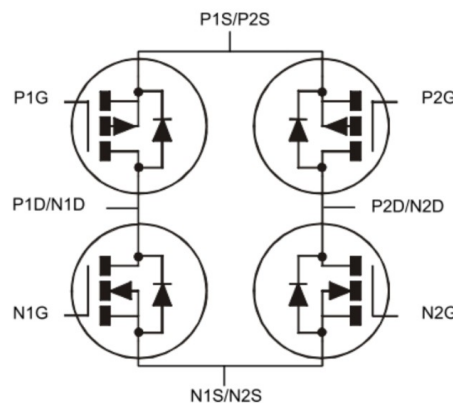


Figure 2: The internals of DMHC3025(taken from [datasheet](#)).

When IN1 is set to logic high, PMOS1 and NMOS2 will be turned on, allowing current to flow from OUT1 to OUT2. When IN2 is set to logic high, current will flow from OUT2 to OUT1. **Do not set both inputs to high at the same time, this will cause a direct short between VM and GND.** Two LEDs are connected to the input respectively to monitor the input signal.

Besides the pin headers, 4 screw terminal mounting holes are provided on the module for the 4 high current pins: GND, VM, OUT1 and OUT2 (from right to left in the picture on the right). To improve performance, a large capacitor should be soldered to the centre of the module, where a electrolytic capacitor footprint is provided.



Figure 3: Rear side of the PCB of the MOS H-bridge.

### Special Notes

1. **Do not set both inputs to high at the same time**, this will cause a direct short between VM and GND.
2. The two inputs do not have internal pull-down resistors. Make sure to **drive or externally pull it to ground when unused**.
3. In order to protect the MOSFETs, a resistive divider is implemented to reduce the gate-source voltage of the PMOS so that it will not exceed 20V when the device is operated with 30V supply. **If the power supply(VM) to the module is less than 6V, jumpers JP1 and JP2 should be shorted to ensure proper operation.**

### Revision History

PCB Revision	Datasheet Revision	Description
1.0	1.0.0	Initial version.
	1.0.1	Rewritten to improve readability.

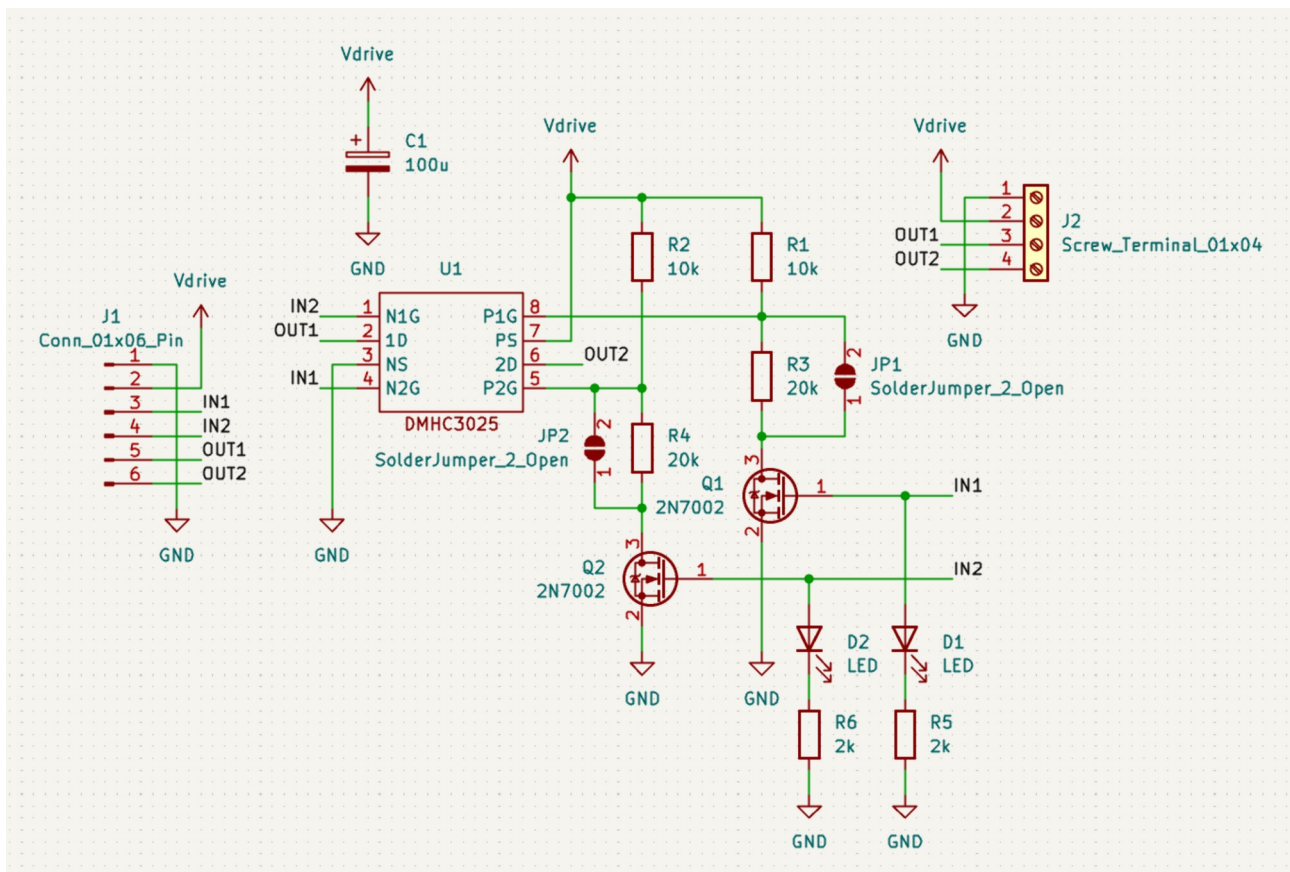


Figure 4: Schematic of the MOS H-bridge. Note that the electrolytic capacitor, pin headers and screw terminals are not included when shipped.