

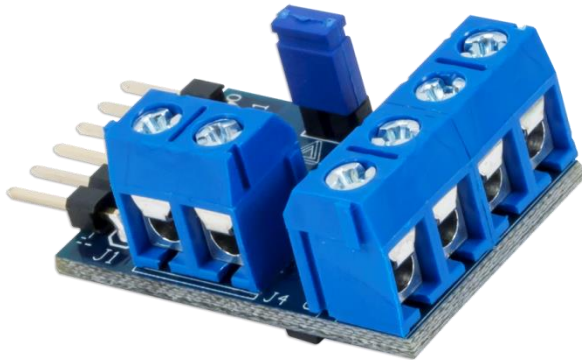
PmodOD1™ Reference Manual

Revised May 26, 2016

This manual applies to the PmodOD1 rev. A

Overview

The Digiilent PmodOD1 uses open-drain MOSFETs to drive high current applications.



The PmodOD1.

Features include:

- Two dual power N-FETs
- Comfortably drives 3.0 A of continuous current
- 4.1 A peak output current ($t < 5$ s)
- 20 V maximum output voltage
- Four output clamp diodes
- Small PCB size for flexible designs 1.2" × 0.8" (3.0 cm × 2.0 cm)
- 6-pin Pmod connector with GPIO interface
- Follows [Digiilent Pmod Interface Specification](#) Type 1

1 Functional Description

The PmodOD1 utilizes two NTHD4508 dual power N-FETs. Each channel can comfortably drive 3.0 A of continuous current at 25°C and up to 4.1 A of current for under 5 seconds, making this Pmod ideal for high current applications that require a simple on/off switch mechanism.

2 Interfacing with the Pmod

The PmodOD1 communicates with the host board via the GPIO protocol. A logic high signal “turns on” a particular MOSFET and a logic low signal turns off the MOSFET.

Pin	Signal	Description
1	G1	Output 1
2	G2	Output 2
3	G3	Output 3
4	G4	Output 4
5	GND	Power Supply Ground
6	VCC	Positive Power Supply (3.3/5V)

Table 1. Pinout description table.

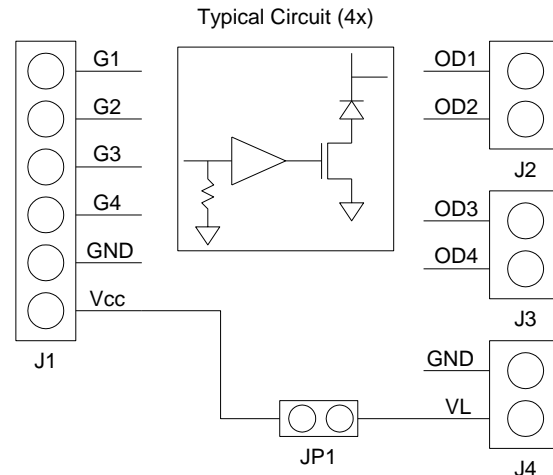


Figure 1. PmodOD1 block diagram.

Each output provides a clamp diode to prevent damage due to flyback voltages generated by inductive loads. Each output transistor functions independently of the others, so they can be used individually or simultaneously.

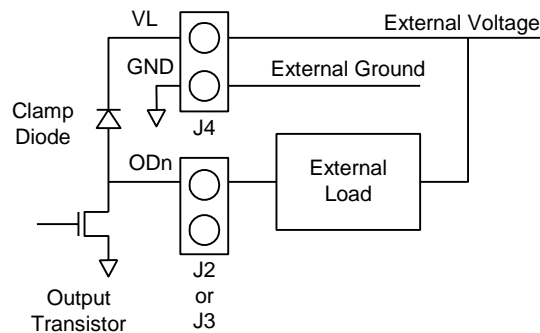


Figure 2. Output circuit with load connection.

As illustrated in Fig. 2, a load is connected so that current from an external voltage source conducts through the load to ground when the output transistor is turned on. In order to complete the circuit, the GND pin on J4 must be connected to the ground for the external voltage supply. Additionally, the external voltage source must be connected to the VL pin on J4 to complete the circuit for the output clamp diode.

Any external power applied to the PmodOD1 must be within 2.7V and 5.25V; however, it is recommended that Pmod is operated at 3.3V.

3 Physical Dimensions

The pins on the pin header are spaced 100 mil apart. The PCB is 1.15 inches long on the sides parallel to the pins on the pin header and 0.8 inches long on the sides perpendicular to the pin header.