

DIGILENT PmodOD1 Open-Drain MOSFETs to Drive User Manual

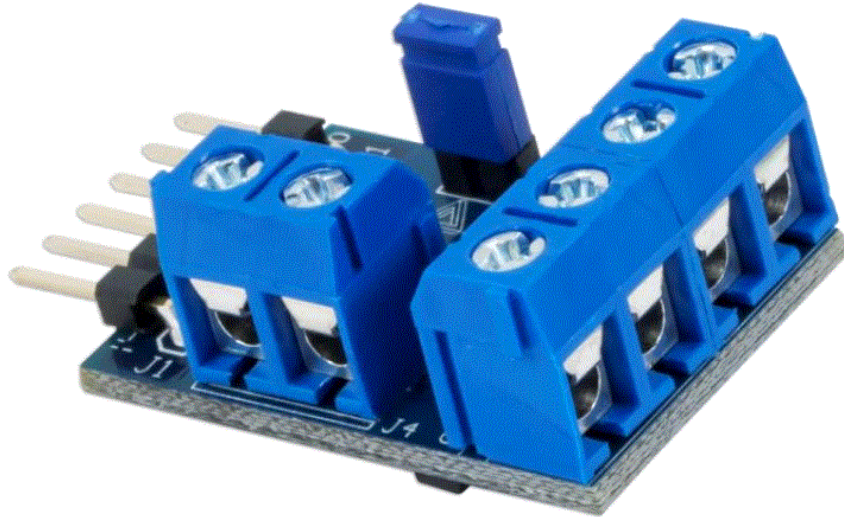
[Home](#) » [DIGILENT](#) » DIGILENT PmodOD1 Open-Drain MOSFETs to Drive User Manual 

Contents

- [1 DIGILENT PmodOD1 Open-Drain MOSFETs to Drive](#)
- [2 Pin Signal Description](#)
- [3 Power Requirements](#)
- [4 Overview](#)
- [5 Features include](#)
- [6 Functional Description](#)
- [7 Interfacing with the Pmod](#)
- [8 Physical Dimensions](#)
- [9 Documents / Resources](#)
 - [9.1 References](#)



DIGILENT PmodOD1 Open-Drain MOSFETs to Drive



Revised May 26, 2016

This manual applies to the PmodOD1 rev. A 1300 Henley Court Pullman, WA 99163 509.334.6306
www.digilentinc.com

Overview

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

The PmodOD1 features include:

- Two dual-power N-FETs
- Comfortable drives 3.0 A of continuous Specification Type1

Functional Description

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

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)

Typical Circuit

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.

External Load Connection

As illustrated in Figure 2, a load is connected so that current from an external voltage source conducts through the load to the 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.

Power Requirements

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.

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.

Overview

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

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 Digilent Pmod Interface Specification Type 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.

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.

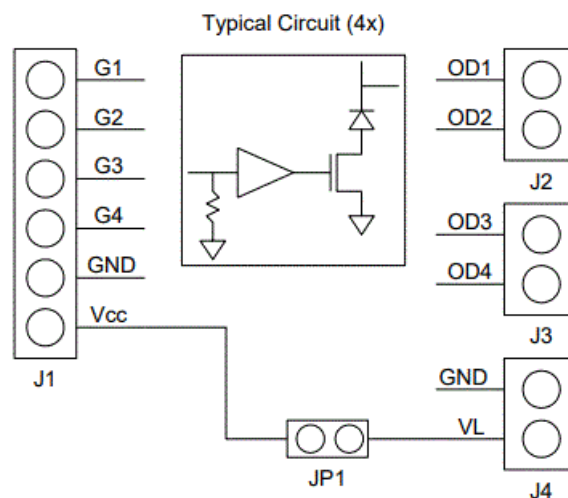


Figure 1. PmodOD1 block diagram.

- 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.

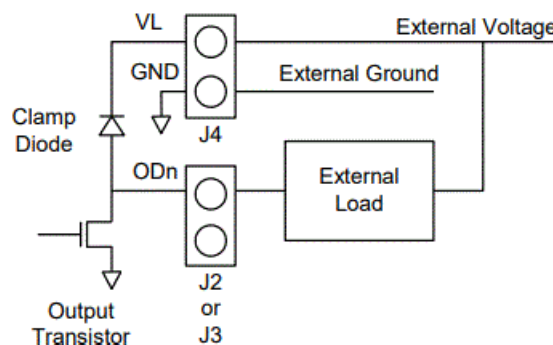


Figure 2. Output circuit with load connection.


- 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.

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.

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Documents / Resources

	<p>DIGILENT PmodOD1 Open-Drain MOSFETs to Drive [pdf] User Manual PmodOD1 rev. A, PmodOD1 Open-Drain MOSFETs to Drive, PmodOD1, Open-Drain MOSFETs to Drive</p>
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References

-  [Digilent â€œ Start Smart, Build Brilliant.](#)