XinaBox Datasheet OC01 - High Current DC Switch

Contents

Overview

This xCHIP forms part of the interface modules and is equipped with a high speed IO expander chip allowing the user to switch a high current through the available MOSFETs. The module is based off the PCA9536 remote 4-bit I^{2}C I/O expander and 4 DMN2041L 6.4 A MOSFETs to provide 4 channels. Each channels is equipped with an output indicator LED to allow for easy debugging.

Product highlights

- 6 A Switching Current Capable
- Fast Switching
- 4 High Current Output Channels
- Output LEDs

OC01 as Burn Wire Controller - Balloon Mission Flight Control Application Note

The OC01 module has been designed to support the control of HAB balloon missions, and has four stages:

- **Burn 1 – Launch**

  Detach the full balloon unit with payload from the launch pad.

- **Burn 2 – Burst**

  The burn wire detaches the balloon when an altitude of 5km has been achieved, or sooner if required. The burn unit can receive signals from the ground station via the radio module, allowing for the team on the ground to terminate the mission if required.

- **Burn 3 – Parachute Deployment**

  The parachute should not be deployed too high above the ground, as wind could take the payload too far off course and result in it not being retrieved. The parachute will be deployed at a predetermined altitude to ensure that the payload is retrievable yet not destroyed by a hard landing.

- **Burn 4 – Release the payload from the parachute**

  If the parachute is caught in power lines or trees it may be necessary to detach the payload through instruction relayed to the burn wire module.

Specifications

PCA9536

- 4-bit I^{2}C-bus Output Channels
- Polarity Inversion register
- Low standby current
- No glitch on power-up
- Internal power-on reset
- 0 Hz to 400 kHz I^{2}C-bus clock frequency
- ESD protection exceeds 2000 V HBM per JESD22-A114, 200 V MM per JESD22-A115 and 1000 V CDM per JESD22-C101
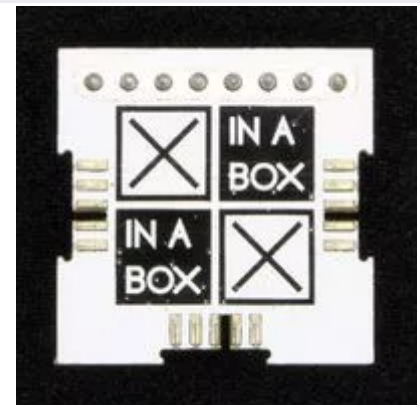
DMN2041L

- Max Voltage: 20 V
- Continuous Drain Current: 6.4 A
- Pulsed Drain Current: 30 A
- Static Drain-Source On-Resistance: 26 mΩ

OC01 - High Current DC Switch
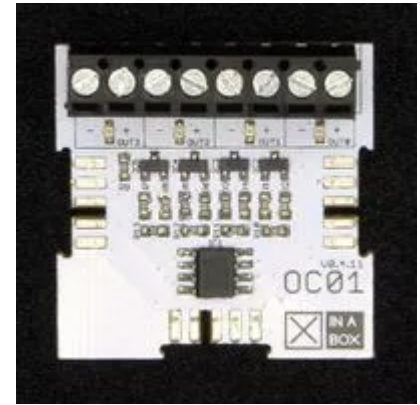
Front

Back

⊠CHIP	
Main Category	Output
Sub Category	Control
Introduced	1 January 2017
Current version	1.0.0
Current version date	1 January 2017
Dimensions	
Size	2U×2U
Weight	8 g
Height	12.3/8.3/2.4 mm
Non-⊠BUS Connections	
North	Terminal block
Main Chip Set	
Main Chip	PCA9536
I²C Configuration	
Default Address	0x41

External Links

GitHub Libraries

- Arduino (https://github.com/xinabox/Arduino_OC01)

Features Samples

- Sample project for the proximity sensor with the OC01 as an output (https://github.com/XinaBoxSamples/sample_OC01_proximity)

Features Projects

- Sound a Piezo Buzzer with Blynk and ⊠XinaBox (https://www.hackster.io/Luqmaan/sound-a-piezo-buzzer-with-blynk-and-xinabox-662971)