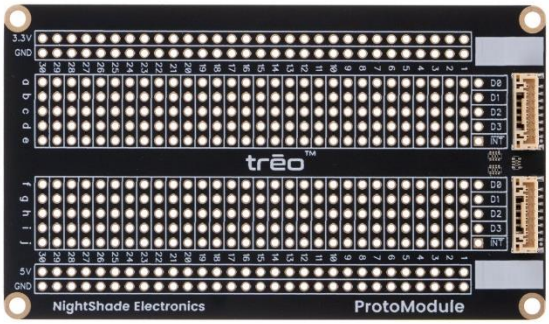
Proto Module - Trēo™ Module

Module Features

- 420 Tie-Point Bread Board Layout
- 2 Trēo™ Connectors
- Pull-up Resistors Pre-installed
- RoHS Compliant



Applications

- Add custom circuitry to the Trēo™ system

Trēo™ Compatibility

Electrical

Communication	ANY
Max Current, 3.3V	1mA
Max Current, 5V	0mA

Mechanical

- 95mm x 55mm Outline
- 90mm x 50mm Hole Pattern
- M2.5 Mounting Holes

Description

The Trēo™ Module lets the user build custom circuitry and attach it to the NightShade Trēo™ system. This module is a part of the NightShade Treo system, patent pending.

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1 Summary

The Trēo™ Proto Module is designed to provide users a means of integrating a custom circuit into the NightShade Trēo™ development system. The circuit is assembled on the module's 420-point bread board PCB area and joined to the Trēo connector break outs.

1.1 Trēo™ Connectors

Each of the Trēo™ connectors can be connected to an I2C, SPI, UART, or GPIO interface on any Trēo adapter board. The function of the data lines, D0 – D3, change depending on the type of interface connection. These functions are shown in the table below. All the data lines have pull-up resistors to 3.3V pre-installed.

Pin	I2C	UART	GPIO	SPI
D0	SDA	-	-	MISO
D1	SCL	-	-	MOSI
D2	-	TXD	GPIO0	SCK
D3	-	RXD	GPIO1	CS

1.2 Power

All power must be drawn from the 3.3V and 5V power lines. Continuous current cannot be drawn from the signal lines (D0-D3). The signal lines can be used for digital communication or they can be used to drive MOSFETs to switch loads connected to the power lines. Even small loads, like an LED, must be powered from a power line and switched with a MOSFET.

Power Switching Examples

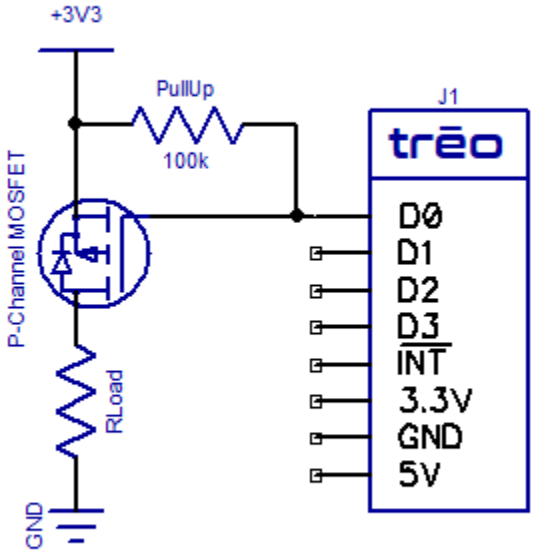


Figure 1 Switching 3.3V, P-MOSFET, Active Low

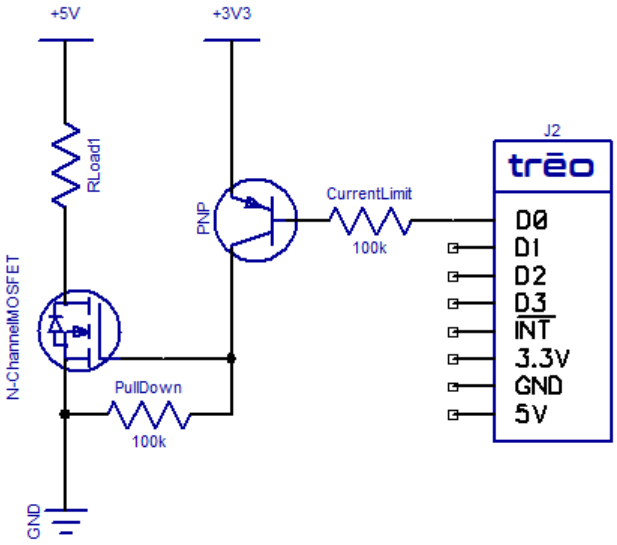


Figure 2 Switching 5V, N-MOSFET, Active Low

1.3 Hardware Interrupt ($\overline{INT}$)

The hardware interrupt line allows the Trēo™ hardware to signal the host directly when an event occurs bypassing the need for polling the module. The interrupt is always active-low and there is a pull-up resistor pre-installed on the Proto Module.

1.4 Software

Software for new circuitry can be developed using the Trēo™ base communication functions.

2 What is Trēo™?

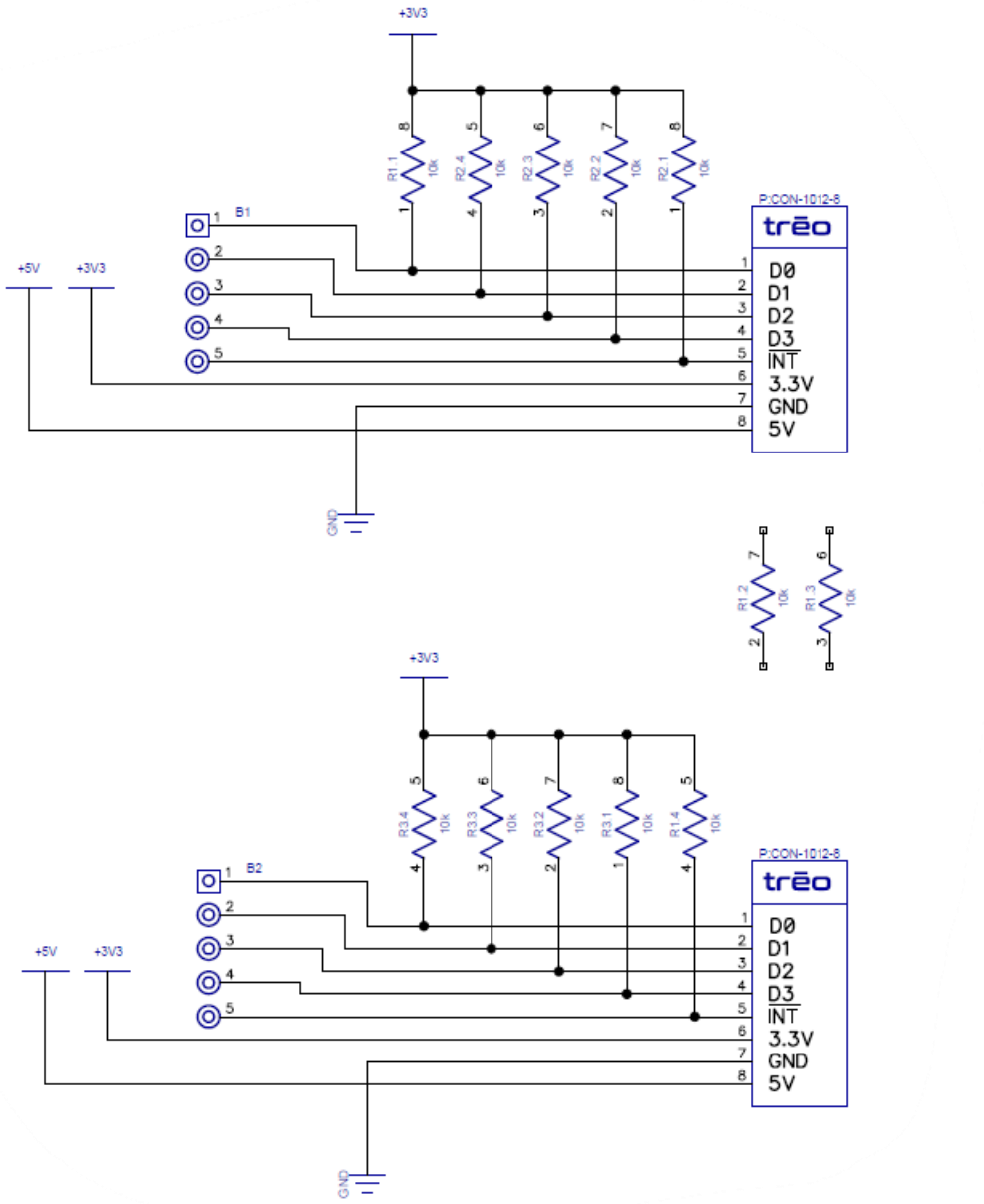
NightShade Trēo is a system of electronic modules that have standardized mechanical, electrical, and software interfaces. It provides you with a way to quickly develop electronic systems around microprocessor development boards. The grid attachment system, common connector/cabling, and extensive cross-platform software library allow you more time to focus on your application. Trēo is supported with detailed documentation and CAD models for each device.

Learn more about Trēo here.

3 Electrical Characteristics

	Minimum	Nominal	Maximum
Voltages			
$V_{i/o}$ (D0-D3, INT)	-0.3V	-	3.6V
$V_{3.3V}$	3.1V	3.3V	3.5V
V_{5V}	4.8V	5.0V	5.2V
Currents			
$I_{i/o}$	-4mA (sink)		10µA (source)
$I_{3.3V}$			300mA
I_{5V}			1000mA
Logic Level			
$D0\text{-}D3_{High}$	2.5V	3.3V	3.5V
$D0\text{-}D3_{Low}$	-0.3V	0V	0.8V
INT_{Active}	-0.3V	0V	0.8V
$INT_{Inactive}$	2.5V	3.3V	3.5V
Operating Temperature	-25°C	-	+85°C

4 Electrical Schematic



5 Mechanical Outline