Robotics

Documentation	SJSU-IB2023

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Features
USB-C
MPU-6050
CAN, I2C, AD0 Jumpers

Applications
Breakout board used to send power and data to the MPU-6050 and CAN Bus for motors. The boards have an input and output USB-C connector so it can either connect to the Universal Controller Board or to another Arm Breakout board.

At most 4 MPU-6050s can be used at a time by utilizing 2 I2C channels.

USB-C Stubby
12-Pin USB-C comes in SMD form.

MPU-6050
The MPU-6050 receives 3.3V through VCC. The device communicates bi-directionally using I2C SCL, SDA pins. The MPU-6050 has two possible addresses 0x68, 0x69 which are selected by driving the AD0 pin either LOW or HIGH respectively. This can be selected with the AD0 jumper solder pad.

CAN
CAN transceiver sends signal through USB-C and is received in the arm breakout. This line is broken into high and low onto a solder pad that also contains a pad for the voltage line for arm motors. The board contains two sets of pads for ease of use for connecting to motors.

I2C
The two I2C lines are sent over USB-C and are received in the arm breakout. These lines are sent to a set of jumper solder pads one for SDA and the other for SCL. This allows for selection of which line will go to the MPU.

Arm Breakout Board

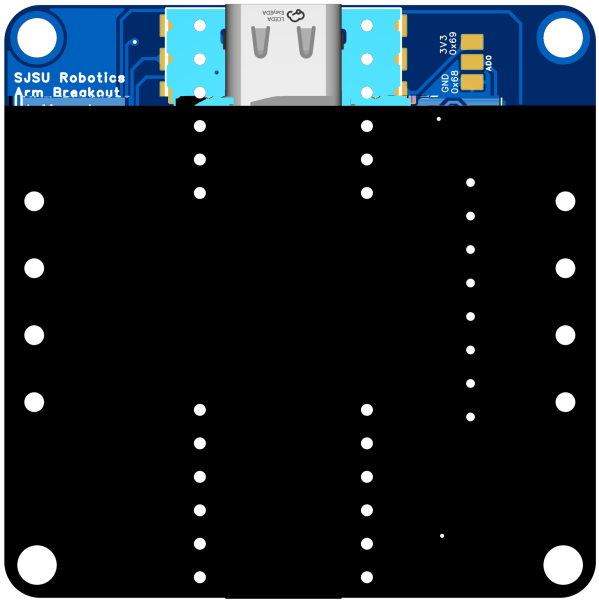


Figure 1: Top-view

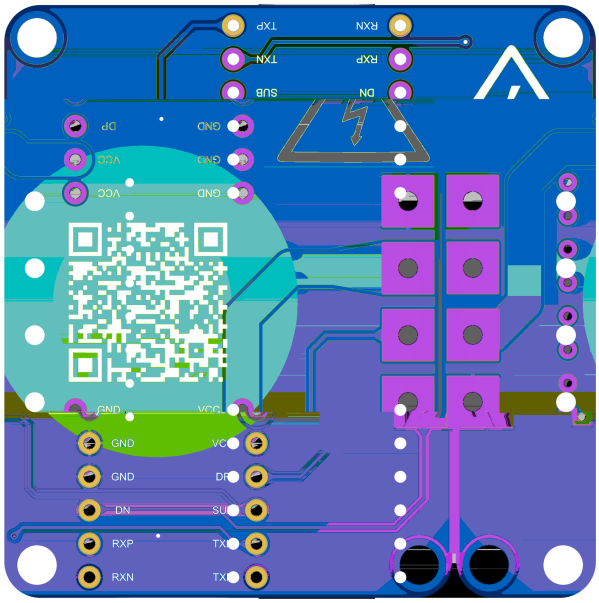


Figure 2: Bottom-view

AD0 Jumpers

AD0 from the MPU is sent to a jumper solder pad. This allows the AD0 to be set high or low as the solder pads have a VCC pad and a ground pad.

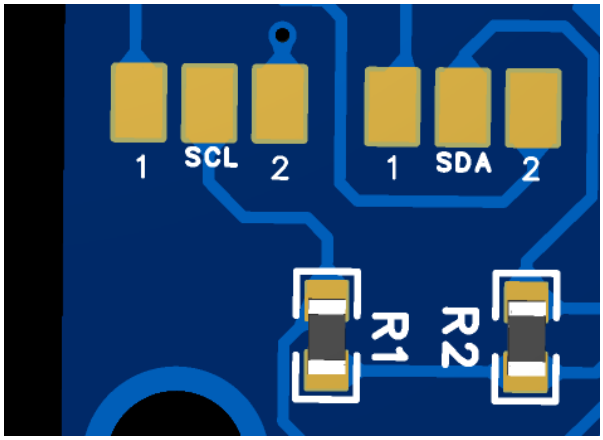


Figure 3: Solder Pads for 12C SCL and SDA Jumpers

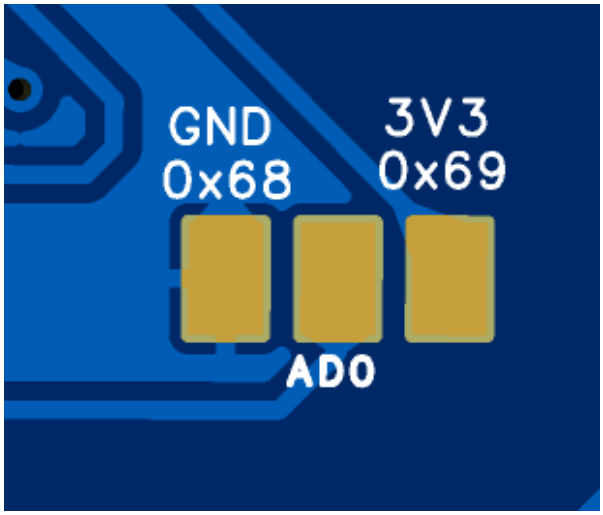


Figure 4: Solder Pads for AD0 jumper.

Block Diagram

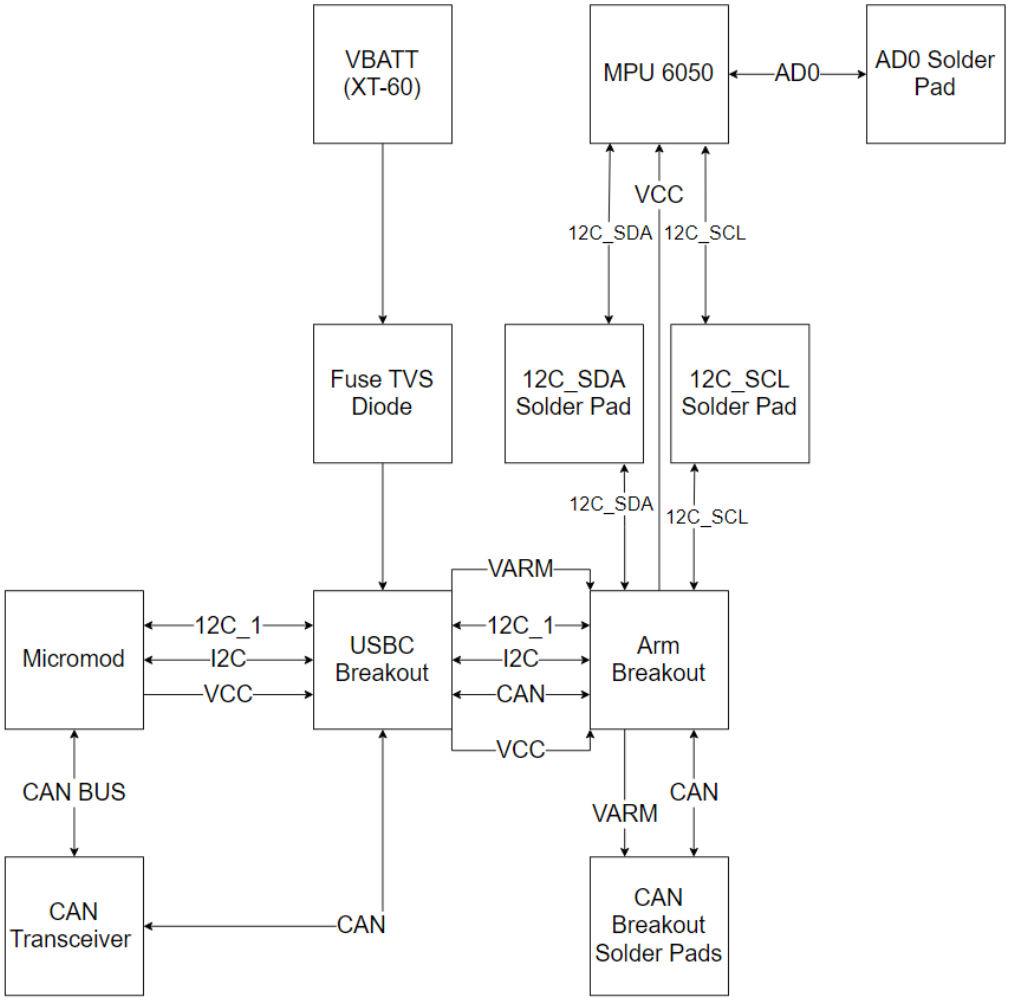
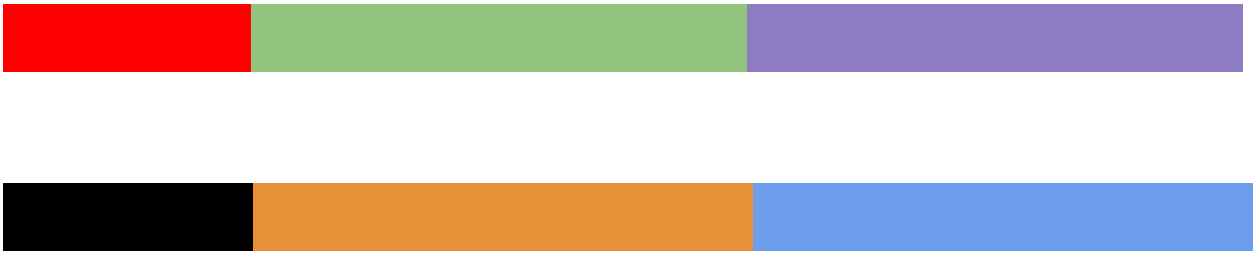


Figure 5: General Use Block Diagram

USB C Breakout

TXP pins are shorted together.

RXP pins are shorted together.



Specifications

Designed Ratings

Parameter	Rating
USB C Breakout Current	5A
Buck Converter Current	1A

Table 2: Designed Ratings