

*MODULAR
COMMUNICATIONS
BOARD*

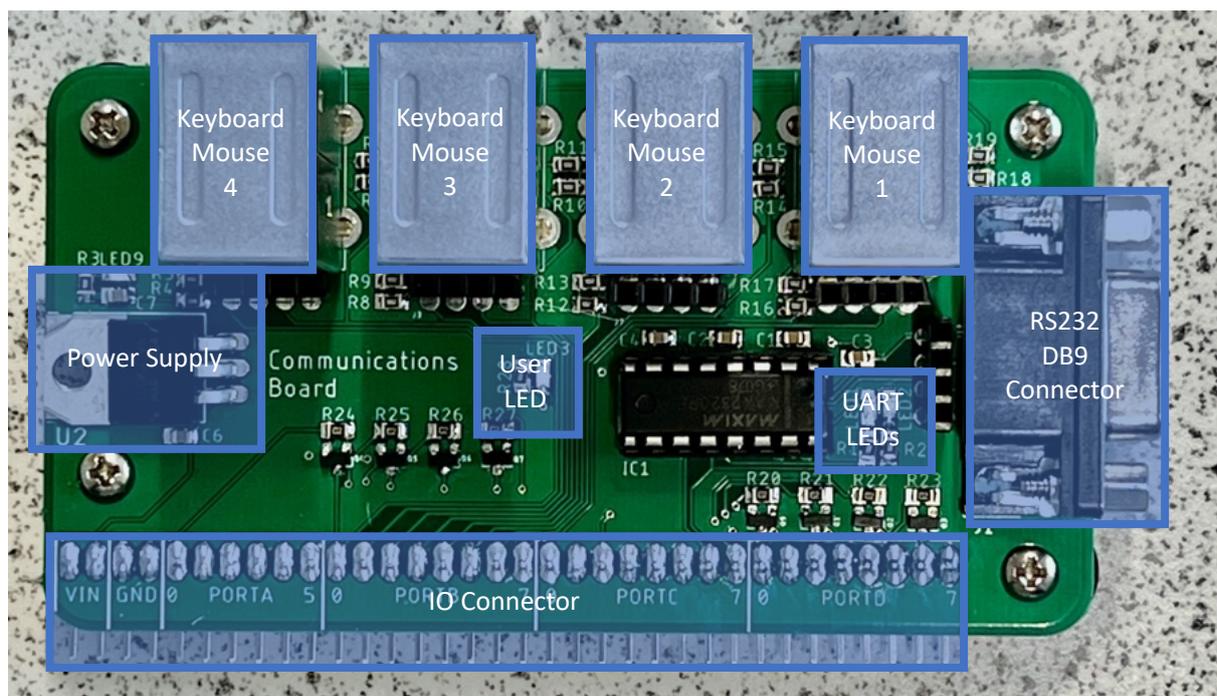
The Machine Shop

John Lawrence

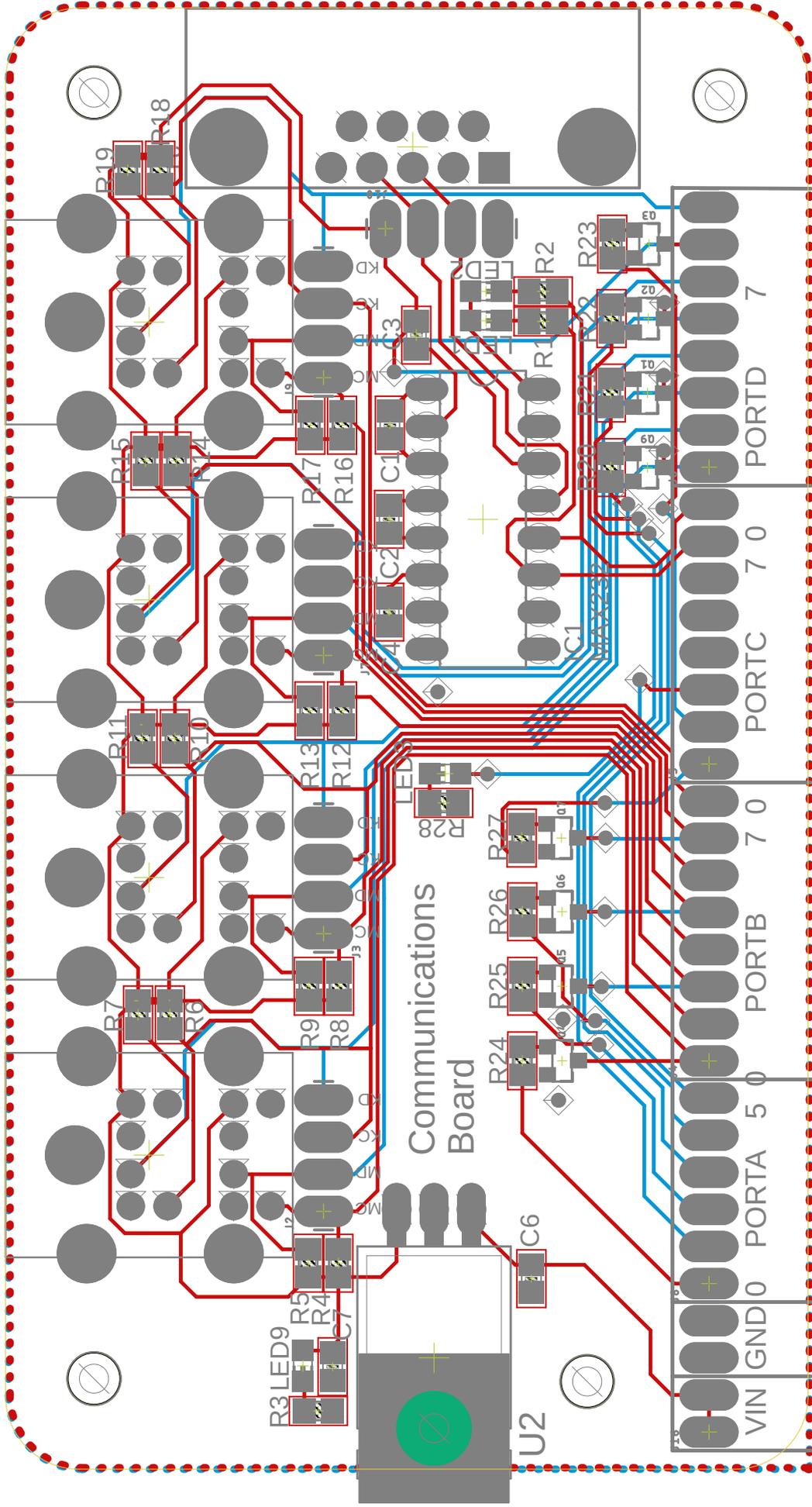
Table of Contents

Feature Layout	1
PCB Layout	2
PCB Top Layer.....	3
PCB Bottom Layer.....	4
Schematic.....	5
PS/2 Connectors	6
PS/2 IO Pinout.....	7
RS232	8
User LED.....	8
Power.....	8

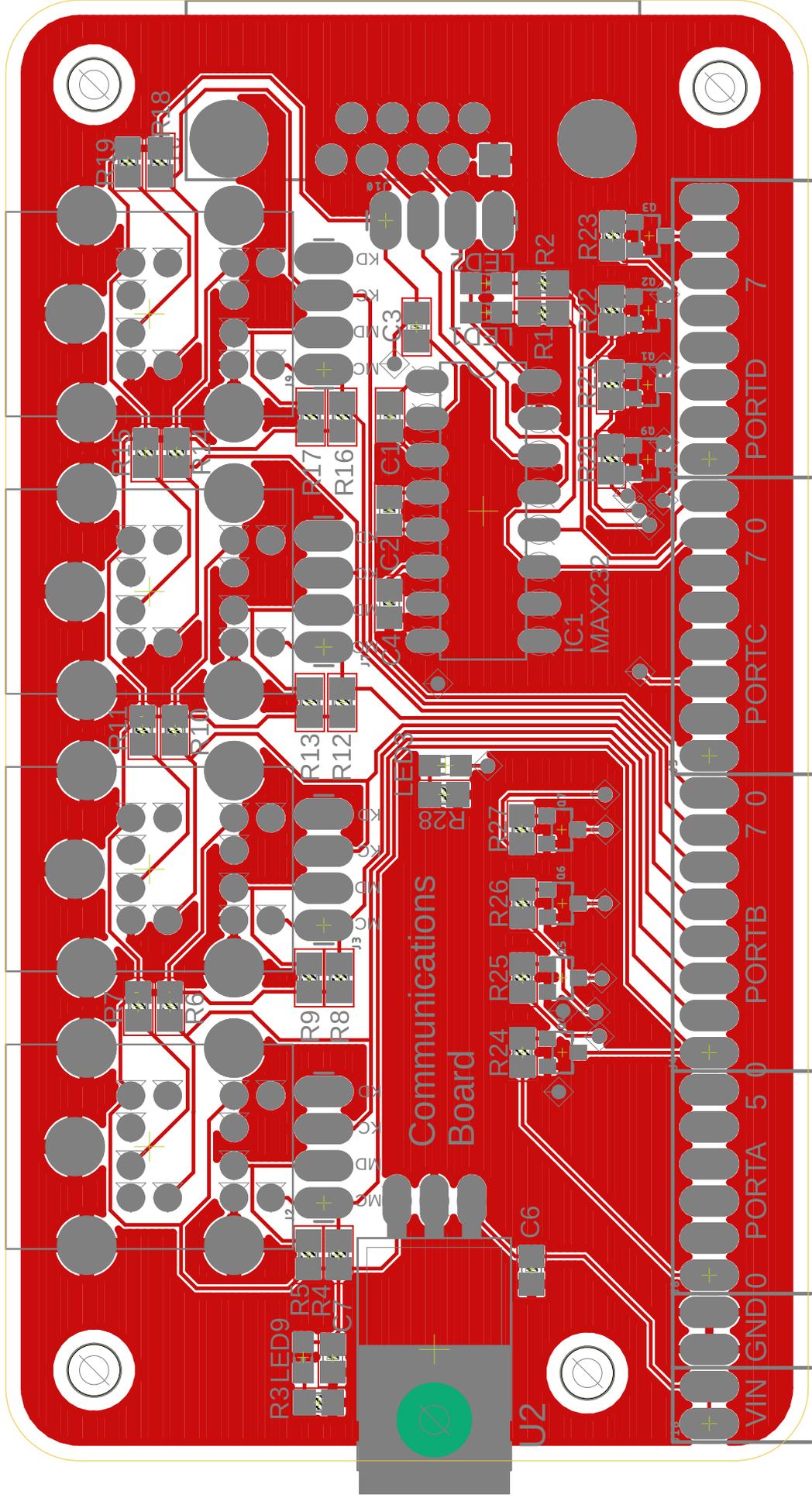
Feature Layout



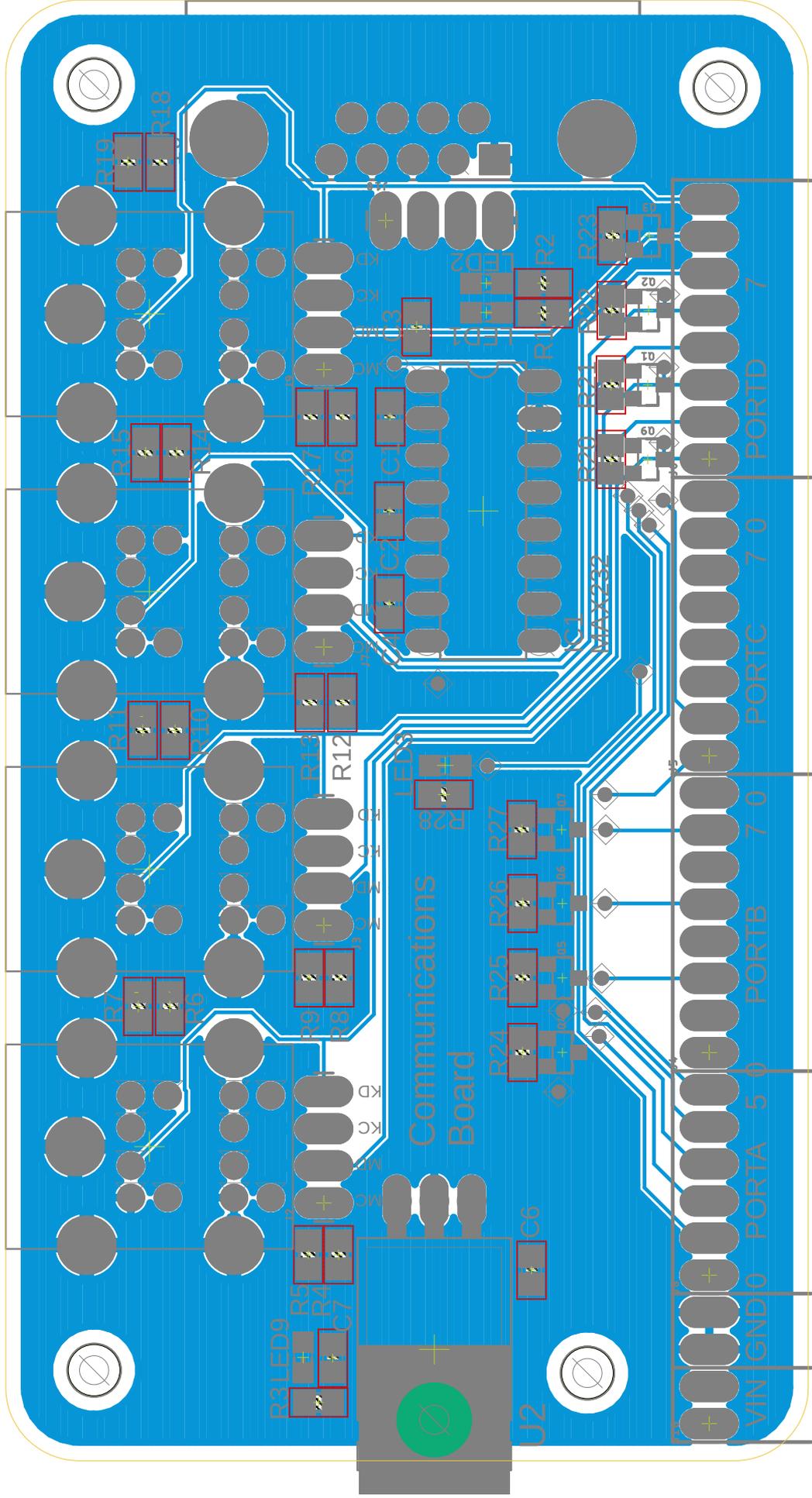
PCB Layout



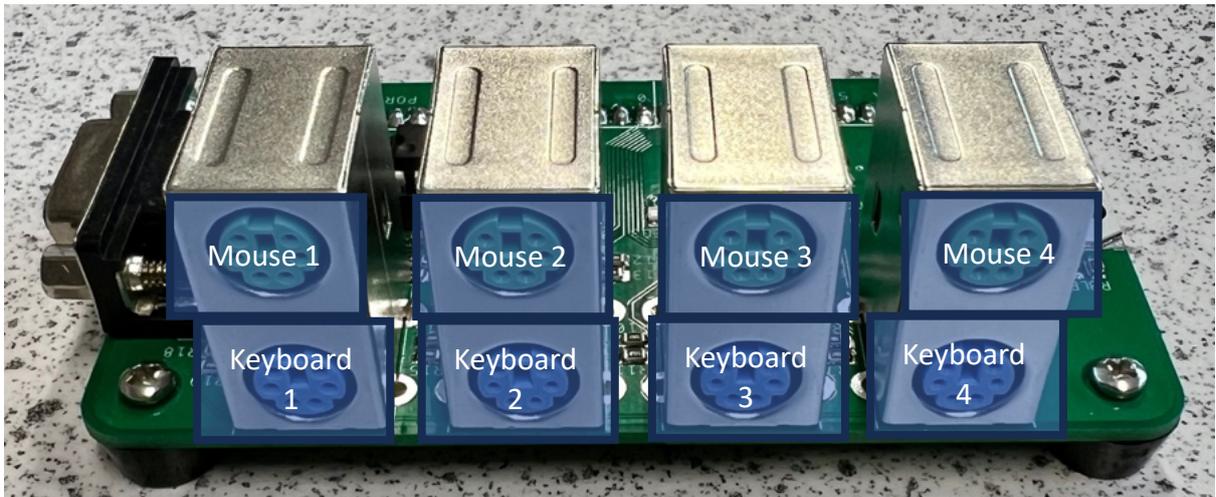
PCB Top Layer



PCB Bottom Layer



PS/2 Connectors



Each PS/2 port is powered by the onboard 5V regulator and each clock and data line is pulled up to the 5V rail via a 10K resistor.

The mouse ports also have open collector transistors that allow the host microcontroller to pull the clock and data lines down to ground.

The clock and data lines have also been exposed on the header socket behind the connector. The pinout for these is as follows:

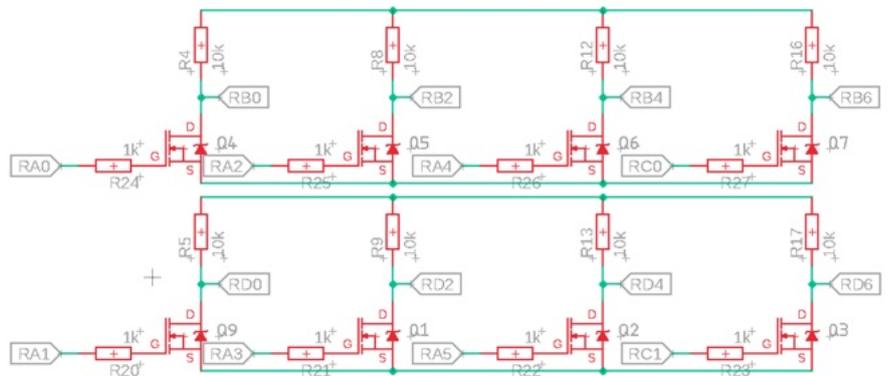
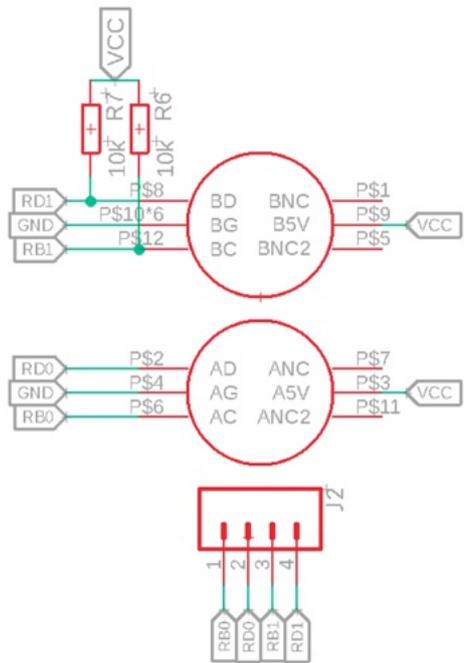


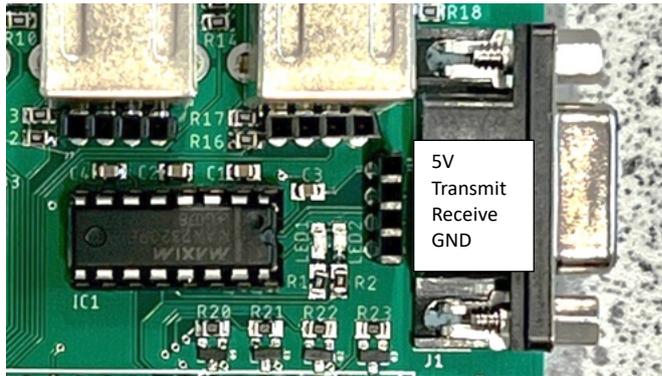
Figure 1 - Open Collectors

PS/2 IO Pinout

Keyboard 1 Data	RD7
Keyboard 1 Clock	RB7
Mouse 1 Data	RD6
Mouse 1 Clock	RB6
Mouse 1 Data Open Collector	RC1
Mouse 1 Clock Open Collector	RC0
Keyboard 2 Data	RD5
Keyboard 2 Clock	RB5
Mouse 2 Data	RD4
Mouse 2 Clock	RB4
Mouse 2 Data Open Collector	RA5
Mouse 2 Clock Open Collector	RA4
Keyboard 3 Data	RD3
Keyboard 3 Clock	RB3
Mouse 3 Data	RD2
Mouse 3 Clock	RB2
Mouse 3 Data Open Collector	RA3
Mouse 3 Clock Open Collector	RA2
Keyboard 4 Data	RD1
Keyboard 4 Clock	RB1
Mouse 4 Data	RD0
Mouse 4 Clock	RB0
Mouse 4 Data Open Collector	RA1
Mouse 4 Clock Open Collector	RA0



RS232

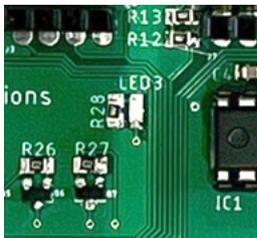


The RS232 circuit is designed to convert the UART signals from the PIC Microcontroller into a higher voltage RS232 signal that outputs on the DB9 connector. The UART signals are indicated on two LEDs. LED1 indicates signals being transmitted and LED2 indicates signals being received. The MAX232 chip (IC1) amplifies the UART signals. These RS232 signals have also been exposed on the 4 port female header behind the DB9 connector.

IO port pinout

RS232 Transmit	RC6
RS232 Receive	RC7

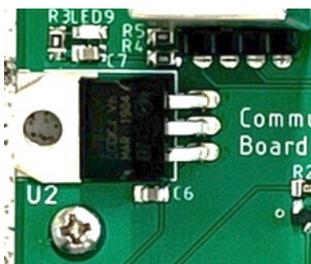
User LED



This LED can be controlled by the PIC Microcontroller by writing a high signal to the RC2 pin.



Power



The on-board power supply takes the Vin power rail from the PIC microcontroller board and converts it to 5V for the communication ports. The tab on the voltage regulator can be used as a convenient GND connection for oscilloscope probes.