

BMP280 and the Pi

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Opening

This document explains connecting an Adafruit BMP280 to a Raspberry Pi

Use a BMP280 data-sheet as reference. Example

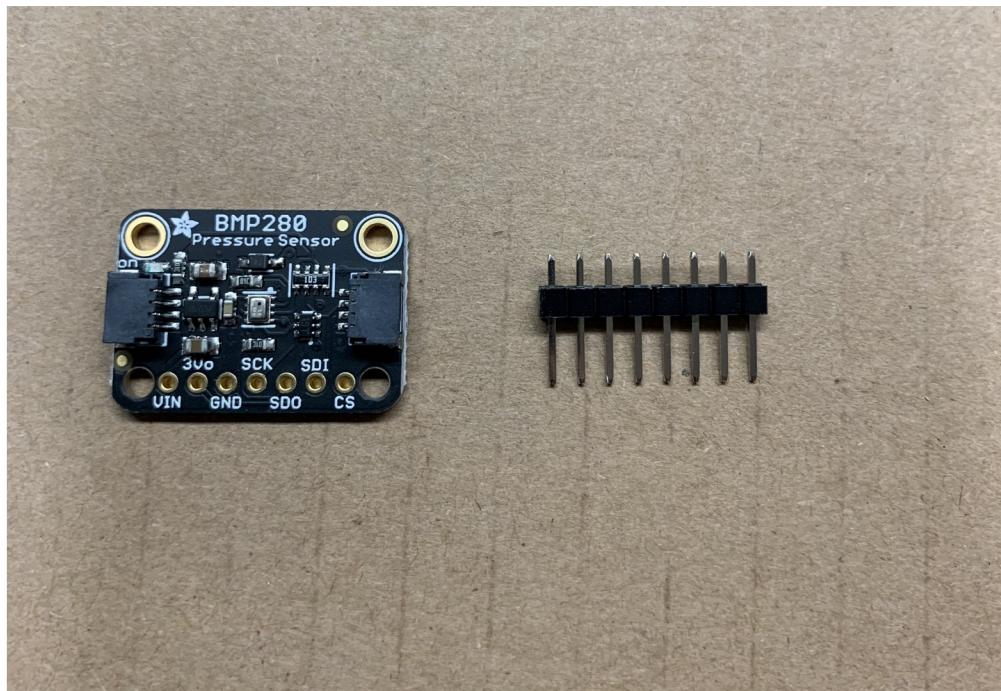
<https://www.digikey.com/htmldatasheets/production/2394371/0/0/1/BMP280-Datasheet.pdf>

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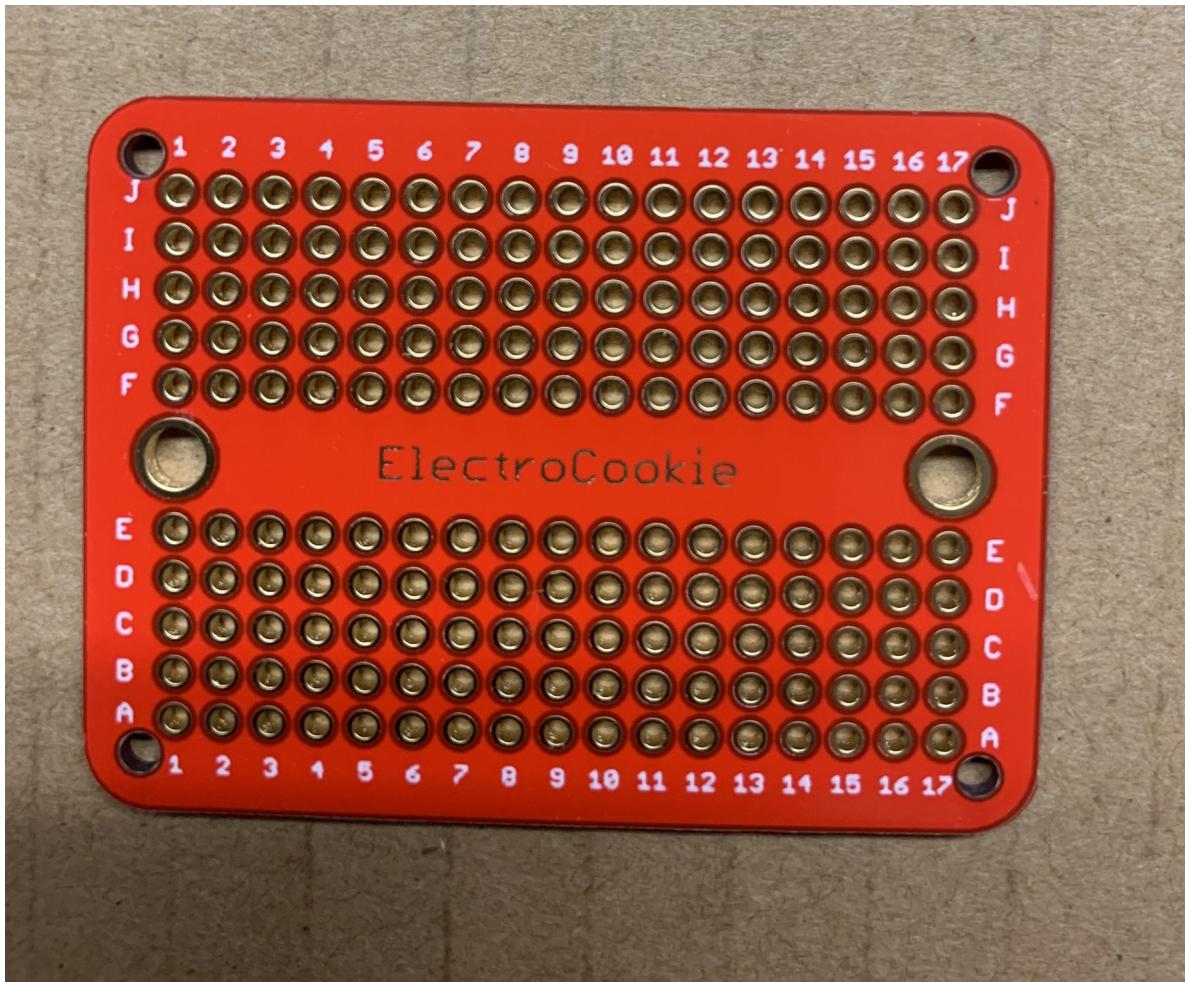
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Adafruit BMP280

After soldering the pins to the PCB you could use female-female jumpers to connect directly to the Pi GPIO pins. I choose to make a simple socket-ed PCB. I can later use this board to attach other chips, up to a 28 pin ICs



Prototype Board

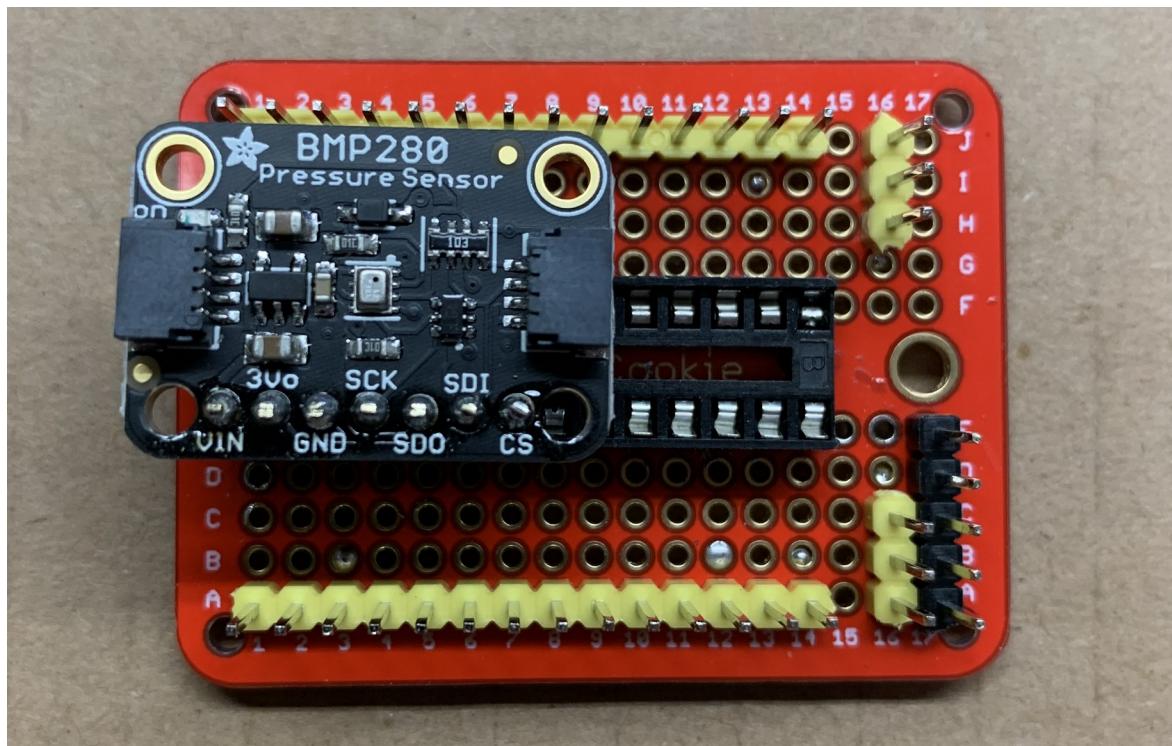


Socket



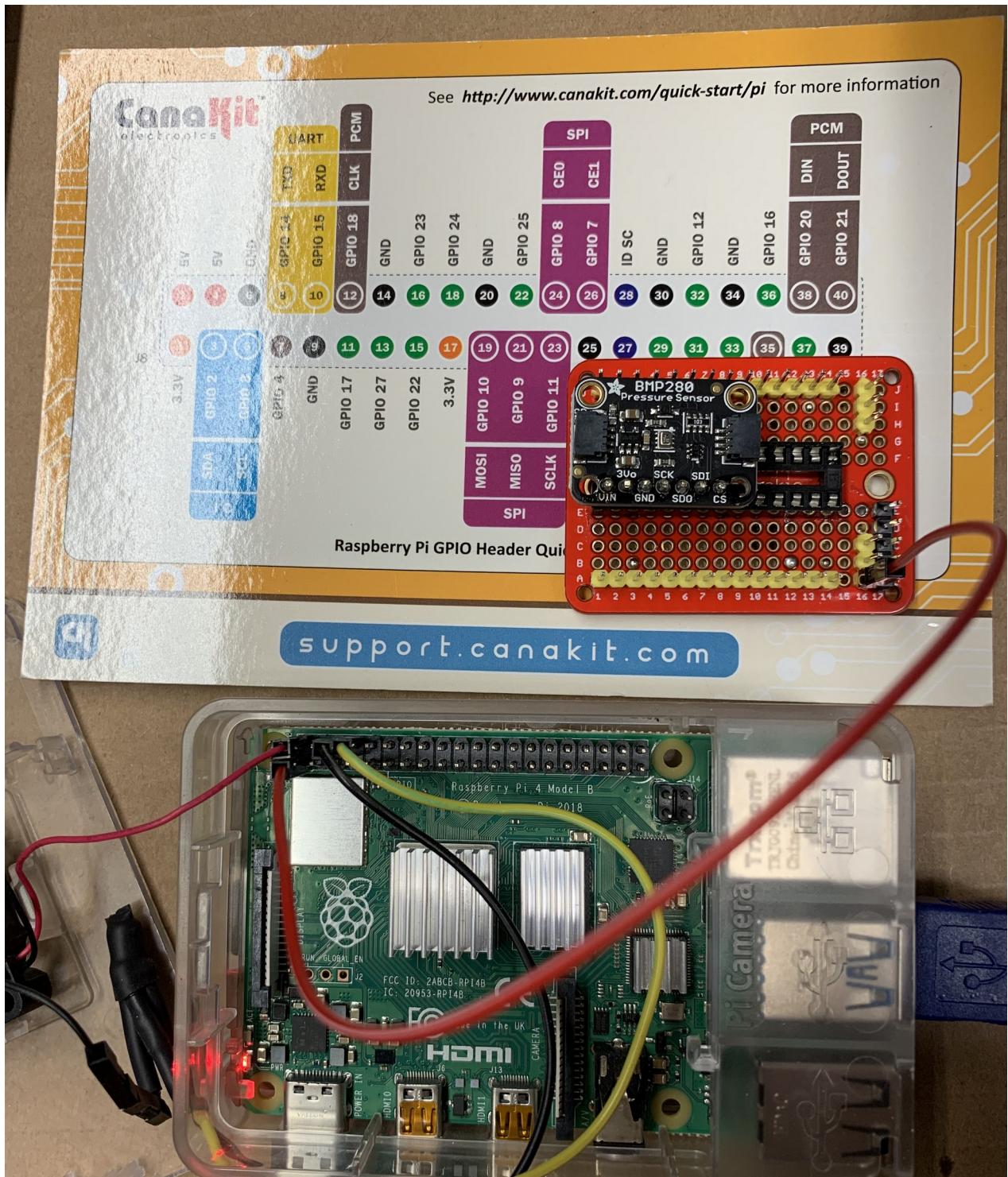
Completed Board

The board includes a pin for each of the sockets 28 connections. In addition pins will provide a common connection for 3,3v 5v and ground.

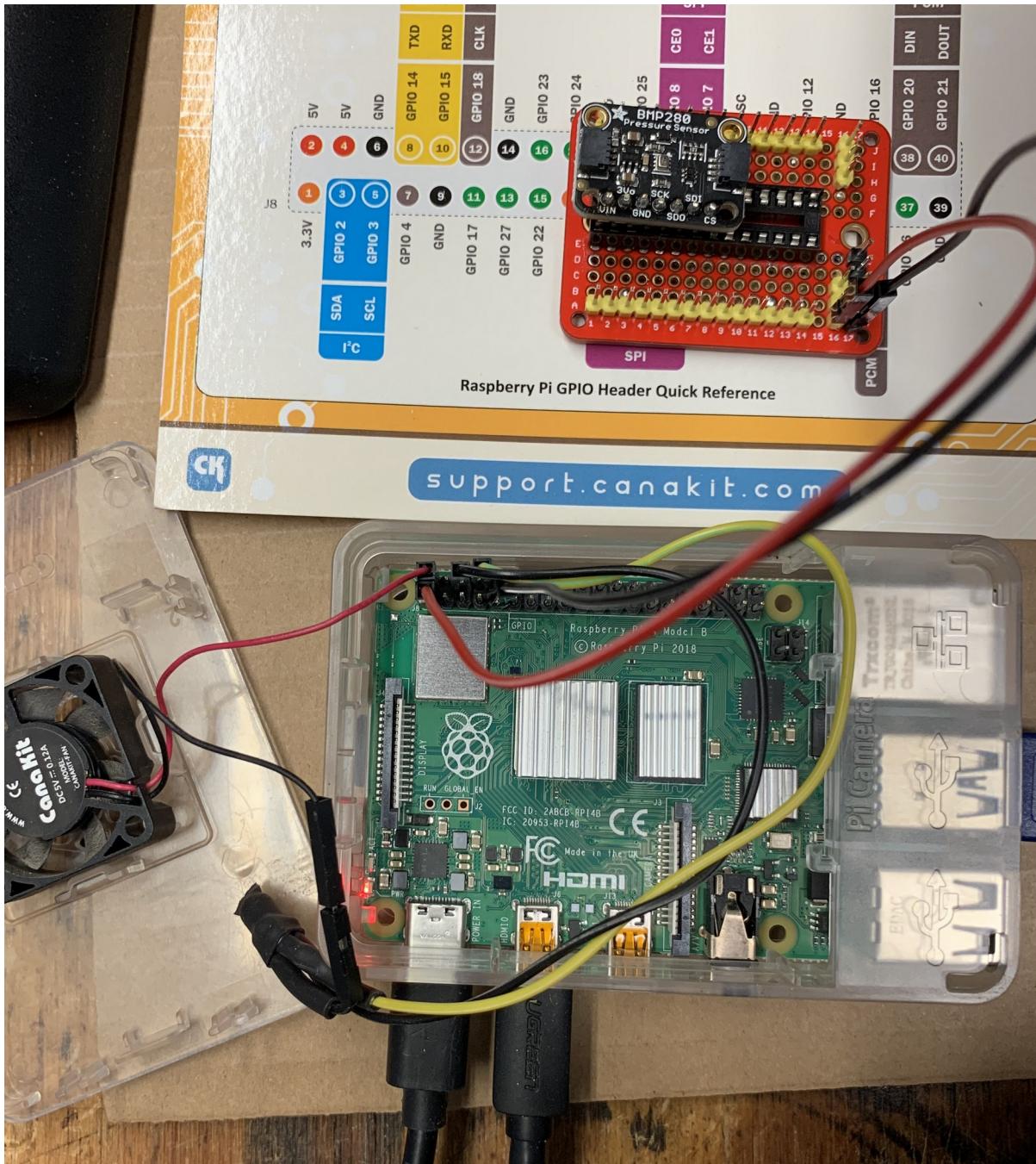


Wiring to Pi GPIO 40 Pin Connector

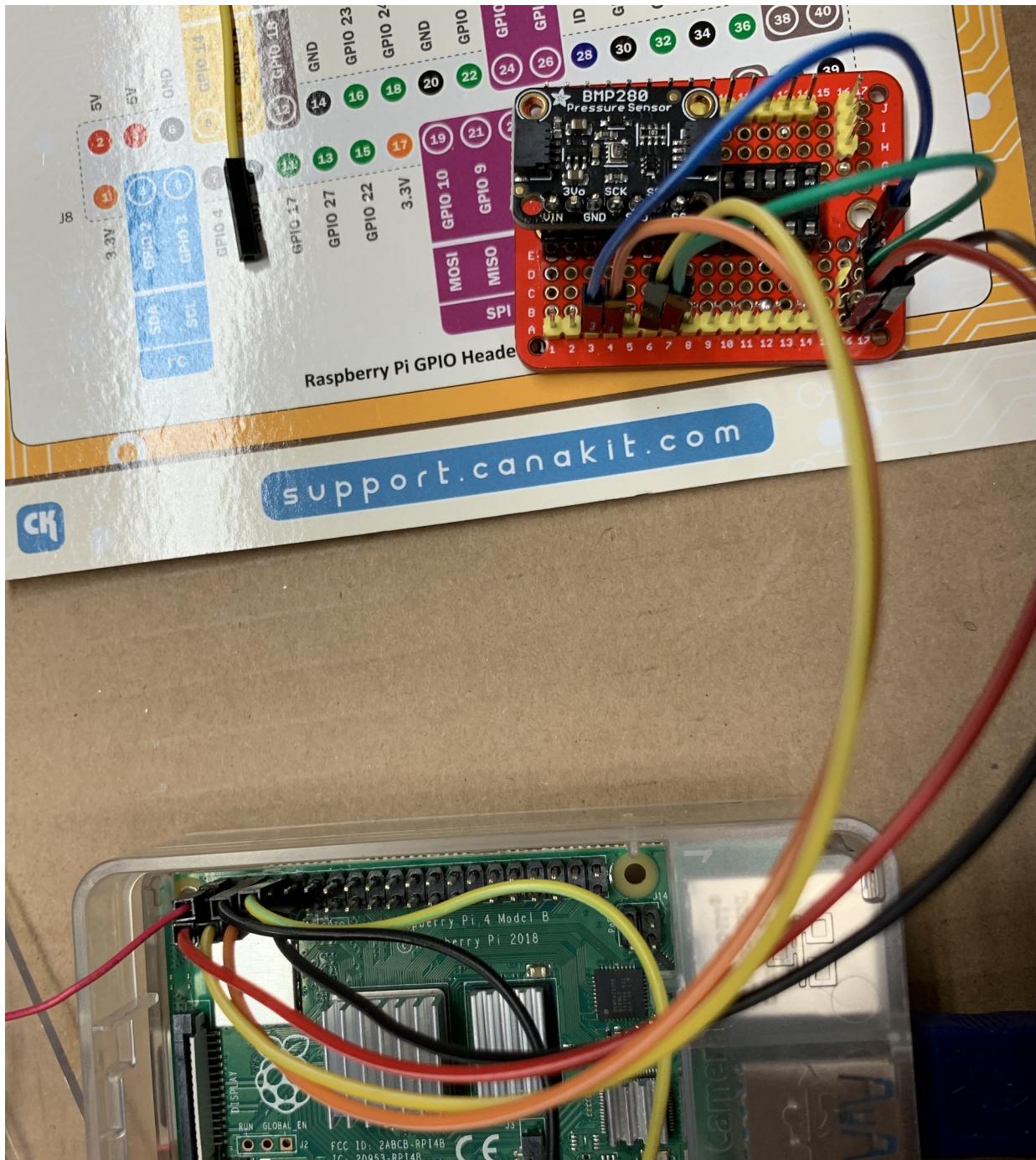
3.3v from GPIO to a common point on the board.



Ground GPIO to common point on the board

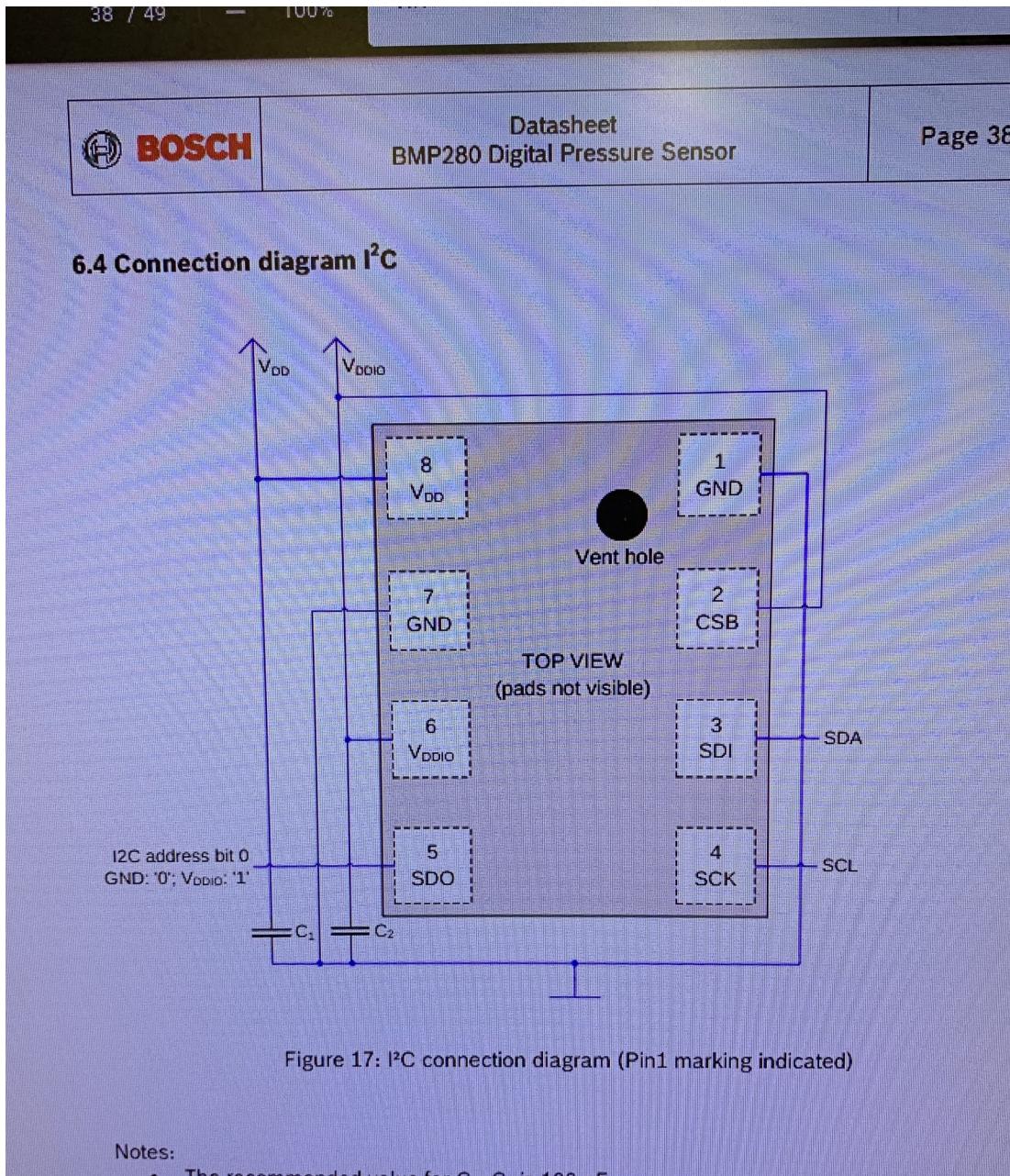


I2C from GPIO to the board



Wiring within the board

At this point the 3.3v and ground are connected from the Pi to the board. In addition the I2C SDA and SCL are connected from the Pi to the BMP280 pins. Remaining connections are within the board and they connect BMP280 pins to 3.3v or ground.

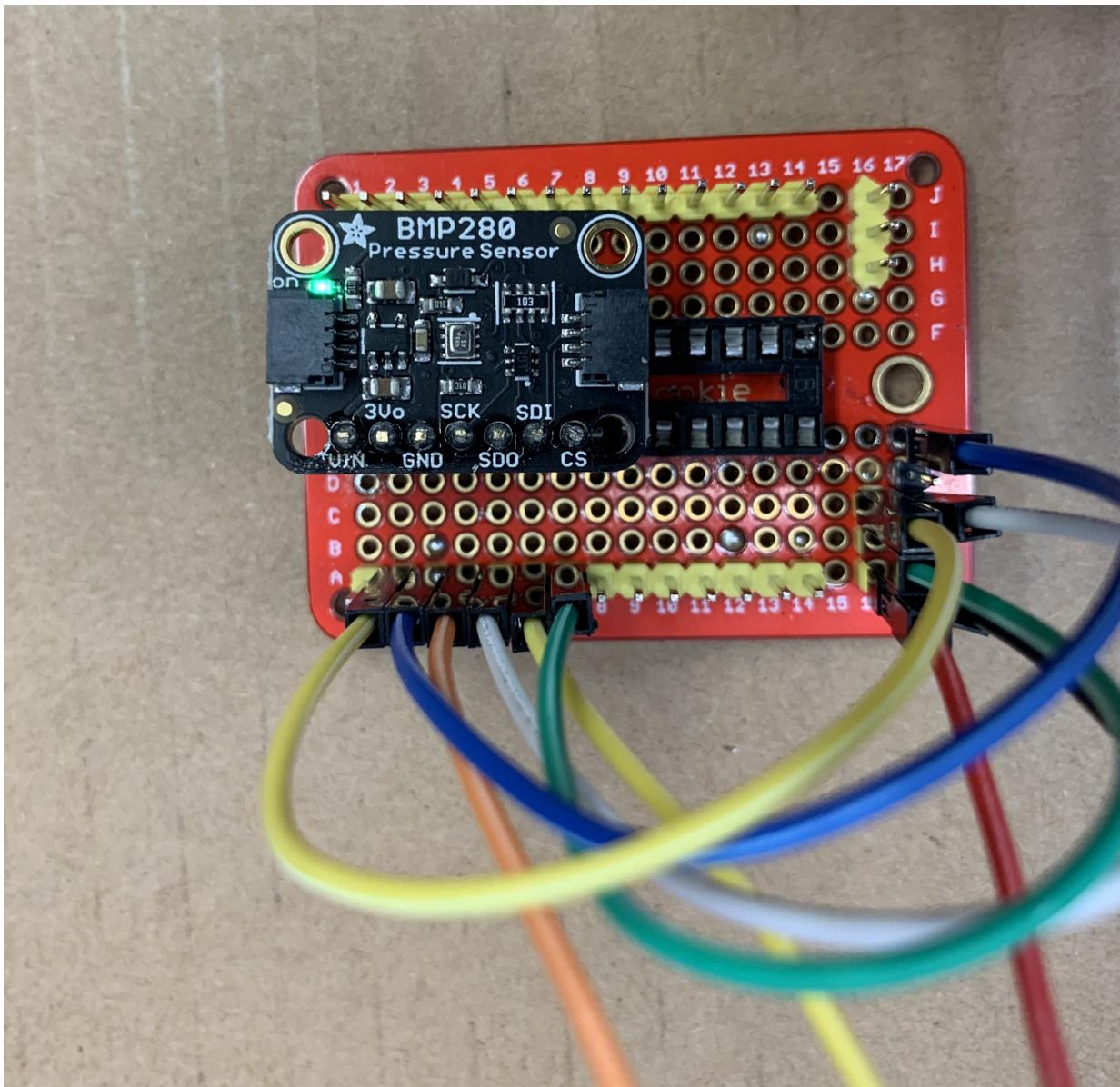


Final Connections

The BMP280 pins:

- vin I not used
- 3v connects to 3v bus on the board.
- GND connects to ground bus on the board.
- SCK connects SCL on the Pi gpio connector
- SDO connects to ground bus on the board. Sets i2c device address 0x76
- SDI connects to SDA on the Pi gpio connector
- CS connects to 3.3v bus on the board. Enables i2c interface *

* CS must be energized with 3.3v before OR at the same time as the 3v pin to correctly enable the I2C interface.



Result

If properly connected and energized:

A screenshot of a terminal window titled "pi@raspberrypi: ~/Pi4J_V2/Pi4J_V2-TemperatureSensor/target/distribution". The window shows the command "i2cdetect -y 1" being run, followed by a table of I2C addresses from 0 to 76. The table has columns for address, device name, and a status column. The status column contains mostly '-' and one 'I' at address 76.

```
pi@raspberrypi:~/Pi4J_V2/Pi4J_V2-TemperatureSensor/target/distribution$ i2cdetect -y 1
      0  1  2  3  4  5  6  7  8  9  a  b  c  d  e  f
00: --
10: --
20: --
30: --
40: --
50: --
60: --
70: -- 76 --
pi@raspberrypi:~/Pi4J_V2/Pi4J_V2-TemperatureSensor/target/distribution$
```

