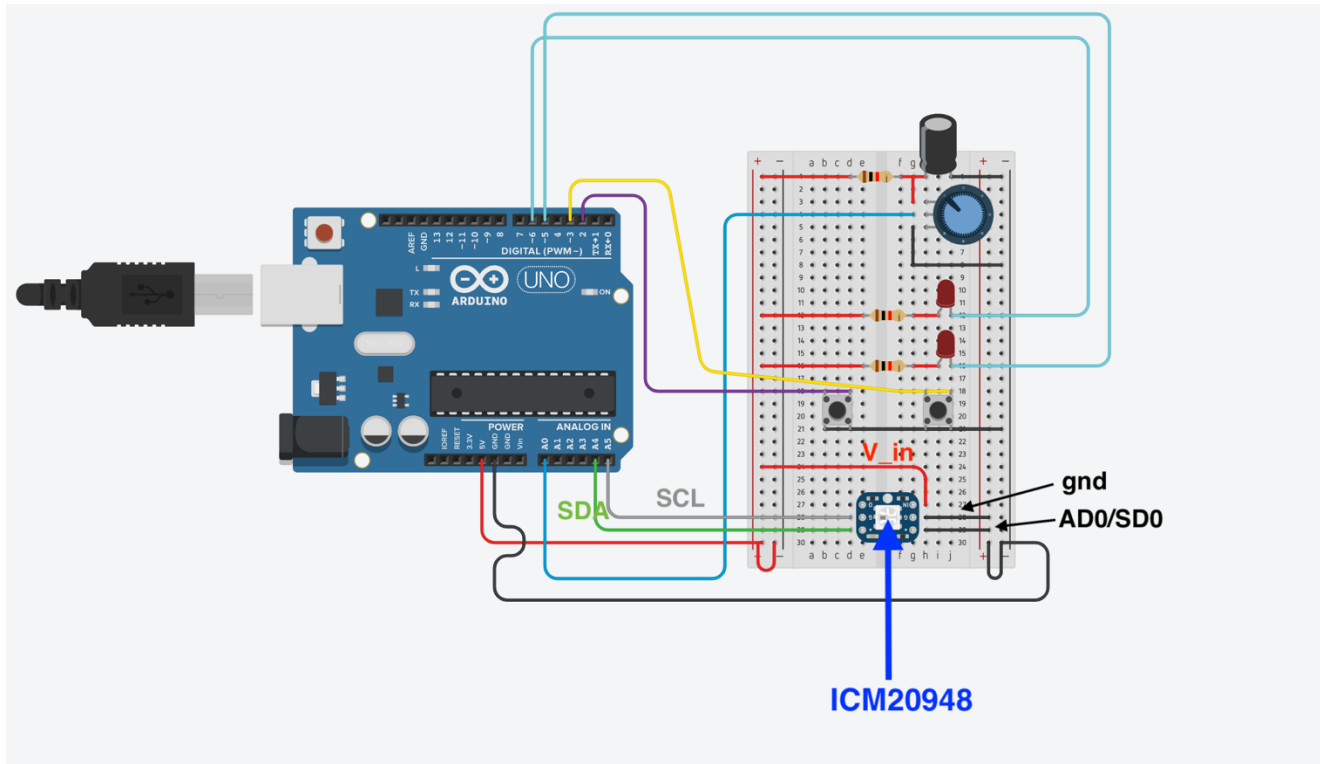


The shield should be able to accommodate the requirements as pictured:

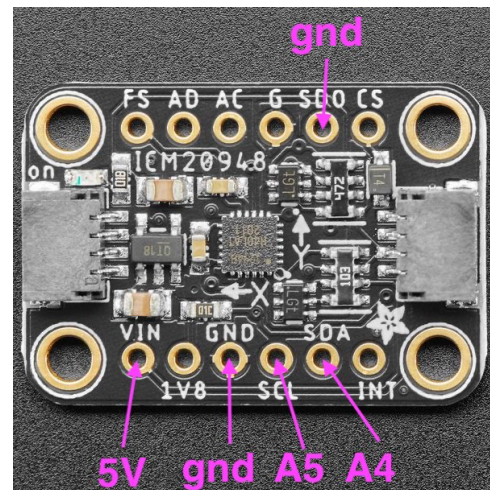


1. Two LEDs ([Spec](#)) with appropriate resistors ([Spec](#)) connected to PORTD pins 5&6 in reverse logic.
2. Two push buttons ([spec](#)) working in internal pullup mode connected to PORTD pins 2&3.
3. A 10K Potentiometer ([spec](#)) with a filter connected to PORTC pin 0.
4. Female header pin for I2C interface with VCC and GND to accommodate the ICM20948 sensor (link to lib will be updated).

Connection Summary:

- PC4-PC5: I2C,
- PC0: POT,
- PD2,PD3: Switch
- PD6, PD5: Led

The capacitor is not specified.



Using the ICM20948 AdaFruit module, the spacing can be built correctly.
This module requires 5 pins to operate in I2C mode.

Potentiometer

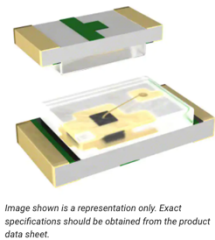
https://www.digikey.com/en/products/detail/bourns-inc/3362P-1-103LF/1088412?utm_adgroup=Trimmer%20Potentiometers&utm_source=google&utm_medium=cpc&utm_campaign=Shopping_Potentiometers%2C%20Variable%20Resistors_NEW&utm_term=&utm_content=Trimmer%20Potentiometers&gclid=EAlaIqobChMI1MzYvODt6AIVIK_sCh3QgAILEAYYAyABEgL7wvD_BwE



3362P-1-103LF		10k
Digi-Key Part Number	3362P-103LF-ND	
Manufacturer	Bourns Inc.	
Manufacturer Product Number	3362P-1-103LF	
Description	TRIMMER 10K OHM 0.5W PC PIN TOP	
Manufacturer Standard Lead Time	27 Weeks	
Detailed Description	10 kOhms 0.5W, 1/2W PC Pins Through Hole Trimmer Potentiometer Cermet 1.0 Turn Top Adjustment	
Customer Reference	<input type="text" value="Customer Reference"/>	
Datasheet	Datasheet	

LEDs, x2

<https://www.digikey.com/en/products/detail/lite-on-inc/LTST-C193TGKT-5A/2356255>



LTST-C193TGKT-5A	
Digi-Key Part Number	160-1832-2-ND - Tape & Reel (TR) 160-1832-1-ND - Cut Tape (CT) 160-1832-6-ND - Digi-Reel®
Manufacturer	Lite-On Inc.
Manufacturer Product Number	LTST-C193TGKT-5A
Description	LED GREEN CLEAR CHIP SMD
Detailed Description	Green 528nm LED Indication - Discrete 2.8V 0603 (1608 Metric)
Customer Reference	<input type="text" value="Customer Reference"/>
Datasheet	Datasheet

Push button, x2

<https://www.digikey.com/en/products/detail/te-connectivity-alcoswitch-switches/8-1437565-1/529677>



8-1437565-1	
Digi-Key Part Number	450-1941-2-ND - Tape & Reel (TR) 450-1941-1-ND - Cut Tape (CT)
Manufacturer	TE Connectivity ALCOSWITCH Switches
Manufacturer Product Number	8-1437565-1
Description	SWITCH TACTILE SPST-NO 0.02A 15V
Manufacturer Standard Lead Time	15 Weeks
Detailed Description	Tactile Switch SPST-NO Top Actuated Surface Mount
Customer Reference	<input type="text" value="Customer Reference"/>
Datasheet	Datasheet

Resistor, x3


<https://www.digikey.com/en/products/detail/yageo/RC0603JR-071KL/726677>



Image shown is a representation only. Exact specifications should be obtained from the product data sheet.



RC0603JR-071KL

Digi-Key Part Number	311-1.0KGRTR-ND - Tape & Reel (TR) 311-1.0KGRCT-ND - Cut Tape (CT) 311-1.0KGRDKR-ND - Digi-Reel®
Manufacturer	YAGEO
Manufacturer Product Number	RC0603JR-071KL
Description	RES 1K OHM 5% 1/10W 0603
Manufacturer Standard Lead Time	20 Weeks
Detailed Description	1 kOhms ±5% 0.1W, 1/10W Chip Resistor 0603 (1608 Metric) Moisture Resistant Thick Film
Customer Reference	<input type="text" value="Customer Reference"/>
Datasheet	 Datasheet

Capacitor

<https://www.digikey.com/en/products/detail/nichicon/UVZ1H0R1MDD1TD/4342173>




Image shown is a representation only. Exact specifications should be obtained from the product data sheet.

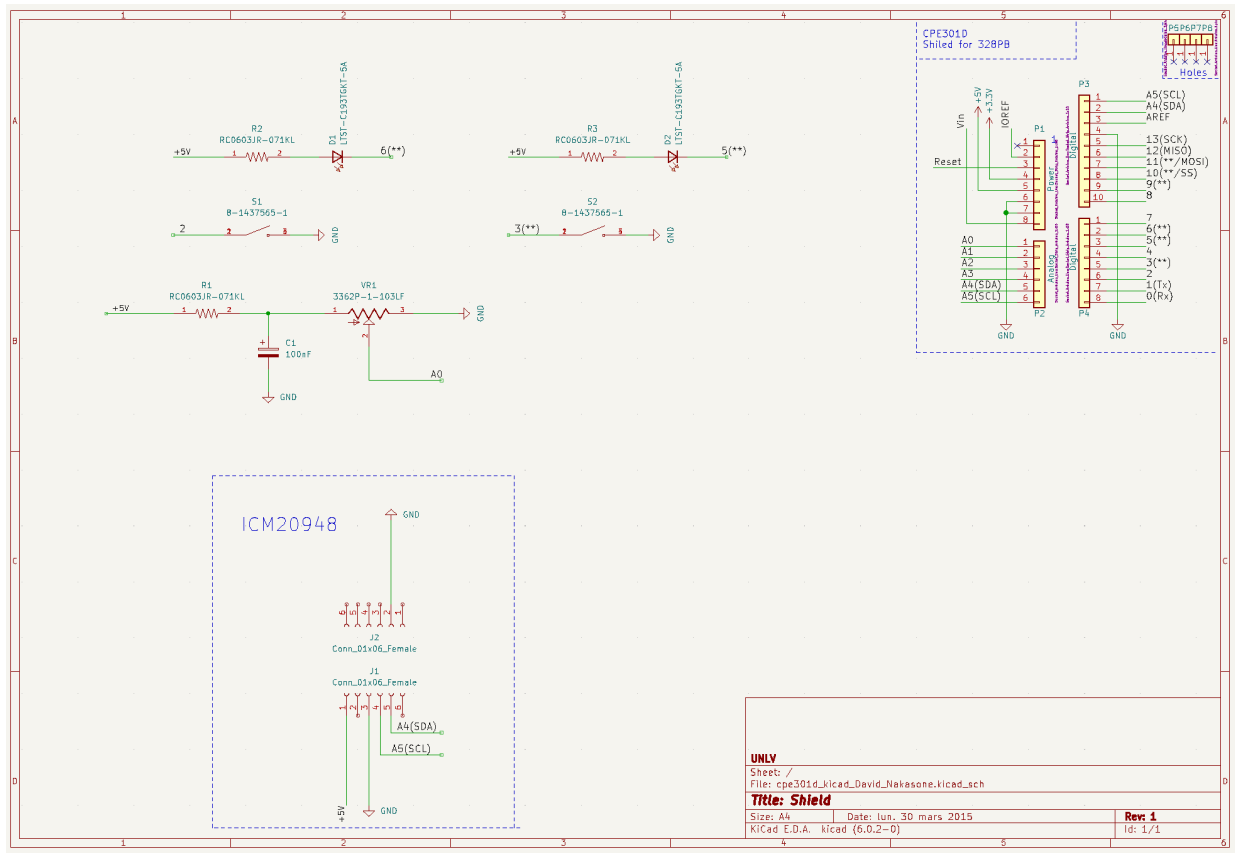


UVZ1H0R1MDD1TD

100 nF

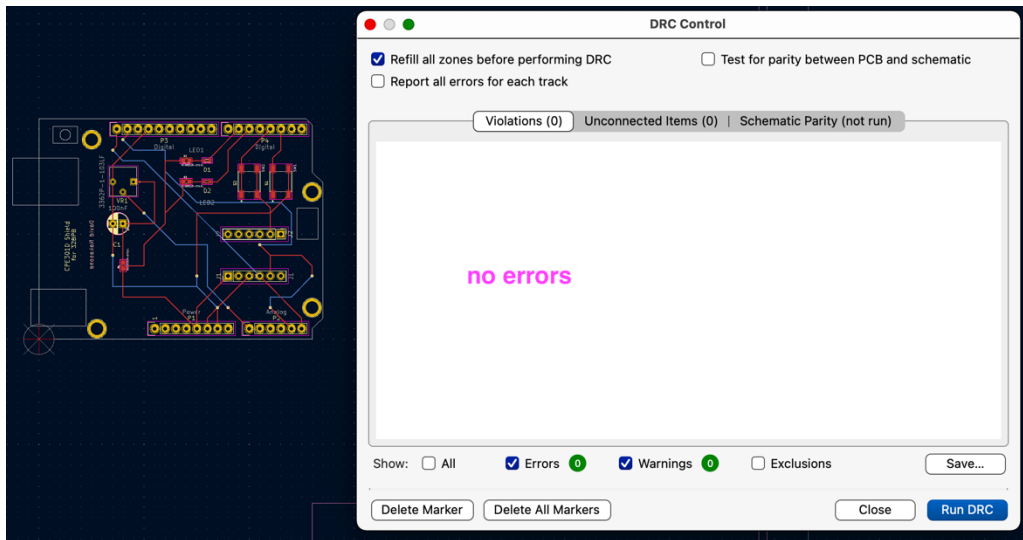
Digi-Key Part Number	493-13462-1-ND - Cut Tape (CT) 493-13462-3-ND - Tape & Box (TB)
Manufacturer	Nichicon
Manufacturer Product Number	UVZ1H0R1MDD1TD
Description	CAP ALUM 0.1UF 20% 50V RADIAL
Detailed Description	0.1 µF 50 V Aluminum Electrolytic Capacitors Radial, Can - 1000 Hrs @ 105°C
Customer Reference	<input type="text" value="Customer Reference"/>
Datasheet	 Datasheet

New project, from template, using the Arduino Uno.
 Downloading the footprints for the specified components:

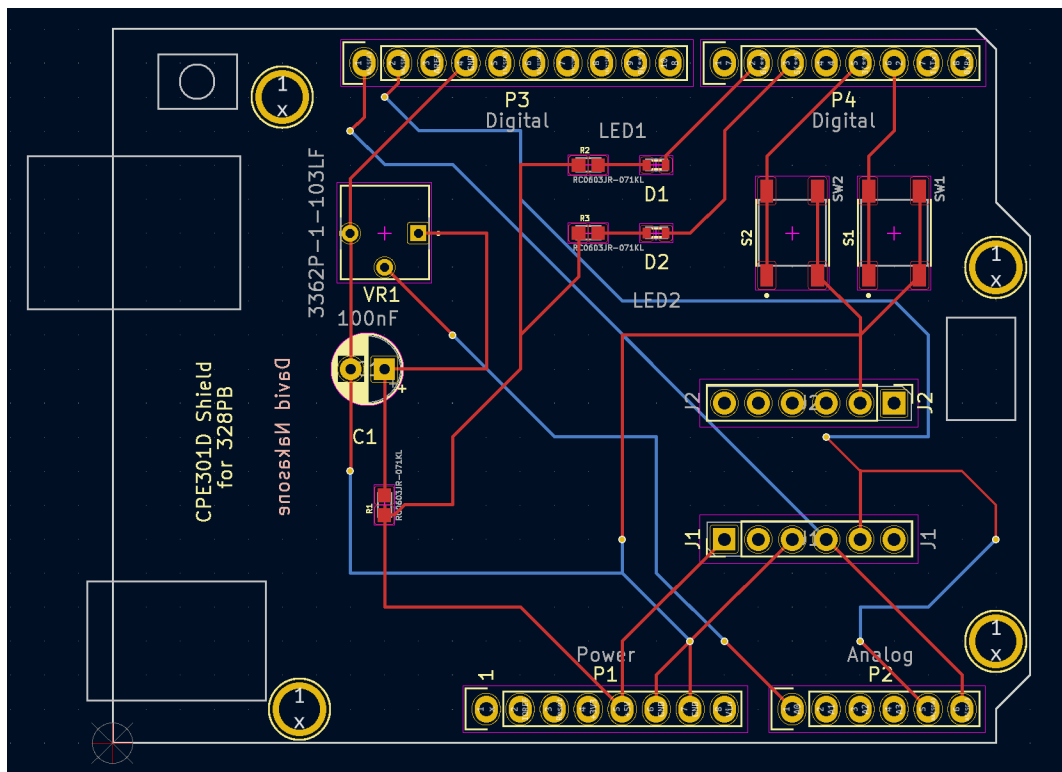


The netlist and BOM were also made

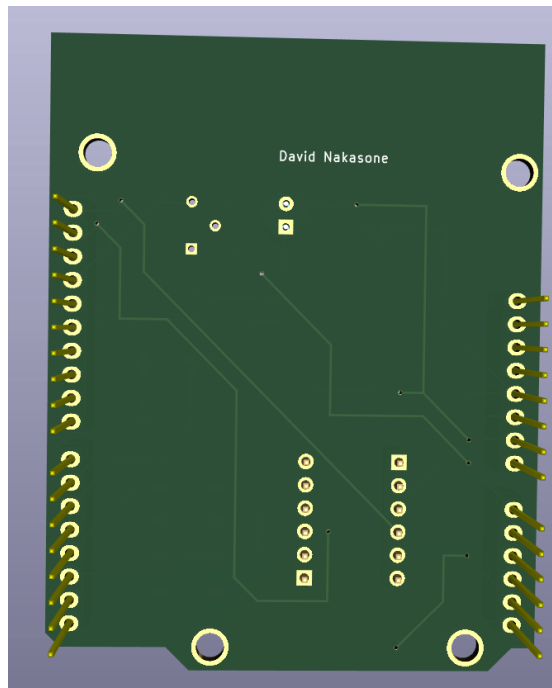
Performing the DRC:



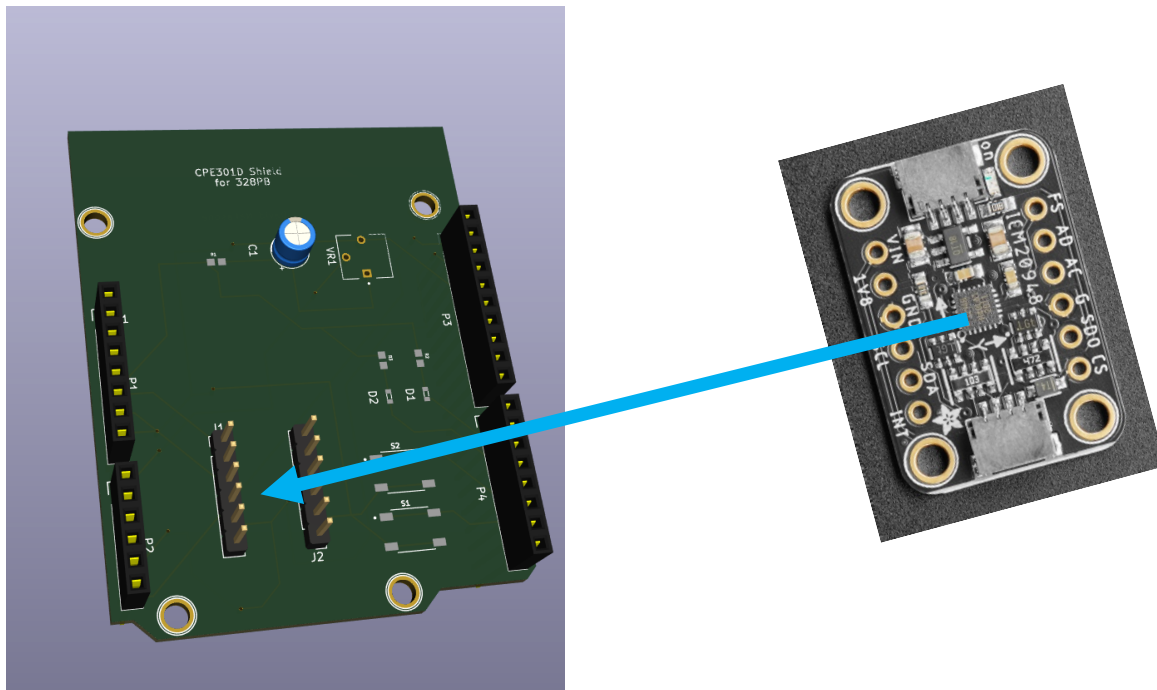
The shield, using 2 layers:



Back of shield:



Front of shield, ready for the ICM20948 to be soldered on:



I was unwilling to pay for the 3D footprint models.

Outputting the design files (Gerber and Drill), the design is successful:

oshpark.com/uploads/mBwdZRem

Military Academics Religion Laws/Codes Career Business KC LVS Sports Visualization TABs Family NNSA

OSH PARK ABOUT US SERVICES SUPPORT SHARING LOG IN

About your board

We detected a 2 layer board of 2.70 x 2.10 inches (68.6 x 53.3mm)
3 boards will cost \$28.35

Board name
CPE301D Shield

Description
shield for all design assignments

Email
Enter your email address (required).

Notes

Design Success

i Processing information

- Processing Archive.zip as KiCad ZIP file.
- Noting blank layer: cpe301d_kicad_David_Nakasone-NPTH.drl
- 2 layer board of 2.70x2.10 inches.
- Your project contains 2 drill files, we've merged them.
["cpe301d_kicad_David_Nakasone-NPTH.drl",
"cpe301d_kicad_David_Nakasone-PTH.drl"]

Top

See the github:

https://github.com/davenakasone/cpe301_David_Nakasone/tree/main/kicad