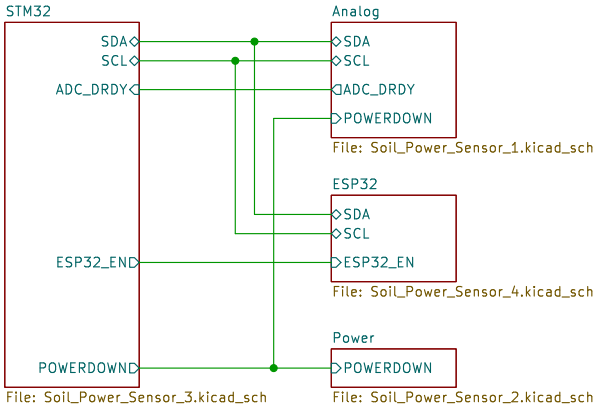
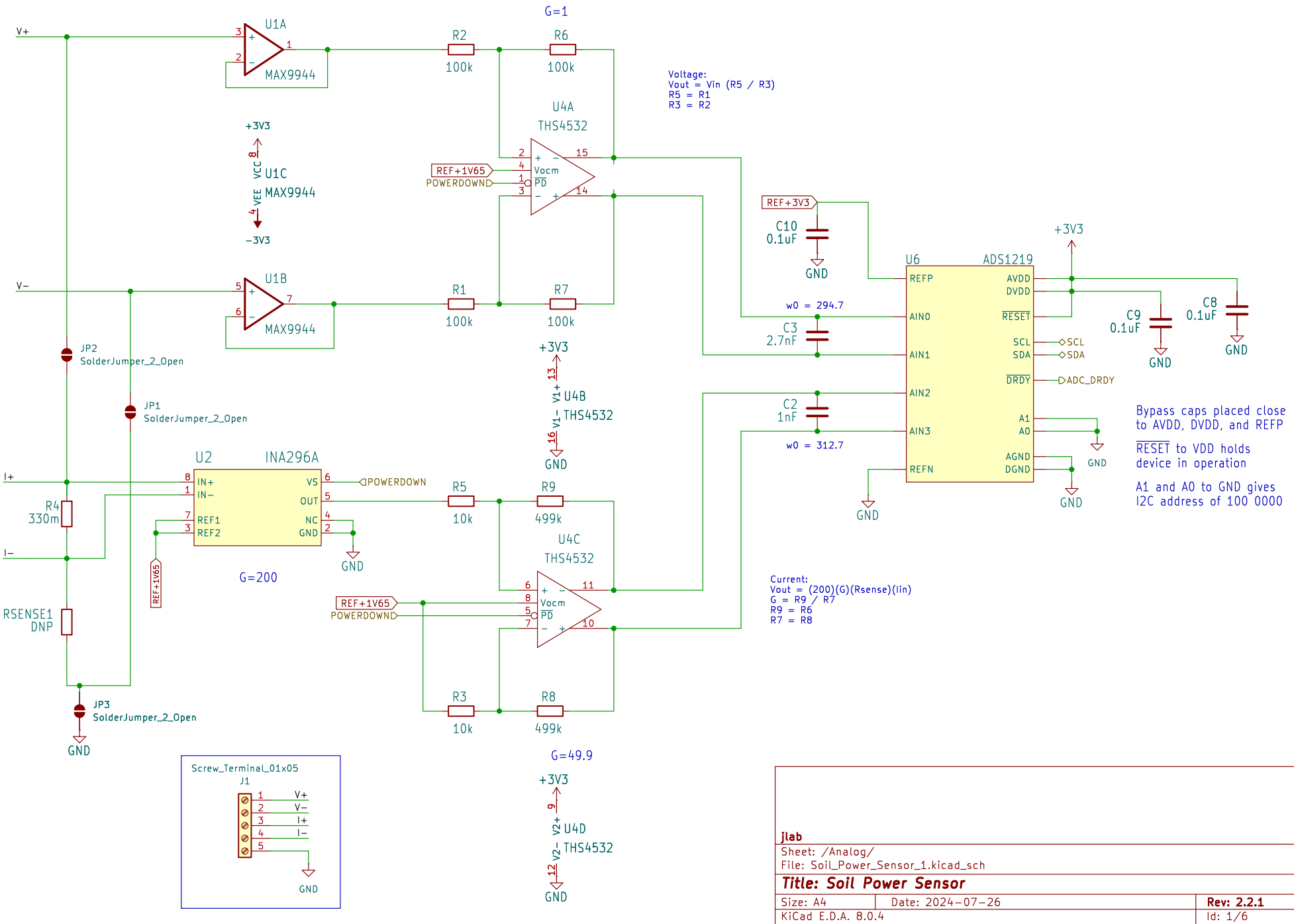


jlab

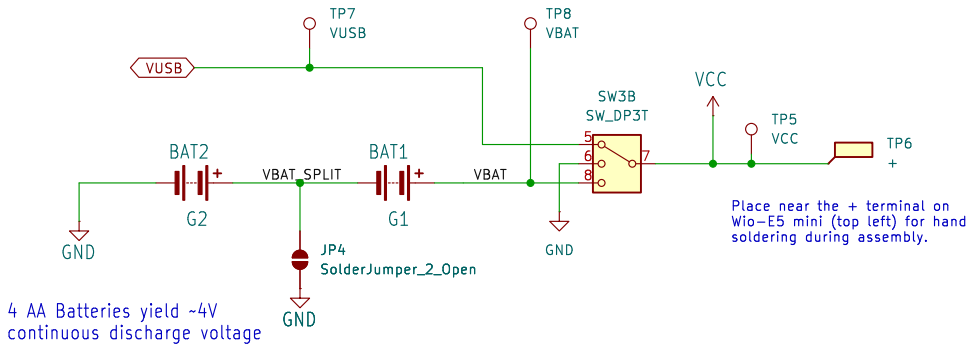
Sheet: /
File: Soil Power Sensor.kicad_sch

Title: Soil Power Sensor

Size: A4	Date: 2024-07-26	**Rev: 2.2.1**
KiCad E.D.A. 8.0.4		Id: 1/6


G=1
U1A
MAX9944
R2
100k
R6
100k
V+
V−
U1C
MAX9944
+3V3
−3V3
U1B
MAX9944
R1
100k
R7
100k
U4A
THS4532
REF+1V65
POWERDOWN
Vocm
PD
U4B
THS4532
U4C
THS4532
U4D
THS4532
Voltage:
Vout = Vin (R5 / R3)
R5 = R1
R3 = R2
REF+3V3
C10
0.1uF
GND
U6
ADS1219
REFP
AIN0
AIN1
AIN2
AIN3
REFN
AVDD
DVDD
RESET
SCL
SDA
DRDY
A1
A0
AGND
DGND
ADC_DRDY
w0 = 294.7
C3
2.7nF
C2
1nF
w0 = 312.7
C9
0.1uF
C8
0.1uF
Bypass caps placed close to AVDD, DVDD, and REFP
RESET to VDD holds device in operation
A1 and A0 to GND gives I2C address of 100 0000
JP2
SolderJumper_2_Open
JP1
SolderJumper_2_Open
JP3
SolderJumper_2_Open
U2
INA296A
IN+
IN−
REF1
REF2
VS
OUT
NC
GND
POWERDOWN
G=200
R4
330m
RSENSE1
DNP
R5
10k
R9
499k
R3
10k
R8
499k
G=49.9
Current:
Vout = (200)(G)(Rsense)(Iin)
G = R9 / R7
R9 = R6
R7 = R8
Screw_Terminal_01x05
J1
V+
V−
I+
I−
jlab
Sheet: /Analog/
File: Soil_Power_Sensor_1.kicad_sch
Title: Soil Power Sensor
Size: A4
Date: 2024-07-26
Rev: 2.2.1
KiCad E.D.A. 8.0.4
Id: 1/6

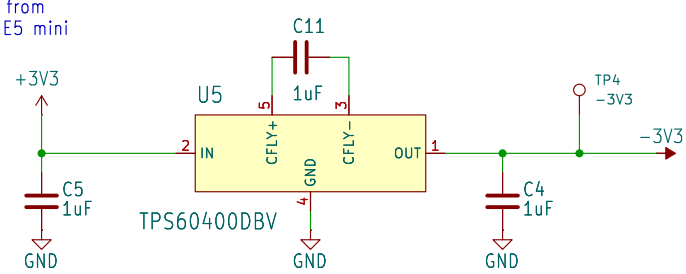
VCC Input



Charge Pump for −3V3 Rail

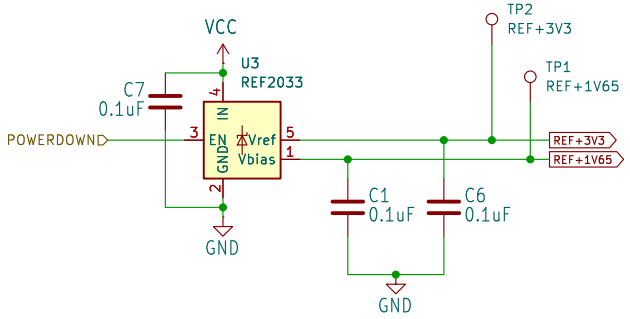
Place bypass caps close to package

+3V3 comes from
LDO on Wio-E5 mini



Reference +3V3 and +1V65

Place bypass caps close to package

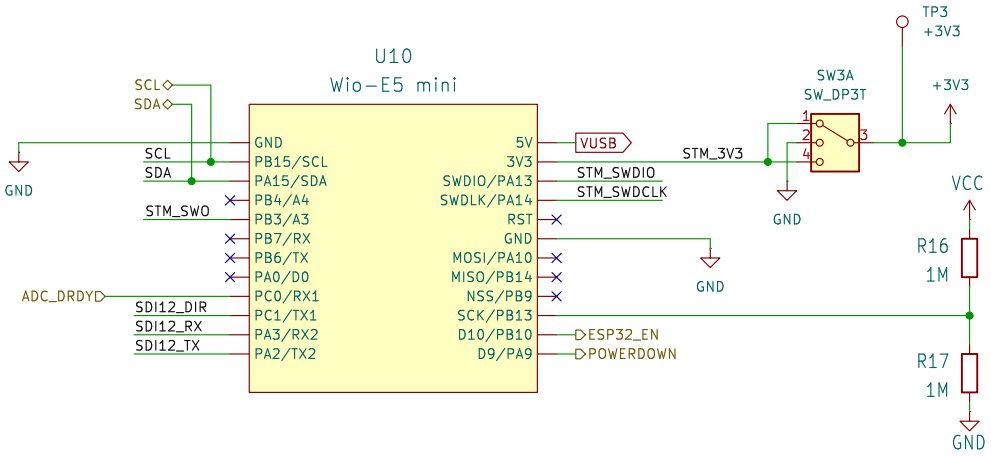


jlab

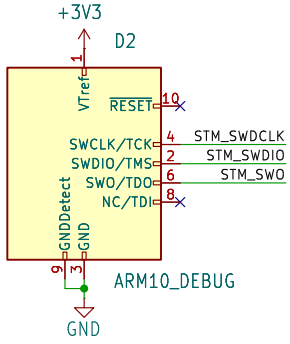
Sheet: /Power/
File: Soil_Power_Sensor_2.kicad_sch

Title: Soil Power Sensor

Size: A4	Date: 2024-07-26	**Rev: 2.2.1**
KiCad E.D.A. 8.0.4		Id: 2/6

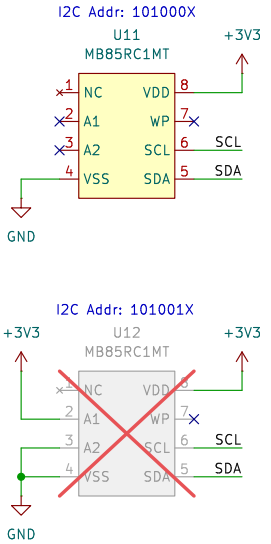


JTAG Connector

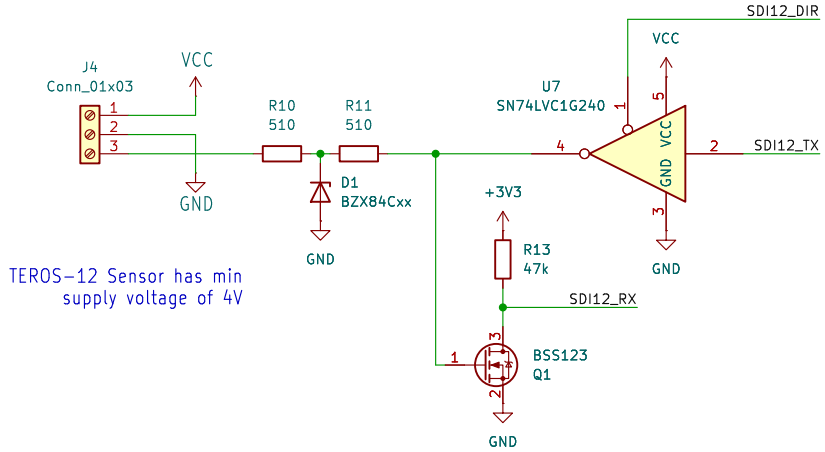


FRAM

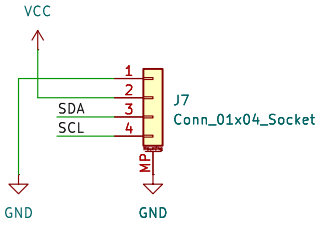
Optional slot for second chip



UART to SDI12 Converter



STEMMA QT Connector



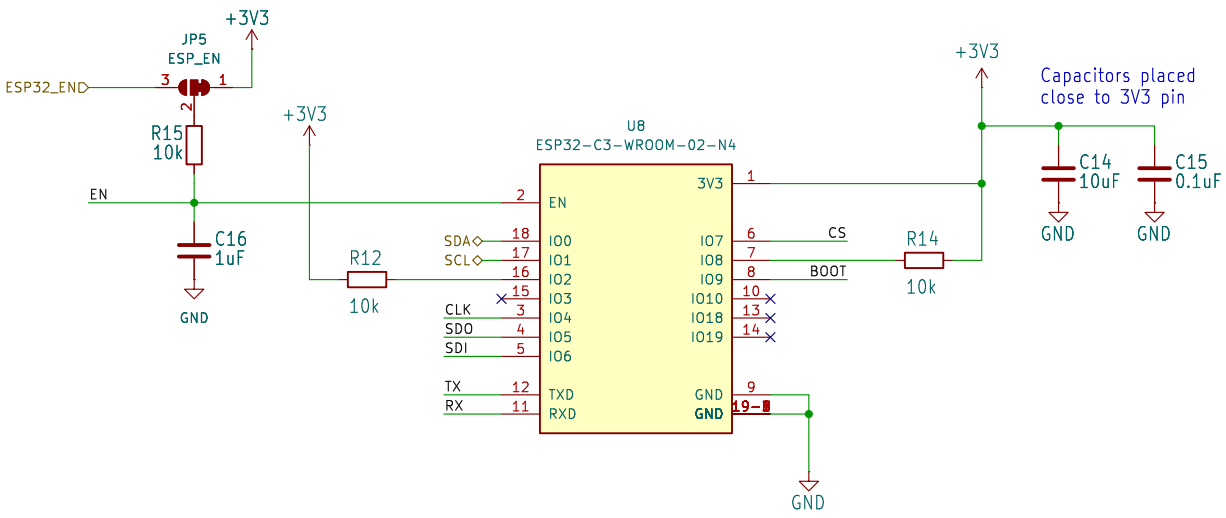
jlab

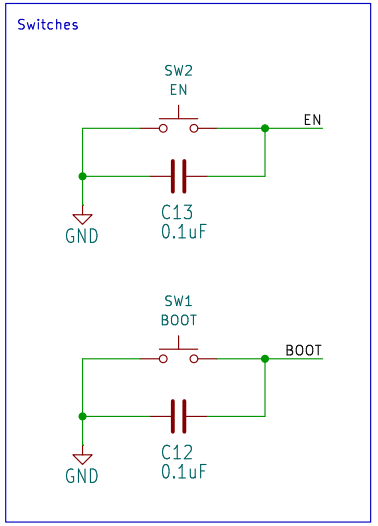
Sheet: /STM32/
File: Soil_Power_Sensor_3.kicad_sch

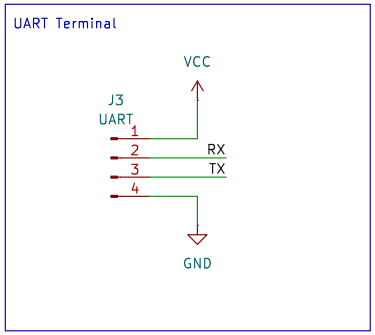
Title: Soil Power Sensor

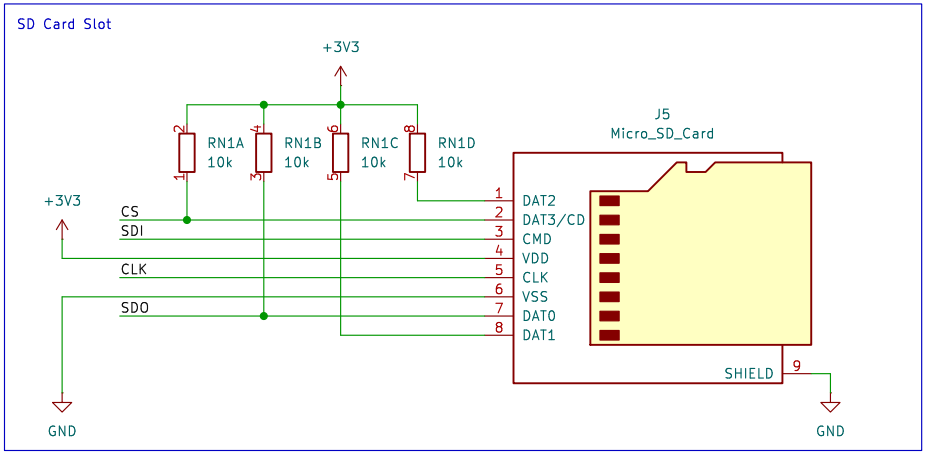
Size: A4	Date: 2024-07-26	**Rev: 2.2.1**
KiCad E.D.A. 8.0.4		Id: 3/6

RC Filter for added delay
(values from ESP32 DS)





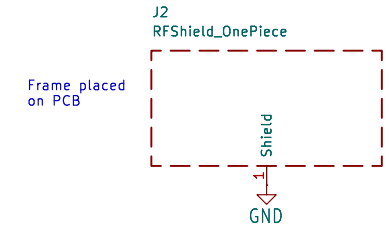


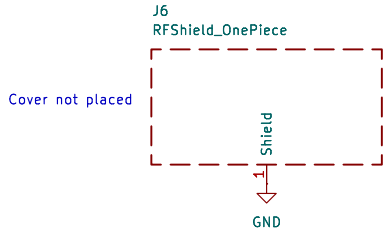


jlab		
Sheet: /ESP32/		
File: Soil_Power_Sensor_4.kicad_sch		
Title: Soil Power Sensor		
Size: A4	Date: 2024-07-26	**Rev: 2.2.1**
KiCad E.D.A. 8.0.4		Id: 4/6

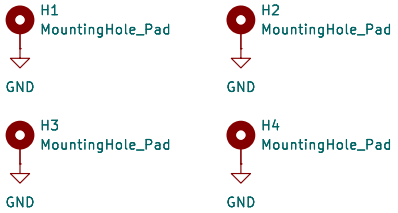
RF Shield

Covers analog components in sheet 1 and reference voltage source.





Mounting Holes



jlab		
Sheet: /Hardware/		
File: hardware.kicad_sch		
Title: Soil Power Sensor		
Size: A4	Date: 2024-07-26	**Rev: 2.2.1**
KiCad E.D.A. 8.0.4		Id: 5/6