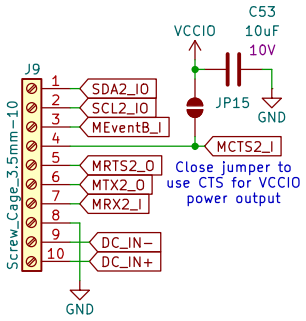
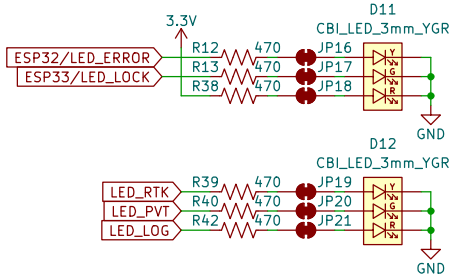
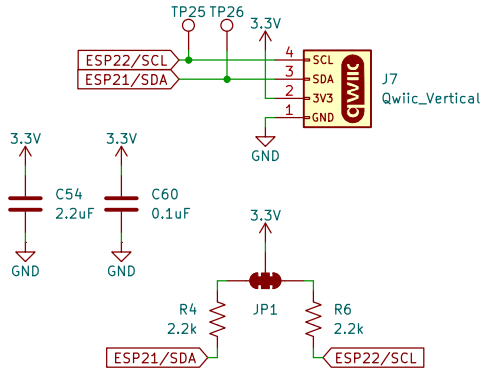
I/O Connector



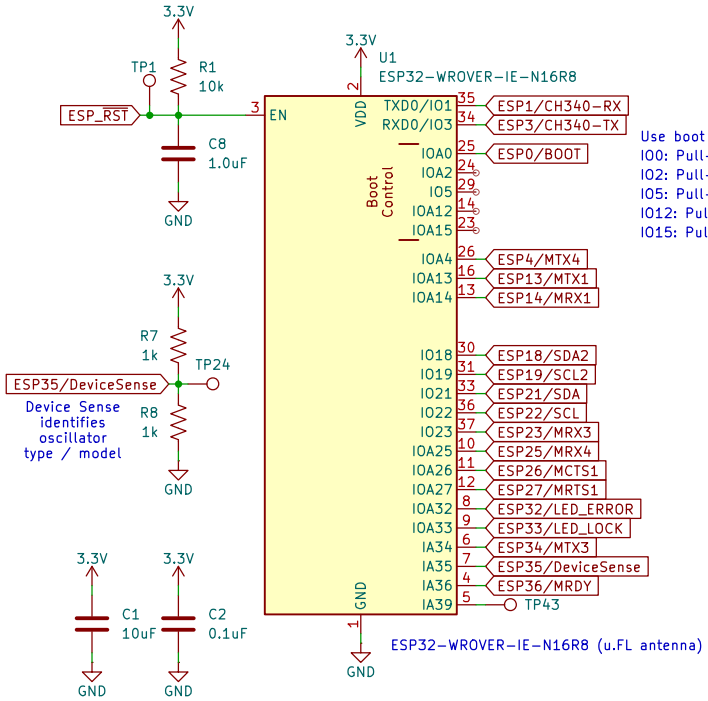
LEDs



Qwiic I²C (for OLED)



ESP32-WROVER



Use boot control pins with caution: 0, 2, 5, 12, 15
IO0: Pull-up at boot. Can be used a stat LED.
IO2: Pull-down at boot. Boot mode.
IO5: Pull-up at boot. SDIO timing.
IO12: Pull-down at boot. LDO voltage.
IO15: Pull-up. TXO debug active.

Power
File: Power.kicad_sch

USB
File: USB.kicad_sch

GNSS
File: GNSS.kicad_sch

Ethernet
File: Ethernet.kicad_sch

Level_Shifting
File: Level_Shifting.kicad_sch

Level_Shifting_10MHz
File: Level_Shifting_10MHz.kicad_sch

open source hardware

Designed by: P.C.

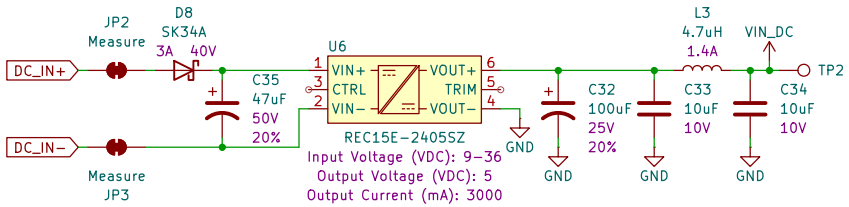
SPARKPNT

Sheet: /
File: SparkFun_RTK_mosaic-T.kicad_sch

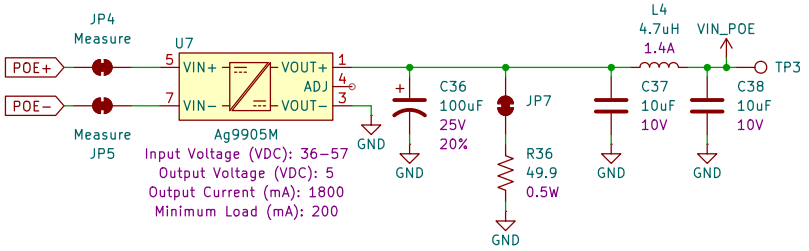
Title: GPSDO (mosaic-T)

Size: USLetter	Date: 2024-10-17	**Rev: v10**
KiCad E.D.A. 8.0.5		Id: 1/7

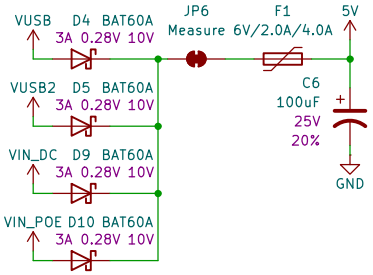
DC Power In



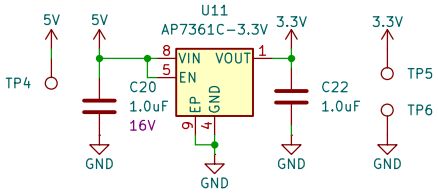
Power Over Ethernet



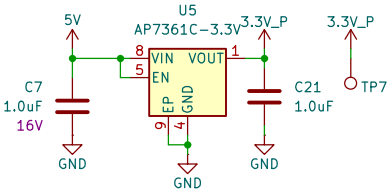
Power Mux



Main 3.3V

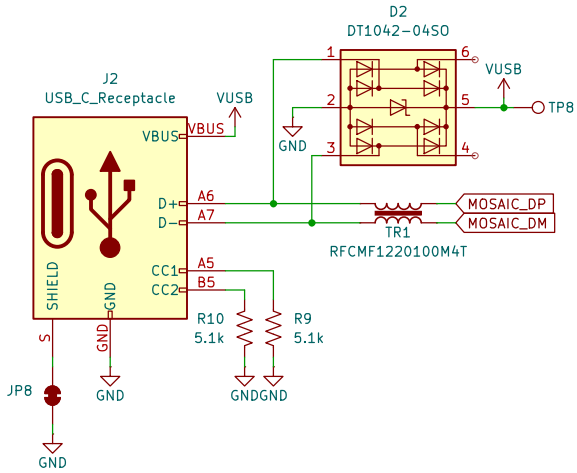


Peripheral 3.3V



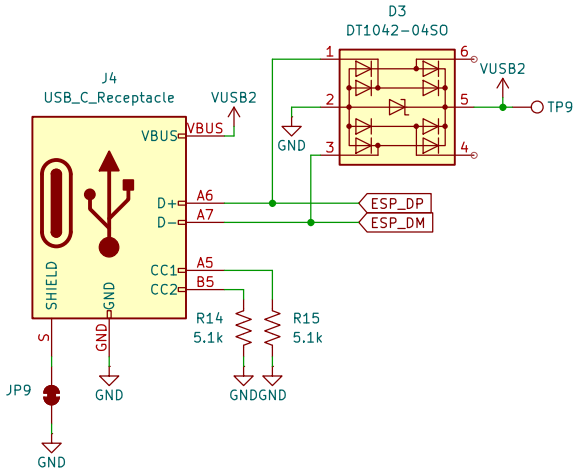
Sheet: /Power/	
File: Power.kicad_sch	
Title: Power	
Size: USLetter | Date:	**Rev:**
KiCad E.D.A. 8.0.5	Id: 2/7

Mosaic USB

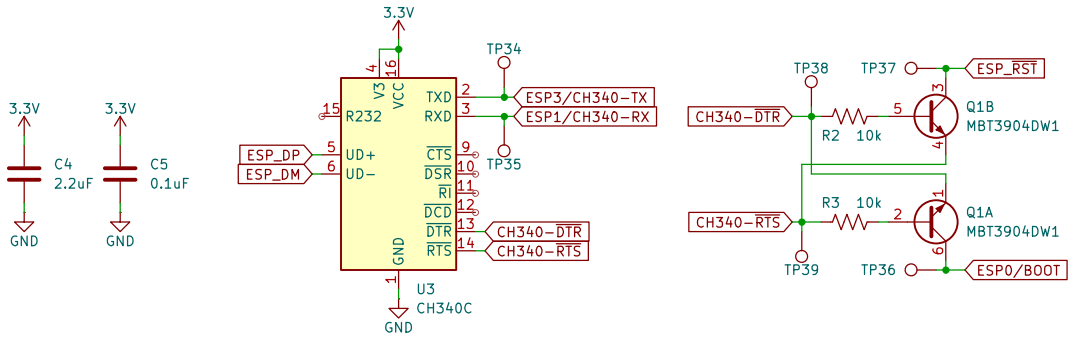


USB Track Impedance: Differential Pair
https://saturnpcb.com/saturn-pcb-toolkit/
Prepreg thickness: 8.3 mil (JLC7628). Er = 4.6
10.5 mil track with 9.5 mil gap (20 mil center to center) = 90 Ohms

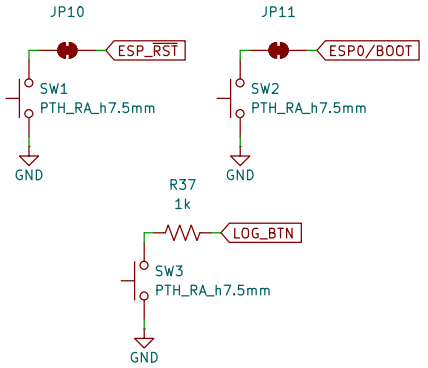
ESP32 USB



ESP32 USB to Serial

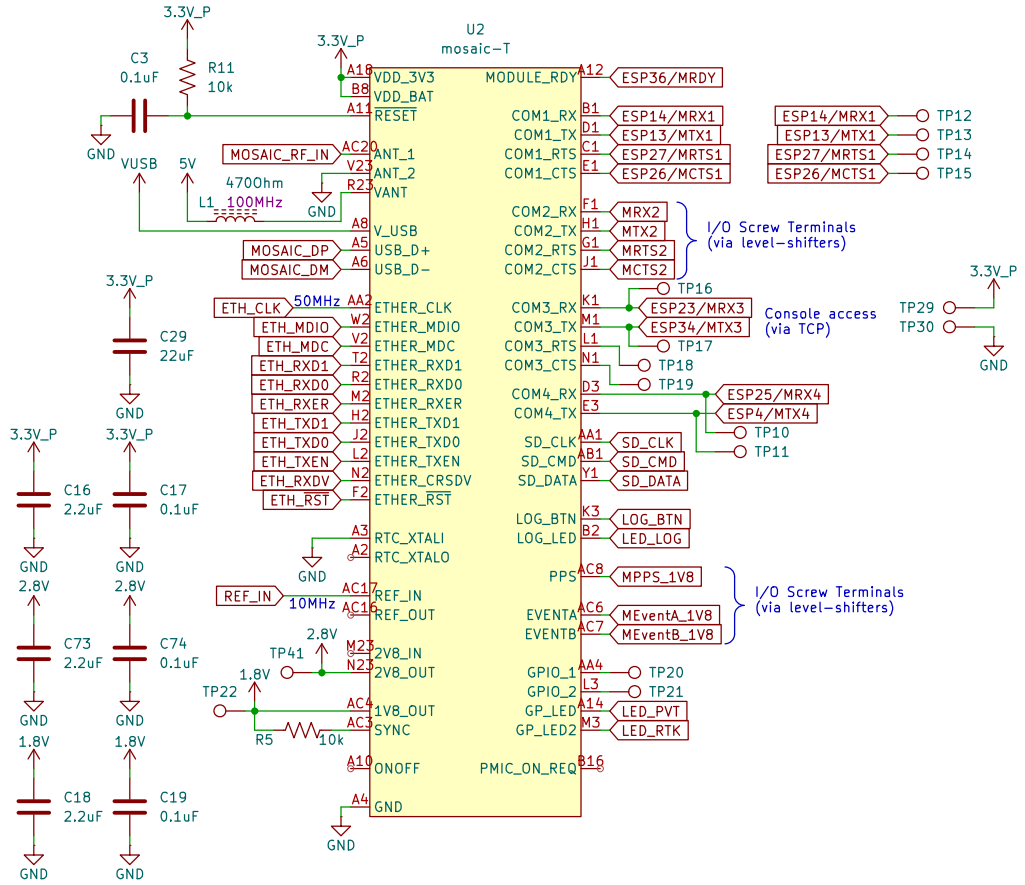


Buttons

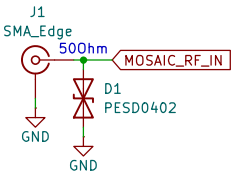


Sheet: /USB/	
File: USB.kicad_sch	
Title: USB	
Size: USLetter	Date:
KiCad E.D.A. 8.0.5	Id: 3/7

mosaic Tri-band GNSS

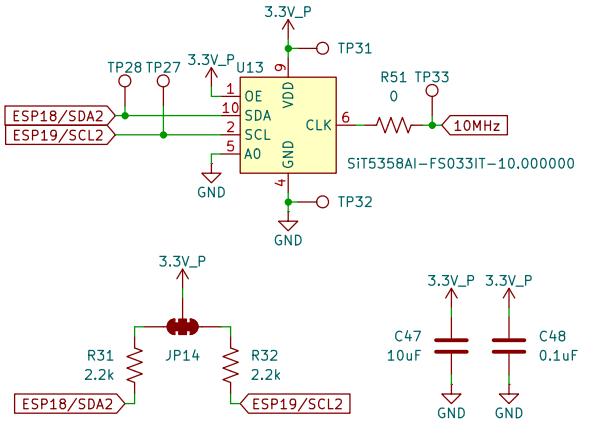


GNSS Antenna

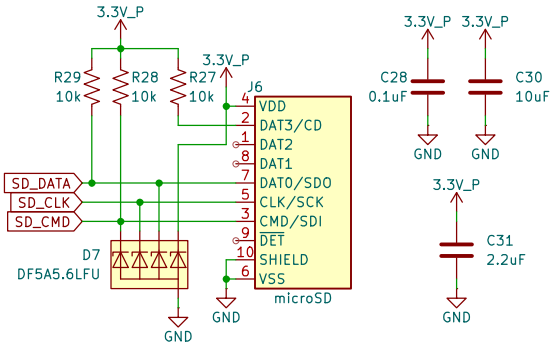


Microstrip Calculation:
Copper Thickness (1oz): 1.4mil/0.035mm
Board thickness: 1.6mm
Dielectric thickness (layer 1 to 2): 0.2mm
Er: 4.6
Polygon Isolation: 6mil/0.1524mm
RF Trace Width: 13mil/0.33mm
https://chemandy.com/calculators/coplanar-waveguide-with-ground-calculator.htm

10MHz Oscillator



microSD

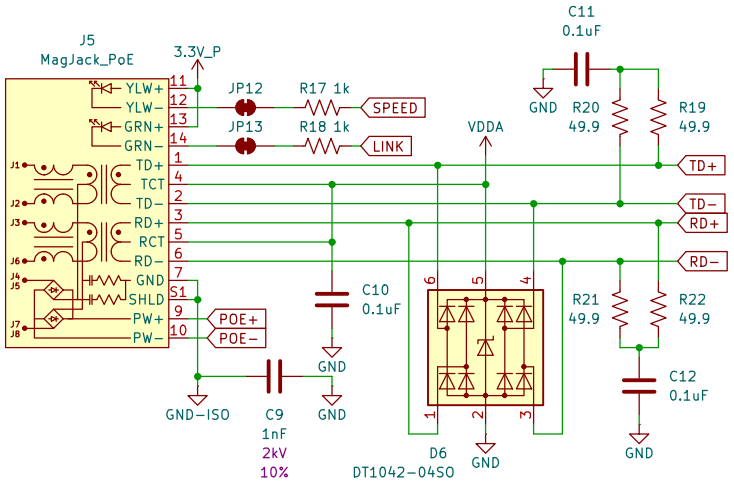


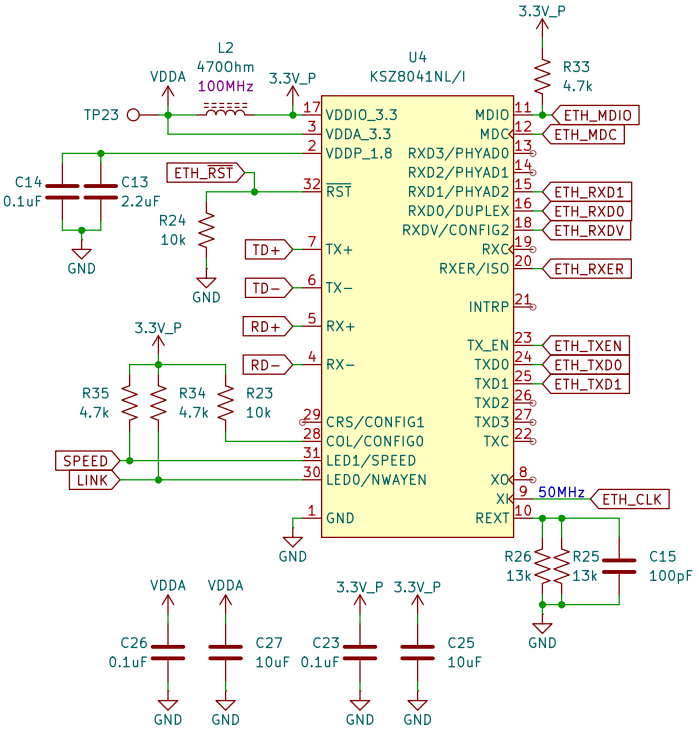
Sheet: /GNSS/
File: GNSS.kicad_sch

Title: GNSS

Size: USLetter	Date:	**Rev:**
KiCad E.D.A. 8.0.5		Id: 4/7

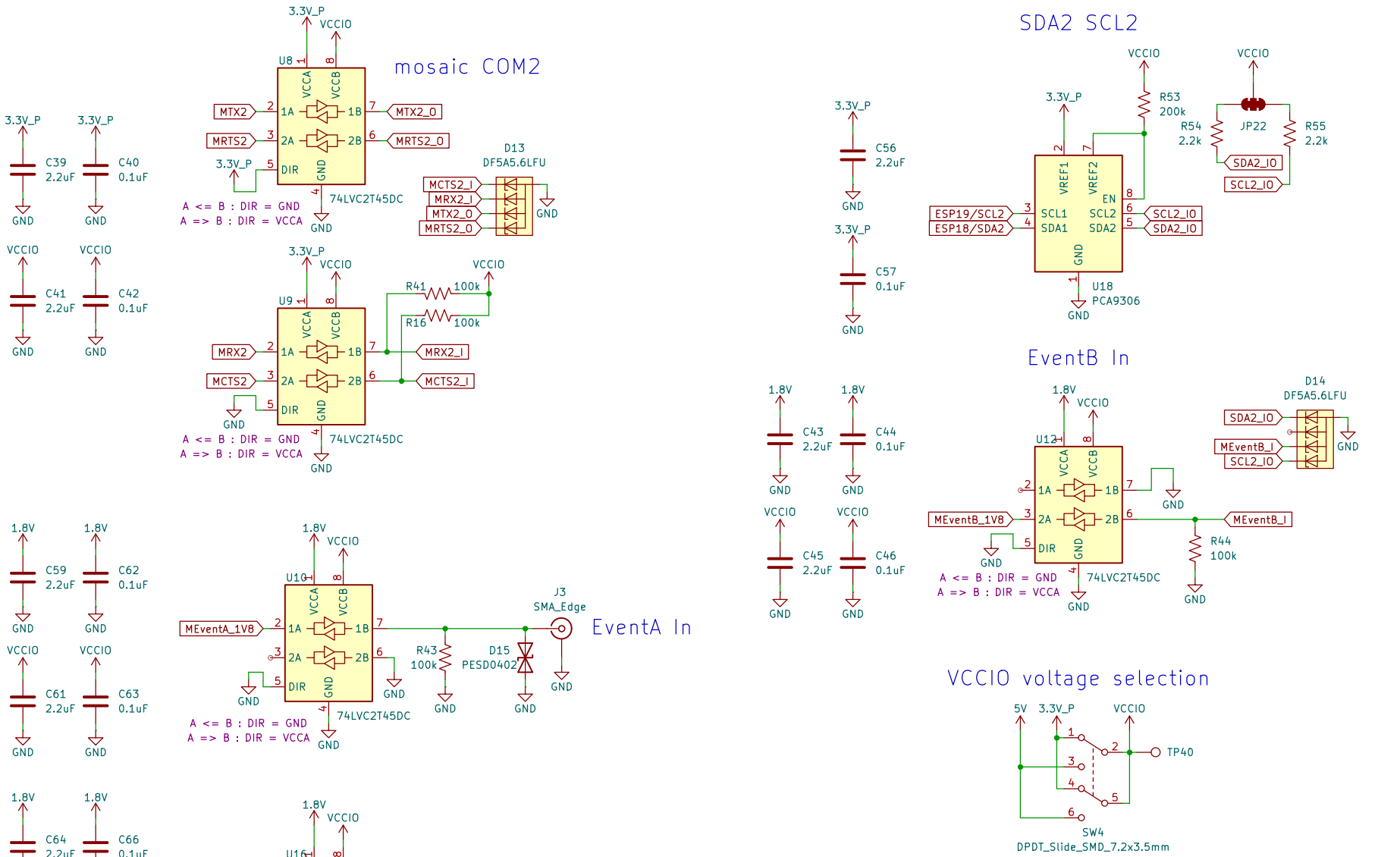
Ethernet

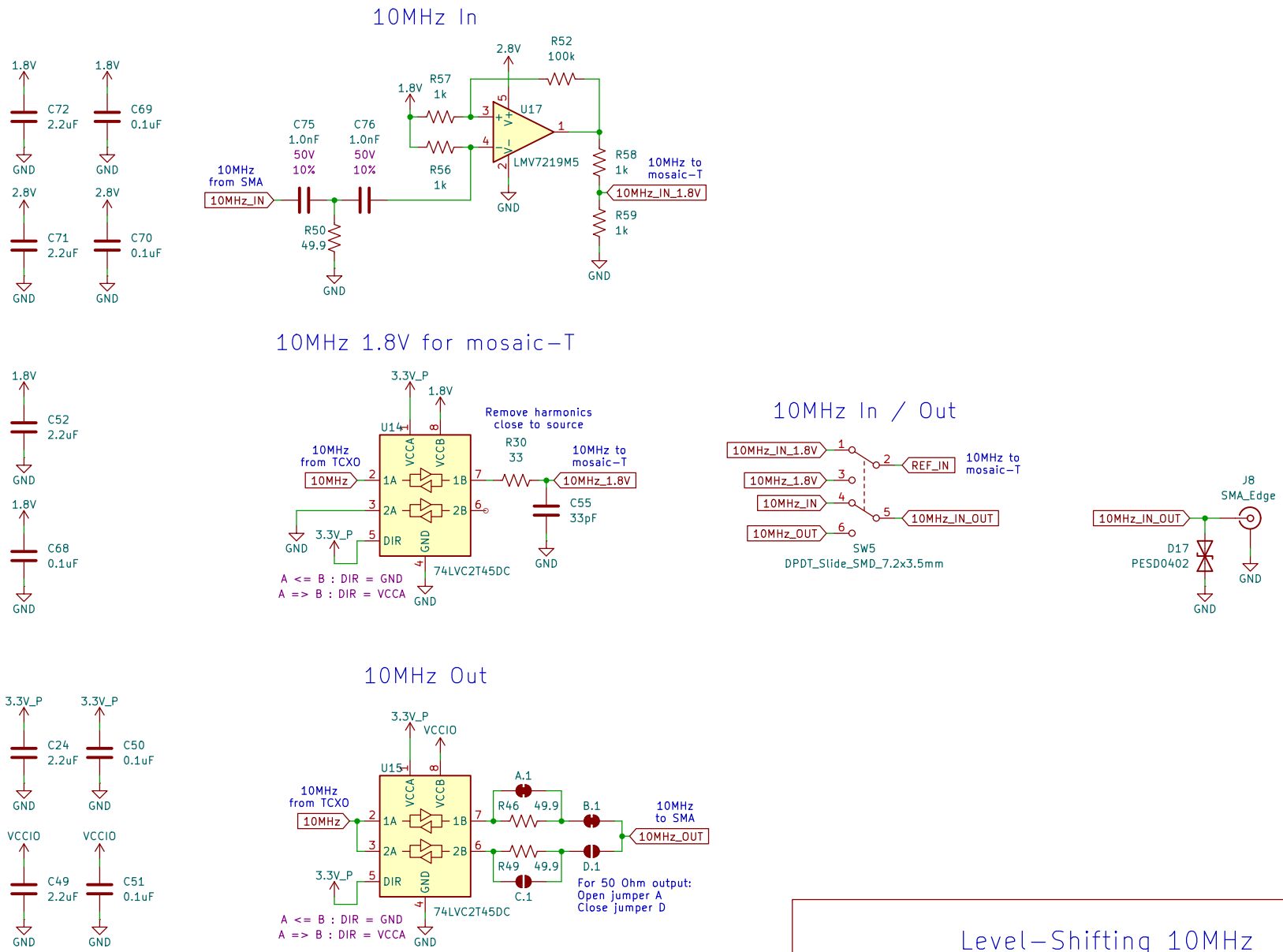




Ethernet Track Impedance: Differential Pair
https://saturnpcb.com/saturn-pcb-toolkit/
Prepreg thickness: 8.3 mil (JLC7628). Er = 4.6
9.0 mil track with 11.0 mil gap (20 mil center to center) = 100 Ohms
Each pair should match in length to better than 0.5mm

Sheet: /Ethernet/		
File: Ethernet.kicad_sch		
Title: Ethernet		
Size: USLetter	Date:	**Rev:**
KiCad E.D.A. 8.0.5		Id: 5/7


mosaic COM2
SDA2 SCL2
EventB In
EventA In
PPS Out
VCCIO voltage selection
U8
U9
U10
U12
U16
U18
74LVC2T45DC
PCA9306
D13
DF5A5.6LFU
D14
DF5A5.6LFU
D15
PESD0402
J3
SMA_Edge
J12
SMA_Edge
JP22
TP40
SW4
DPDT_Slide_SMD_7.2x3.5mm
A <= B : DIR = GND
A => B : DIR = VCCA
For 50 Ohm output:
Open jumper E
Close jumper H
Level-Shifting
Sheet: /Level_Shifting/
File: Level_Shifting.kicad_sch
Title: Level Shifting
Size: USLetter
Date:
Rev:
KiCad E.D.A. 8.0.5
Id: 6/7


10MHz In
1.8V
C72
2.2uF
GND
C69
0.1uF
2.8V
C71
C70
10MHz
from SMA
10MHz_IN
C75
1.0nF
50V
10%
C76
R50
49.9
R57
1k
R56
U17
LMV7219M5
R52
100k
R58
10MHz to
mosaic-T
10MHz_IN_1.8V
R59
10MHz 1.8V for mosaic-T
C52
C68
3.3V_P
U14
VCCA
VCCB
Remove harmonics
close to source
R30
33
10MHz
from TCXO
1A
1B
2A
2B
DIR
74LVC2T45DC
C55
33pF
A <= B : DIR = GND
A => B : DIR = VCCA
10MHz In / Out
10MHz_IN_1.8V
10MHz_1.8V
10MHz_IN
10MHz_OUT
REF_IN
10MHz_IN_OUT
SW5
DPDT_Slide_SMD_7.2x3.5mm
J8
SMA_Edge
D17
PESD0402
10MHz Out
C24
C50
VCCIO
C49
C51
U15
A.1
R46
49.9
B.1
10MHz
to SMA
R49
C.1
D.1
For 50 Ohm output:
Open jumper A
Close jumper D
Level-Shifting 10MHz
Sheet: /Level_Shifting_10MHz/
File: Level_Shifting_10MHz.kicad_sch
Title: Level Shifting 10MHz
Size: USLetter
Date:
Rev:
KiCad E.D.A. 8.0.5
Id: 7/7