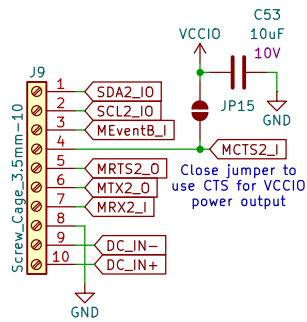
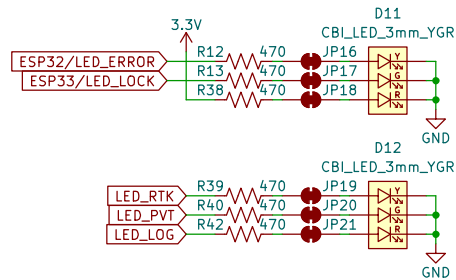


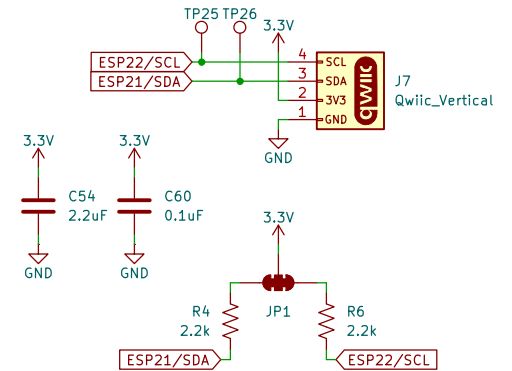
## I/O Connector



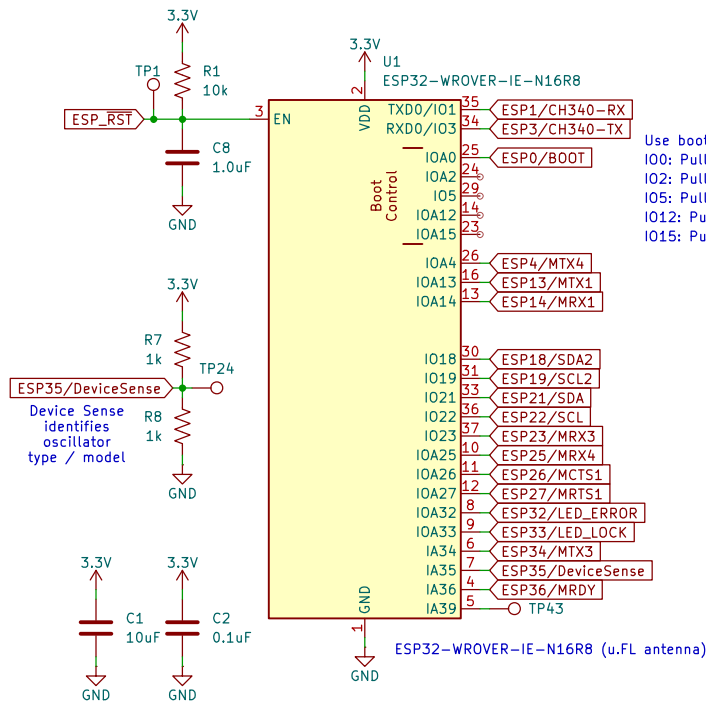
## LEDs



## Qwiic I<sup>2</sup>C (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. TX0 debug active.

### Power

File: Power.kicad\_sch

### USB

File: USB.kicad\_sch

### GNSS

File: GNSS.kicad\_sch

### Ethernet

File: Ethernet.kicad\_sch

### LevelShifting

File: LevelShifting.kicad\_sch

### LevelShifting\_10MHz

File: LevelShifting\_10MHz.kicad\_sch



open source hardware

# SPARKPNT

Designed by: P.C.

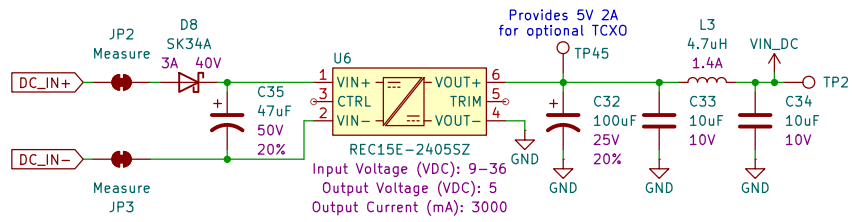
Sheet: /  
 File: SparkPNT\_GPSDO.kicad\_sch

**Title: GPSDO (mosaic-T, SiT5358)**

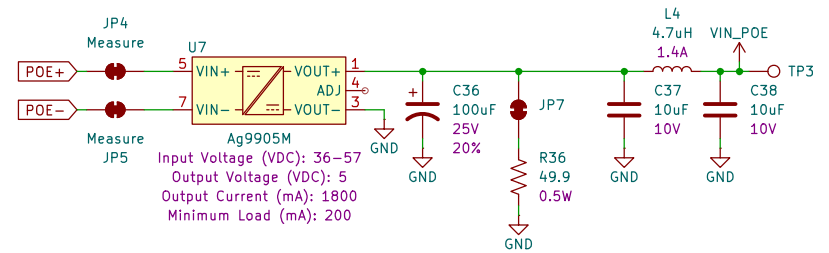
Size: USLetter Date: 2024-11-08  
 KiCad E.D.A. 8.0.5

Rev: v10  
 Id: 1/7

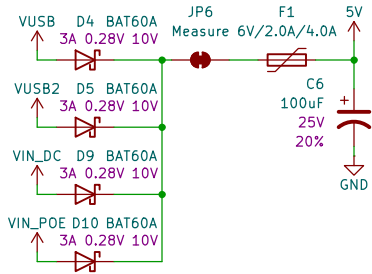
## DC Power In



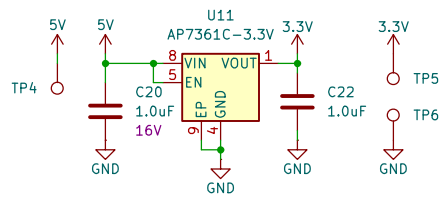
## Power Over Ethernet



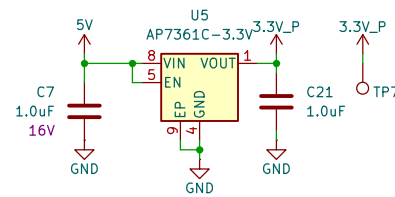
## Power Mux



## Main 3.3V



## Peripheral 3.3V



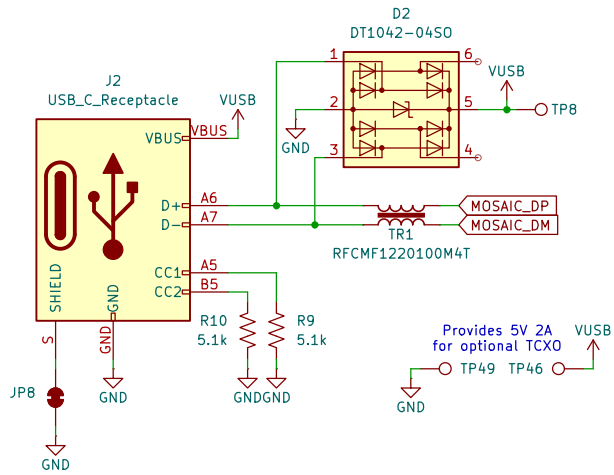
Sheet: /Power/  
 File: Power.kicad\_sch

**Title: Power**

Size: USLetter Date:  
 KiCad E.D.A. 8.0.5

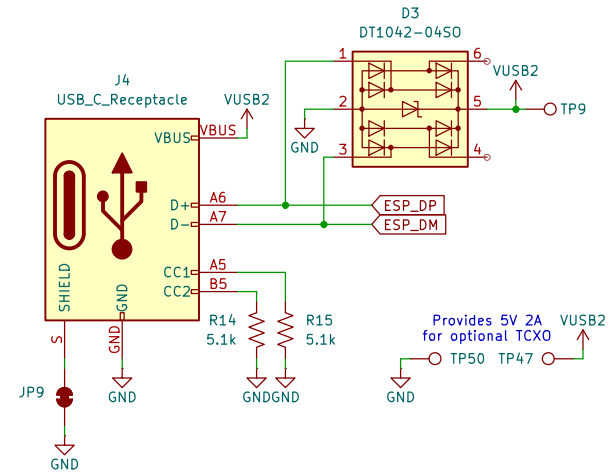
Rev:  
 Id: 2/7

## Mosaic USB

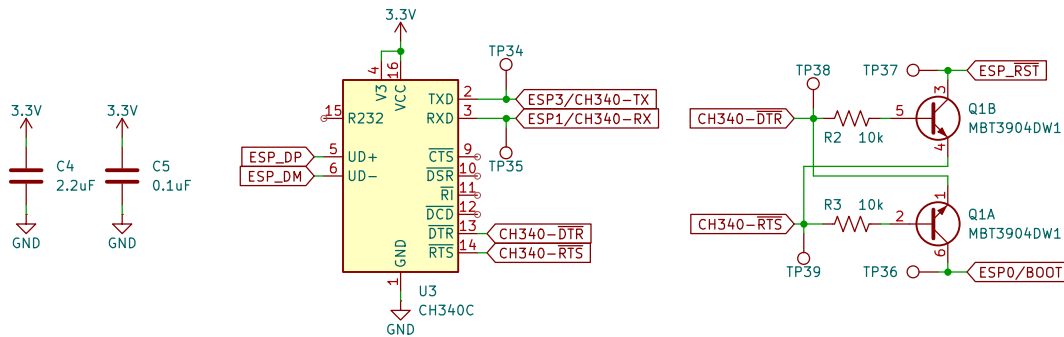


USB Track Impedance: Differential Pair  
<https://saturnpcb.com/saturn-pcb-toolkit/>  
 Prepreg thickness: 8.3 mil (JLC7628). Er = 4.6  
 10.5 mil track with 9.5 mil gap (20 mil center to center) = 90 Ohms

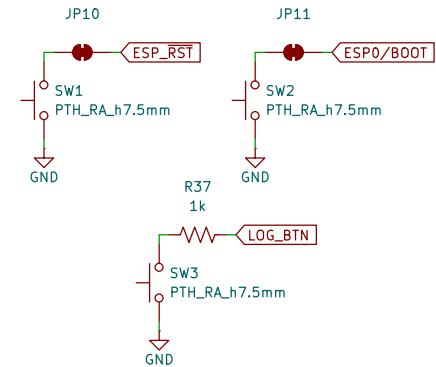
## ESP32 USB



## ESP32 USB to Serial



## Buttons



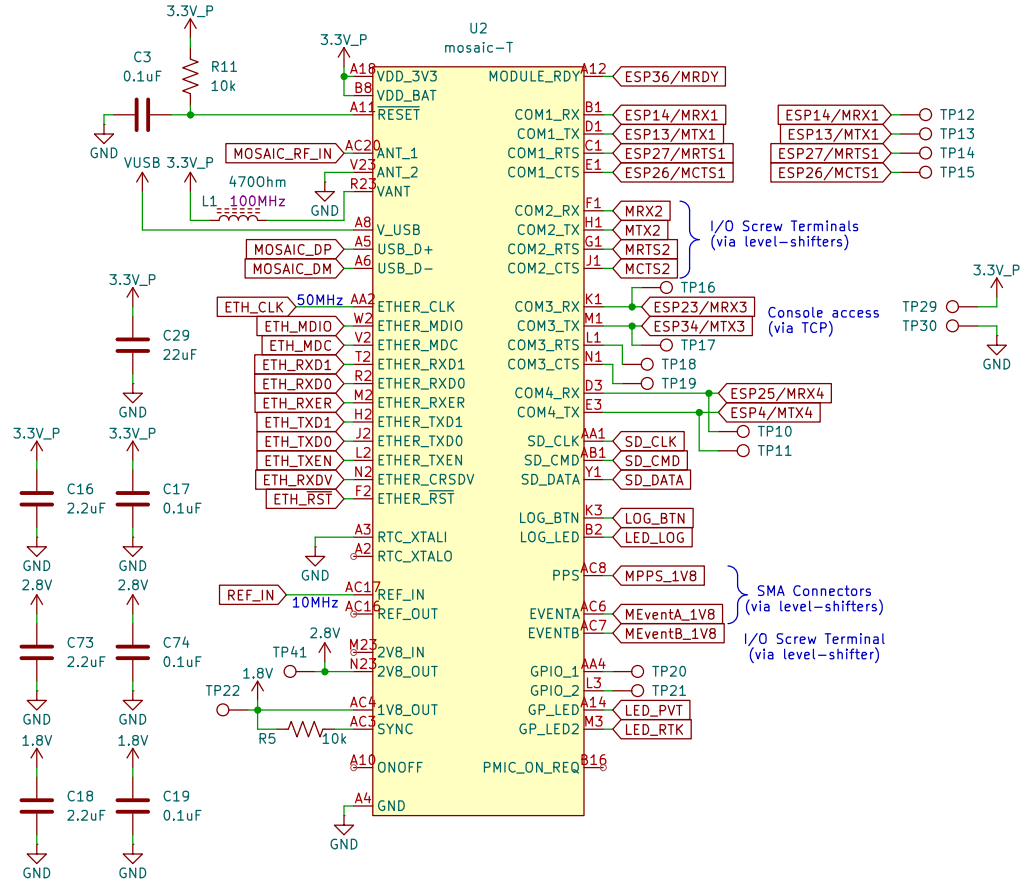
Sheet: /USB/  
 File: USB.kicad\_sch

**Title: USB**

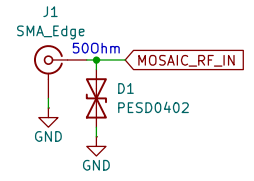
Size: USLetter Date:  
 KiCad E.D.A. 8.0.5

Rev:  
 Id: 3/7

# mosaic Tri-band GNSS

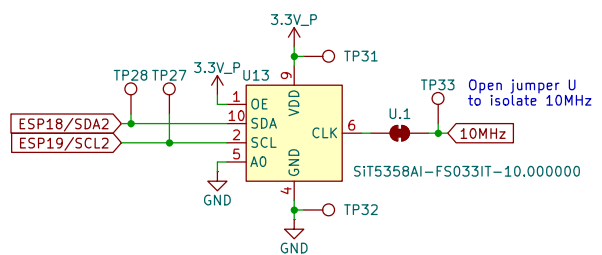


# GNSS Antenna

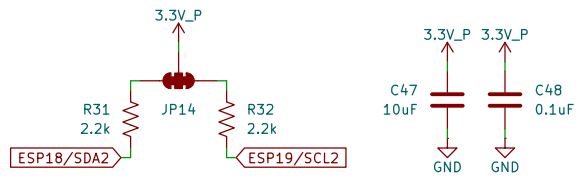
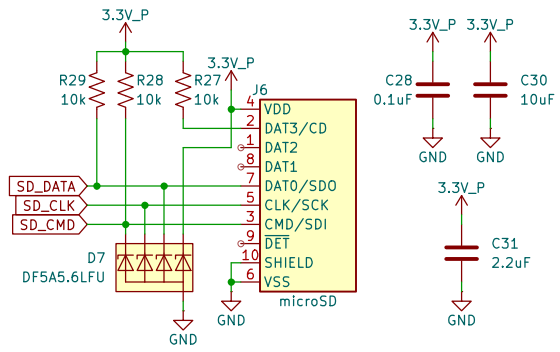


Microstrip Calculation:  
 Copper Thickness (1oz): 1.4mil/0.035mm  
 Board thickness: 1.6mm  
 Dielectric thickness (layer 1 to 2): 0.2mm  
 Er: 4.6  
 Polygon Isolation: 6mil/0.1524mm  
 RF Trace Width: 13mil/0.33mm  
<https://chemandy.com/calculators/coplanar-waveguide-with-ground-calculator.htm>

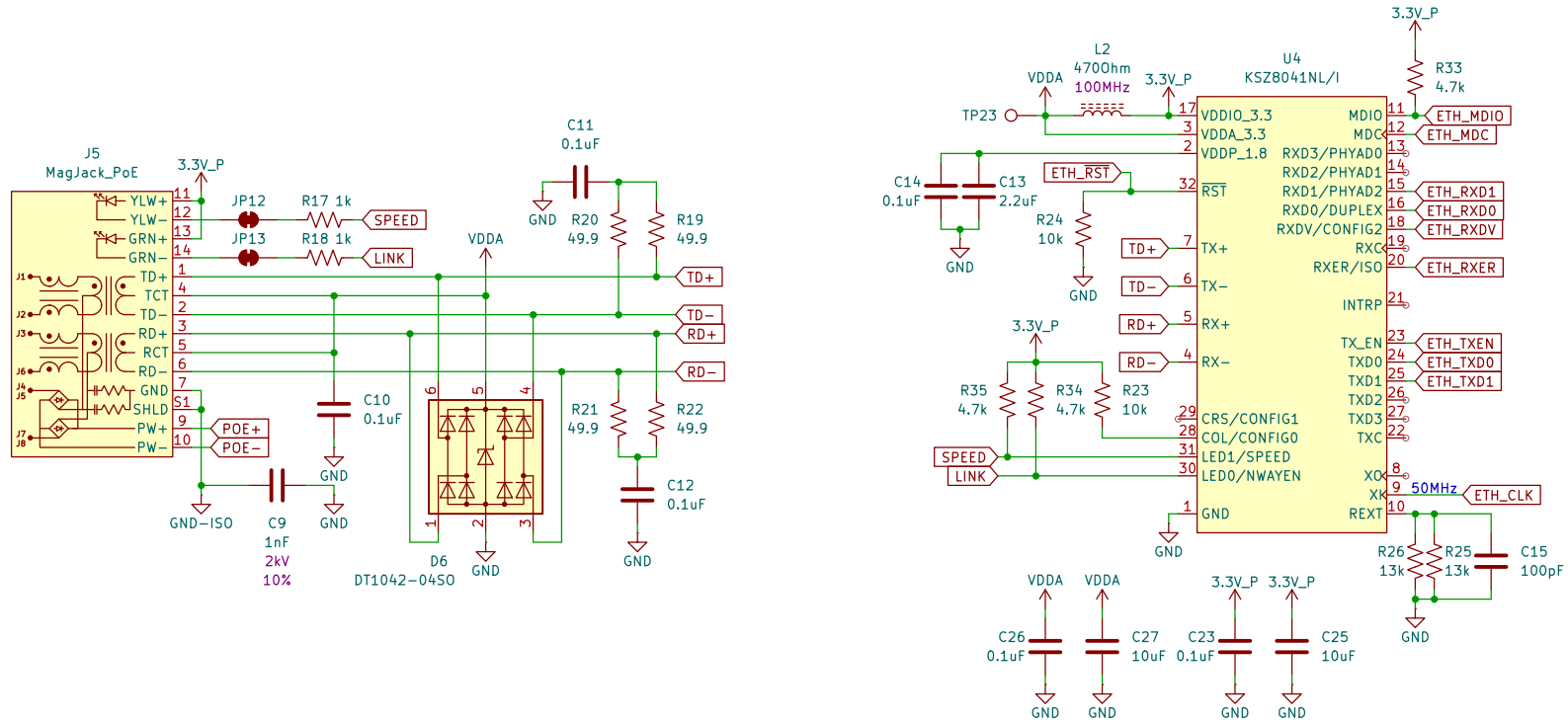
# 10MHz Oscillator



# microSD



# 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

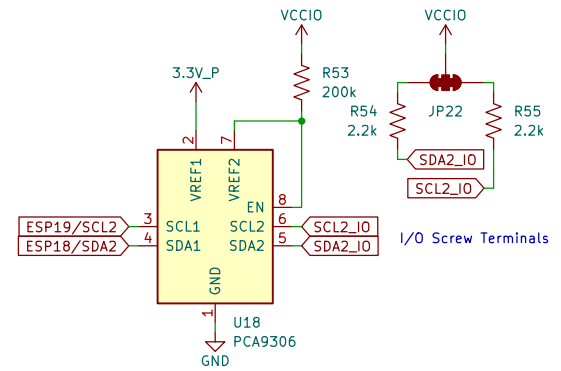
Sheet: /Ethernet/  
 File: Ethernet.kicad\_sch

**Title: Ethernet**

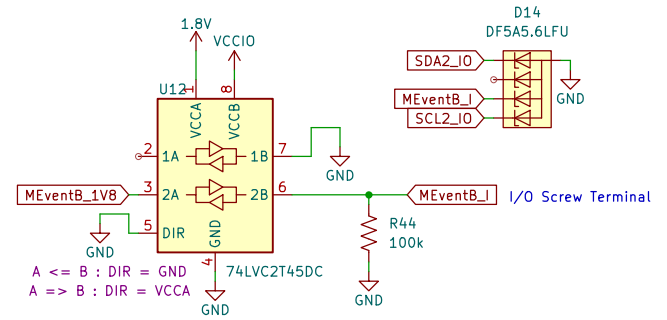
Size: USLetter Date:  
 KiCad E.D.A. 8.0.5

Rev:  
 Id: 5/7

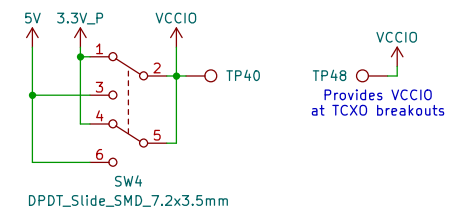
### SDA2 SCL2



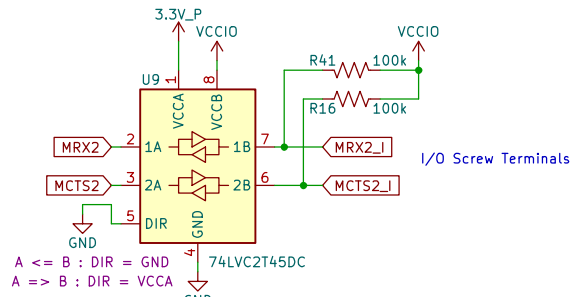
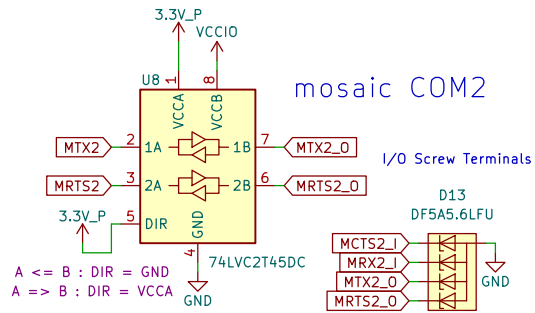
### EventB In



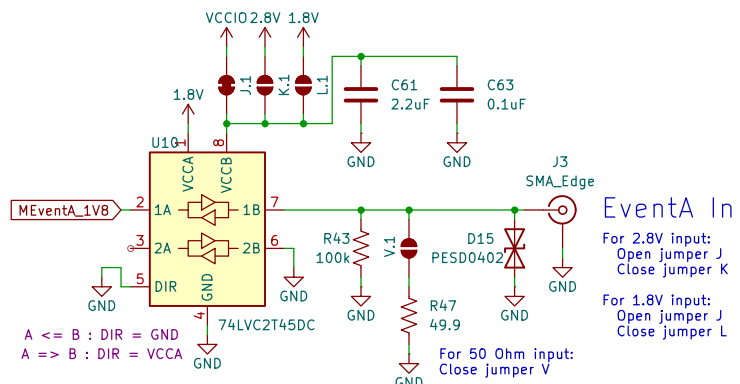
### VCCIO voltage selection



### mosaic COM2



### EventA In

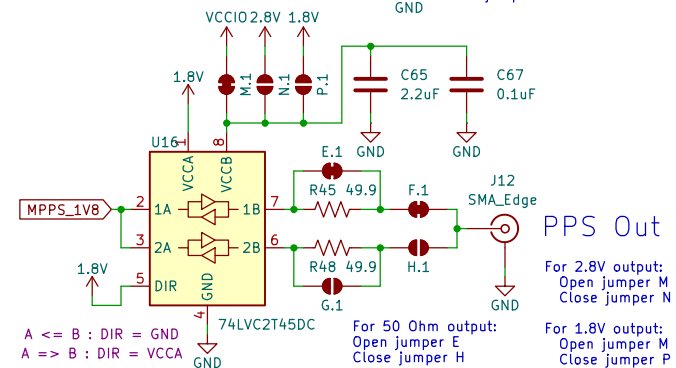


For 2.8V input:  
Open jumper J  
Close jumper K

For 1.8V input:  
Open jumper L  
Close jumper V

For 50 Ohm input:  
Close jumper V

### PPS Out



For 2.8V output:  
Open jumper M  
Close jumper N

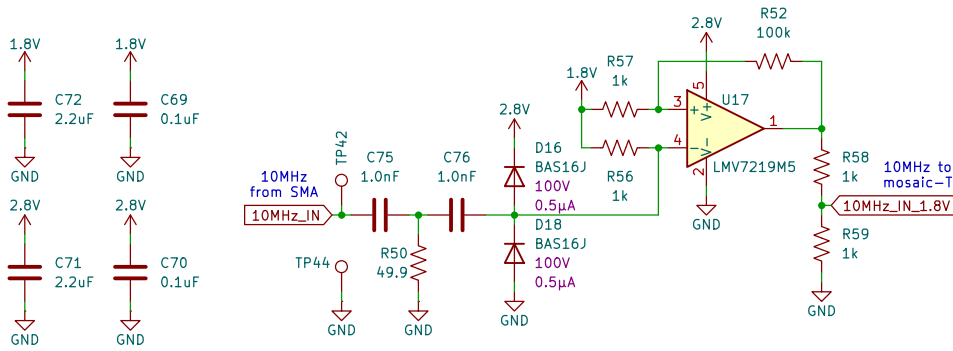
For 1.8V output:  
Open jumper E  
Close jumper P

For 50 Ohm output:  
Open jumper E  
Close jumper H

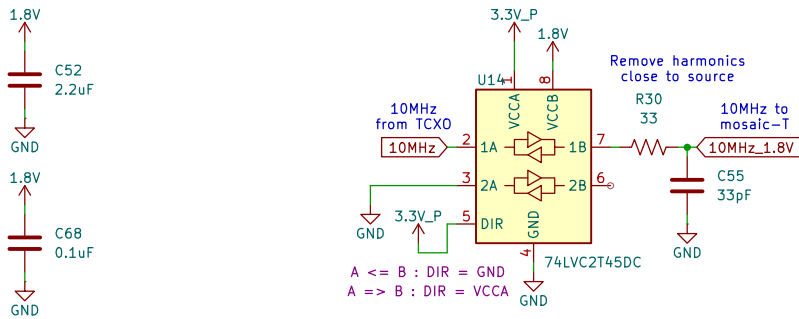
### Level-Shifting

Sheet: /LevelShifting/		Rev:	
File: LevelShifting.kicad_sch		Id: 6/7	
<b>Title: Level Shifting</b>			
Size: USLetter	Date:		
KiCad E.D.A. 8.0.5			

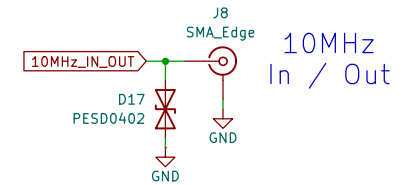
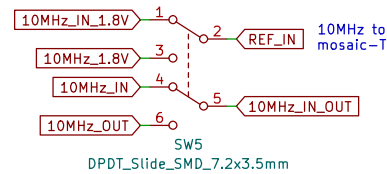
10MHz In  
 Input impedance: 50Ω  
 Detection level: -14dBm  
 Max supported level: +12dBm



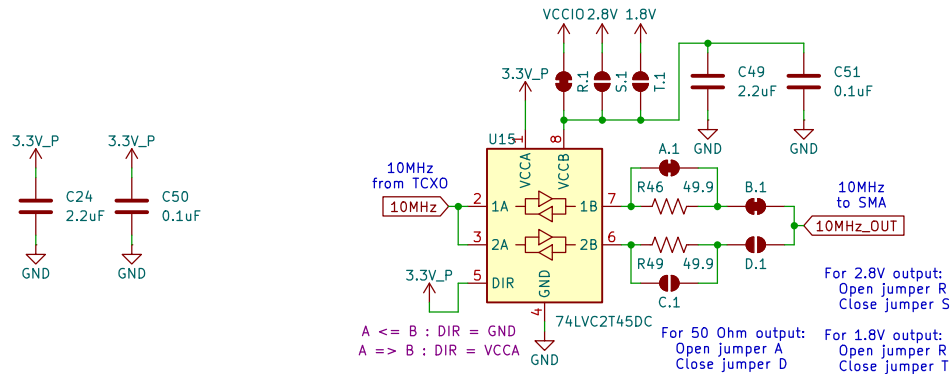
10MHz 1.8V for mosaic-T



10MHz In / Out



10MHz Out



### Level-Shifting 10MHz

Sheet: /Level\_Shifting\_10MHz/  
 File: Level\_Shifting\_10MHz.kicad\_sch  
**Title: Level Shifting 10MHz**  
 Size: USLetter Date:  
 KiCad E.D.A. 8.0.5

Rev:  
 Id: 7/7