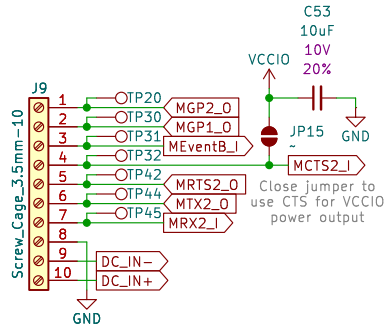
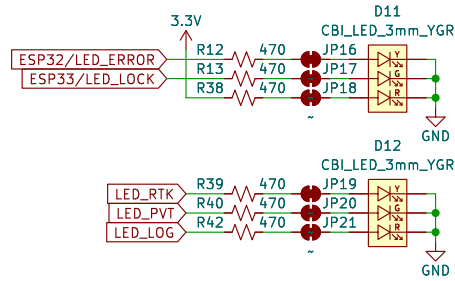


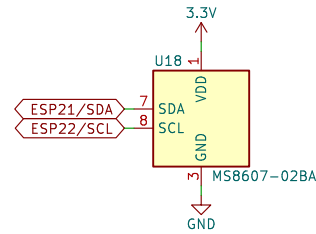
I/O Connector



LEDs

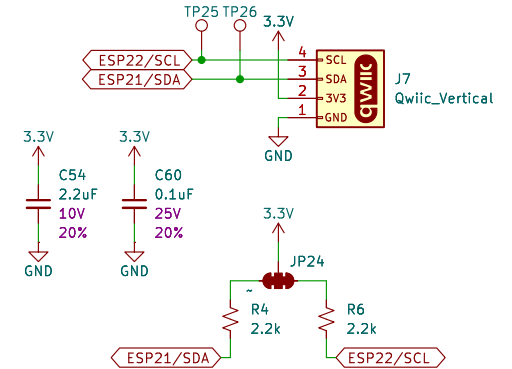


PHT Sensor – MS8607-02BA



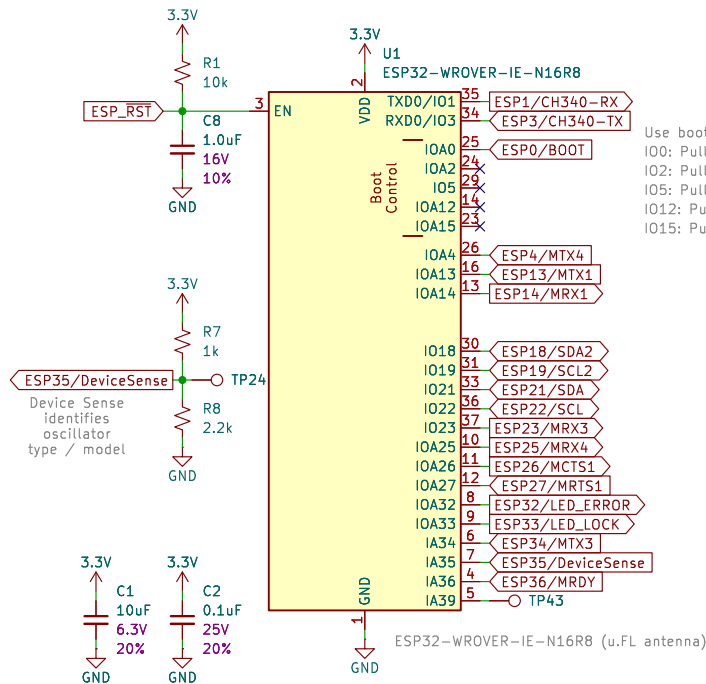
MS8607 I²C addresses:
P&T: 0x76 (unshifted)
H: 0x40 (unshifted)

Qwiic I²C (for OLED)



SSD1306 default I²C address: 0x3D (unshifted)

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
- PowerPath**
File: PowerPath.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
- Oscillator**
File: Oscillator.kicad_sch



SPARKPNT

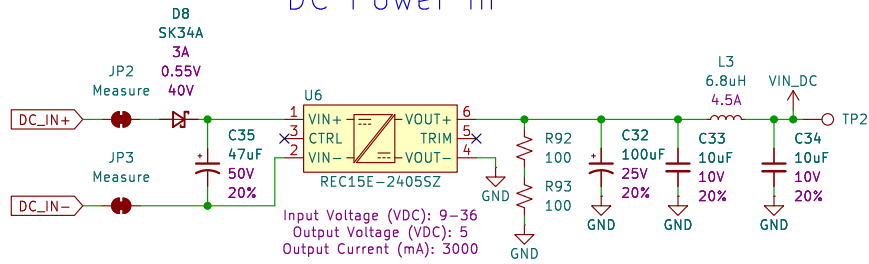
Designed by: P.C.
SparkFun Electronics
 Sheet: /
 File: SparkPNT_GNSSDO_Plus.kicad_sch

Title: GNSSDO Plus (mosaic-T, STP3593LF)

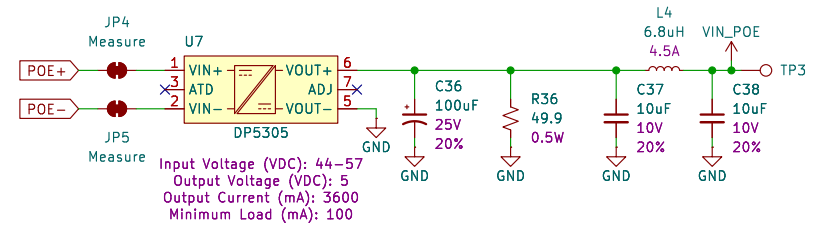
Size: USLetter Date: 2025-06-06
 KiCad E.D.A. 9.0.8

Rev: v02
 Id: 1/9

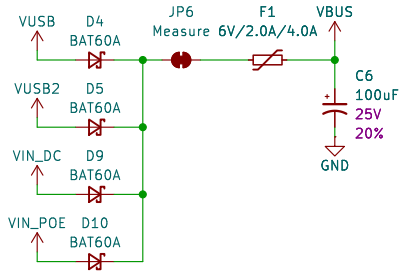
DC Power In



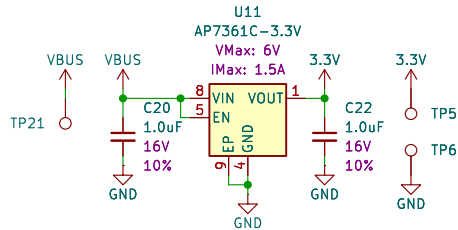
Power Over Ethernet



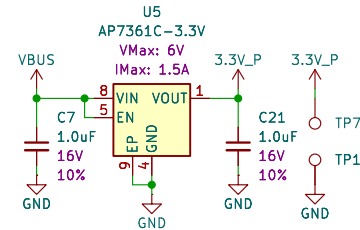
Power Mux



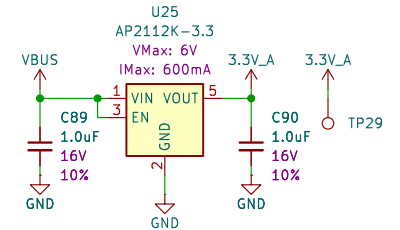
Main 3.3V



Peripheral 3.3V



Analog 3.3V



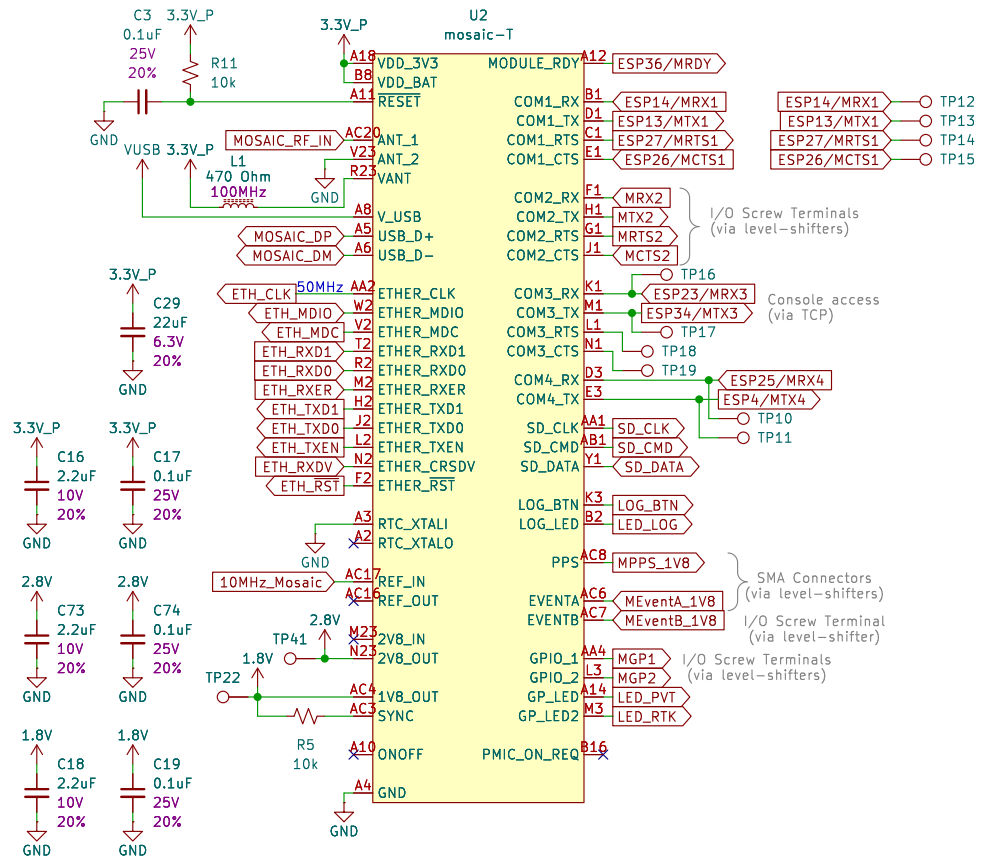
Sheet: /Power/
 File: Power.kicad_sch

Title: GNSSDO Plus - Power

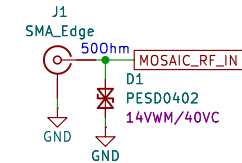
Size: USLetter Date:
 KiCad E.D.A. 9.0.8

Rev:
 Id: 2/9

mosaic Tri-band GNSS

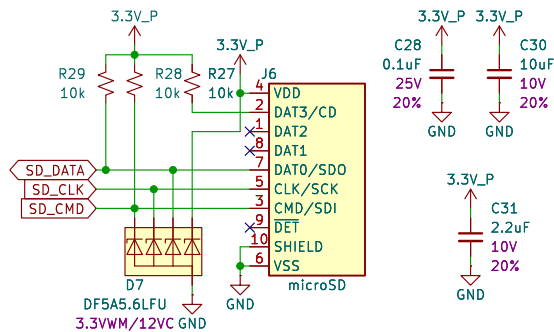


GNSS Antenna



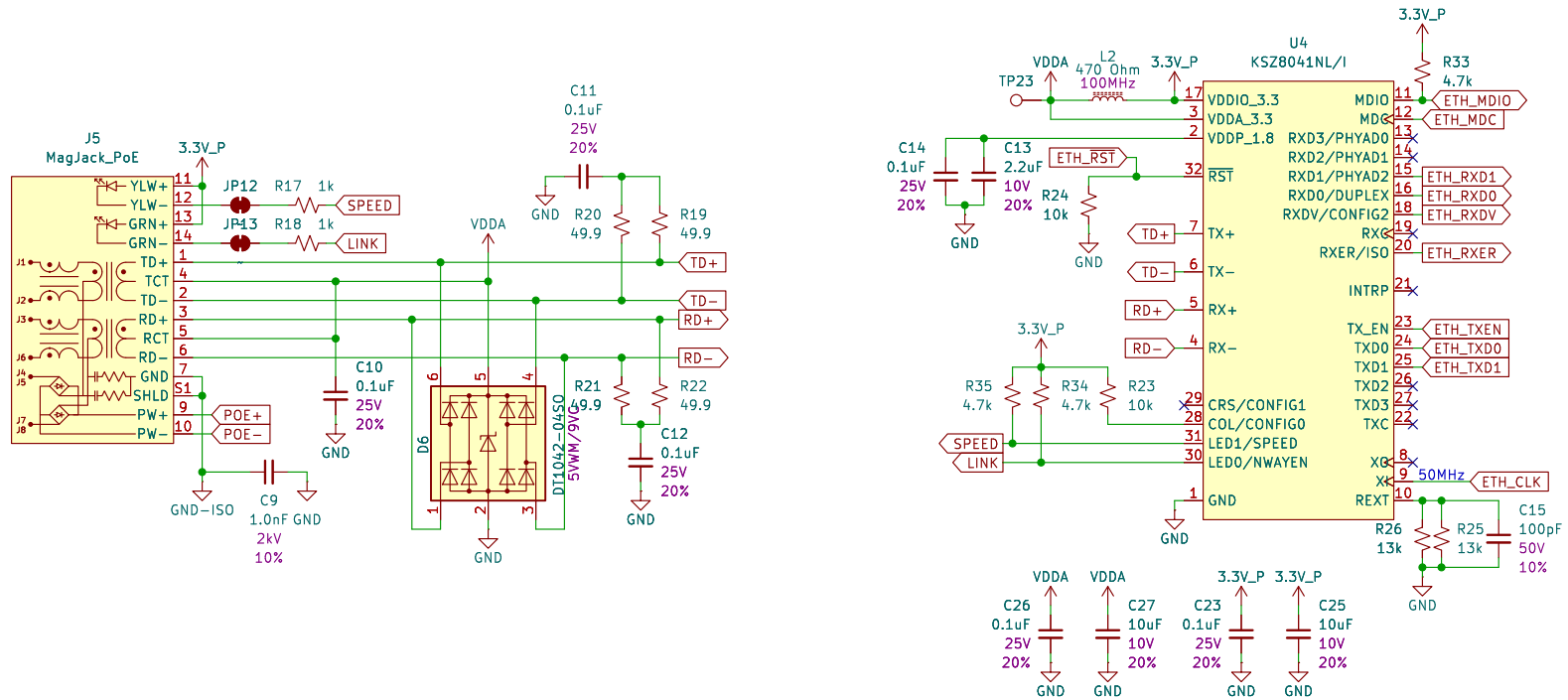
Microstrip Calculation:
 Copper Thickness (1oz): 1.4mil/0.035mm
 Board thickness: 1.6mm
 Dielectric thickness (layer 1 to 2): 0.2mm
 Er: 4.6
 Polygon Isolation: 6mil/0.1524mm
 RF Trace Width: 13mil/0.33mm
<https://chemandy.com/calculators/coplanar-waveguide-with-ground-calculator.htm>

microSD



Sheet: /GNSS/	
File: GNSS.kicad_sch	
Title: GNSSDO Plus - GNSS	
Size: USLetter	Date:
KiCad E.D.A. 9.0.8	Rev:
	Id: 4/9

Ethernet



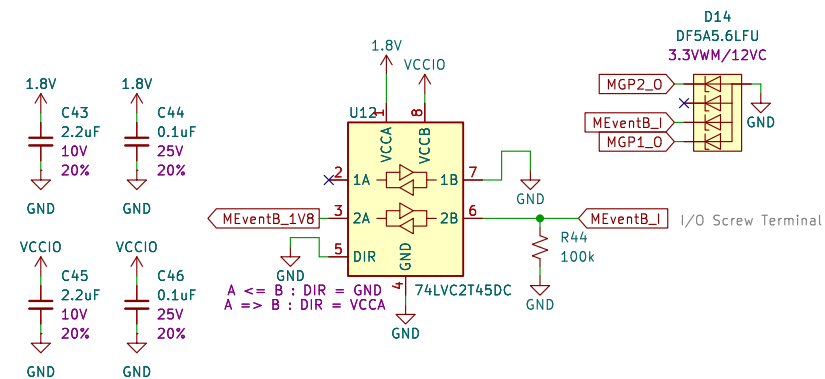
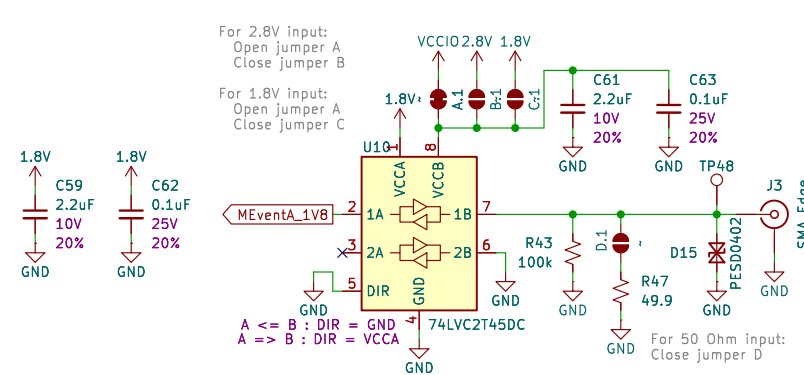
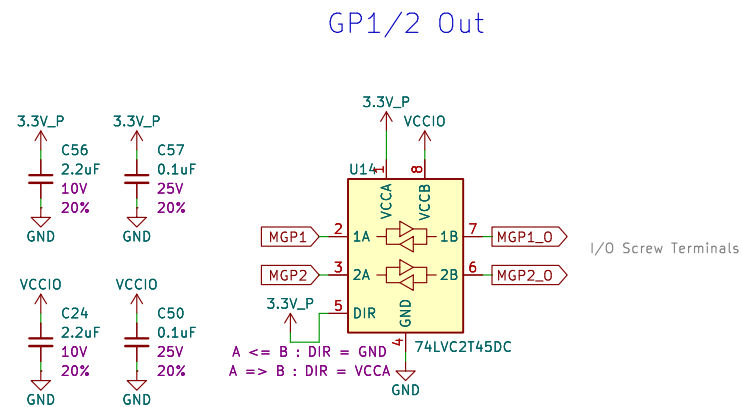
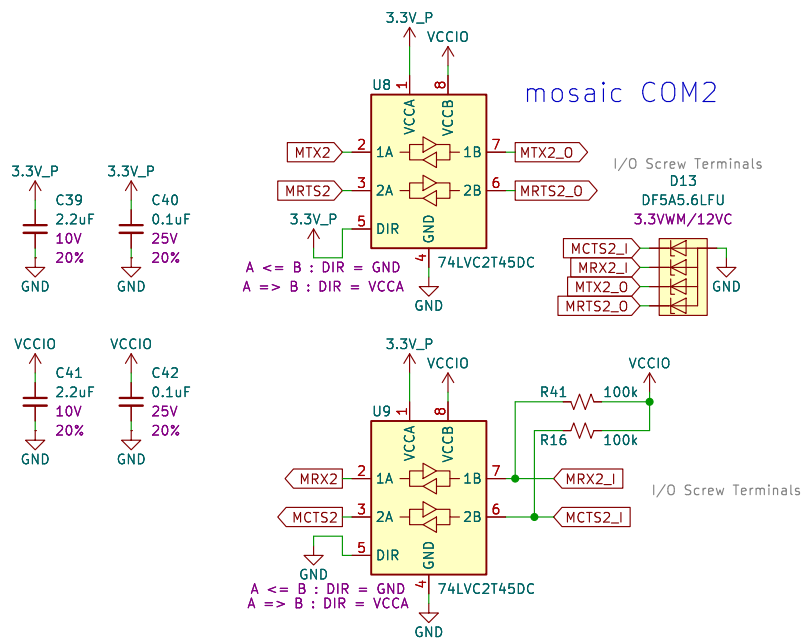
Ethernet Track Impedance: Differential Pair
<https://saturnpcb.com/saturn-pcb-toolkit/>
 Prepreg thickness: 8.3 mil (JLC7628), Er = 4.6
 9.0 mil track with 11.0 mil gap (20 mil center to center) = 100 Ohms
 Each pair should match in length to better than 0.5mm

Sheet: /Ethernet/
 File: Ethernet.kicad_sch

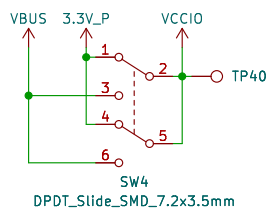
Title: GNSSDO Plus - Ethernet

Size: USLetter Date:
 KiCad E.D.A. 9.0.8

Rev:
 Id: 5/9



VCCIO voltage selection

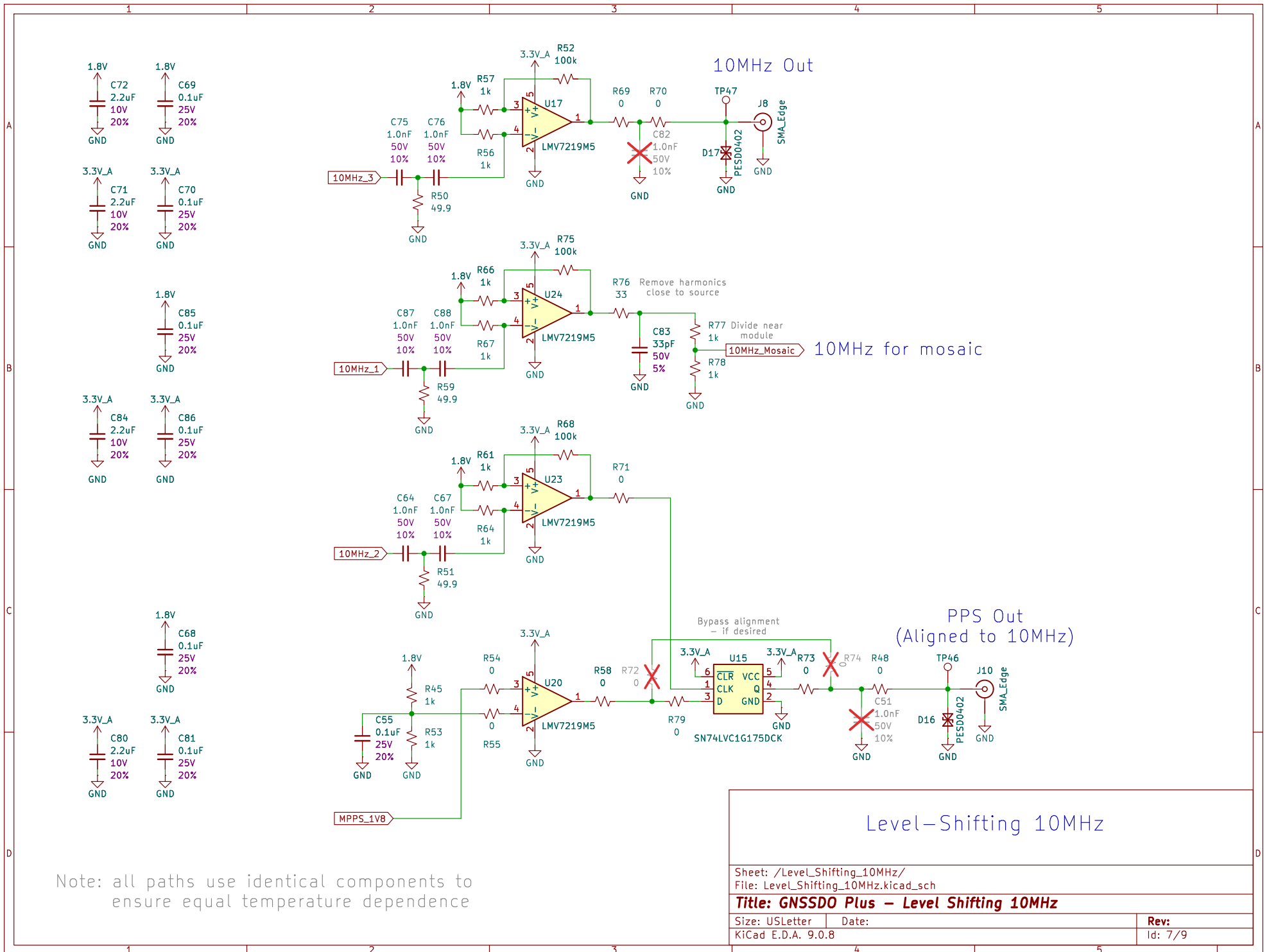


Sheet: /Level_Shifting/
File: Level_Shifting.kicad_sch

Title: GNSSDO Plus - Level Shifting

Size: USLetter Date:
KiCad E.D.A. 9.0.8

Rev:
Id: 6/9

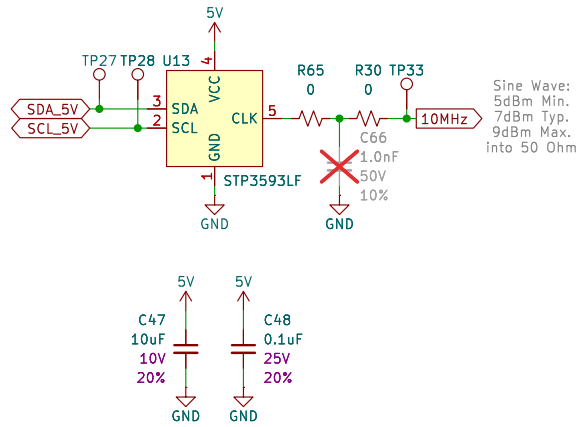


Note: all paths use identical components to ensure equal temperature dependence

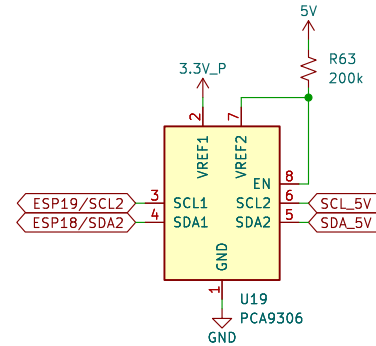
Level-Shifting 10MHz	
Sheet: /Level_Shifting_10MHz/	
File: Level_Shifting_10MHz.kicad_sch	
Title: GNSSDO Plus - Level Shifting 10MHz	
Size: USLetter	Date:
KiCad E.D.A. 9.0.8	Rev:
	Id: 7/9

10MHz Oscillator – STP3593LF

Supply Voltage: 5.0V (4.75V Min., 5.25V Max.)
 Current Consumption: 1500mA (Warm Up), 600mA (Steady State)

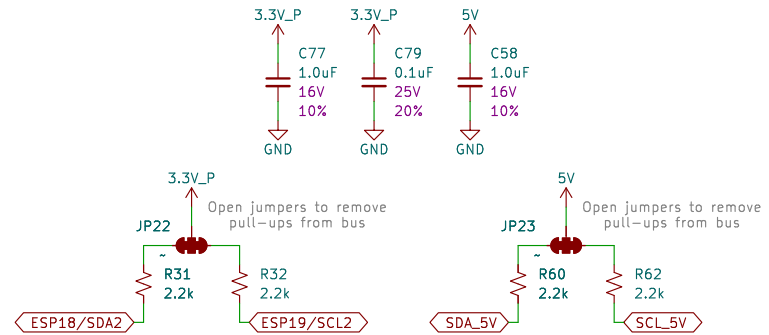
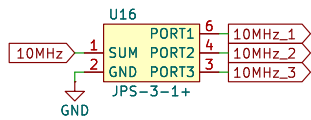


I²C Level Shifting – PCA9306



3-Way Splitter – JPS-3-1+

Typical Total Loss: 5.0dB at 10MHz

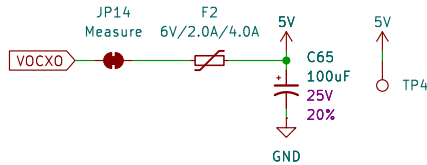
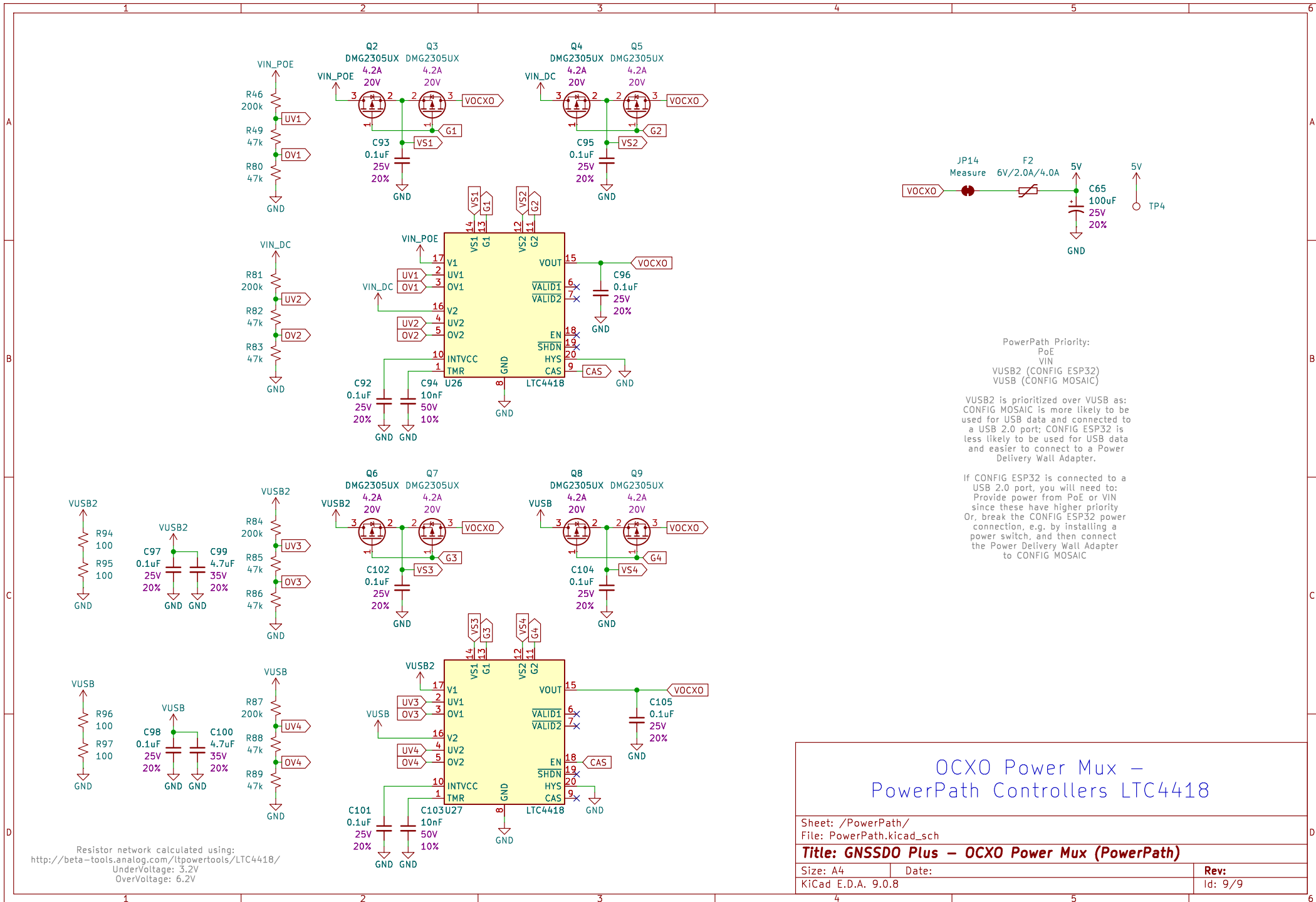


Sheet: /Oscillator/
 File: Oscillator.kicad_sch

Title: GNSSDO Plus – Oscillator

Size: A4 Date:
 KiCad E.D.A. 9.0.8

Rev:
 Id: 8/9



PowerPath Priority:
 PoE
 VIN
 VUSB2 (CONFIG ESP32)
 VUSB (CONFIG MOSAIC)

VUSB2 is prioritized over VUSB as:
 CONFIG MOSAIC is more likely to be used for USB data and connected to a USB 2.0 port; CONFIG ESP32 is less likely to be used for USB data and easier to connect to a Power Delivery Wall Adapter.

If CONFIG ESP32 is connected to a USB 2.0 port, you will need to:
 Provide power from PoE or VIN since these have higher priority
 Or, break the CONFIG ESP32 power connection, e.g. by installing a power switch, and then connect the Power Delivery Wall Adapter to CONFIG MOSAIC

OXC0 Power Mux – PowerPath Controllers LTC4418

Sheet: /PowerPath/		File: PowerPath.kicad_sch	
Title: GNSSDO Plus – OXC0 Power Mux (PowerPath)			
Size: A4	Date:	Rev:	
KiCad E.D.A. 9.0.8		Id: 9/9	