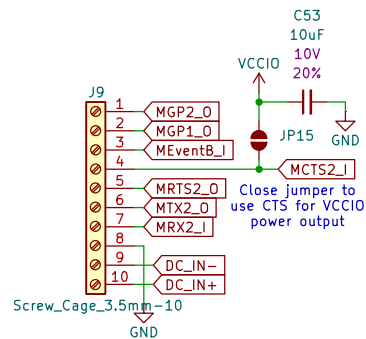
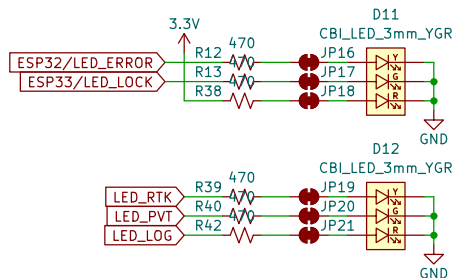


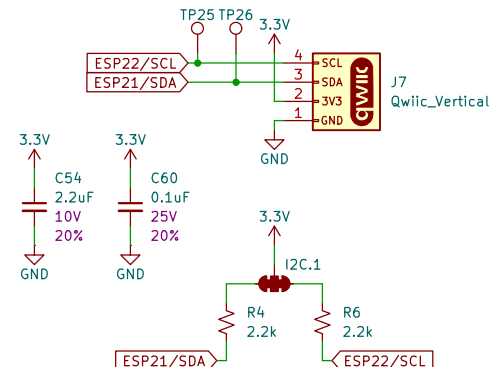
I/O Connector



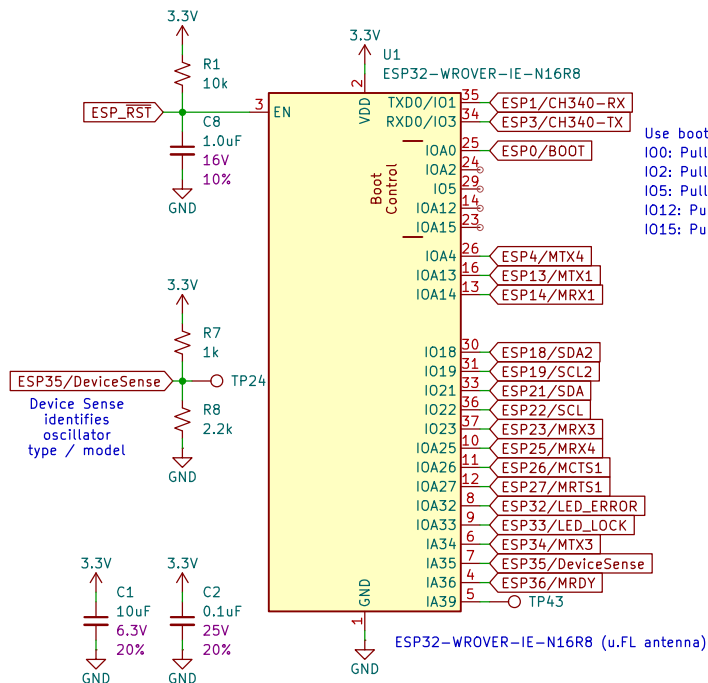
LEDs



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. 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

Oscillator

File: Oscillator.kicad_sch



SPARKPNT



Designed by: P.C.

Sheet: /

File: SparkPNT_GNSSDO_Plus.kicad_sch

Title: GNSSDO Plus (mosaic-T, STP3593LF)

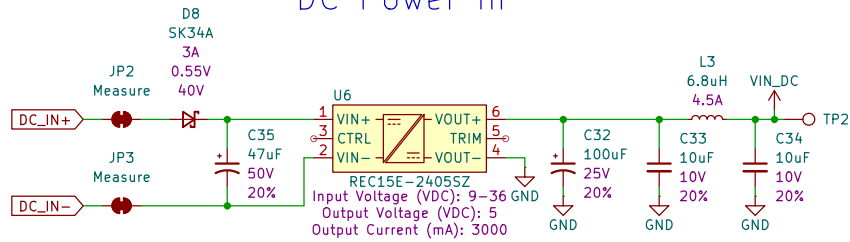
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KiCad E.D.A. 8.0.7

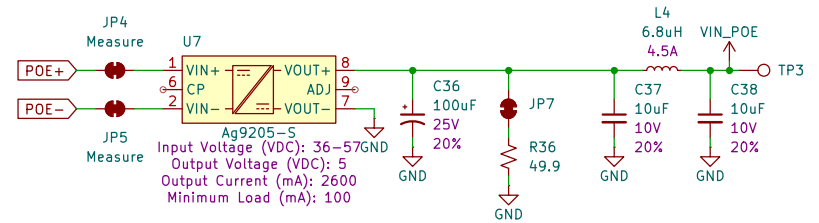
Rev: v10

Id: 1/8

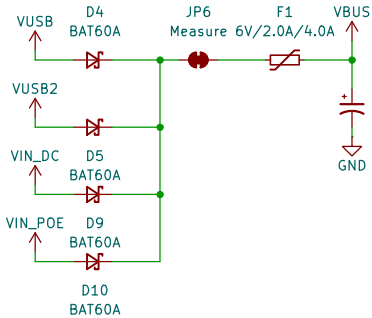
DC Power In



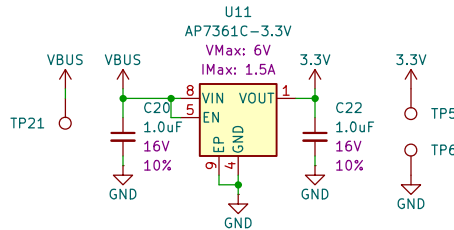
Power Over Ethernet



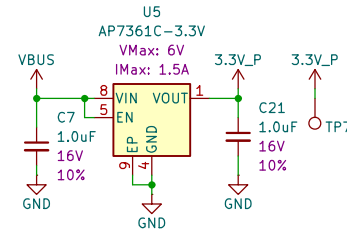
Power Mux



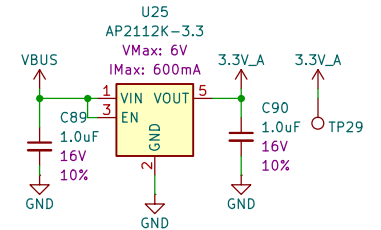
Main 3.3V



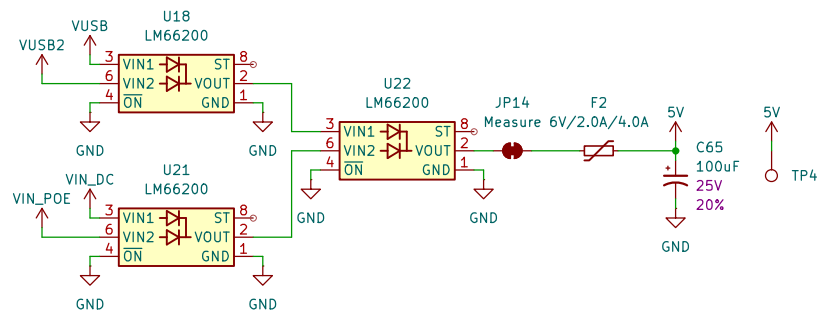
Peripheral 3.3V



Analog 3.3V



OCX0 Power Mux



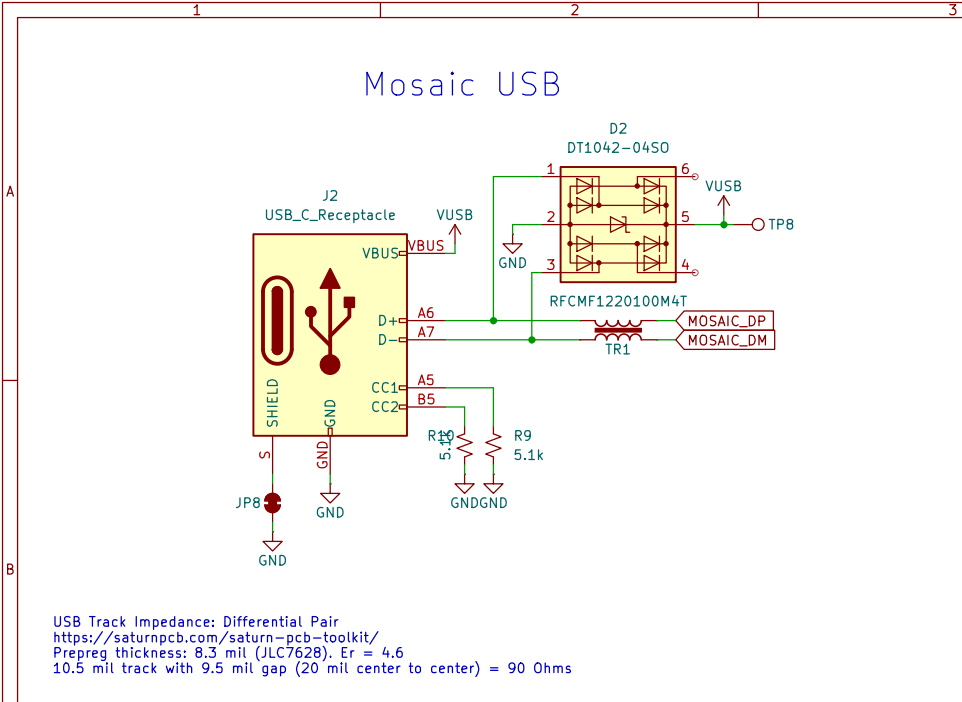
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Title: Power

Size: USLetter Date:

KiCad E.D.A. 8.0.7

Rev:
Id: 2/8

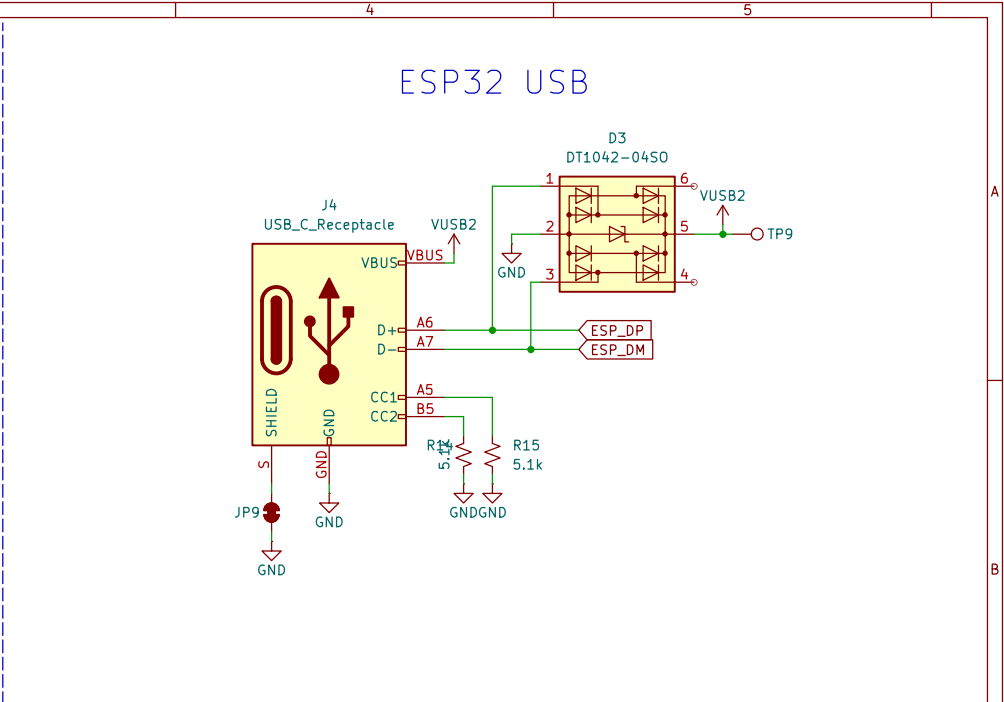
[illegible]

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

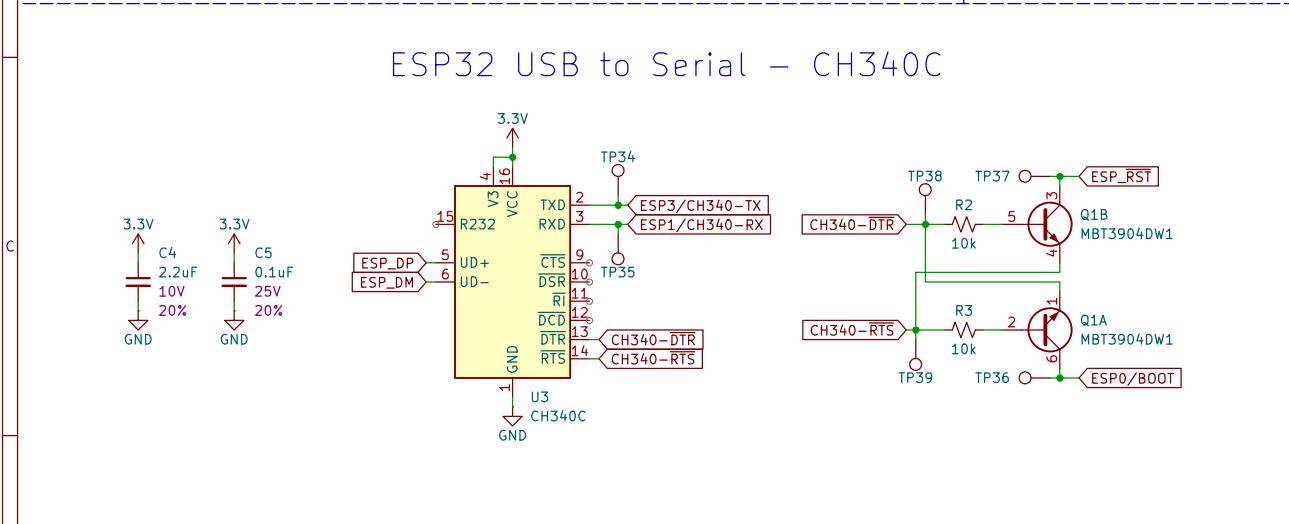
ESP32 USB

The diagram illustrates the USB interface for the ESP32. It features a USB-C receptacle (J4) connected to a USB-to-UART bridge (D3, DT1042-0450). The bridge's VBUS pin (1) is connected to the receptacle's VBUS pin (VBUS) and a 5V source (JP9). Its GND pin (3) is connected to the receptacle's GND pin (GND) and ground. Its D+ pin (2) is connected to the receptacle's D+ pin (A6) and the ESP32's DP pin (ESP_DP). Its D- pin (4) is connected to the receptacle's D- pin (A7) and the ESP32's DM pin (ESP_DM). The bridge's 5V pin (5) is connected to a 5.1k resistor (R15) and ground. The receptacle's SHIELD pin (CC1) is connected to a 5.1k resistor (R14) and ground. The receptacle's GND pin (CC2) is connected to ground. The ESP32's DP pin (ESP_DP) is connected to the bridge's D+ pin (2) and the ESP32's DP pin (ESP_DP). The ESP32's DM pin (ESP_DM) is connected to the bridge's D- pin (4) and the ESP32's DM pin (ESP_DM).



ESP32 USB to Serial – CH340C

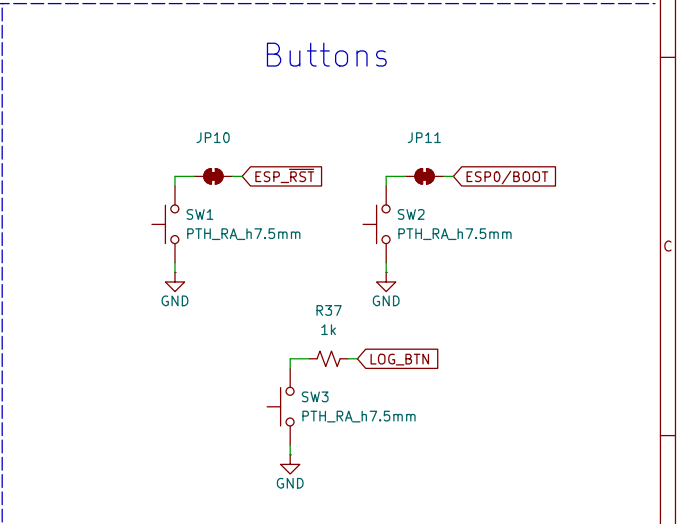
The diagram illustrates the wiring for an ESP32 USB to Serial module using a CH340C chip. The power supply section shows two 3.3V regulators (C4 and C5) connected to the CH340C chip. The CH340C chip is connected to the ESP32's VCC, GND, and various control pins (ESP_DP, ESP_DM, ESP_RST, ESP0/BOOT). The CH340C's TXD and RXD pins are connected to the ESP32's TX and RX pins. The CH340C's DTR and RTS pins are connected to the ESP32's DTR and RTS pins. The CH340C's CH340-DTR and CH340-RTS pins are connected to the ESP32's CH340-DTR and CH340-RTS pins. The CH340C's CH340-TX and CH340-RX pins are connected to the ESP32's CH340-TX and CH340-RX pins. The CH340C's CH340-RST and CH340-RTS pins are connected to the ESP32's CH340-RST and CH340-RTS pins. The CH340C's CH340-RTS and CH340-RST pins are connected to the ESP32's CH340-RTS and CH340-RST pins. The CH340C's CH340-RTS and CH340-RST pins are connected to the ESP32's CH340-RTS and CH340-RST pins.



Buttons

The image shows three separate circuit diagrams for push buttons, labeled JP10, JP11, and R37. Each diagram consists of a green line representing a wire, a red switch symbol, and a red label box.

- JP10:** A green wire connects a red switch symbol (SW1) to a red label box labeled "ESP_RST". The switch is also connected to a red label box labeled "PTH_RA_h7.5mm". The other terminal of the switch is connected to a red triangle symbol labeled "GND".
- JP11:** A green wire connects a red switch symbol (SW2) to a red label box labeled "ESP0/BOOT". The switch is also connected to a red label box labeled "PTH_RA_h7.5mm". The other terminal of the switch is connected to a red triangle symbol labeled "GND".
- R37:** A green wire connects a red switch symbol (SW3) to a red label box labeled "LOG_BTN". The switch is also connected to a red label box labeled "PTH_RA_h7.5mm". The other terminal of the switch is connected to a red triangle symbol labeled "GND".



Sheet: /USB/	
File: USB.kicad_sch	
Title: USB	
Size: USLetter	Date:
KiCad E.D.A. 8.0.7	Id: 3/8

[illegible]

GNSS Antenna

J1
SMA_Edge
500ohm
MOSAIC_RF_IN
D1
PESD0402
GND
GND

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

3.3V_P

R29 10k

R28 10k

R27 10k

3.3V_P

3.3V_P

J6

4 VDD

2 DAT3/CD

1 DAT2

8 DAT1

7 DAT0/SDO

5 CLK/SCK

3 CMD/SDI

9 DET

10 SHIELD

6 VSS

microSD

SD_DATA

SD_CLK

SD_CMD

D7

DF5A5.6LFU

GND

GND

3.3V_P

3.3V_P

C28 0.1uF 25V 20%

GND

GND

C30 10uF 10V 20%

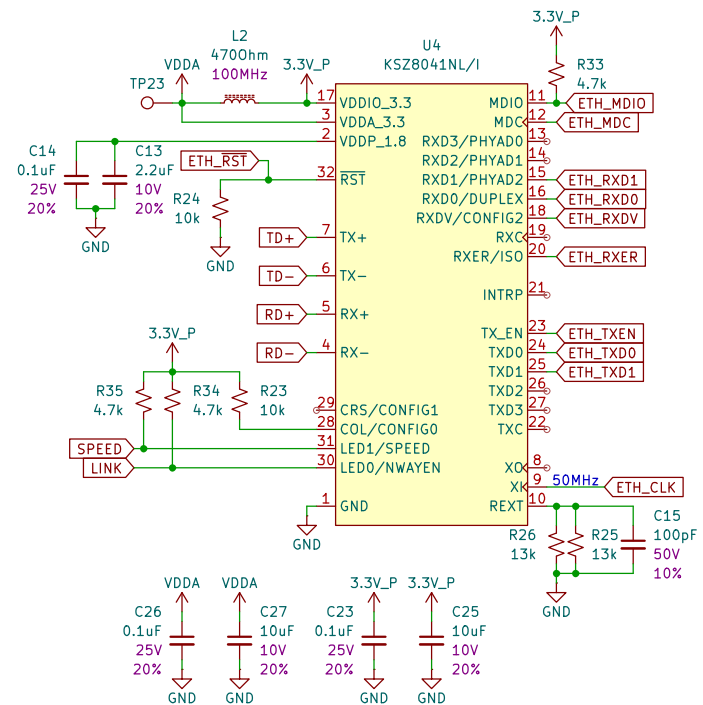
3.3V_P

C31 2.2uF 10V 20%

GND

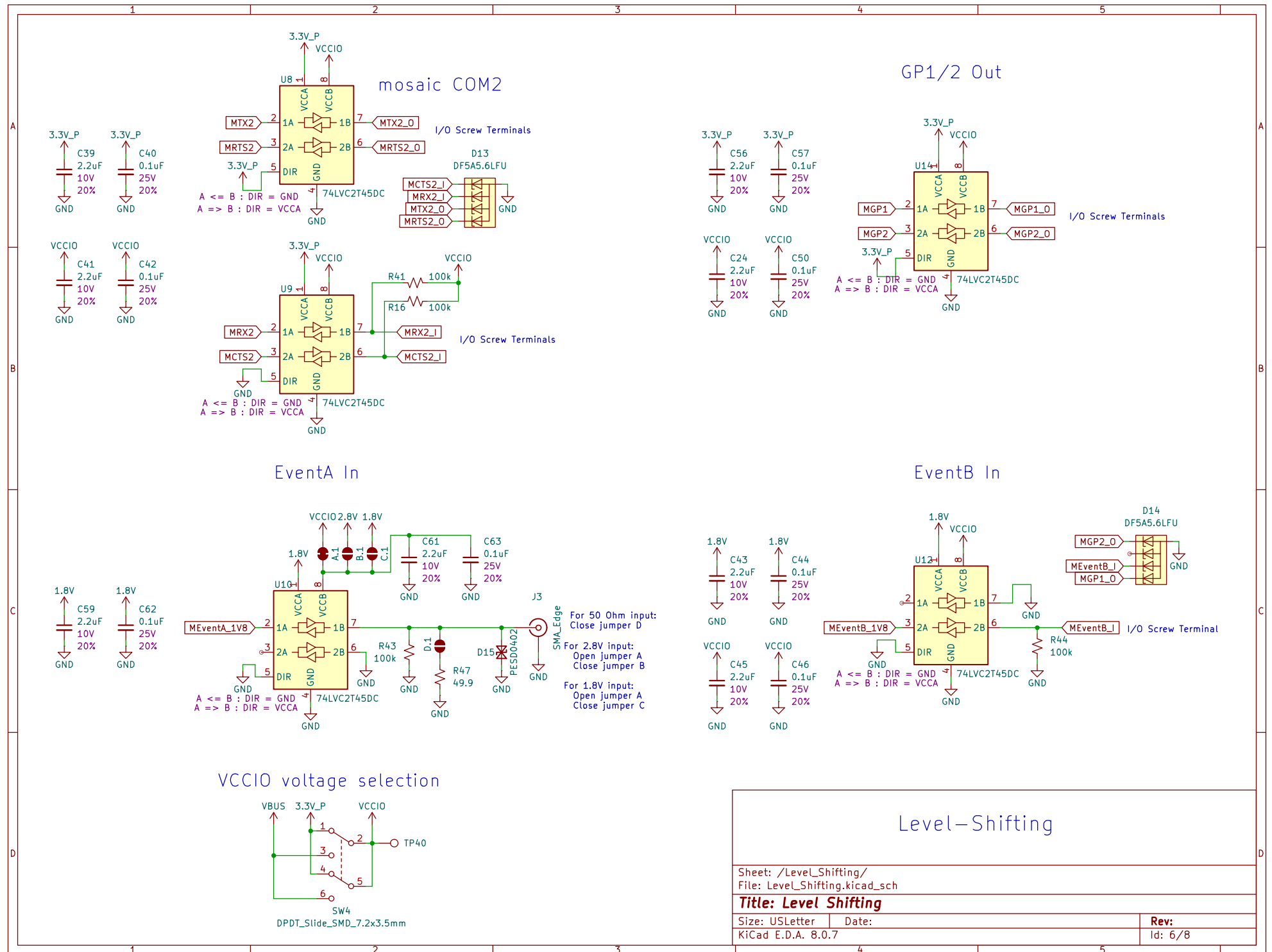
Size: USLetter	Date:	Rev:
KiCad E.D.A. 8.0.7		Id: 4/8

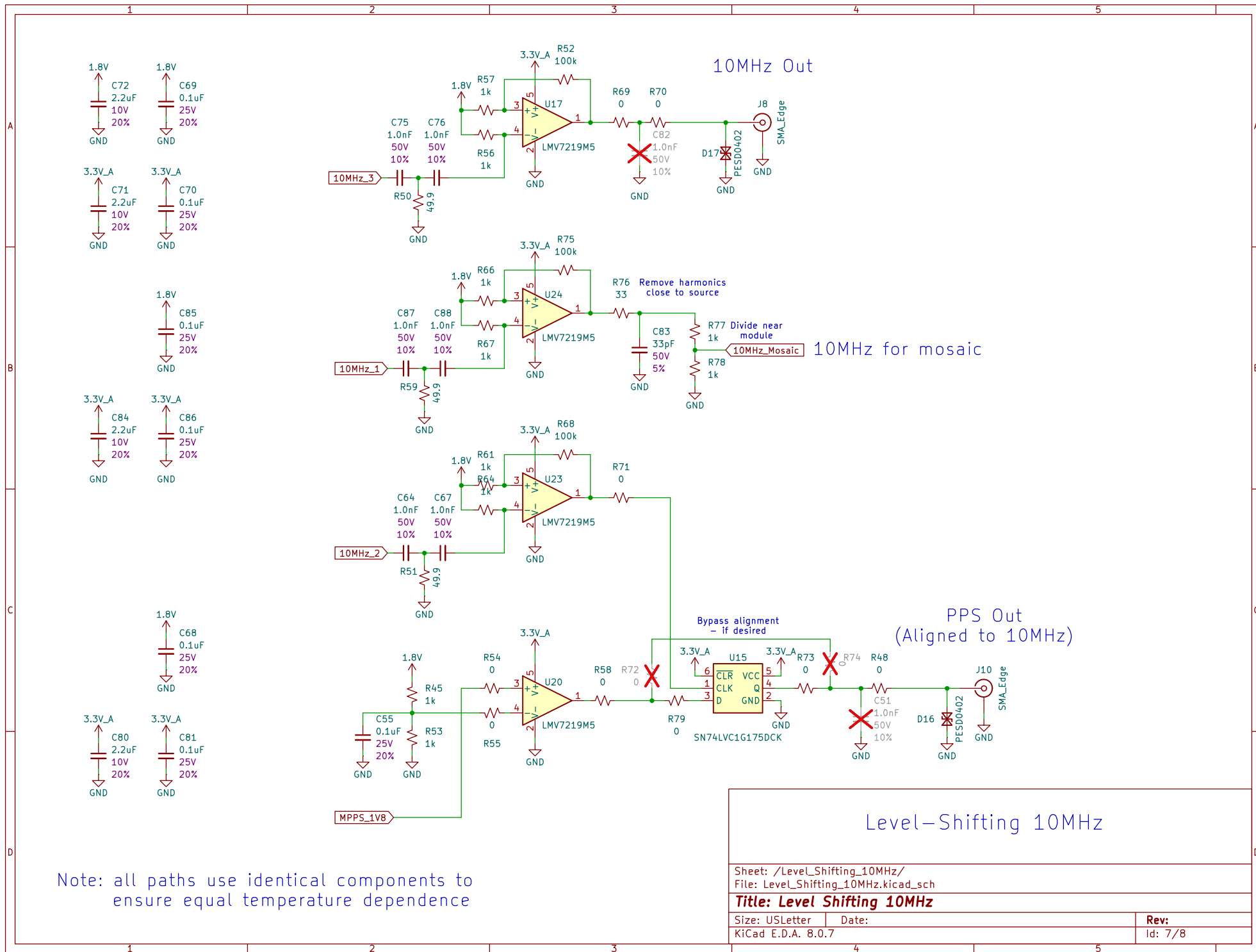
Ethernet Track Impedance: Differential Pair
<https://saturnpcb.com/saturn-pcb-toolkit/>
 Prepreg thickness: 8.3 mil (JLC7628). Er = 4.6
 9.0 mil track with 11.0 mil gap (20 mil center to center) = 100 Ohms
 Each pair should match in length to better than 0.5mm



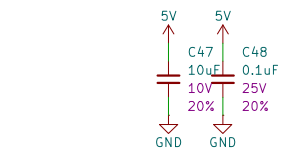
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KiCad E.D.A. 8.0.7	

Rev:
Id: 5/8

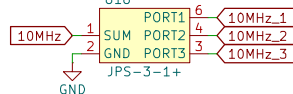




Supply Voltage: 5.0V (4.75V Min., 5.25V Max.)
Current Consumption: 1500mA (Warm Up), 600mA (Steady State)



Typical Total Loss: 5.0dB at 10MHz



I2C Level Shifting – PCA9306

