

Screw_Cage_3.5mm-10

1 SDA2_I/O

2 SCL2_I/O

3 MEVENTB_I

4 MCTS2_I

5 MRTS2_O

6 MTX2_O

7 MRX2_I

8

9 DC_IN-

10 DC_IN+

VCCIO

C53 10µF

JP15

GND

MCTS2_I

Close jumper to use CTS for VCCIO power output

The diagram illustrates the connection of two LED modules, D11 and D12, to the ESP32. Module D11 is connected to the ESP32's LED_ERROR and LED_LOCK pins, and a 3.3V supply. Module D12 is connected to the LED_RT_K, LED_PVT, and LED_LOG pins. Both modules are connected to a common ground (GND). The connections are as follows:

- Module D11:**
 - ESP32/LED_ERROR (Red) to R12 (470Ω)
 - ESP32/LED_LOCK (Red) to R13 (470Ω)
 - 3.3V supply to R18 (470Ω)
 - R12, R13, and R18 are connected to the Y pin of D11.
 - D11 is connected to JP16, JP17, and JP18.
 - D11 is connected to GND.
- Module D12:**
 - LED_RT_K (Red) to R39 (470Ω)
 - LED_PVT (Red) to R40 (470Ω)
 - LED_LOG (Red) to R42 (470Ω)
 - R39, R40, and R42 are connected to the Y pin of D12.
 - D12 is connected to JP19, JP20, and JP21.
 - D12 is connected to GND.

ESP32-WROVER-IE-N16R8 (u.FL antenna)

ESP32-WROVER-IE-N16R8

ESP1/CH340-RX

ESP3/CH340-TX

ESP0/BOOT

ESP4/MTX4

ESP13/MTX1

ESP14/MRX1

ESP18/SDA2

ESP19/SCL2

ESP21/SDA

ESP22/SCL

ESP23/MRX3

ESP25/MRX4

ESP26/MCTS1

ESP27/MRTS1

ESP32/LED_ERROR

ESP33/LED_LOCK

ESP34/MTX3

ESP35/DeviceSense

ESP36/MRDY

ESP_RST

EN

TP1

R1 10k

C8 1.0uF

GND

3.3V

TP24

R7 1k

R8 1k

GND

3.3V

C1 10uF

C2 0.1uF

GND

3.3V

GND

TP43

Device Sense identifies oscillator type / model

Use boot

I00: Pull

I02: Pull

I05: Pull

I012: Pu

I015: Pu

Power

USB

GNSS

Ether

Level

File: Level_Sh

Level_Shifting_10MHz

File: LevelShifting_10MHz.kicad_sch

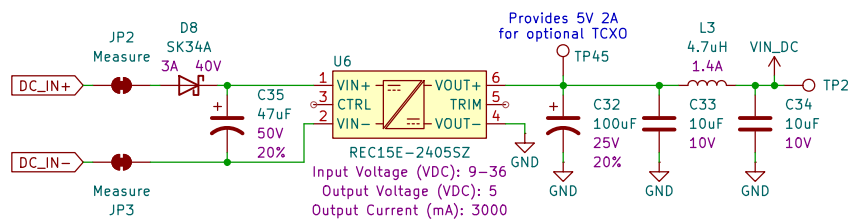


SPARK PNT

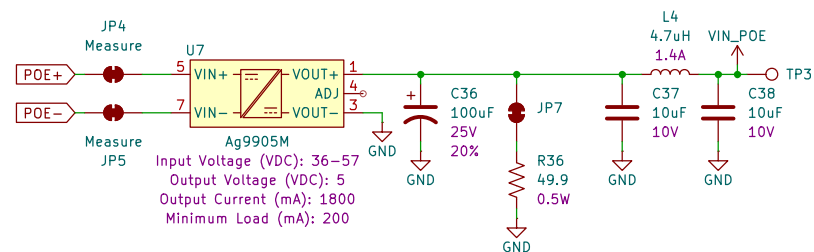
Title: GPSDO (mosaic-T, SiT5358)

Rev: v10
Id: 1/7

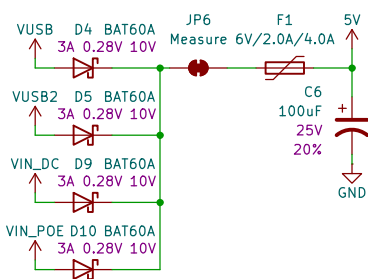
DC Power In



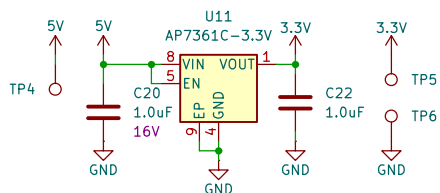
Power Over Ethernet



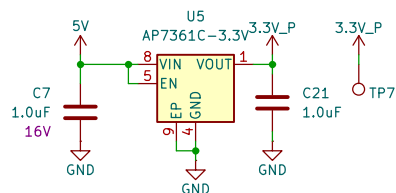
Power Mux



Main 3.3V



Peripheral 3.3V



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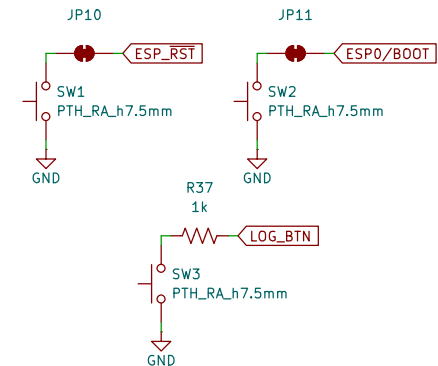
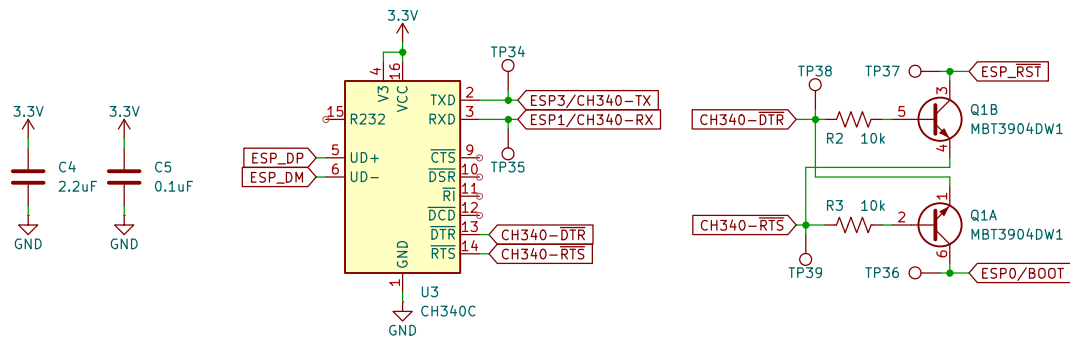
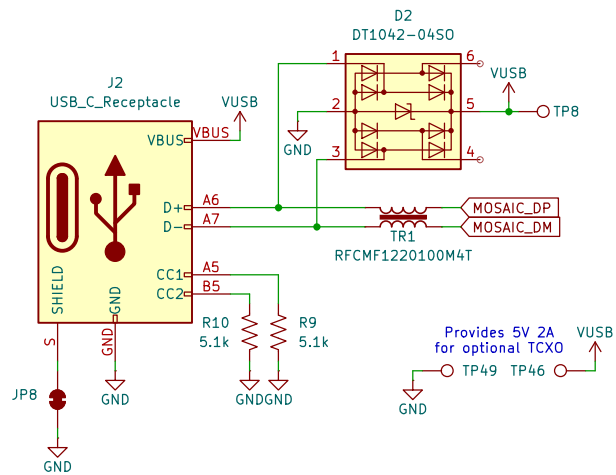
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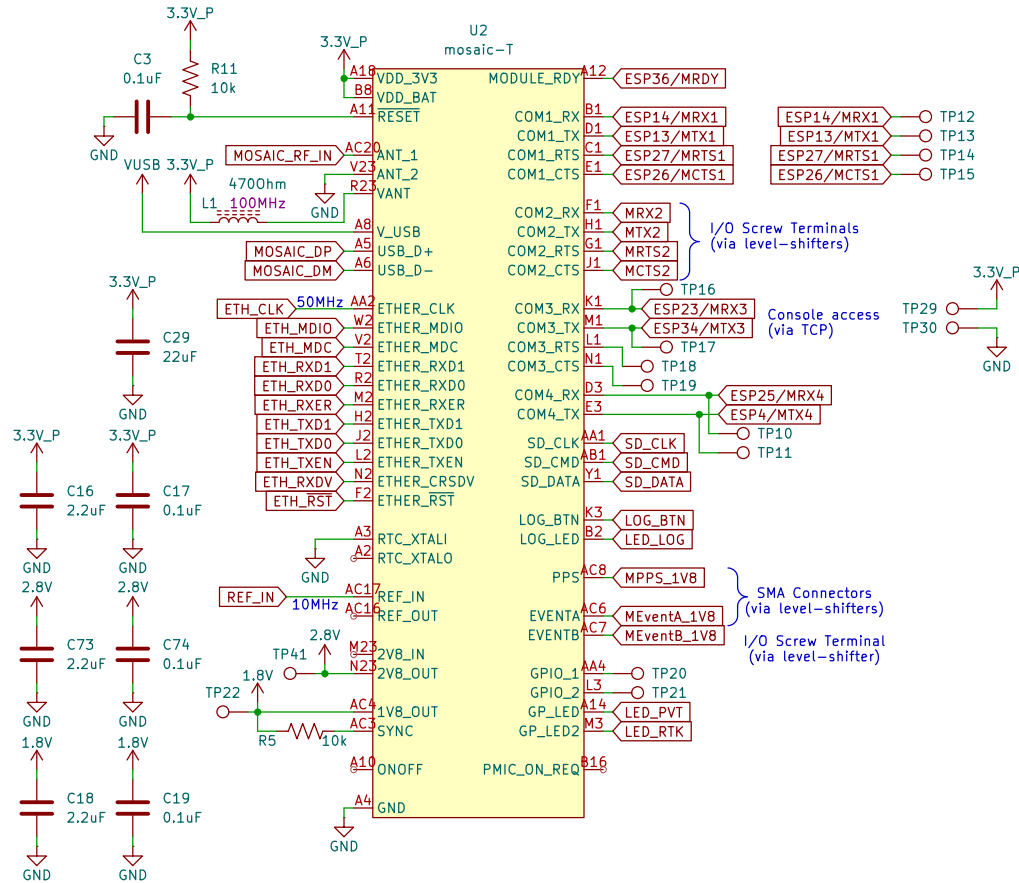
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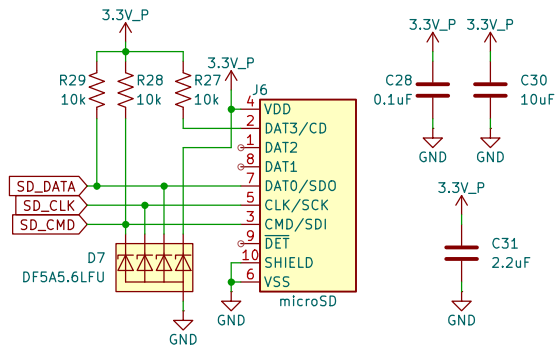


Rev:
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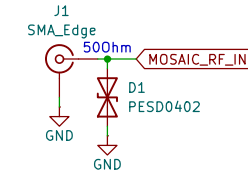
mosaic Tri-band GNSS



microSD

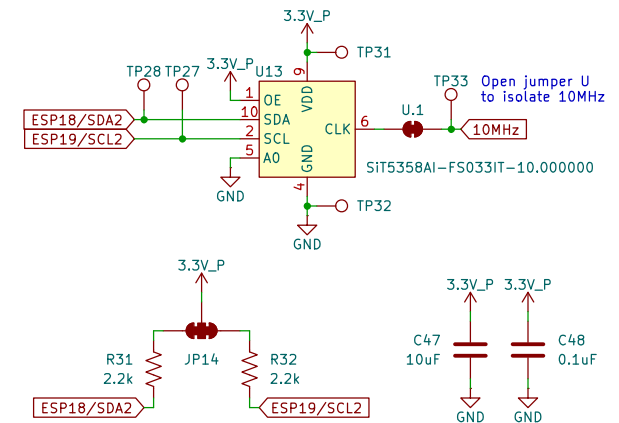


GNSS Antenna



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



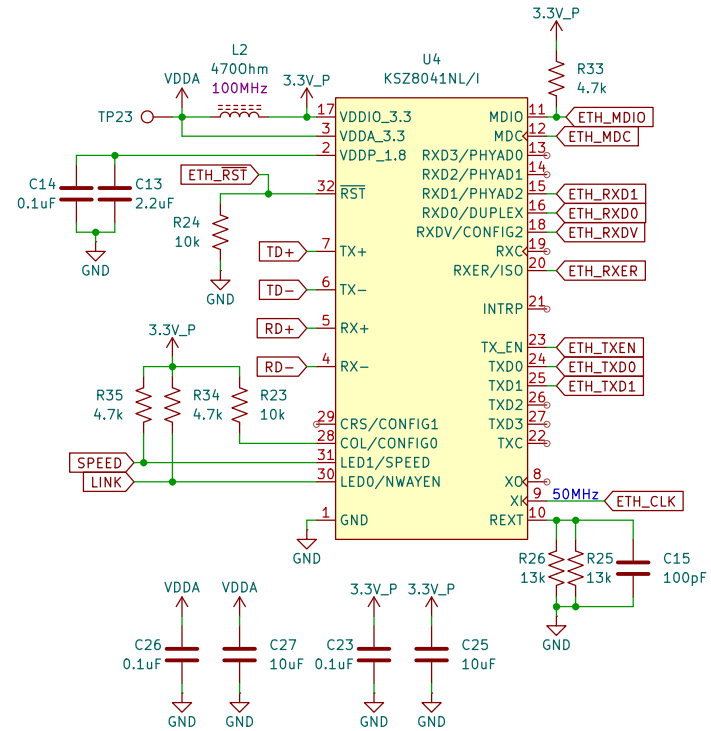
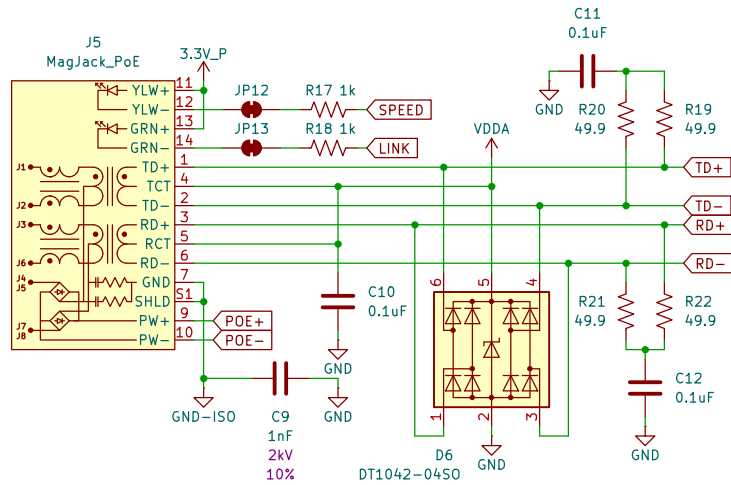
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 File: GNSS.kicad_sch

Title: GNSS

Size: USLetter Date:
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Rev:
 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

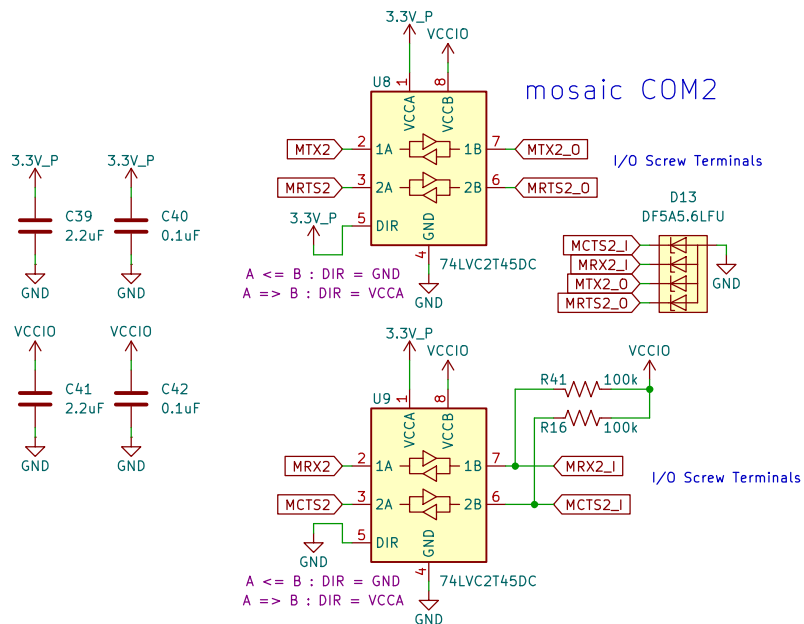
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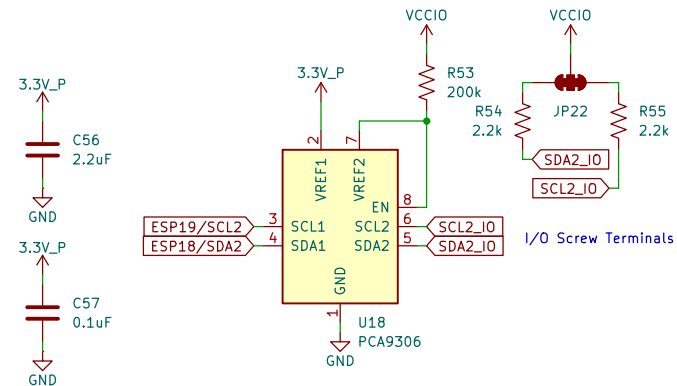
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 KiCad E.D.A. 8.0.5

Rev:
 Id: 5/7

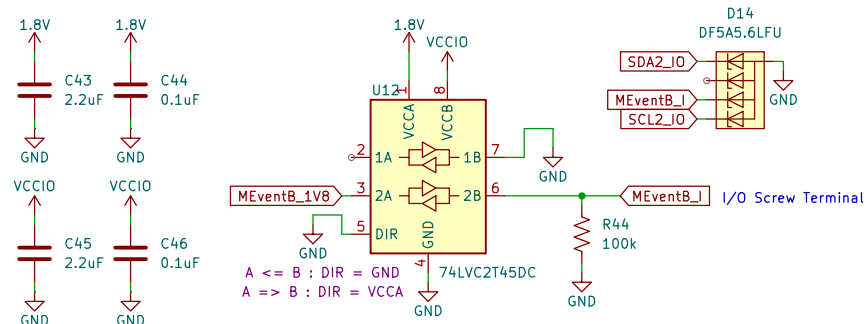
mosaic COM2



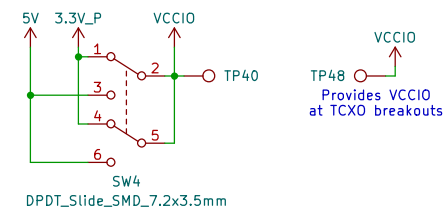
SDA2 SCL2



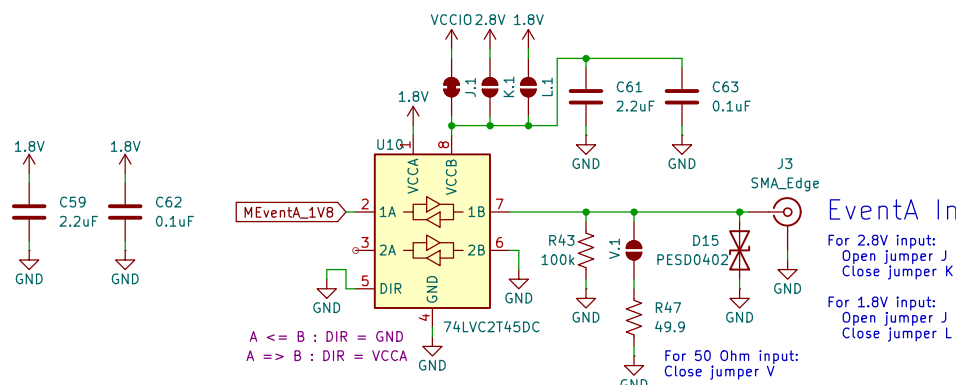
EventB In



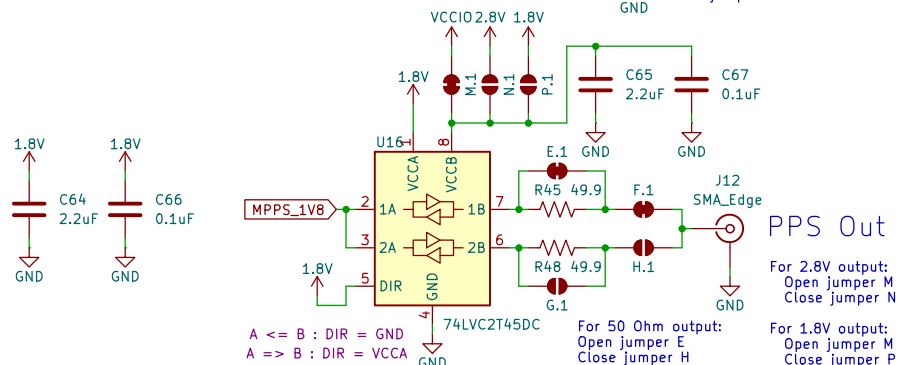
VCCIO voltage selection



EventA In



PPS Out



Level-Shifting

Sheet: /LevelShifting/
File: LevelShifting.kicad_sch

Title: Level Shifting

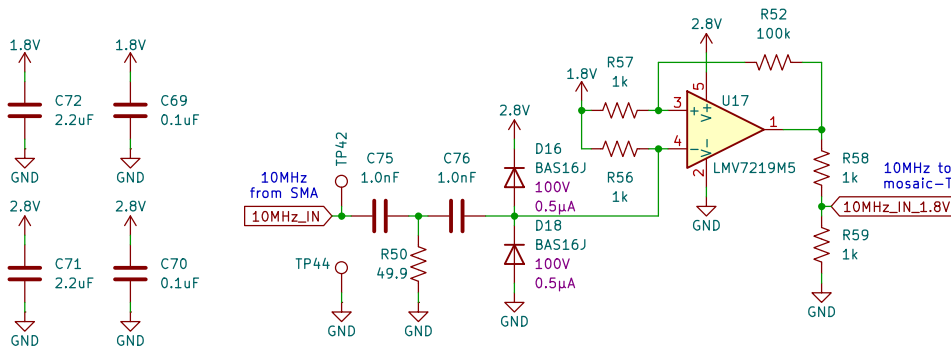
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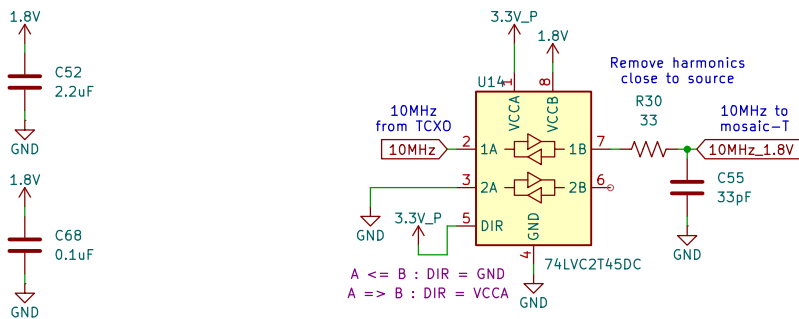
Rev:

Id: 6/7

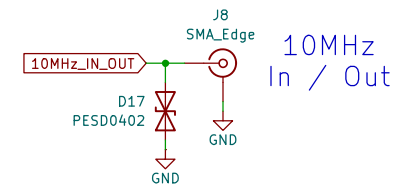
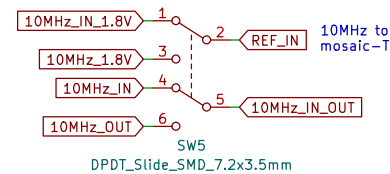
10MHz In
Input impedance: 50Ω
Detection level: -14dBm
Max supported level: +12dBm



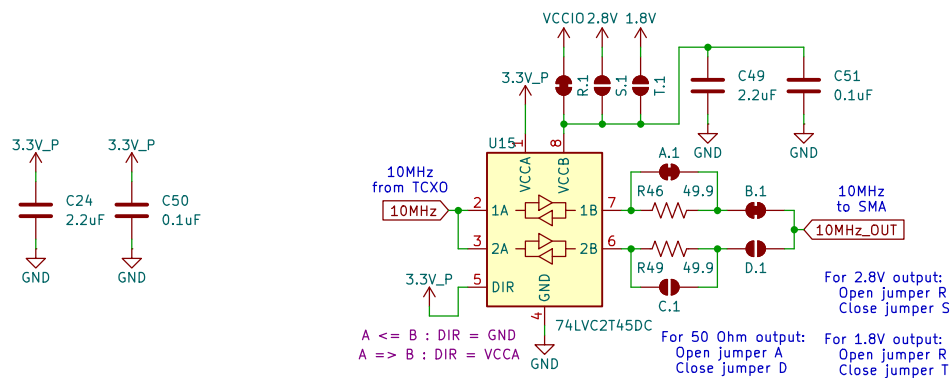
10MHz 1.8V for mosaic-T



10MHz In / Out



10MHz Out



Level-Shifting 10MHz

Sheet: /LevelShifting_10MHz/
File: LevelShifting_10MHz.kicad_sch

Title: Level Shifting 10MHz

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

Rev:
Id: 7/7