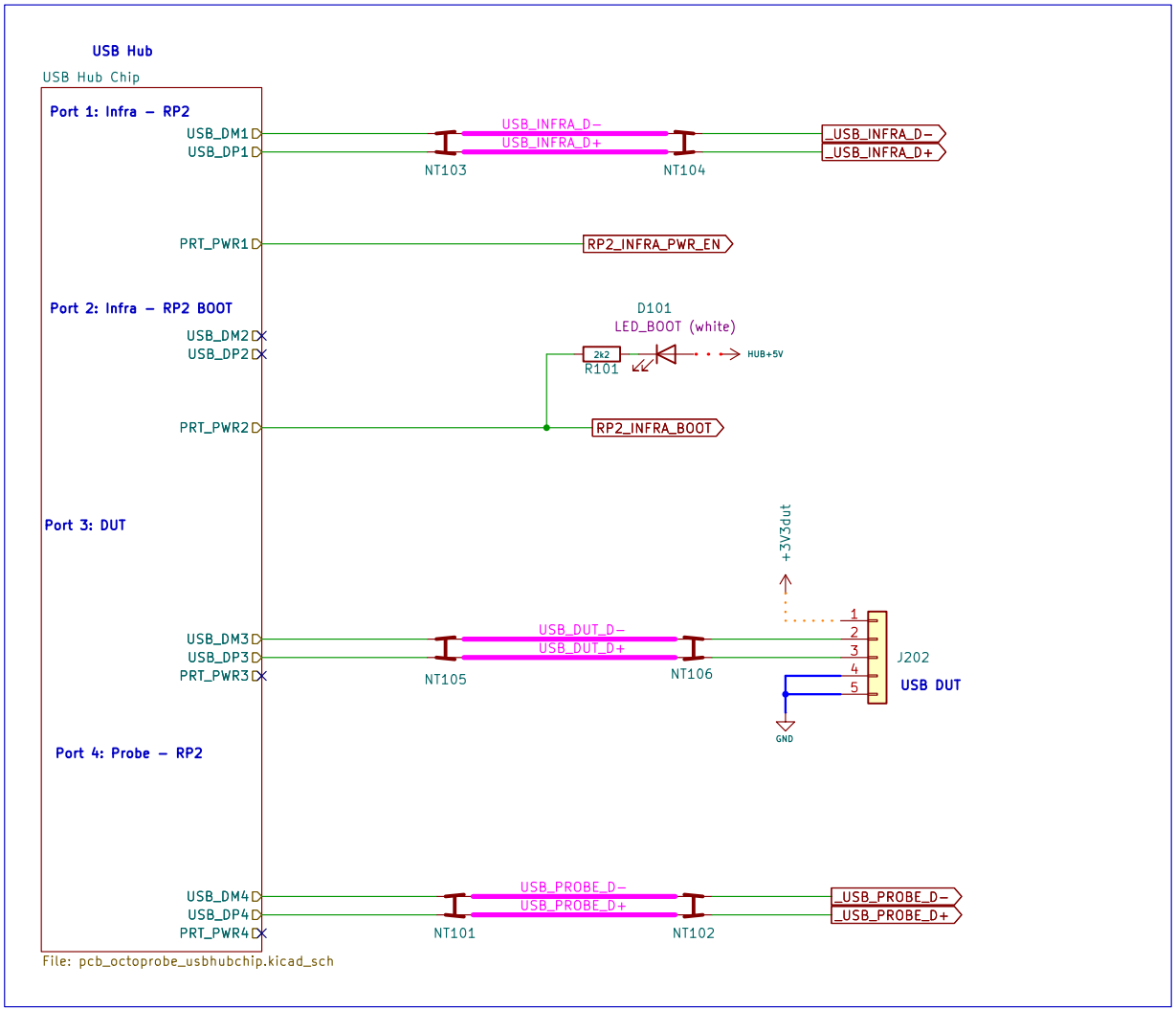

Regulator 3V3

File: pcb_octoprobe_regulator3V3.kicad_sch

RP2 CPU

12MHz

File: pcb_octoprobe_cpu.kicad_sch

RP2 PROBE

12MHz

File: pcb_octoprobe_probe.kicad_sch

Relay Breakout

File: pcb_octoprobe_relay_breakout.kicad_sch

Prototype Area

File: pcb_octoprobe_prototype_area.kicad_sch

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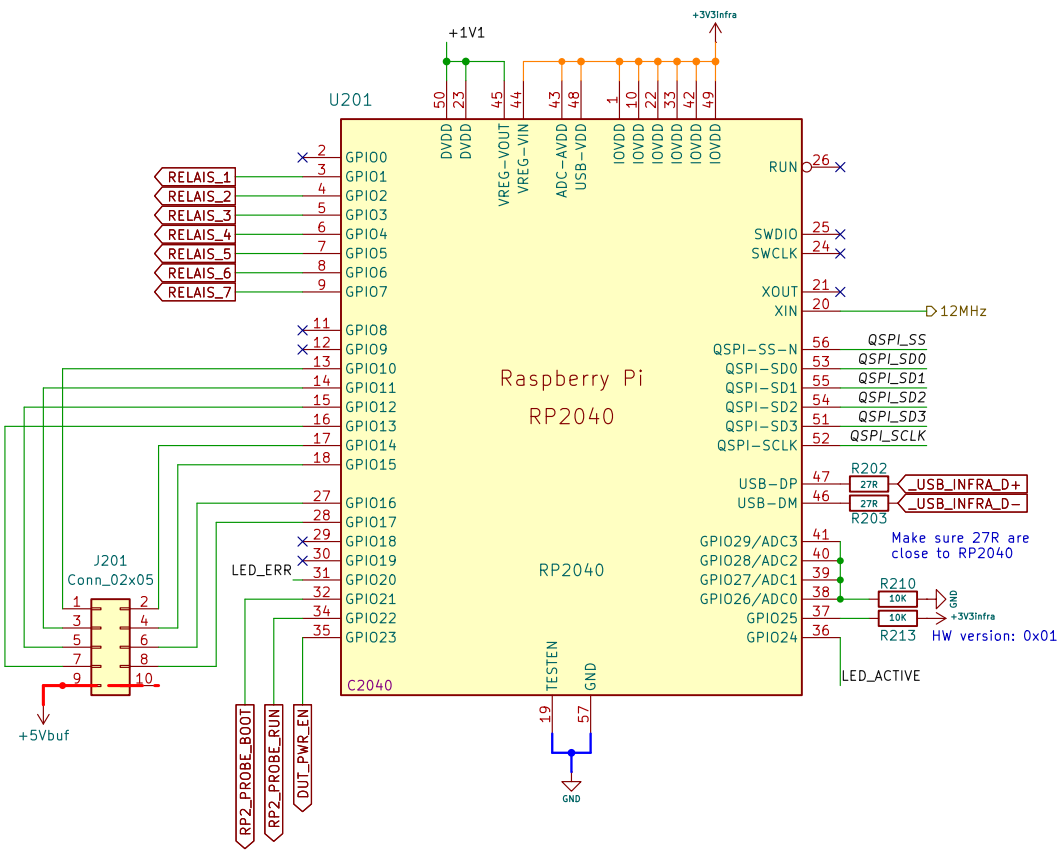
Sheet: /
File: pcb_octoprobe.kicad_sch

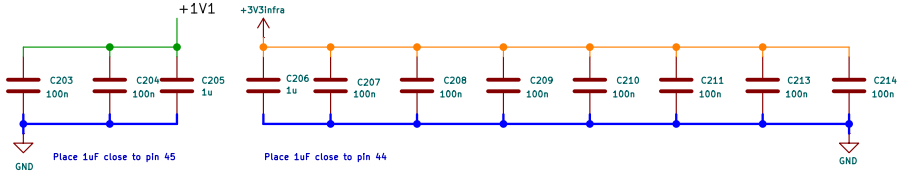
Title: Octoprobe tentacle

Size: A4	Date: 2025-08-31	**Rev: 0.5**
KiCad E.D.A. 9.0.6		Id: 1/14

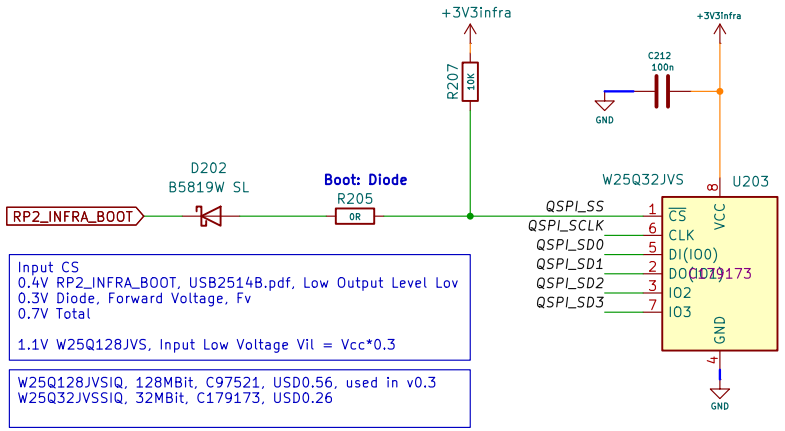
RP2040 Infra

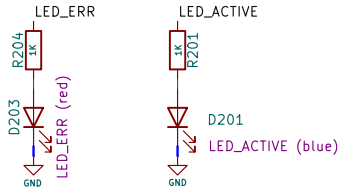


Bypass Capacitors

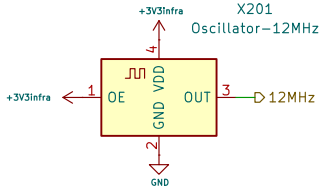


Flash Memory





Oscillator



JLC alternatives

jlc	USD/Stock	Package	Comments
C2831468	0.37/1k	SMD2520-4P	1nd
C2901596	0.37/1k	SMD2520-4P	2nd
C437139	0.29/188	SMD2520-4P	2nd
C387449	0.49/3k	SMD2520-4P	2nd
C409301	0.55/2k	SMD2520-4P	2nd

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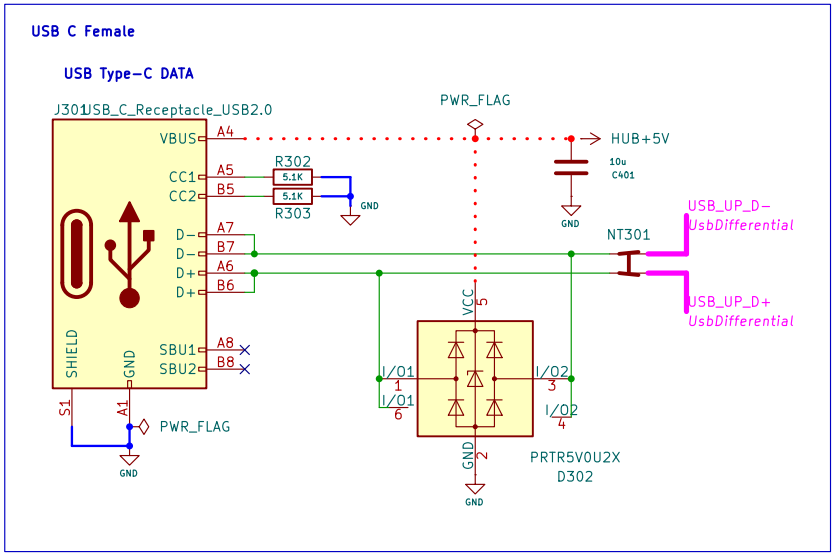
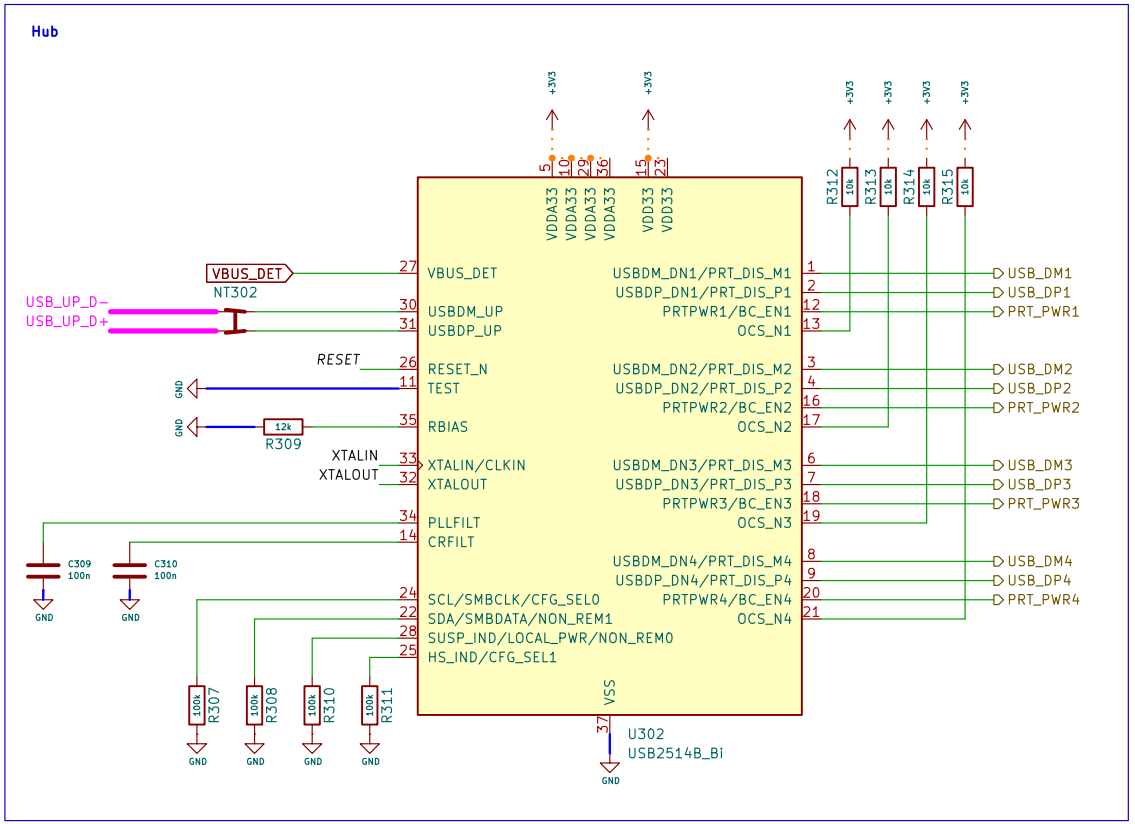
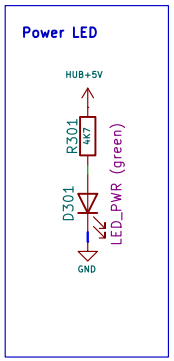
Sheet: /RP2 CPU/
File: pcb_octoprobe_cpu.kicad_sch

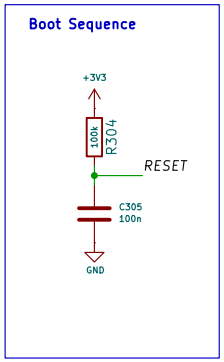
Title: Octoprobe tentacle

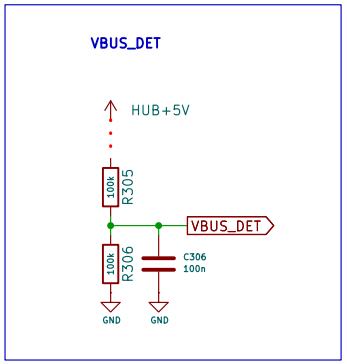
Size: A4	Date: 2025-08-31	**Rev: 0.5**
KiCad E.D.A. 9.0.6		Id: 2/14

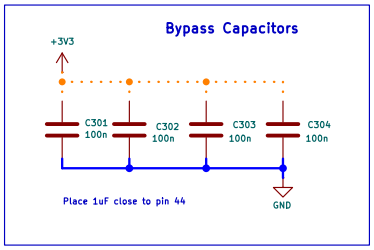


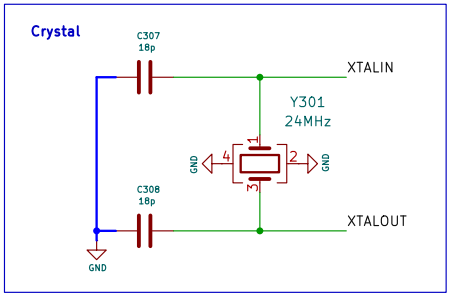












Microchip AN 15.17 "PCB Layout Gide for USB Hubs"

DP/DM:
27mil, 0.7mm, trace
5mil, 0.127mm, space
50mil, 1.27mm, trace side no ground

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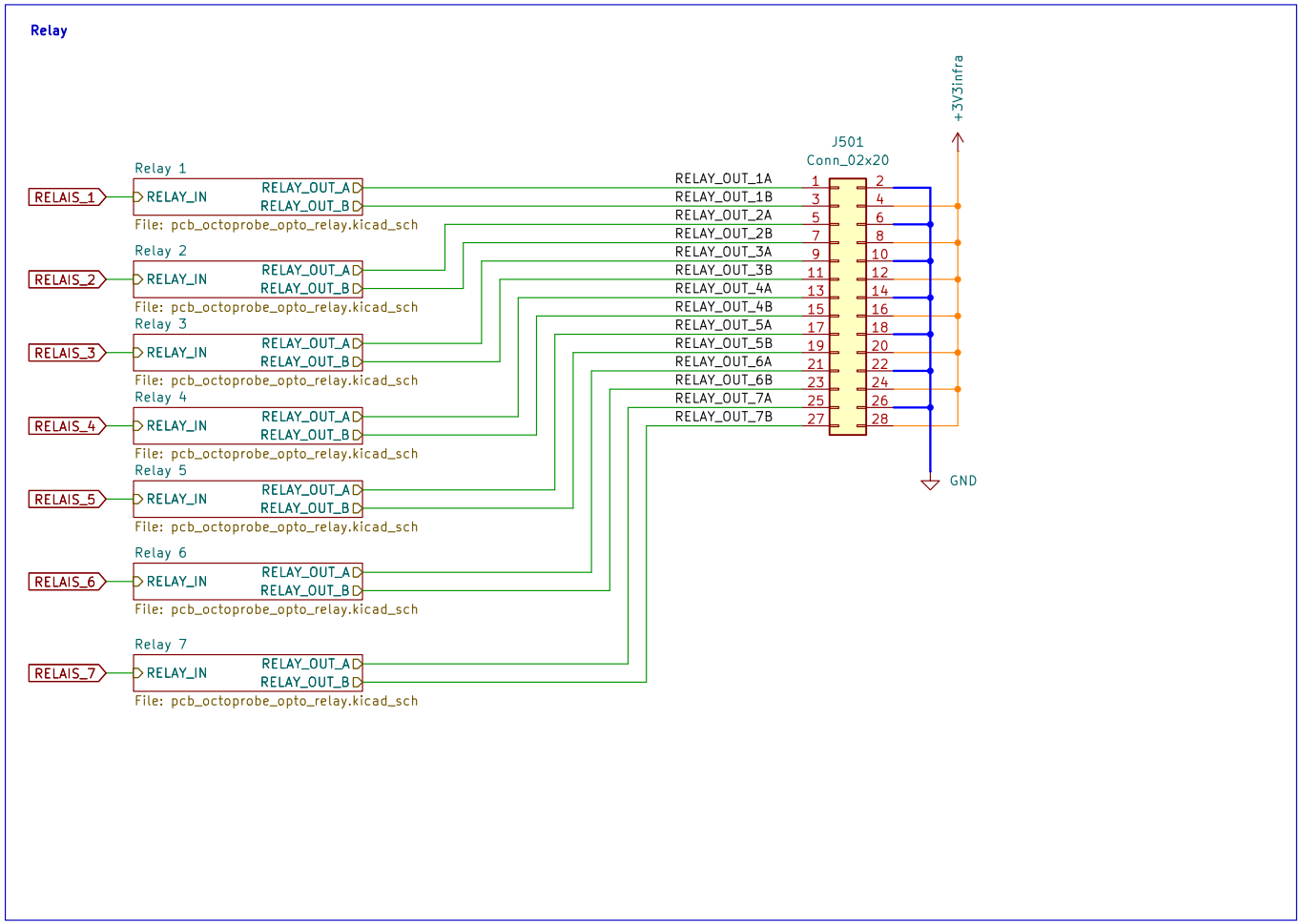
Sheet: /USB Hub Chip/
File: pcb_octoprobe_usbhubchip.kicad_sch

Title: Octoprobe tentacle

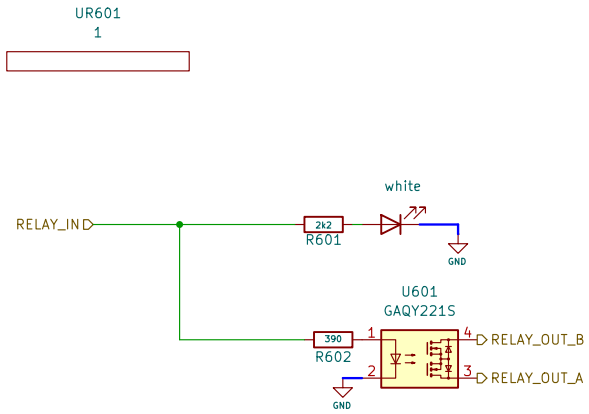
Size: A4	Date: 2025-08-31	**Rev: 0.5**
KiCad E.D.A. 9.0.6		Id: 3/14



Sheet: /Relay Breakout/
File: pcb_octoprobe_relay_breakout.kicad_sch

Title: Octoprobe tentacle

Size: A4	Date: 2025-08-31	**Rev: 0.5**
KiCad E.D.A. 9.0.6		Id: 5/14



Calculation of the input resistor

Vdiff = 3.3V – Vf = 3.3V– 1.2V = 2.1V
I_Fon = 5mA
R = 2.1V / 5mA = 420 Ohm

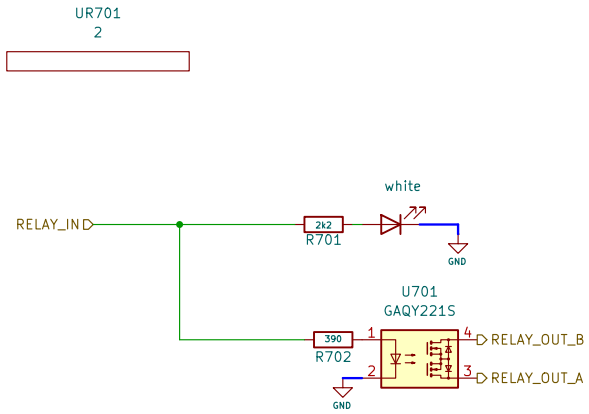
390 Ohm

Hans Märki, Märki Informatik

Sheet: /Relay Breakout/Relay 1/
File: pcb_octoprobe_opto_relay.kicad_sch

Title: Octoprobe tentacle

Size: A4	Date: 2025-08-31	**Rev: 0.5**
KiCad E.D.A. 9.0.6		Id: 6/14



Calculation of the input resistor

Vdiff = 3.3V – Vf = 3.3V– 1.2V = 2.1V
I_Fon = 5mA
R = 2.1V / 5mA = 420 Ohm

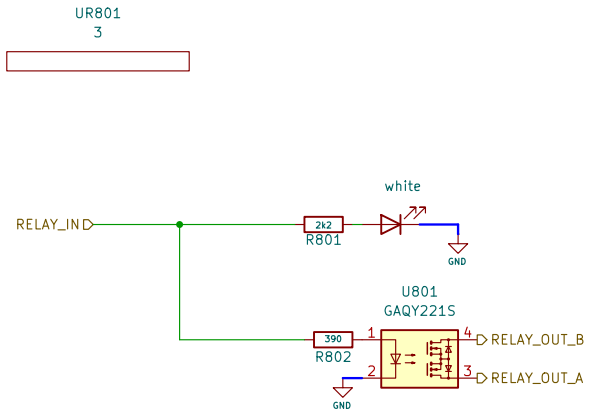
390 Ohm

Hans Märki, Märki Informatik

Sheet: /Relay Breakout/Relay 2/
File: pcb_octoprobe_opto_relay.kicad_sch

Title: Octoprobe tentacle

Size: A4	Date: 2025-08-31	**Rev: 0.5**
KiCad E.D.A. 9.0.6		Id: 7/14



Calculation of the input resistor

Vdiff = 3.3V – Vf = 3.3V– 1.2V = 2.1V
I_Fon = 5mA
R = 2.1V / 5mA = 420 Ohm

390 Ohm

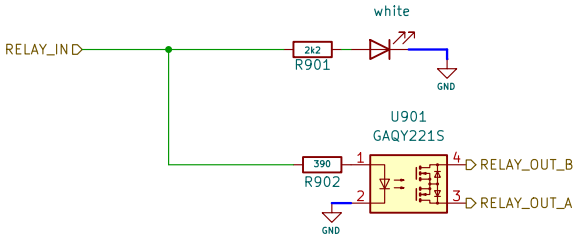
Hans Märki, Märki Informatik

Sheet: /Relay Breakout/Relay 3/
File: pcb_octoprobe_opto_relay.kicad_sch

Title: Octoprobe tentacle

Size: A4	Date: 2025-08-31	**Rev: 0.5**
KiCad E.D.A. 9.0.6		Id: 8/14

UR901
4



Calculation of the input resistor

Vdiff = 3.3V – Vf = 3.3V– 1.2V = 2.1V
I_Fon = 5mA
R = 2.1V / 5mA = 420 Ohm

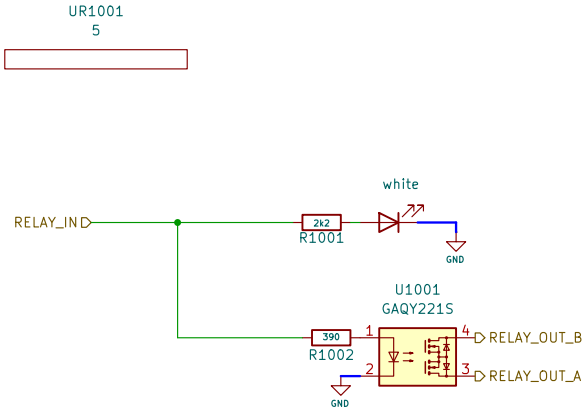
390 Ohm

Hans Märki, Märki Informatik

Sheet: /Relay Breakout/Relay 4/
File: pcb_octoprobe_opto_relay.kicad_sch

Title: Octoprobe tentacle

Size: A4	Date: 2025-08-31	**Rev: 0.5**
KiCad E.D.A. 9.0.6		Id: 9/14



Calculation of the input resistor

Vdiff = 3.3V – Vf = 3.3V– 1.2V = 2.1V
I_Fon = 5mA
R = 2.1V / 5mA = 420 Ohm

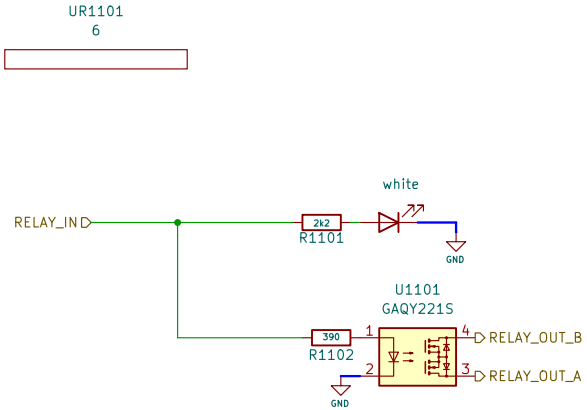
390 Ohm

Hans Märki, Märki Informatik

Sheet: /Relay Breakout/Relay 5/
File: pcb_octoprobe_opto_relay.kicad_sch

Title: Octoprobe tentacle

Size: A4	Date: 2025-08-31	**Rev: 0.5**
KiCad E.D.A. 9.0.6		Id: 10/14



Calculation of the input resistor

Vdiff = 3.3V – Vf = 3.3V– 1.2V = 2.1V
I_Fon = 5mA
R = 2.1V / 5mA = 420 Ohm

390 Ohm

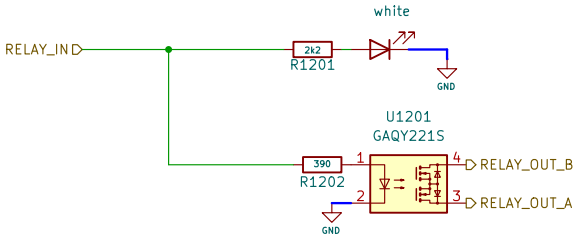
Hans Märki, Märki Informatik

Sheet: /Relay Breakout/Relay 6/
File: pcb_octoprobe_opto_relay.kicad_sch

Title: Octoprobe tentacle

Size: A4	Date: 2025-08-31	**Rev: 0.5**
KiCad E.D.A. 9.0.6		Id: 11/14

UR1201
7



Calculation of the input resistor

Vdiff = 3.3V – Vf = 3.3V– 1.2V = 2.1V
I_Fon = 5mA
R = 2.1V / 5mA = 420 Ohm

390 Ohm

Hans Märki, Märki Informatik

Sheet: /Relay Breakout/Relay 7/
File: pcb_octoprobe_opto_relay.kicad_sch

Title: Octoprobe tentacle

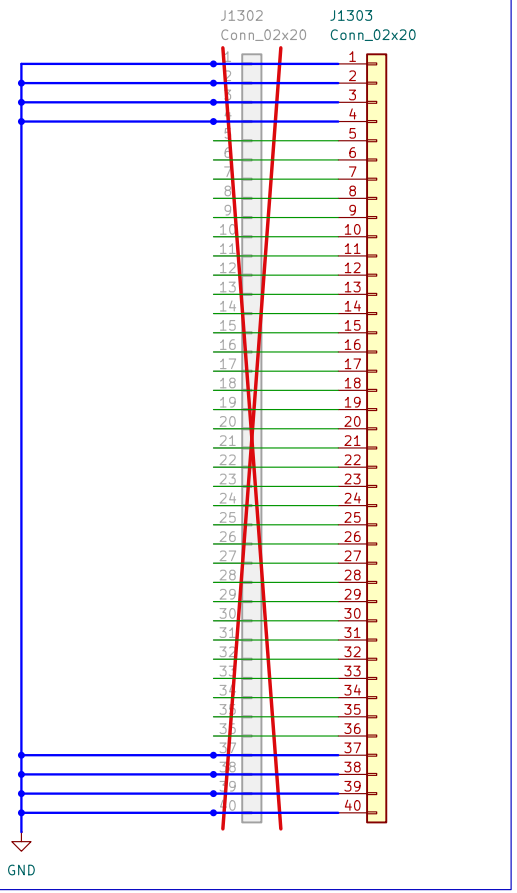
Size: A4	Date: 2025-08-31	**Rev: 0.5**
KiCad E.D.A. 9.0.6		Id: 12/14

Prototype Area

H1305
octoprobe_MountingHole
H1306
octoprobe_MountingHole
H1307
octoprobe_MountingHole
H1308
octoprobe_MountingHole
GND

TH1301
JLCPCB Tooling Hole
TH1302
JLCPCB Tooling Hole

Octobus



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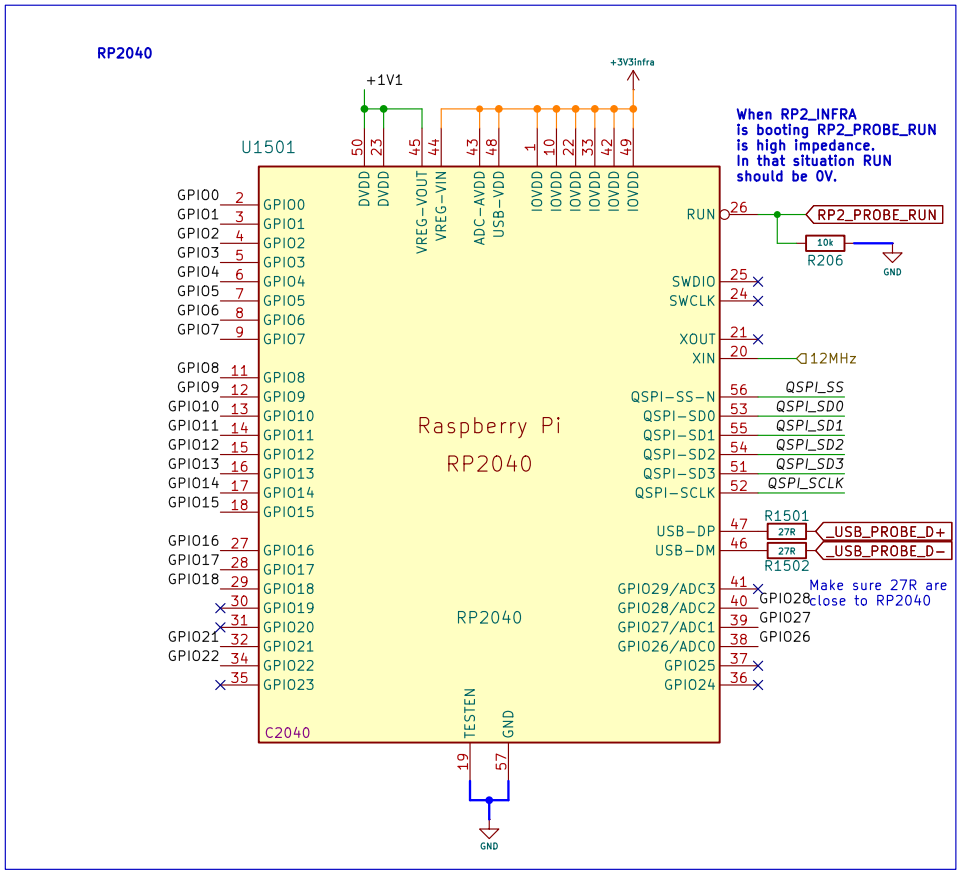
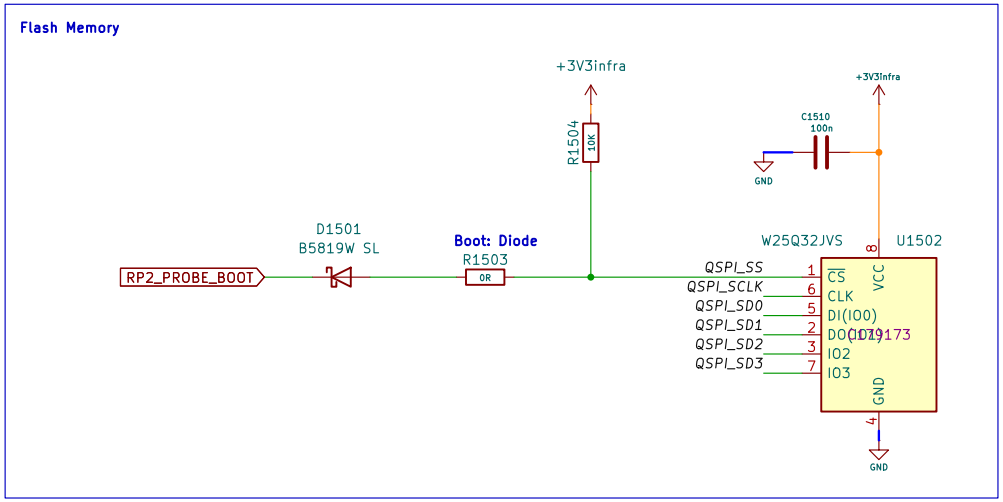
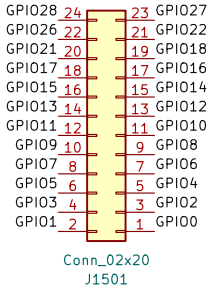
Sheet: /Prototype Area/
File: pcb_octoprobe_prototype_area.kicad_sch

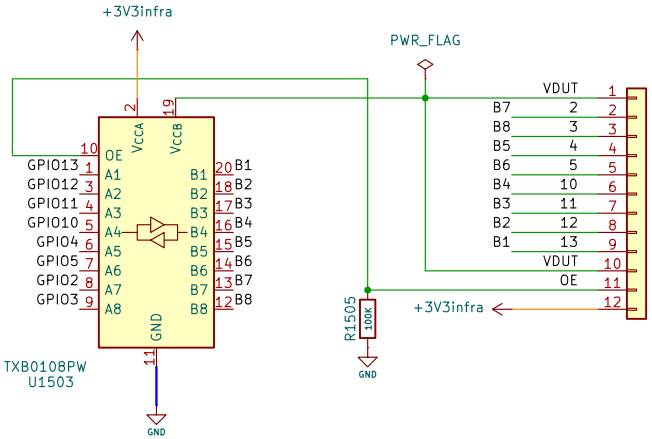
Title: Octoprobe tentacle

Size: A4	Date: 2025-08-31	**Rev: 0.5**
KiCad E.D.A. 9.0.6		Id: 13/14









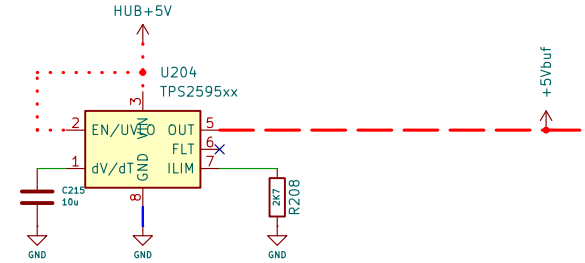
Hans Märki, Märki Informatik

Sheet: /RP2 PROBE/
File: pcb_octoprobe_probe.kicad_sch

Title: Octoprobe tentacle

Size: A4	Date: 2025-08-31	**Rev: 0.5**
KiCad E.D.A. 9.0.6		Id: 15/14

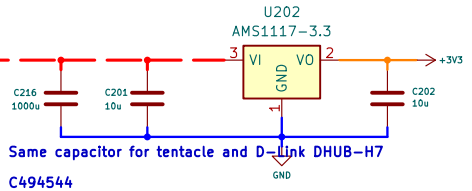
Current Limiter 5V



Datasheet "Active Current Limiting":
Goal: 800mA
Rilm = 2000/(0.8A−0.04) = R2K630, choosen: R2K7

Datasheet "Slew Rate and Inrush Current Control":
Goal: 5V/1000ms
C = 42000/V*ms = 6'363'636pF = 6uF, choosen: 10uF

Regulator 3V3

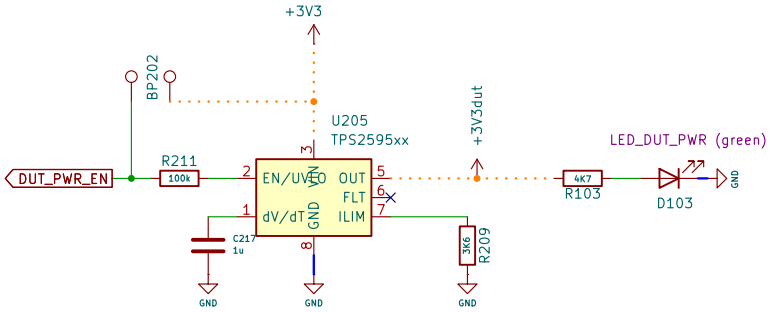


Same capacitor for tentacle and D-Link DHUB-H7

C494544

2.5mm distance between wires
6.3mm diameter
11mm height

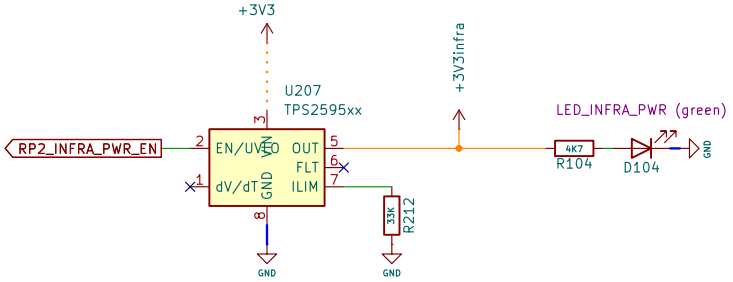
Current Limiter 3V3 DUT



Datasheet "Active Current Limiting":
Goal: 600mA
Rilm = 2000/(0.8A−0.04) = R3K571, choosen: R3K6

Datasheet "Slew Rate and Inrush Current Control":
Goal: 3V3/100ms
C = 42000/V*ms = 1'272'272pF, choosen: 1uF

POWER RP Infra



Datasheet "Active Current Limiting":
Goal: 100mA
Rilm = 2000/(0.1A−0.04) = R33K333, choosen: R33K

Sheet: /Regulator 3V3/		
File: pcb_octoprobe_regulator3V3.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. 9.0.6		Id: 16/14