

TACNPR project

Tatu OH2EAT, Lasse OH3HZB & Tommi OH1GJV & SCOMS team
Special thanks to: Mikko OH2FLO & Vili OH5GE

SUBSHEETS (revB with onboard Ethernet):

cpu

MCU, SRAM,
SERIAL

File: cpu-sheet.kicad_sch

radio

Si4463 &
RF switching

File: radio-sheet.kicad_sch

RF-PA

RF LNA
& PA

File: RF-PA-sheet.kicad_sch

tacbucks

DC/DC
converters

File: tacbuck-sheet.kicad_sch

linear-regs

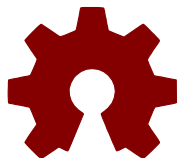
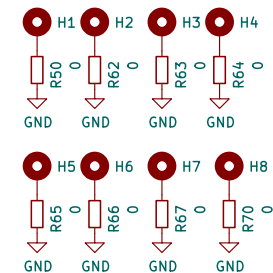
3V3 lin.reg.
& terminals

File: linreg-sheet.kicad_sch

ethernet

W5500
Ethernet

File: ethernet-sheet.kicad_sch



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TACNPR project

OH1GJV, OH2EAT, OH2FLO, OH3HZB, OH5GE



Sheet: /
File: TACNPR.kicad_sch

Title: TACNPR

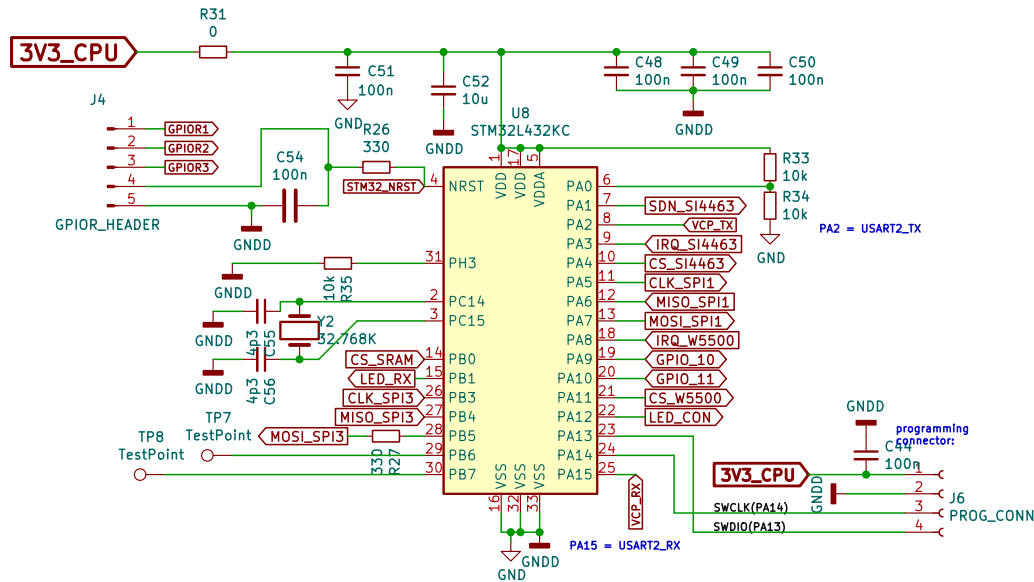
Size: A4 Date: 2021-03-22

KiCad E.D.A. kicad 6.0.2+dfsg-1

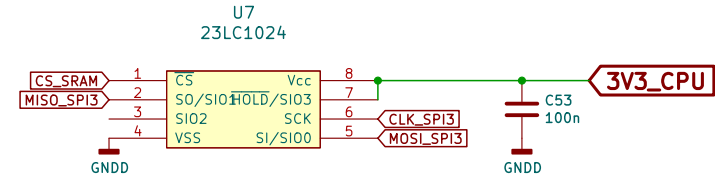
Rev: A

Id: 1/7

MCU: STM32L432KC (256 kB Flash)



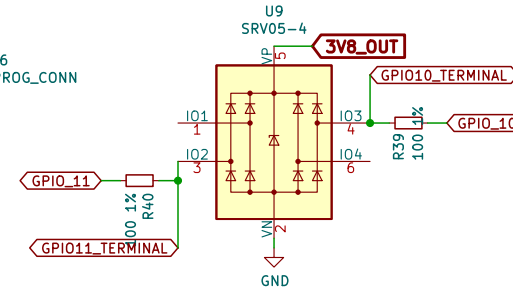
SRAM (23LC1024, 1Mbit)



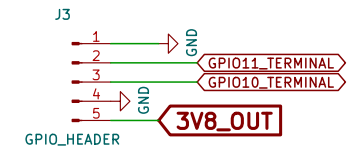
CONN LEDs



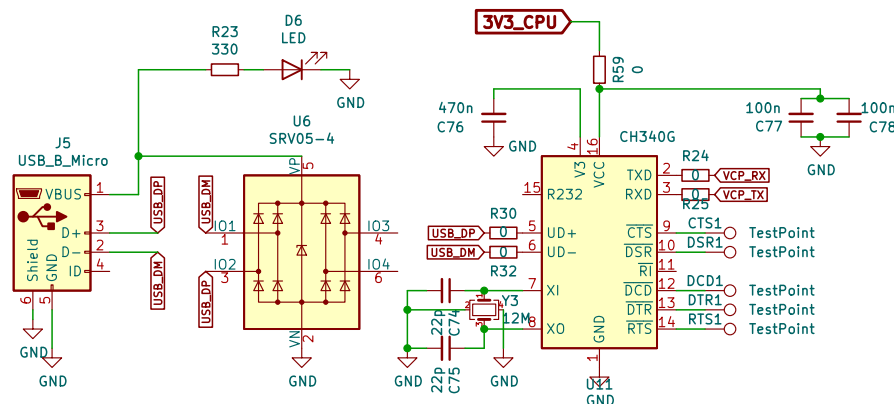
GPIO ESD protection



GPIO header



USB ESD PROTECTION & CH340G SERIAL



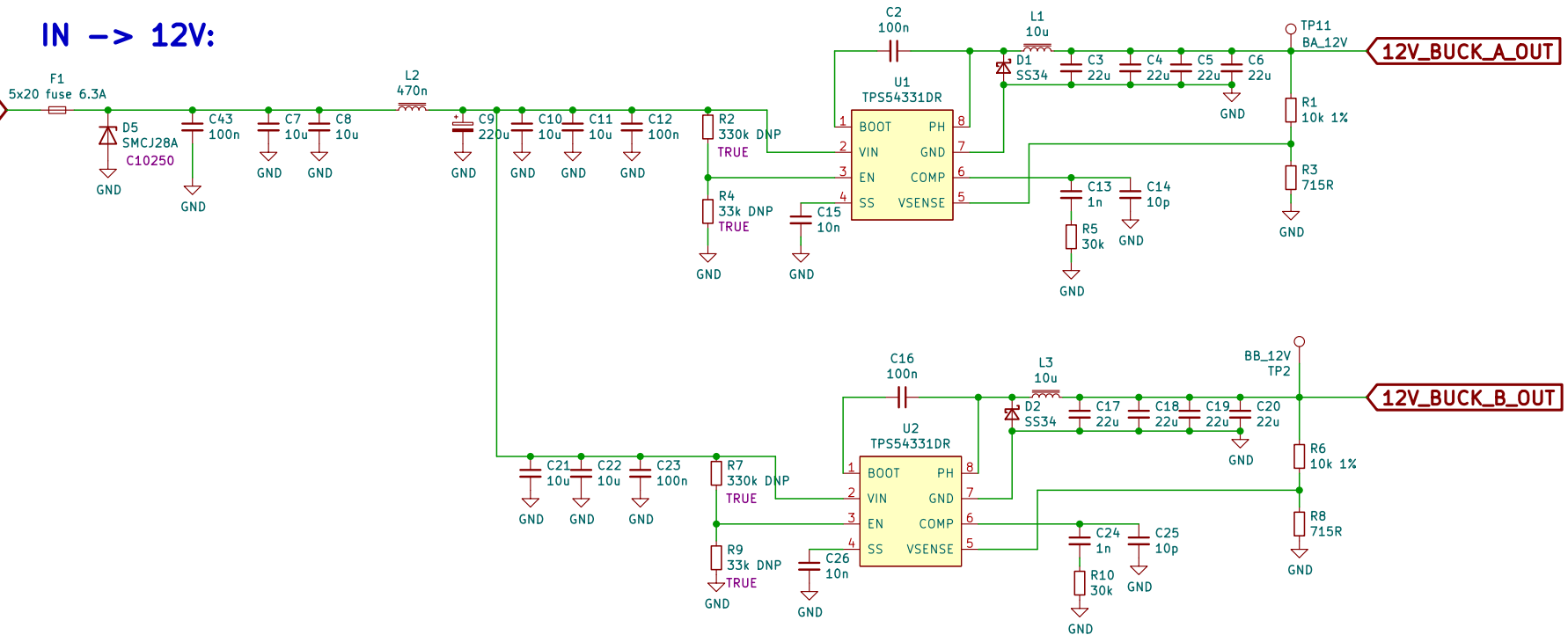
TACNPR / CPU sheet

(CPU, SRAM, GPIO, ETHERNET, USB SERIAL)

Sheet: /cpu/	
File: cpu-sheet.kicad_sch	
Title: TACNPR (CPU sheet)	
Size: A4	Date:
KiCad E.D.A. kicad 6.0.2+dfsg-1	Rev: B
	Id: 2/7

IN -> 12V:

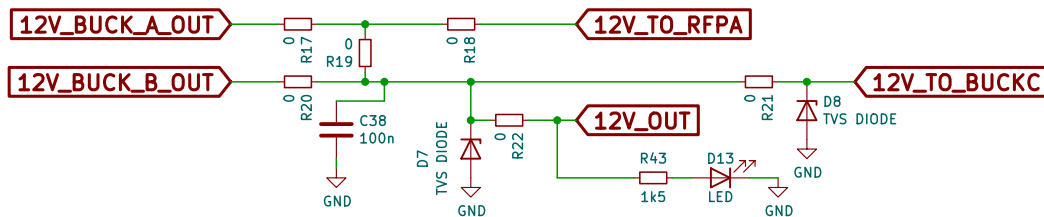
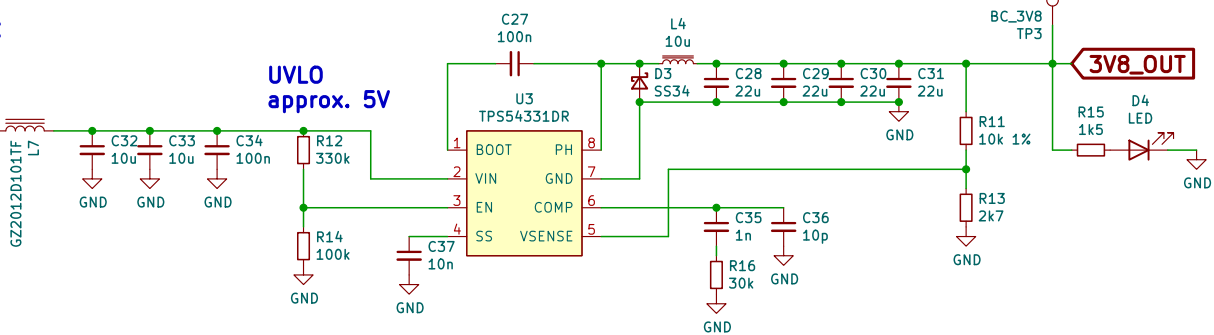
RAW_PSU_IN



12V -> 3V8:

12V_TO_BUCKC

UVLO approx. 5V



TACNPR / DC/DC converters

based on TACBUCK-A design by Tommi OH1GJV

Sheet: /tacbucks/

File: tacbuck-sheet.kicad_sch

Title: TACNPR (TACBUCKs)

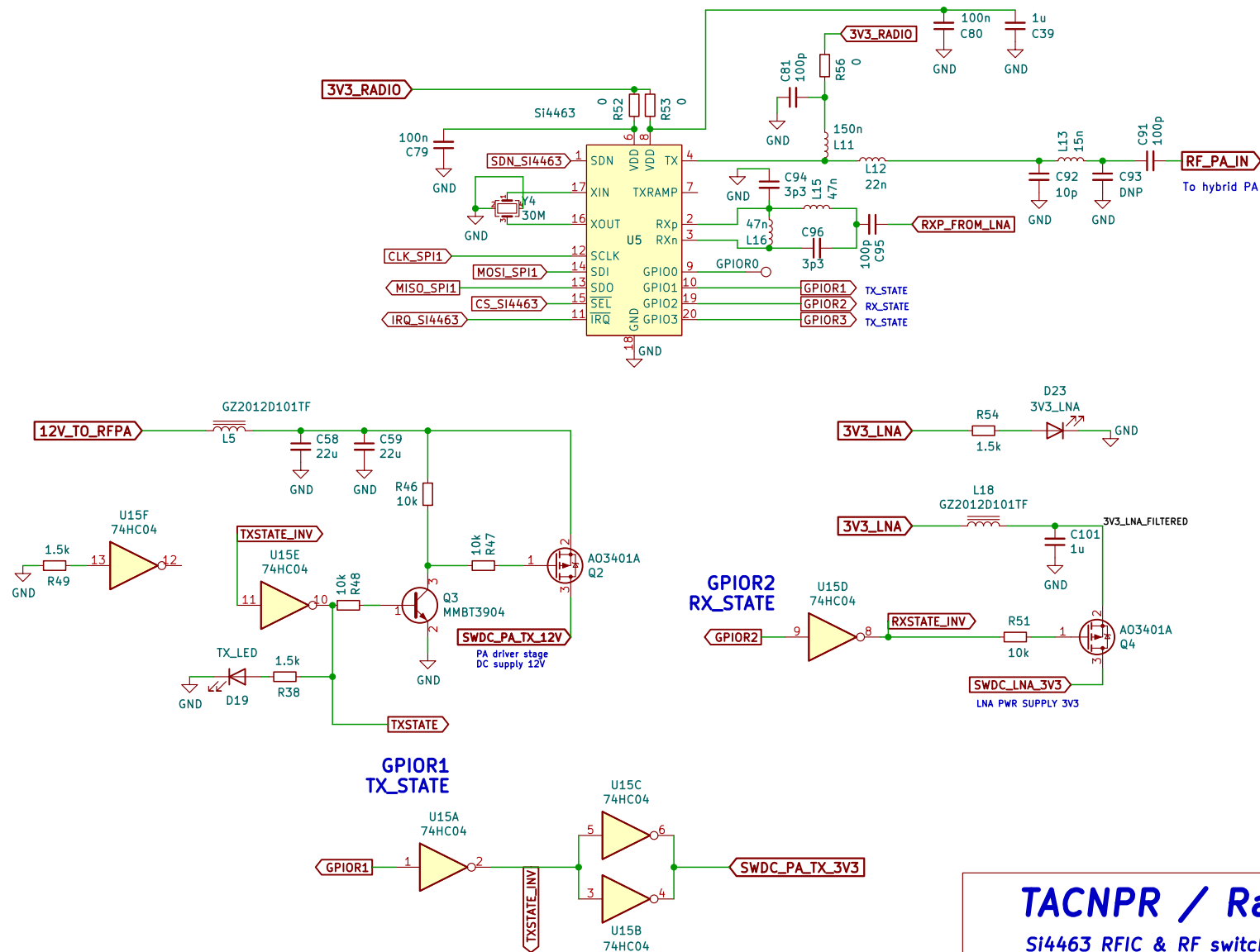
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Date:

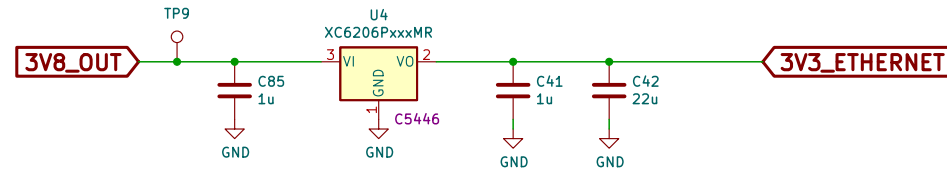
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Rev: B

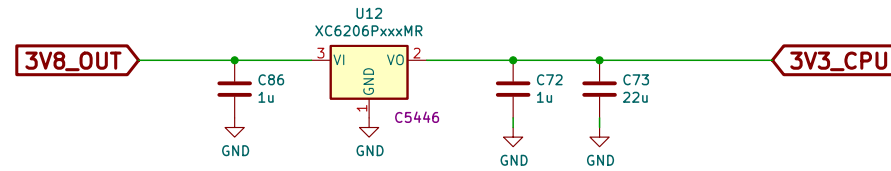
Id: 3/7



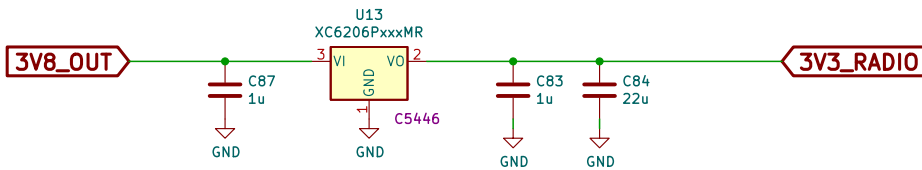
3V3 for Ethernet transceiver



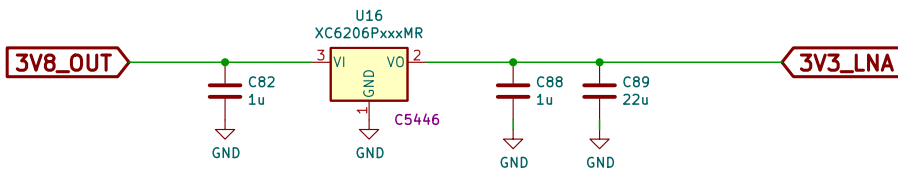
3V3 for STM32 CPU



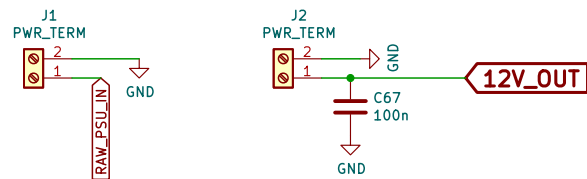
3V3 for Si4463 radio chip



3V3 for LNA



Screw terminals



TACNPR / regulators & terminals

3V8 -> 3V3 LDO linear regulators & screw terminals

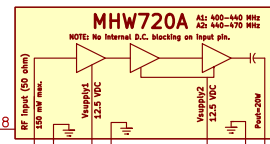
Sheet: /linear-regs/
File: linreg-sheet.kicad_sch

Title: TACNPR (linear regulators)

Size: A4 Date:
KiCad E.D.A. kicad 6.0.2+dfsg-1

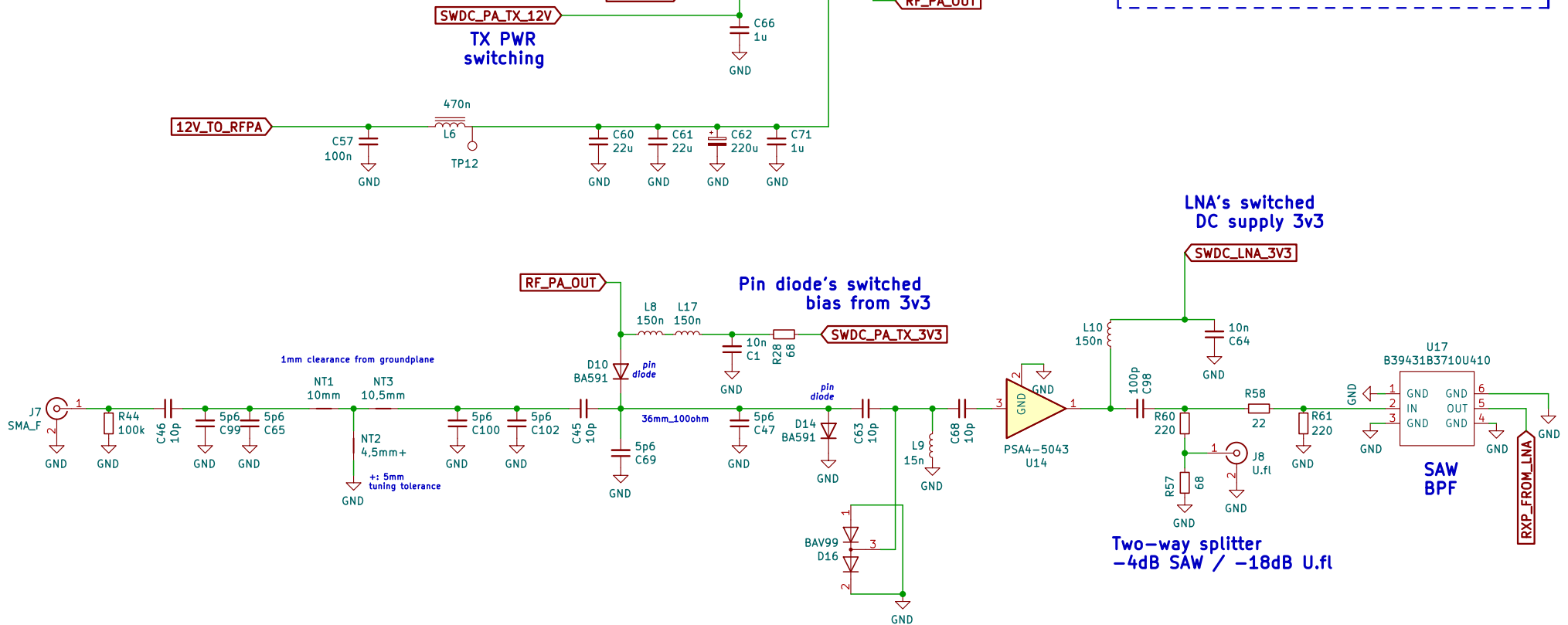
Rev: B
Id: 5/7

MHW720A



RF strip widths
on the keepout area:

50 ohm: 2 mm (millimeters)
100 ohm: 0,5 mm



TACNPR / RF PA & TRX switch

Motorola MHW720A 20W RF PA, design & simulations: Tatu OH2EAT

Sheet: /RF-PA/

File: RF-PA-sheet.kicad_sch

Title: TACNPR (RF PA & LNA)

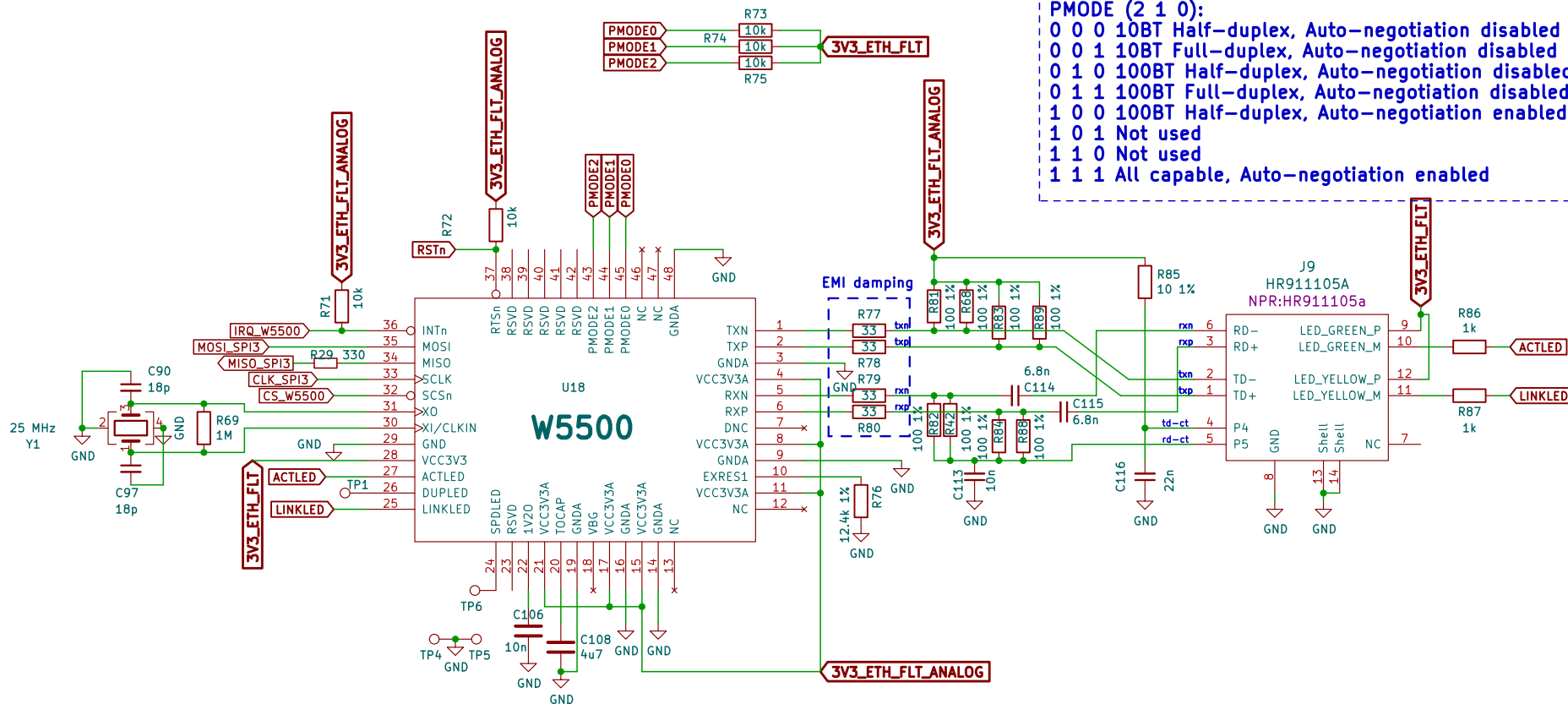
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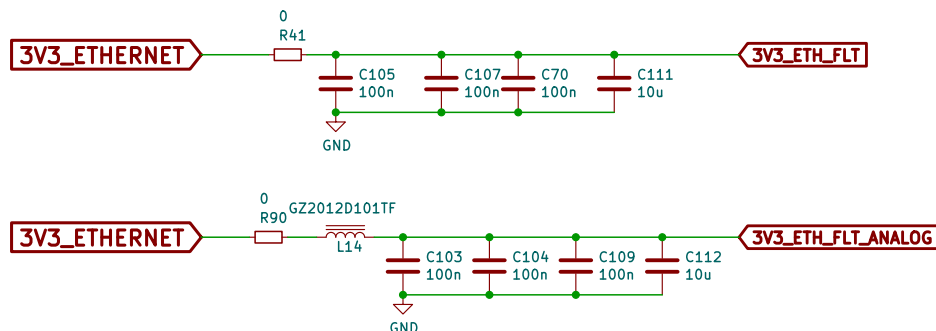
KiCad E.D.A. kicad 6.0.2+dfsg-1

Rev: B

Id: 6/7



PMODE (2 1 0):
 0 0 0 10BT Half-duplex, Auto-negotiation disabled
 0 0 1 10BT Full-duplex, Auto-negotiation disabled
 0 1 0 100BT Half-duplex, Auto-negotiation disabled
 0 1 1 100BT Full-duplex, Auto-negotiation disabled
 1 0 0 100BT Half-duplex, Auto-negotiation enabled
 1 0 1 Not used
 1 1 0 Not used
 1 1 1 All capable, Auto-negotiation enabled



W5500 reference schematic:
<https://docs.wiznet.io/Product/iEthernet/W5500/ref-schematic>
 W5500 Ref.Schematic – RJ45 with Transformer

See also the HR911105A datasheet.
 On page 1 (REV A/2): "Connect CHS GND to PCB ground".
 The connector is equipped with an internal 1nF 2kV CAP (P8).

Reviewed by OH2EAT 2023
 Drawn by OH3HZB 2022–2023
 Scoms

TACNPR Ethernet

Sheet: /ethernet/
 File: ethernet-sheet.kicad_sch

Title: TACNPR (Ethernet)

Size: A4 Date:
 KiCad E.D.A. kicad 6.0.2+dfsg-1

Rev: B
 Id: 7/7