

TACNPR project

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

SUBSHEETS (revision E):

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

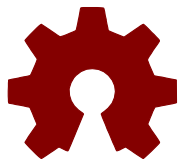
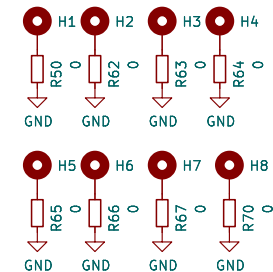
ethernet

W5500
Ethernet

File: ethernet-sheet.kicad_sch

Major changes since revA:

- revA: first release
- revB: integrated Ethernet
- revC: enhanced RF performance
- revD: Powerpole connector
- revE: RX_LED (J4), minor enhancements



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TACNPR project

OH1GJV, OH2EAT, OH2FLO, OH3HZB, OH5GE



Sheet: /
File: TACNPR.kicad_sch

Title: TACNPR

Size: A4 Date: 2021-03-22

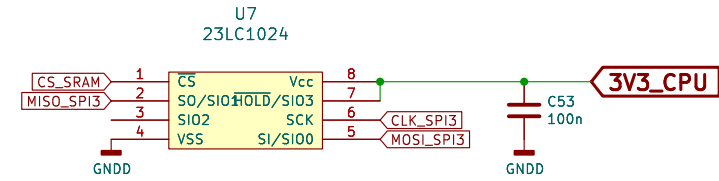
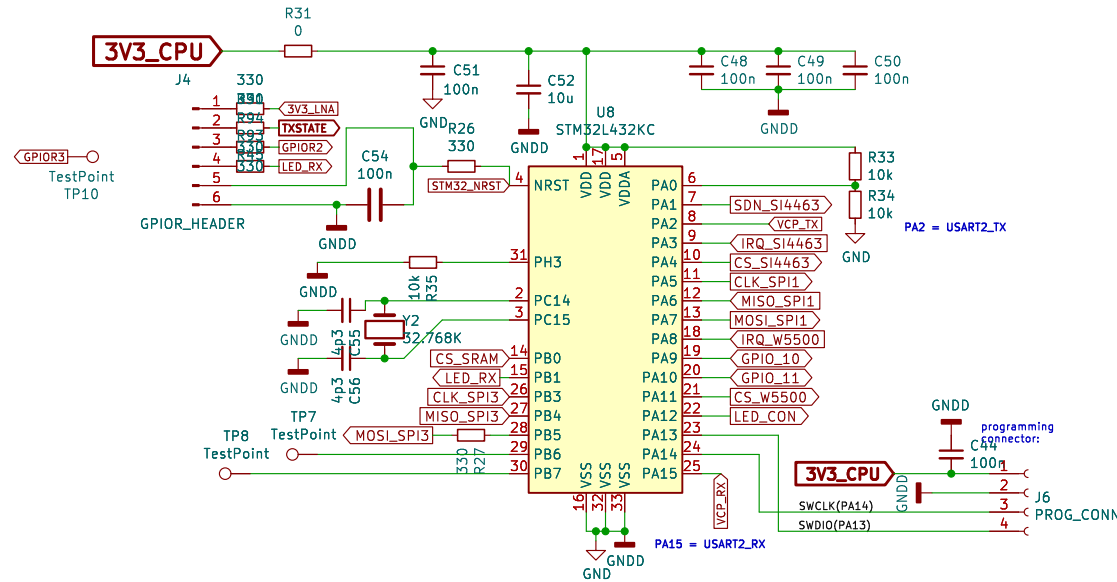
KiCad E.D.A. 8.0.9

Rev: E

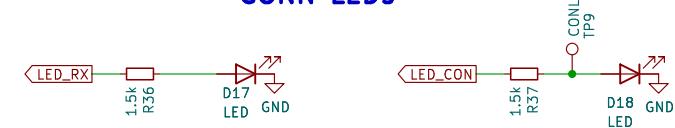
Id: 1/7

MCU: STM32L432KC (256 kB Flash)

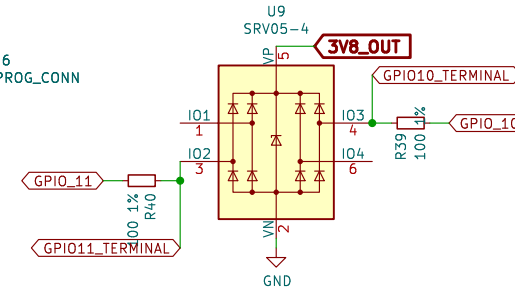
SRAM (23LC1024, 1Mbit)



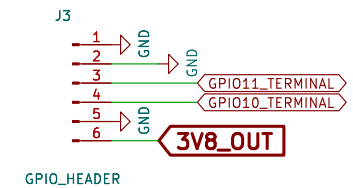
CONN LEDs



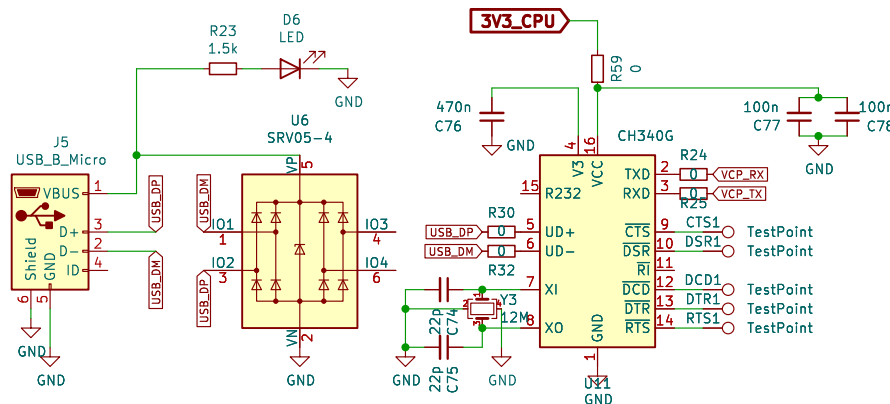
GPIO ESD protection



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. 8.0.9

Rev: E

Id: 2/7

IN -> 12V:

RAW_PSU_IN

F1 5x20 fuse 6.3A

D5 SMCJ28A C10250

C43 100n

C7 10u

C8 10u

L2 470n

C9 220u

C10 10u

C11 10u

C12 100n

C15 10n

C21 10u

C22 10u

C23 100n

C26 10n

C27 100n

C28 22u

C29 22u

C30 22u

C31 22u

C32 10u

C33 10u

C34 100n

C37 10n

C38 100n

C39 22u

C40 22u

C41 22u

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C275 100n

C276 100n

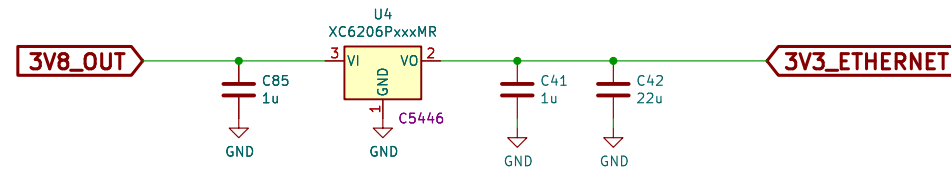
C277 100n

C278 100n

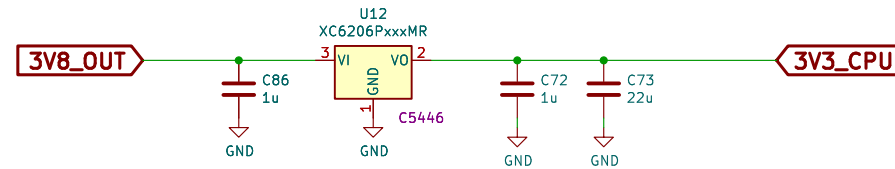


Rev: E
Id: 4/7

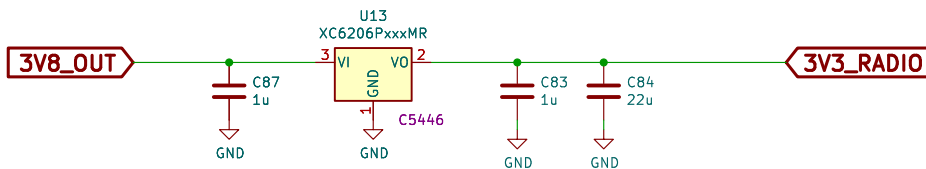
3V3 for Ethernet transceiver



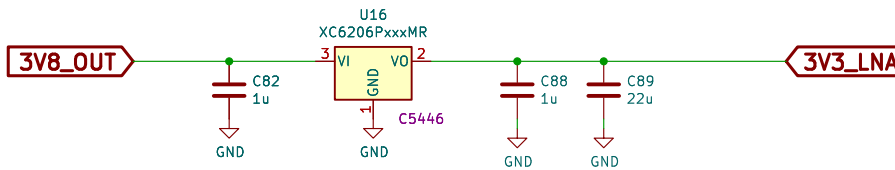
3V3 for STM32 CPU



3V3 for Si4463 radio chip

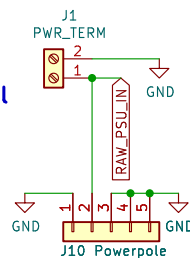


3V3 for LNA

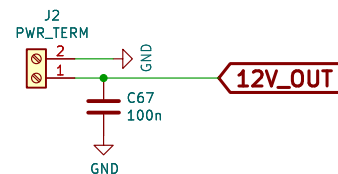


Screw terminals (power in and 12V DC out)

DC power can be fed either using screw terminal or Anderson Powerpole connector (7,9mm pitch)



Powerpole strain relief options:
1) solder a wire around it into GND pads 3 and 4
2) use the mounting hole (machine screw and nut)



TACNPR / regulators & terminals

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

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

Title: TACNPR (linear regulators)

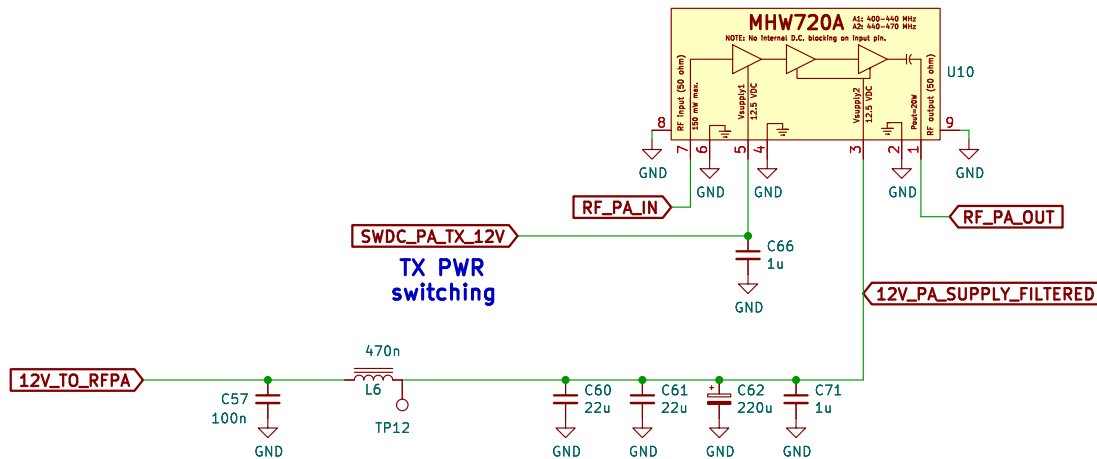
Size: A4

Date:

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Rev: E

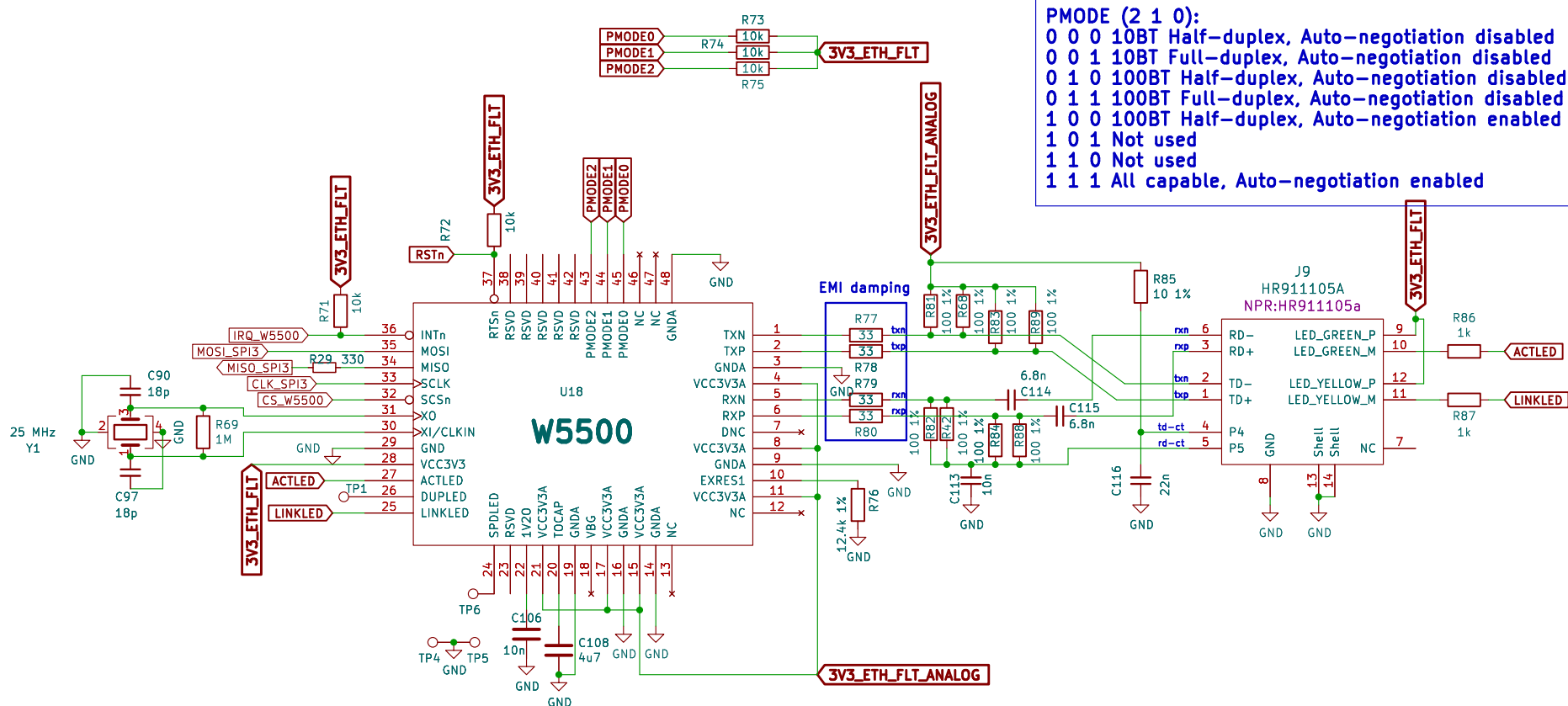
Id: 5/7



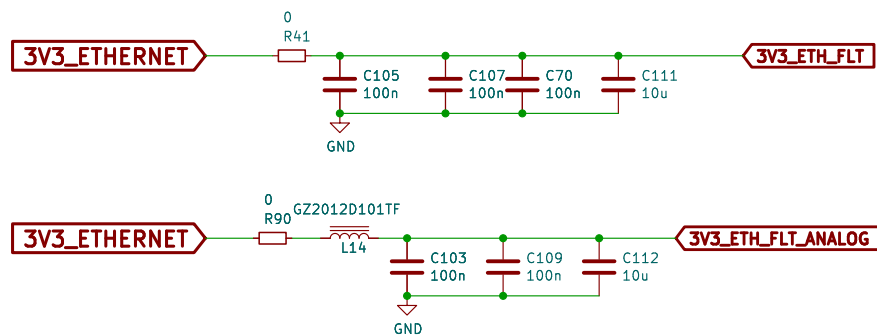
50 ohm: 2 mm (millimeters)
100 ohm: 0,5 mm



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		<h1>TACNPR Ethernet</h1>
Scoms		
Sheet: /ethernet/ File: ethernet-sheet.kicad_sch		
Title: TACNPR (Ethernet)		
Size: A4	Date:	Rev: E
KiCad E.D.A. 8.0.9		Id: 7/7