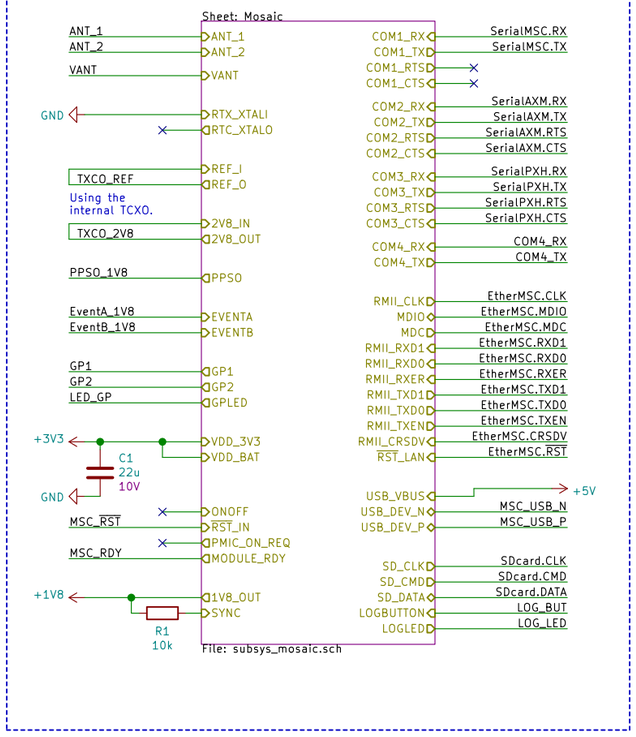
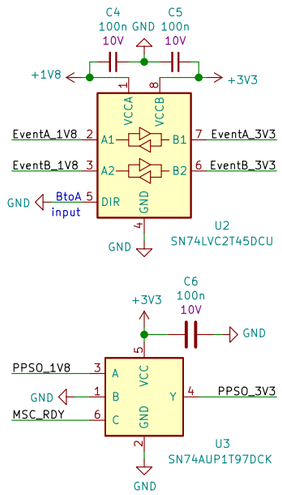
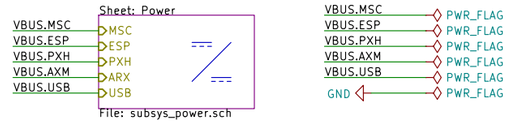
Mosaic x5/H



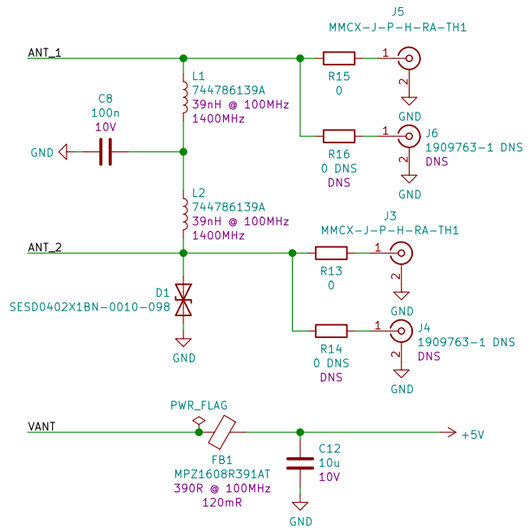
Greco timing circuitry



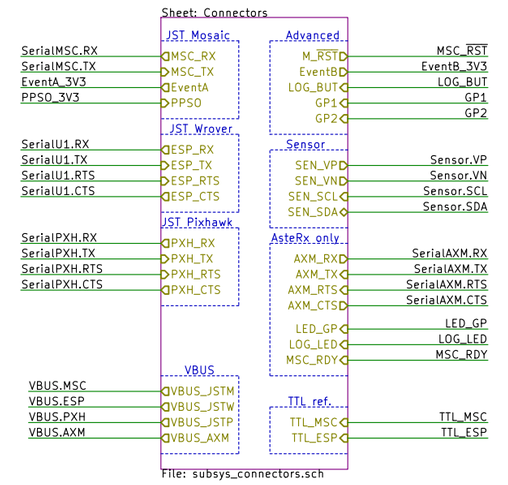
Power management



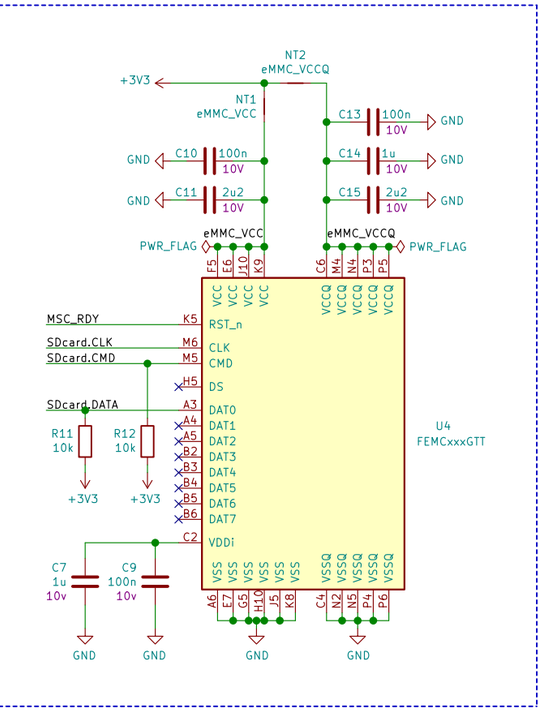
GNSS antenna & VANT circuitry



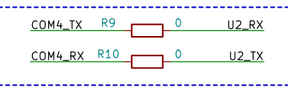
Connectors



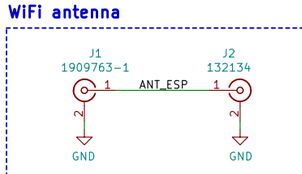
eMMC memory



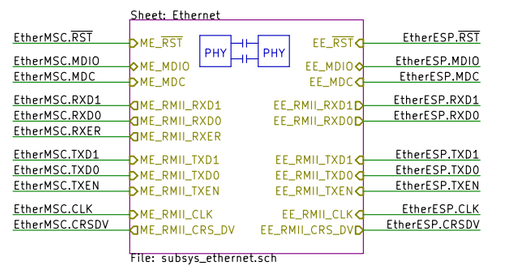
Inboard Serial



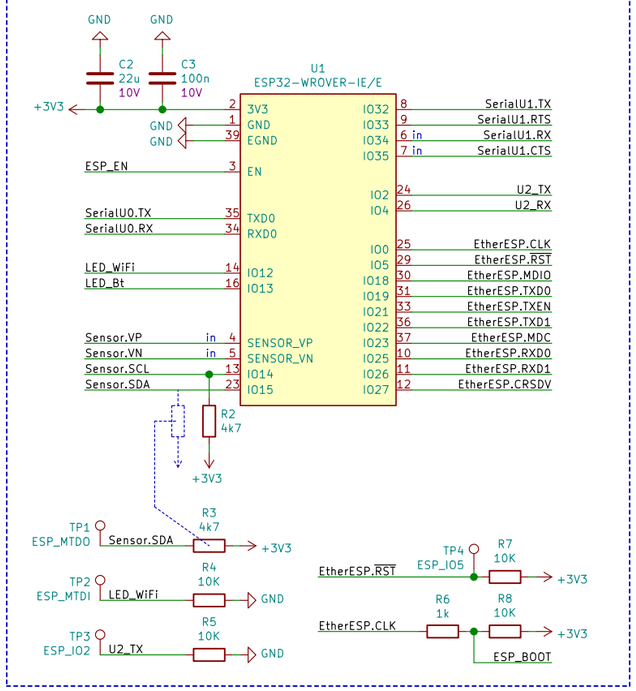
WiFi antenna



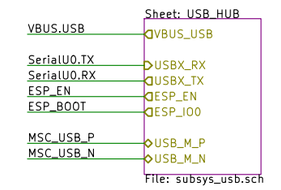
Ethernet link



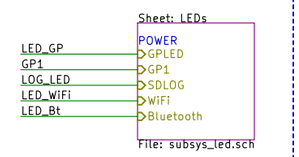
ESP32 Wrover E/IE



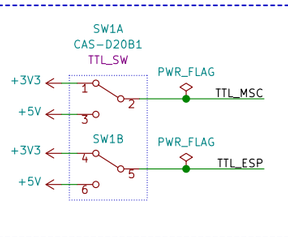
USB connector and HUB



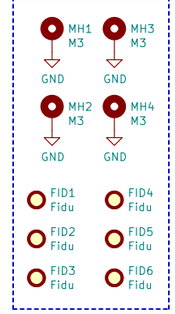
LEDs and their drivers



TTL switch

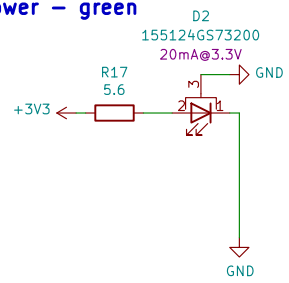


Mechanical

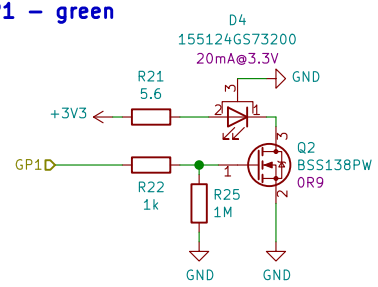


Sheet: / File: mowi.sch		
Title: mowi		
Size: A3	Date: 2021-08-10	**Rev: v1.0**
KiCad E.D.A. kicad 5.1.10-6.fc34		Id: 1/7

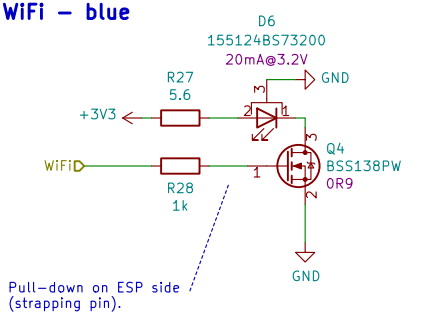
1: Power – green



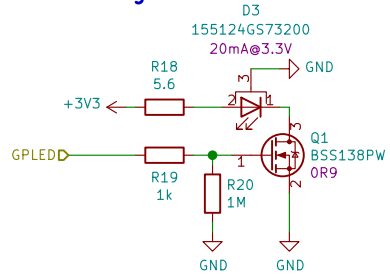
3: GP1 – green



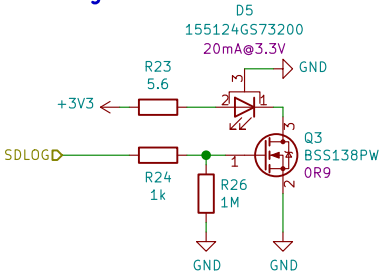
5: WiFi – blue



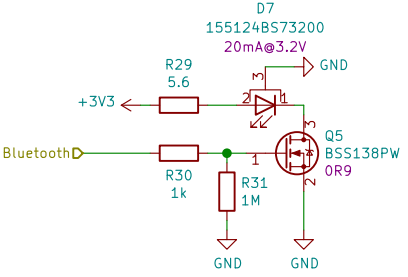
2: GPLED – green



4: SDLOG – green



6: Bluetooth – blue

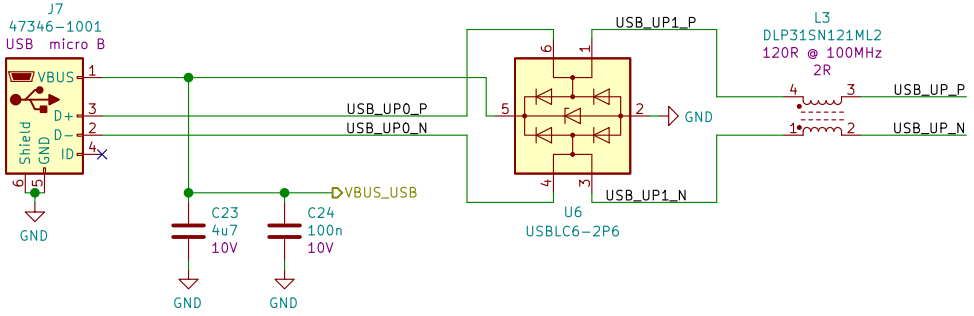


Sheet: /LEDs/
File: subsys_led.sch

Title: mowi

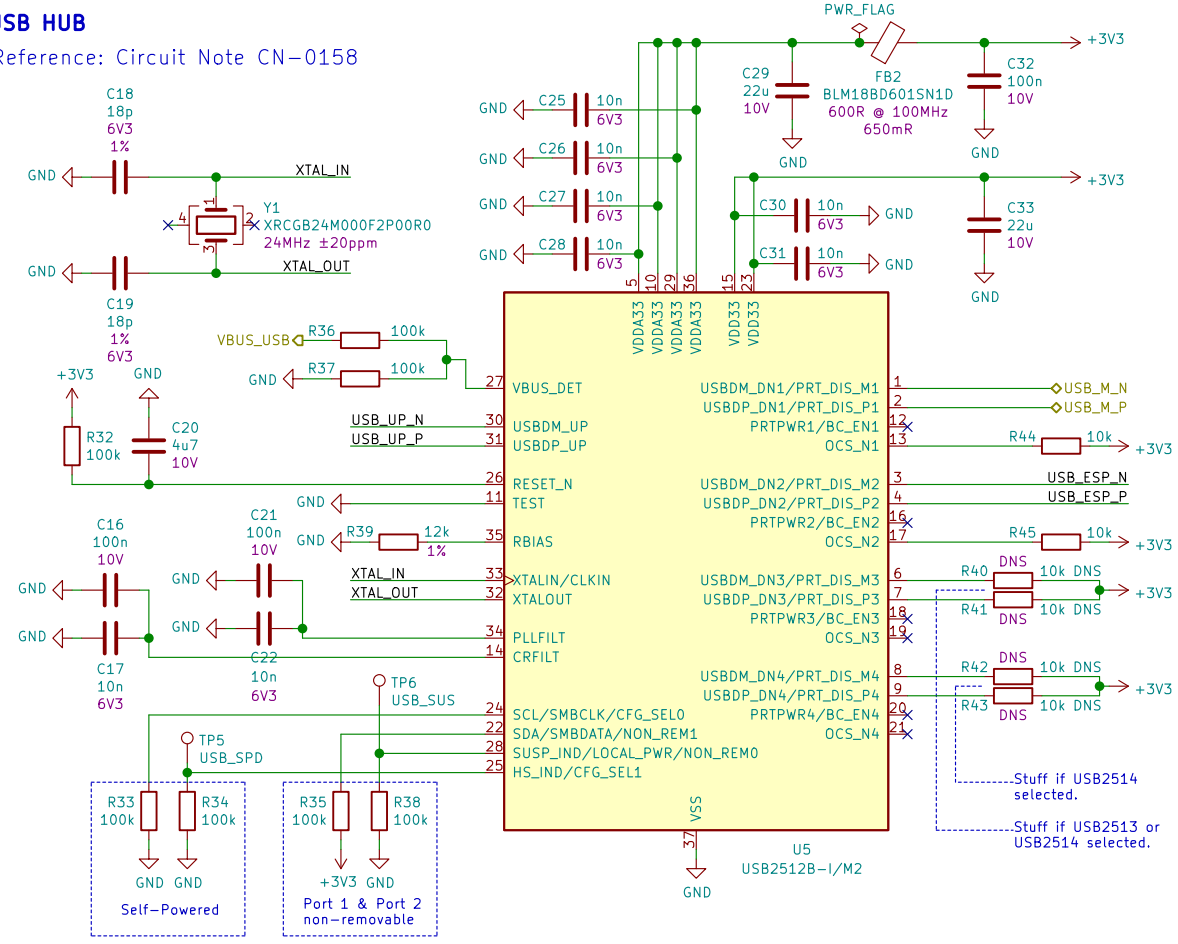
Size: User	Date: 2021-08-10	**Rev: v1.0**
KiCad E.D.A. kicad 5.1.10-6.fc34		Id: 2/7

USB connector



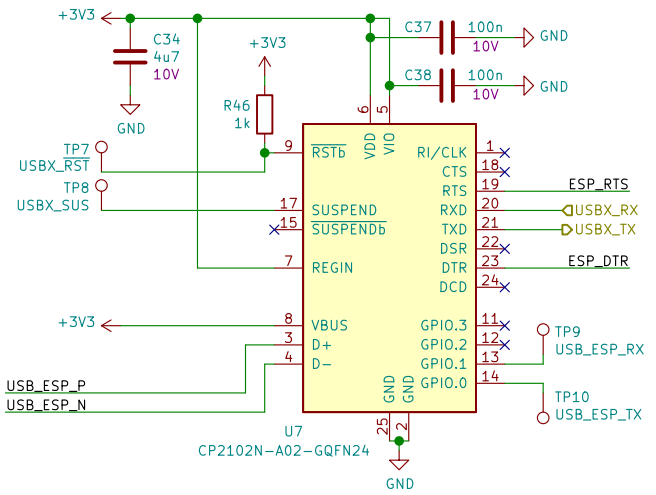
USB HUB

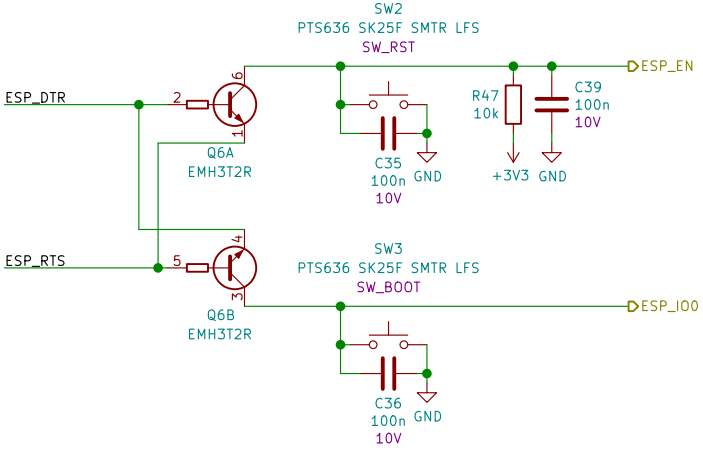
Reference: Circuit Note CN-0158



USB to Serial and auto program of ESP32 Wrover

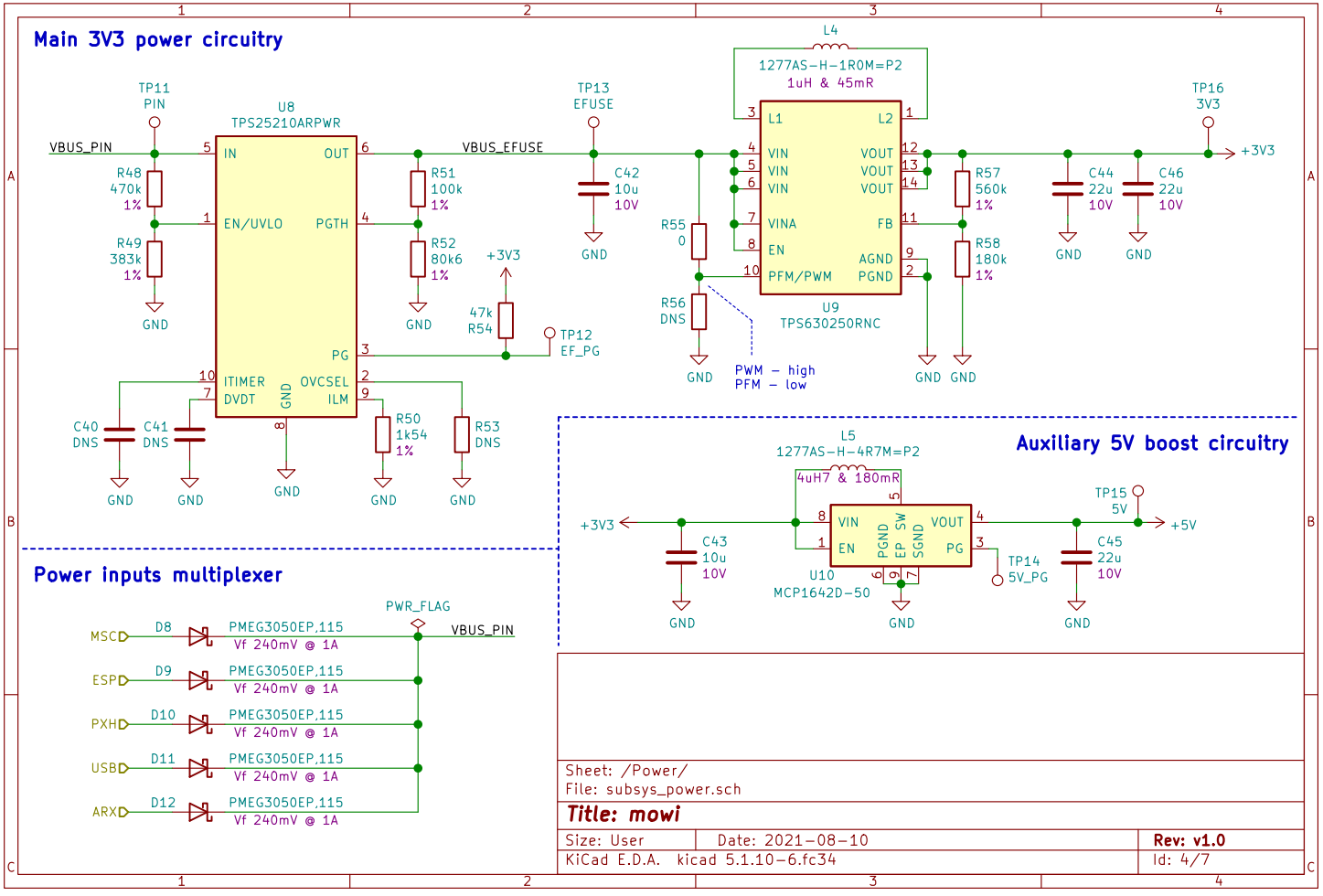
Reference: ESP32_DevKitc_V4



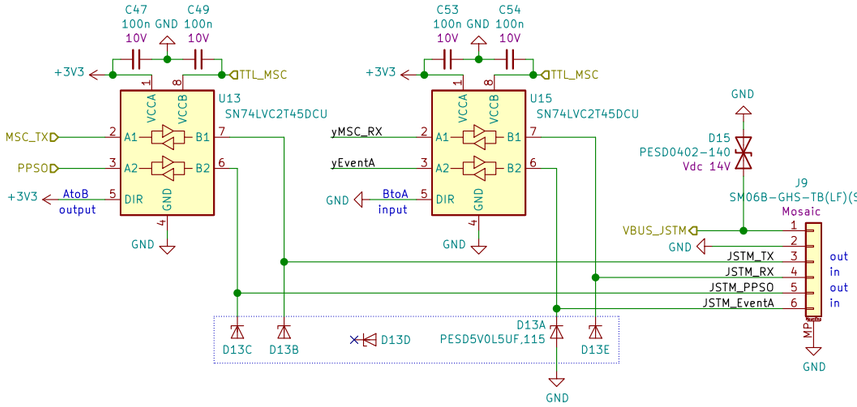


Referenced set-up circuitry using two SS8050 devices with base resistors replaced with a single component EMH3.

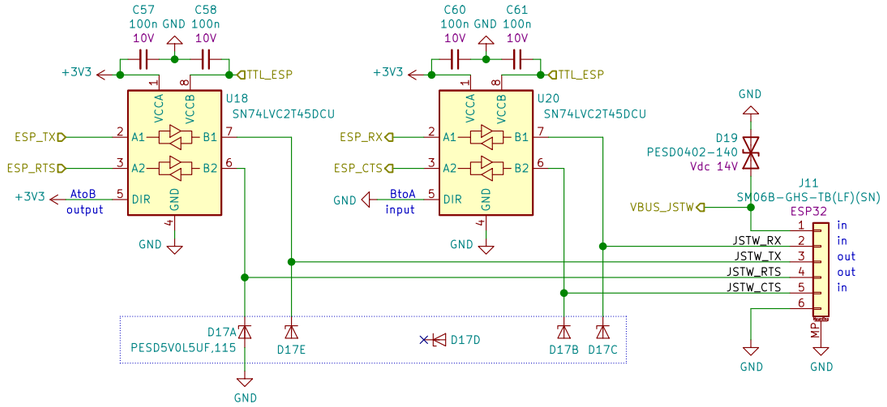
Sheet: /USB_HUB/		
File: subsys_usb.sch		
Title: mowi		
Size: A4	Date: 2021-08-10	**Rev: v1.0**
KiCad E.D.A. kicad 5.1.10-6.fc34		Id: 3/7


Main 3V3 power circuitry
TP11
PIN
U8
TPS25210ARPWR
VBUS_PIN
IN
OUT
EN/UVLO
PGTH
PG
ITIMER
DVDT
GND
OVCSEL
ILM
R48
470k
1%
R49
383k
1%
R51
100k
1%
R52
80k6
1%
VBUS_EFUSE
TP13
EFUSE
C42
10u
10V
+3V3
47k
R54
TP12
EF_PG
C40
DNS
C41
DNS
R50
1k54
1%
R53
DNS
L4
1277AS-H-1R0M=P2
1uH & 45mR
L1
L2
VIN
VOUT
VINA
FB
EN
AGND
PGND
PFM/PWM
U9
TPS630250RNC
R55
0
R56
DNS
PWM - high
PFM - low
R57
560k
1%
R58
180k
1%
C44
22u
10V
C46
22u
10V
TP16
3V3
Auxiliary 5V boost circuitry
L5
1277AS-H-4R7M=P2
4uH7 & 180mR
VIN
EN
PGND
EP
SW
SGND
VOUT
PG
U10
MCP1642D-50
C43
10u
10V
C45
22u
10V
TP14
5V_PG
TP15
5V
+5V
Power inputs multiplexer
PWR_FLAG
MSC
ESP
PXH
USB
ARX
D8
D9
D10
D11
D12
PMEG3050EP,115
Vf 240mV @ 1A
Sheet: /Power/
File: subsys_power.sch
Title: mowi
Size: User
Date: 2021-08-10
Rev: v1.0
KiCad E.D.A. kicad 5.1.10-6.fc34
Id: 4/7

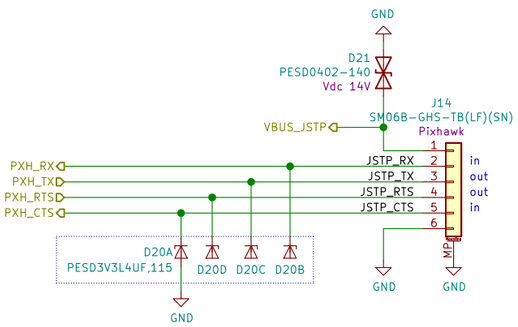
JST connector for Mosaic – *JSTM*



JST connector for Wrover – *JSTW*

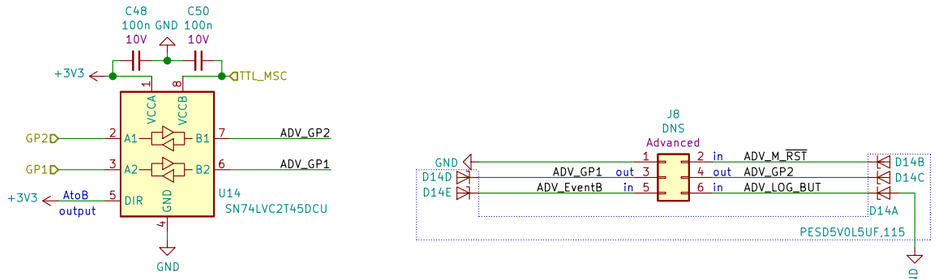


JST connector for Pixhawk – *JSTP*

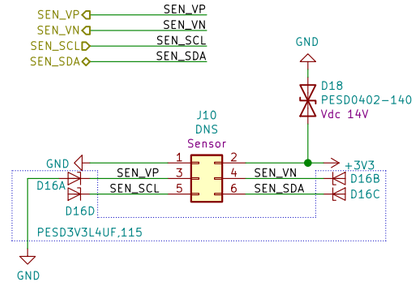


Advanced connector – 2x3 2.54mm header

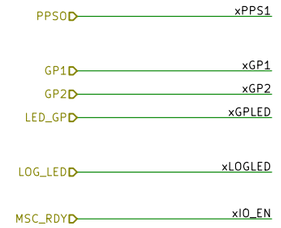
Connectors J8 and J10 are labeled as DNS. However their footprints can be sourced with a standard 02x03 2.54mm pitch socket / header.



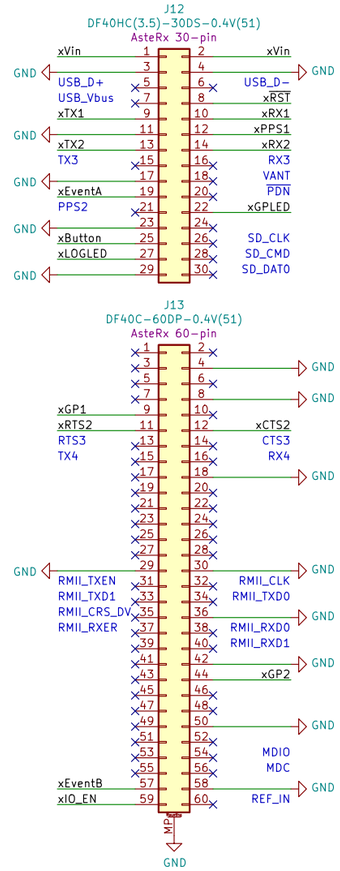
Sensor connector – 2x3 2.54mm header



Outputs only



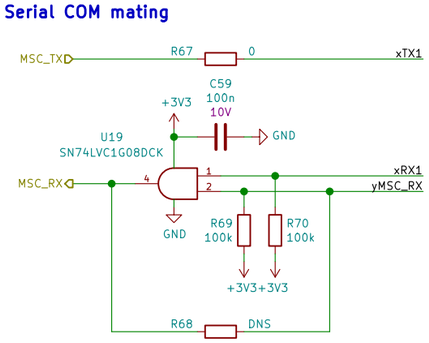
AsteRx connectors



EventA and EventB handling

Including voltage translation:
- xEvent is 3V3
- yEvent is 3V3 or 5V
- Event is 3V3

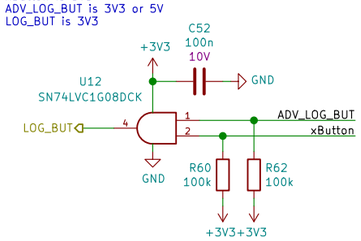
Serial COM mating



Resistors R67 and R68 can be used to enable/disable serial communication with AsteRx-platform modules.

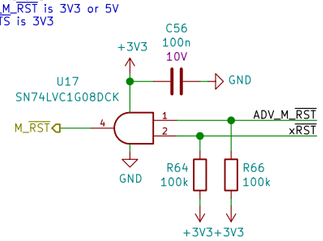
LOG button handling

Including voltage translation:
- xButton is 3V3
- ADV_LOG_BUT is 3V3 or 5V
- LOG_BUT is 3V3



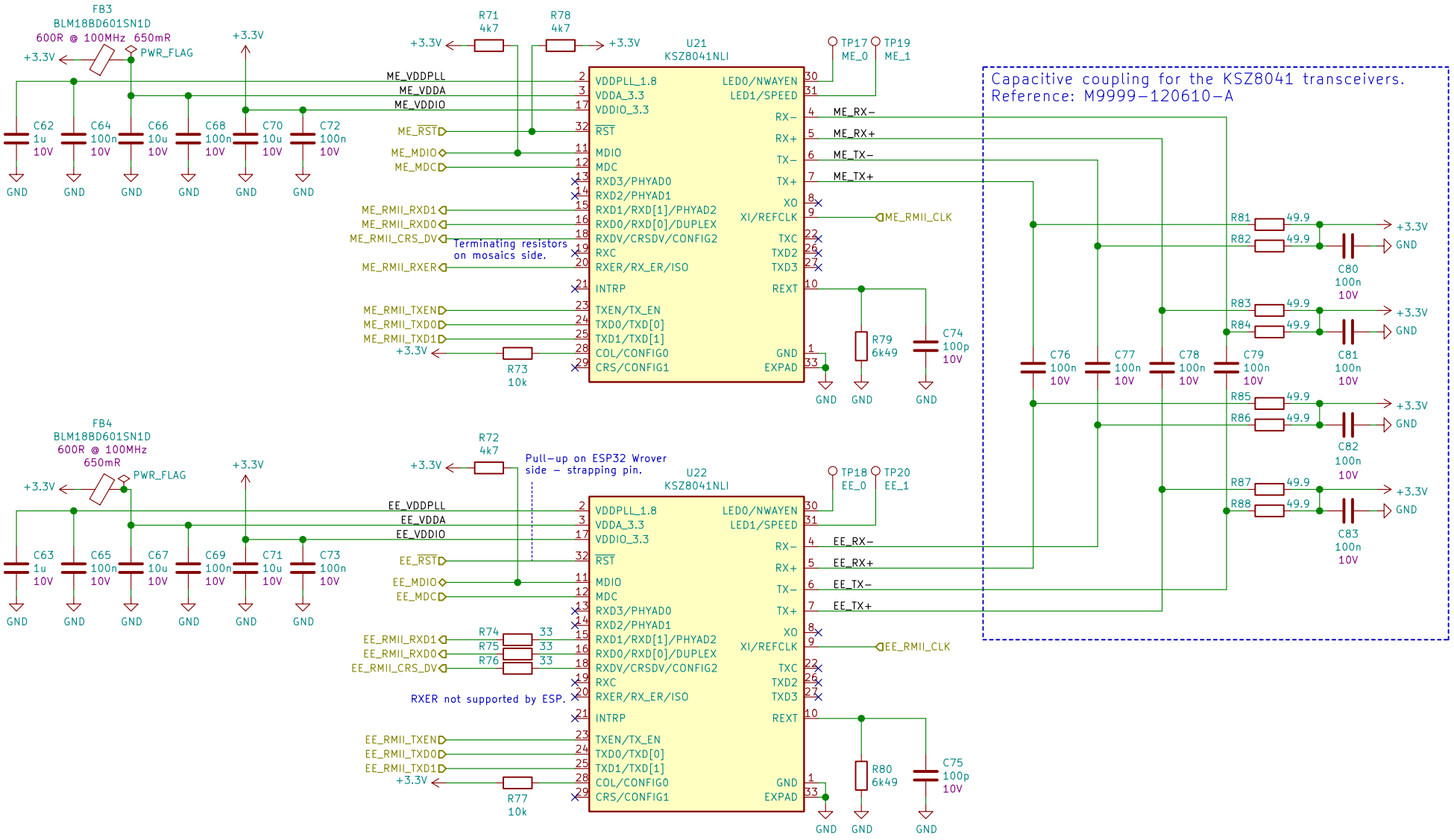
Mosaic $\overline{\text{RST}}$ handling

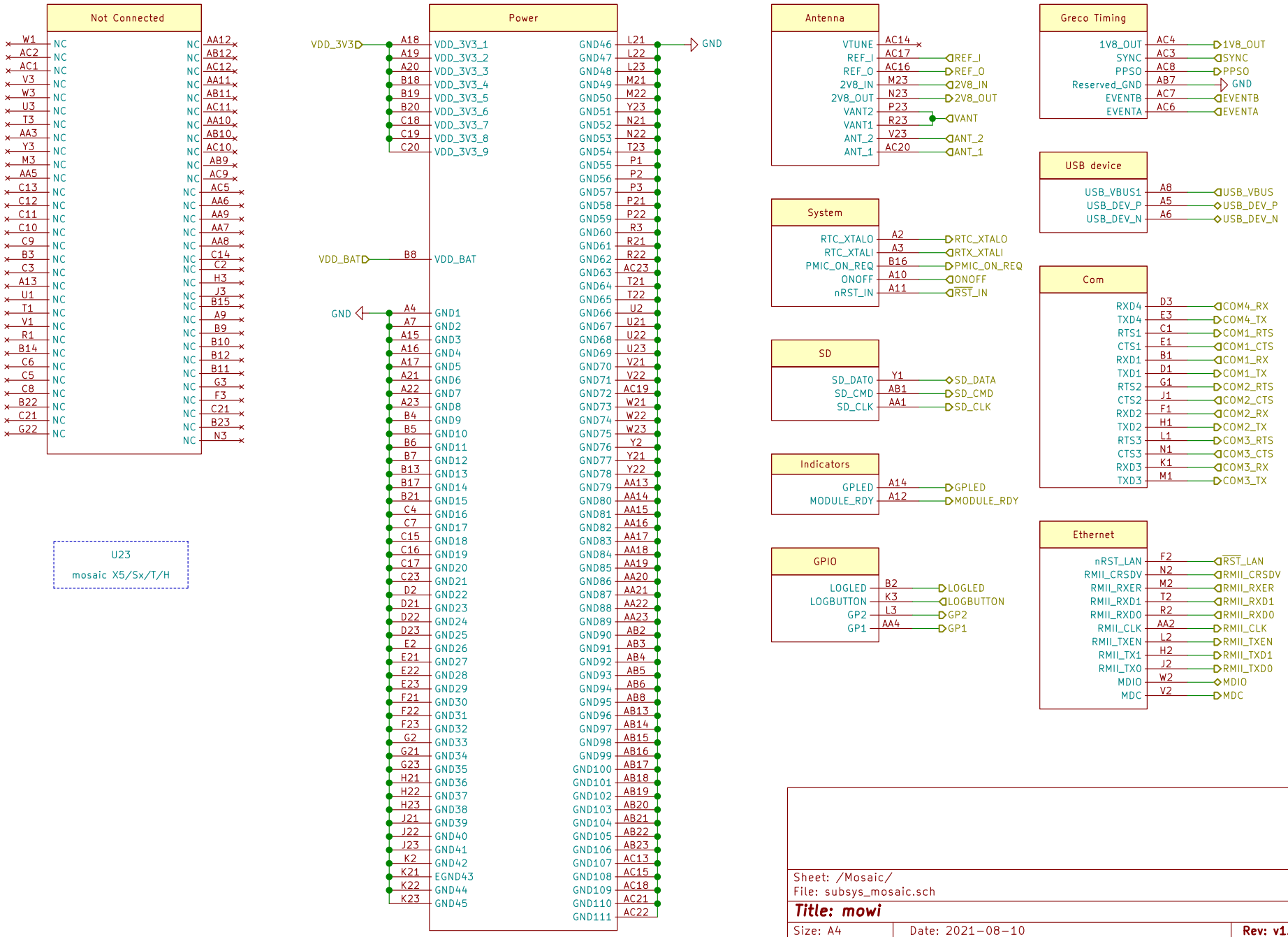
Including voltage translation:
- $\overline{\text{xRST}}$ is 3V3
- ADV_M_$\overline{\text{RST}}$ is 3V3 or 5V
- M_$\overline{\text{RTS}}$ is 3V3



AsteRx power input

Sheet: /Connectors/		
File: subsys_connectors.sch		
Title: mowi		
Size: A3	Date: 2021-08-10	**Rev: v1.0**
KiCad E.D.A. kicad 5.1.10-6.fc34		Id: 5/7


FB3
BLM18BD601SN1D
600R @ 100MHz 650mR
PWR_FLAG
+3.3V
R71 4k7
R78 4k7
U21
KSZ8041NLI
TP17 ME_0
TP19 ME_1
ME_VDDPLL
ME_VDDA
ME_VDDIO
ME_RST
ME_MDIO
ME_MDC
ME_RMII_RXD1
ME_RMII_RXD0
ME_RMII_CRS_DV
ME_RMII_RXER
ME_RMII_TXEN
ME_RMII_TXD0
ME_RMII_TXD1
ME_RMII_CLK
ME_RX–
ME_RX+
ME_TX–
ME_TX+
Terminating resistors on mosaics side.
R73 10k
R79 6k49
C74 100p 10V
C62 1u 10V
C64 100n 10V
C66 10u 10V
C68 100n 10V
C70 10u 10V
C72 100n 10V
GND
Capacitive coupling for the KSZ8041 transceivers.
Reference: M9999-120610-A
R81 49.9
R82 49.9
R83 49.9
R84 49.9
R85 49.9
R86 49.9
R87 49.9
R88 49.9
C80 100n 10V
C81 100n 10V
C82 100n 10V
C83 100n 10V
C76 100n 10V
C77 100n 10V
C78 100n 10V
C79 100n 10V
FB4
BLM18BD601SN1D
600R @ 100MHz
650mR
R72 4k7
Pull-up on ESP32 Wrover side – strapping pin.
U22
KSZ8041NLI
TP18 EE_0
TP20 EE_1
EE_VDDPLL
EE_VDDA
EE_VDDIO
EE_RST
EE_MDIO
EE_MDC
EE_RMII_RXD1
EE_RMII_RXD0
EE_RMII_CRS_DV
EE_RMII_TXEN
EE_RMII_TXD0
EE_RMII_TXD1
EE_RMII_CLK
EE_RX–
EE_RX+
EE_TX–
EE_TX+
R74 33
R75 33
R76 33
RXER not supported by ESP.
R77 10k
R80 6k49
C75 100p 10V
C63 1u 10V
C65 100n 10V
C67 10u 10V
C69 100n 10V
C71 10u 10V
C73 100n 10V
Sheet: /Ethernet/
File: subsys_ethernet.sch
Title: mowi
Size: A4
Date: 2021-08-10
Rev: v1.0
KiCad E.D.A. kicad 5.1.10-6.fc34
Id: 6/7


Not Connected
W1 NC AA12
AC2 NC AB12
AC1 NC AC12
V3 NC AA11
W3 NC AB11
U3 NC AC11
T3 NC AA10
AA3 NC AB10
Y3 NC AC10
M3 NC AB9
AA5 NC AC9
C13 NC AC5
C12 NC AA6
C11 NC AA9
C10 NC AA7
C9 NC AA8
B3 NC C14
C3 NC C2
A13 NC H3
U1 NC J3
T1 NC B15
V1 NC A9
R1 NC B9
B14 NC B10
C6 NC B12
C5 NC B11
C8 NC G3
B22 NC F3
C21 NC C21
G22 NC B23
NC N3
U23
mosaic X5/Sx/T/H
Power
VDD_3V3 A18 VDD_3V3_1
A19 VDD_3V3_2
A20 VDD_3V3_3
B18 VDD_3V3_4
B19 VDD_3V3_5
B20 VDD_3V3_6
C18 VDD_3V3_7
C19 VDD_3V3_8
C20 VDD_3V3_9
VDD_BAT B8 VDD_BAT
GND A4 GND1
A7 GND2
A15 GND3
A16 GND4
A17 GND5
A21 GND6
A22 GND7
A23 GND8
B4 GND9
B5 GND10
B6 GND11
B7 GND12
B13 GND13
B17 GND14
B21 GND15
C4 GND16
C7 GND17
C15 GND18
C16 GND19
C17 GND20
C23 GND21
D2 GND22
D21 GND23
D22 GND24
D23 GND25
E2 GND26
E21 GND27
E22 GND28
E23 GND29
F21 GND30
F22 GND31
F23 GND32
G2 GND33
G21 GND34
G23 GND35
H21 GND36
H22 GND37
H23 GND38
J21 GND39
J22 GND40
J23 GND41
K2 GND42
K21 EGND43
K22 GND44
K23 GND45
GND46 L21 GND
GND47 L22
GND48 L23
GND49 M21
GND50 M22
GND51 Y23
GND52 N21
GND53 N22
GND54 T23
GND55 P1
GND56 P2
GND57 P3
GND58 P21
GND59 P22
GND60 R3
GND61 R21
GND62 R22
GND63 AC23
GND64 T21
GND65 T22
GND66 U2
GND67 U21
GND68 U22
GND69 U23
GND70 V21
GND71 V22
GND72 AC19
GND73 W21
GND74 W22
GND75 W23
GND76 Y2
GND77 Y21
GND78 Y22
GND79 AA13
GND80 AA14
GND81 AA15
GND82 AA16
GND83 AA17
GND84 AA18
GND85 AA19
GND86 AA20
GND87 AA21
GND88 AA22
GND89 AA23
GND90 AB2
GND91 AB3
GND92 AB4
GND93 AB5
GND94 AB6
GND95 AB8
GND96 AB13
GND97 AB14
GND98 AB15
GND99 AB16
GND100 AB17
GND101 AB18
GND102 AB19
GND103 AB20
GND104 AB21
GND105 AB22
GND106 AB23
GND107 AC13
GND108 AC15
GND109 AC18
GND110 AC21
GND111 AC22
Antenna
VTUNE AC14
REF_I AC17 REF_I
REF_O AC16 REF_O
2V8_IN M23 2V8_IN
2V8_OUT N23 2V8_OUT
VANT2 P23 VANT
VANT1 R23
ANT_2 V23 ANT_2
ANT_1 AC20 ANT_1
System
RTC_XTALO A2 RTC_XTALO
RTC_XTALI A3 RTX_XTALI
PMIC_ON_REQ B16 PMIC_ON_REQ
ONOFF A10 ONOFF
nRST_IN A11 RST_IN
SD
SD_DAT0 Y1 SD_DATA
SD_CMD AB1 SD_CMD
SD_CLK AA1 SD_CLK
Indicators
GPLED A14 GPLED
MODULE_RDY A12 MODULE_RDY
GPIO
LOGLED B2 LOGLED
LOGBUTTON K3 LOGBUTTON
GP2 L3 GP2
GP1 AA4 GP1
Greco Timing
1V8_OUT AC4 1V8_OUT
SYNC AC3 SYNC
PPSO AC8 PPSO
Reserved_GND AB7 GND
EVENTB AC7 EVENTB
EVENTA AC6 EVENTA
USB device
USB_VBUS1 A8 USB_VBUS
USB_DEV_P A5 USB_DEV_P
USB_DEV_N A6 USB_DEV_N
Com
RXD4 D3 COM4_RX
TXD4 E3 COM4_TX
RTS1 C1 COM1_RTS
CTS1 E1 COM1_CTS
RXD1 B1 COM1_RX
TXD1 D1 COM1_TX
RTS2 G1 COM2_RTS
CTS2 J1 COM2_CTS
RXD2 F1 COM2_RX
TXD2 H1 COM2_TX
RTS3 L1 COM3_RTS
CTS3 N1 COM3_CTS
RXD3 K1 COM3_RX
TXD3 M1 COM3_TX
Ethernet
nRST_LAN F2 RST_LAN
RMII_CRSDV N2 RMII_CRSDV
RMII_RXER M2 RMII_RXER
RMII_RXD1 T2 RMII_RXD1
RMII_RXD0 R2 RMII_RXD0
RMII_CLK AA2 RMII_CLK
RMII_TXEN L2 RMII_TXEN
RMII_TX1 H2 RMII_TXD1
RMII_TX0 J2 RMII_TXD0
MDIO W2 MDIO
MDC V2 MDC
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Date: 2021-08-10
Rev: v1.0
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