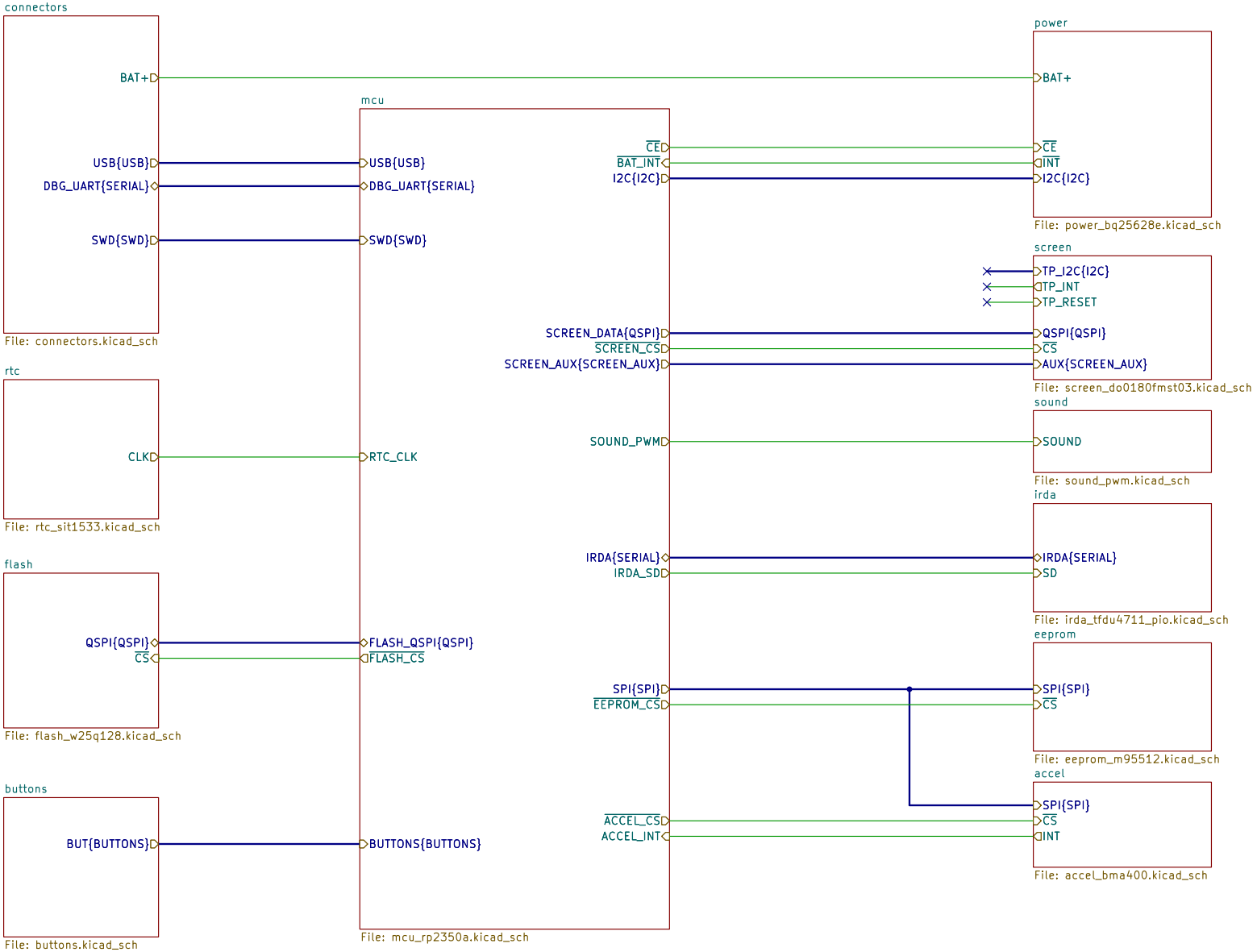
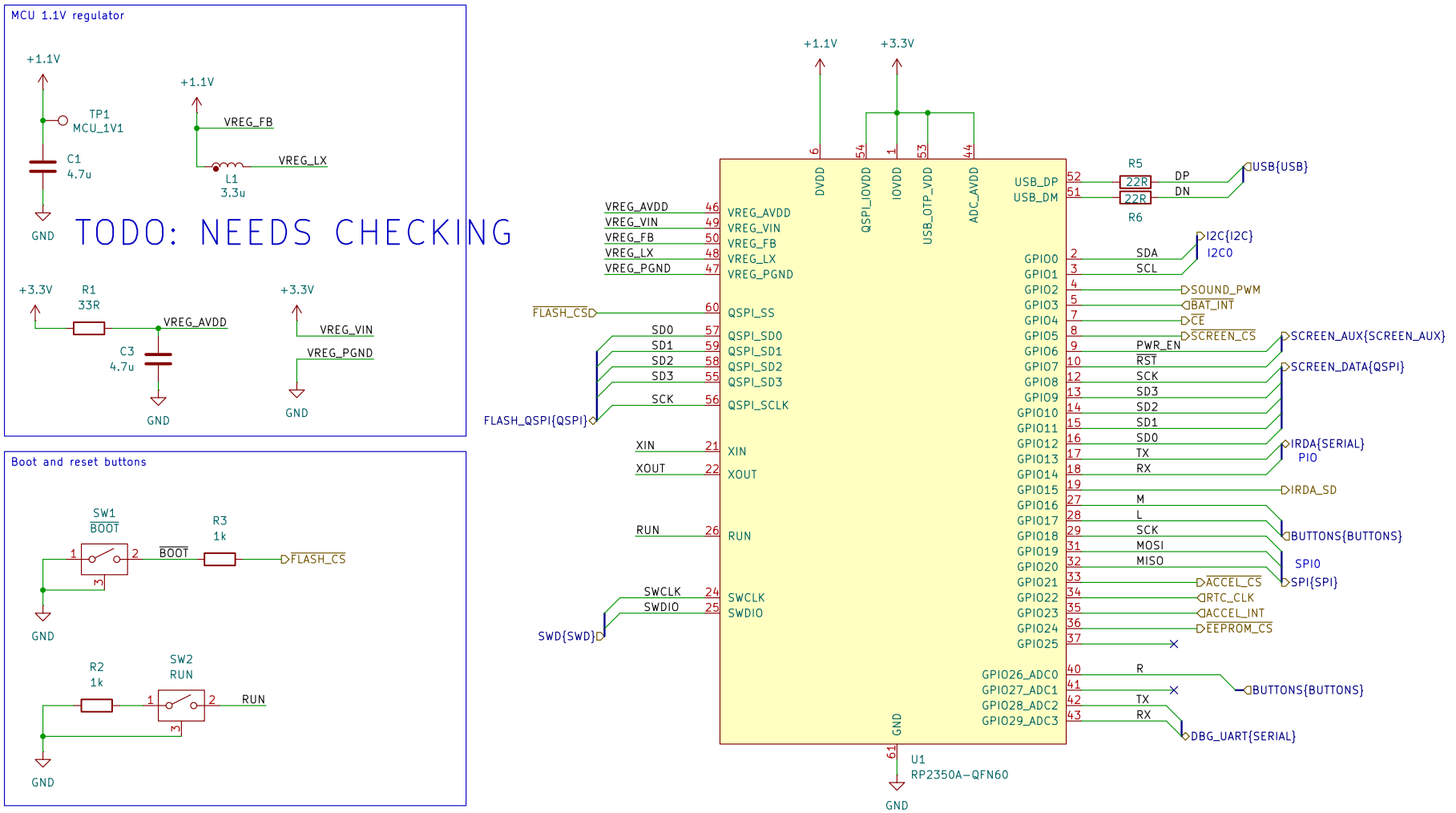
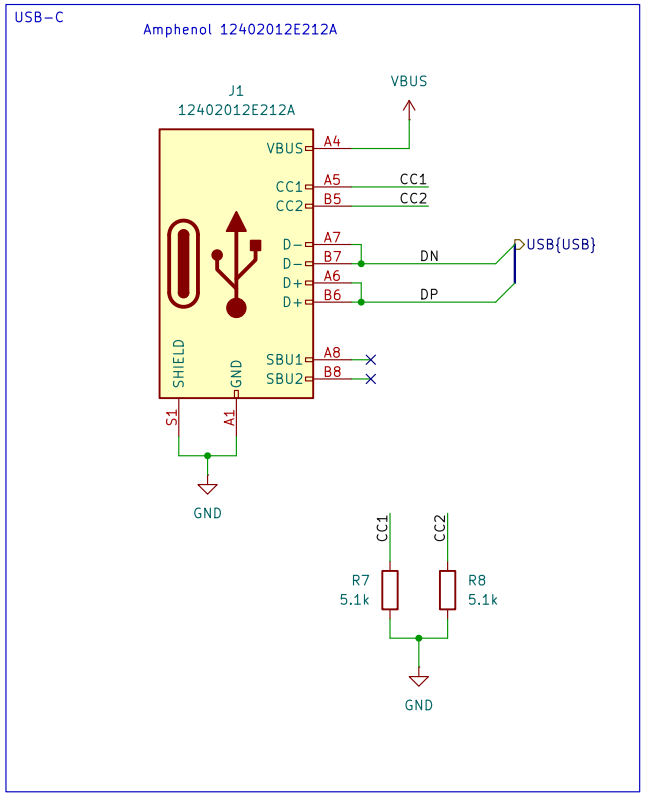
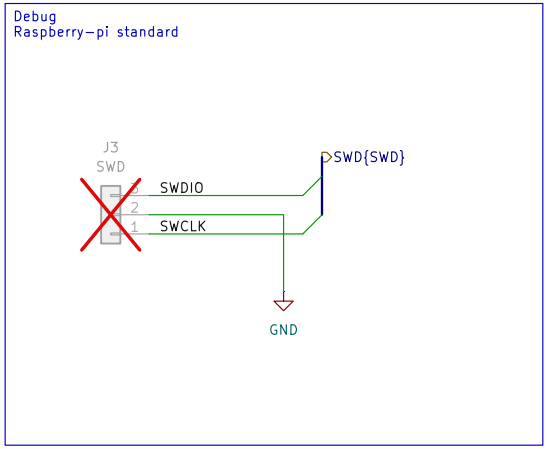
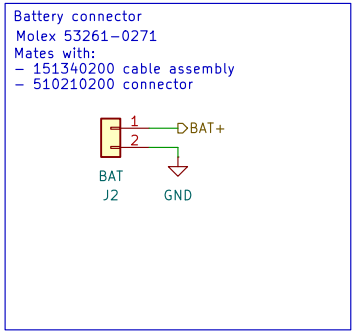
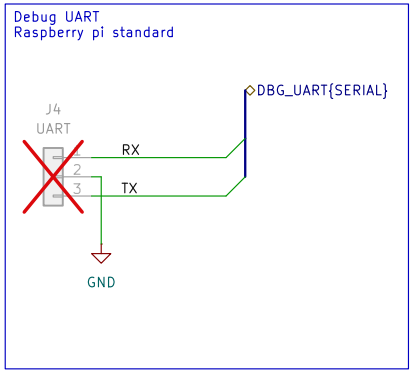

connectors
BAT+
USB{USB}
DBG_UART{SERIAL}
SWD{SWD}
File: connectors.kicad_sch
rtc
CLK
File: rtc_sit1533.kicad_sch
flash
QSPI{QSPI}
CS
File: flash_w25q128.kicad_sch
buttons
BUT{BUTTONS}
File: buttons.kicad_sch
mcu
USB{USB}
DBG_UART{SERIAL}
SWD{SWD}
RTC_CLK
FLASH_QSPI{QSPI}
FLASH_CS
BUTTONS{BUTTONS}
CE
BAT_INT
I2C{I2C}
SCREEN_DATA{QSPI}
SCREEN_CS
SCREEN_AUX{SCREEN_AUX}
SOUND_PWM
IRDA{SERIAL}
IRDA_SD
SPI{SPI}
EEPROM_CS
ACCEL_CS
ACCEL_INT
File: mcu_rp2350a.kicad_sch
power
BAT+
CE
INT
I2C{I2C}
File: power_bq25628e.kicad_sch
screen
TP_I2C{I2C}
TP_INT
TP_RESET
QSPI{QSPI}
CS
AUX{SCREEN_AUX}
File: screen_do0180fmst03.kicad_sch
sound
SOUND
File: sound_pwm.kicad_sch
irda
IRDA{SERIAL}
SD
File: irda_tfdu4711_pio.kicad_sch
eeprom
SPI{SPI}
CS
File: eeprom_m95512.kicad_sch
accel
SPI{SPI}
CS
INT
File: accel_bma400.kicad_sch

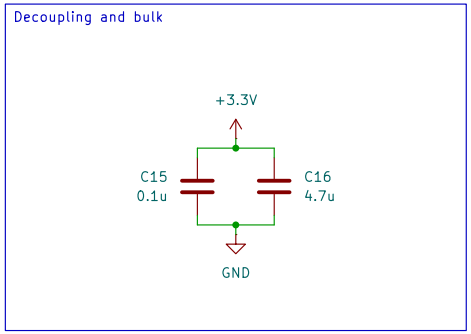

MCU 1.1V regulator
+1.1V
TP1
MCU_1V1
C1
4.7u
GND
+1.1V
VREG_FB
VREG_LX
L1
3.3u
TODO: NEEDS CHECKING
+3.3V
R1
33R
VREG_AVDD
C3
4.7u
GND
+3.3V
VREG_VIN
VREG_PGND
GND
Boot and reset buttons
SW1
BOOT
R3
1k
BOOT
FLASH_CS
GND
R2
1k
SW2
RUN
RUN
GND
12MHz Crystal
Y1
ABM8-272-T3
R4
1k
XIN
XOUT
C2
15p
C4
15p
GND
GND
GND
Ensure ground plane is >1.0 mm from surface
Decoupling and bulk
+1.1V
C5
0.1u
C6
0.1u
C7
4.7u
GND
+3.3V
C8
0.1u
C9
0.1u
C10
0.1u
C11
0.1u
C12
0.1u
C13
0.1u
C14
0.1u
GND
+1.1V
+3.3V
DVDD
QSPI_IOVDD
IOVDD
USB_OTP_VDD
ADC_AVDD
VREG_AVDD
VREG_VIN
VREG_FB
VREG_LX
VREG_PGND
QSPI_SS
QSPI_SD0
QSPI_SD1
QSPI_SD2
QSPI_SD3
QSPI_SCLK
FLASH_CS
FLASH_QSPI{QSPI}
XIN
XOUT
RUN
SWCLK
SWDIO
SWD{SWD}
USB_DP
USB_DM
R5
22R
R6
22R
DP
DN
USB{USB}
GPIO0
GPIO1
SDA
SCL
I2C{I2C}
I2C0
GPIO2
GPIO3
GPIO4
GPIO5
SOUND_PWM
BAT_INT
CE
SCREEN_CS
SCREEN_AUX{SCREEN_AUX}
GPIO6
GPIO7
GPIO8
GPIO9
GPIO10
GPIO11
GPIO12
GPIO13
GPIO14
PWR_EN
RST
SCK
SD3
SD2
SD1
SD0
TX
RX
SCREEN_DATA{QSPI}
IRDA{SERIAL}
PIO
GPIO15
IRDA_SD
GPIO16
GPIO17
GPIO18
GPIO19
GPIO20
M
L
SCK
MOSI
MISO
BUTTONS{BUTTONS}
SPI0
SPI{SPI}
GPIO21
GPIO22
GPIO23
GPIO24
GPIO25
ACCEL_CS
RTC_CLK
ACCEL_INT
EEPROM_CS
GPIO26_ADC0
GPIO27_ADC1
GPIO28_ADC2
GPIO29_ADC3
R
BUTTONS{BUTTONS}
TX
RX
DBG_UART{SERIAL}
GND
U1
RP2350A-QFN60
GND

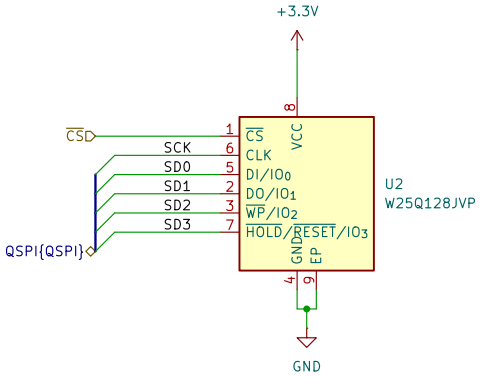

USB-C
Amphenol 12402012E212A
J1
12402012E212A
VBUS
VBUS
A4
CC1
A5
CC1
CC2
B5
CC2
D-
A7
D-
B7
DN
USB{USB}
D+
A6
D+
B6
DP
SHIELD
GND
SBU1
A8
SBU2
B8
S1
A1
GND
CC1
CC2
R7
5.1k
R8
5.1k
GND

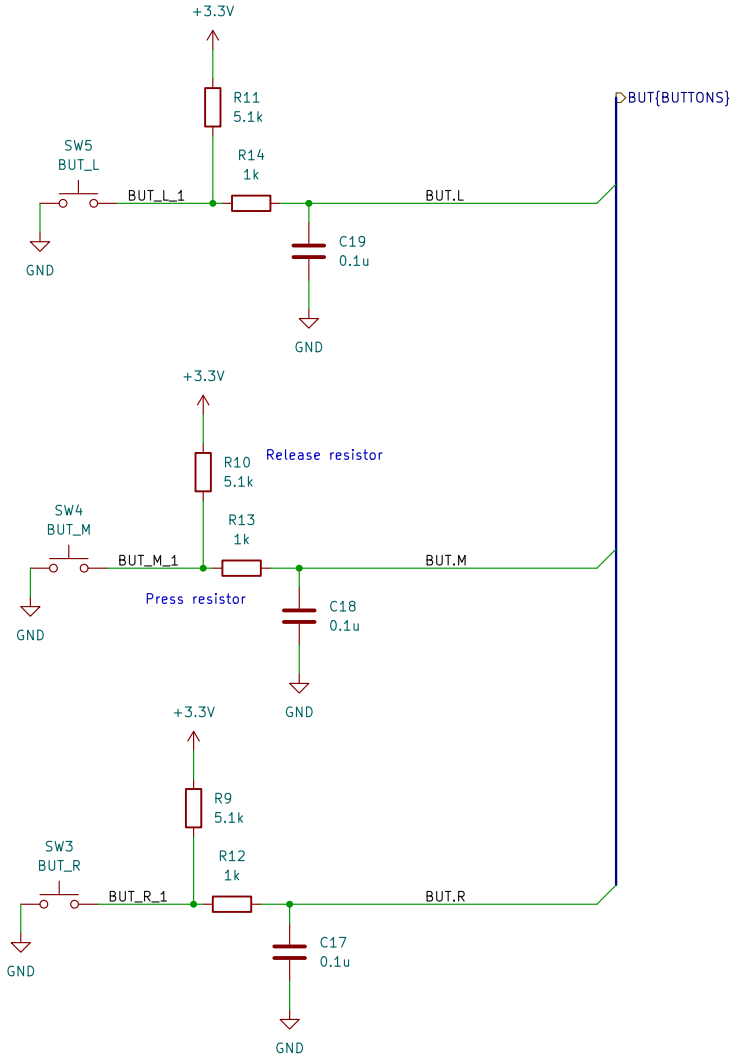

Debug
Raspberry-pi standard
J3
SWD
SWD{SWD}
SWDIO
SWCLK
GND

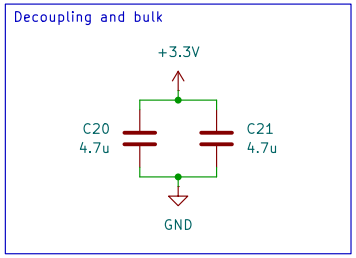

Battery connector
Molex 53261-0271
Mates with:
- 151340200 cable assembly
- 510210200 connector
BAT+
BAT
J2
GND

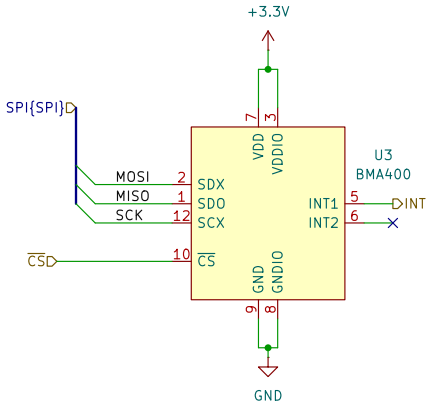

Debug UART
Raspberry pi standard
J4
UART
DBG_UART{SERIAL}
RX
TX
GND

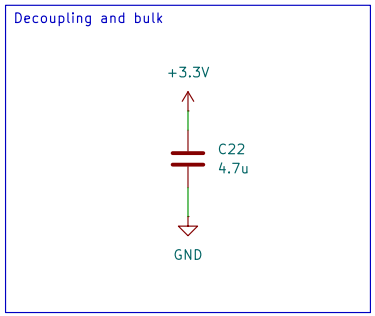

Decoupling and bulk
+3.3V
C15
0.1u
C16
4.7u
GND

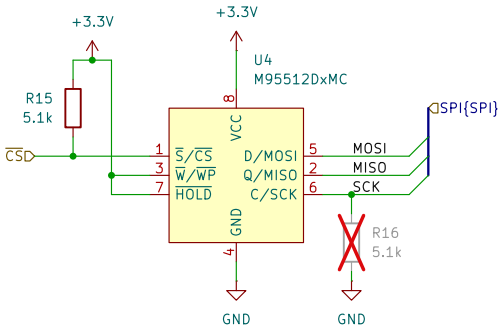

+3.3V
8
VCC
CS
1
SCK
6
SD0
5
SD1
2
SD2
3
SD3
7
CLK
DI/IO0
DO/IO1
WP/IO2
HOLD/RESET/IO3
GND
EP
4
9
U2
W25Q128JVP
GND
CS
QSPI{QSPI}

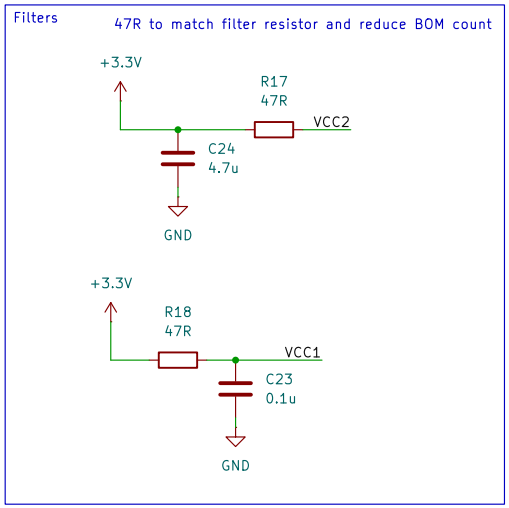

+3.3V
R11
5.1k
SW5
BUT_L
R14
1k
BUT_L_1
BUT.L
BUT{BUTTONS}
GND
C19
0.1u
GND
+3.3V
R10
5.1k
Release resistor
SW4
BUT_M
R13
1k
BUT_M_1
BUT.M
Press resistor
GND
C18
0.1u
GND
+3.3V
R9
5.1k
SW3
BUT_R
R12
1k
BUT_R_1
BUT.R
GND
C17
0.1u
GND


Decoupling and bulk
+3.3V
C20
4.7u
C21
4.7u
GND


+3.3V
SPI{SPI}
MOSI
MISO
SCK
CS
SDX
SDO
SCX
CS
VDD
VDDIO
GND
GNDIO
INT1
INT2
INT
U3
BMA400
7
3
2
1
12
10
5
6
9
8
GND

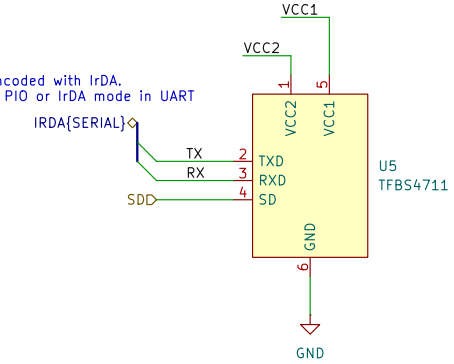

Decoupling and bulk
+3.3V
C22
4.7u
GND

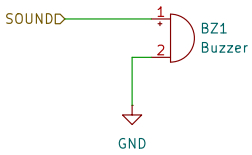

+3.3V
+3.3V
U4
M95512DxMC
R15
5.1k
CS
1
3
7
S/CS
W/WP
HOLD
8
VCC
GND
4
D/MOSI
Q/MISO
C/SCK
5
2
6
SPI{SPI}
MOSI
MISO
SCK
R16
5.1k
GND
GND

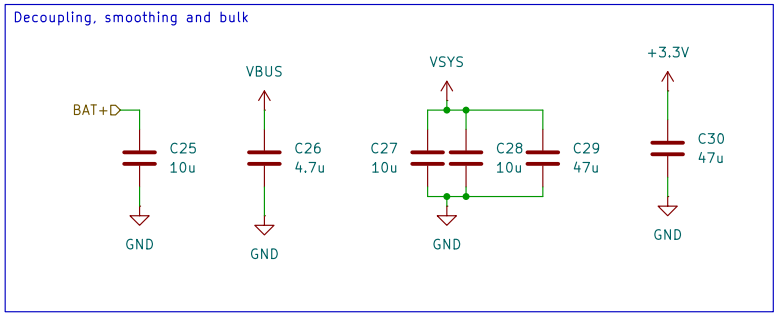


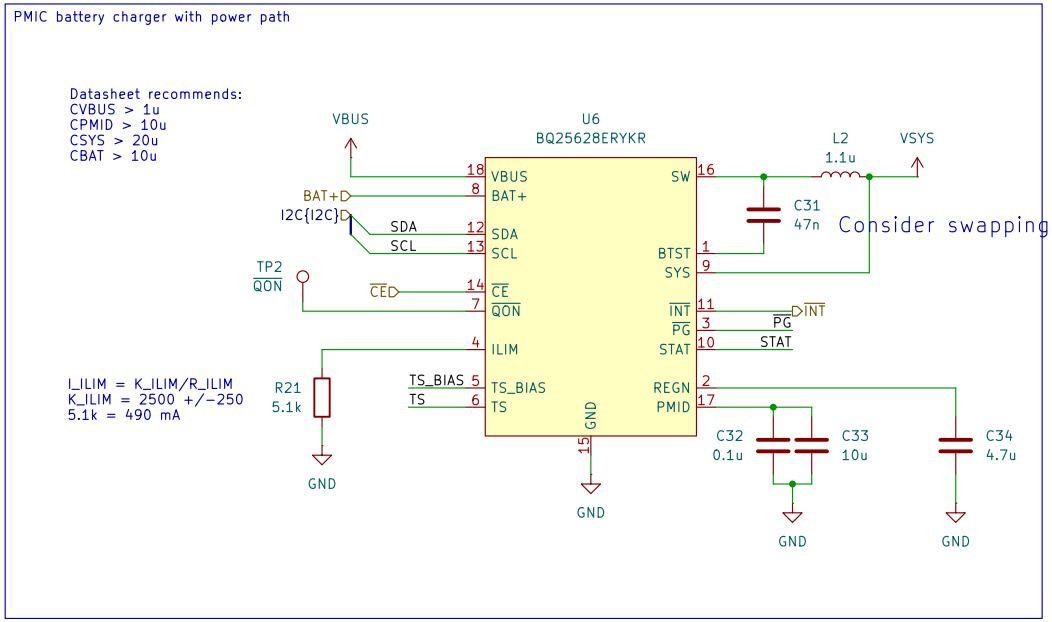
VCC2 average transmit current max 85 mA
Peak current 430 mA.
Min resistor value at 1/16 W average dissipation = 8.7 ~ 10 Ohms

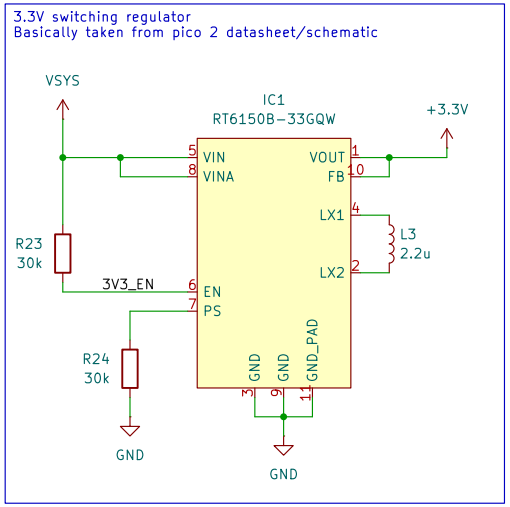
Expect serial to be encoded with IrDA.
MCU can do this with PIO or IrDA mode in UART

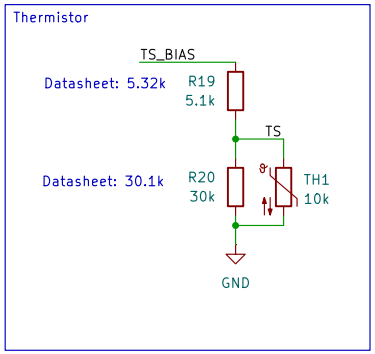


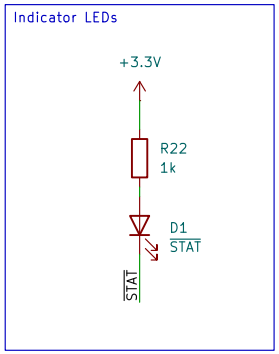

SOUNDD
1
+
BZ1
Buzzer
2
GND

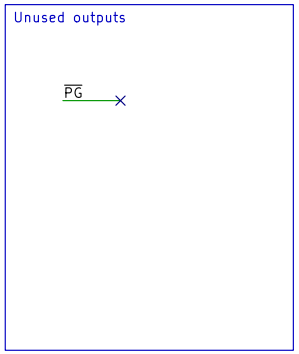

Decoupling, smoothing and bulk
BAT+
C25
10u
GND
VBUS
C26
4.7u
GND
VSYS
C27
10u
C28
10u
C29
47u
GND
+3.3V
C30
47u
GND

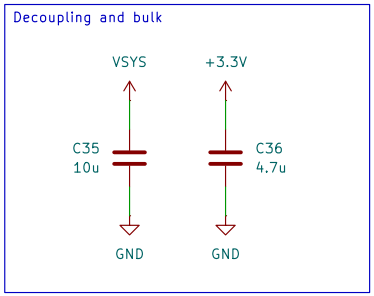

PMIC battery charger with power path
Datasheet recommends:
CVBUS > 1u
CPMID > 10u
CSYS > 20u
CBAT > 10u
I_ILIM = K_ILIM/R_ILIM
K_ILIM = 2500 +/-250
5.1k = 490 mA
U6
BQ25628ERYKR
VBUS
BAT+
I2C{I2C}
SDA
SCL
TP2
QON
CE
ILIM
TS_BIAS
TS
R21
5.1k
GND
L2
1.1u
VSYS
C31
47n
Consider swapping for 0.1u
BTST
SYS
INT
PG
STAT
REGN
PMID
C32
0.1u
C33
10u
C34
4.7u
GND

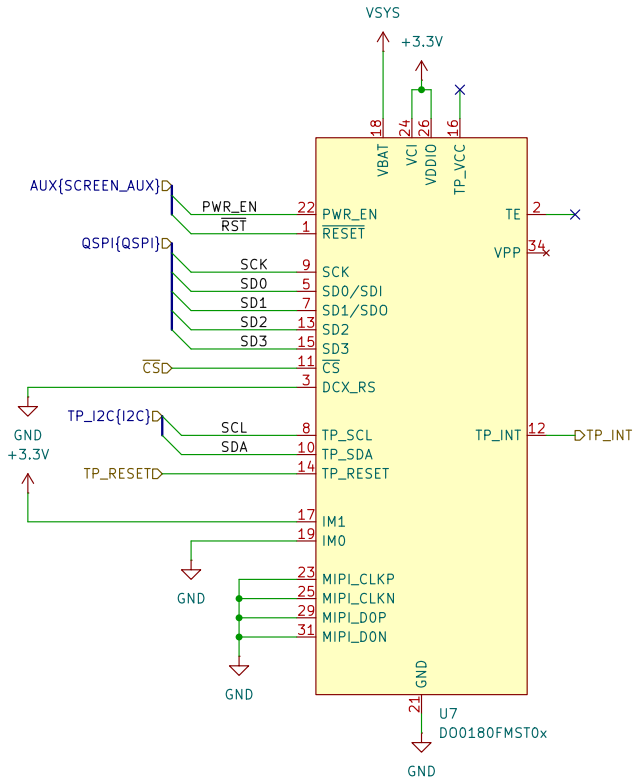

3.3V switching regulator
Basically taken from pico 2 datasheet/schematic
VSYS
IC1
RT6150B-33GQW
+3.3V
VIN
VINA
VOUT
FB
LX1
LX2
L3
2.2u
R23
30k
3V3_EN
EN
PS
R24
30k
GND
GND_PAD
GND

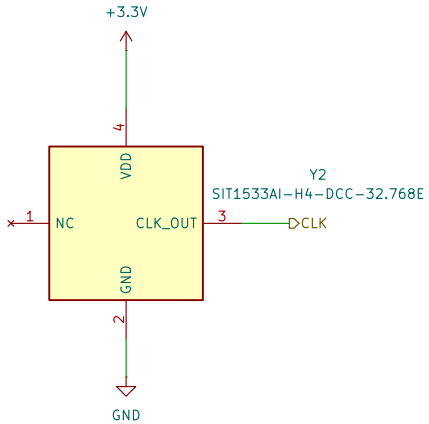

Thermistor
TS_BIAS
Datasheet: 5.32k
R19
5.1k
TS
Datasheet: 30.1k
R20
30k
TH1
10k
GND


Indicator LEDs
+3.3V
R22
1k
D1
STAT


Unused outputs
PG


Decoupling and bulk
VSYS
+3.3V
C35
10u
C36
4.7u
GND
GND


VSYS
+3.3V
18
24
26
16
VBAT
VCI
VDDIO
TP_VCC
AUX{SCREEN_AUX}
PWR_EN
22
PWR_EN
RST
1
RESET
TE
2
QSPI{QSPI}
VPP
34
SCK
9
SCK
SD0
5
SD0/SDI
SD1
7
SD1/SDO
SD2
13
SD2
SD3
15
SD3
CS
11
CS
3
DCX_RS
GND
TP_I2C{I2C}
SCL
8
TP_SCL
TP_INT
12
TP_INT
+3.3V
SDA
10
TP_SDA
TP_RESET
14
TP_RESET
17
IM1
19
IM0
GND
23
MIPI_CLKP
25
MIPI_CLKN
29
MIPI_DOP
31
MIPI_DON
GND
GND
21
U7
DO0180FMST0x
GND


+3.3V
4
VDD
Y2
SIT1533AI-H4-DCC-32.768E
1
NC
CLK_OUT
3
CLK
GND
2
GND