01 Descriptions

文件: 01 Descriptions.kicad_sch

02 Block Diagram

文件: 02 Block Diagram.kicad_sch

03 Power

文件: 03 Power.kicad_sch

04 MAIN

文件: 04 MAIN.kicad_sch

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Sheet: /
File: XIAO nRF54l15.kicad_sch

Title: XIAO nRF54L15

Size: A3	Date: 2026-01-30	**Rev: V1.2**
KiCad E.D.A. 10.0.1		Id: 1/5

Version	Descriptions	Data	Name
V1.0	First Release	4/16/2025	
V1.2	Added U12 to prevent UART signal backflow, added C21 and C26 to the NFC circuit, added U13 to optimize the power switching circuit.	1/30/2026	

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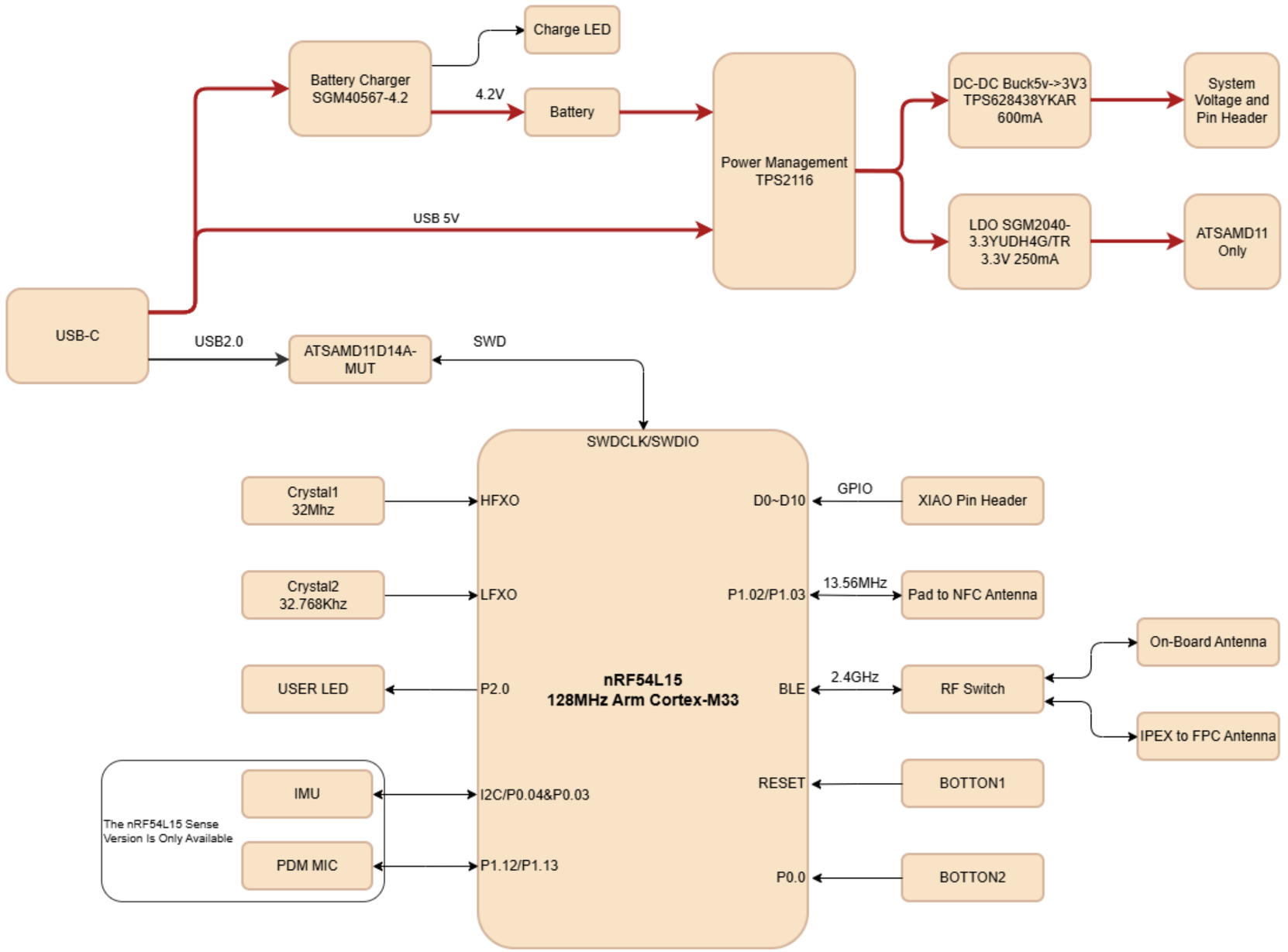
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Sheet: /01 Descriptions/
File: 01 Descriptions.kicad_sch

Title: XIAO nRF54L15

Size: A3 | Date: 2026-01-30 | Rev: V1.2

KiCad E.D.A. 10.0.1 | Id: 2/5



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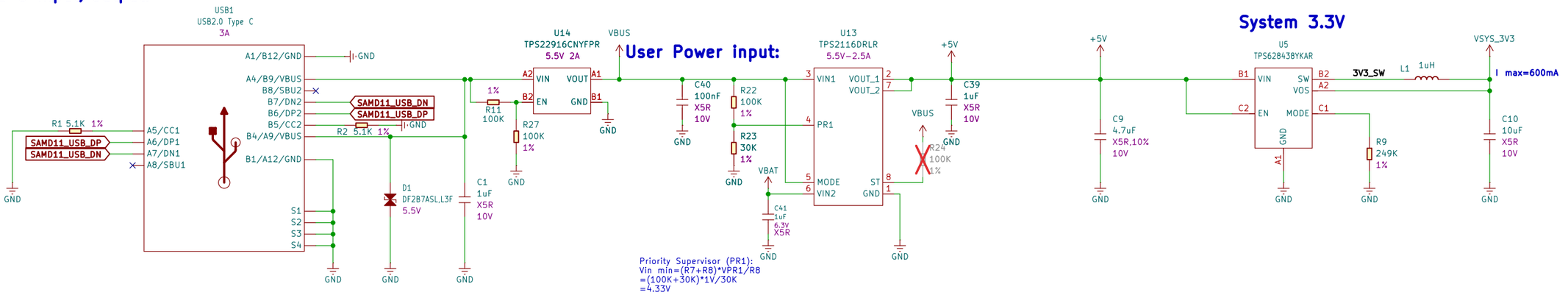
Sheet: /02 Block Diagram/
File: 02 Block Diagram.kicad_sch

Title: XIAO nRF54L15

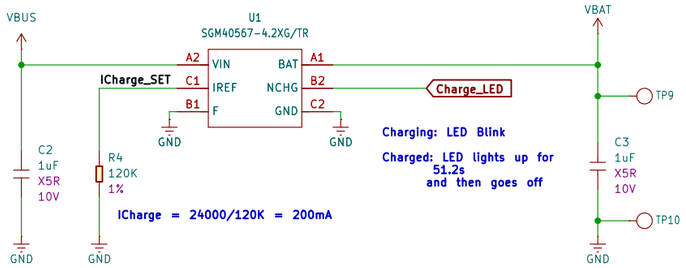
Size: A3 | Date: 2026-01-30 | Rev: V1.2

KiCad E.D.A. 10.0.1 | Id: 3/5

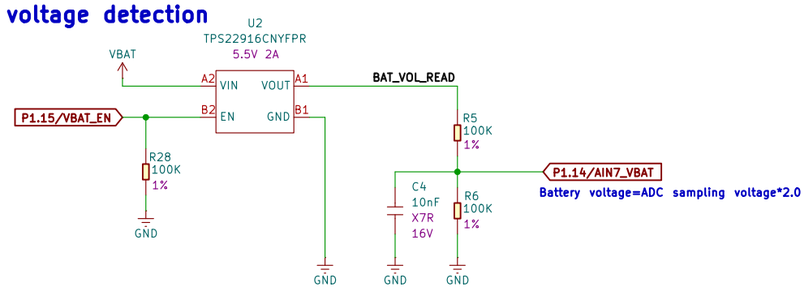
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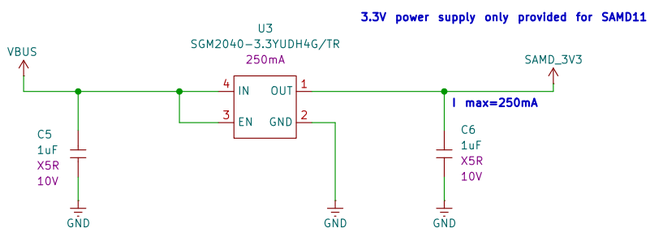
Battery charge



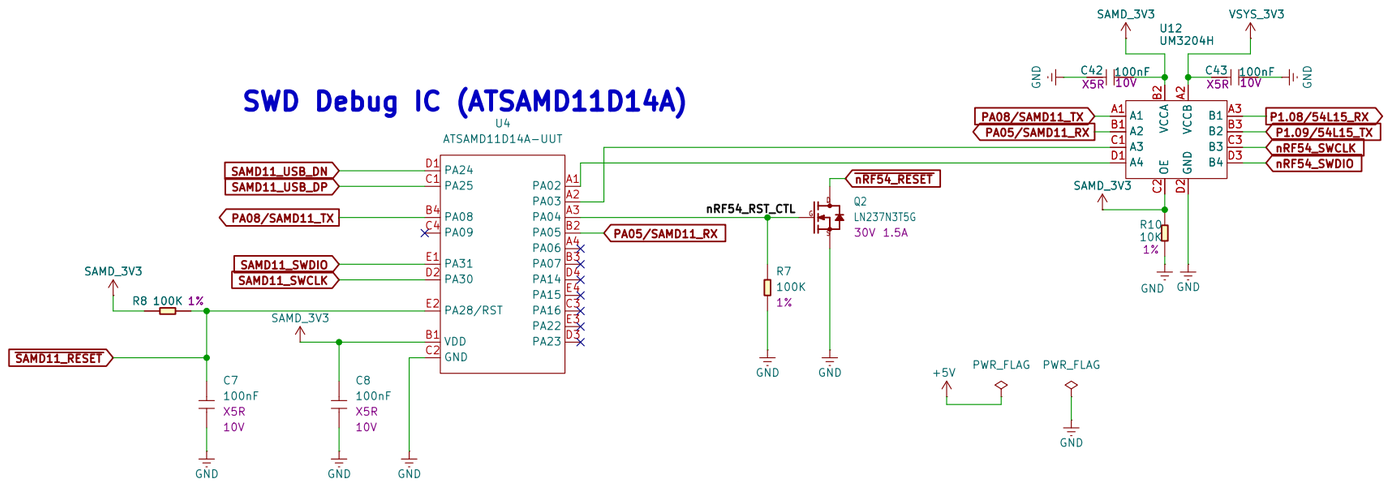
Battery voltage detection



SAMD11 IC power 3.3V



SWD Debug IC (ATSAMD11D14A)



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Title: XIAO nRF54L15

Size: A3 | Date: 2026-01-30 | **Rev: V1.2**
KiCad E.D.A. 10.0.1 | Id: 4/5

nRF54L15 GPIO

U6B
nRF54L15-CAAA-R

P0.00 G1 — P0.00/USR_KEY
P0.01 F1 — P0.01/IMU&MIC_3V3_EN
P0.02 E2 — P0.02/IMU_INT1
P0.03/CK E1 — P0.03/D11/IMU_SCL
P0.04/CK D3 — P0.04/D12/IMU_SDA
IIC30

U6C
nRF54L15-CAAA-R

P1.00/XL1 C5 — XL1
P1.01/XL2 C6 — XL2
X2 32.768KHZ-7PF-20ppm 7PF-20ppm
C21 300pF 50V
P1.02/NFC1 C7
P1.03/NFC2/CK D5
C26 300pF 50V
P1.04/AIN0/CK D6 — P1.04/A0/D0
P1.05/AIN1 E6 — P1.05/A1/D1
P1.06/AIN2 D7 — P1.06/A2/D2
P1.07/AIN3 E7 — P1.07/A3/D3
P1.08/EXTREF/CLK16M/CK F7 — P1.08/54L15_RX
P1.09 B3 — P1.09/54L15_TX
P1.10 C3 — P1.10/D4/SDA
P1.11/AIN4/CK C4 — P1.11/D5/SCL
P1.12/AIN5/CK A3 — P1.12/MIC_CLK
P1.13/AIN6 B4 — P1.13/MIC_DAT
P1.14/AIN7 B5 — P1.14/AIN7_VBAT
P1.15 B6 — P1.15/VBAT_EN
UART20 IIC22 PDM20

U6D
nRF54L15-CAAA-R

P2.00 G6 — P2.00/USR_LED
P2.01/CK G7 — P2.01/D8/SCK
P2.02 F6 — P2.02/D10/MOSI
P2.03 E5 — P2.03/RF_SW_PWR
P2.04 F5 — P2.04/D9/MISO
P2.05 G5 — P2.05/RF_SW_CTL
P2.06/CK F4 — P2.06/D15
P2.07/SWO E4 — P2.07/D7/RX
P2.08 D4 — P2.08/D6/TX
P2.09 F3 — P2.09/D14
P2.10 G2 — P2.10/D13
SPIM00 UART21

nRF54L15

U6A
nRF54L15-CAAA-R

VSYS_3V3
C11 10uF X5R 10V
C12 100nF X5R 10V
nRF54_DCC
L2 4.7uH 620mA
nRF54_DECD
FB1 120R 200mA
C14 2.2uF X5R 6.3V
nRF54_DEC
C15 2.2uF X5R 6.3V
C16 10nF X7R 16V
C17 3.9pf NOP 50V
VDD B7
DCC A7
DECD A5
DECA A4
DECRF B1
VSS A6
VSS G4
XC1 A1
XC2 A2
ANT D1
VSS_PA C2
RESET D2
SWDCLK E3
SWDIO F2
nRF54_RESET
nRF54_SWCLK
nRF54_SWDIO
VDD G3
X1 32MHz-8pF-10ppm-70R
X1 10ppm
C13 100nF X5R 10V
ANT_PIN
L3 3.6nH 400mA
L4 4.7nH 350mA
L5 2nH 600mA
ANT
C18 1.2pF C0G 50V
C19 1.2pF C0G 50V

L6 6.8nH 3%-300mA
ANT1 KH5220-A36
C20 VALUE
C31 1pf NP0 50V
P2.03/RF_SW_PWR
U10 FM8625H RF Switch
VDD RF1
ANT GND
VCTL RF2
P2.05/RF_SW_CTL
C27 100pF NPO 50V
C29 100pF NPO 50V
RF Switch Port Selection
0: RF1
1: RF2
R21 0R 1%
ANT2 ECT818000500

Back debugging function points

nRF54_SWCLK — TP1 SWCLK
nRF54_SWDIO — TP2 SWDIO
GND — TP3 GND
nRF54_RESET — TP4 RST
VSYS_3V3 — TP5 3V3
SAMD11_RESET — TP6 RST2
SAMD11_SWCLK — TP7 SWCLK2
SAMD11_SWDIO — TP8 SWDIO2

NFC Function Points

TP19 — P1.02/NFC1 — N1
TP20 — P1.03/NFC2 — N2

Back functional points

P1.09/54L15_TX — TP11
P1.08/54L15_RX — TP12
P0.03/D11/IMU_SCL — R16 0R 1% — TP13 D11
P0.04/D12/IMU_SDA — R17 0R 1% — TP14 D12
TP18 — P2.00/USR_LED
D15 TP17 — P2.06/D15
D14 TP16 — P2.09/D14
D13 TP15 — P2.10/D13

XIAO Header

U9
XIAO-Add-On

P1.04/A0/D0 — D0
P1.05/A1/D1 — D1
P1.06/A2/D2 — D2
P1.07/A3/D3 — D3
P1.10/D4/SDA — D4
P1.11/D5/SCL — D5
P2.08/D6/TX — D6
3V3_OUT
D10 — P2.02/D10/MOSI
D9 — P2.04/D9/MISO
D8 — P2.01/D8/SCK
D7 — P2.07/D7/RX
VBUS
GND
VSYS_3V3

VBAT R14 10K 1% D2 Red Charge_LED
VSYS_3V3 R15 1.5K 1% D3 Green P2.00/USR_LED
VSYS_3V3 PWR_FLAG

R12 10K 1% nRF54_RESET C24 100nF X5R 10V K1 CQ-TB1ZP21
R13 10K 1% P0.00/USR_KEY C25 100nF X5R 10V K2 CQ-TB1ZP21

U11
TPS22916CNYFPR
5.5V 2A
VSYS_3V3
IMU&MIC_3V3
P0.01/IMU&MIC_3V3_EN
PWR Switch contrl
0: DIS EN
1: EN
C28 100nF X5R 10V

U8
MSM261DGT006
IMU&MIC_3V3
R20 0R 1%
MIC_PWR
C23 100nF X5R 10V
P1.13/MIC_DAT
P1.12/MIC_CLK
MIC

IMU Addr: 0x6A

U7
LSM6DS3TR-C
IMU&MIC_3V3
R18 4.7K 1%
R19 4.7K 1%
SDO/DA0
SDX
SCX
VDD
VDDIO
GND@1
GND@2
SDA
SCL
CS
INT2
INT1
NC@2
NC@1
P0.04/D12/IMU_SDA
P0.03/D11/IMU_SCL
IMU&MIC_3V3
P0.02/IMU_INT1
C22 100nF X5R 10V
IMU

Sense Version Only

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