nRF52840 with Decoupling

U1 — NRF52840-QIAA-R

Pin labels (left side):
- A8 P0.31/AIN7 — SW1
- A10 P0.29/AIN5 — SW2
- A12 P0.02/AIN0 — SW3
- A14 P1.15 — SW4
- A16 P1.13 — Servo3
- A18 DEC2
- A20 P1.10 — Buzzer
- A22 VDD
- A23 XC2 — XC2
- B1 VDD
- B3 DCC
- B5 DEC4
- B7 VSS
- B9 P0.30/AIN6
- B11 P0.28/AIN4
- B13 P0.03/AIN1
- B15 P1.14
- B17 P1.12
- B19 P1.11
- B24 XC1 — XC1, Servo4
- C1 DEC1
- D2 P0.00/XL1 — Servo2
- D23 DEC3
- E24 DEC6
- F2 P0.01/XL2 — Servo1
- F23 VSS_PA — VSS_PA
- G1 P0.26 — RGBData
- H2 P0.27
- H23 ANT — ANT
- J1 P0.04/AIN2 — SW0
- J24 P0.10/NFC2 — NFC2
- K2 P0.05/AIN3
- L1 P0.06 — P0.06
- L24 P0.09/NFC1 — NFC1
- M2 P0.07/TRACECLK
- N1 P0.08 — P0.08
- N24 DEC5

Pin labels (right side):
- EP 0 — GND
- D23 VDD
- D22 P1.00/TRACEDATA0 — P1.00
- D20 P0.24 — SCL_qwIIC
- D18 P0.22 — P0.22
- D16 P0.20 — SDA_qwIIC
- D14 VDD
- D12 P0.17 — P0.17
- D10 P0.15 — P0.15
- AD8 P0.13 — P0.13
- AD6 D+ — USB_P
- AD4 D- — USB_N
- AD2 VBUS — VBUSnRF
- AC24 SWDIO — SWDIO
- C21 P0.25
- AC19 P0.23
- AC17 P0.21
- AC15 P0.19
- AC13 P0.18/nRESET — nRESET
- AC11 P0.16
- AC9 P0.14
- AC5 DECUSB
- AB2 DCCH
- AA24 SWDCLK — SWDCLK
- Y23 P1.01
- Y2 VDDH
- W24 P1.02 — LD3
- W1 VDD
- V23 P1.03
- U24 P1.04 — LD4
- U1 P0.12/TRACEDATA1 — P0.12
- T23 P1.05
- T2 P0.11
- R24 P1.06 — LD1
- R1 P1.09/TRACEDATA3 — P1.09
- P23 P1.07 — LD2
- P2 P1.08

Decoupling / passive components:
- C26 100nF +3V3
- C18 1µF +3V3
- C25 1µF
- C24 100nF
- C29 100pF
- C27 820pF
- DEC4_6
- C17 100nF +3V3
- C16 100nF +3V3
- R11 5k1 +3V3
- RST1 TS-1088R-02026
- C20 100nF
- C21 4.7µF
- C22 4.7µF
- C23 4.7µF

X1 — Free Pin Header
PM254-2-08-S-8.5

Pin	Net	Pin	Net
1	P0.06	2	VBUSnRF
3	P0.08	4	+3V3
5	P1.09	6	P1.00
7	P0.12	8	SDA_qwIIC
9	P0.13	10	SCL_qwIIC
11	P0.15	12	SWDIO
13	P0.22	14	SWDCLK
15	P0.17	16	GND

SWD Debug
SWD1 — HX JN1.27-2X5 TP H4.9

Pin	Net	Pin	Net
1	+3V3	2	SWDIO
3		4	SWDCLK
5		6	
7		8	
9	GND	10	nRESET

NFC Connector
RF1 — IPEX-01
- NFC1 — 1
- NFC2 — 2, 3

U6 — 2,4 GHz Radio
ANT3216LL00R2400A
- L2 2.2nH
- C2 1.2pF
- L1 4.7nH
- C1 1.0pF
- VSS_PA
- ANT

X2 — 32 MHz Crystal
Q22FA12800025
- C4 12pF
- C3 12pF
- XC1
- XC2

In-Output — Datei: in_output.kicad_sch

USB-Power — Datei: usb_power.kicad_sch

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Size: A4
Date: 2025-07-17
KiCad E.D.A. 9.0.3
Rev:
Id: 1/3

WS2812 LED Strip

GND — C12 100nF — D4 WS2812E-V5 — VBUSnRF
VDD DO / DIN GND — GND

GND — C11 100nF — D3 WS2812E-V5 — VBUSnRF
VDD DO / DIN GND — GND

GND — C10 100nF — D2 WS2812E-V5 — VBUSnRF
VDD DO / DIN GND — GND

GND — C9 100nF — D1 WS2812E-V5 — VBUSnRF
VDD DO / DIN GND — GND

Level Shifting from 3V3 to VBUSnRF

VBUSnRF — R15 5k1 — Q2 2N7002 — 220R R3 — RGBData
R14 5k1 — +3V3

User LEDs

+3V3 — R7 5k1 — LD1 0603White light_C2290 — LD1
R8 5k1 — LD2 0603White light_C2290 — LD2
R5 5k1 — LD3 0603White light_C2290 — LD3
R6 5k1 — LD4 0603White light_C2290 — LD4

Small User Buttons

SW1 — TS-1088R-02026
SW2 — TS-1088R-02026
SW3 — TS-1088R-02026
SW4 — TS-1088R-02026 — GND

Big User Button

GND — KEY1 TS-1003S-07026 — GND
SW0 — SW0

Servo Connector

HDR1 PZ254-2-03-S
Servo2 — 1 / 2 — Servo1
VBUSnRF — 3 / 4 — VBUSnRF
GND — 5 / 6 — GND

HDR2 PZ254-2-03-S
Servo4 — 1 / 2 — Servo3
VBUSnRF — 3 / 4 — VBUSnRF
GND — 5 / 6 — GND

qwIIC Temperature Sensor

GND
+3V3 / SDA_qwIIC / SCL_qwIIC
U5 SHT40-CD1B-R3
SDA / SCL — EP / VSS / VDD — GND
CN1 SM04B-SRSS-TB (LF)(SN)
R12 5k1 / R13 5k1
C15 100nF — +3V3

Buzzer

VBUSnRF
D5 SS210
U3 HYG-8503A-5027
R4 220R — Buzzer
Q1 2N7002
R10 5k1
GND

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SPDX-FileCopyrightText: 2025 Andreas Kurz <info@akurz.net>

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Title: CoffeeCaller nRF52840
Size: A4 | Date: 2025-07-17 | Rev:
KiCad E.D.A. 9.0.3 | | Id: 3/3

USB-C Connector

USBC1
TYPE-C-31-M-12

- R1 5k1
- R2 5k1

Pin	Name
1	GND
2	VBUS
3	SBU2
4	CC1
5	DN2
6	DP2
7	DN1
8	DP2
9	SBU1
10	CC2
11	VBUS
12	GND
13	SHELL
14	SHELL

USB_N, USB_P
VBUS, USB_GND

VBUS Filtering

- L3 100R@100MHz
- VBUS → VBUSnRF
- C5 10nF
- C6 100nF
- GND

- L4 100R@100MHz
- USB_GND
- GND

3V3 Regulator

U4
XC6206P332MR

- GND
- C19 1µF
- VBUSnRF → Vin
- Vout → +3V3
- C14 1µF
- C13 100nF
- R9 5k1
- LD5 0603 White light_C2290
- GND

3V3 Power Good

ESD Protection

D0
PRTR5V0U2X,215

- Pin 1 GND
- Pin 4 VCC → VBUS
- Pin 2 IO1 → USB_N
- Pin 3 IO2 → USB_P
- C8 100nF
- C7 4.7µF
- GND

Sheet: /USB-Power/
File: usb_power.kicad_sch

Title: CoffeeCaller nRF52840

Size: A4
Date: 2025-07-17
KiCad E.D.A. 9.0.3

Rev:
Id: 2/3