

Revision History

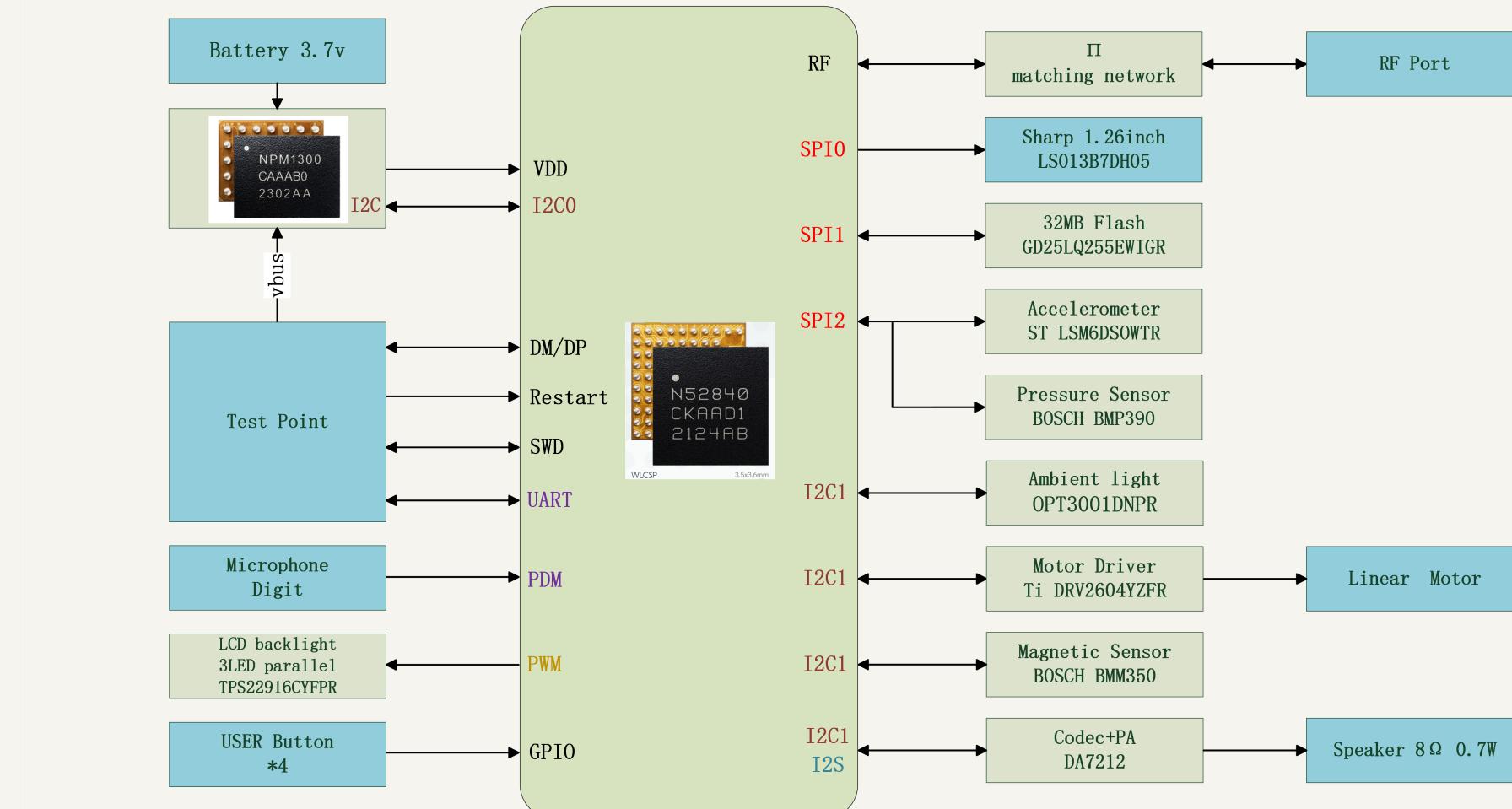
DATE	REVISION	DESCRIPTION
2024/06/04	v0.1	1.Initial
2025/01/10	EVT1	1.Del FT4232 and current monitor debug circuit; 2.Change SOC from nRF5340 to nRF52840; 3.Change LCD backlight driver to TPS610996YFFR; 4.Add J7 for DEBUG 5.Change to IIC for U8 & U20
2025/03/05	EVT2	1.Modify the J7 connector function and add charging pins; 2.Add L2 L6 C83,for SOC DCDC mode;
2025/04/03	EVT3	1.Add Magnetic sensor MMC5603NJ,default use MMC5603NJ instead of BMM350;



Sheet: /change list/
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Watch Block Diagram

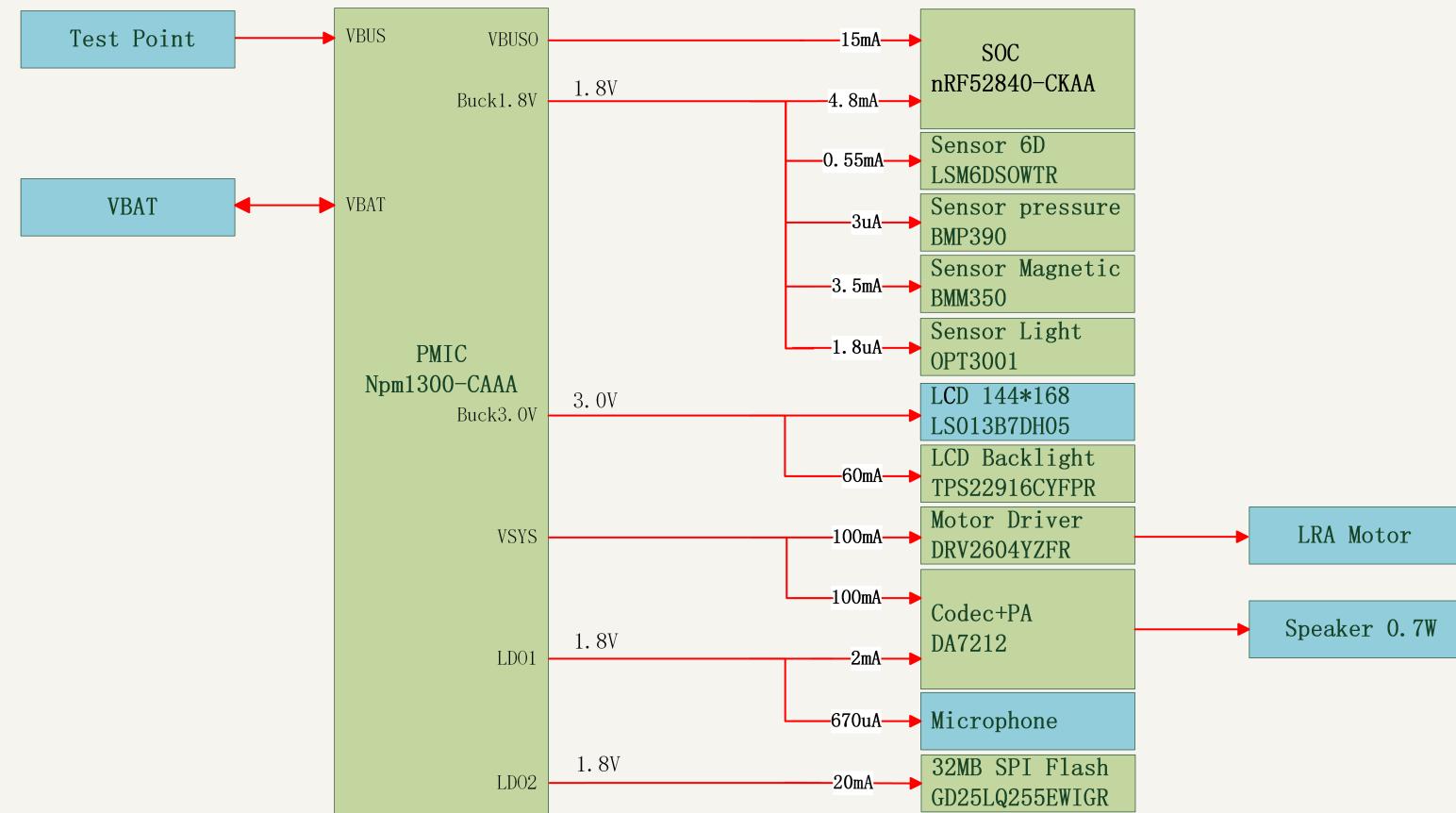


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Watch Power Topology



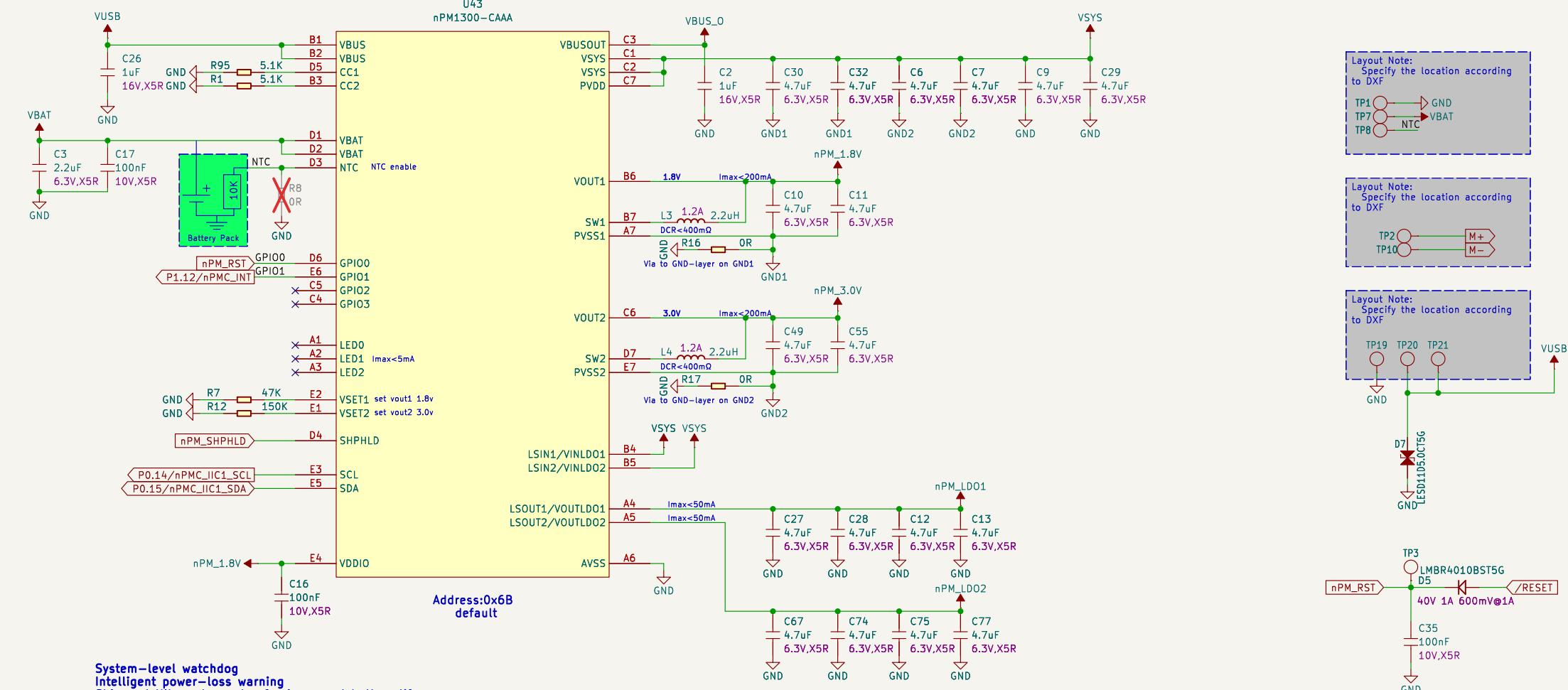
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Sheet: /Power Topology/
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PMIC nPM1300



Resistor value

Output voltage

VOUT1

VOUT2

< 100 Ω (grounded)

0 V (OFF)

0 V (OFF)

4.7 kΩ

1.0 V

1.8 V

1.0 kΩ

1.2 V

2.0 V

22 kΩ

1.5 V

2.2 V

47 kΩ

1.8 V (RSET1)

2.4 V

68 kΩ

2.0 V

2.5 V

100 kΩ

2.2 V

2.7 V

150 kΩ

2.5 V

3.0 V (RSET2)

2.7 V

250 kΩ to 500 kΩ

2.7 V

3.3 V

Pin

Pin name

Default indication mode

1

LED0

ERR (error)

2

LED1

CHG (charging)

3

LED2

HOST (host activity)

4

GND

N/A (ground)

Part

Parameter controlled (PMIC)

Function

SW1

SHPHLD/RESET

PMIC RESET /
Exit Ship mode /
Exit Hibernation mode

SW2

GPIO0

PMIC GPIO0

SW3

GPIO1

PMIC GPIO1

SW4

GPIO2

PMIC GPIO2

nPM_SHPHLD:

Ship and Hibernation modes isolate the battery from the system and minimize the quiescent current. Hibernation mode is identical to Ship mode with the exception that, in Hibernation mode, the timer is running and functions as an additional wake-up source. The device enters Ship mode through register **TASKENTERSHIPMODE** on page 117. Register **SHPHLDCONFIG** on page 117 configures the SHPHLD button press time, and register **TASKSHPHLDCFGSTROBE** on page 117 applies the configured value. When VBUS is not present, the device enters Ship mode immediately. The host software must wait until **EVENTSVBUSINOSET** on page 134 to ensure VBUS is disconnected and discharged before writing to the register.

TP12 → VBUS_O
TP13 → VSYS
TP14 → nPM_1.8V
TP15 → nPM_3.0V
TP16 → nPM_LDO1
TP27 → nPM_LDO2

Layout Note:
Specify the location according to DXF
TP1 → GND
TP7 → NTC
TP8 → VBAT

Layout Note:
Specify the location according to DXF
TP2 → M+
TP10 → M-

Layout Note:
Specify the location according to DXF
TP19 → GND
TP20 → GND
TP21 → VUSB

D7 → GND
D5 → LED11D5_0CT5G

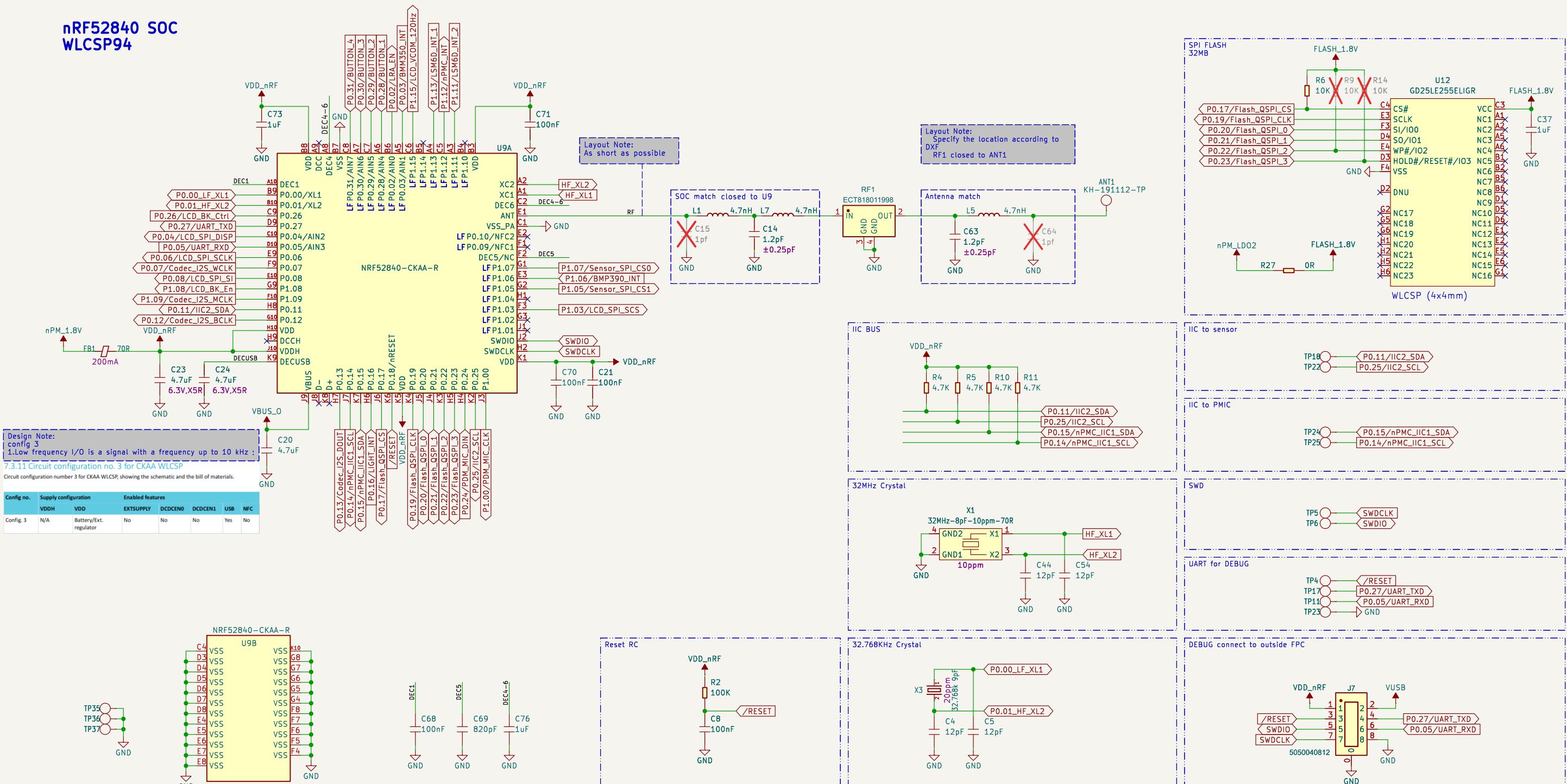
TP3 → LMBR4010BST5G
D5 → 40V 1A 600mV@1A
C35 → 100nF
10V,X5R
GND

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Sheet: /Power & PMIC nPM1300/
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nRF52840 SOC WLCSP94



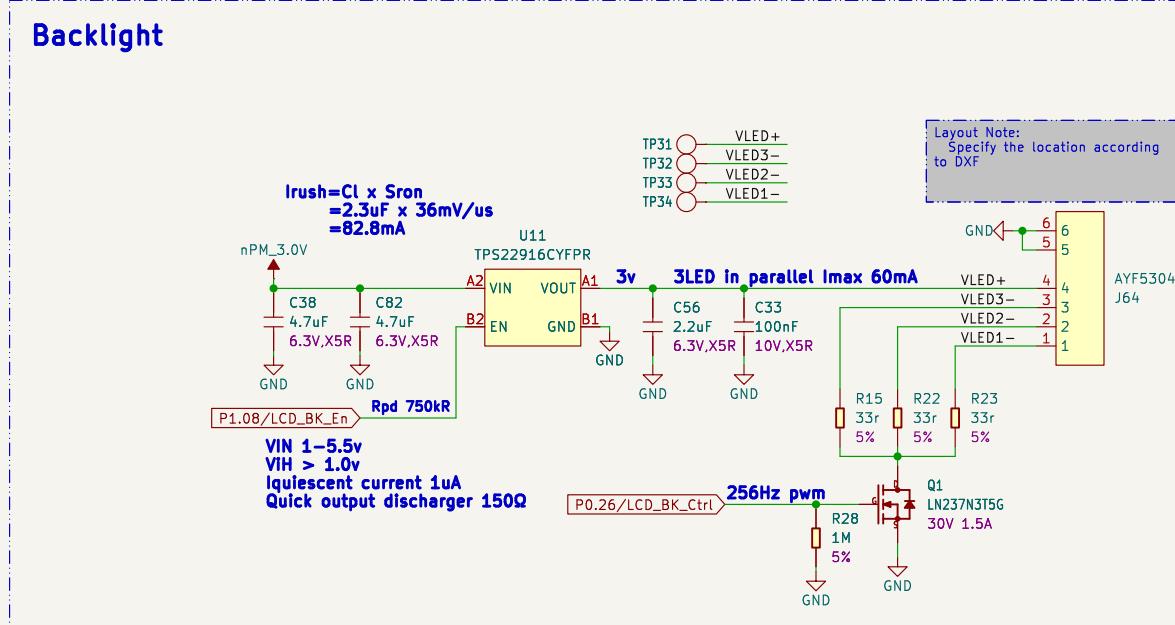
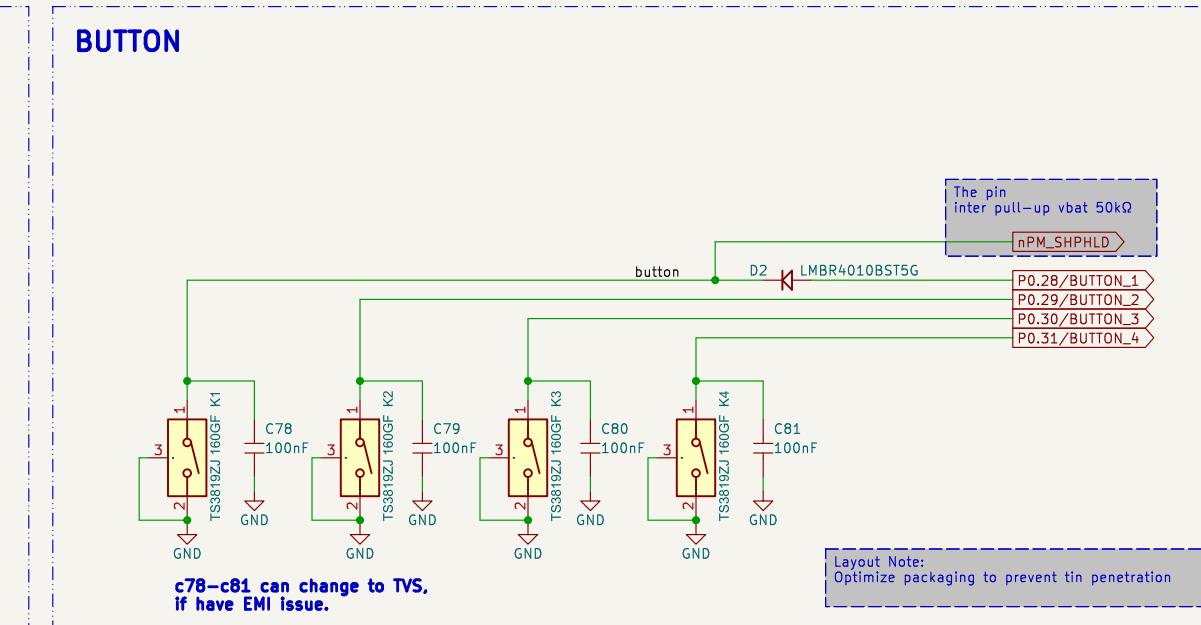
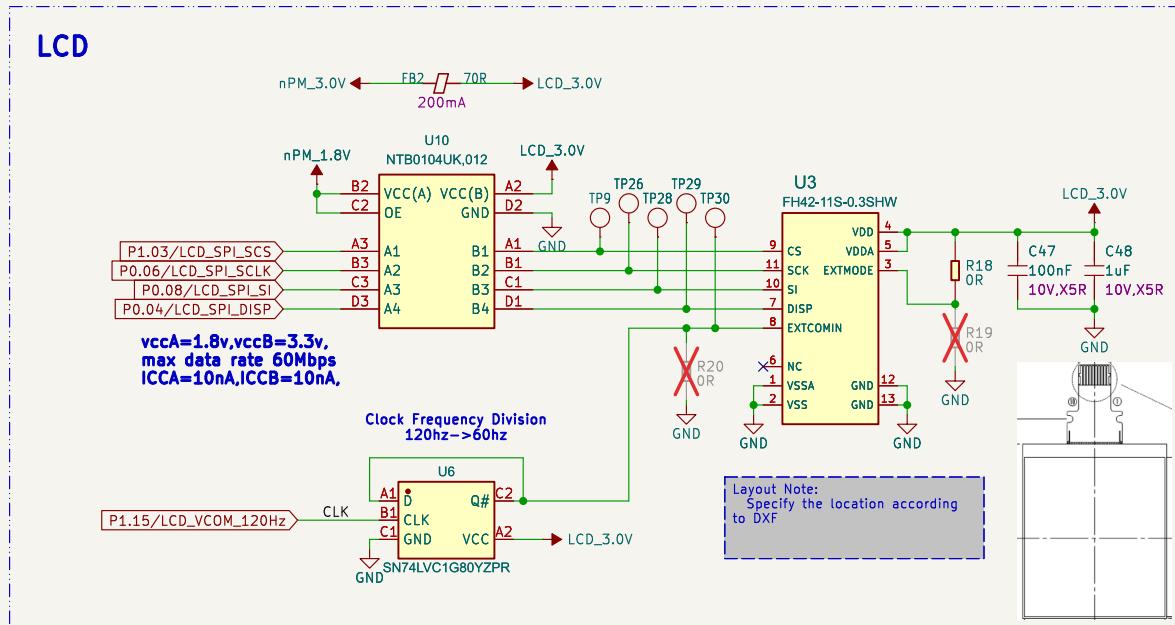
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Sheet: /nRF52840 SOC/
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1 2 3 4 5 6 7 8

A A

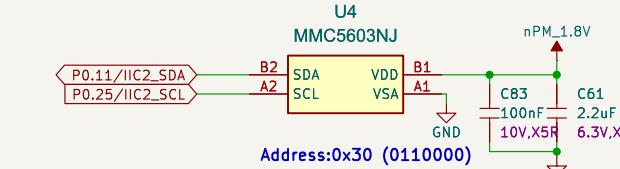
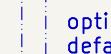
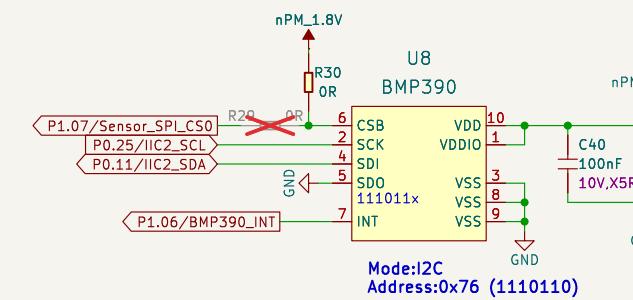
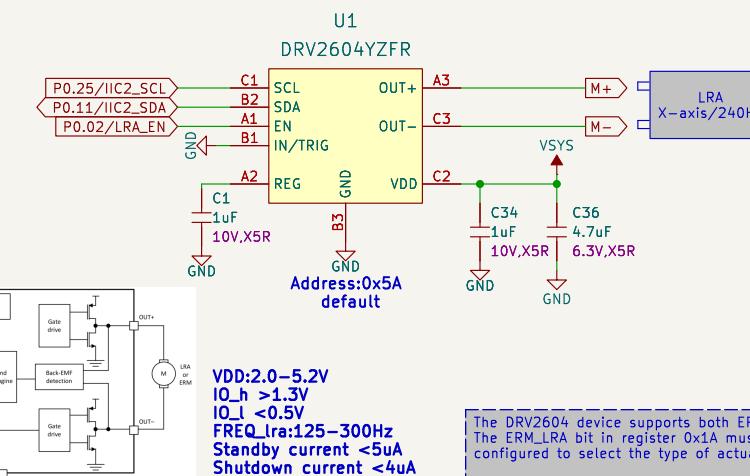
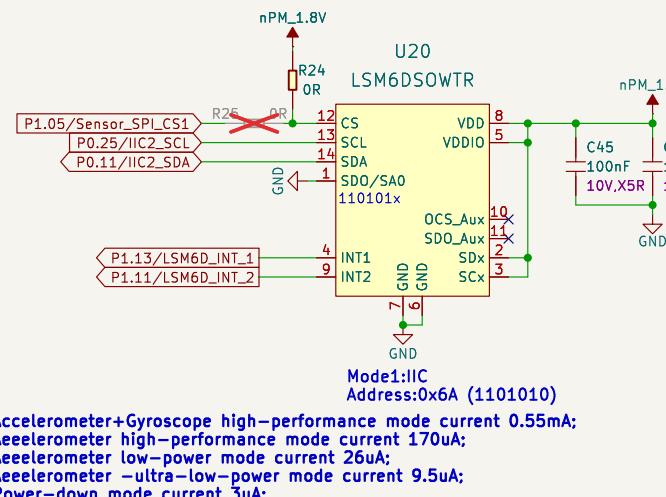
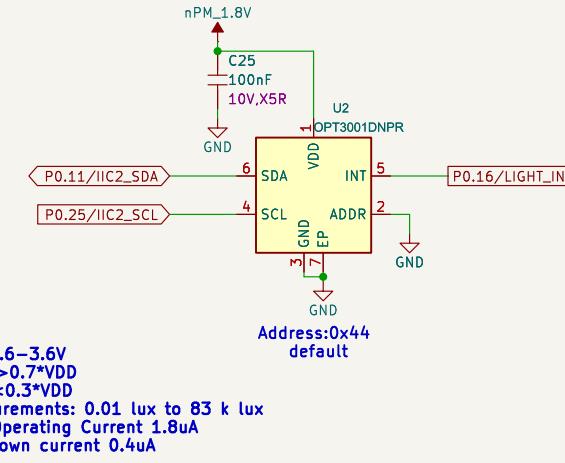
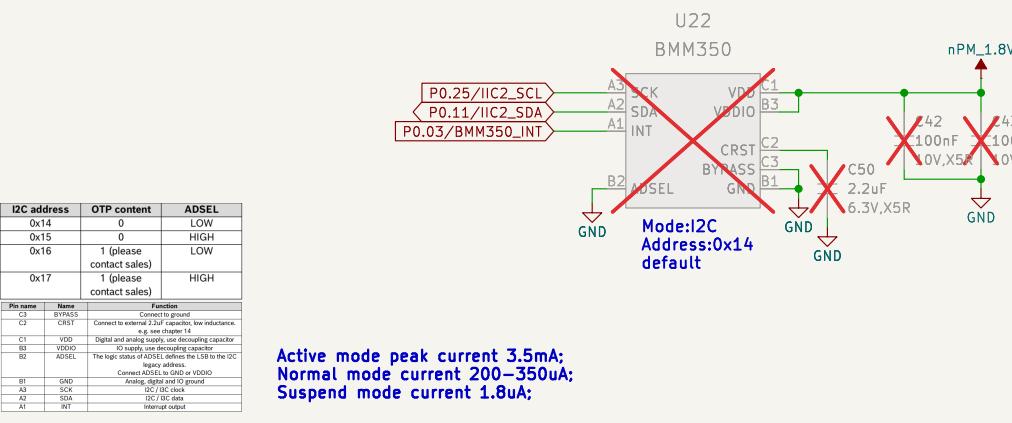


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Sheet: /LCD & BK & KEY/
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1 2 3 4 5 6 7 8



MMC5603NJ consumes 1.3mA (typical) at 1.8V with 100 measurements per second. If only 1 measurements are performed per second the current will be $1300 * 1 / 100 = 13 \mu A$. Power down mode current 1.2uA.

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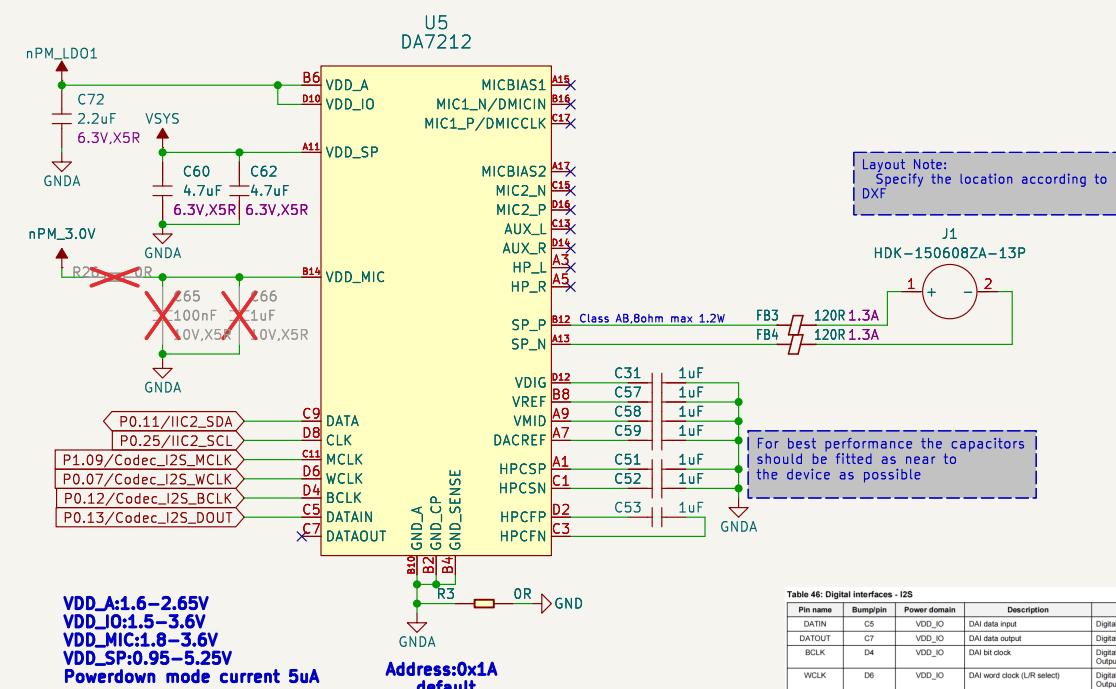
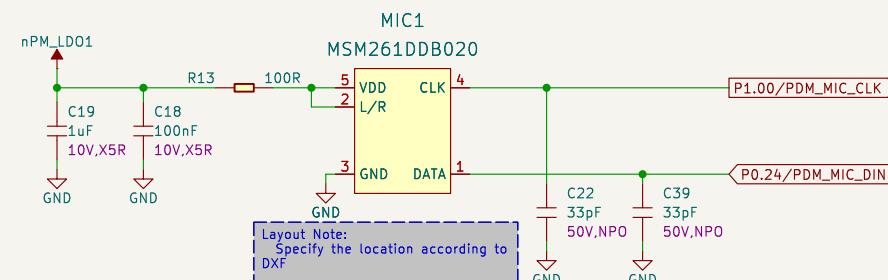
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Codec**MIC digit**

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