

STM32N6570-DK

MB1939

Table of contents

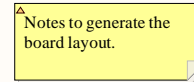
- Sheet 1: Project overview (this page)
- Sheet 2: Top
- Sheet 3: STM32_microcontroller_I/Os
- Sheet 4: STM32_microcontroller_power
- Sheet 5: Power
- Sheet 6: HexaSPI_PSRAM
- Sheet 7: OctoSPI_Flash
- Sheet 8: Peripherals
- Sheet 9: Arduino_UNO_R3_SMD
- Sheet 10: STMOD+
- Sheet 11: LCD
- Sheet 12: Camera
- Sheet 13: Ethernet
- Sheet 14: SDcard
- Sheet 15: Audio
- Sheet 16: MEMs_microphone
- Sheet 17: USB1_DRP
- Sheet 18: USB2
- Sheet 19: STLINK_V3EC
- Sheet 20: External_Debug_Interface
- Sheet 21: Mechanical

Legend

General comment such as function title, configuration, ...

Text to be added to silkscreen.

Warning text.



Open Platform License Agreement

The Open Platform License Agreement (“Agreement”) is a binding legal contract between you (“You”) and STMicroelectronics International N.V. (“ST”), a company incorporated under the laws of the Netherlands acting for the purpose of this Agreement through its Swiss branch 39, Chemin du Champ des Filles, 1228 Plan-les-Ouates, Geneva, Switzerland.

By using the enclosed reference designs, schematics, PC board layouts, and documentation, in hardcopy or CAD tool file format (collectively, the “Reference Material”), You are agreeing to be bound by the terms and conditions of this Agreement. Do not use the Reference Material until You have read and agreed to this Agreement terms and conditions. The use of the Reference Material automatically implies the acceptance of the Agreement terms and conditions.

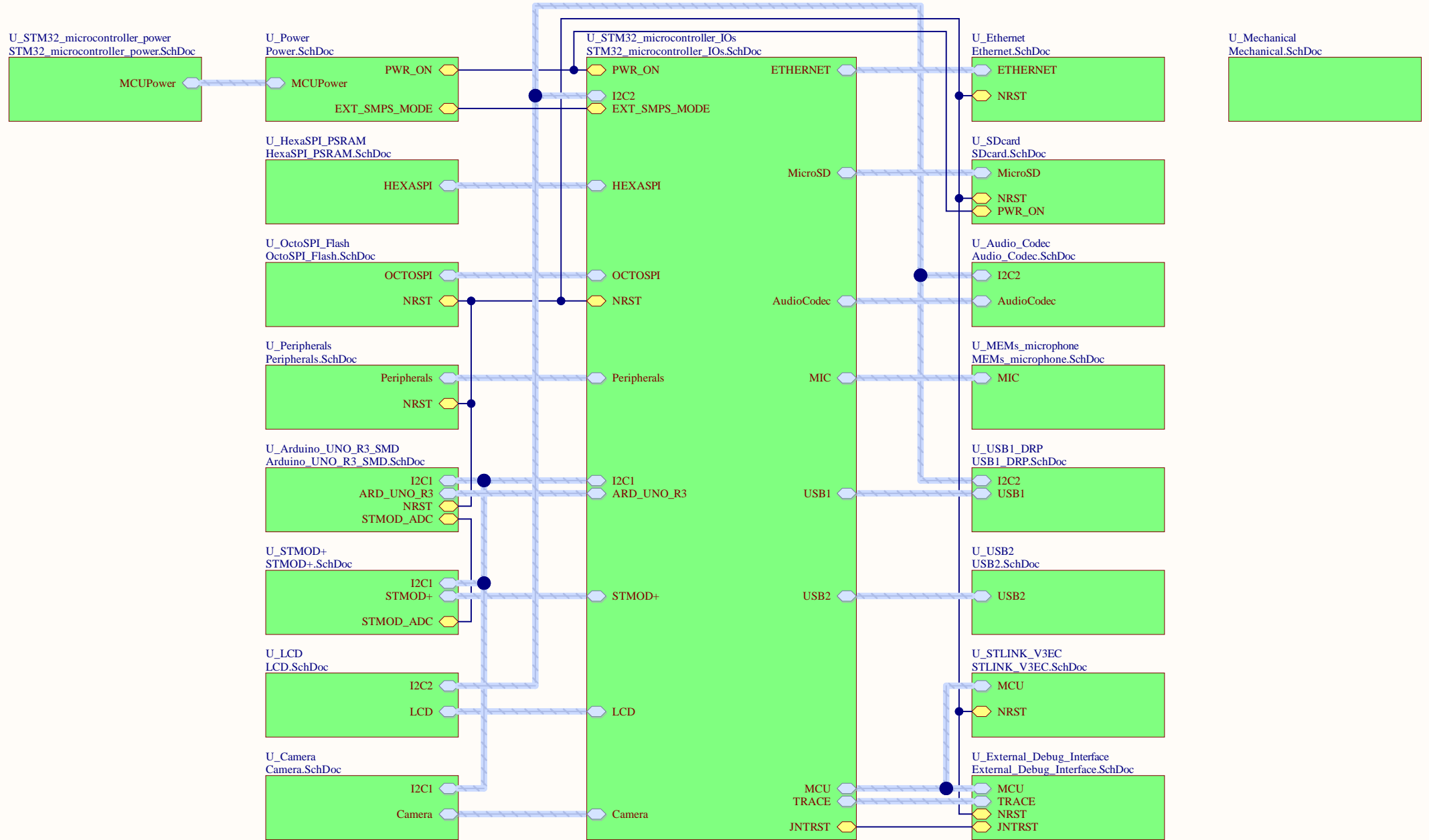
The complete Open Platform License Agreement can be found on www.st.com/opla.

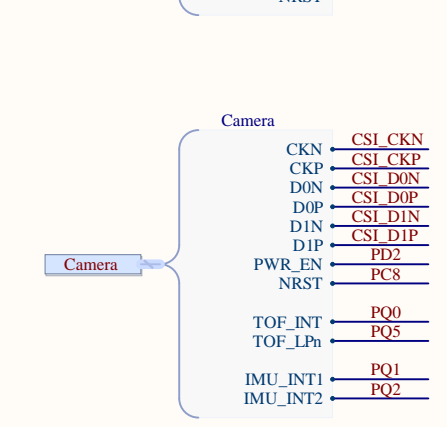
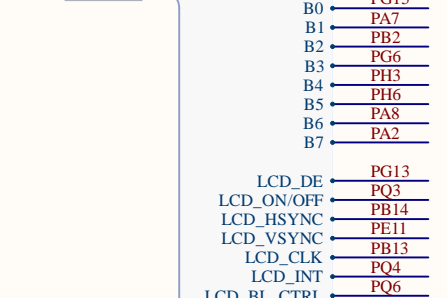
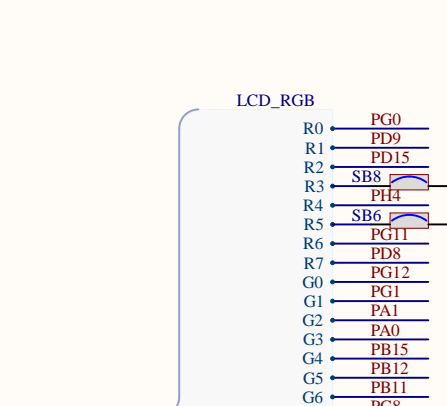
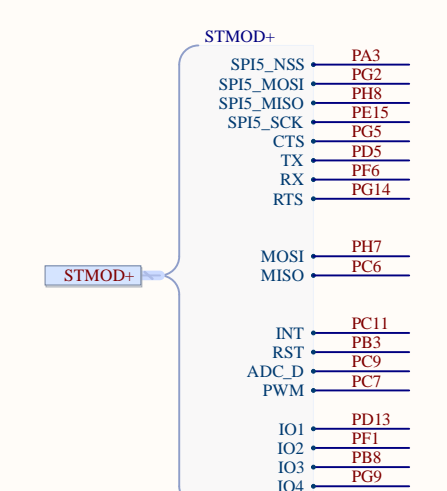
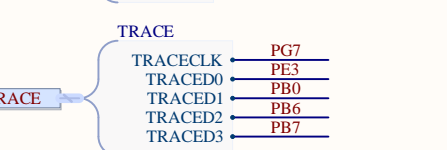
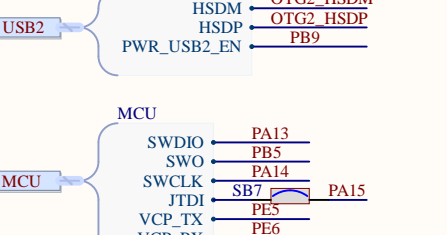
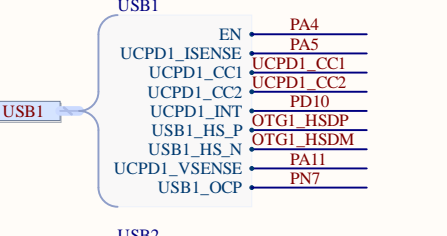
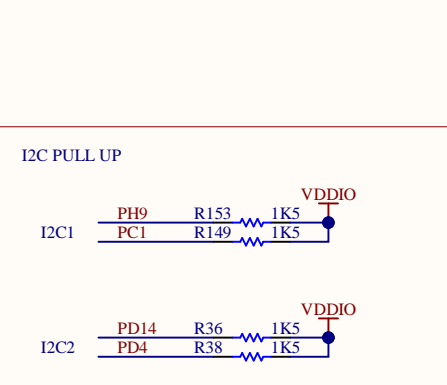
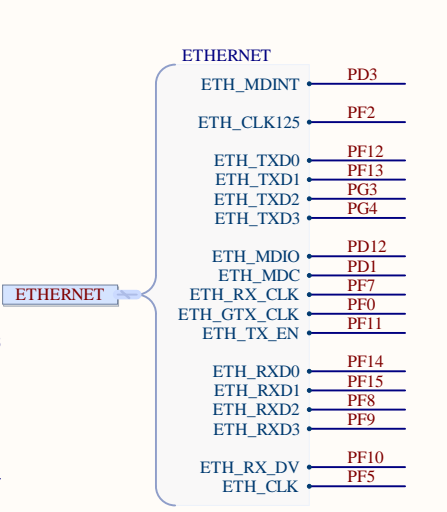
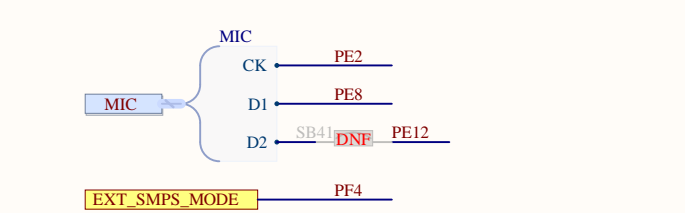
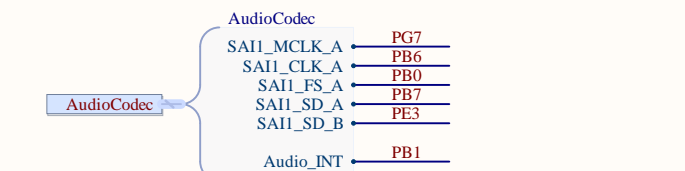
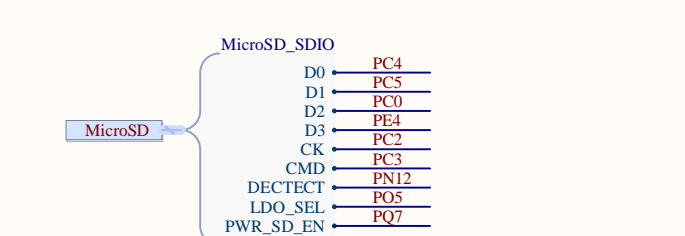
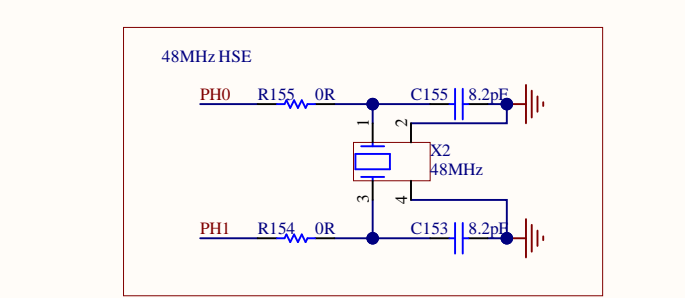
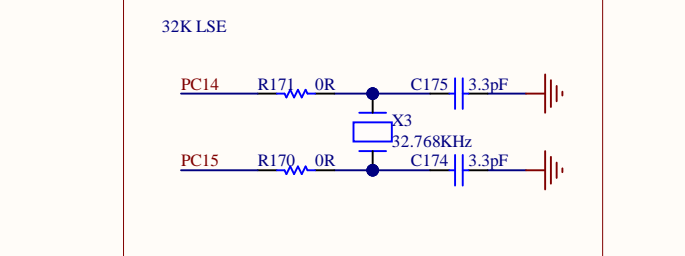
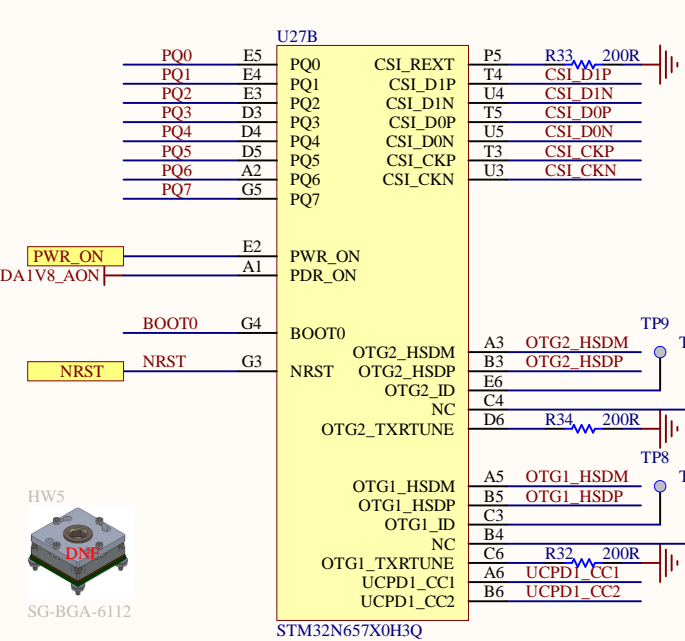
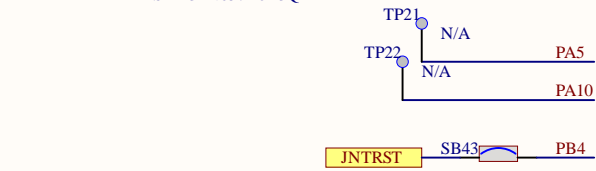
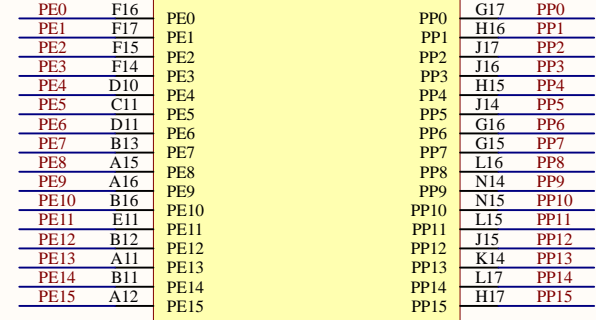
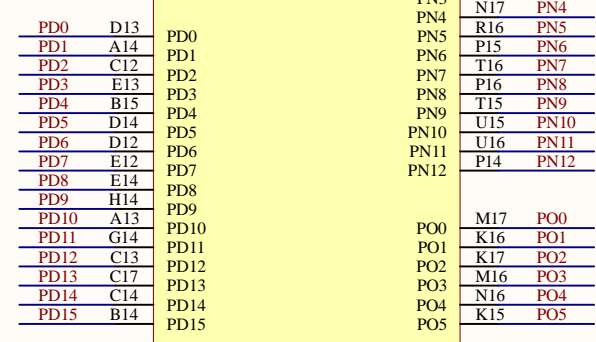
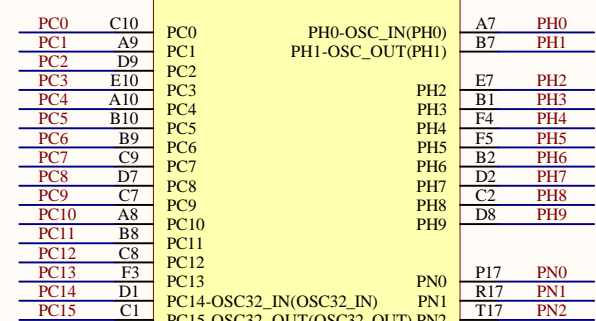
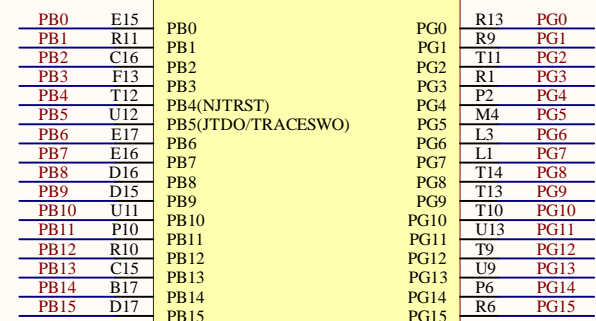
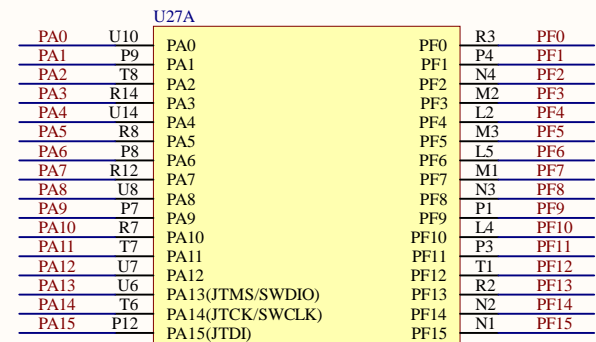
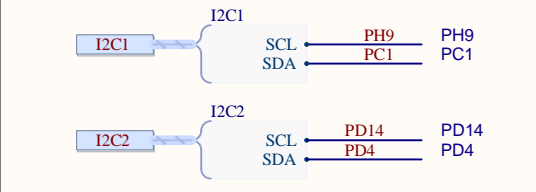
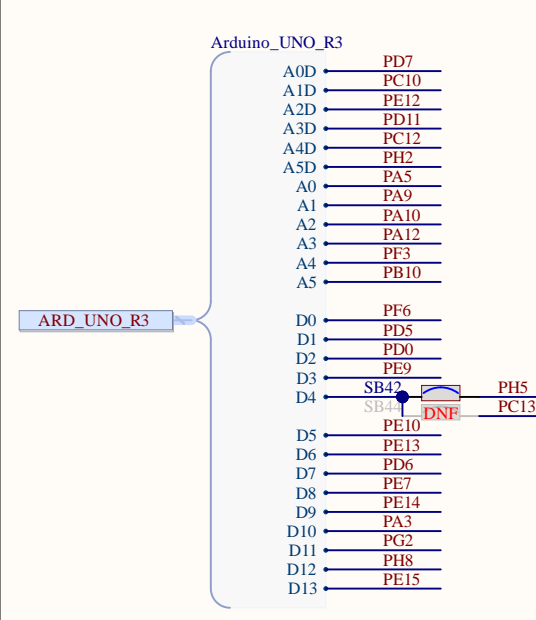
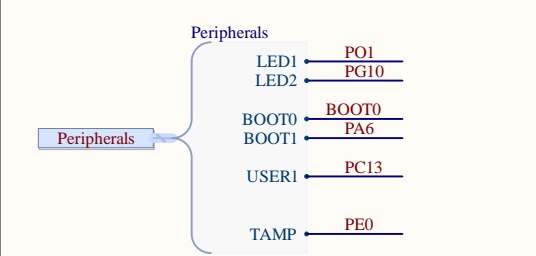
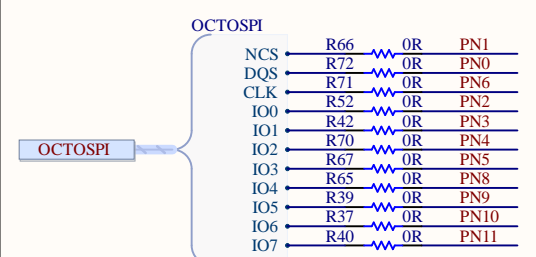
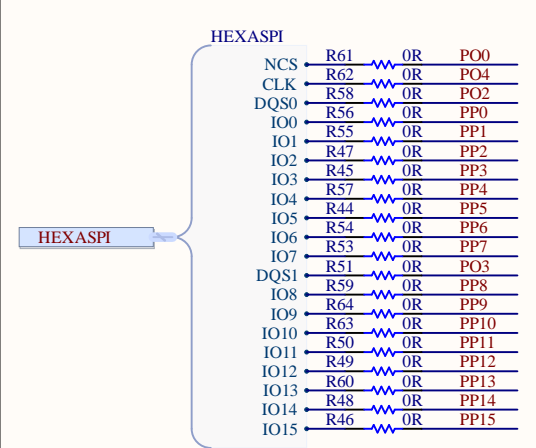
U_Top
Top.SchDoc

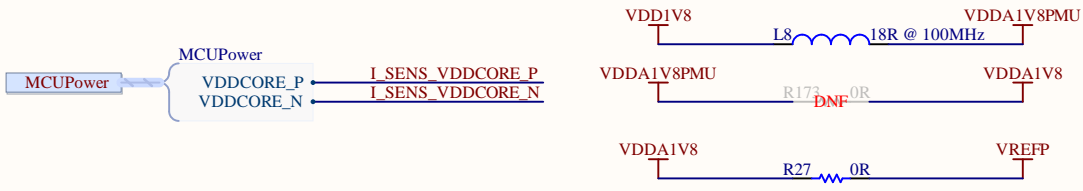
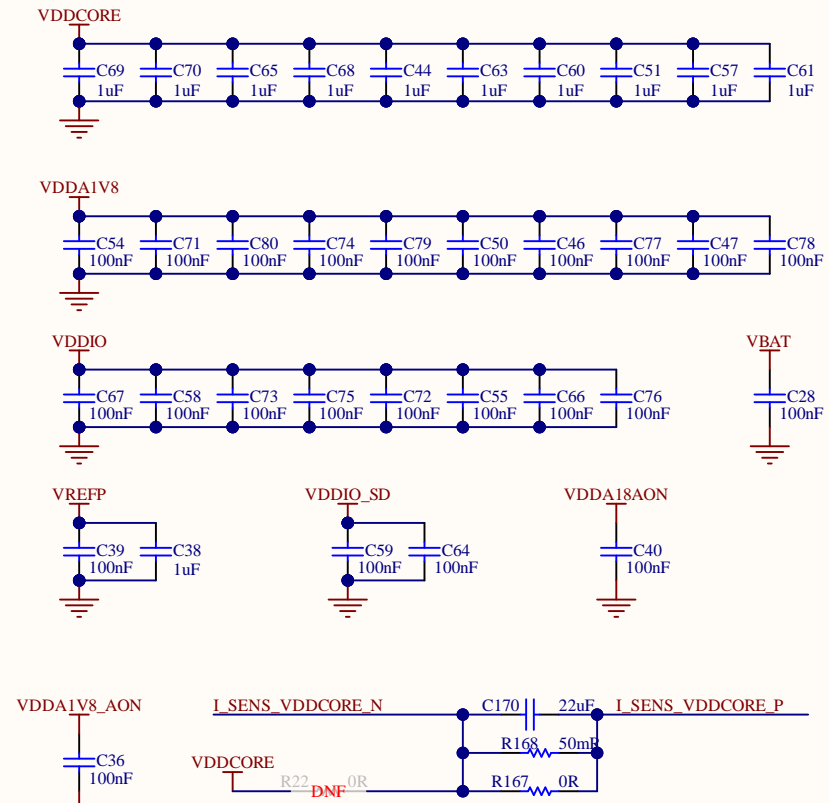
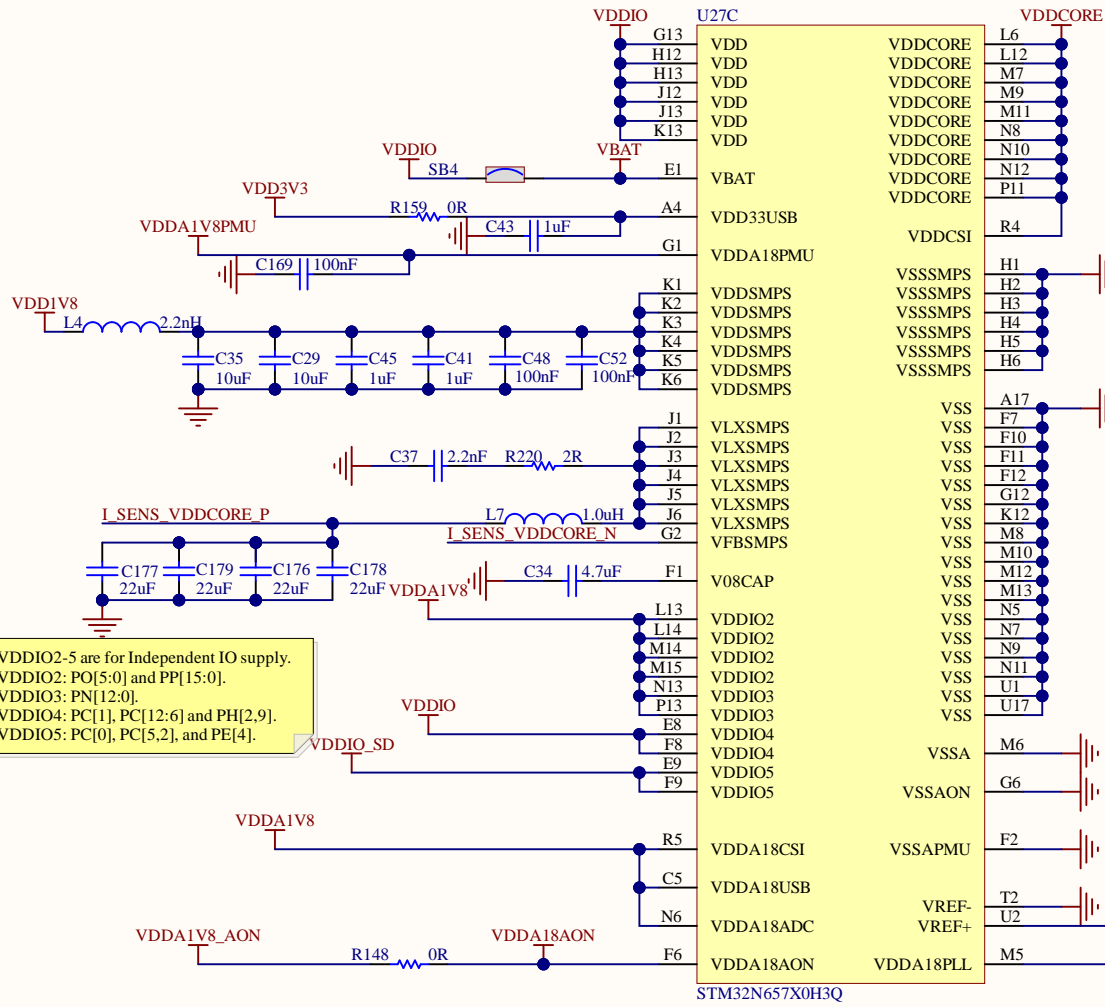


| | | |
|--------------------------------|----------------|-------------------|
| Title: Project Overview | | |
| Project: STM32N6570-DK | | |
| Variant: N6570 | | |
| Revision: C-02 | | Reference: MB1939 |
| Size: A4 | Date: 4-Nov-24 | Sheet: 1 of 21 |









POWER

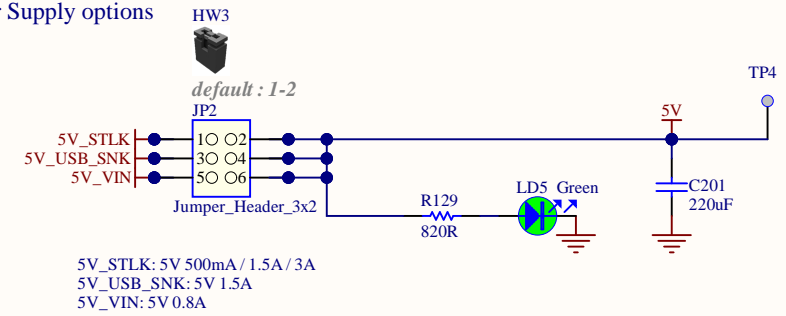


Measurement of power consumption

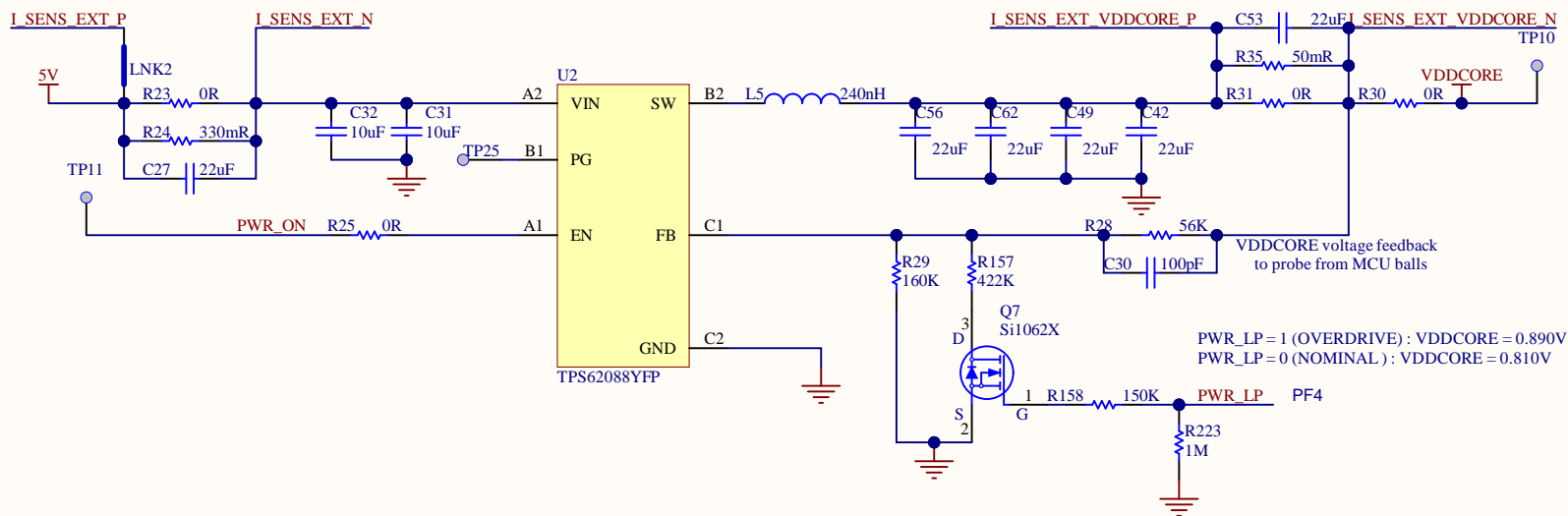
| | CN2 | | |
|----------------------|-----|----|----------------------|
| I_SENS_EXT_P | 1 | 2 | I_SENS_EXT_N |
| I_SENS_EXT_VDDCORE_P | 3 | 4 | I_SENS_EXT_VDDCORE_N |
| I_SENS_INT_P | 5 | 6 | I_SENS_INT_N |
| I_SENS_INT_VDDCORE_P | 7 | 8 | I_SENS_INT_VDDCORE_N |
| I_SENS_VDDIO_P | 9 | 10 | I_SENS_VDDIO_N |
| I_SENS_VDDA1V8_P | 11 | 12 | I_SENS_VDDA1V8_N |
| I_SENS_VDDA1V8_P | 13 | 14 | I_SENS_VDDA1V8_N |

Jumper_Header 7x2

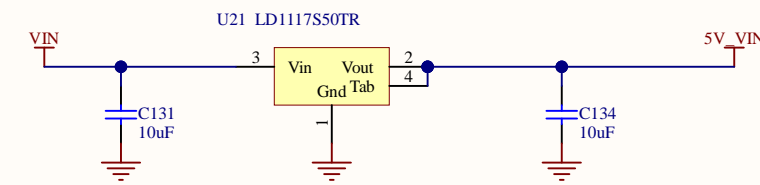
5V Power Supply options



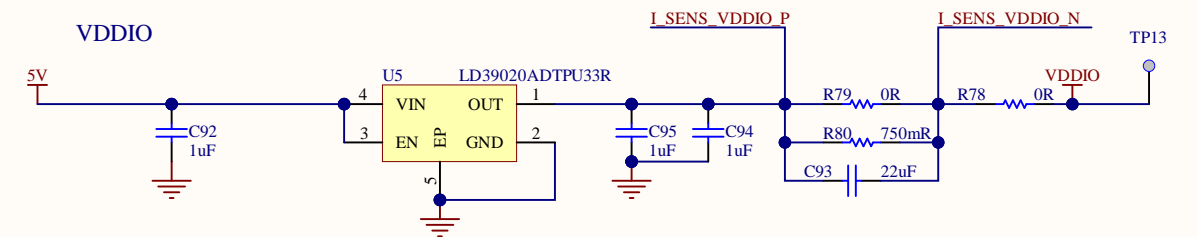
External SMPS



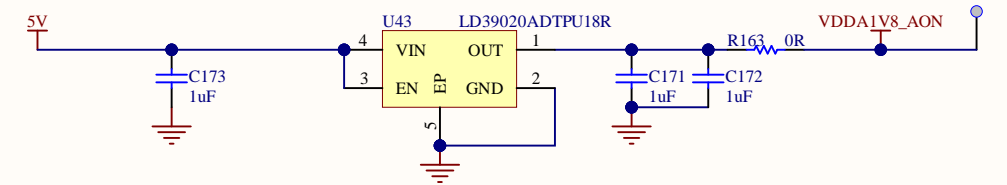
5V External POWER



VDDIO

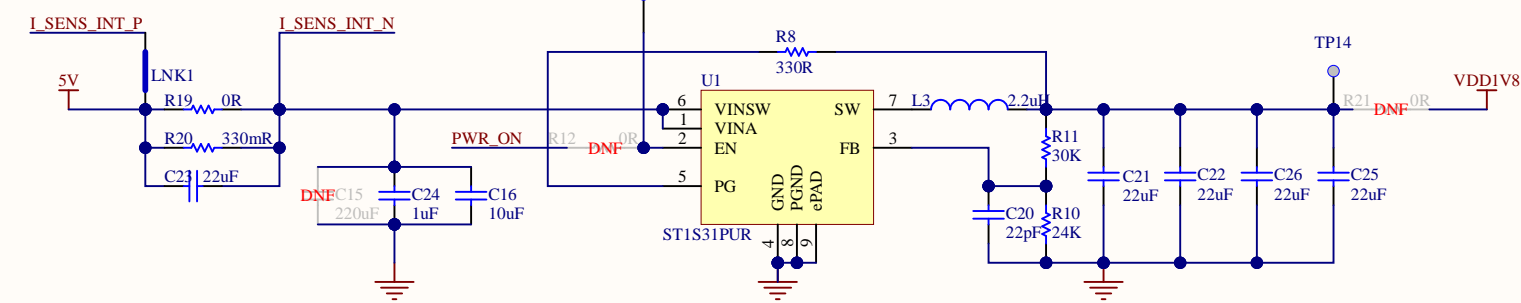


VDDA1V8_AON

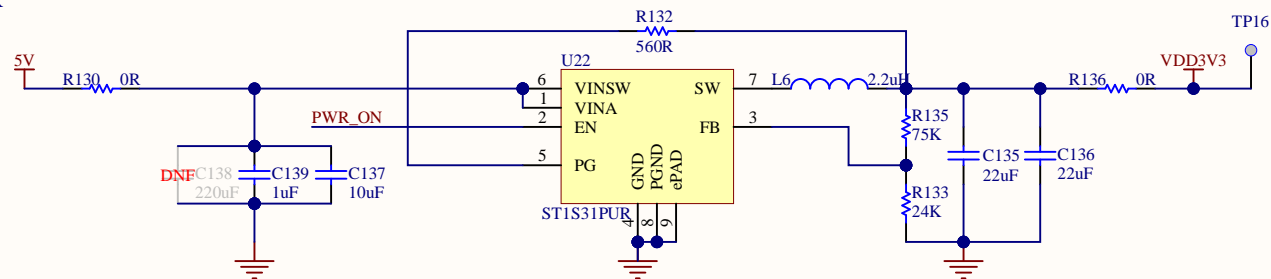


VDDIO and VDDA1V8_AON should be provided to the MCU before other powers.

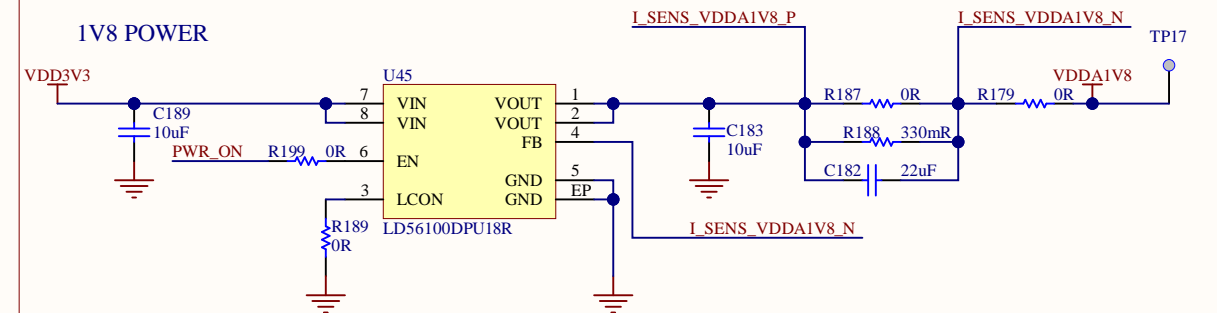
Internal SMPS and other MCU 1V8 POWER INPUT



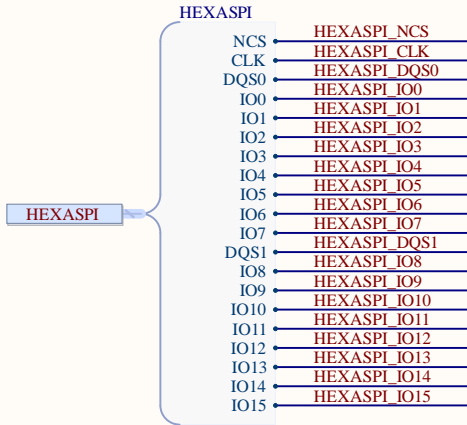
3V3 POWER



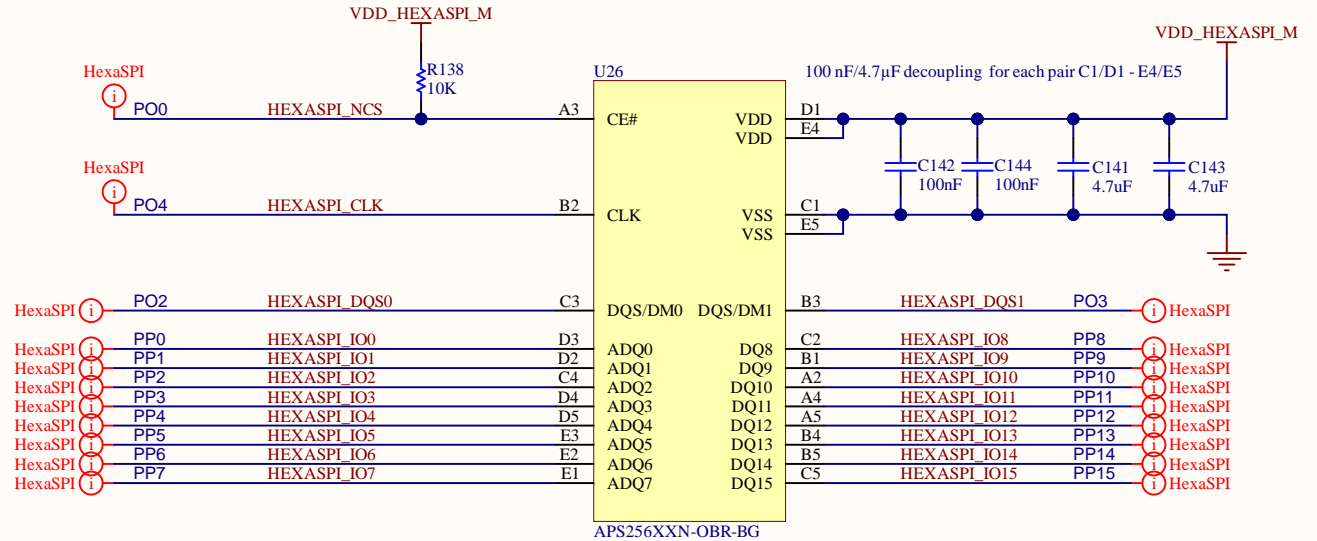
1V8 POWER



HexaSPI PSRAM Memory



HEXASPI
Impedance Constraint [Min = 45.00 Max = 55.00]



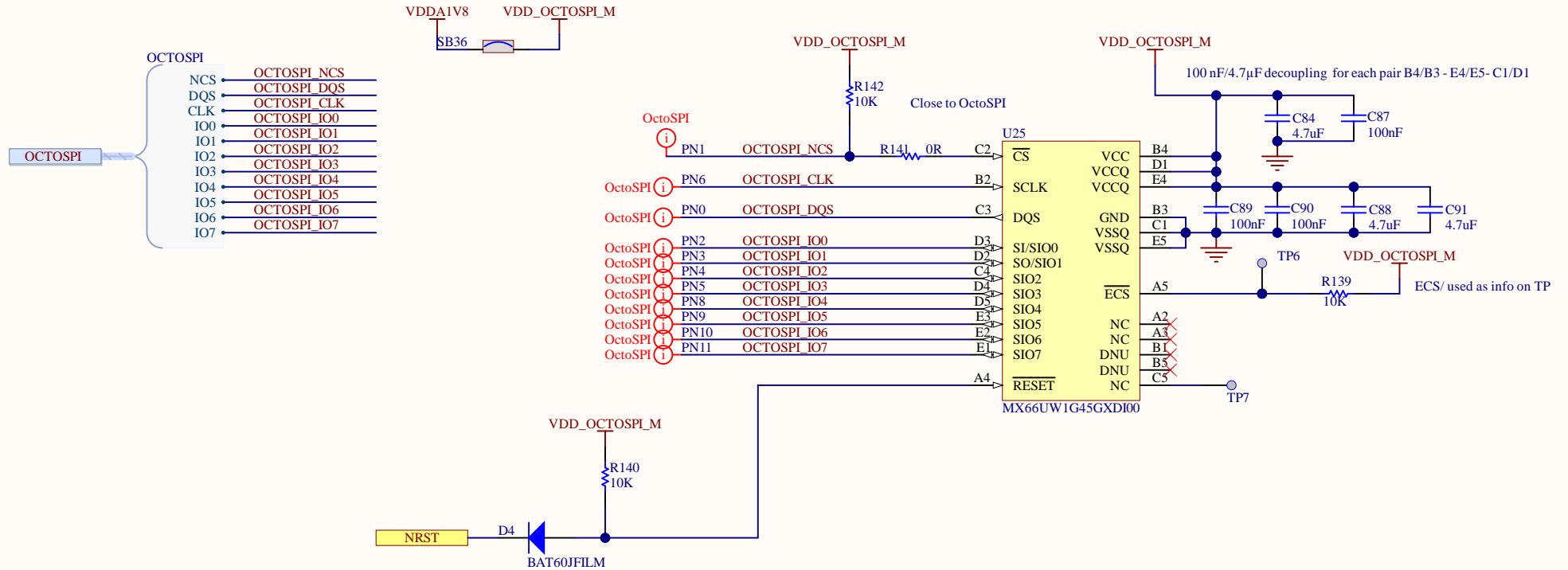
Match length (including BGA package length)

- DQS0 with IO0..7 (Byte0) , all in 50 mils,
- DQS1 with IO8..15 (Byte1), all in 50 mils,
- CLK is 100 mils from any signal of Byte0 or Byte1
- NCS can be CLK +/- 700 mils



OctoSPI Flash Memory

OCTOSPI
Impedance Constraint [Min = 45.00 Max = 55.00]

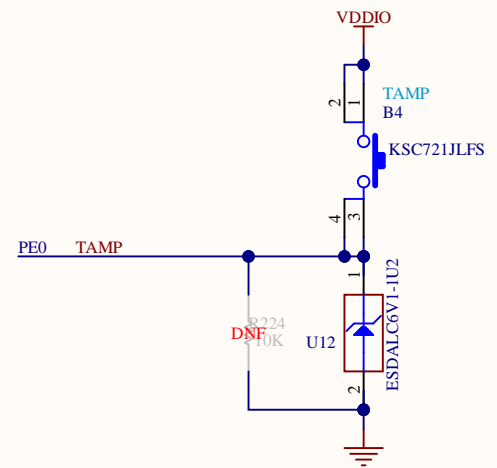
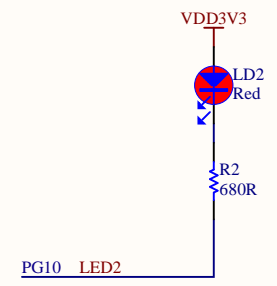
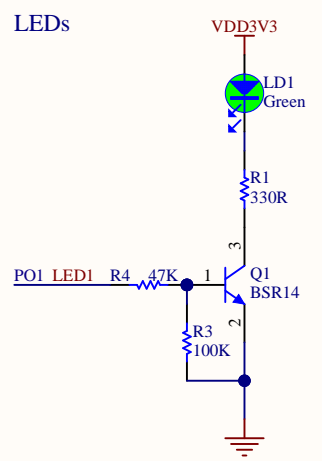
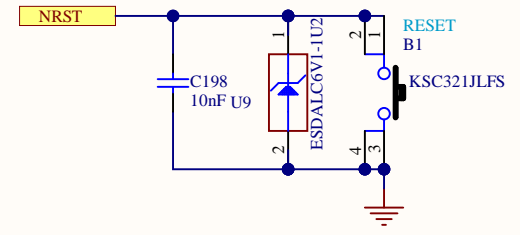
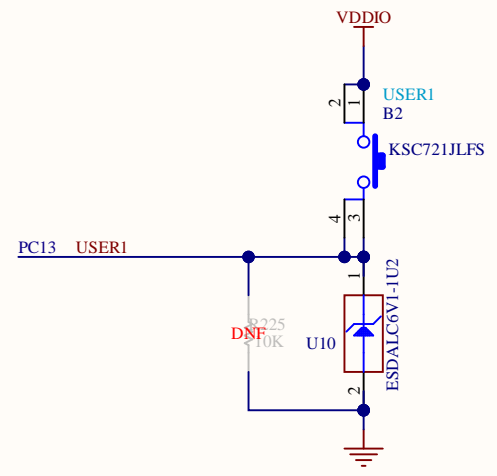
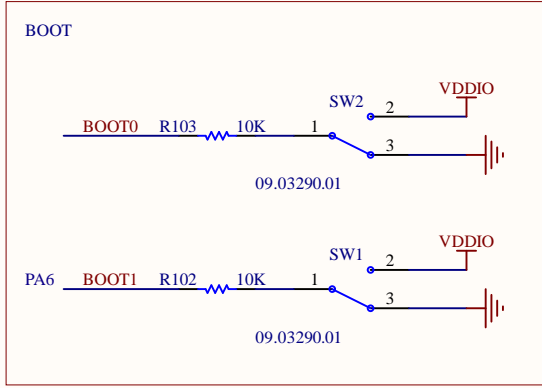
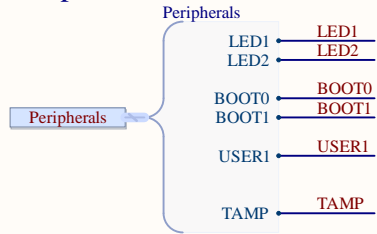


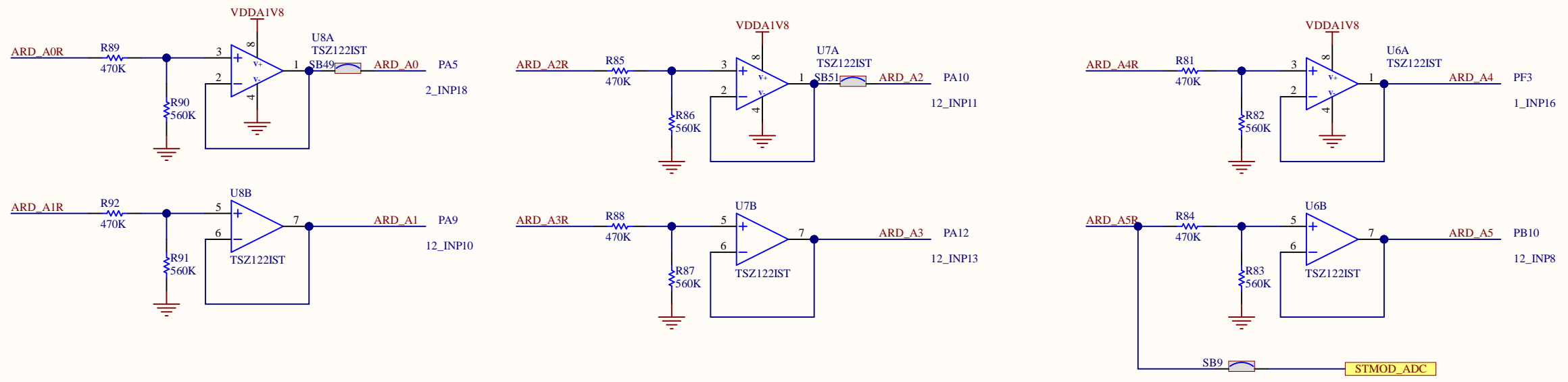
^A Length equalization (include BGA package length) :

- DQS0 with IO0..7 (Byte0) , and CLK , all in 50 mils
- NCS length can be in the range of up to CLK length +/- 750 mils

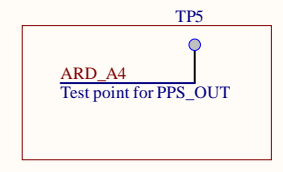
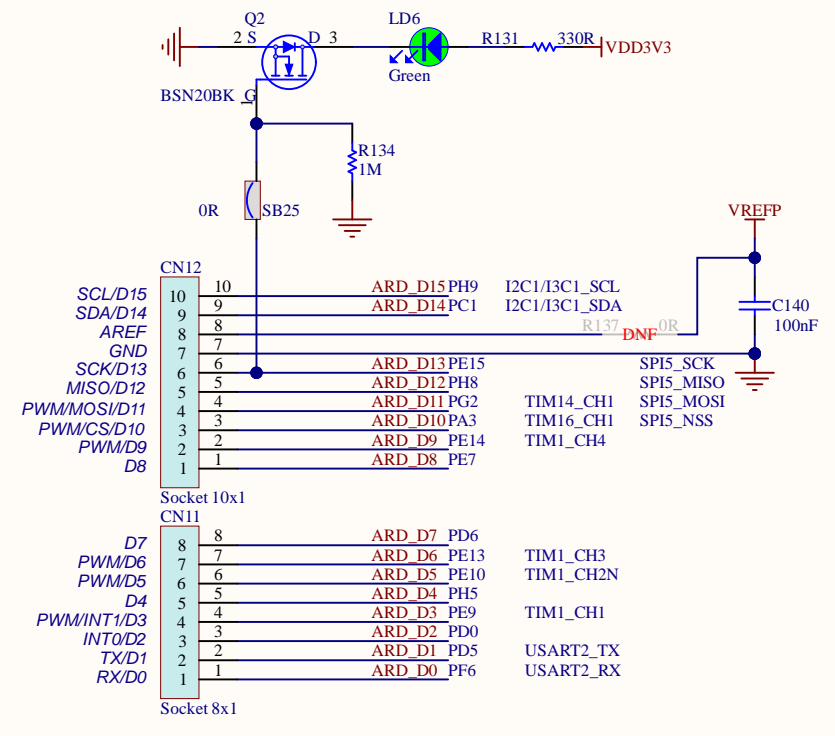
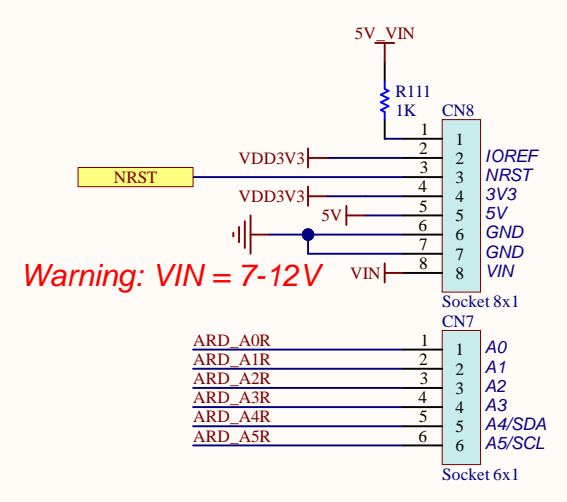
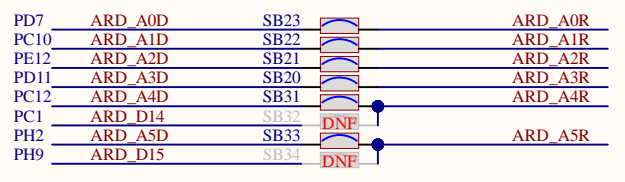
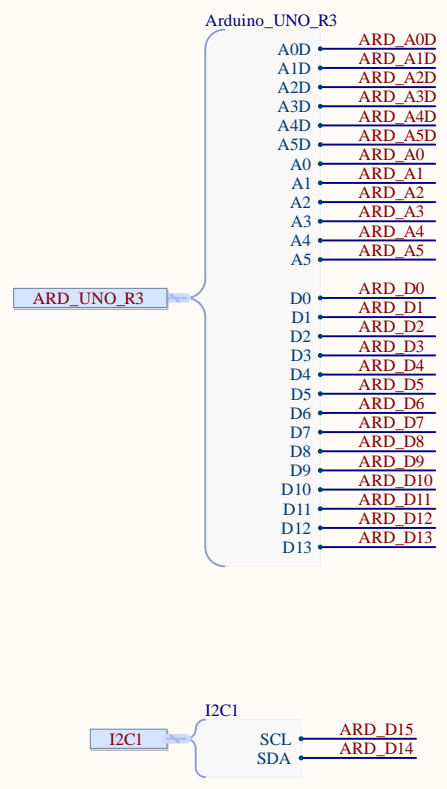


Peripherals

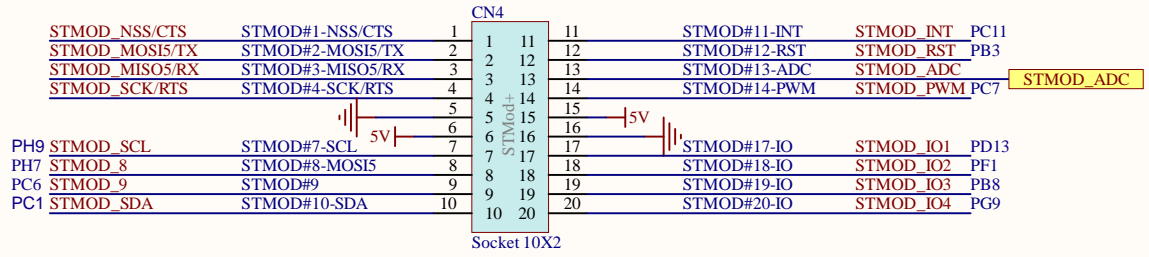
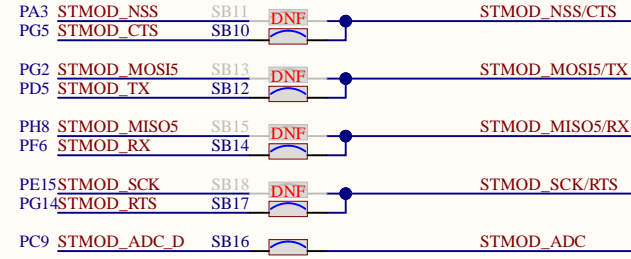
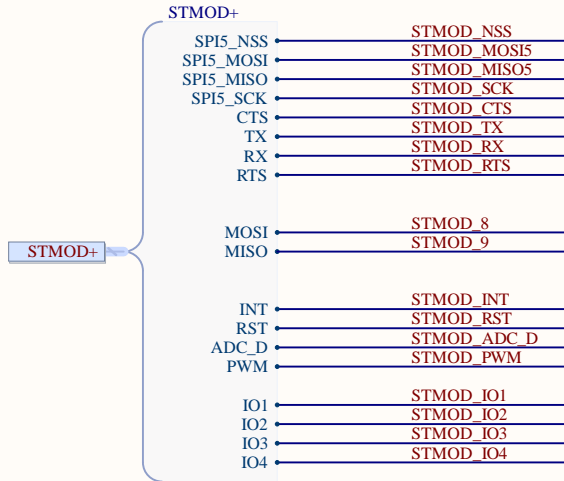




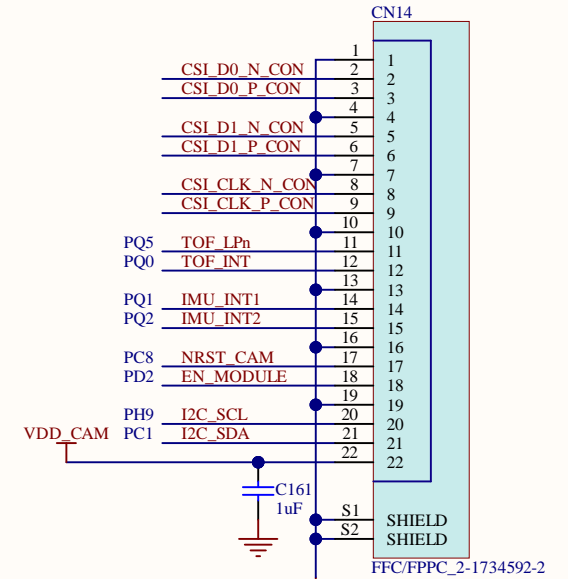
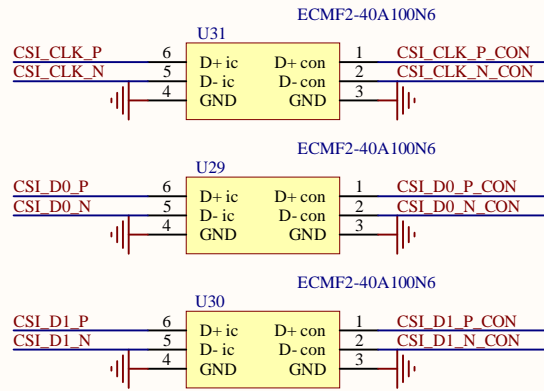
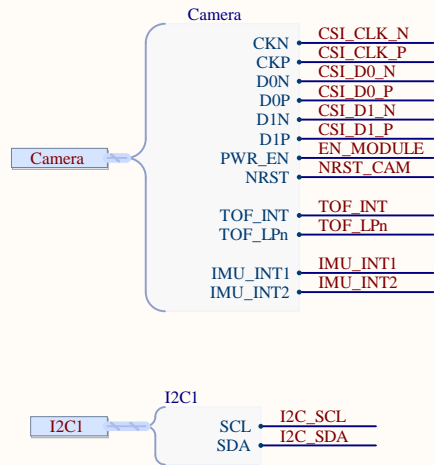
Arduino Connectors



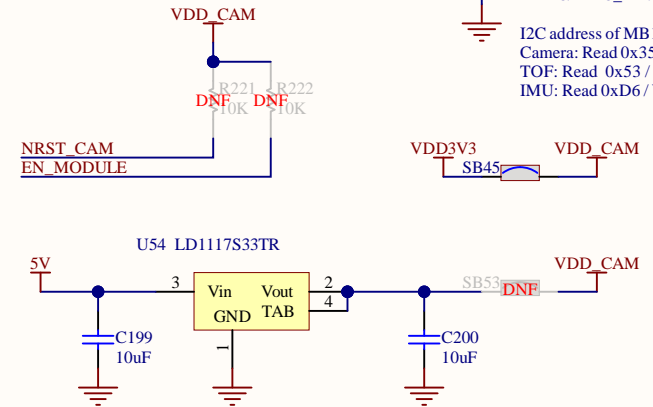
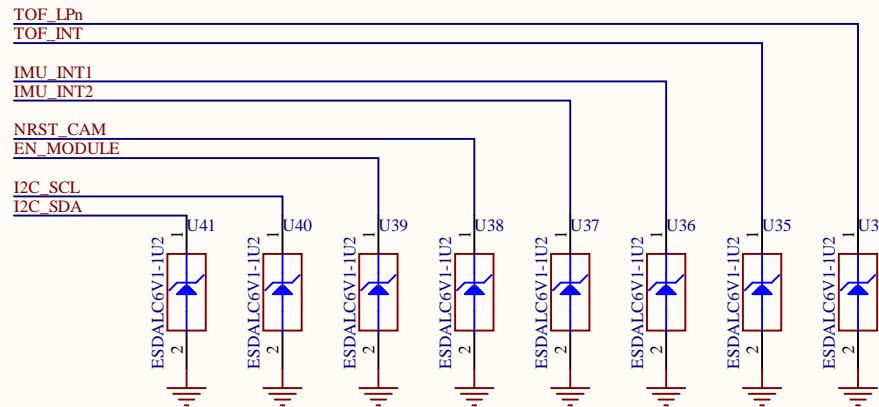
STMod+



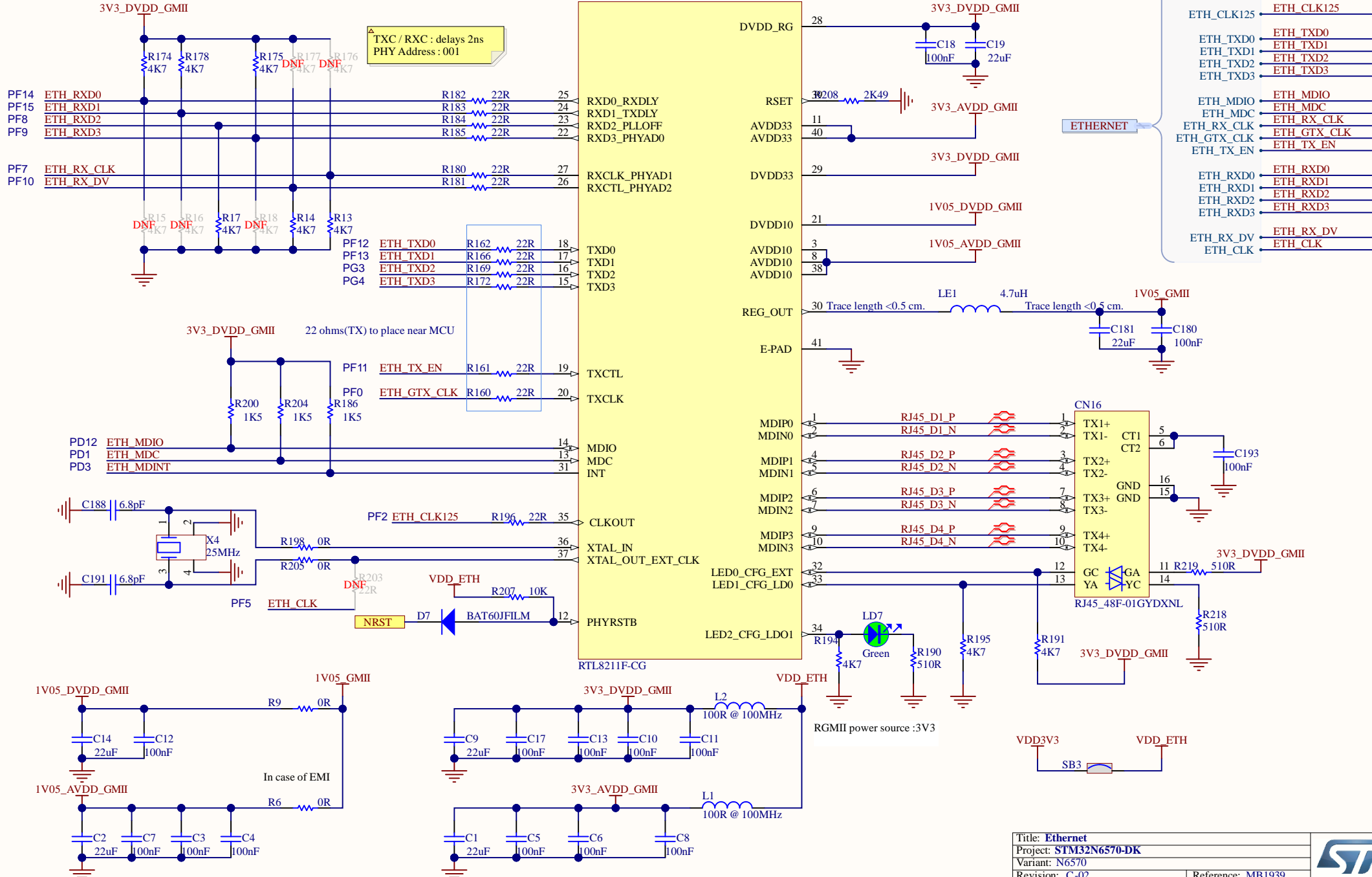
Camera CONNECTOR



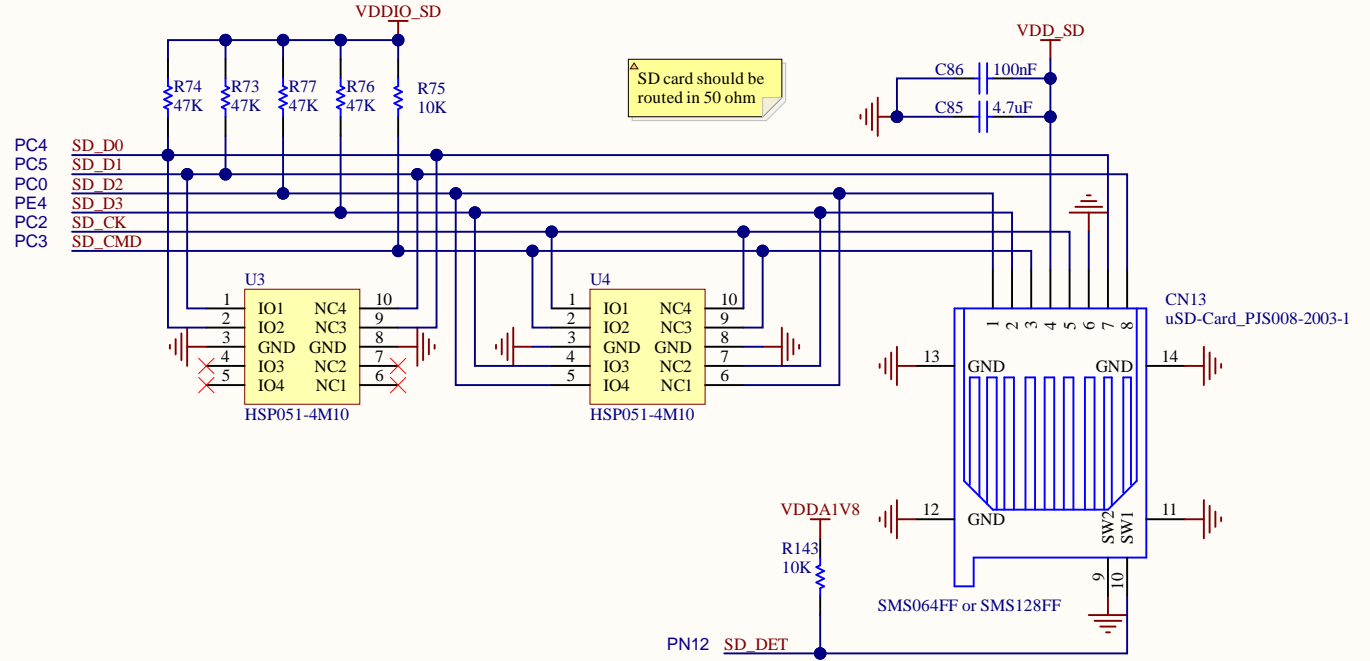
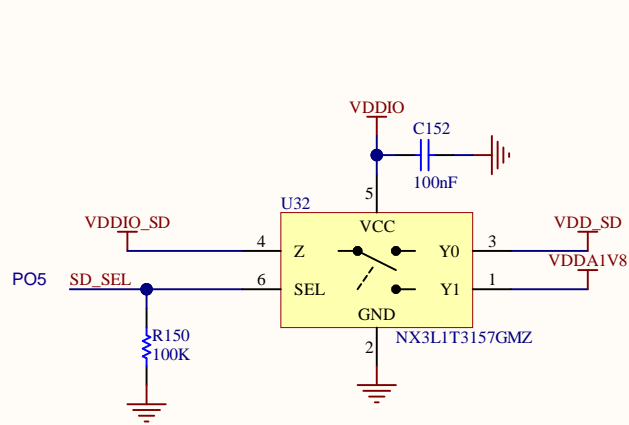
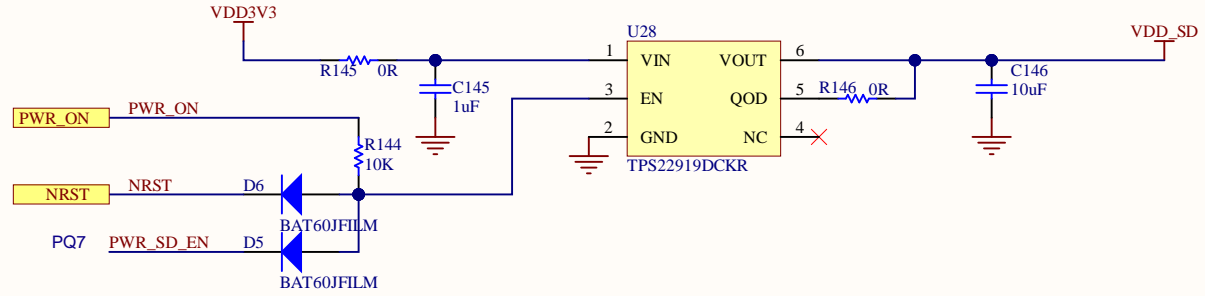
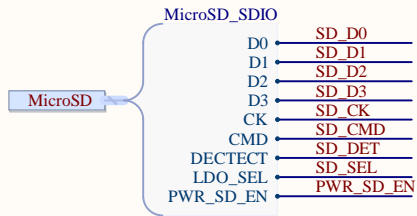
I2C address of MB1854-B01:
 Camera: Read 0x35 / Write 0x34
 TOF: Read 0x53 / Write 0x52
 IMU: Read 0xD6 / Write 0xD5



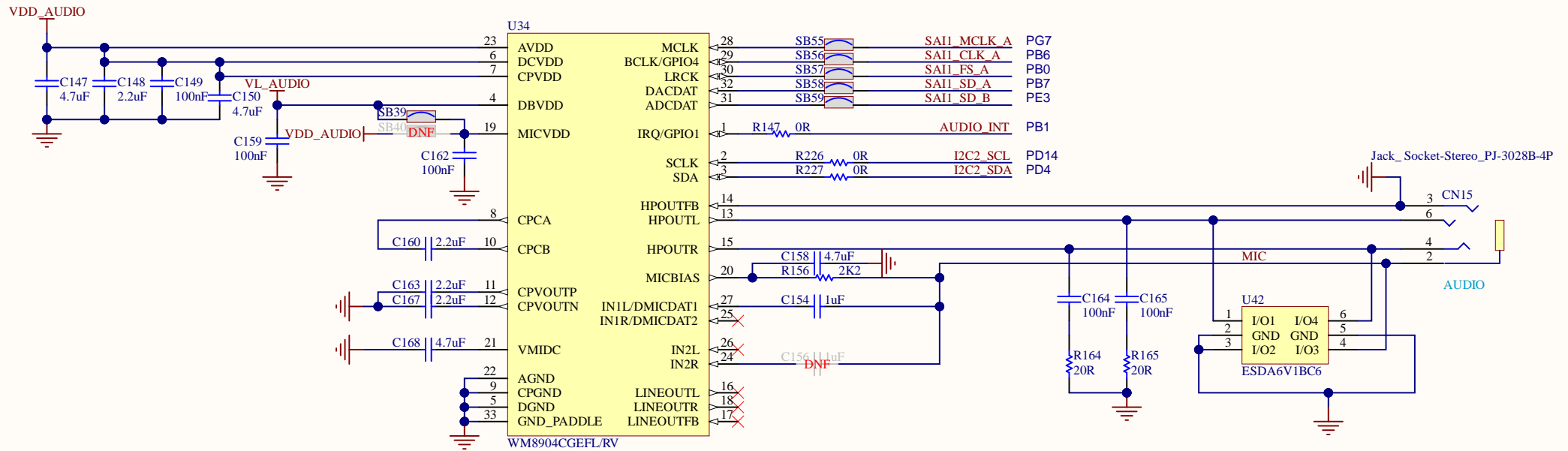
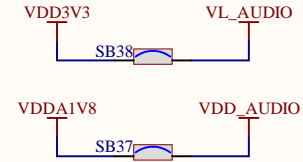
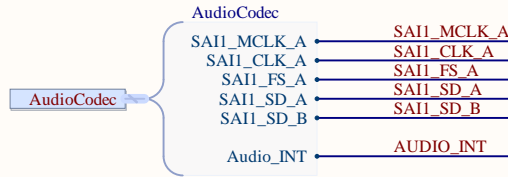
Ethernet



SD-Card



Audio



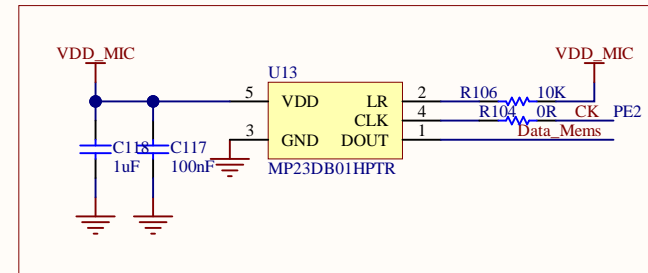
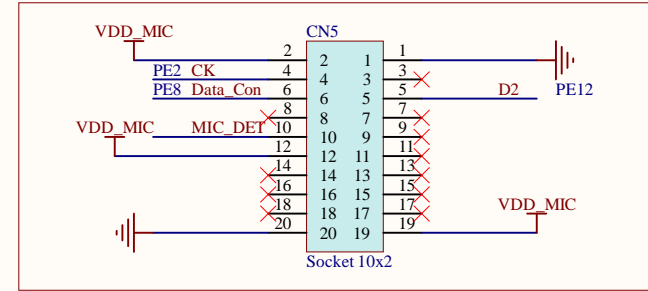
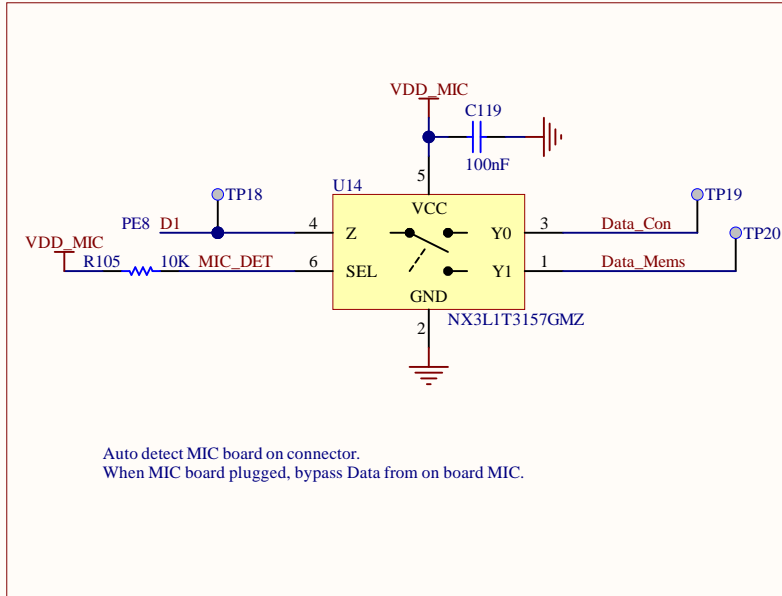
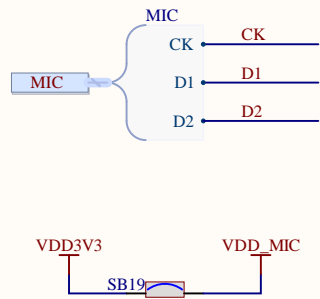
I2C address of WM8904 :
Read 0x35 / Write 0x34

AUDIO Stereo Out with MIC

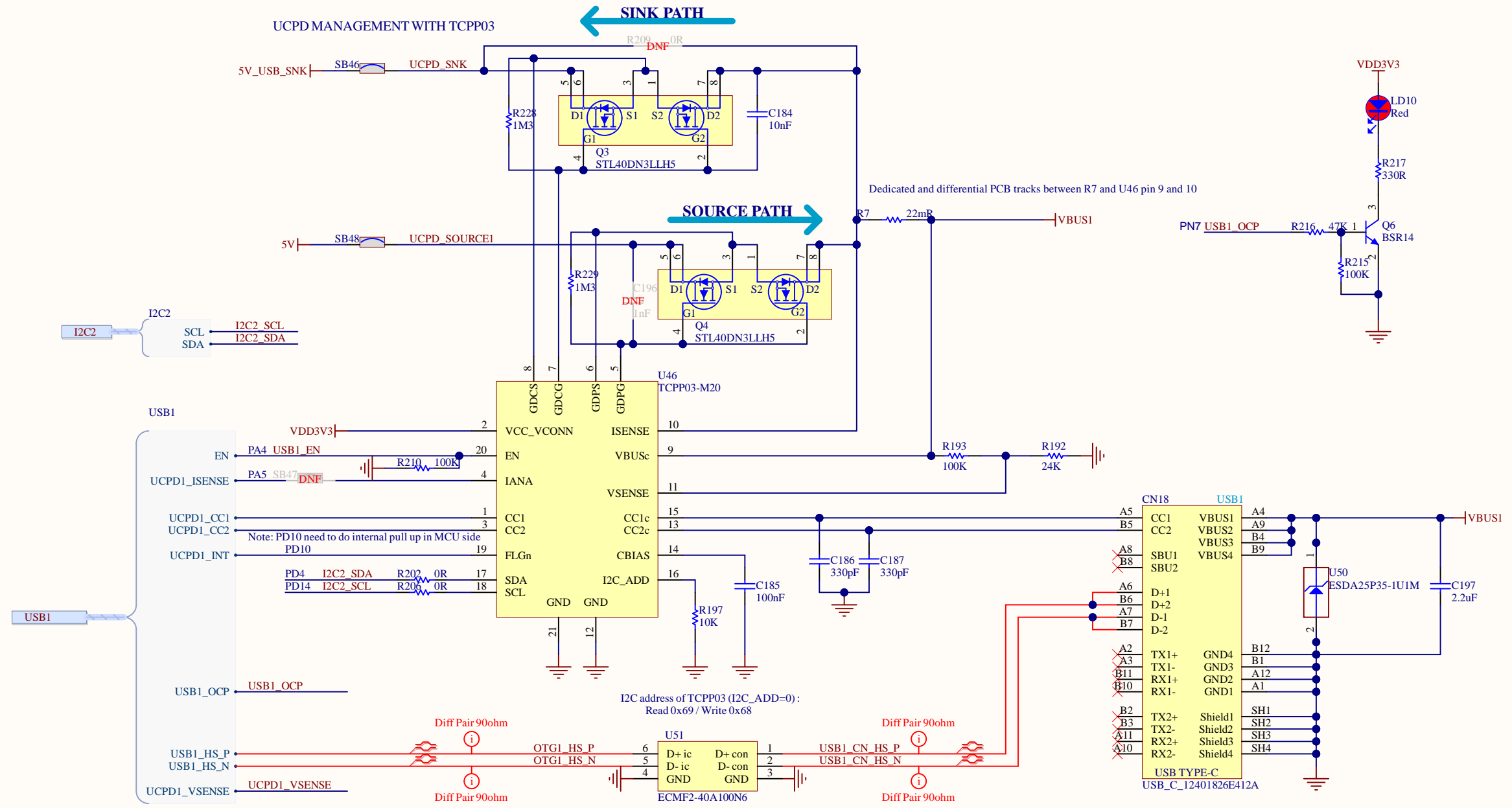


MEMs microphone

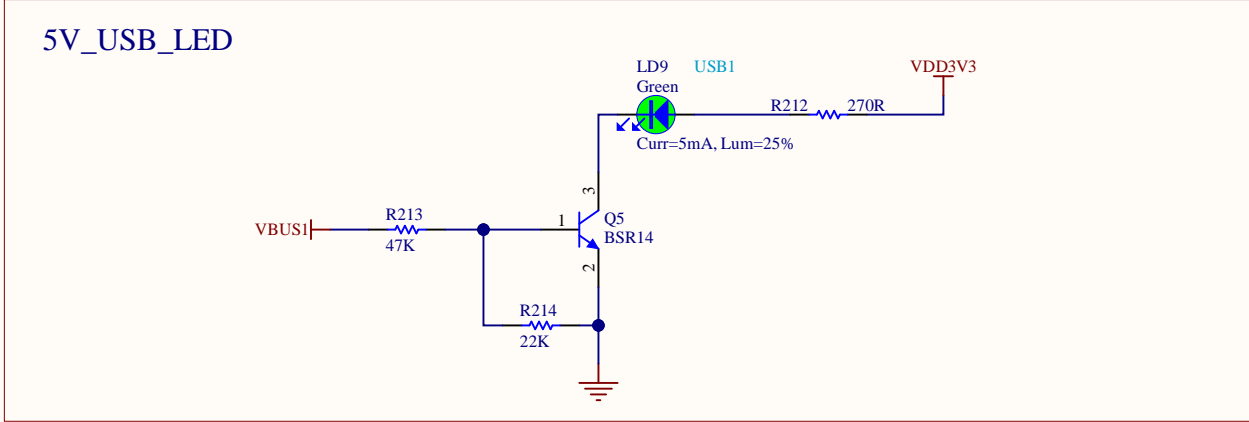
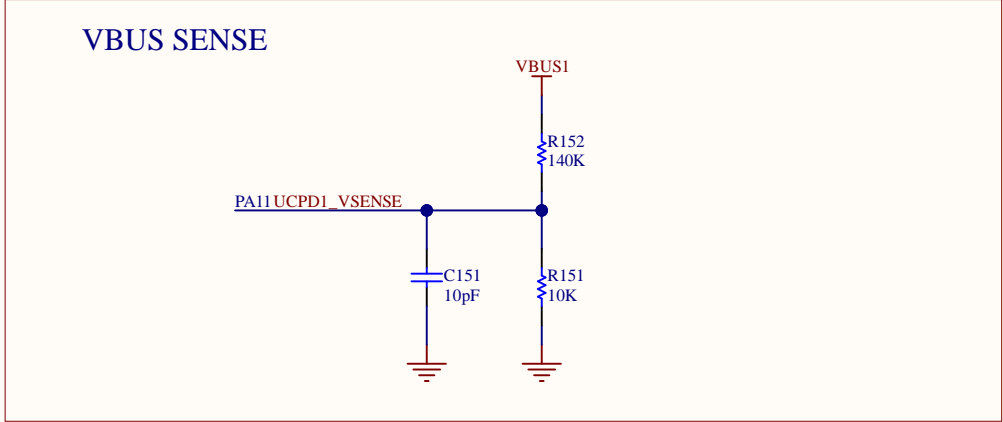
Operation Voltage: VDD_MIC = 1.6 - 3.6V



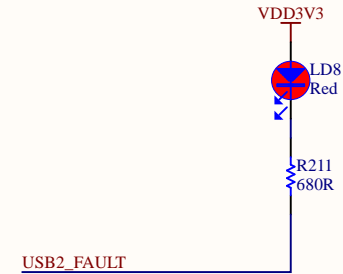
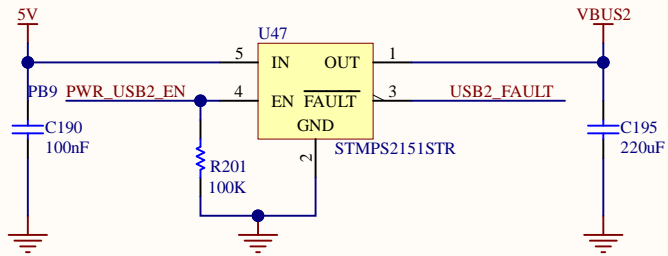
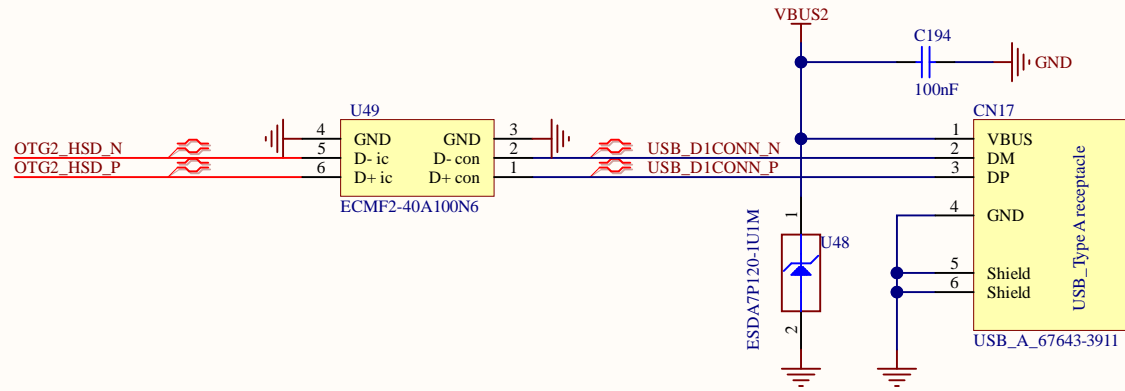
USB1 Type-C DRP



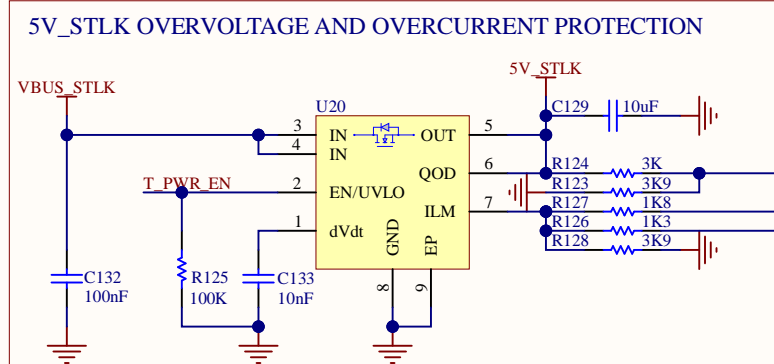
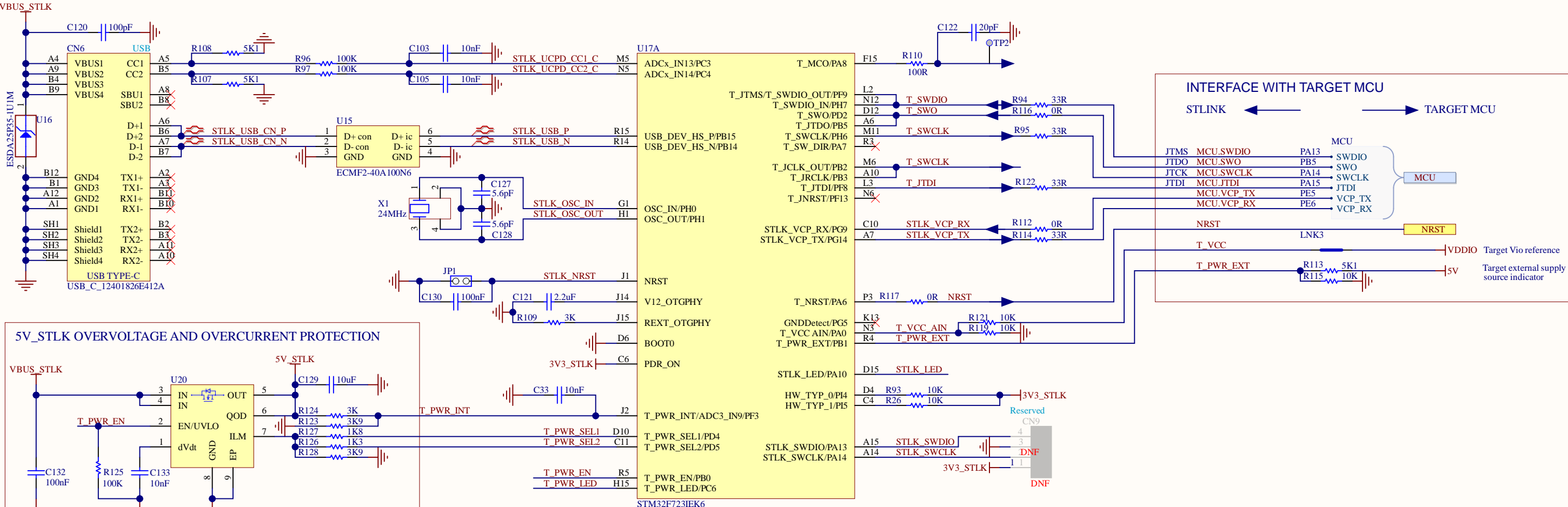
USB DP/DM should be routed in 90 ohm diff +/- 10%



USB_HOST



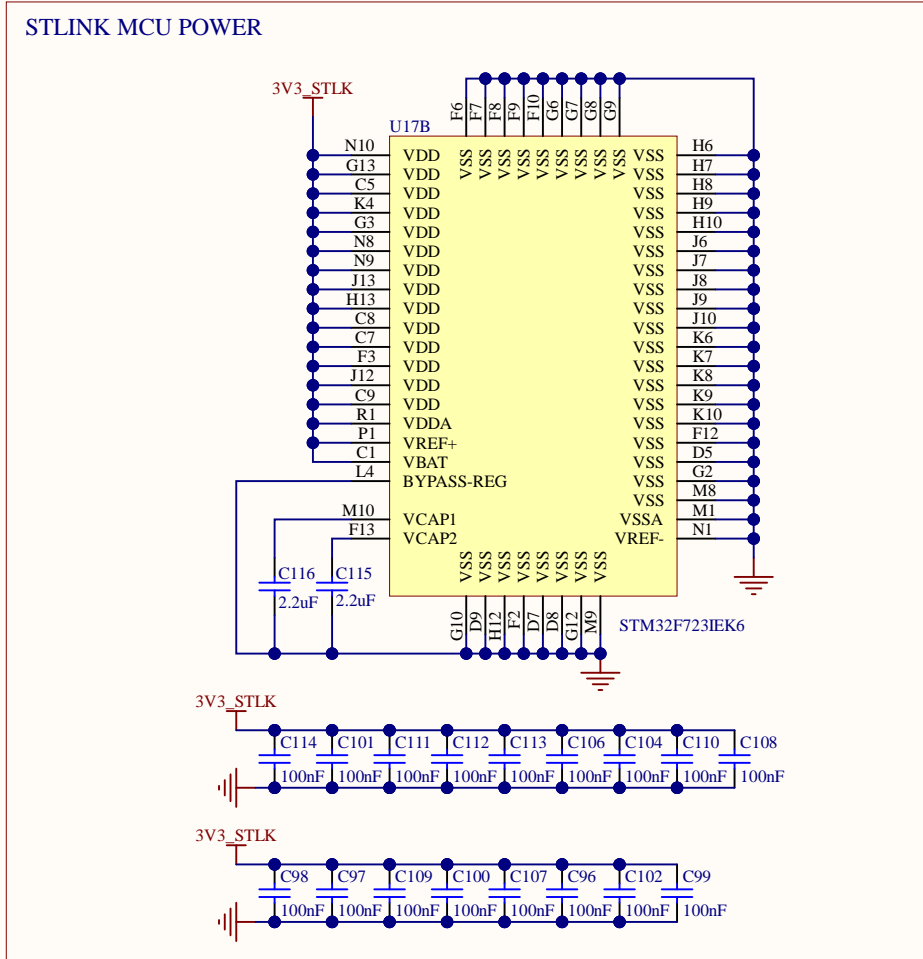
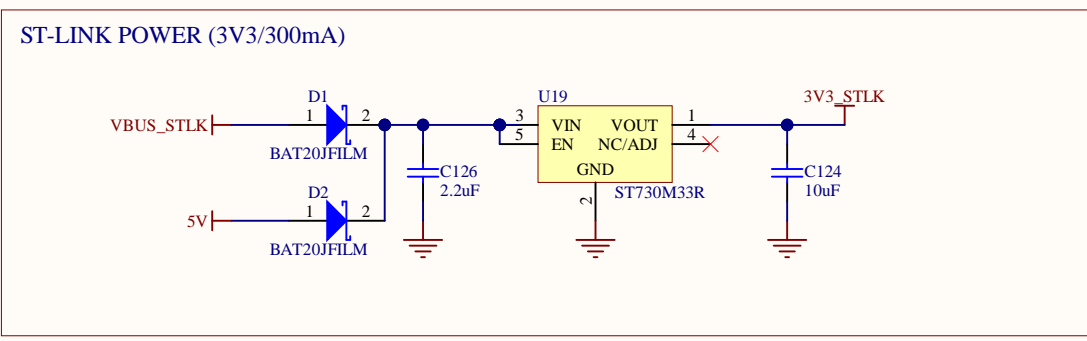
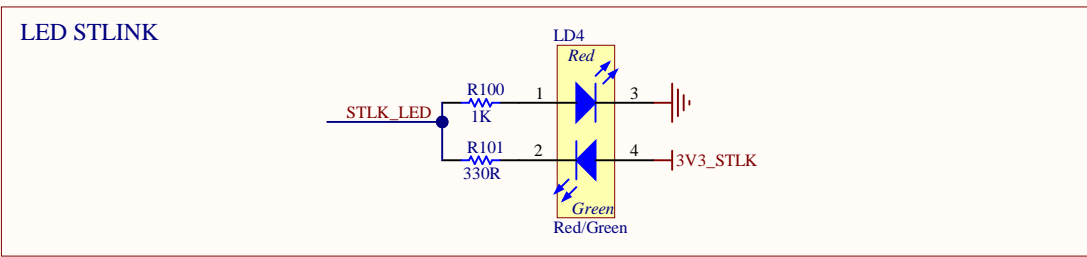
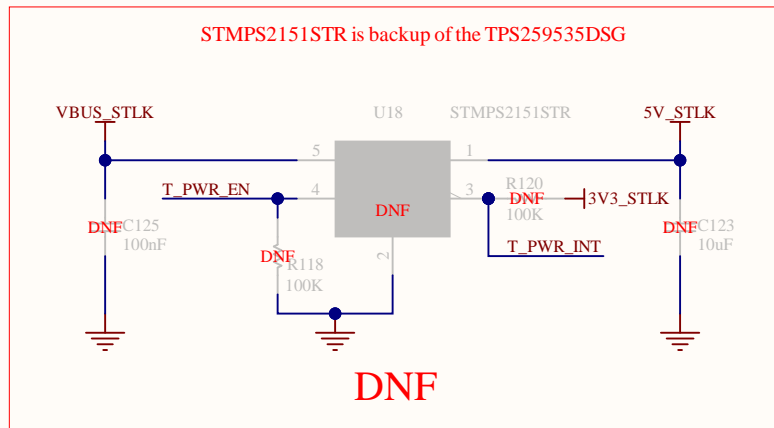
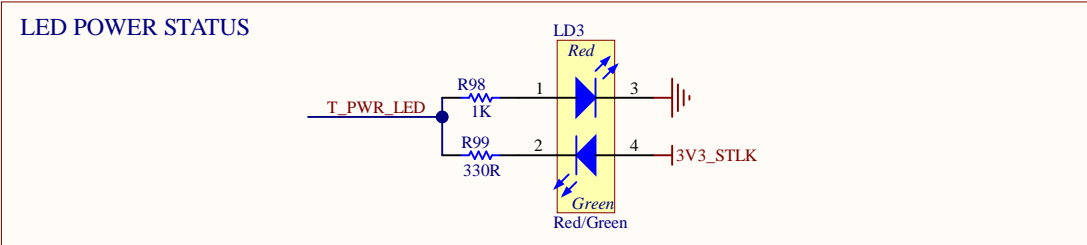
STLINK-V3EC



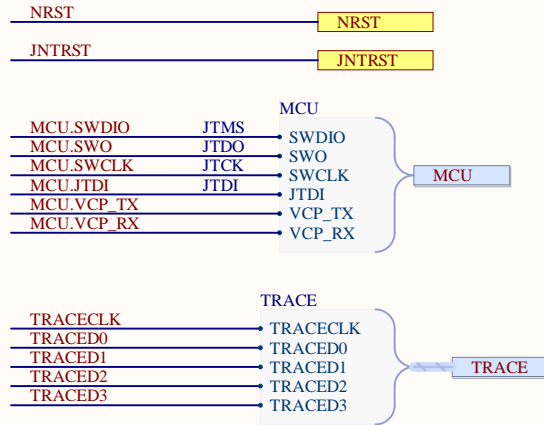
5V_STLK OVERCURRENT PROTECTION MANAGEMENT

| | T_PWR_SEL2/PD5 | T_PWR_SEL1/PD4 |
|--|----------------|----------------|
| PowerDefault.SNK (current limit: 550mA) | Hi-Z | Hi-Z |
| Power1.5.SNK (current limit: 1.66A) | Hi-Z | 0 |
| Power3.0.SNK (current limit: 3.2A) | 0 | 0 |

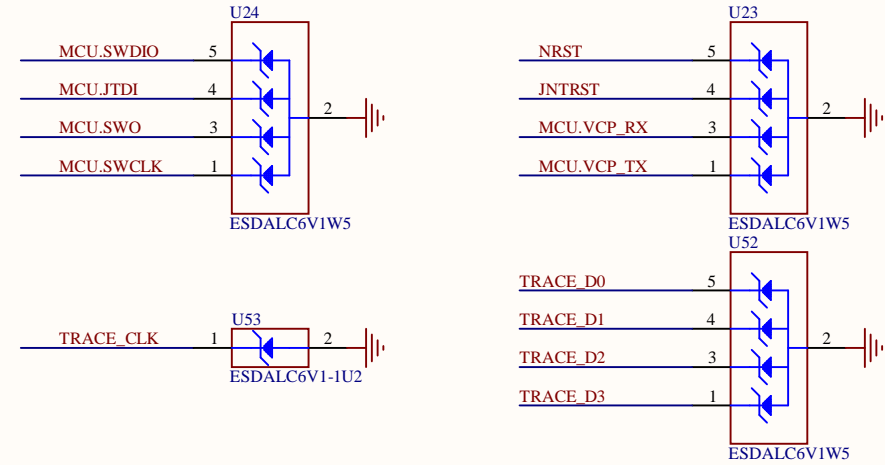
Hi-Z = IO set in high impedance



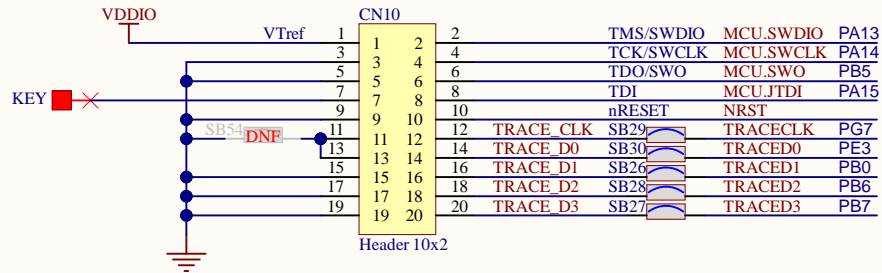
EXTERNAL DEBUGGER INTERFACE



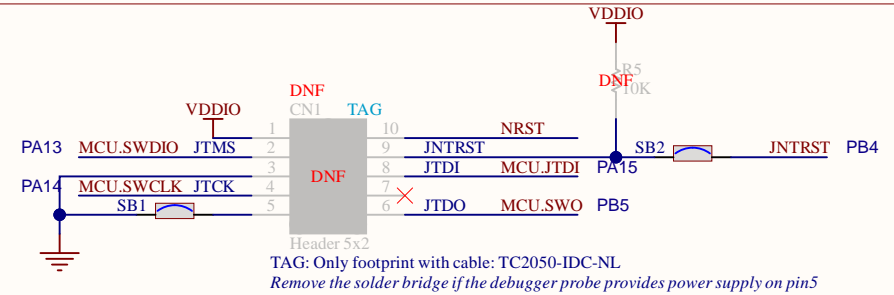
ESD PROTECTIONS



MIPI-20 CONNECTOR



TAG RECEIVER



HW2

STICKER BOARD

N/A

HW1

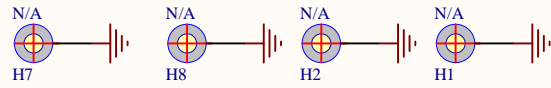
STICKER PRODUCT

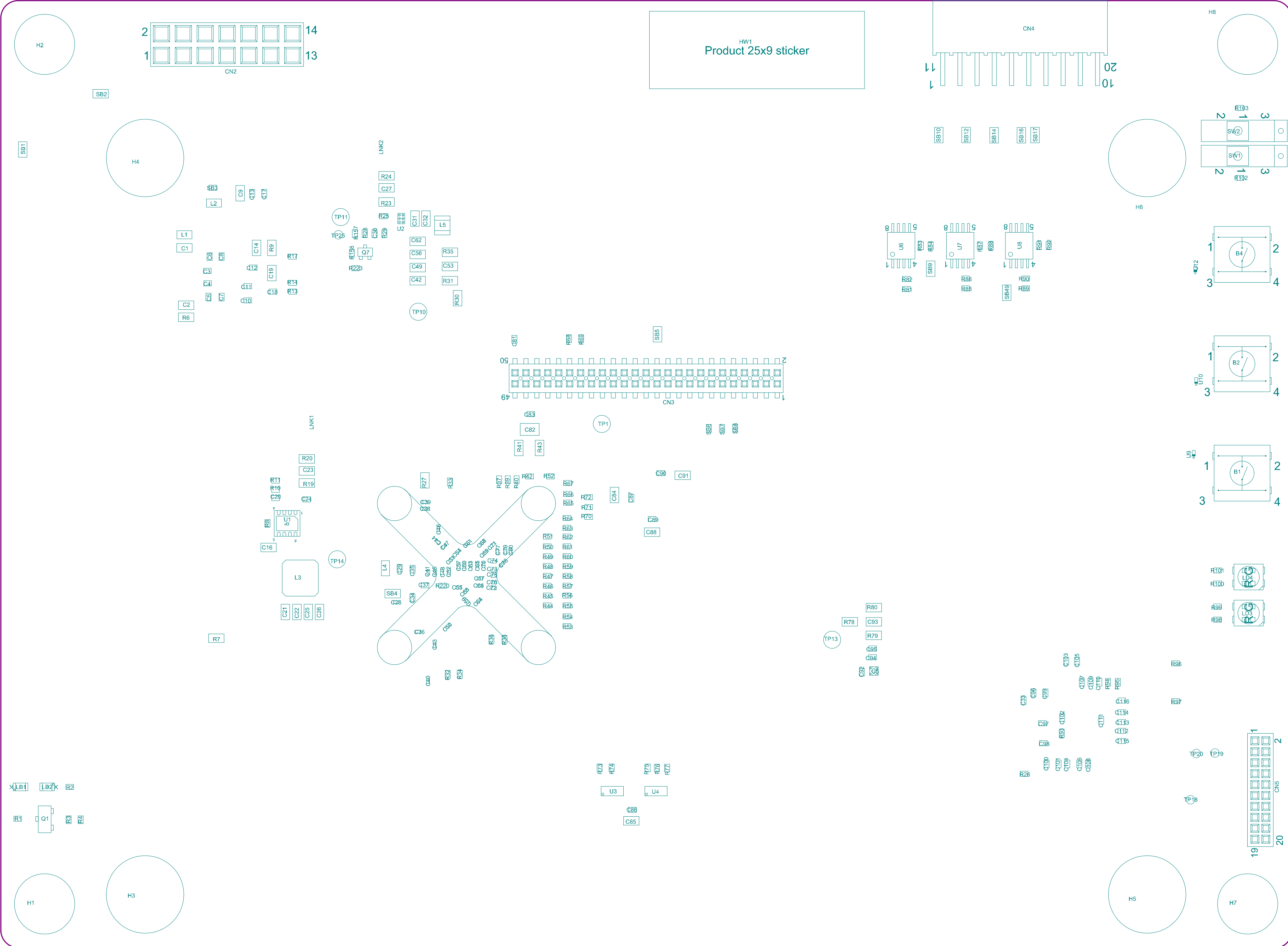
N/A


HW4

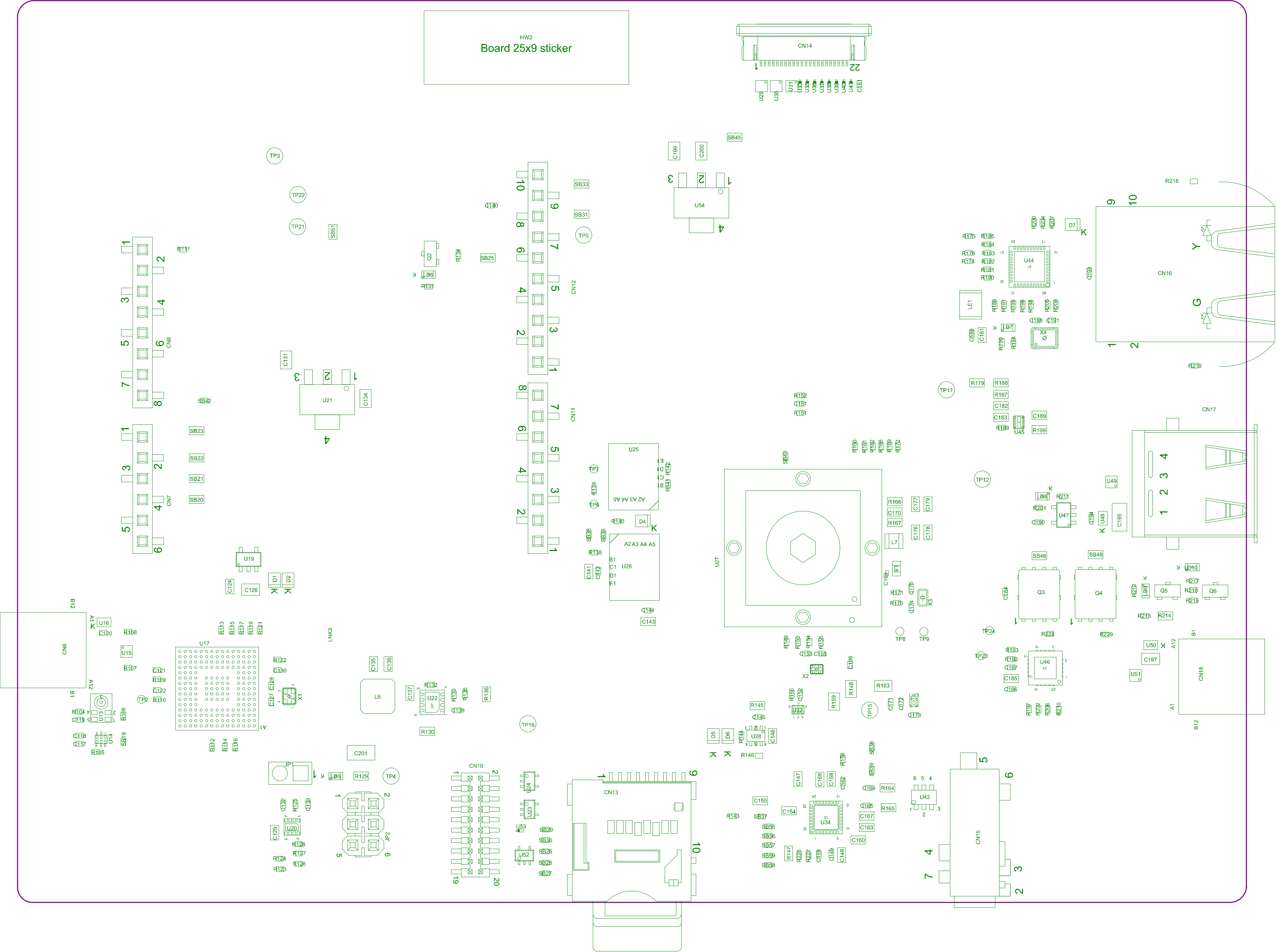
PCB

MB1939





| | | |
|-------------------------|---------------|---|
| Project: STM32N6570-DK | |  |
| Layer: M14-Top Assembly | Gerber: .GM14 | |
| Variant: N6570 | Ref: MB1939 | |
| Date: 4-Nov-24 | Rev: C | |



Project: STM32N6570-DK

Layer: M15-Bottom Assembly

Variant: N6570

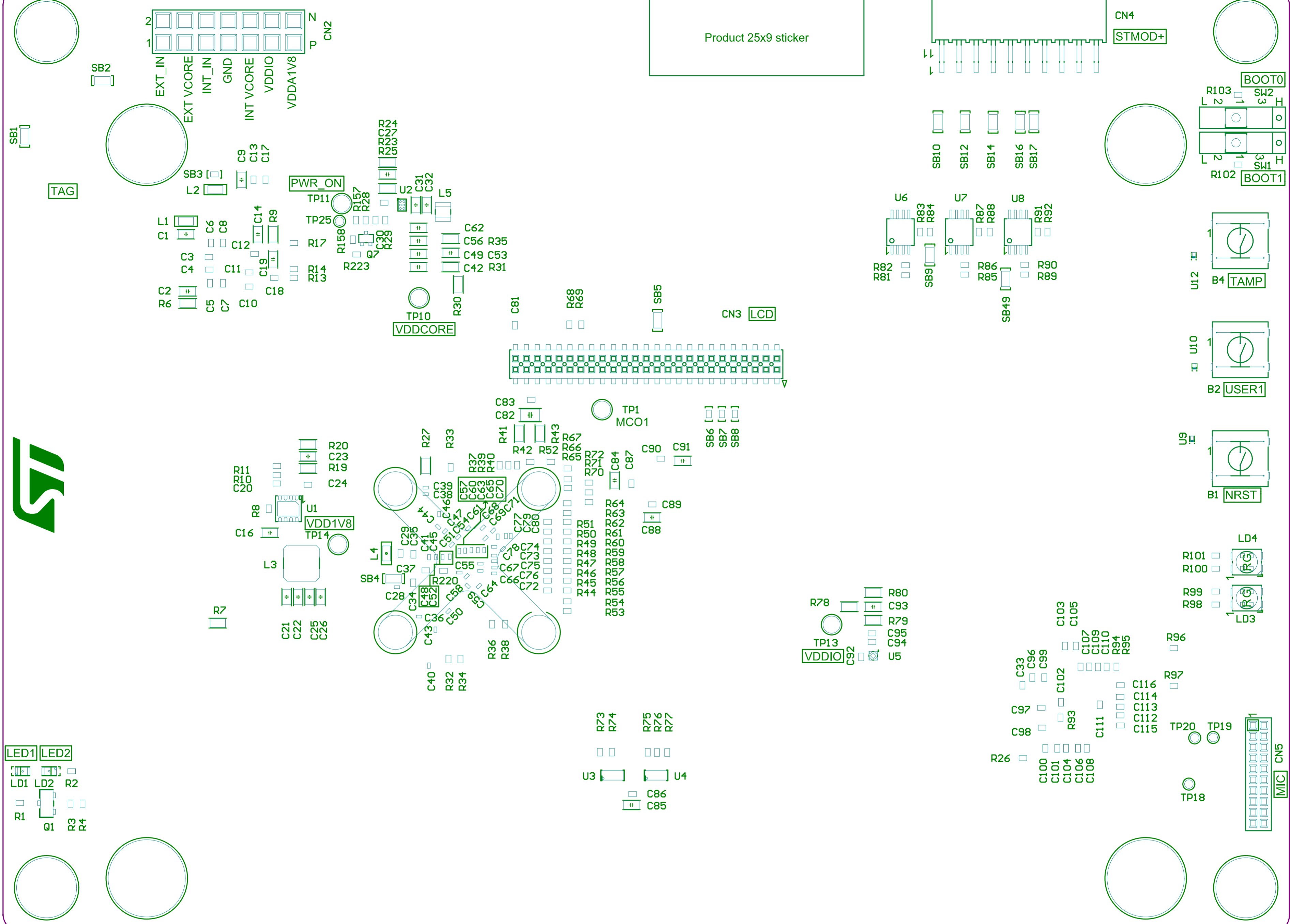
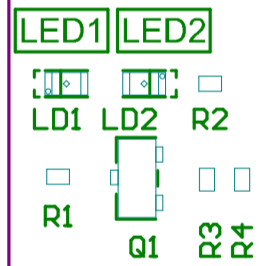
Date: 4-Nov-24

Gerber: .GM15

Ref: MB1939

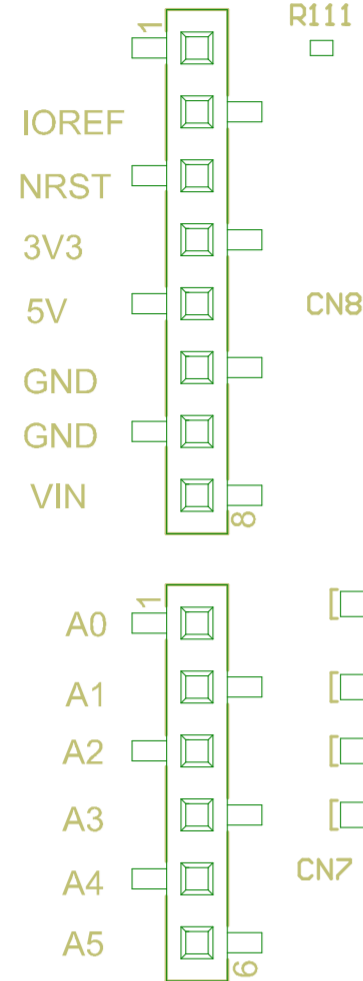
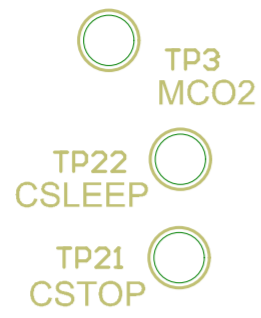
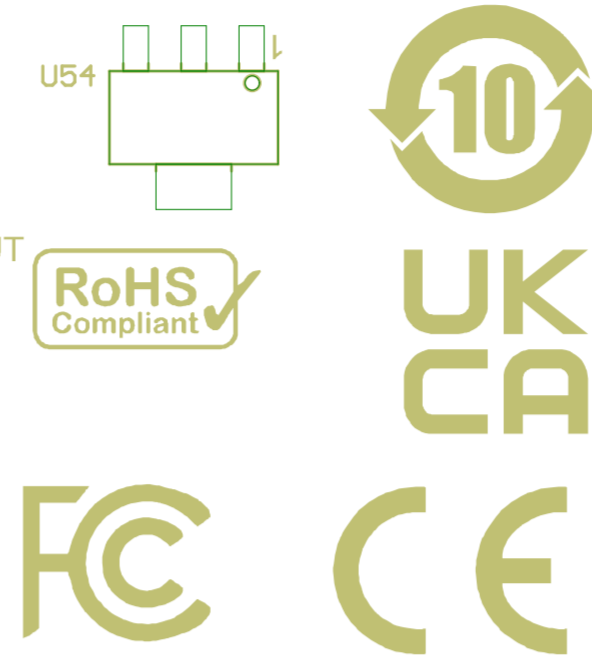
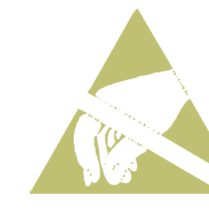
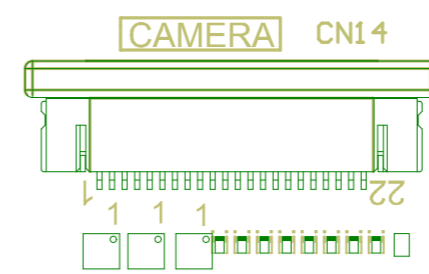
Rev: C



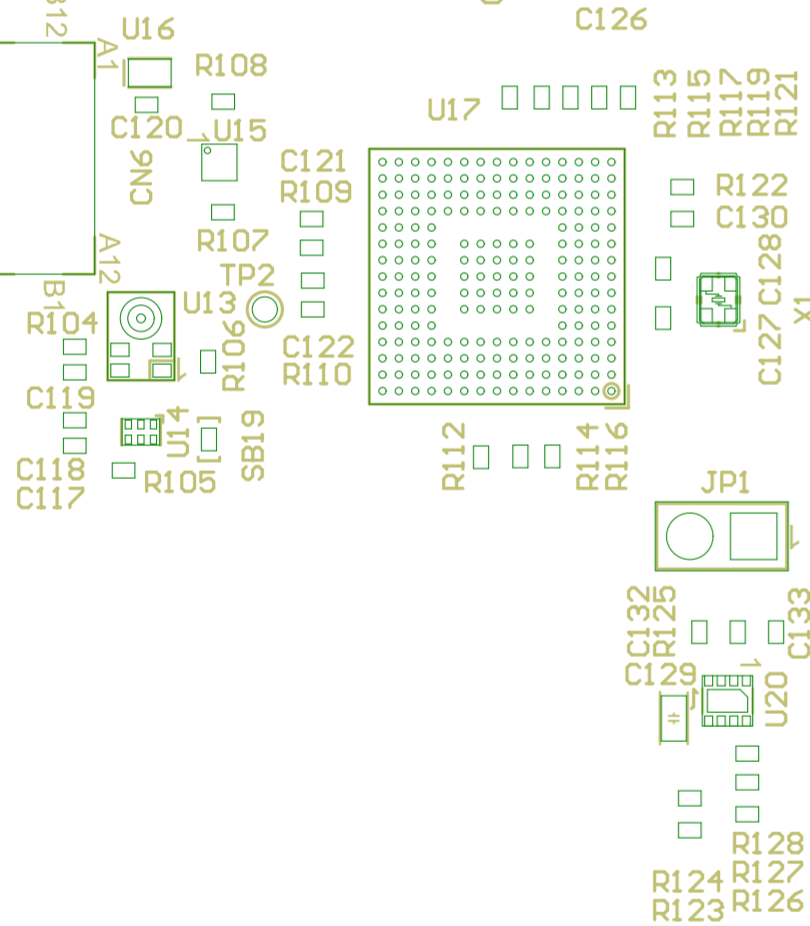


MB1939C

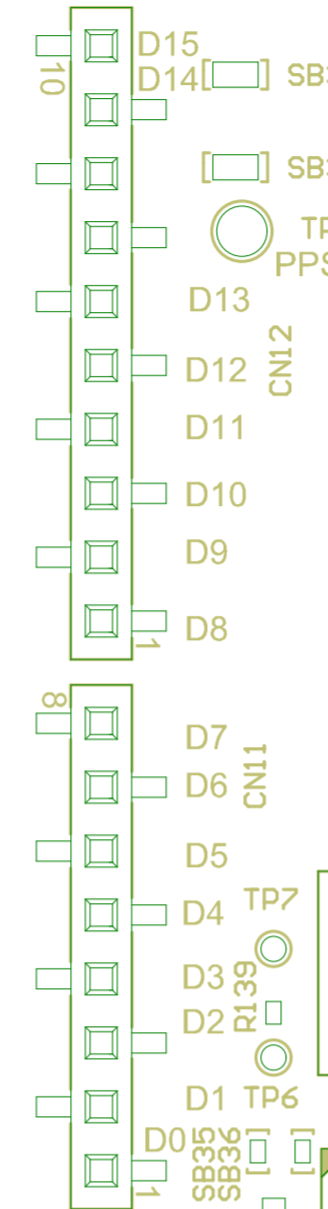
Board 25x9 sticker



STLINK_V3EC



1-2:5V_STLK
3-4:5V_USB_SNK
5-6:5V_VIN



VDD3V3

MIPI20

