

Nucleo144 H7 SMPS with STLINK V3

MB1363

H7A3ZIQ

Table of contents

Sheet 1: Project overview (this page)

Sheet 2: MB1363_Top

Sheet 3: MCU I/Os

Sheet 4: MCU POWER

Sheet 5: CONNECTORS

Sheet 6: ETHERNET

Sheet 7: USB

Sheet 8: POWER BOARD

Sheet 9: ST-LINK V3E SWD

U_MB1363_Top
MB1363_Top.SchDoc

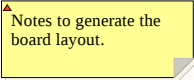


Legend

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

Text to be added to silkscreen.

Warning text.



OPEN PLATFORM LICENSE AGREEMENT

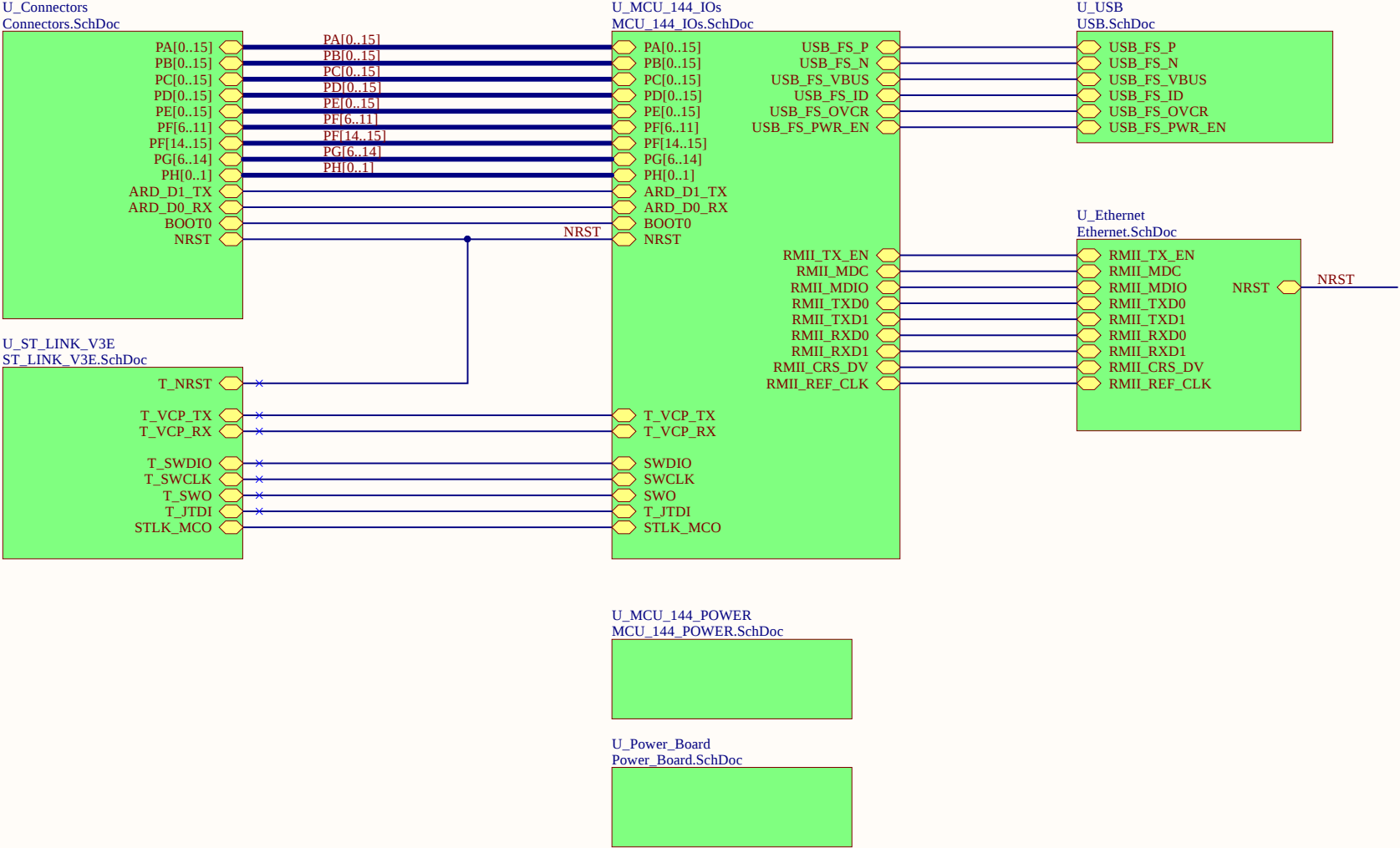
The Open Platform License Agreement (“Agreement”) is a binding legal contract between you (“You”) and STMicroelectronics International N.V. (“ST”), a company incorporated under the laws of the Netherlands acting for the purpose of this Agreement through its Swiss branch 39, Chemin du Champ des Filles,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

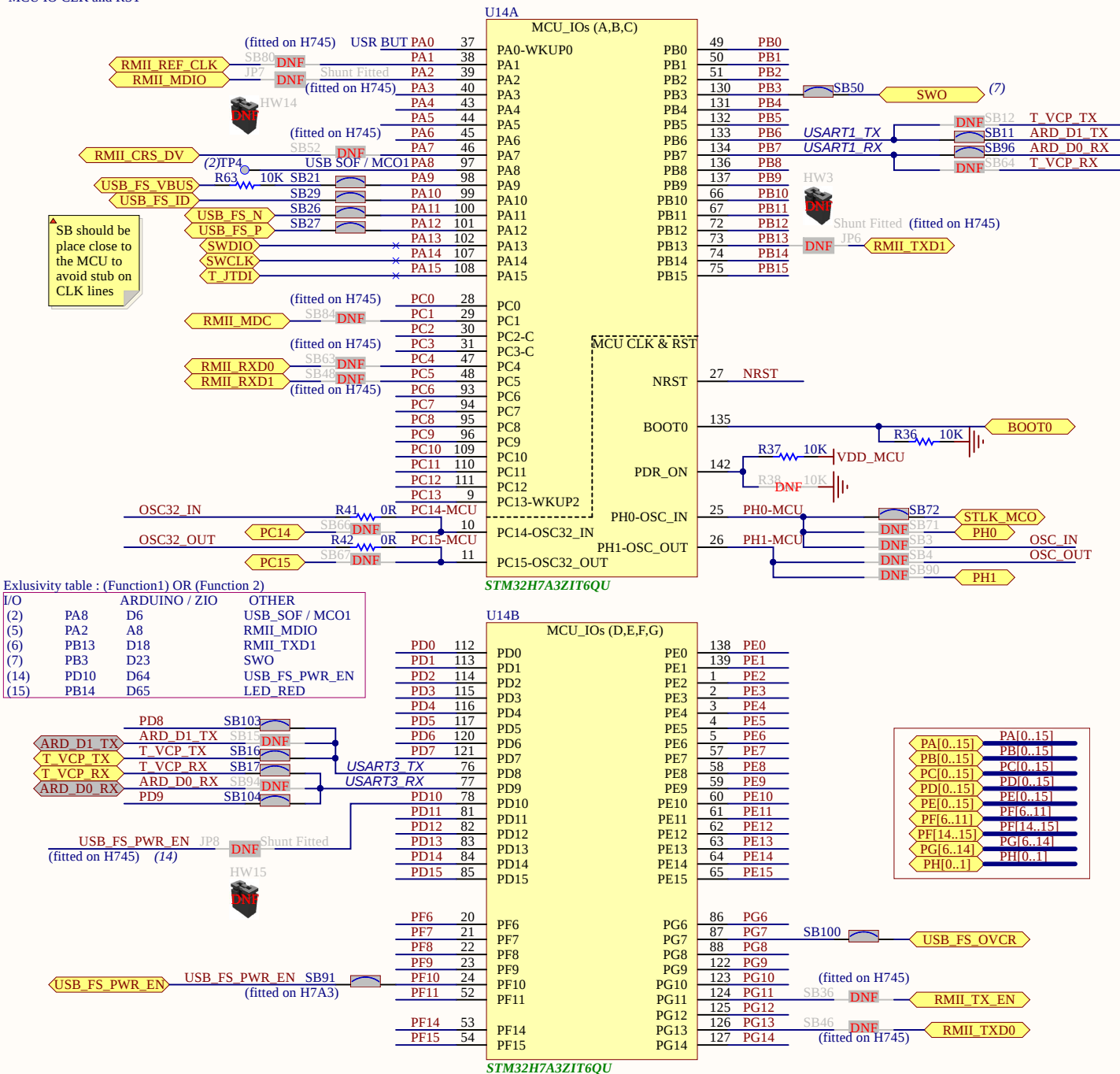
The complete Open Platform License Agreement can be found on www.st.com/opla.

Title: Project overview		
Project: Nucleo144 H7 SMPS with STLINK V3		
Variant: H7A3ZIQ		
Revision: D-01		Reference: MB1363
Size: A4	Date: 24-OCT-19	Sheet: 1 of 9

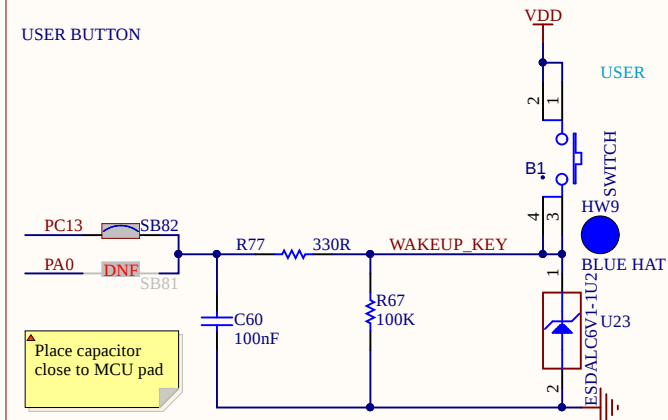




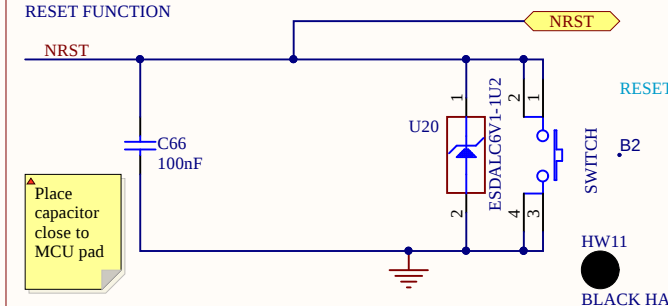
MCU IO CLK and RST



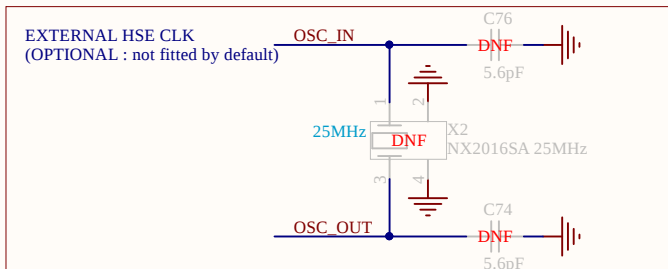
USER BUTTON



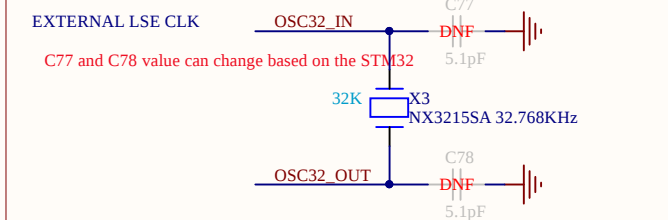
RESET FUNCTION



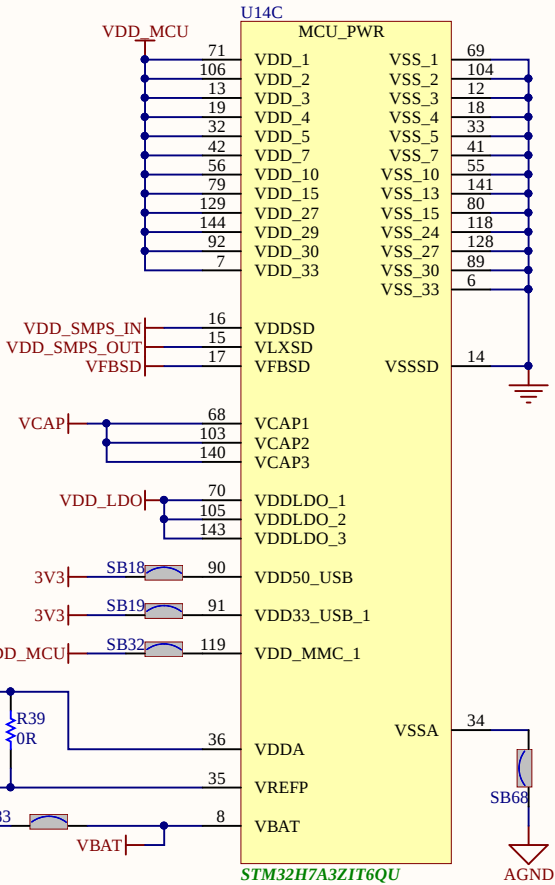
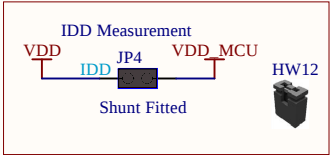
EXTERNAL HSE CLK
(OPTIONAL : not fitted)



EXTERNAL LSE CLK



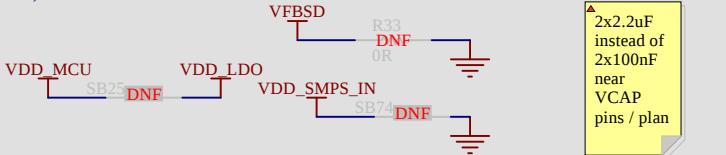
MCU PWR SUPPLIES



SMPS MCU Supply Config

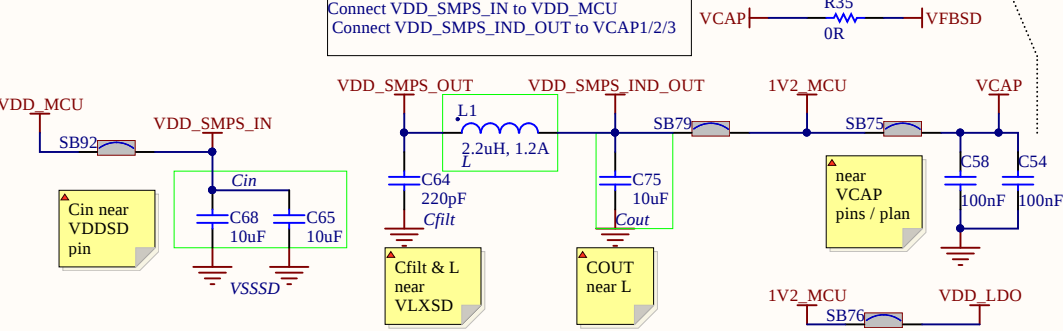
Supply Config 1 : LDO only (SMPS OFF, LDO ON)

Disconnect 3V3_SMPS_IN from 3V3_MCU
Connect 3V3_SMPS_IN to GND
Connect VDD_SMPS_IND_OUT to GND
Connect VDD_LDO to 3V3_MCU
2 x 2.2uF near VCAP pins/pins



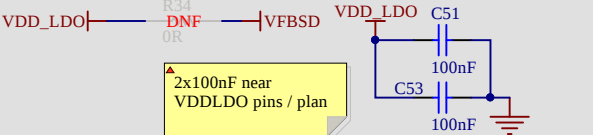
Supply Config 2 : Internal SMPS only (SMPS ON, LDO OFF)

Default config



Supply Config 3 : SMPS & LDO cascaded (SMPS & LDO ON)

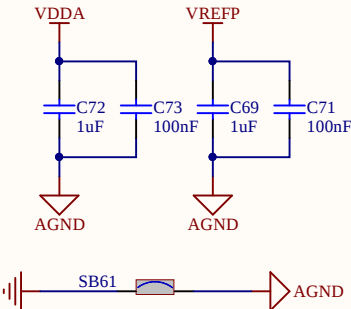
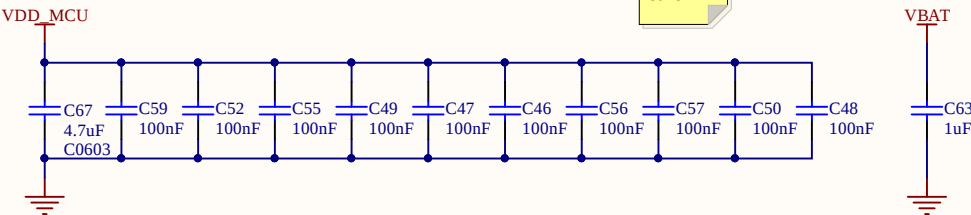
Compared to config 2 :
Disconnect VDD_SMPS_IND_OUT from VCAP
Connect VDD_SMPS_IND_OUT to VDD_LDO
Add 2x100nF near VDDLDO pins/plans
Add 2x2.2uF near VCAP pins/plans (see config 1)



Supply Config 5 : external SMPS

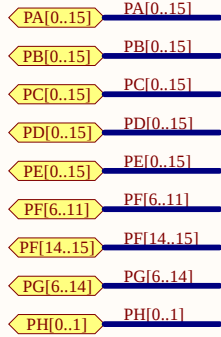
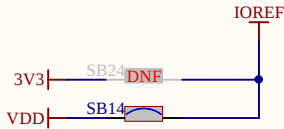
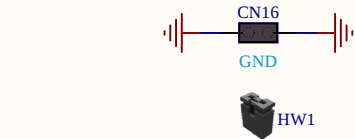
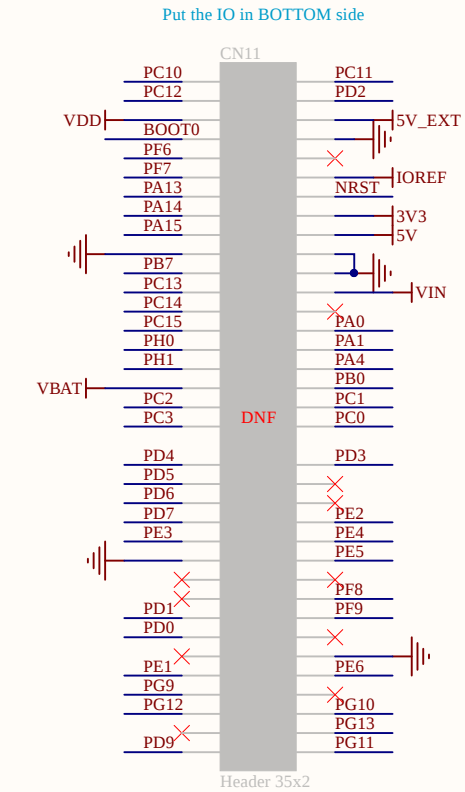
Disconnect 1V2_MCU from VDD_SMPS_IND_OUT
Connect 1V2_MCU to 1V2_VOUTCORE (Connectors page)

MCU DECAPS
Ceramic capacitor (Low ESR, ESR<1ohm)



EXTENSION CONNECTORS, MCU INTERFACES

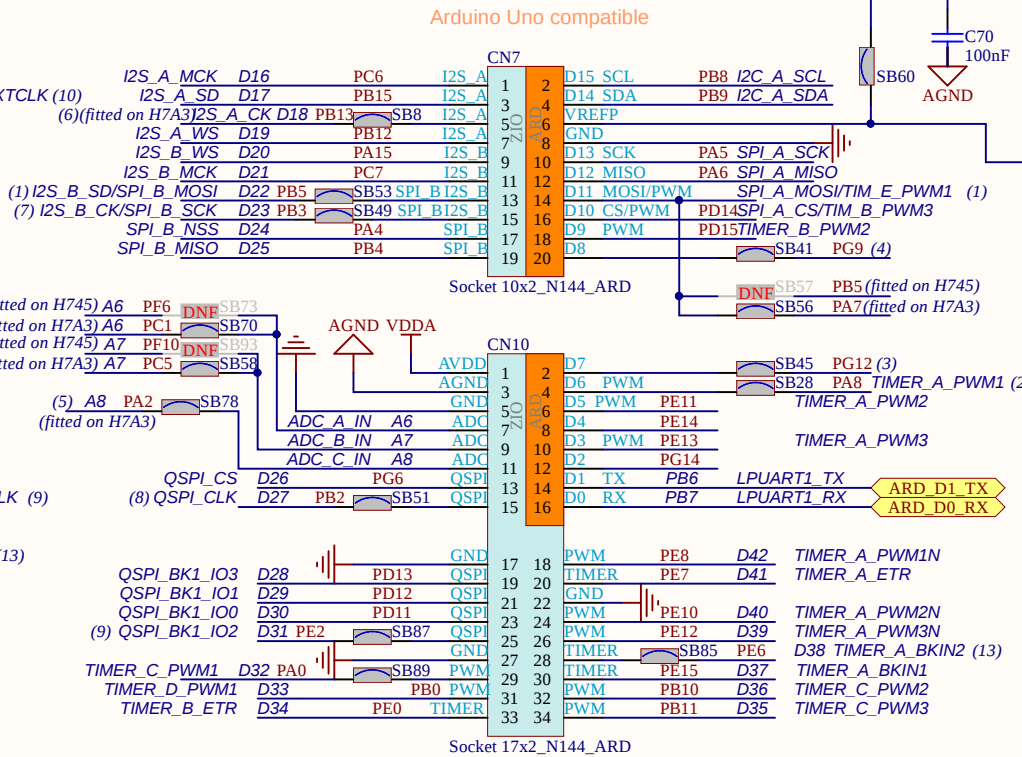
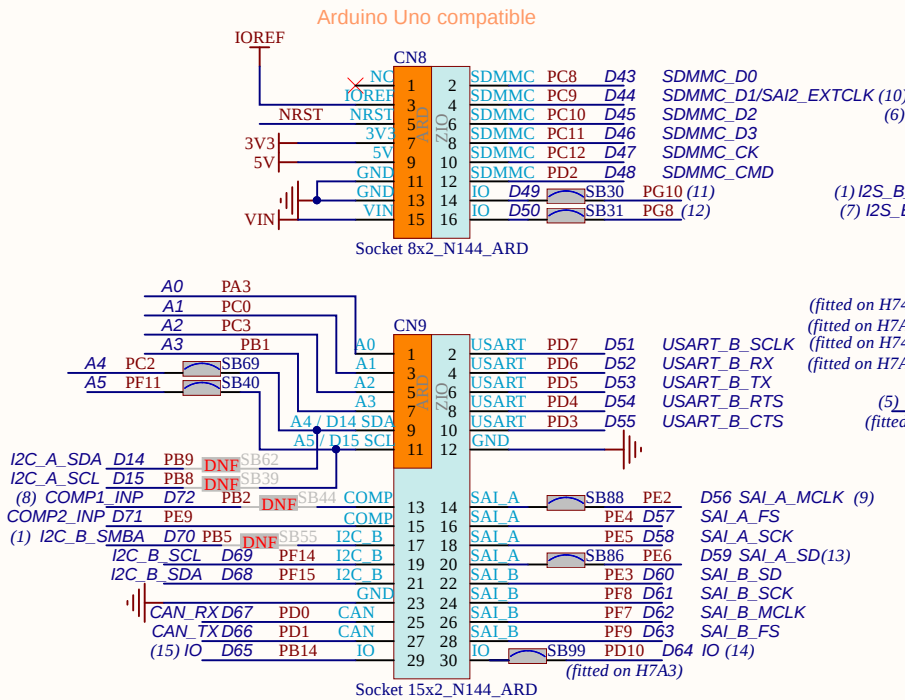
MORPHO CONNECTOR LEFT SIDE



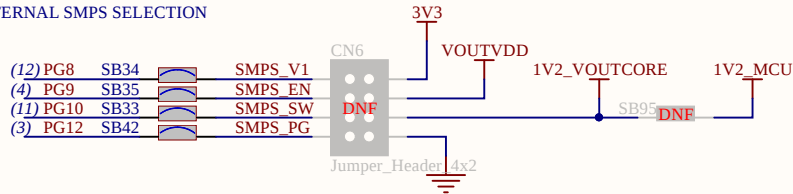
Exclusivity table : (Function1) OR (Function 2)

I/O	ARDUINO / ZIO	OTHER
(1) PB5	D11 / D22 / D70	
(2) PA8	D6	USB_SOF / MCO1
(3) PG12	D7	SMPS_PG
(4) PG9	D8	SMPS_EN
(5) PA2	A8	RMII_MDIO (H745ZI / H755ZI)
(6) PB13	D18	RMII_TXD1 (H745ZI / H755ZI)
(7) PB3	D23	SWO
(8) PB2	D27 / D72	
(9) PE2	D31 / D56	
(10) PC9	D44	
(11) PG10	D49	SMPS_SW
(12) PG8	D50	SMPS_V1
(13) PE6	D59 / D38	
(14) PD10	D64	USB_FS_PWR_EN (H745ZI / H755ZI)
(15) PB14	D65	LED_RED

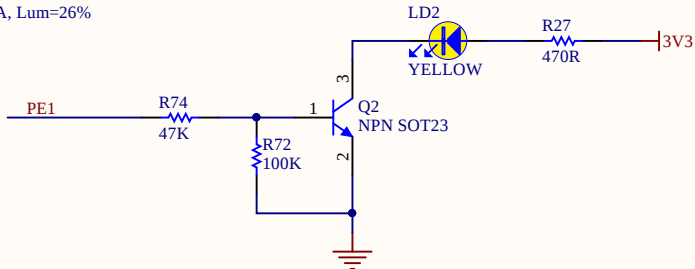
ZIO CONNECTOR ARDUINO UNO COMPATIBLE



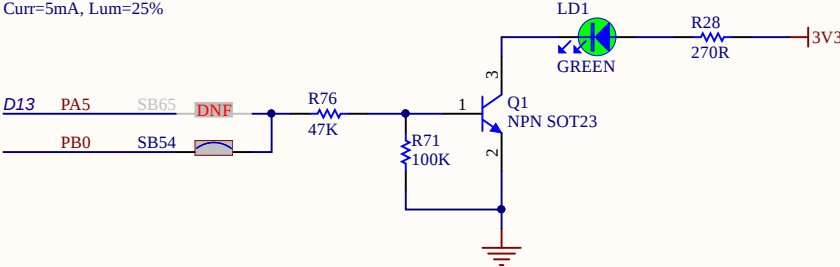
EXTERNAL SMPS SELECTION



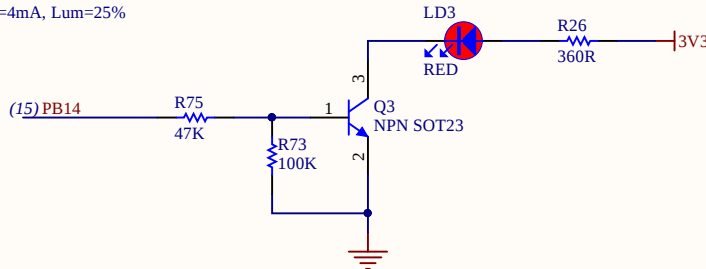
USER LED 2
Curr=3mA, Lum=26%



USER LED 1 : ARD_D13_LED
Curr=5mA, Lum=25%

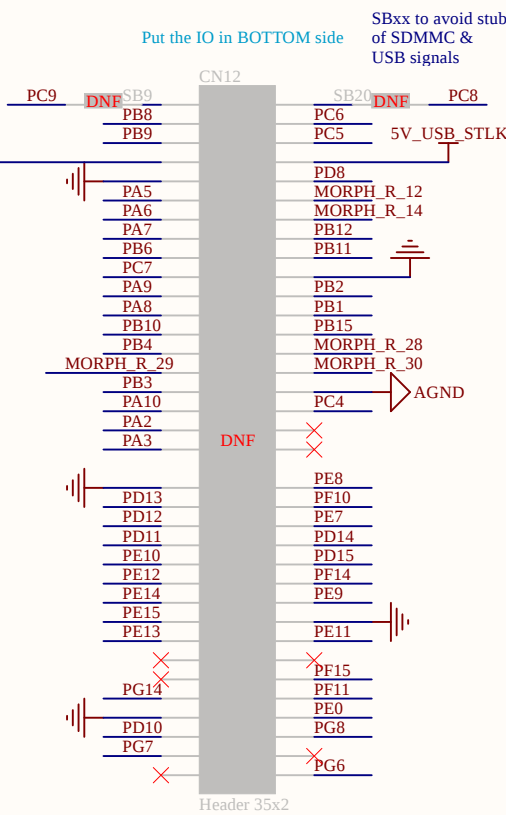
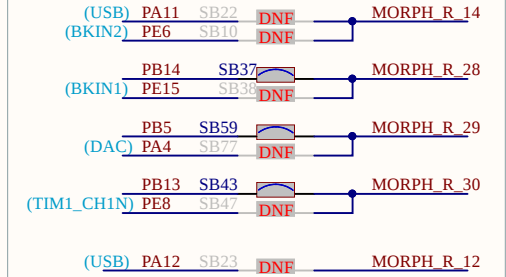


USER LED 3
Curr=4mA, Lum=25%

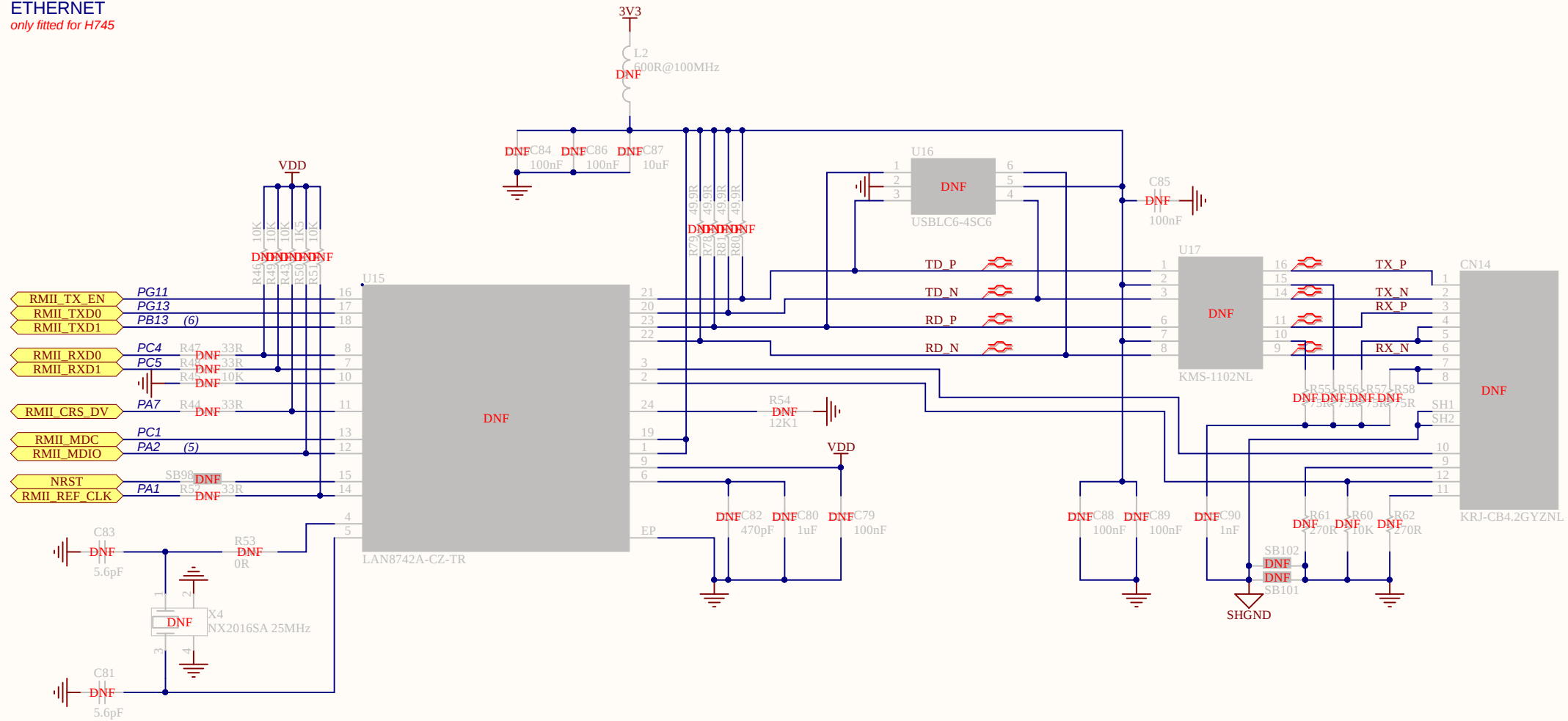


MORPHO CONNECTOR RIGHT SIDE

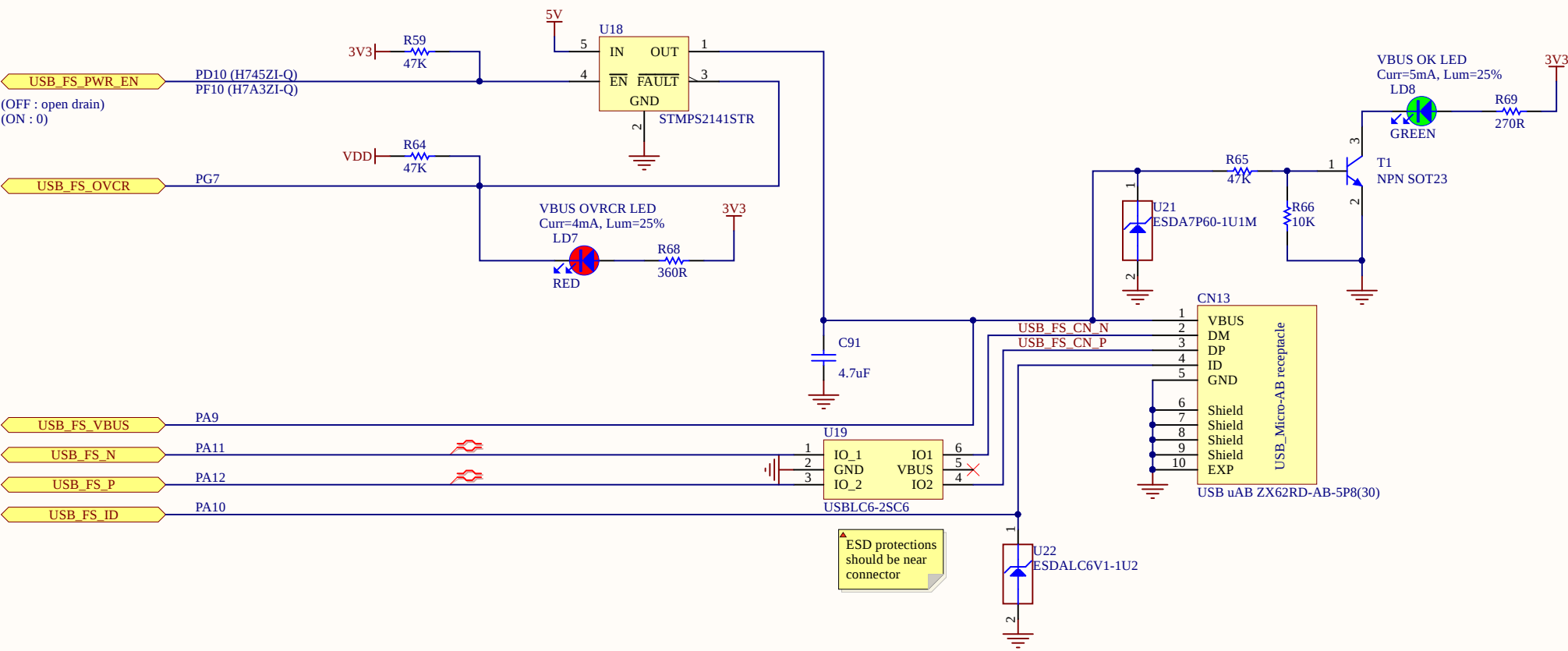
FOR X-NUCLEO-IHMXXM1 MOTOR CTRL COMPATIBILITY



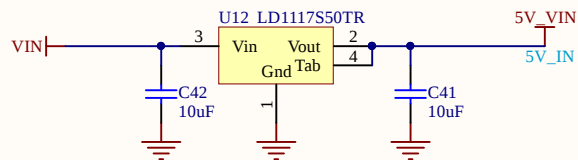
only fitted for H745



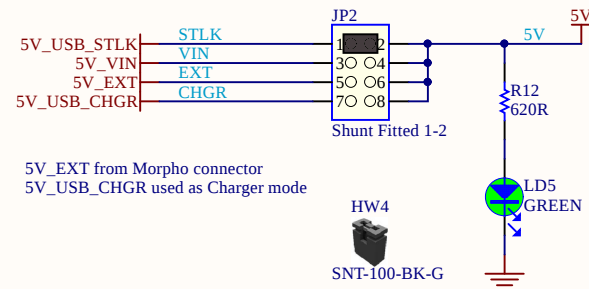
USB FS



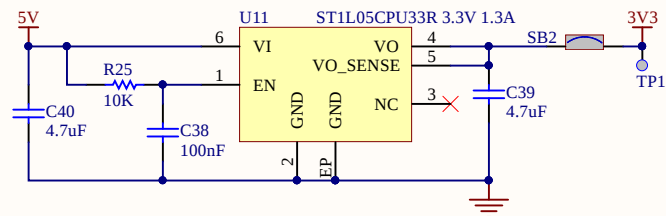
VIN / 5V PWR



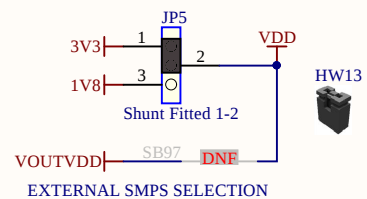
5V PWR SELECTION



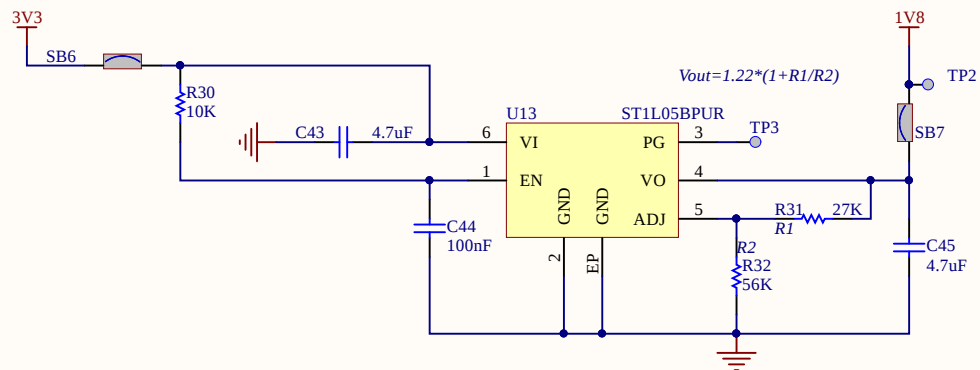
3V3 PWR



3V3/1V8 SELECTION

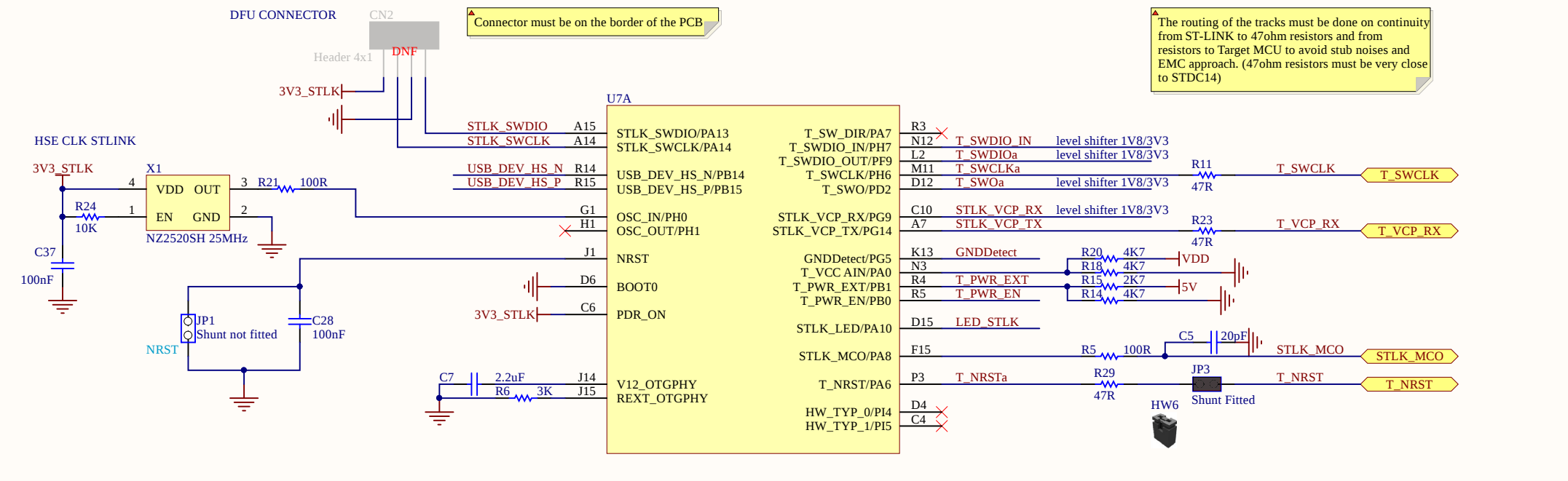


1V8 PWR

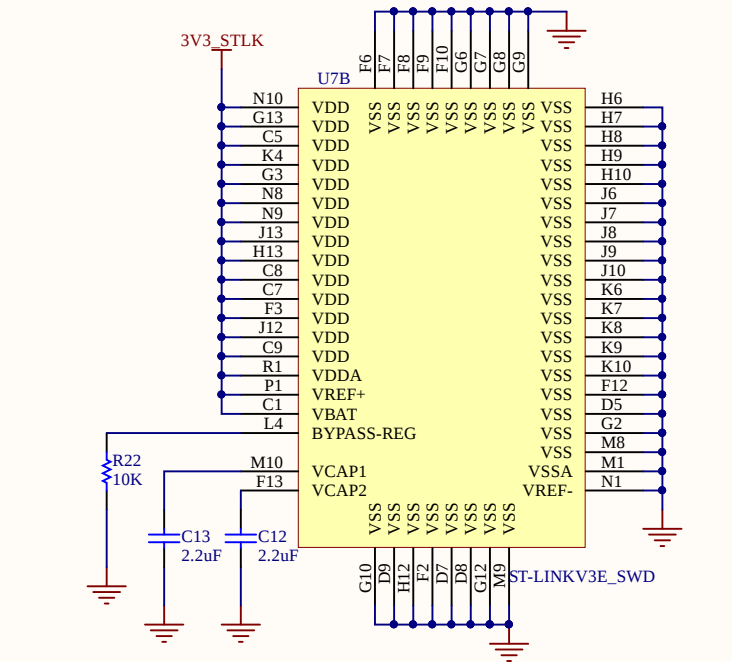


Title: MAIN POWER 5V / 3V3 / 1V8			 lfe.augmented.com
Project: Nucleo144 H7 SMPs with STLINK V3			
Variant: H7A3ZIQ			
Revision: D-01		Reference: MB1363	
Size: A4	Date: 24-OCT-19	Sheet: 8 of 9	

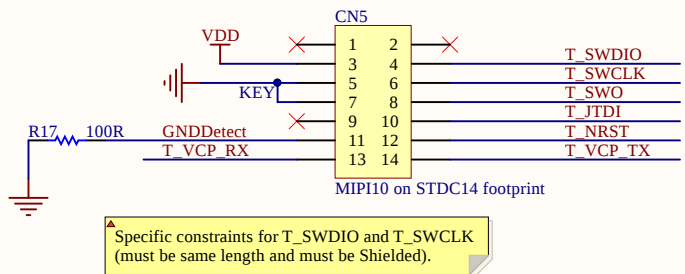
STLINK_MCU



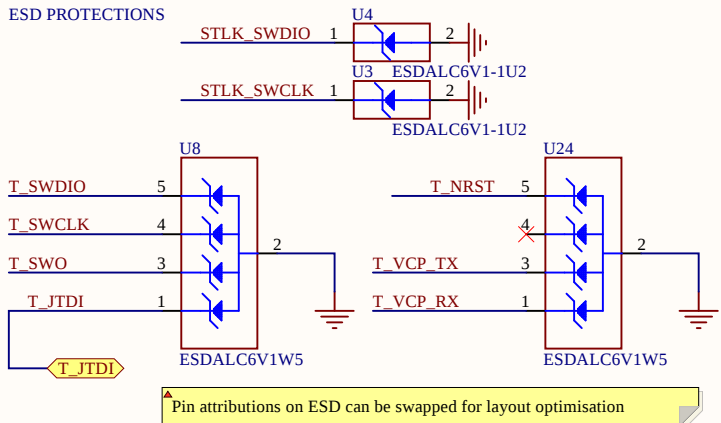
ST-LINK POWER



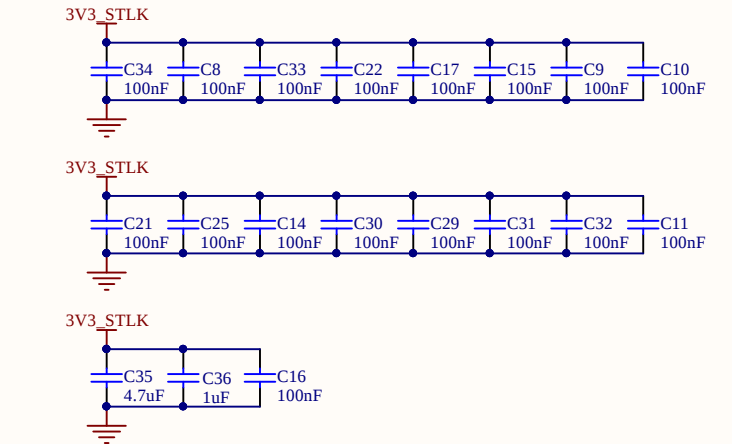
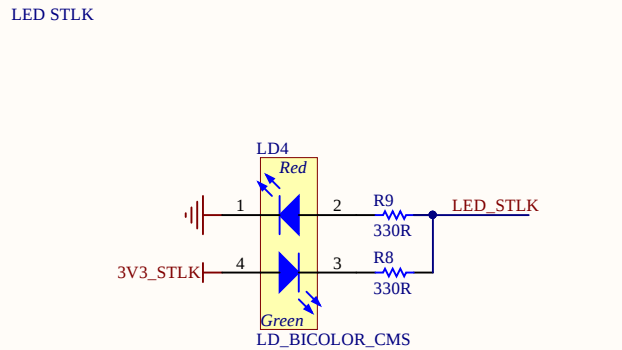
STDC14 Receiver



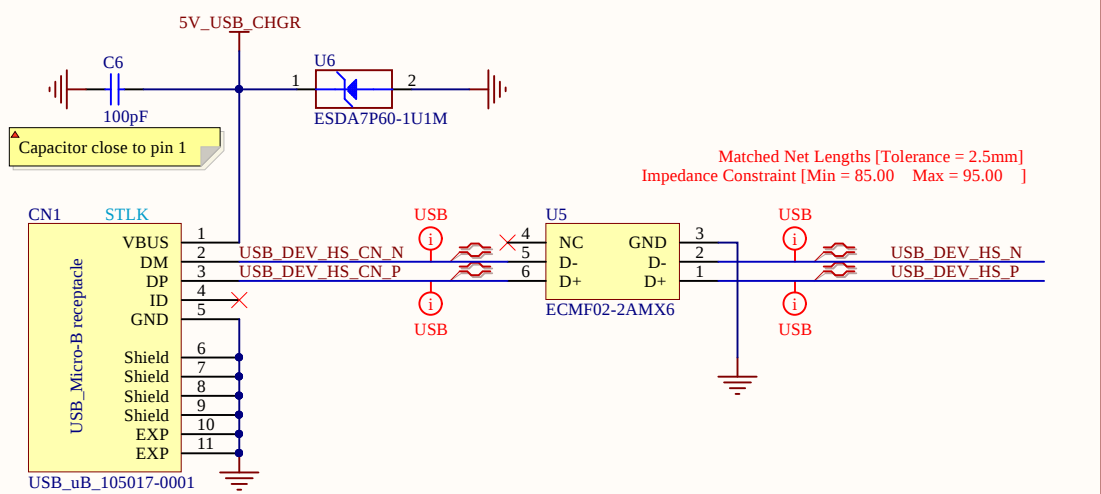
ESD PROTECTIONS



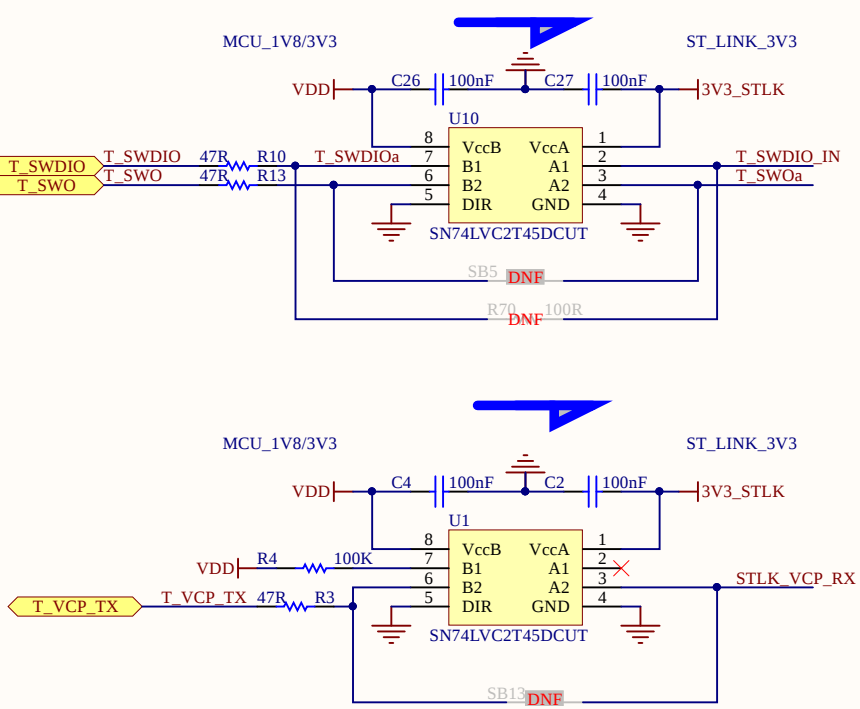
LED STLK



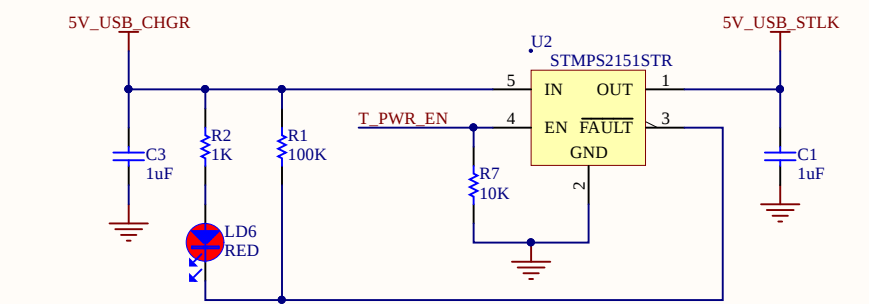
ST-LINK USB CONNECTOR



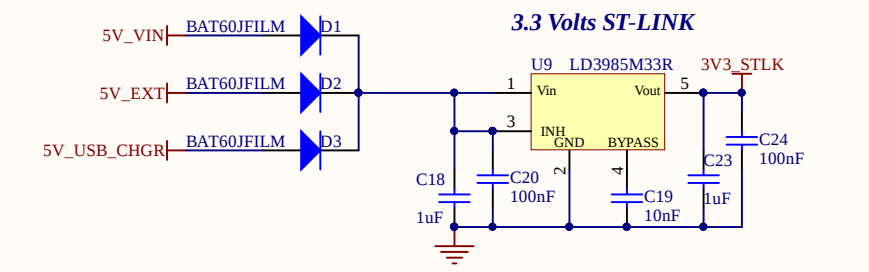
SW LEVEL SHIFTER FOR MCU_1V8

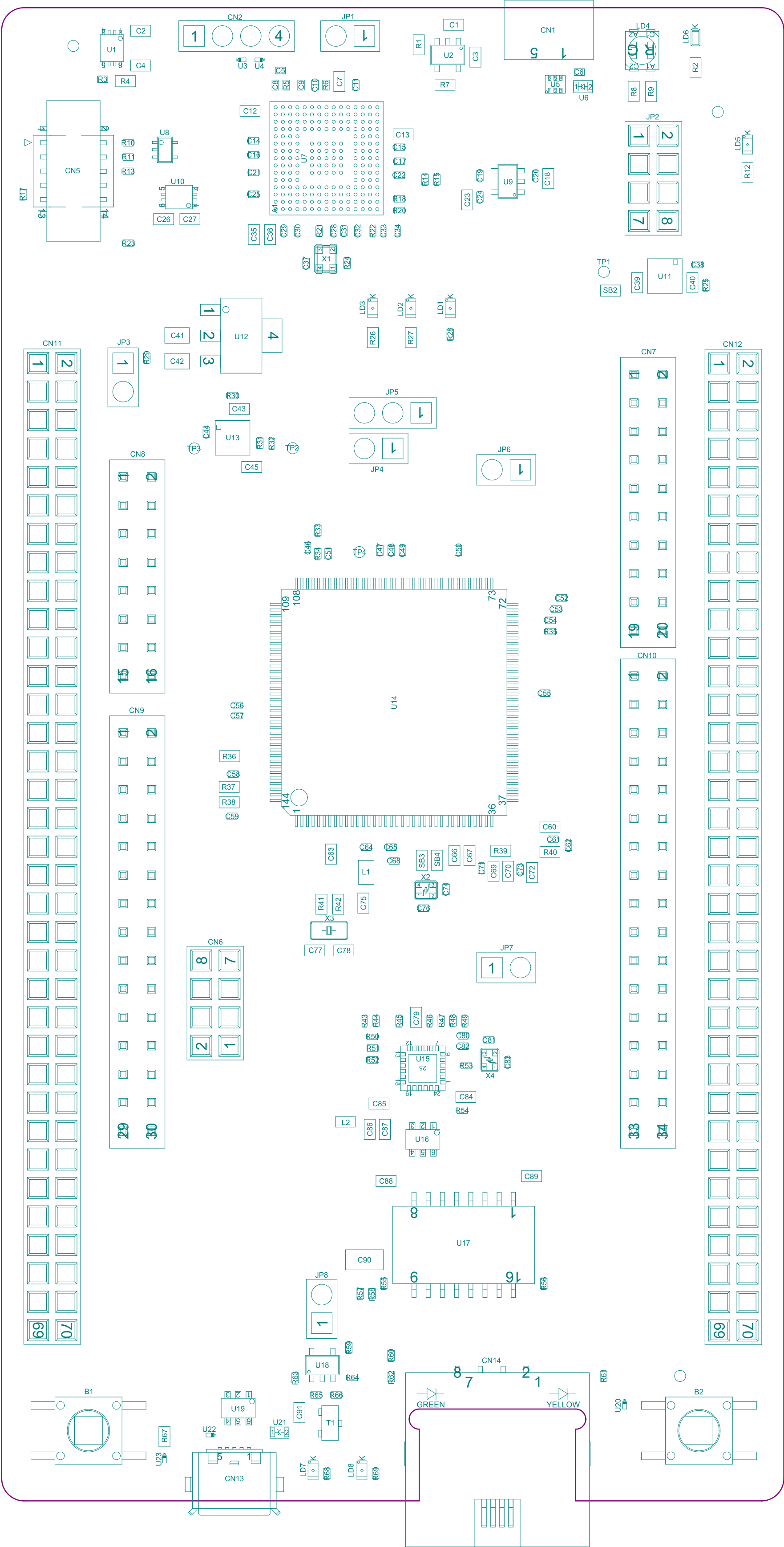


5V ST-LINK PROTECTION

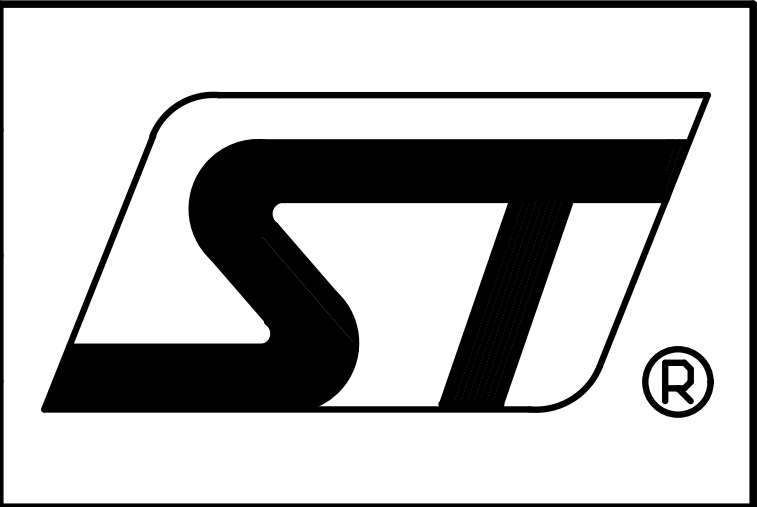


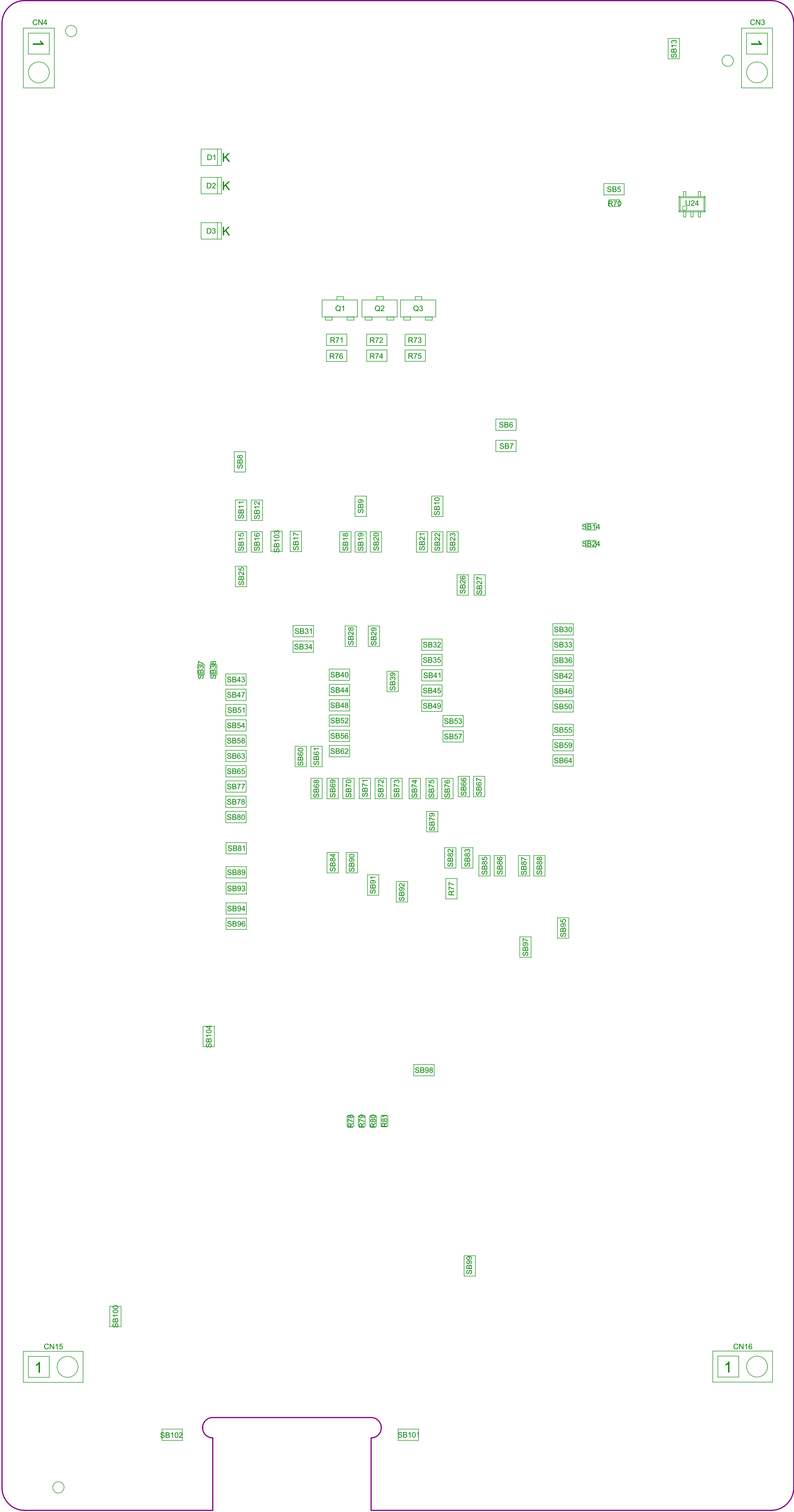
ST-LINK POWER 3V3 / 150mA





Project: Nucleo144 H7 SMPS with STLINK V3	
Layer: M14-Top Assembly	Gerber: .GM14
Variant: [No Variations]	Ref: MB1363
Date: 24-OCT-19	Rev: D





Project: Nucleo144 H7 SMPS with STLINK V3

Layer: M15-Bottom AssemblyGerber:.GM15

Variant: [No Variations]Ref: MB1363

Date: 24-OCT-19Rev: D

