NUCLEO144_Q (int-SMPS)

MB1361

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Sheet 8: ST_LINK_V2-1

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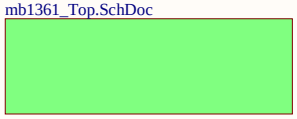
U_mb1361_Top
mb1361_Top.SchDoc



Legend

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

Text to be added to silkscreen.

Warning text.

Notes to generate the board layout.

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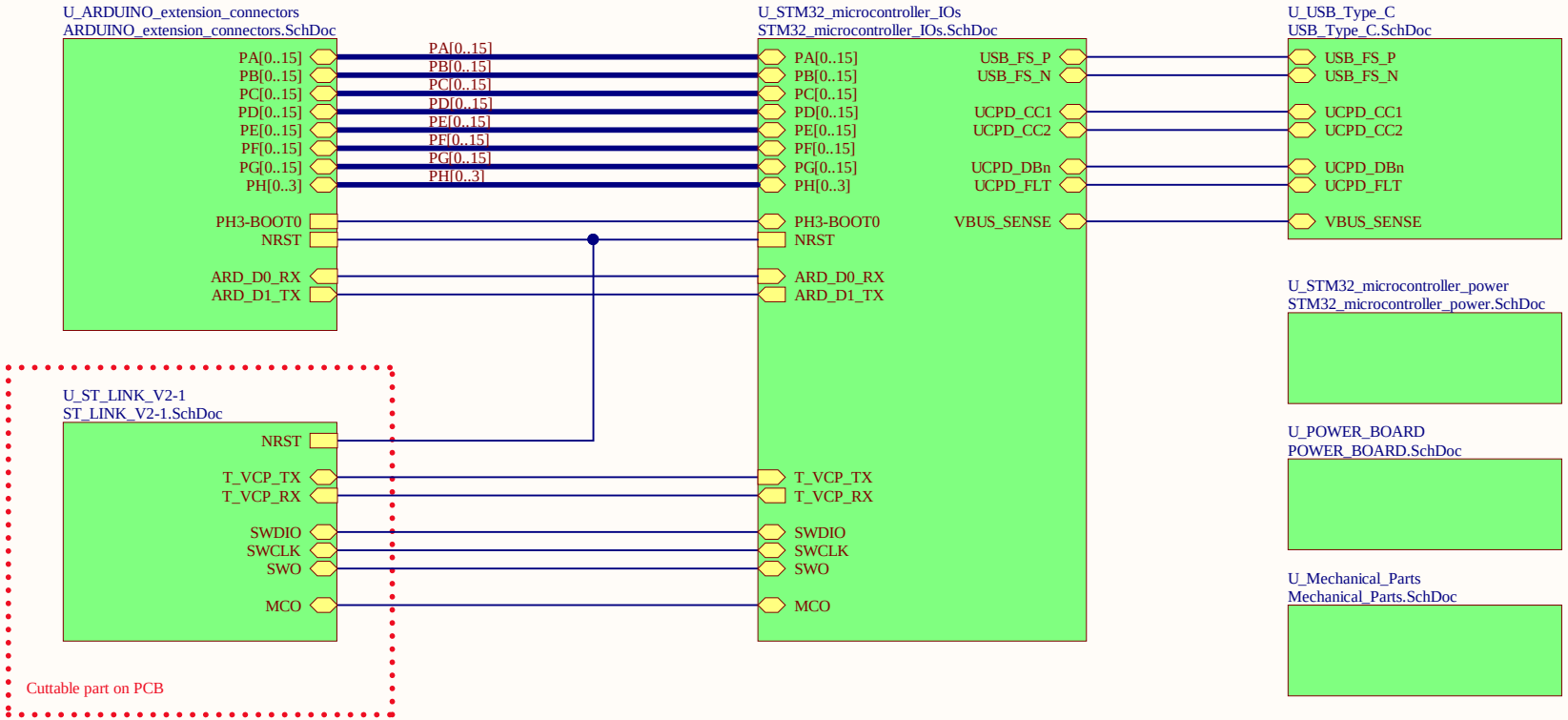
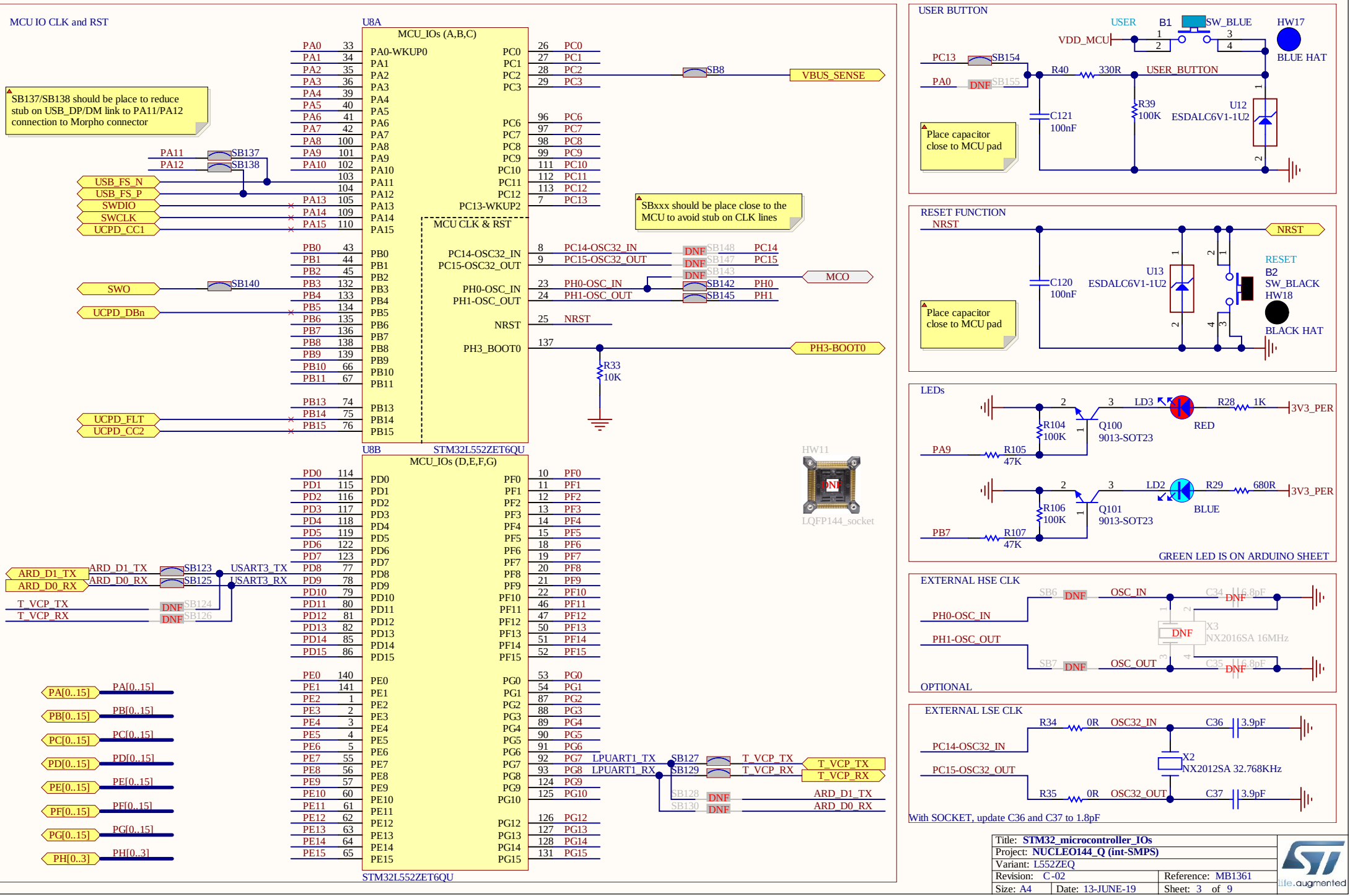
Title: **Project overview**		
Project: **NUCLEO144_Q (int-SMPS)**		
Variant: L552ZEQ		
Revision: C-02		Reference: MB1361
Size: A4	Date: 13-JUNE-19	Sheet: 1 of 9

life.augmented



Title: **Top: hierarchical view**		
Project: **NUCLEO144_Q (int-SMPS)**		
Variant: L552ZEQ		
Revision: C-02		Reference: MB1361
Size: A4	Date: 13-JUNE-19	Sheet: 2 of 9

life.augmented


MCU IO CLK and RST
U8A
MCU_IOs (A,B,C)
SB137/SB138 should be place to reduce stub on USB_DP/DM link to PA11/PA12 connection to Morpho connector
SB8
VBUS_SENSE
SBxxx should be place close to the MCU to avoid stub on CLK lines
MCU CLK & RST
MCO
PH3-BOOT0
R33
10K
SB140
SWO
UCPD_DBn
UCPD_FLT
UCPD_CC2
USB_FS_N
USB_FS_P
SWDIO
SWCLK
UCPD_CC1
U8B
STM32L552ZET6QU
MCU_IOs (D,E,F,G)
HW11
LQFP144_socket
ARD_D1_TX
ARD_D0_RX
T_VCP_TX
T_VCP_RX
USART3_TX
USART3_RX
LPUART1_TX
LPUART1_RX
ARD_D1_TX
ARD_D0_RX
PA[0..15]
PB[0..15]
PC[0..15]
PD[0..15]
PE[0..15]
PF[0..15]
PG[0..15]
PH[0..3]
USER BUTTON
VDD_MCU
USER
B1
SW_BLUE
HW17
BLUE HAT
R40
330R
USER_BUTTON
R39
100K
C121
100nF
U12
ESDALC6V1-1U2
Place capacitor close to MCU pad
RESET FUNCTION
NRST
C120
100nF
U13
ESDALC6V1-1U2
RESET
B2
SW_BLACK
HW18
BLACK HAT
LEDs
R104
100K
Q100
9013-SOT23
LD3
RED
R28
1K
3V3_PER
R105
47K
PA9
R106
100K
Q101
9013-SOT23
LD2
BLUE
R29
680R
R107
47K
PB7
GREEN LED IS ON ARDUINO SHEET
EXTERNAL HSE CLK
OSC_IN
OSC_OUT
PH0-OSC_IN
PH1-OSC_OUT
X3
NX2016SA 16MHz
OPTIONAL
EXTERNAL LSE CLK
R34
0R
OSC32_IN
C36
3.9pF
PC14-OSC32_IN
X2
NX2012SA 32.768KHz
PC15-OSC32_OUT
R35
0R
OSC32_OUT
C37
3.9pF
With SOCKET, update C36 and C37 to 1.8pF
Title: STM32_microcontroller_IOs
Project: NUCLEO144_Q (int-SMPS)
Variant: L552ZEQ
Revision: C-02
Reference: MB1361
Size: A4
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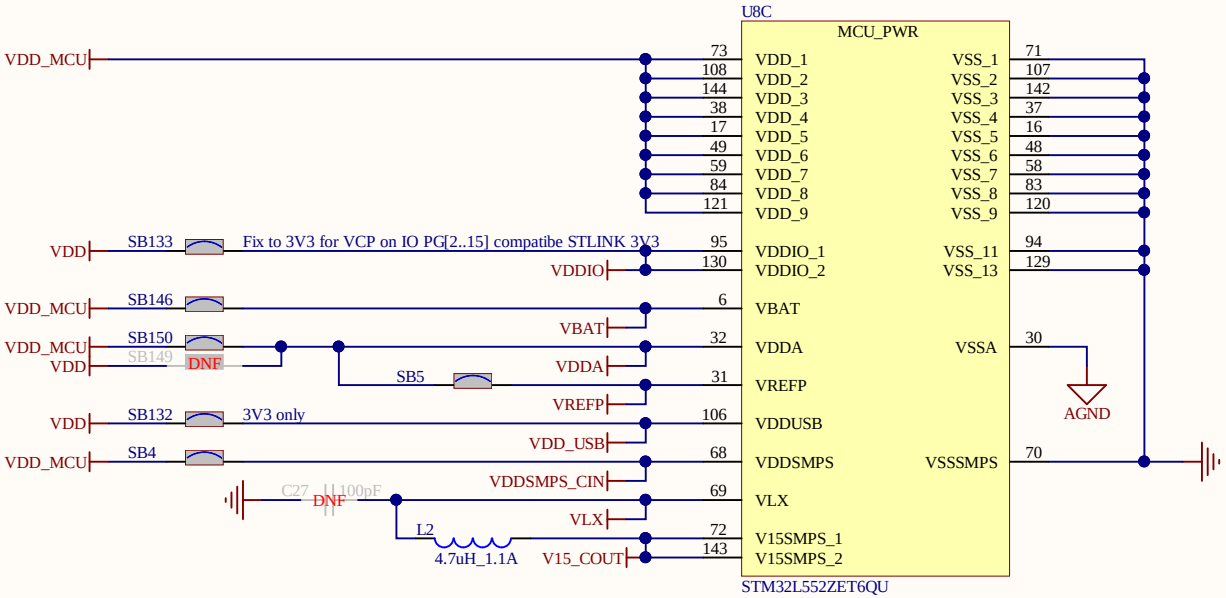
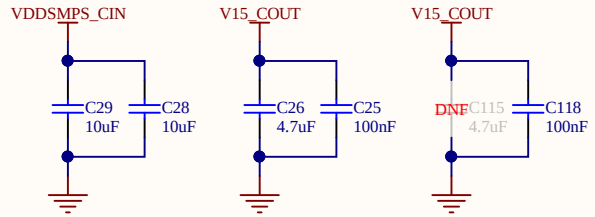
MCU PWR SUPPLIES

Operating range: 1V71<VDD<3V6
Operating range: 1V08<VDDIO2<3V6 (only for IO G[15:2])
Operating range: 1V55<VBAT<3V6
Operating range: 1V62<VDDA<3V6
Operating range: 1V62<VREF<3V6 (depend of VDDA)
Operating range: 1V71<VDD_SMPS<3V6

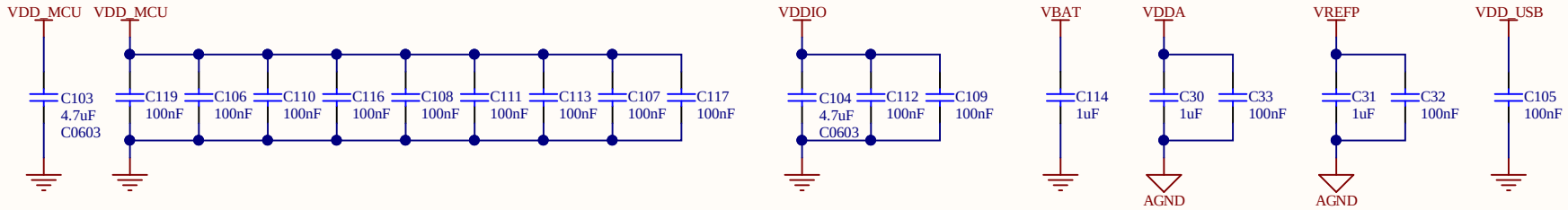
Operating range: 3V0<VDDUSB<3V6

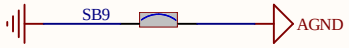


"CIN" and "COUT" should be as closed as possible to the LQFP associated pad. COUT 10µF should be place near L4. Or 1 couple of capacitors per pad (4.7µF / 100nF)



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

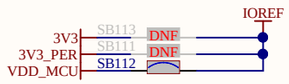


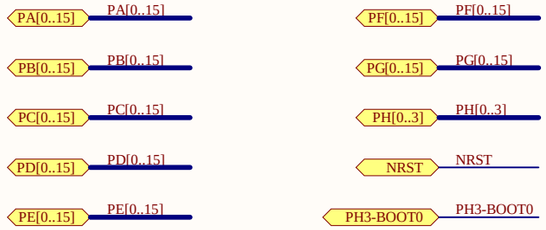


Title: **STM32_microcontroller_power**		
Project: **NUCLEO144_Q (int-SMPS)**		
Variant: L552ZEQ		
Revision: C-02		Reference: MB1361
Size: A4	Date: 13-JUNE-19	Sheet: 4 of 9

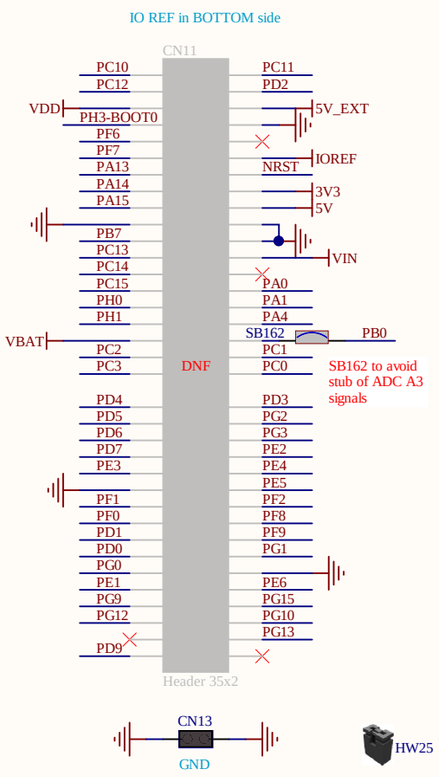
life.augmented

EXTENSION CONNECTORS, MCU INTERFACES

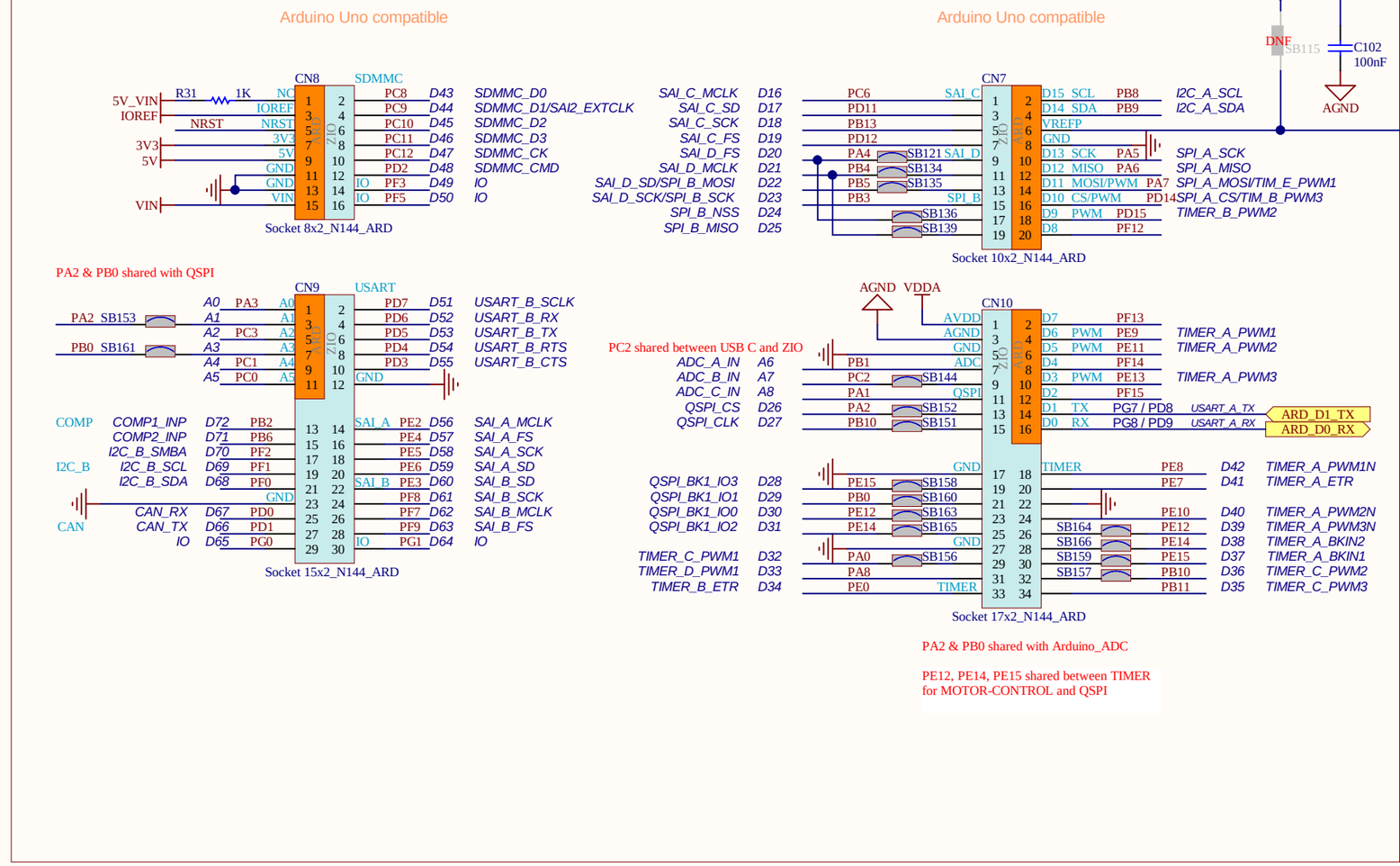




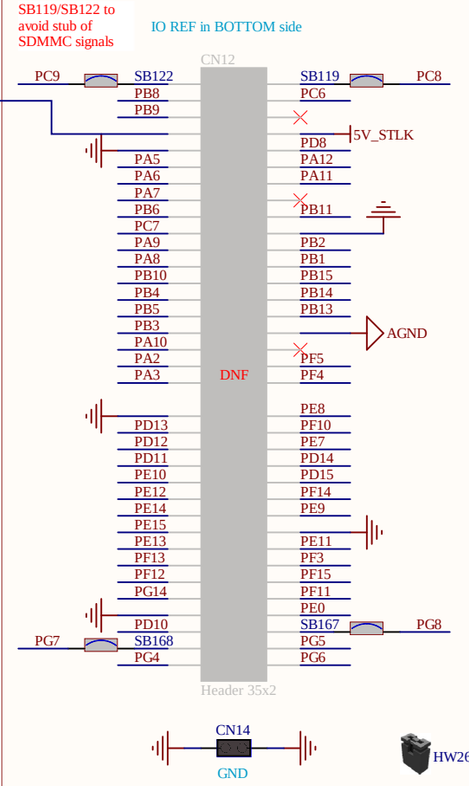
MORPHO CONNECTOR LEFT SIDE

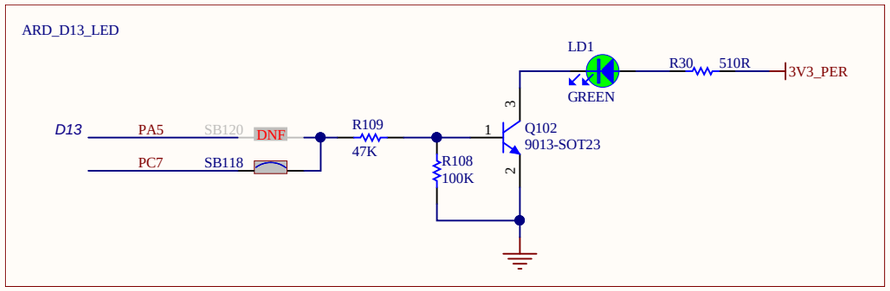


ZIO CONNECTOR ARDUINO UNO COMPATIBLE



MORPHO CONNECTOR RIGHT SIDE





Title: **ARDUINO_extension_connectors**			
Project: **NUCLEO144_Q (int-SMPS)**			
Variant: L552ZEQ			
Revision: C -02		Reference: MB1361	
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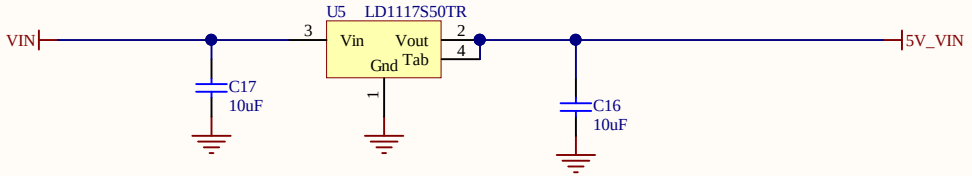
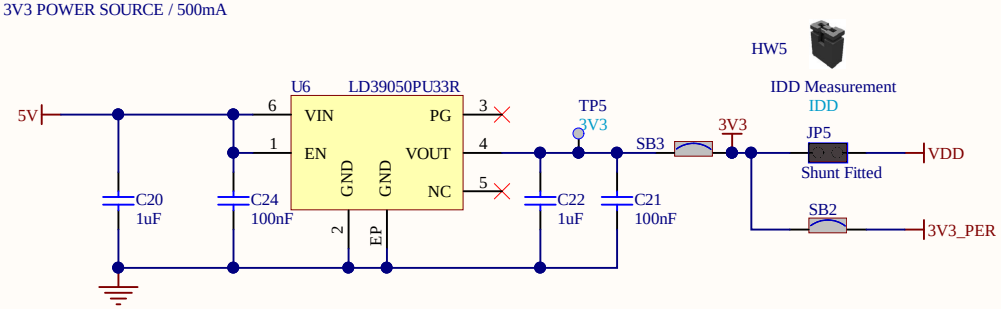
life.augmented

BOARD PWR: VIN / 5V (output current depend of VIN range)

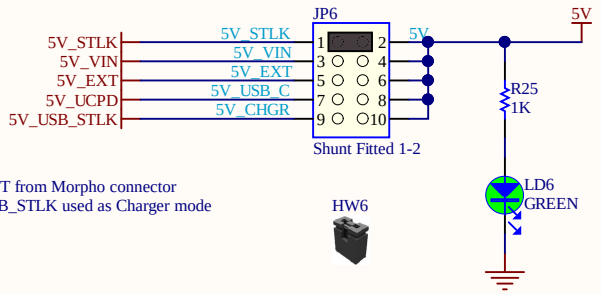


3V3 POWER SOURCE / 500mA



5V PWR SELECTION

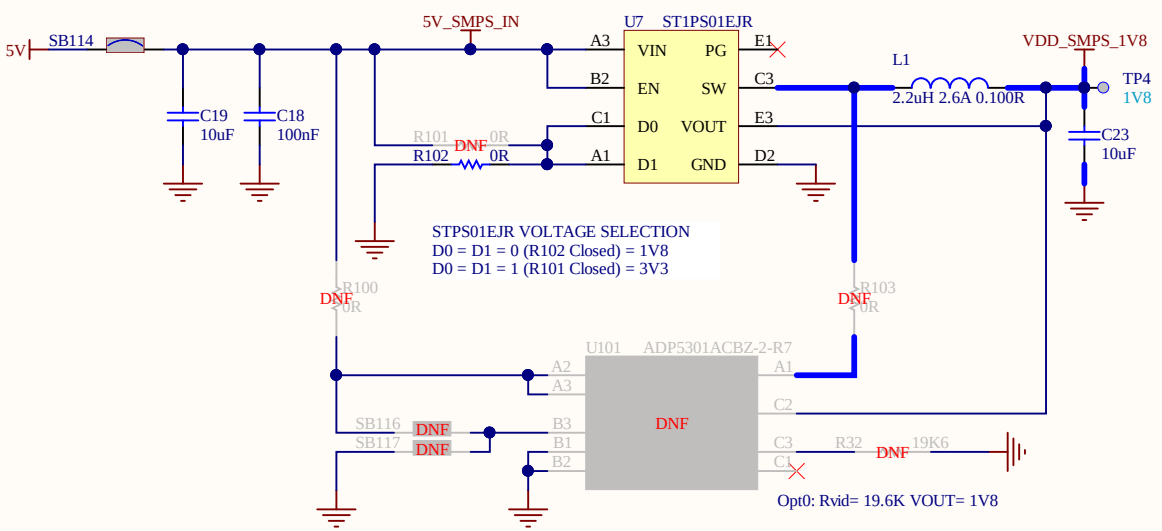
MAX CURRENT 500mA WHEN USING POWER INPUT 5V_STLK



5V_EXT from Morpho connector
5V_USB_STLK used as Charger mode

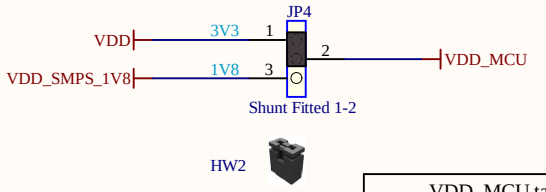
1V8 POWER SOURCE / 400mA

U7 AND U101 ARE EXCLUSIVELY POPULATED



ADP5301 MODE SELECTION
SYNC/MODE = 1 (SB116 Closed) = HYSTERESIS MODE 50mA
SYNC/MODE = 0 (SB117 Closed) = PWM MODE 500mA

VDD_MCU_SELECTION AND CURRENT MEASUREMENT

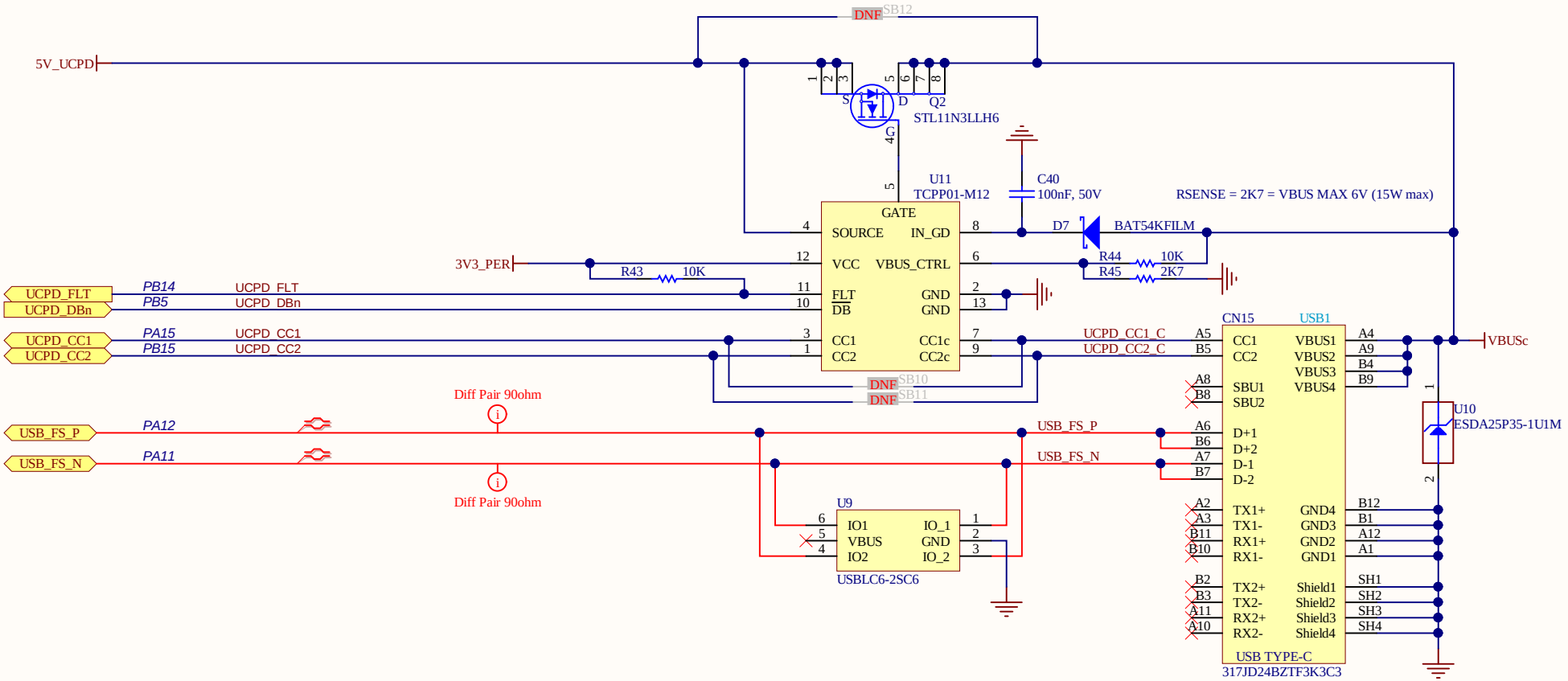


VDD_MCU table	JP4
VDD_MCU= VDD = 3V3	[1-2]
VDD_MCU = VDD_SMPS_1V8 = 1V8	[2-3]

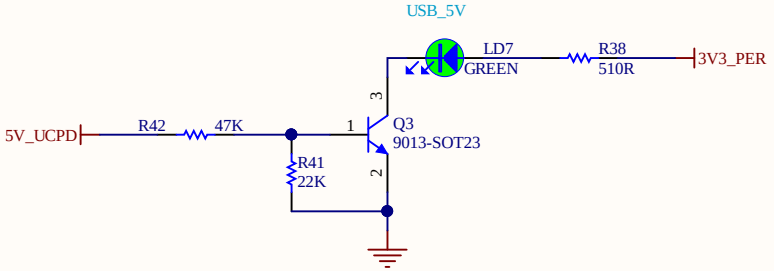
Title: **POWER_BOARD**		
Project: **NUCLEO144_Q (int-SMPS)**		
Variant: L552ZEQ		
Revision: C-02		Reference: MB1361
Size: A4	Date: 13-JUNE-19	Sheet: 6 of 9

life.augmented

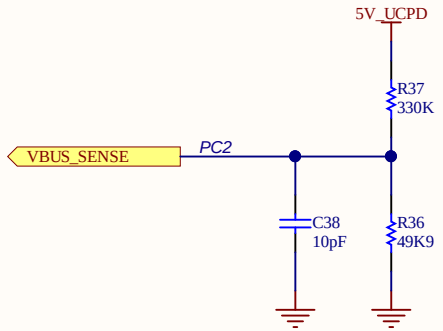
USB_TYPE_C CONNECTOR



5V_USB_LED



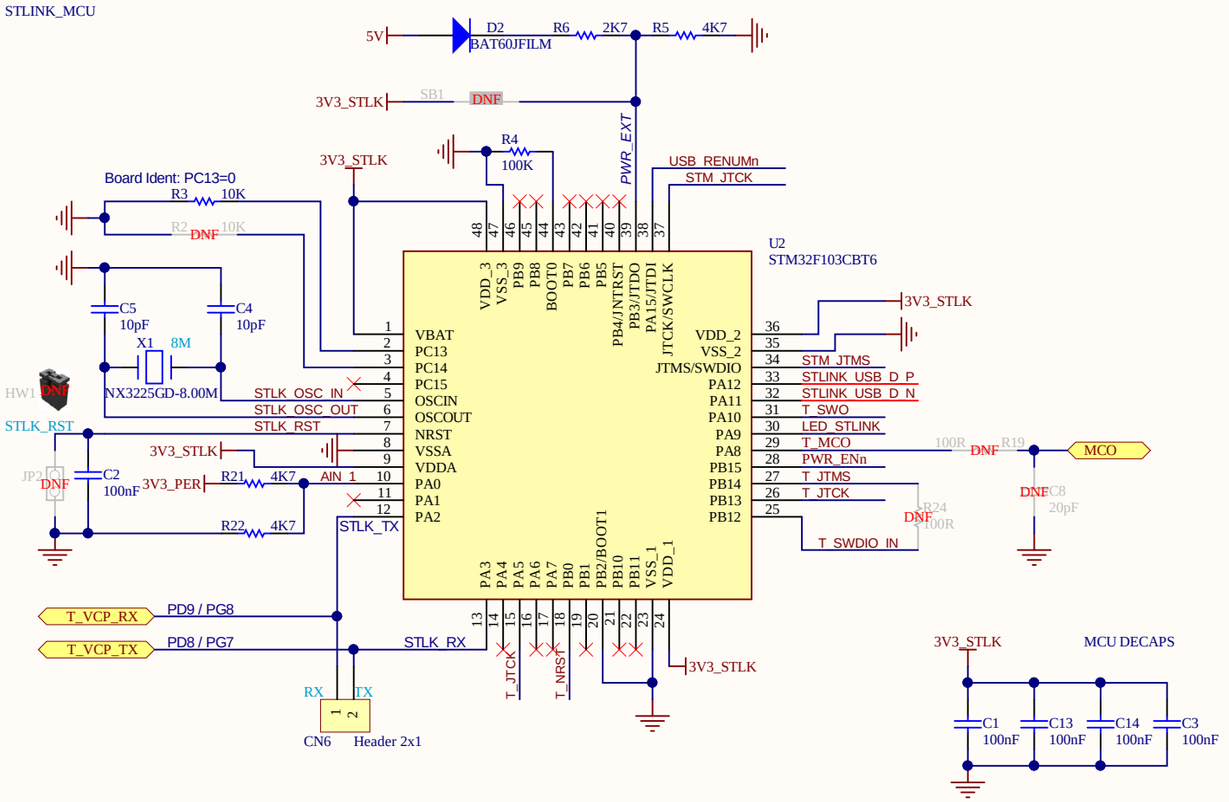
VBUS SENSE



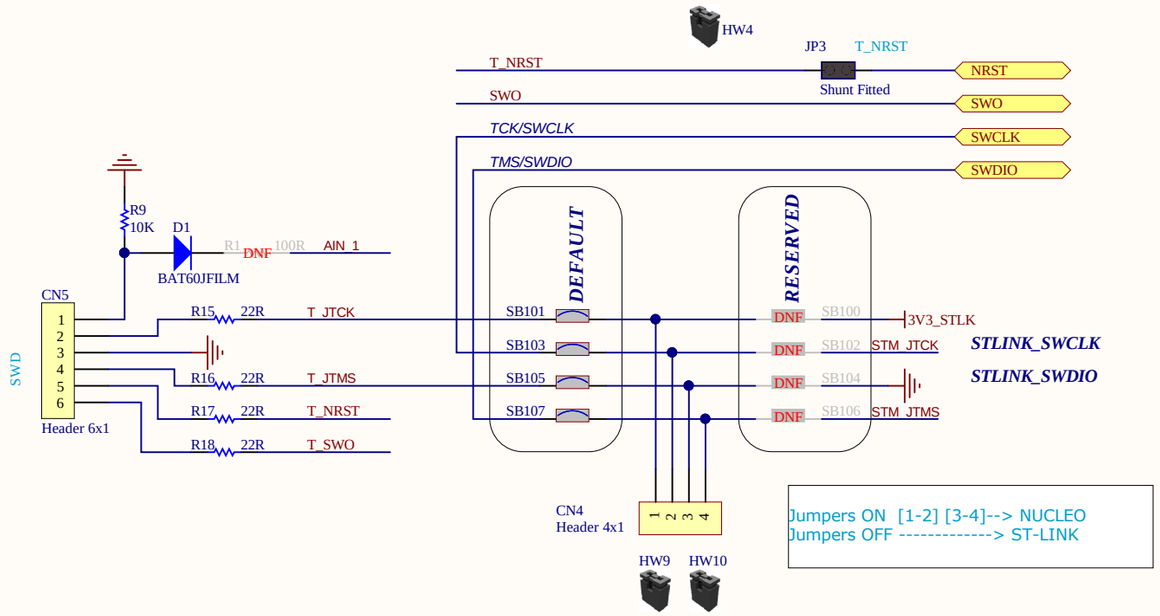
Title: **USB_Type_C**		
Project: **NUCLEO144_Q (int-SMPS)**		
Variant: L552ZEQ		
Revision: C-02		Reference: MB1361
Size: A4	Date: 13-JUNE-19	Sheet: 7 of 9

life.augmented

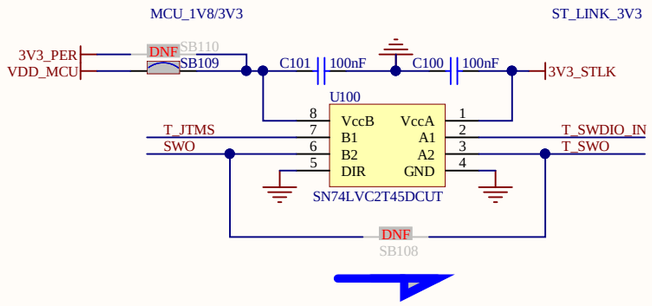
STLINK_MCU



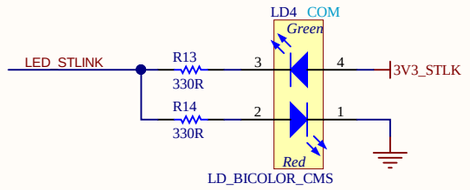
SWD INTERFACE



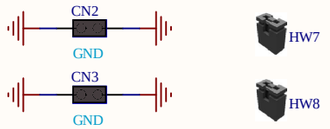
SW LEVEL SHIFTER FOR MCU_1V8



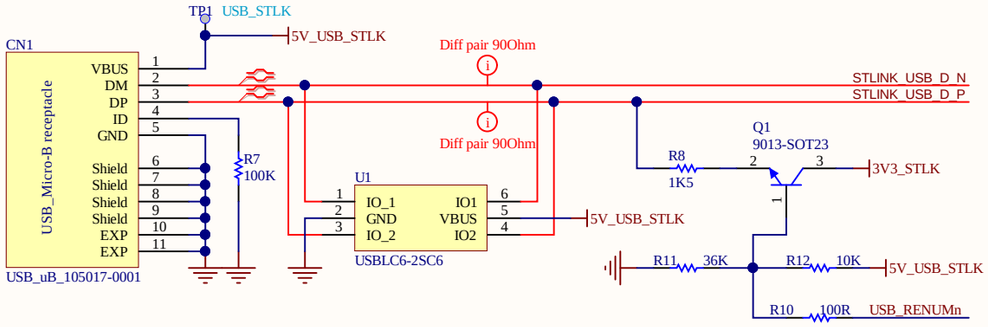
STLINK_LED: COM



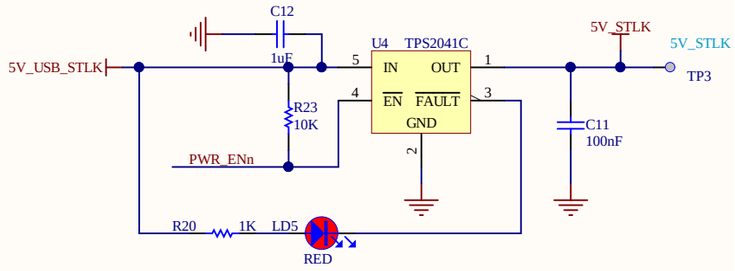
GND



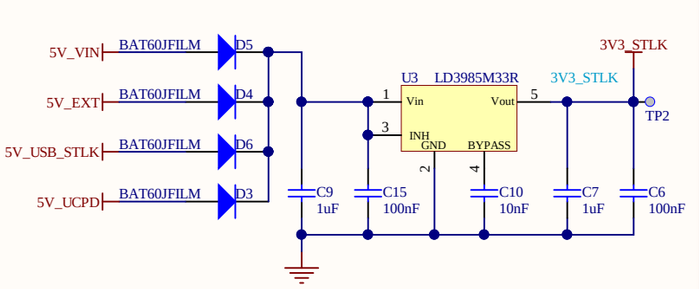
ST-LINK USB CONNECTOR



USB 5V POWER SWITCH: 5V / 500mA



ST-LINK POWER: 3V3 / 150mA



All the sheet are the CUTTABLE part on PCB

Title: **ST_LINK_V2-1**		
Project: **NUCLEO144_Q (int-SMPS)**		
Variant: L552ZEQ		
Revision: C -02		Reference: MB1361
Size: A3	Date: 13-JUNE-19	Sheet: 8 of 9

life.augmented

MECHANICAL PARTS

HW100
PCB
MB1361C

HW101
BOARD REF
MBxxxxy-zz syywwxxxxx

HW102
BOARD CPN
Board CPN

HW3
LOGO NUCLEO

HW104
LOGO ST

HW105
LOGO CE

HW103
LOGO ESD

HW106
LOGO ROHS

Title: **Mechanical_Parts**		
Project: **NUCLEO144_Q (int-SMPS)**		
Variant: L552ZEQ		
Revision: C-02		Reference: MB1361
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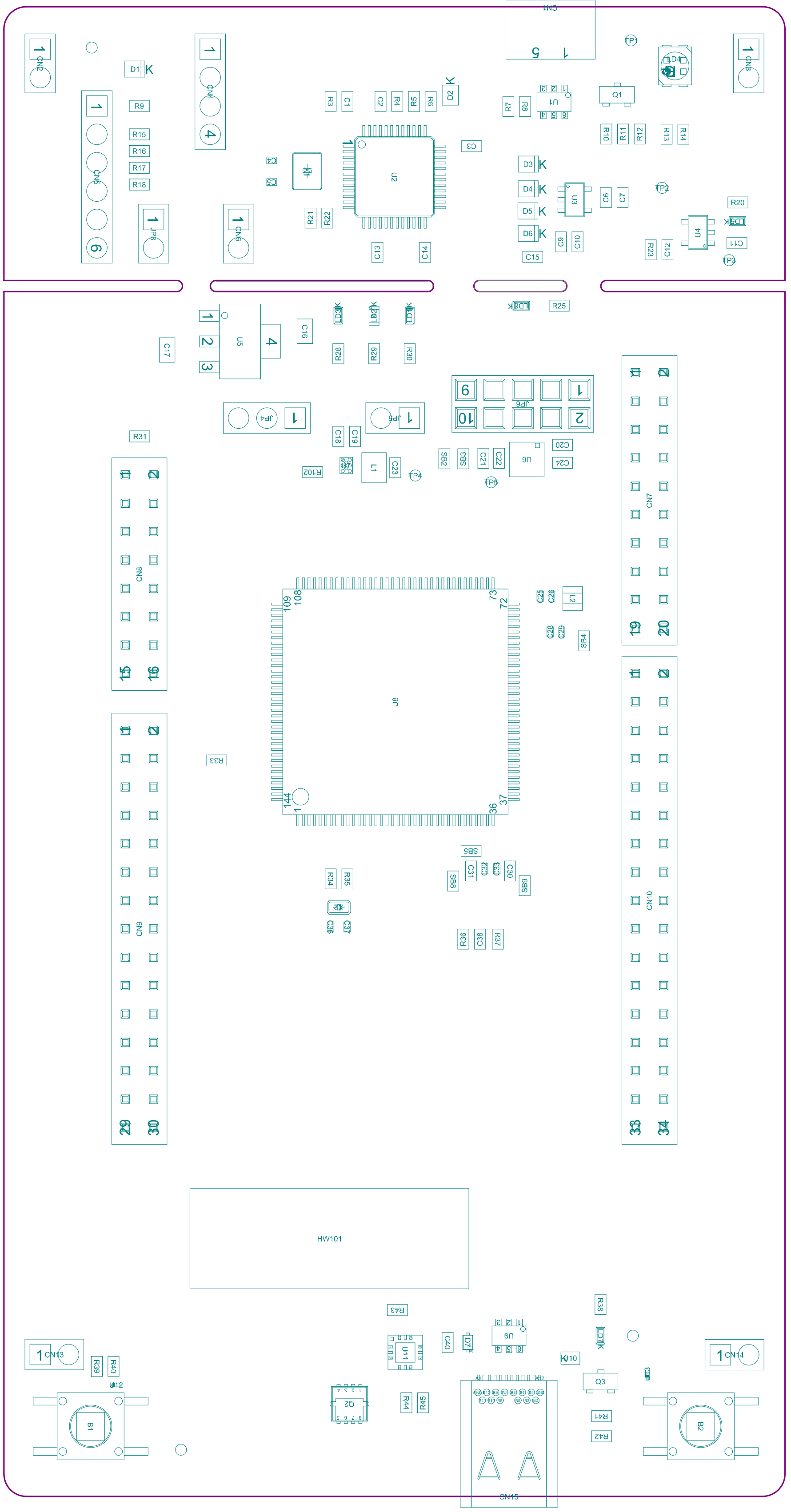
life.augmented



Project: NUCLEO144_Q (int-SMPS)	
Layer: M14-Top Assembly	Gerber: .GM14
Variant: L552ZEQ	Ref: MB1361
Date: 19-FEB-21	Rev: C

SB107
SB103
SB105
SB107
C100
U100
C101
SB109
Q102
Q101
Q100
R108
R106
R104
R109
R107
R105
SB112
SB114
C102
SB119
SB118
SB122
SB123
SB125
SB127
SB129
SB132
SB133
SB121
SB134
SB135
C103
C104
C107
C108
C109
C105
C106
SB136
SB137
SB138
SB139
C110
C111
C112
SB140
C113
SB144
SB142
C114
C117
C116
C118
C119
SB146
SB145
SB150
SB152
SB153
C120
SB154
SB156
C121
SB151
SB157
SB158
SB160
SB161
SB162
SB159
SB163
SB164
SB165
SB166
HW102
SB167
SB168

Project: NUCLEO144_Q (int-SMPS)	
Layer: M15-Bottom Assembly	Gerber:.GM15
Variant: L552ZEQ	Ref: MB1361
Date: 19-FEB-21	Rev: C