NUCLEO-WL5JC

MB1389

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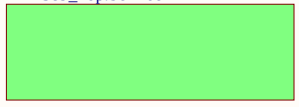
U_MB1389_Top
MB1389_Top.SchDoc



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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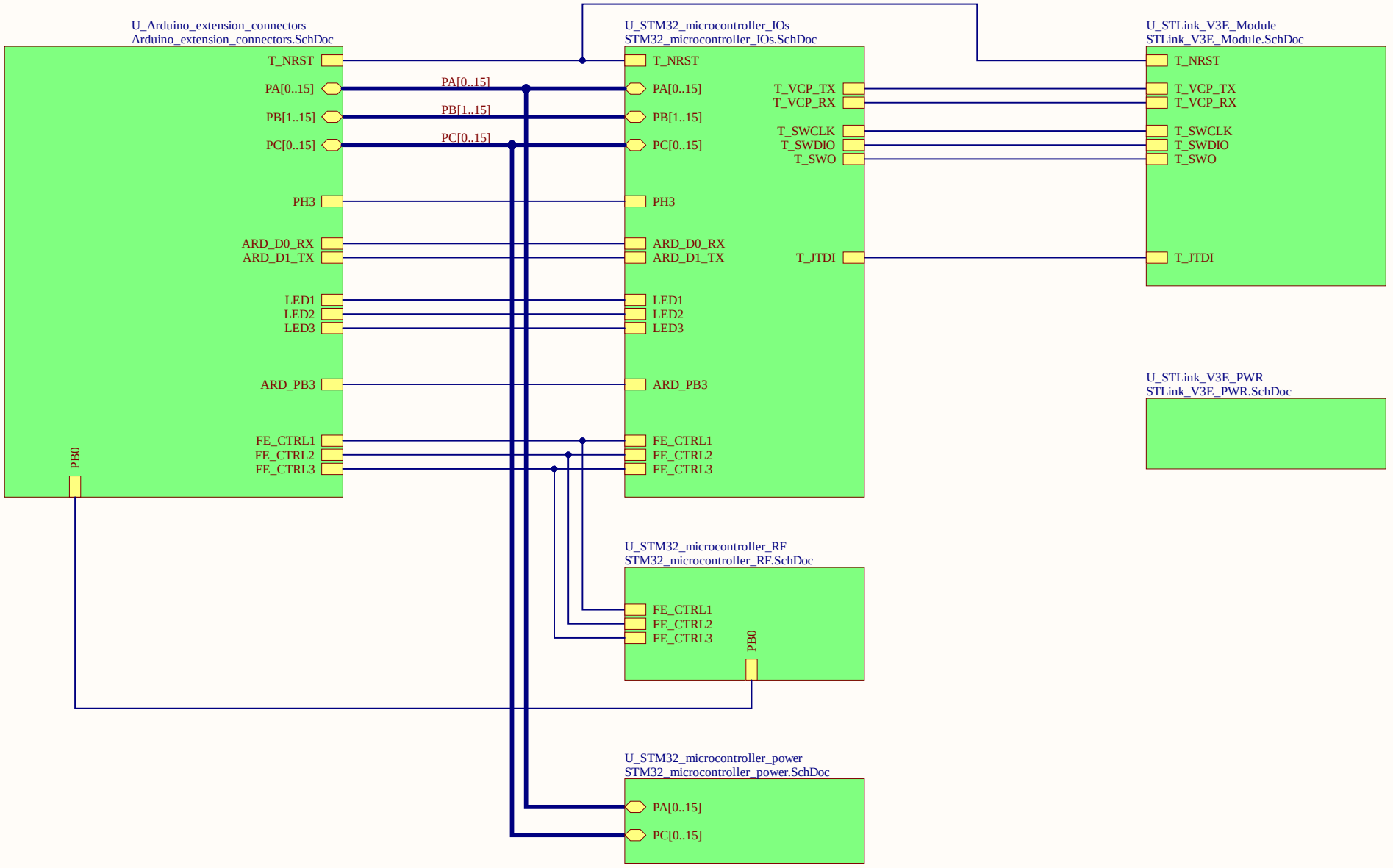
Title: **Project overview**			
Project: **NUCLEO-WL5JC**			
Variant: High-band			
Revision: D-04		Reference: MB1389	
Size: A4	Date: 2020-July-24	Sheet: 1 of 8	life.augmented



HW100
PCB
MBxxxxy

HW101
BOARD REF
MB1389D-01 syywwxxxxx

HW102
BOARD CPN
Board CPN

HW108
ES
ES

Title: **Top hierarchical view**		
Project: **NUCLEO-WL5JC**		
Variant: High-band		
Revision: D-04		Reference: MB1389
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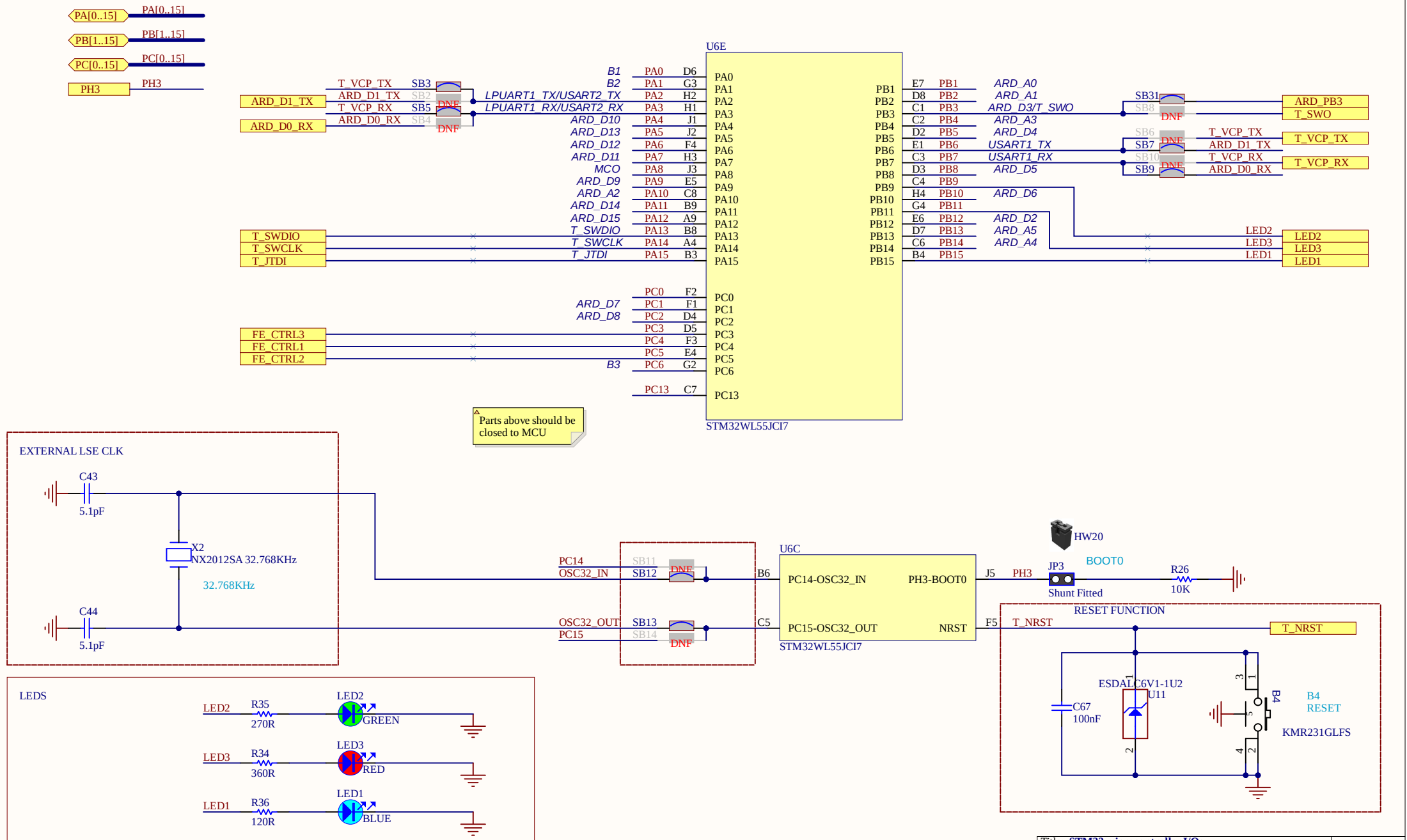
life.augmented


PA[0..15]
PB[1..15]
PC[0..15]
PH3
U6E
STM32WL55JCI7
Parts above should be closed to MCU
ARD_D1_TX
ARD_D0_RX
T_VCP_TX
T_VCP_RX
LPUART1_TX/USART2_TX
LPUART1_RX/USART2_RX
T_SWDIO
T_SWCLK
T_JTDI
FE_CTRL3
FE_CTRL1
FE_CTRL2
ARD_PB3
T_SWO
LED2
LED3
LED1
EXTERNAL LSE CLK
C43
5.1pF
X2
NX2012SA 32.768KHz
32.768KHz
C44
5.1pF
U6C
PC14-OSC32_IN
PC15-OSC32_OUT
PH3-BOOT0
NRST
HW20
JP3
Shunt Fitted
BOOT0
R26
10K
RESET FUNCTION
T_NRST
ESDALC6V1-1U2
U11
C67
100nF
B4
RESET
KMR231GLFS
LEDS
R35
270R
LED2
GREEN
R34
360R
LED3
RED
R36
120R
LED1
BLUE
Title: STM32 microcontroller I/Os
Project: NUCLEO-WL5JC
Variant: High-band
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Reference: MB1389
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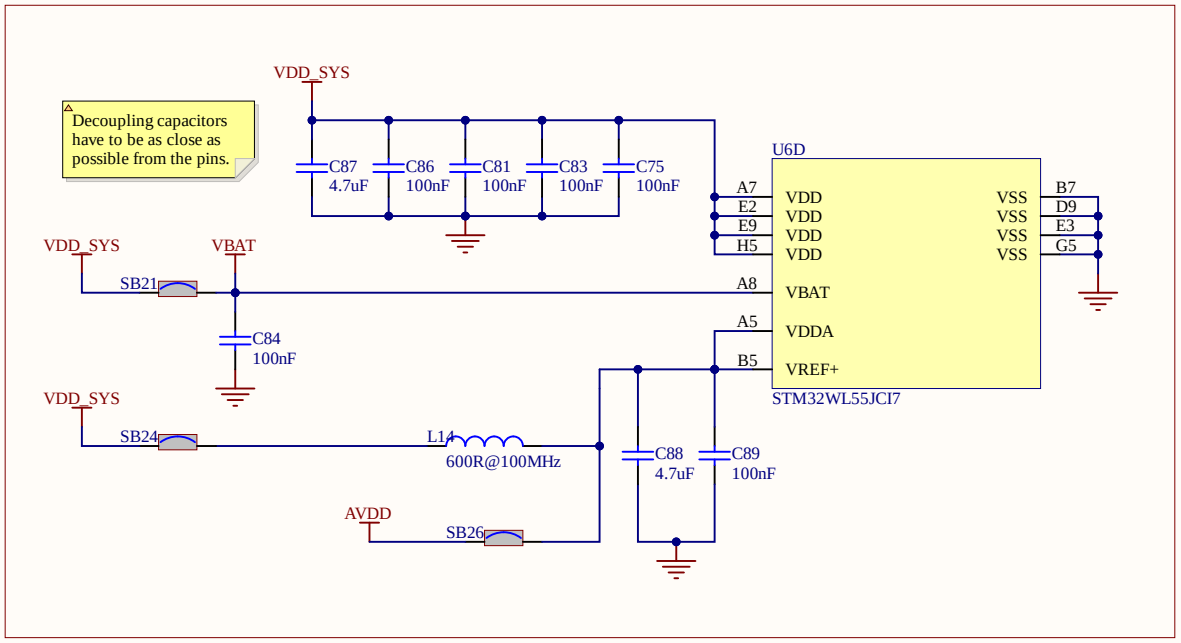
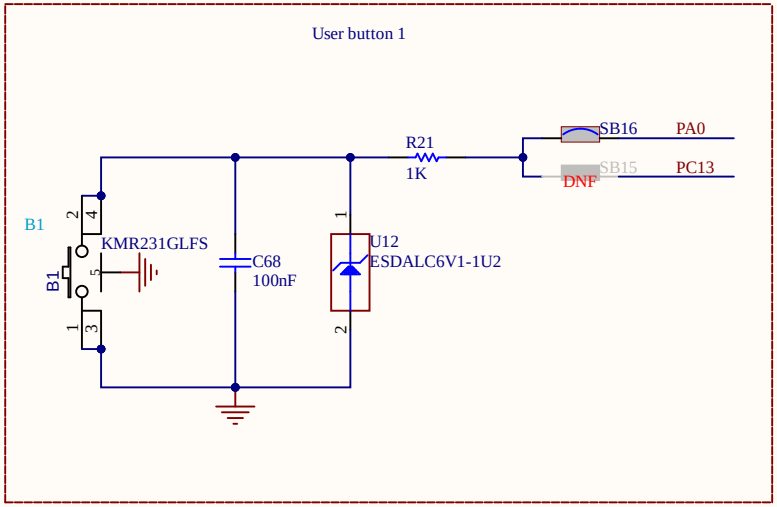
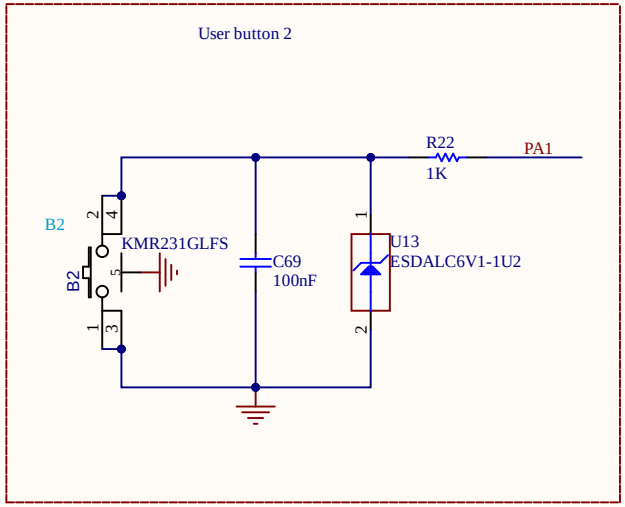
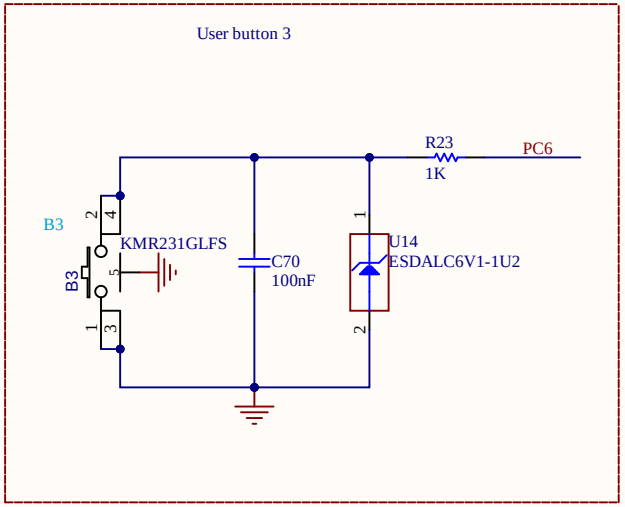
life.augmented



User buttons







PA[0..15] PA[0..15]

PC[0..15] PC[0..15]

Title: **STM32 microcontroller power**		
Project: **NUCLEO-WL5JC**		
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Revision: D-04		Reference: MB1389
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VDD_RF

R33 close to L13 to avoid stub on VLXSMPS track

R33 0R DNF

CN13 DNF header 2x1

U6B

CC0603KRX5R7BB475 C35 4.7uF

C37 100nF CC0402KRX7R7BB104

A2 VDDSMPS

R32 0R

B1 VLXSMPS

B2 VFBSMPS

15uH L13 MLZ2012M150W

A1 VSSSMPS

STM32WL55JCI7

C85 470nF CC0603KRX7R7BB474

SB23

SB22

VDD_APP

U3 NX3L1T3157GM

R37 0R

R38 0R

VCC Y0 Y1 Z SEL GND

VDDPA

FE_CTRL1

PB0_VDD_TCXO

C77 100nF CC0402KRX7R7BB104

C79 47pF CC0402JRNPO9BN470

VDDRF

C82 33pF CC0402GRNPO9BN330

C93 3.3pF CC0402BRNPO9BN3R3

GJM1555C1H1R2WB01D

VDDPA

C78 33pF CC0402GRNPO9BN330

VDDRF1V55

C80 33pF CC0402GRNPO9BN330

Capacitors close to MCU

RF front-end configuration	FE_CTRL1	FE_CTRL2	FE_CTRL3
Transmit high output power	Low	High	High
Transmit low output power	High	High	High
Receive	High	Low	High

FE_CTRL1

FE_CTRL2

FE_CTRL3

EXTERNAL HSE CLK
TCXO Configuration

PB0_VDD_TCXO

XTA

R41 DNF 10R

C31 10pF

L12 1400R@1GHz

R2 220R

X4 32MHz

VDD OUT EN GND

NT2016SF-32M-END5875A

C27 10pF

C31 must be placed in order to avoid stubs on XTA path when C31 not fitted.

C92 1.2pF GJM1555C1H1R2WB01D

CC0402KRX7R8BB473 C74 47nF

C76 68pF CC0402JRNPO9BN680

VDD_APP

U4 NX3L1T3157GM

VCC Z SEL GND Y0 Y1

FE_CTRL1

CC0402GRNPO9BN330 C24 33pF

LQW15AN33NG00 L7 33nH

L8 47nH LQW15AN47NJ00#

C25 33pF CC0402GRNPO9BN330

CC0402BRNPO9BN2R2 C15 2.2pF

L5 3.6nH LQW15AN3N6C10

CC0402JRNPO9BN680 C12 68pF

L3 8.7nH LQW15AN8N7H00

C22 1.2pF GJM1555C1H1R2WB01D

C11 5.6pF CC0402BRNPO9BN5R6

C7 1.2pF GJM1555C1H1R2WB01D

CC0402BRNPO9BN2R7 C16 2.7pF

L6 3nH LQW15AN3N0B00

CC0402GRNPO9BN330 C13 33pF

L4 8.7nH LQW15AN8N7H00

C21 5.6pF CC0402BRNPO9BN5R6

C14 3.3pF CC0402BRNPO9BN3R3

C8 1.3pF CC0402BRNPO9BN1R3

U6A

VDDRF1V55 F7

VDDPA H8

VDDRF E8

VSSRF G6 G7 G8 H6

PB0-VDD_TCXO F6

OSC_IN G9

OSC_OUT F8

VDDRF1V55 VDDPA VDDRF VSSRF VSSRF VSSRF VSSRF PB0-VDD_TCXO OSC_IN OSC_OUT VR_PA RFO_HP RFO_LP RFI_P RFI_N

H9 J9 J8 J6 H7

STM32WL55JCI7

L9 0R RC0402JR-070RL

L10 3.3nH LQW15AN3N3C80

RFI_P

RFI_N

CC0402BRNPO9BN3R6 C20 3.6pF

L11 LQW15AN11NG00 11nH

C19 2.7pF CC0402BRNPO9BN2R7

DNF C17 1pF

PB0

PB0_VDD_TCXO

SB20

EXTERNAL HSE CLK (XO back-up)

C30 DNF 6.8pF

R39 0R DNF

R40 0R DNF

XTA

X3 NX2016SA 32MHz

32 MHz

C38 DNF 6.8pF

RC0402FR-07100RL R28 100R

FE_CTRL2

C71 1nF CC0402KRX7R7BB102

RC0402FR-07100RL R27 100R

FE_CTRL1

C72 1nF CC0402KRX7R7BB102

RC0402FR-07100RL R29 100R

C73 1nF CC0402KRX7R7BB102

SB18

FE_CTRL3

U1 BGS13S4N9

V1 V2 VDD RF3 RF2 RF1 RFin GND DGND

SC1 S0951-46R

SC7 S0951-46R

SC5 S0951-46R

SC9 S0981-46R

SC2 S0911-46R

SC4 S0951-46R

SC3 S0951-46R

SC6 S0951-46R

SC8 S0981-46R

Shield clips for metal RF cavity

HW103

RF shield (17,2x17,2x3mm)

CN12 SMA-J-P-H-ST-EM1

GND GND RF GND GND

LQW15AN8N7H00 L2 8.7nH

C5 3.3pF CC0402BRNPO9BN3R3

C6 3.3pF CC0402BRNPO9BN3R3

C2 33pF CC0402GRNPO9BN330

Title:	**STM32 microcontroller RF**
Project:	**NUCLEO-WL5JC**
Variant:	High-band
Revision:	D-04
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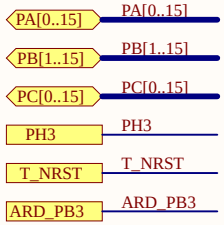
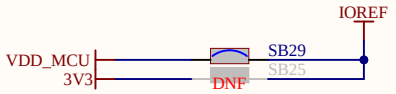
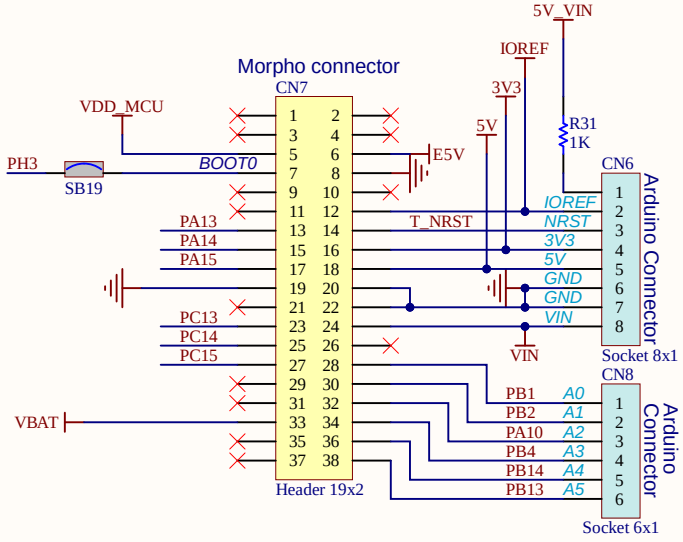
life.augmented

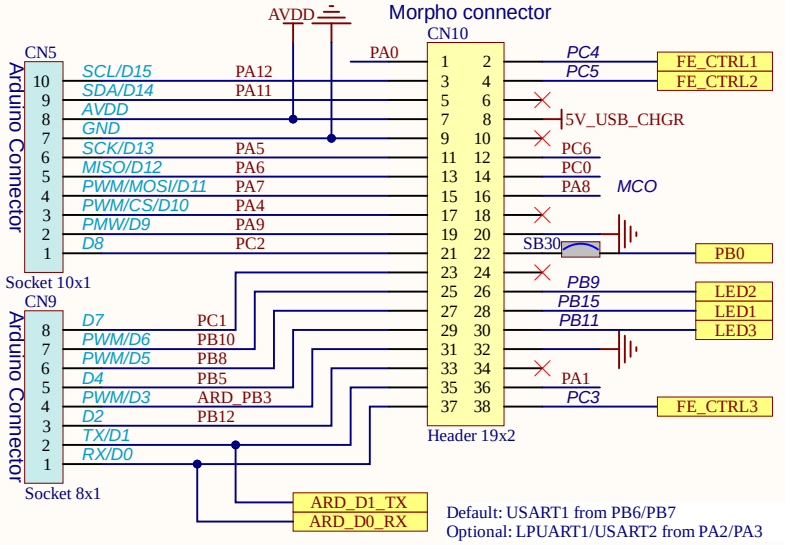


WARNING voltage applied to VIN <11.5V





MCU



Title: **Arduino & Morpho extension connectors**		
Project: **NUCLEO-WL5JC**		
Variant: High-band		
Revision: D-04		Reference: MB1389
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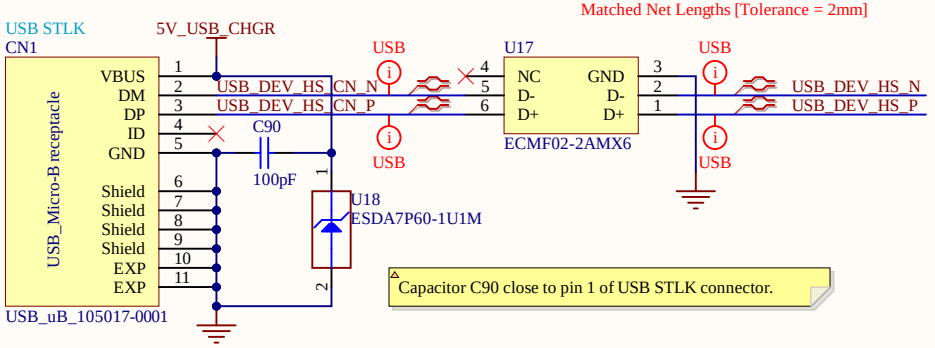
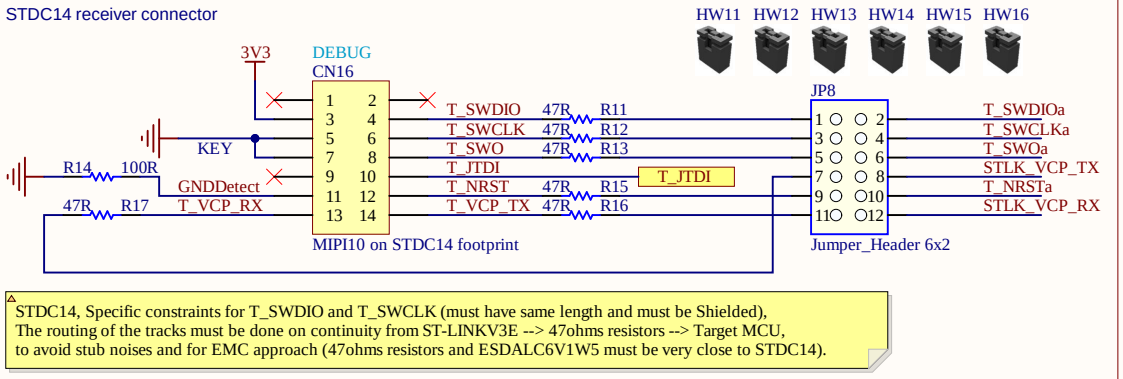
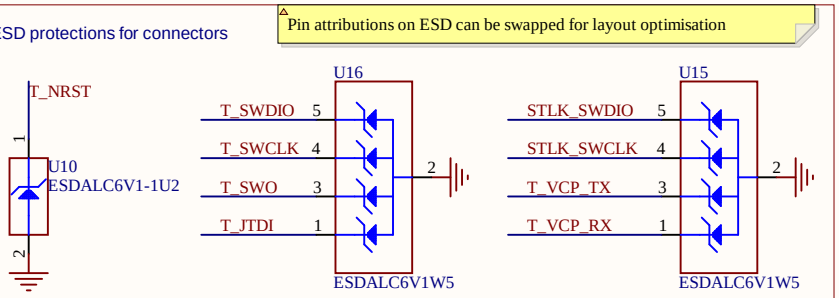
STLK USB HS & 5V USB charger



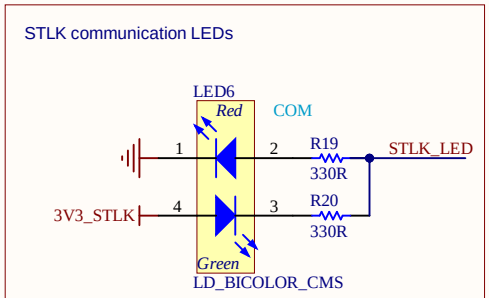
STDC14 receiver connector



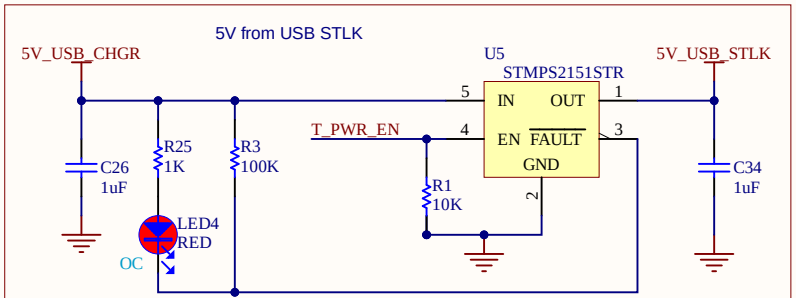
ESD protections for connectors



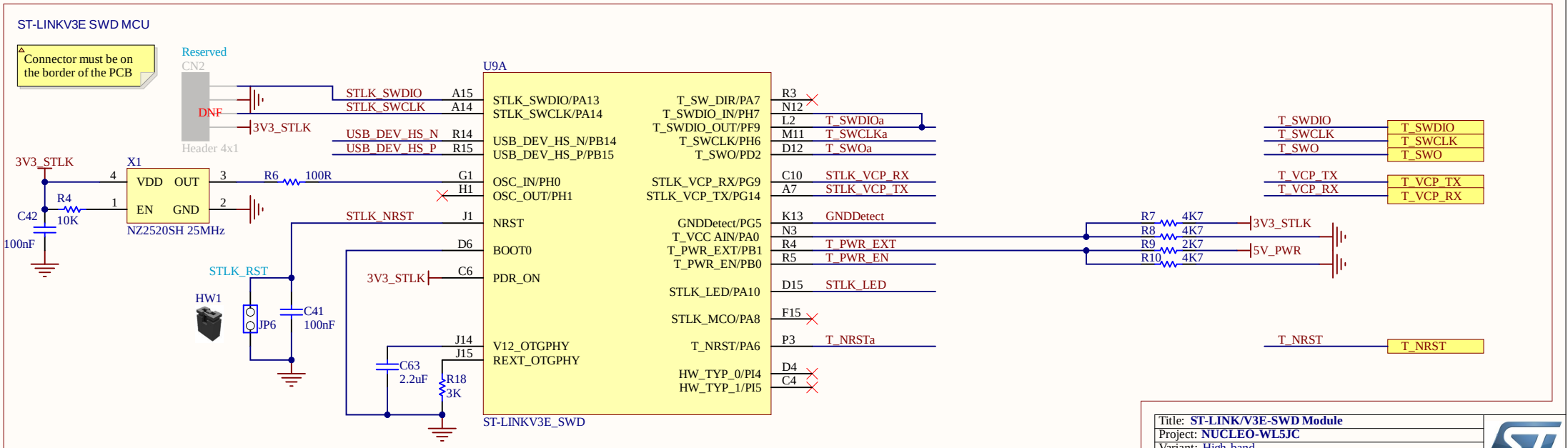
STLK communication LEDs



5V from USB STLK



ST-LINKV3E SWD MCU



Title: **ST-LINK/V3E-SWD Module**		
Project: **NUCLEO-WL5JC**		
Variant: High-band		
Revision: D-04		Reference: MB1389
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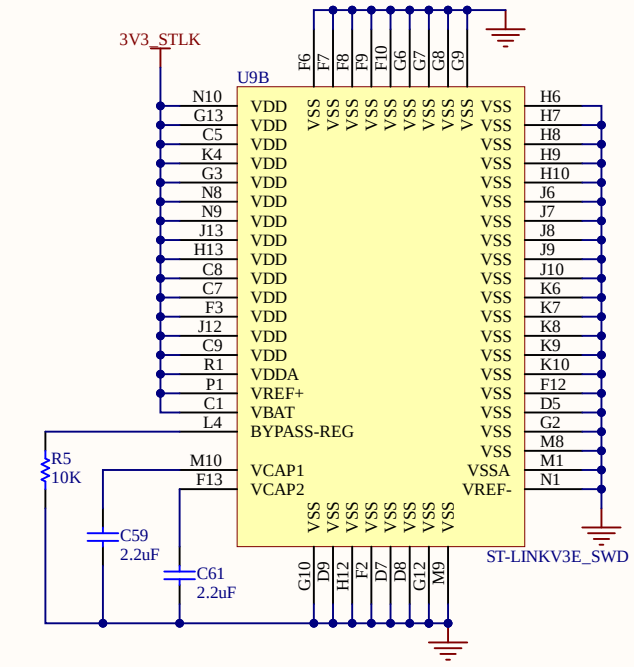
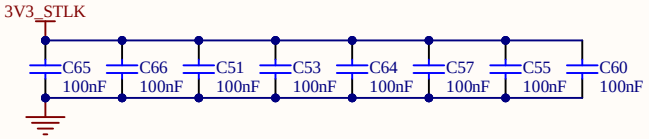
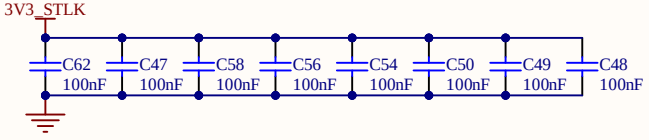
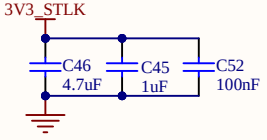
ST-LINKV3E SWD MCU POWER

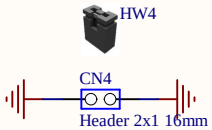




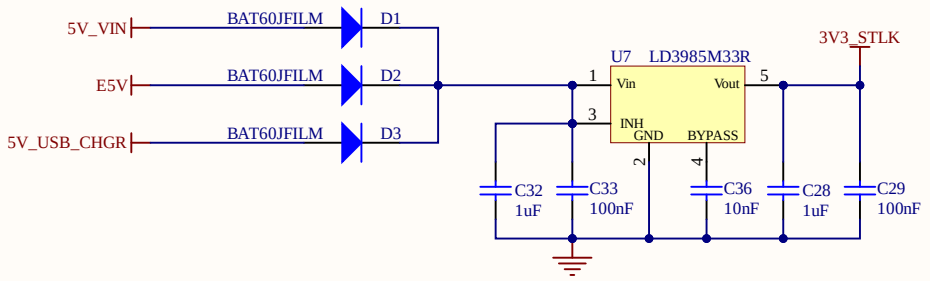




GND

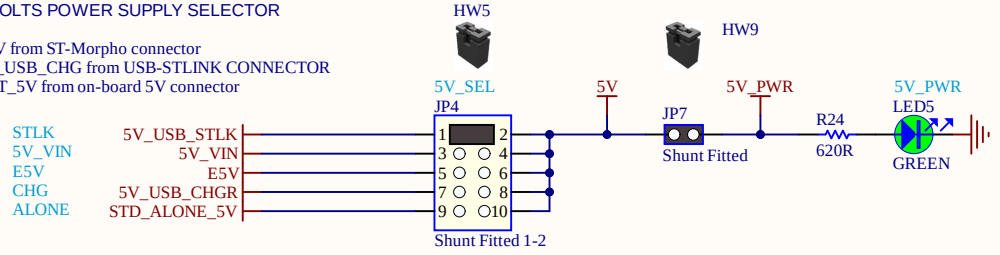


3.3 VOLTS POWER SUPPLY FOR ST-LINK

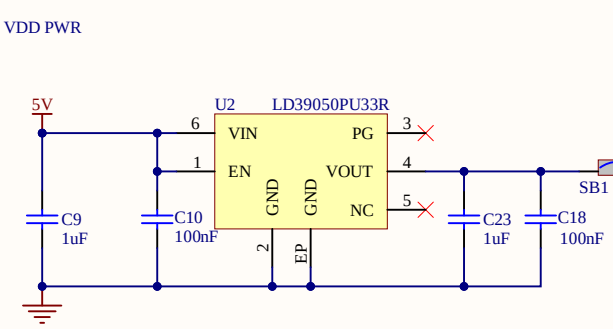


5 VOLTS POWER SUPPLY SELECTOR

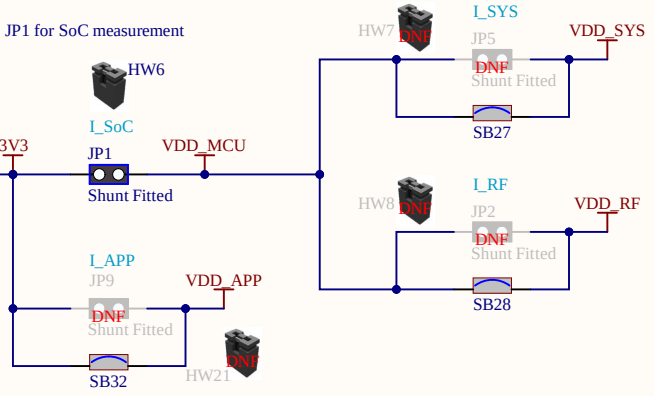
E5V from ST-Morpho connector
5V_USB_CHG from USB-STLINK CONNECTOR
EXT_5V from on-board 5V connector



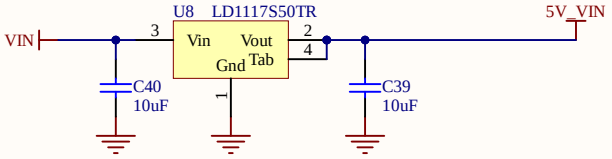
VDD PWR

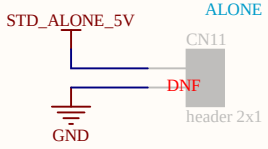


JP1 for SoC measurement



VIN / 5V PWR





Title: **ST-LINK/V3E-SWD Power Module**		
Project: **NUCLEO-WL5JC**		
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Revision: D-04		Reference: MB1389
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life.augmented