

STM32U575I-EV

MB1550

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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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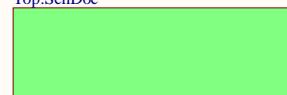
Netherlands acting for the purpose of this Agreement through its Swiss branch 39, Chemin du

Champ des Filles, 1228 Plan-les-Ouates, Geneva, Switzerland.

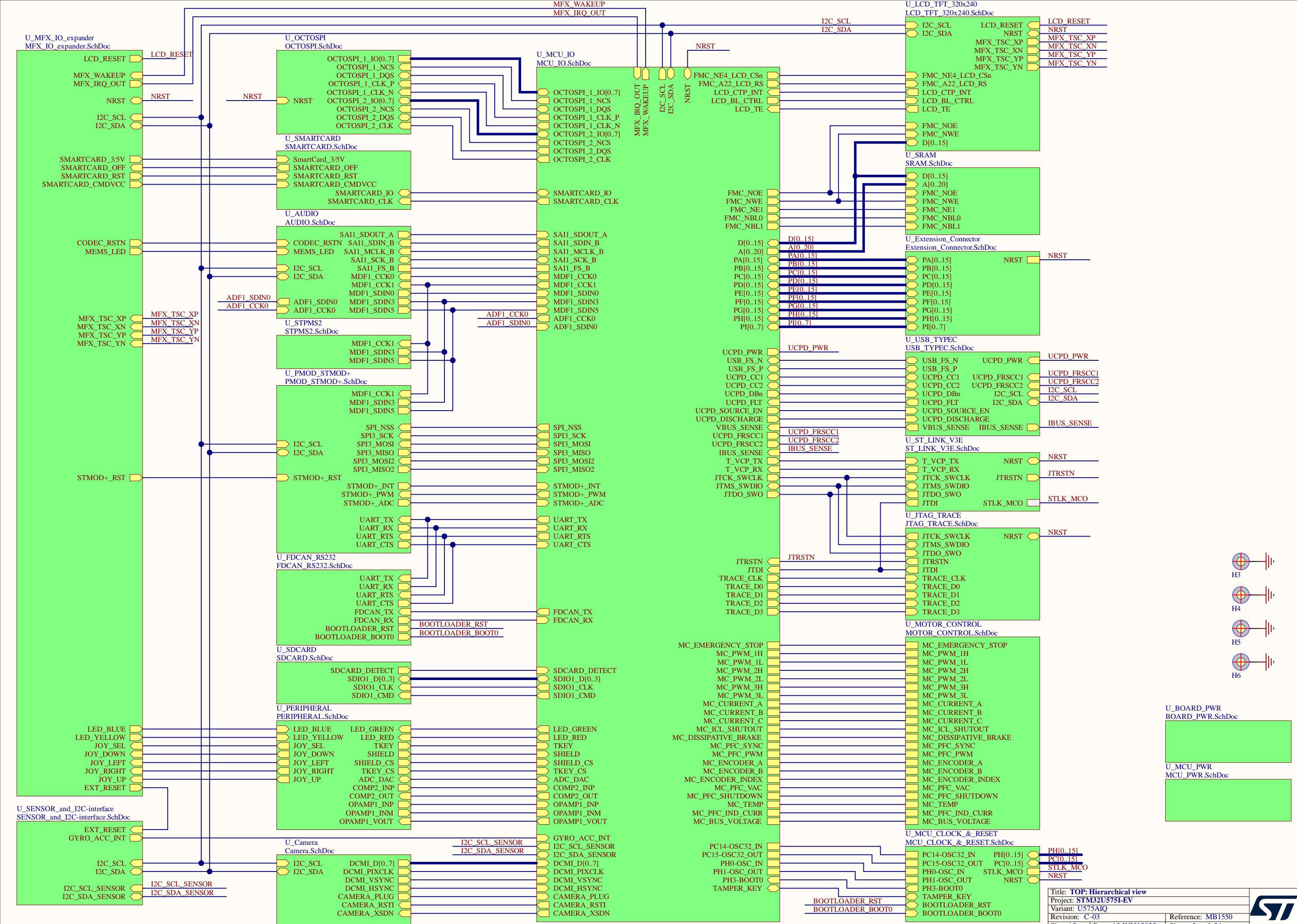
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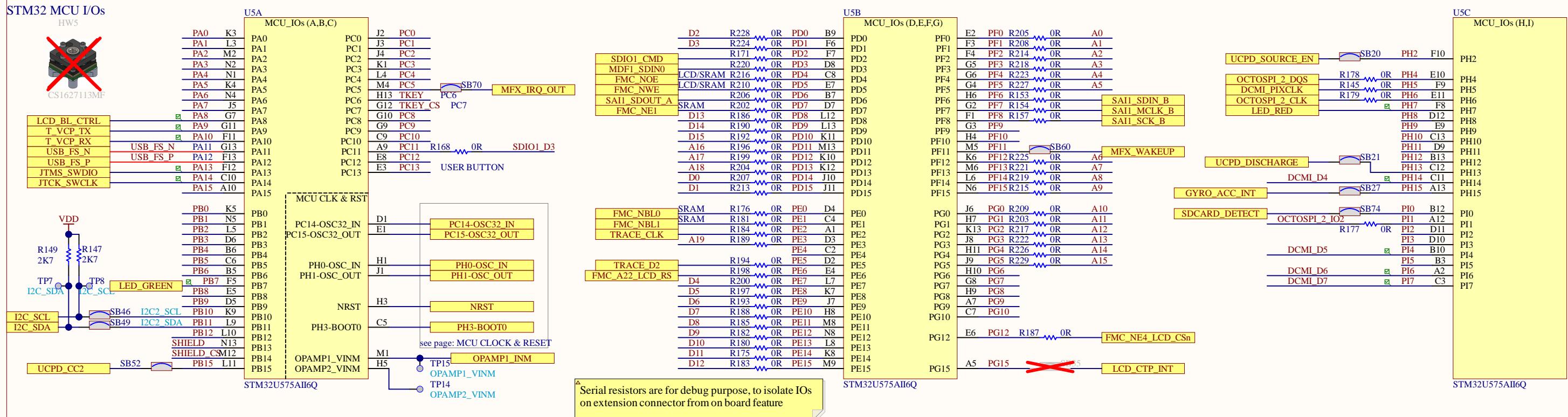
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U_TOP
Top.SchDoc



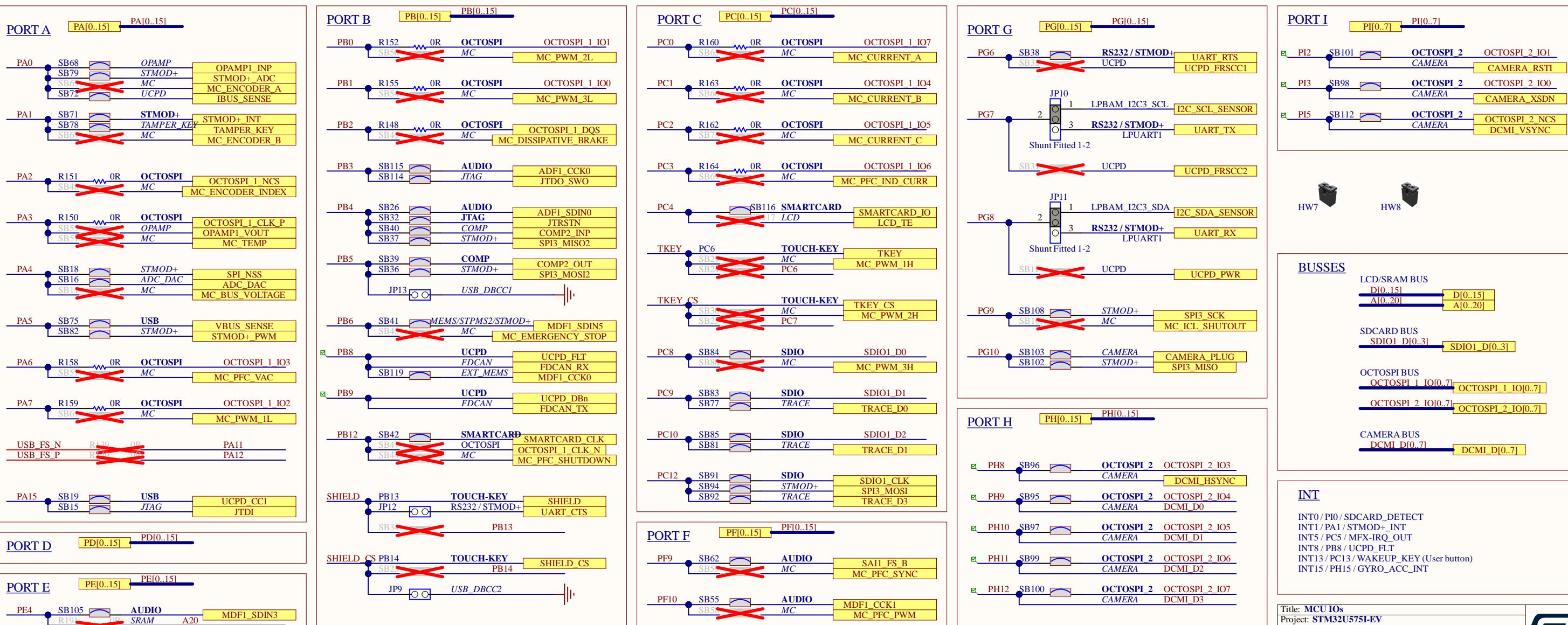
Title: Project overview	Project: STM32U575I-EV	Variant: U575AIQ
Revision: C-03	Reference: MB1550	
Size: A4	Date: 13 JULY 2023	Sheet: 1 of 24



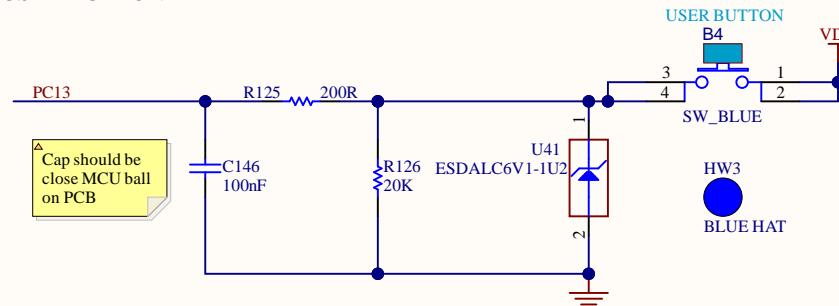


IO PORT MUXING TABLE **BOLD: PRIMARY FEATURES** (exclusive use : SB fitted)

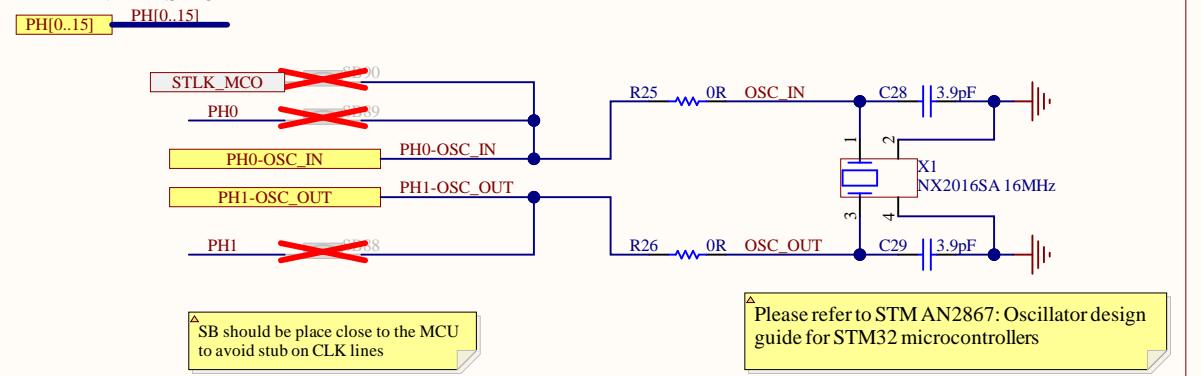
"ITALIC" front: SECONDARY FEATURES (can be not fitted by default)



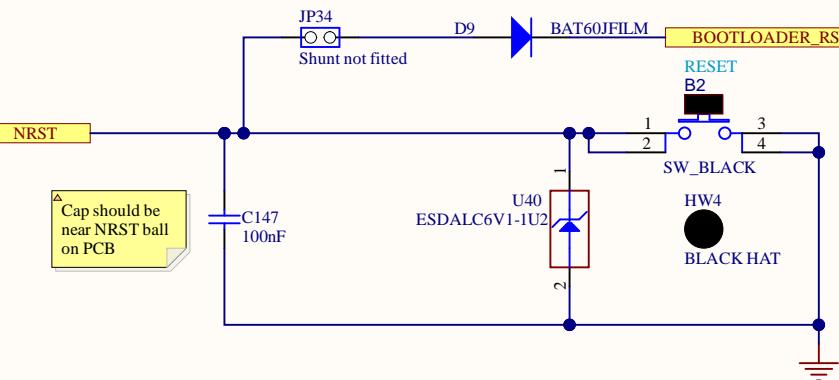
USER BUTTON



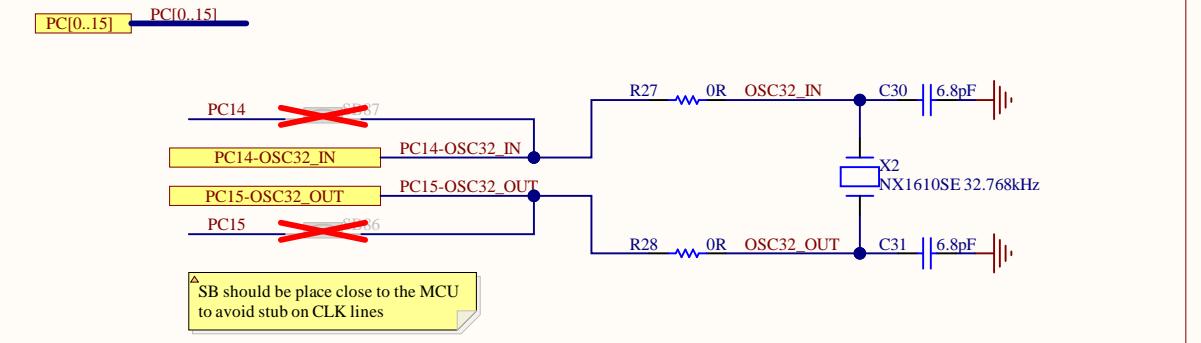
EXTERNAL HSE CLK



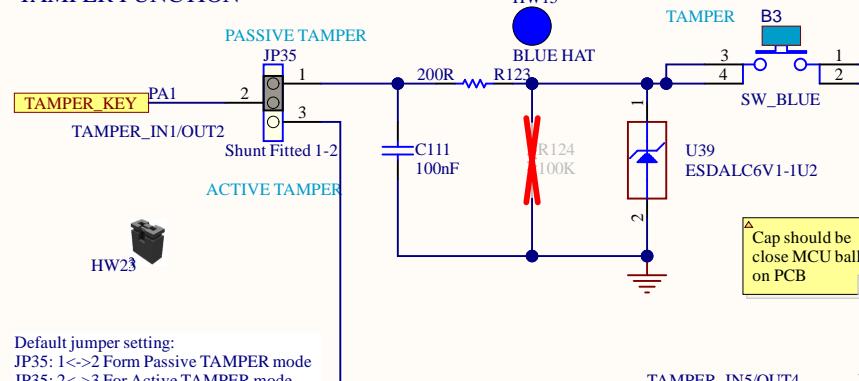
RESET FUNCTION



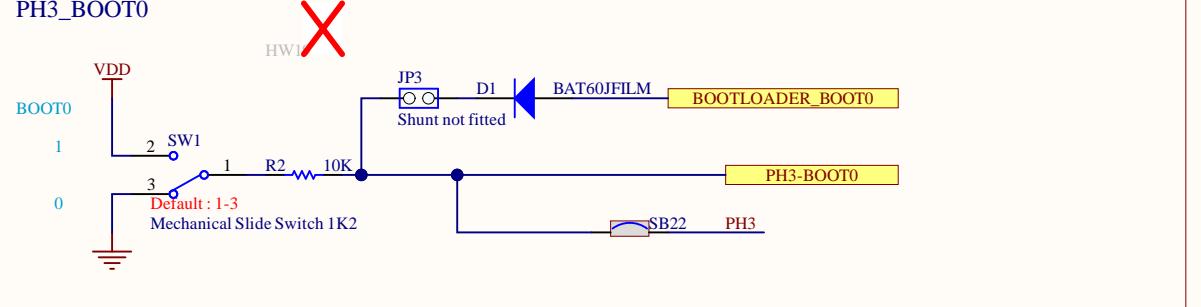
EXTERNAL LSE CLK



TAMPER FUNCTION



PH3_BOOT0



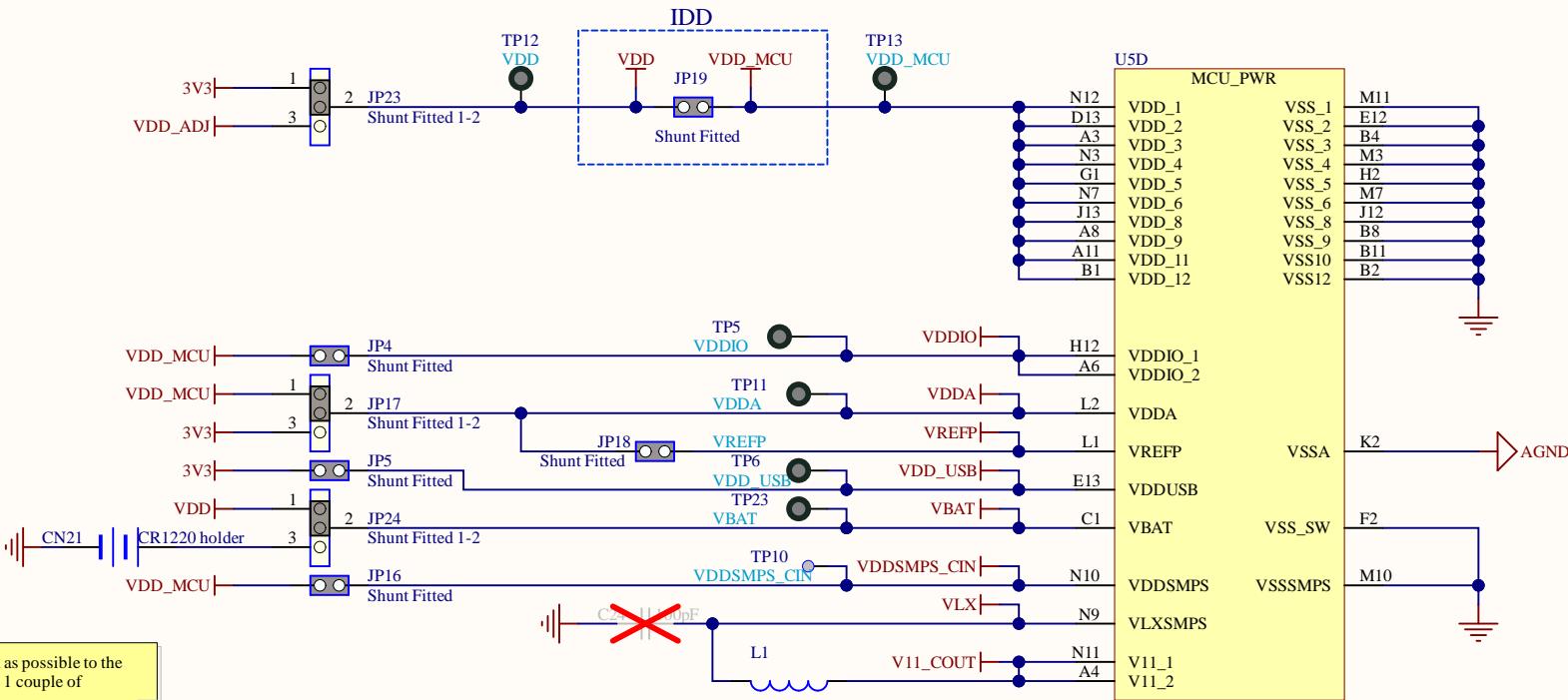
LIMITATIONS: See User Manual for more detail about muxing.

TAMPER on PA1 exclusive with PMOD/STMOD+ INT

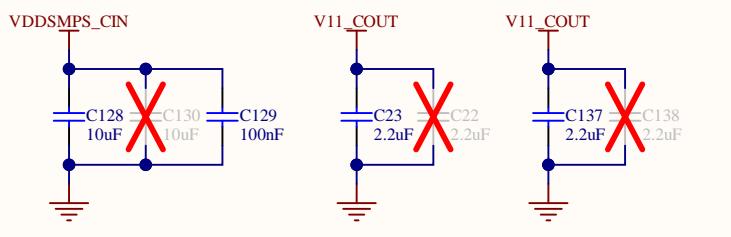
Title: MCU CLOCK & RESET
Project: STM32U575I-EV
Variant: U575AIQ
Revision: C-03
Size: A4



MCU PWR SUPPLIES



"CIN" and "COUT" should be as closed as possible to the
MCU associated pad. For COUT, place 1 couple of
capacitors per pad

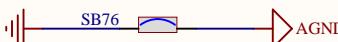


Operating range: 1V71 < VDD < 3V6
 Operating range: 1V08 < VDDIO2 < 3V6 (only for IO G[15:2])
 Operating range: 1V55 < VBAT < 3V6
 Operating range: 1V62 < VDDA < 3V6
 Operating range: 1V62 < VREF < 3V6 (depend of VDDA)
 Operating range: 1V71 < VDD_SMPS < 3V6
 Operating range: 3V0 < VDDUSB < 3V6

Operating range: 3V0 < VDDUSB < 3V6

MCU DECAPS

Ceramic capacitor (Low ESR, ESR<1ohm)

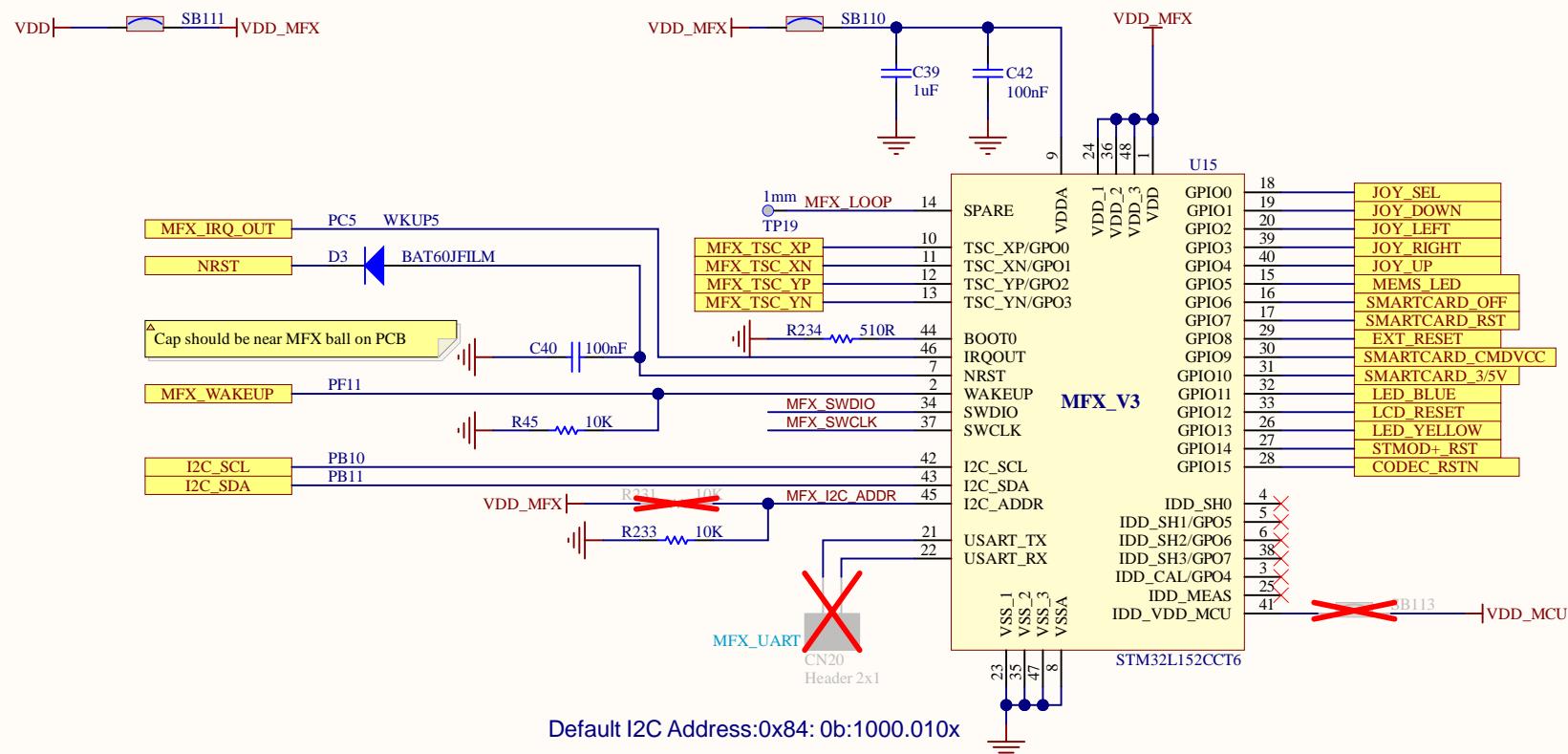


Title: MCU PWR	
Project: STM32U575I-EV	
Variant: U575AIQ	
Revision: C-03	
Size: A4	Date: 13 JULY 2023
Reference: MB1550	Sheet: 5 of 24

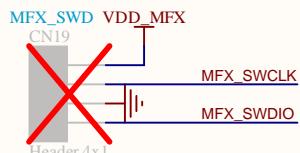


MFX I/O EXPANDER

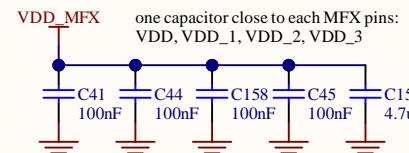
Operating range: $1.65 < VDD < 3.6V$



MFX DEBUG SWD INTERFACE



MFX DECAPS



LIMITATIONS: See User Manual for more detail about muxing.

NO LIMITATION

Title: **MFX IO EXPANDER**

Project: **STM32U575I-EV**

Variant: **U575AIQ**

Revision: **C-03**

Size: **A4** Date: **13 JULY 2023**

Reference: **MB1550** Sheet: **6 of 24**

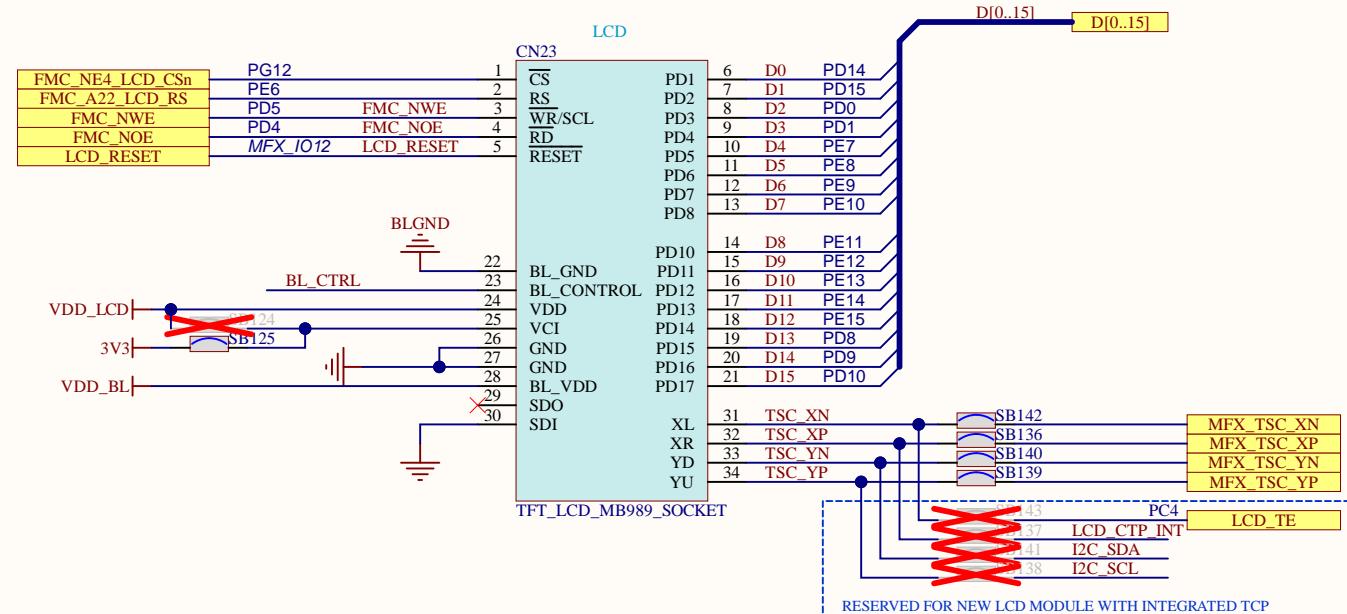


TFT LCD SOCKET CONNECTOR

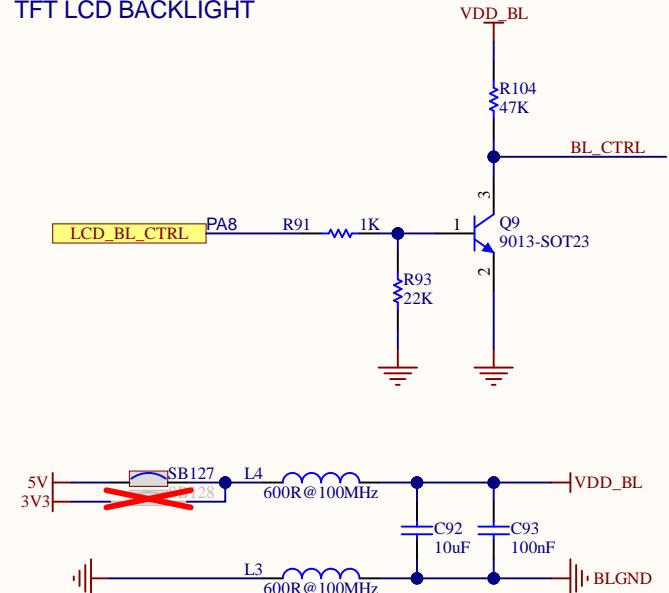
Operating range: 2.5<VCI<3.3V

Operating range: 1.65<VDD<3.3V

VDD — SB123 — VDD_LCD

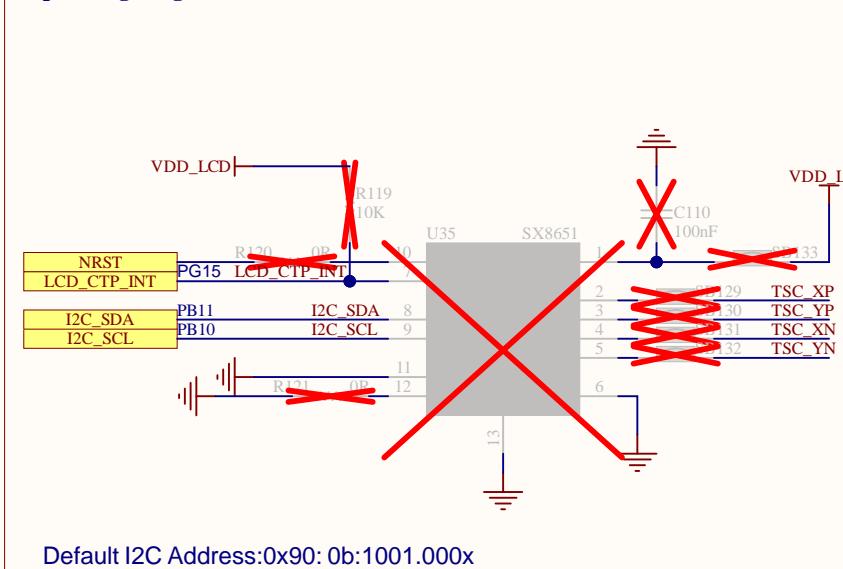


TFT LCD BACKLIGHT

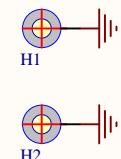


TOUCH PANEL SEMTECH

Operating range: 1.65<VDD<3.7V



LCD MECHANICAL PARTS



LIMITATIONS: See User Manual for more detail about muxing.
LCD_TE exclusive with SMARTCARD_UART_RX

Title: LCD TFT 320x240

Project: STM32U575I-EV

Variant: U575AIQ

Revision: C-03

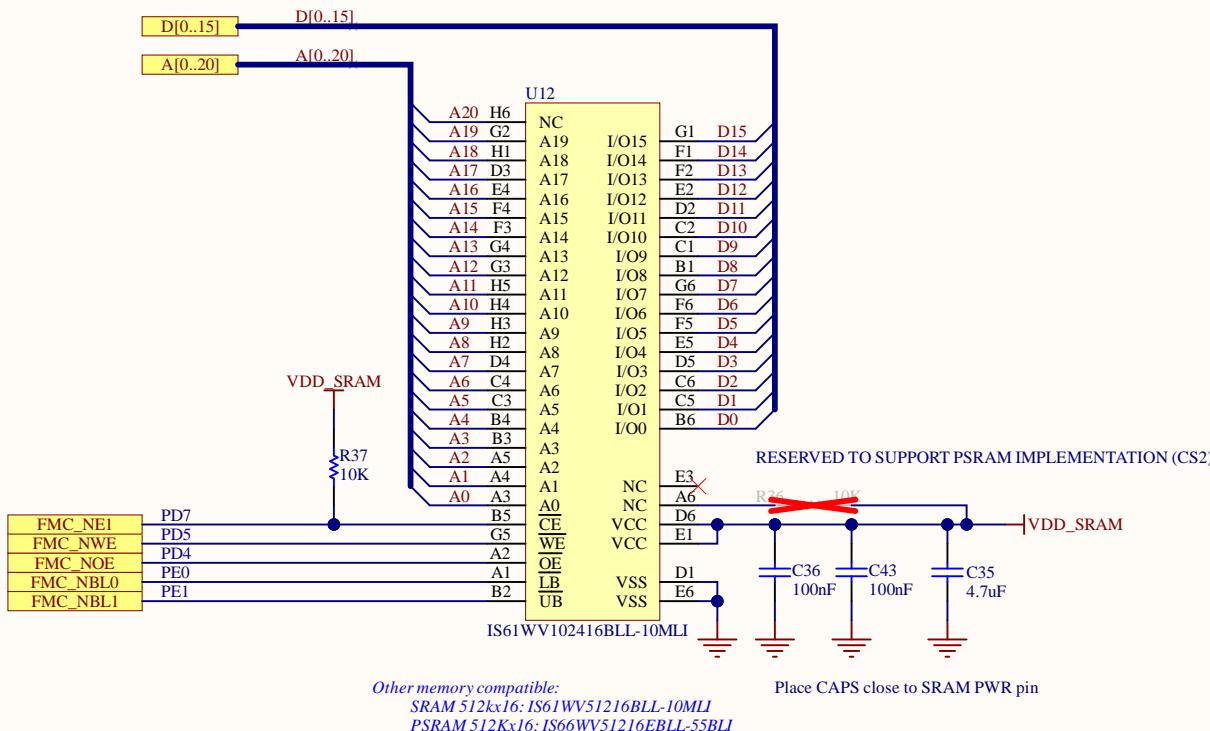
Size: A4 Date: 13 JULY 2023

Reference: MB1550 Sheet: 7 of 24



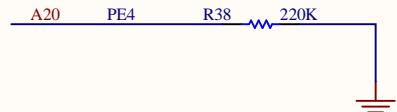
SRAM

Operating range: 2.4<VDD<3.6V



Default config = A0-A19

A20 = 0 by default (depend of the memory size)



LIMITATIONS: See User Manual for more detail about muxing.

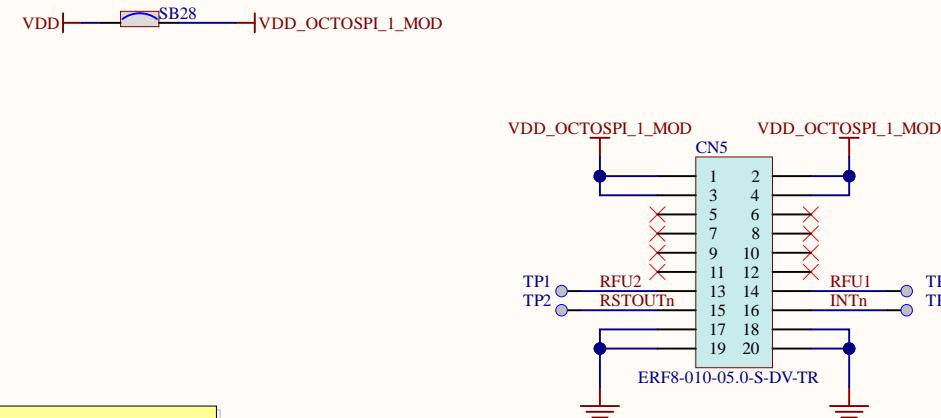
Memory size limited to max 32Mbits by design

▲ SRAM bus should be routed in 50 ohm +/- 15%

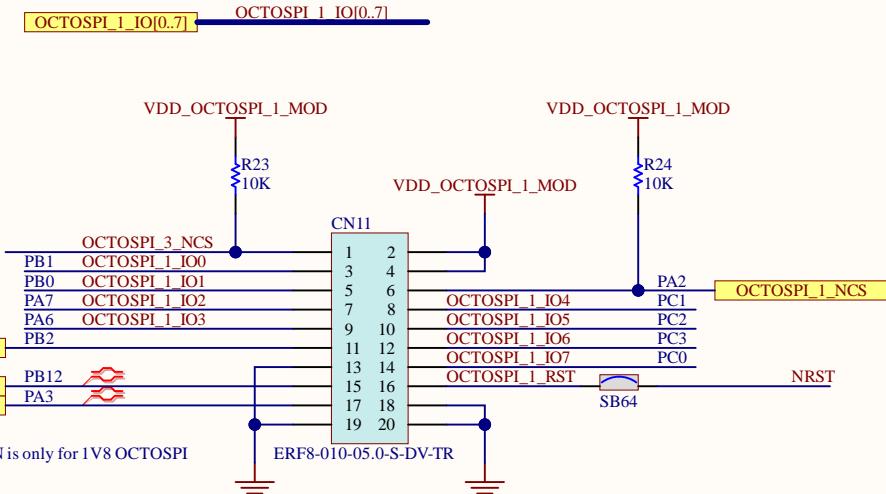
Title: SRAM	Project: STM32U575I-EV	ST
Variant: U575AIQ		
Revision: C-03	Reference: MB1550	
Size: A4	Date: 13 JULY 2023	Sheet: 8 of 24

OCTOSPI_1 (MB1242 Module connector)

Operating range: 1.6<VDD<3.6V



OCTOSPI bus should be routed in 50 ohm +/- 15%

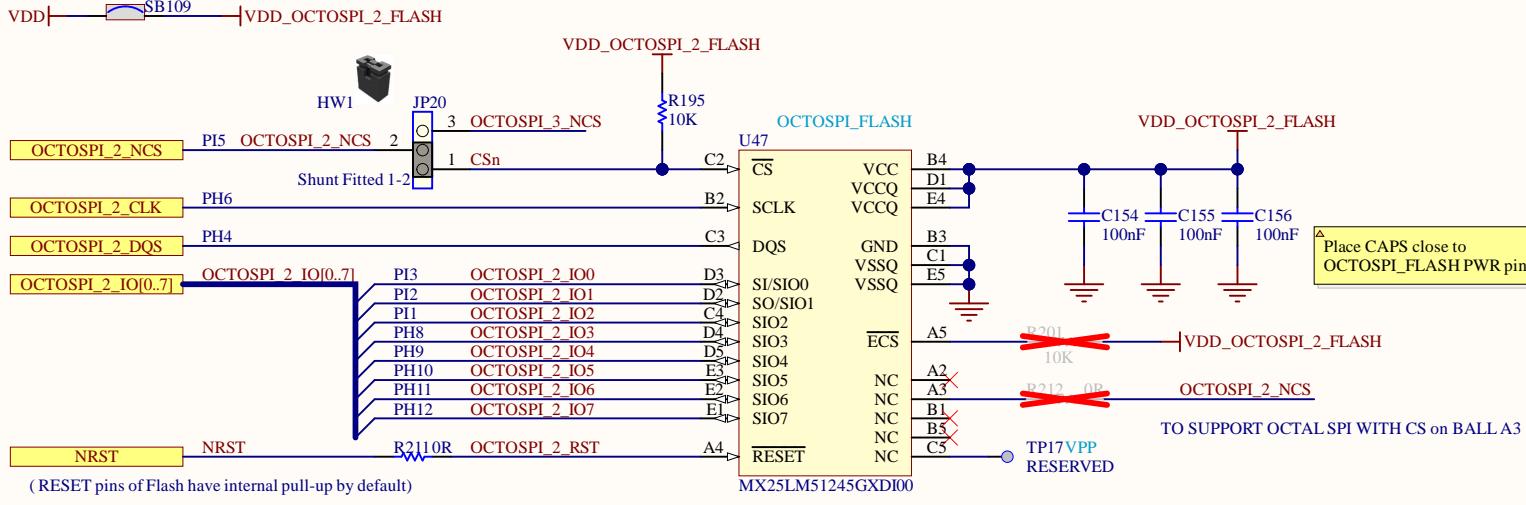


OCTOSPI_1_IO[0..7]

OCTOSPI_1_IO[0..7]

OCTOSPI_2 FLASH

Operating range: 2.7<VDD<3.6V



OCTOSPI bus should be routed in 50 ohm +/- 15%

TO SUPPORT OCTAL SPI WITH CS ON BALL A3

LIMITATIONS: See User Manual for more detail about muxing.

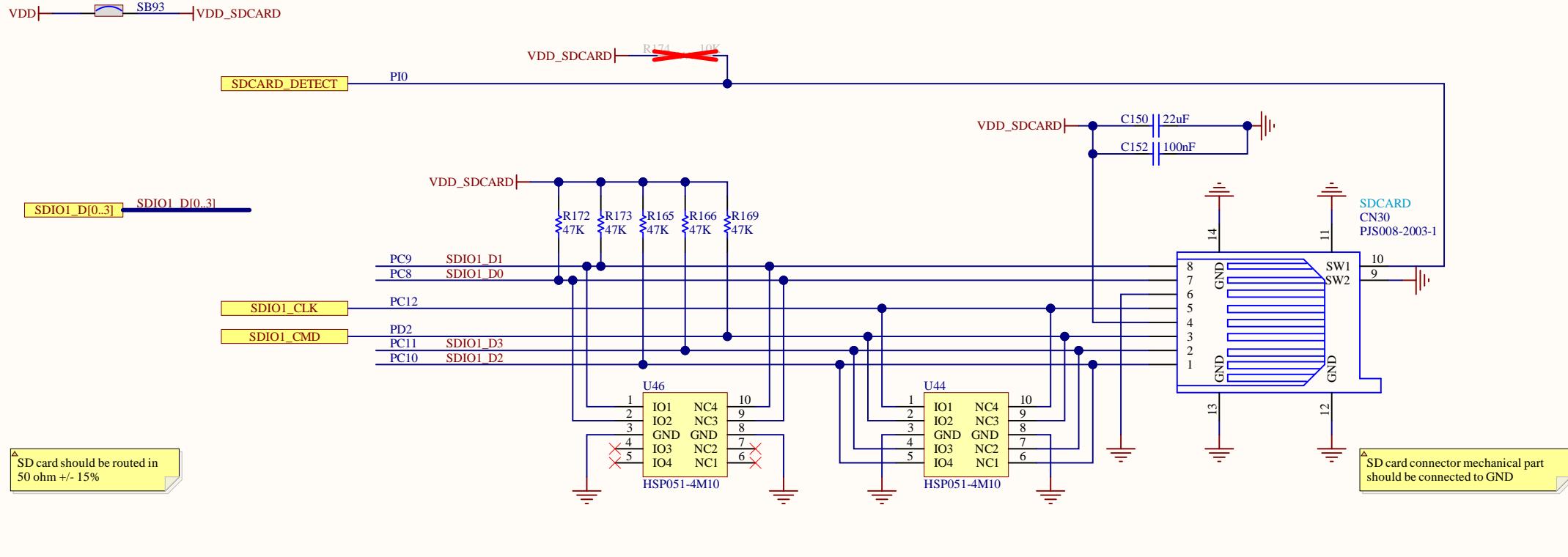
OCTOSPI FLASH IO exclusive with MC.
OCTOSPI_FLASH_CLK exclusive with OPAMP
OCTOSPI SRAM IO exclusive with CAMERA.

Title: OCTOSPI
Project: STM32U575I-EV
Variant: U575AIQ
Revision: C-03
Size: A4
Date: 13 JULY 2023
Reference: MB1550
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SD CARD

Operating range: 2.7<VDD<3.6V



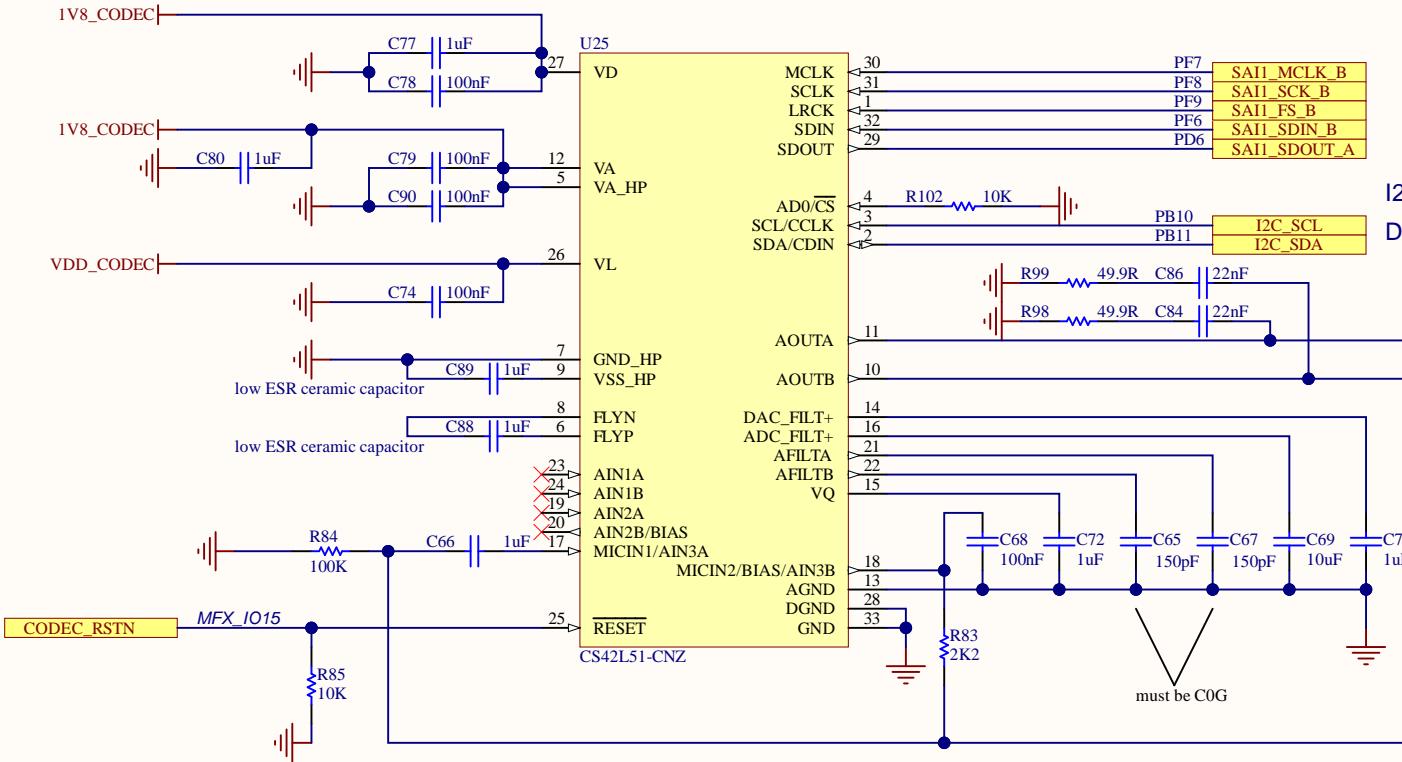
LIMITATIONS: See User Manual for more detail about muxing.

SDIO_CLK/D1/D2 exclusive with TRACE_D0/D1/D3
SDIO_D0 exclusive with MC
SDIO_CLK exclusive with STMOD+

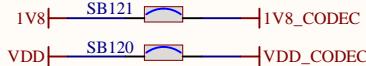
Title: SDCARD			
Project: STM32U575I-EV			
Variant: U575AIQ			
Revision: C-03	Reference: MB1550		
Size: A4	Date: 13 JULY 2023	Sheet: 10 of 24	



AUDIO CODEC

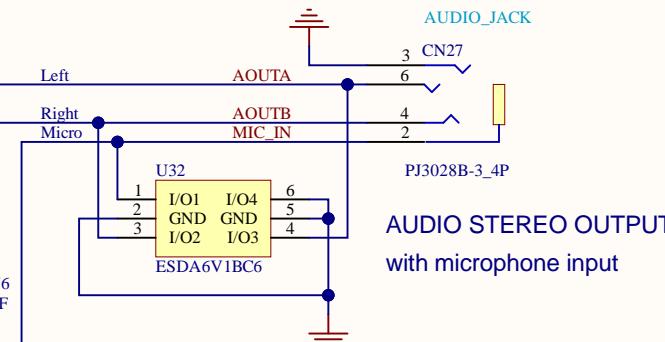


Operating range: 1.65<VL<3.47V
 Operating range: 1.65<VA/VD<2.63V



I2C 100KHz SUPPORTED

Default I2C Address:0x94: 0b:1001.010x

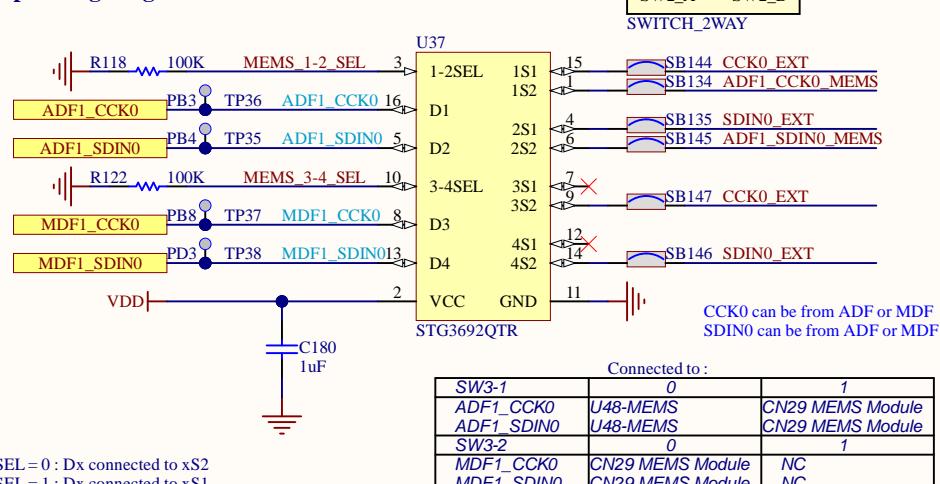


AUDIO STEREO OUTPUT
 with microphone input

LIMITATIONS: See User Manual for more detail about muxing.

SAL_FS_B exclusive with MC

Extension microphones module Operating range: 1.64<VDD<3.6V



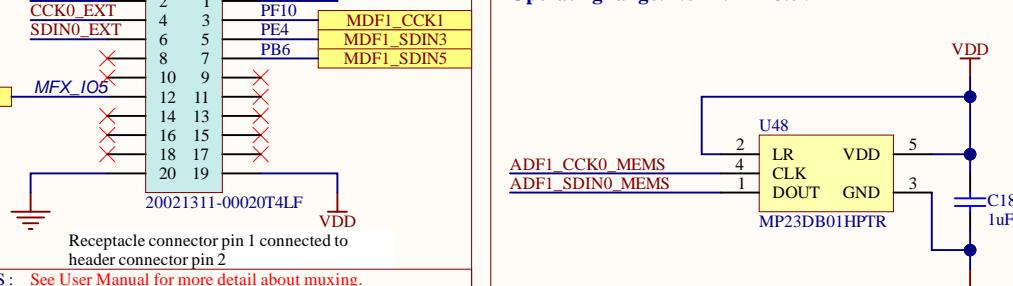
SEL = 0 : Dx connected to xS2
 SEL = 1 : Dx connected to xS1

LIMITATIONS: See User Manual for more detail about muxing.

MDF1_CCK1 shared between EXT-MEMS, STPM2, STMOD+
 MDF1_CCK1 exclusive with MC
 MDF1_SDIN3 shared between EXT-MEMS, STPM2, STMOD+
 ADF1_CCK0 shared between EXT-MEMS and INT-MEMS
 ADF1_CCK0 exclusive with JTAG-JTDO
 ADF1_SDIN0 exclusive with JTAG-NJTRST, COMP2 and STMOD+
 MDF1_SDIN5 shared EXT-MEMS, STPM2, STMOD+
 MDF1_SDIN5 exclusive with MC
 MDF1_CCK0 exclusive with UCPD, FDCAN

MEMS

Operating range: 1.64<VDD<3.6V

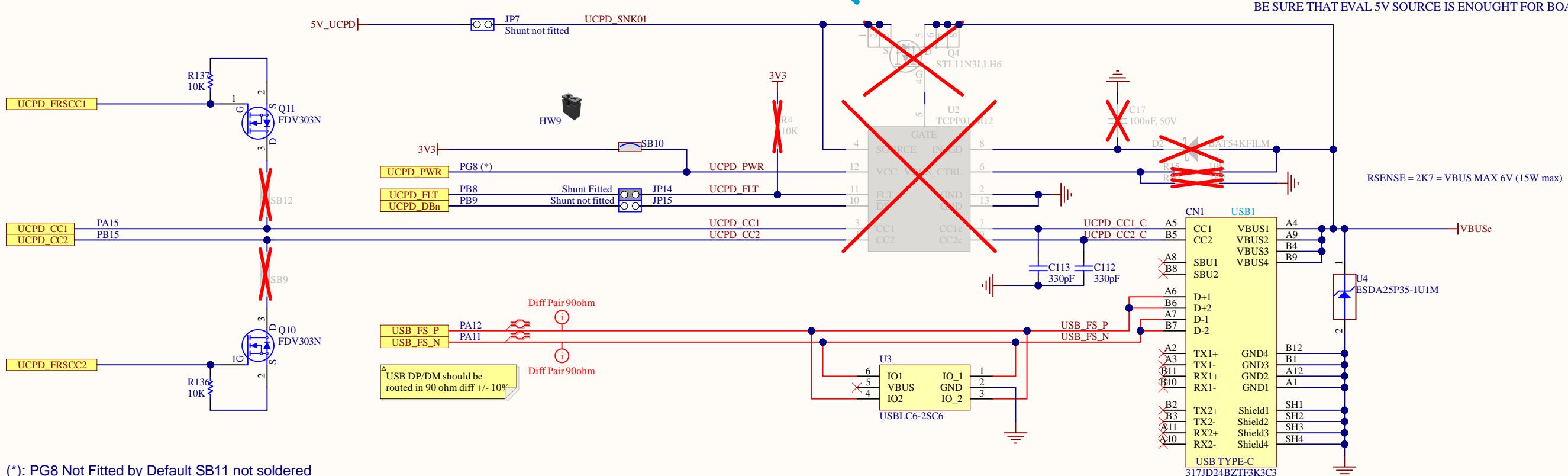


Title: AUDIO	
Project: STM32U575I-EV	
Variant: U575AIQ	
Revision: C-03	Reference: MB1550
Size: A4	Date: 13 JULY 2023
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USB_TYPE_C

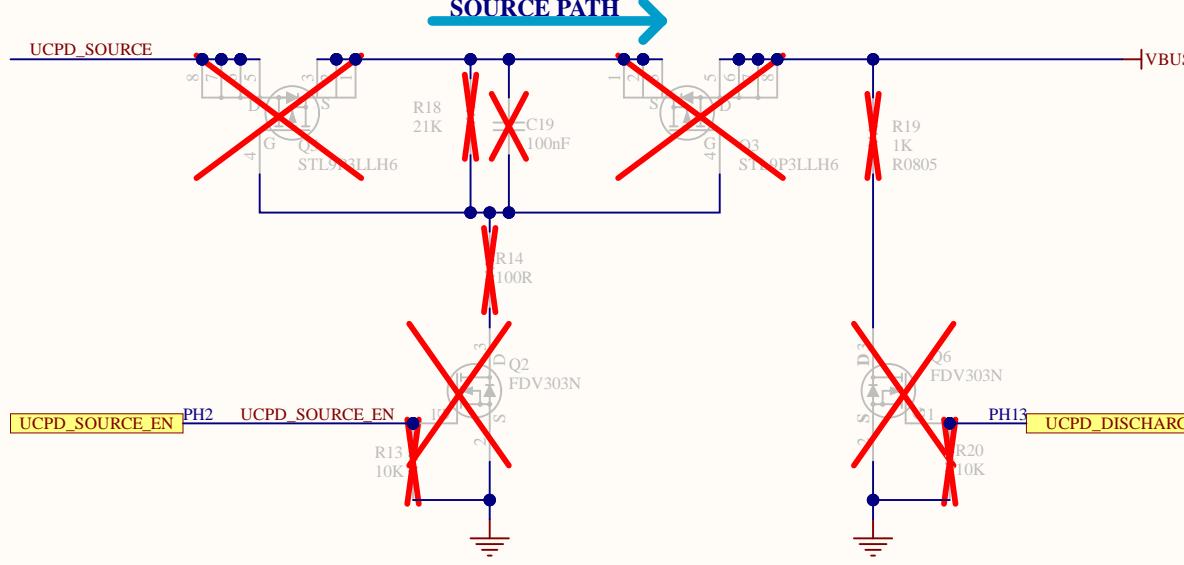
SINK PART WITH TCPP01



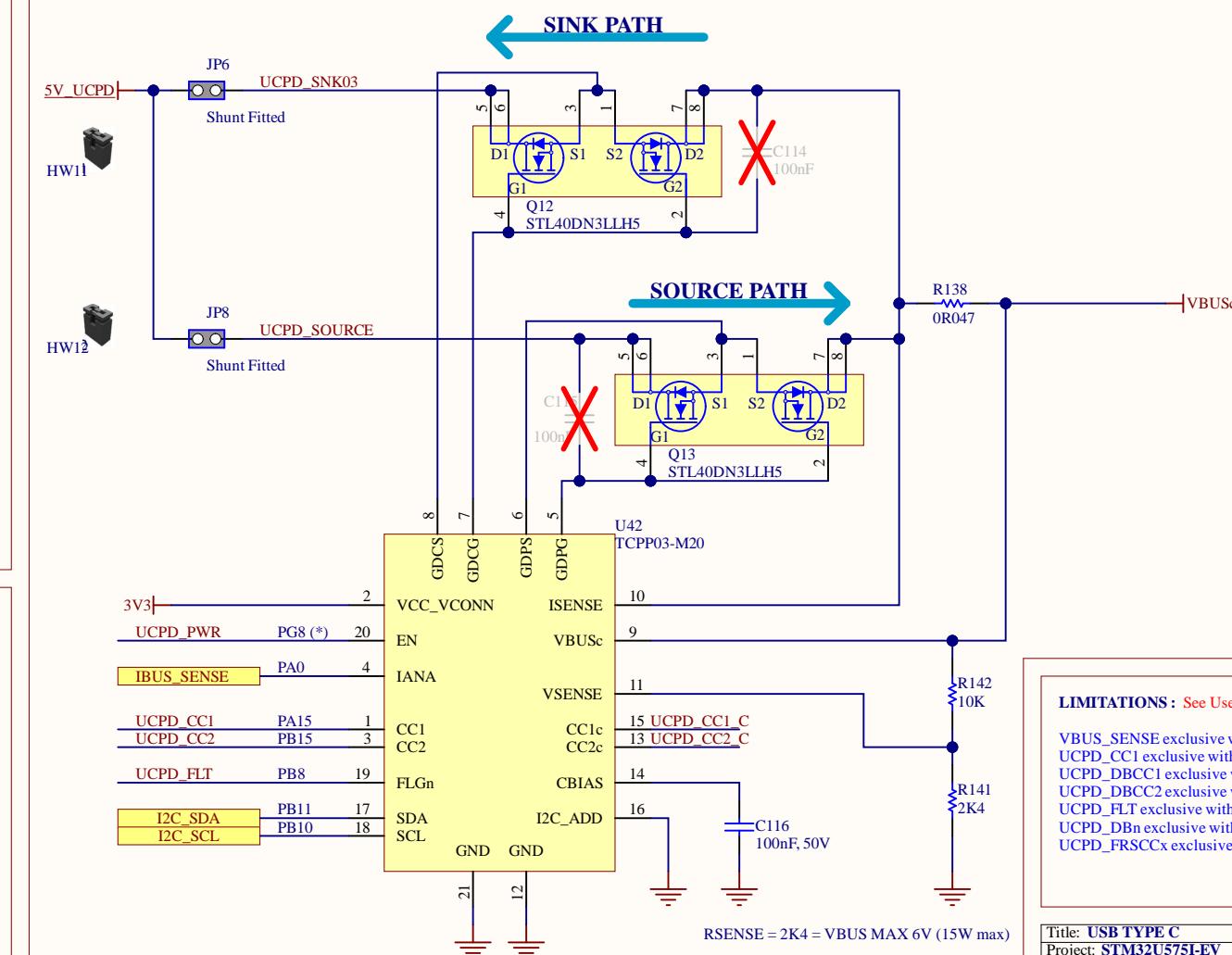
(*): PG8 Not Fitted by Default SB11 not soldered

DEAD BATTERY MODE IS MANAGED THROUGHT TCPP01-DNn pin

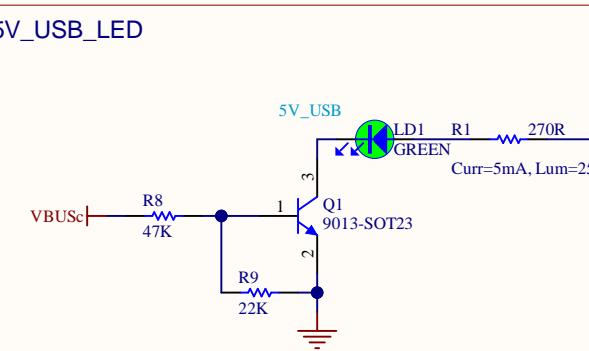
SOURCE PART WITH TCPP01



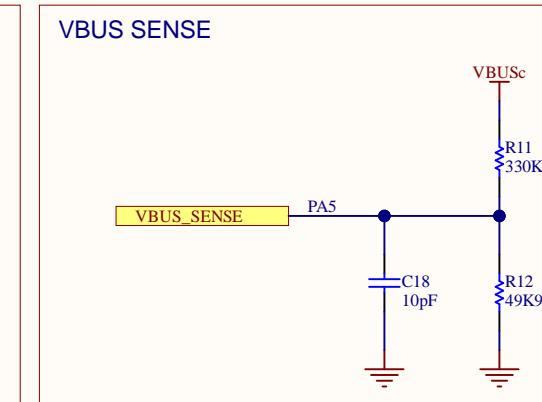
UCPB MANAGEMENT WITH TCPP03



5V_USB_LED



VBUS SENSE



LIMITATIONS : See User Manual for more detail about muxing.

VBUS_SENSE exclusive with STMOD+
UCPD_CC1 exclusive with JTAG_TDI
UCPD_DBCC1 exclusive with COMP and STMOD+
UCPD_DBCC2 exclusive with TOUCH-KEY
UCPD_FLT exclusive with EXT-MEMS, FDCAN
UCPD_DBn exclusive with FDCAN
UCPD_FRS CCx exclusive with RS232 and STMOD+(UART)

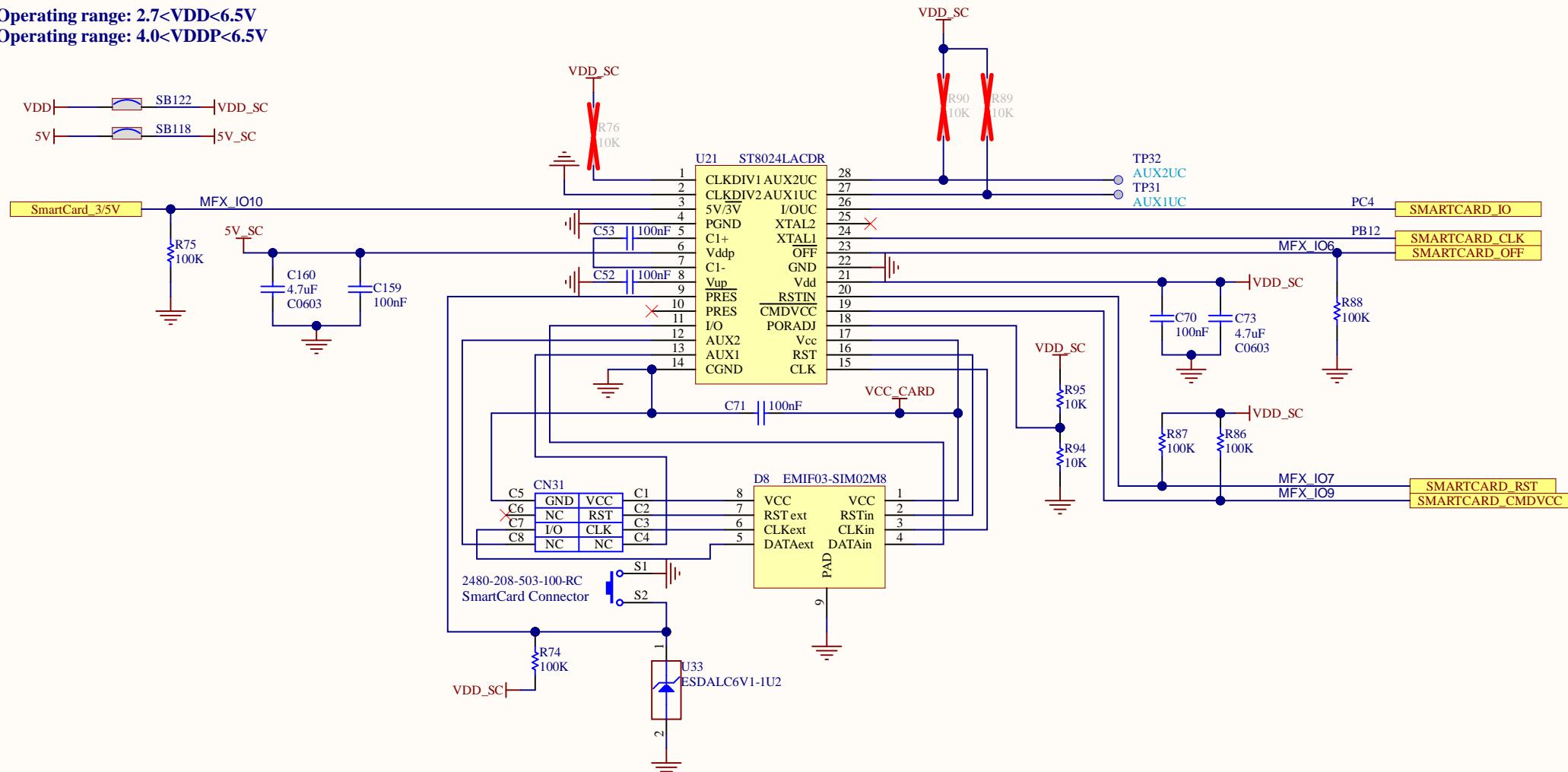
Title: USB TYPE C
Project: STM32U575I-EV
Variant: U575AIQ
Revision: C-03
Reference: MB1550
Size: A3
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SmartCard

Operating range: $2.7 < VDD < 6.5V$

Operating range: $4.0 < VDDP < 6.5V$



LIMITATIONS: See User Manual for more detail about muxing.

SMARTCARD_UART_RX exclusive with LCD_TE
SMARTCARD_CLK exclusive with MC

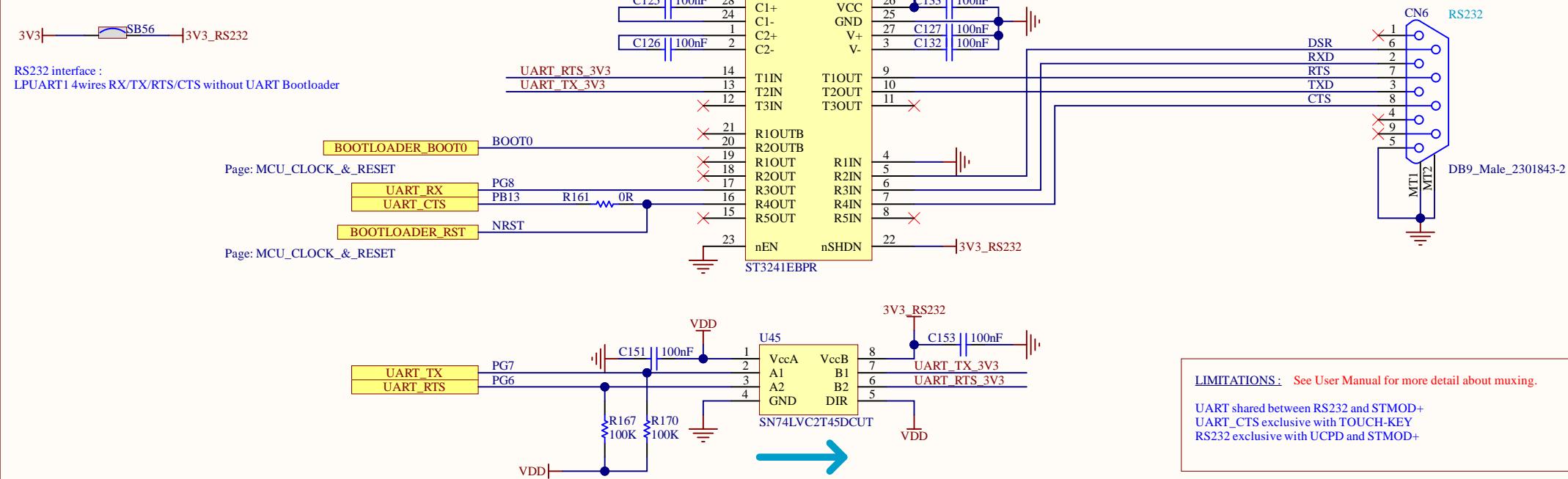
Title: SMARTCARD
Project: STM32U575I-EV
Variant: U575AIQ
Revision: C-03
Size: A4



Reference: MB1550
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RS232 (USART1)

Operating range: 3V < VCC < 5.5V



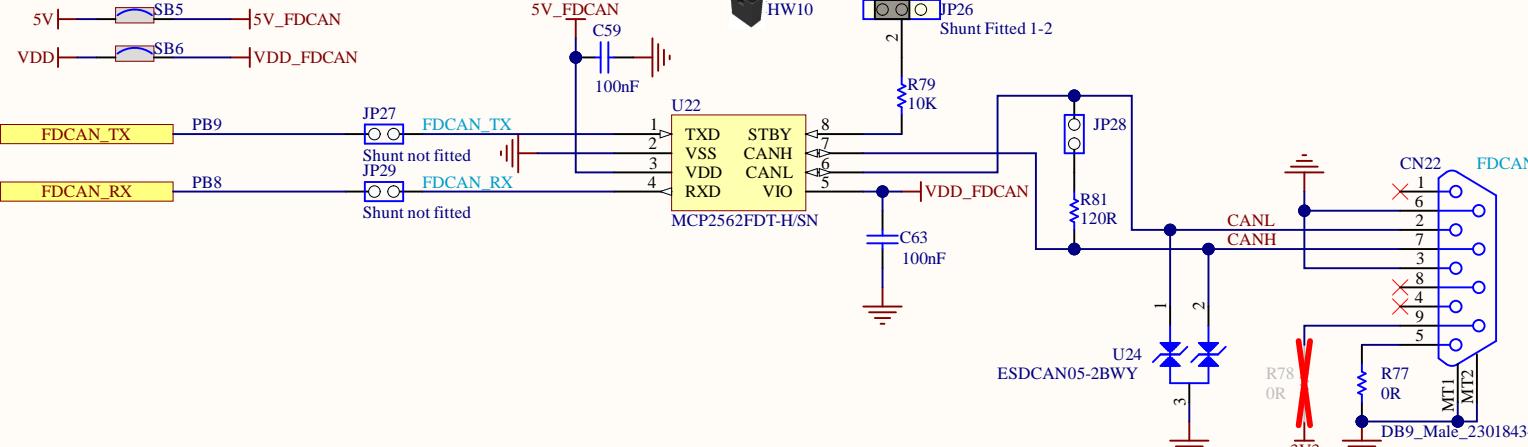
LIMITATIONS : See User Manual for more detail about muxing.

UART shared between RS232 and STMOD+
UART_CTS exclusive with TOUCH-KEY
RS232 exclusive with UCPD and STMOD+

CAN FD

Operating range: 4.5<VDD<5.5V

Operating range: 1.8<VIO<5.5V



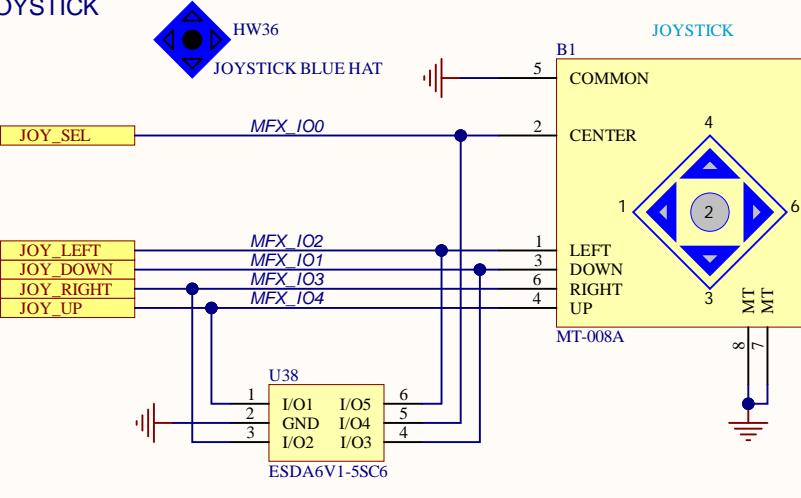
LIMITATIONS : See User Manual for more detail about muxing.

FDCAN_TX exclusive with UCPD_DBn
FDCAN_RX exclusive with EXT-MEMMS, UCPD

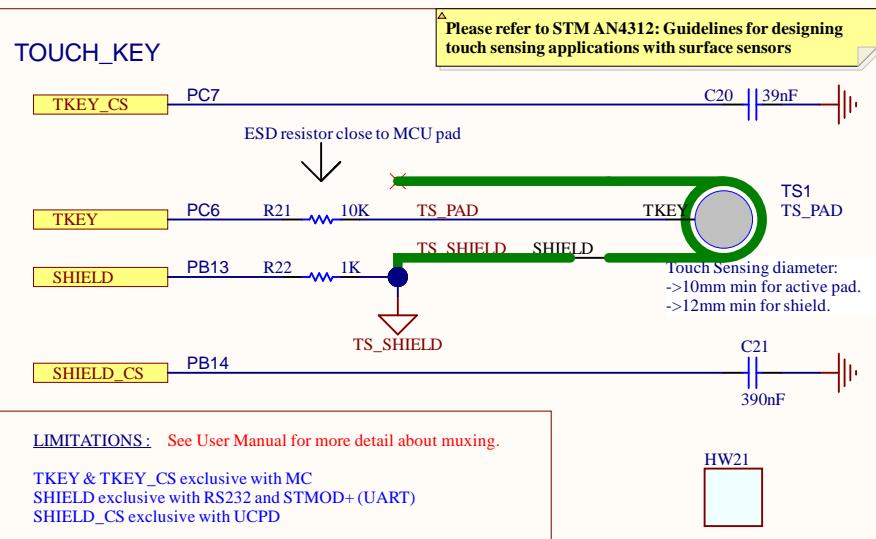
Title: FDCAN & RS232	Project: STM32U575I-EV	Variant: U575AIQ
Revision: C-03	Reference: MB1550	
Size: A4	Date: 13 JULY 2023	Sheet: 14 of 24



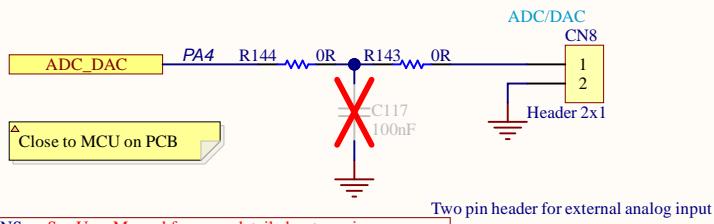
JOYSTICK



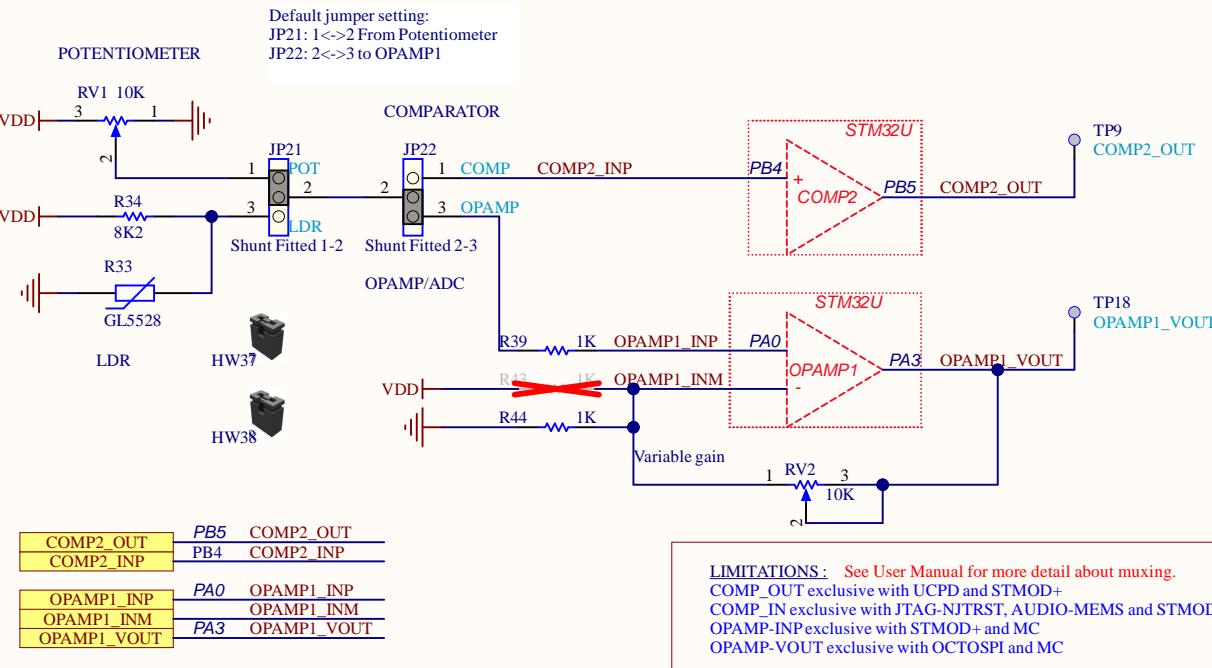
TOUCH_KEY



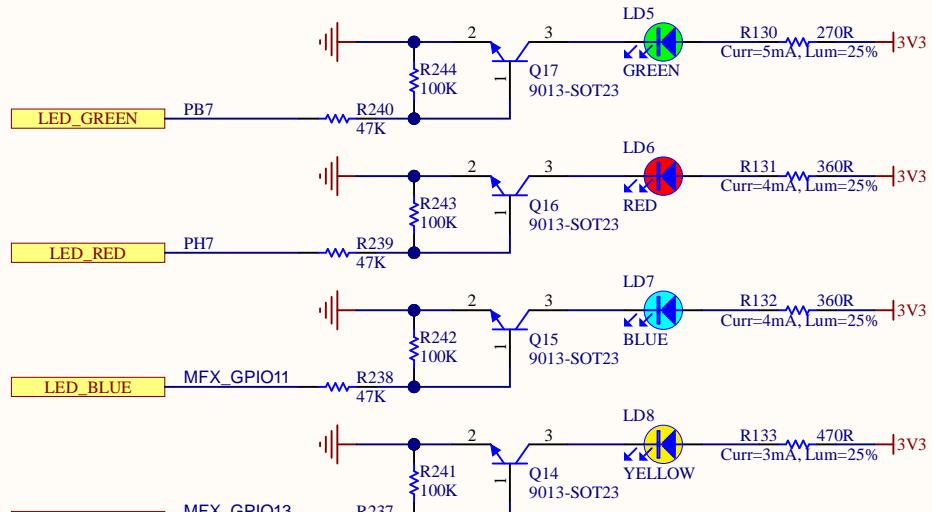
ADC / DAC CONNECTOR



LDR / POTENTIOMETER



LEDs



Title: PERIPHERAL

Project: STM32U575I-EV

Variant: U575AIQ

Revision: C-03

Reference: MB1550

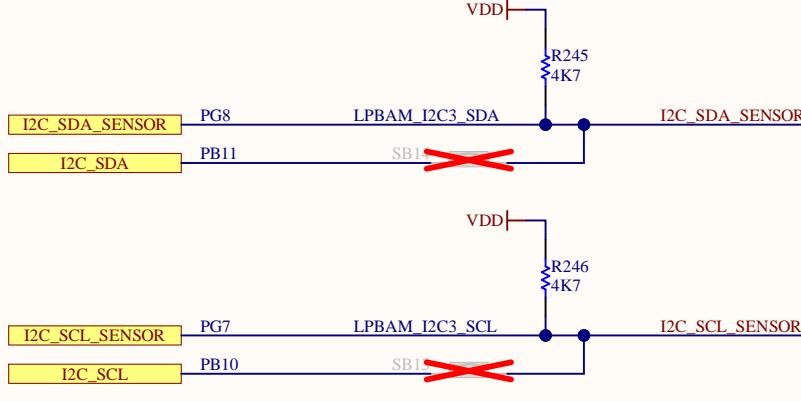
Size: A4

Date: 13 JULY 2023

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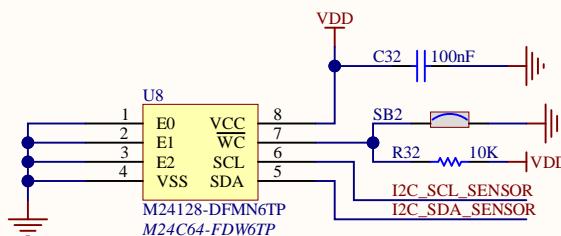


I2C SELECTION



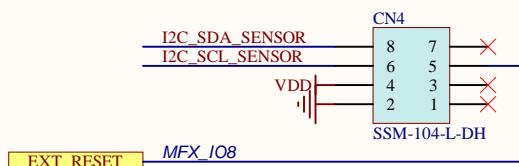
I2C EEPROM

Operating range: $1.7V < VCC < 5.5V$



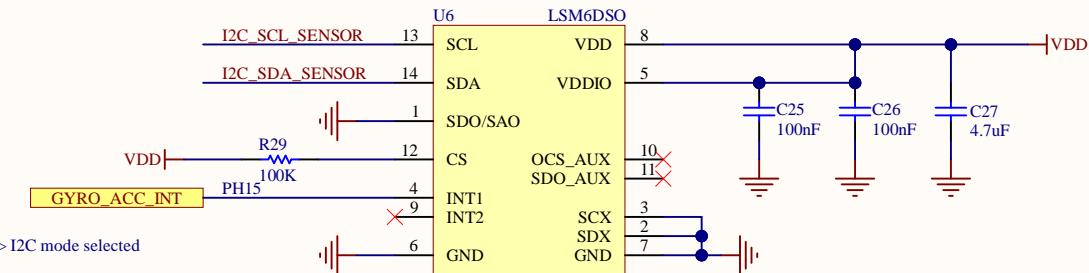
Default I2C Address: 0xA0: 0b:1010.000x

EXT_I2C



3D ACCELEROMETER and 3G GYROSCOPE SENSOR

Operating range: $1.71V < VCC < 3.6V$



Default I2C Address: Read 0xD5 / Write 0xD4

LIMITATIONS: See User Manual for more detail about muxing.

NO LIMITATION

Title: SENSOR & I2C PERIPHERALS

Project: STM32U575I-EV

Variant: U575AIQ

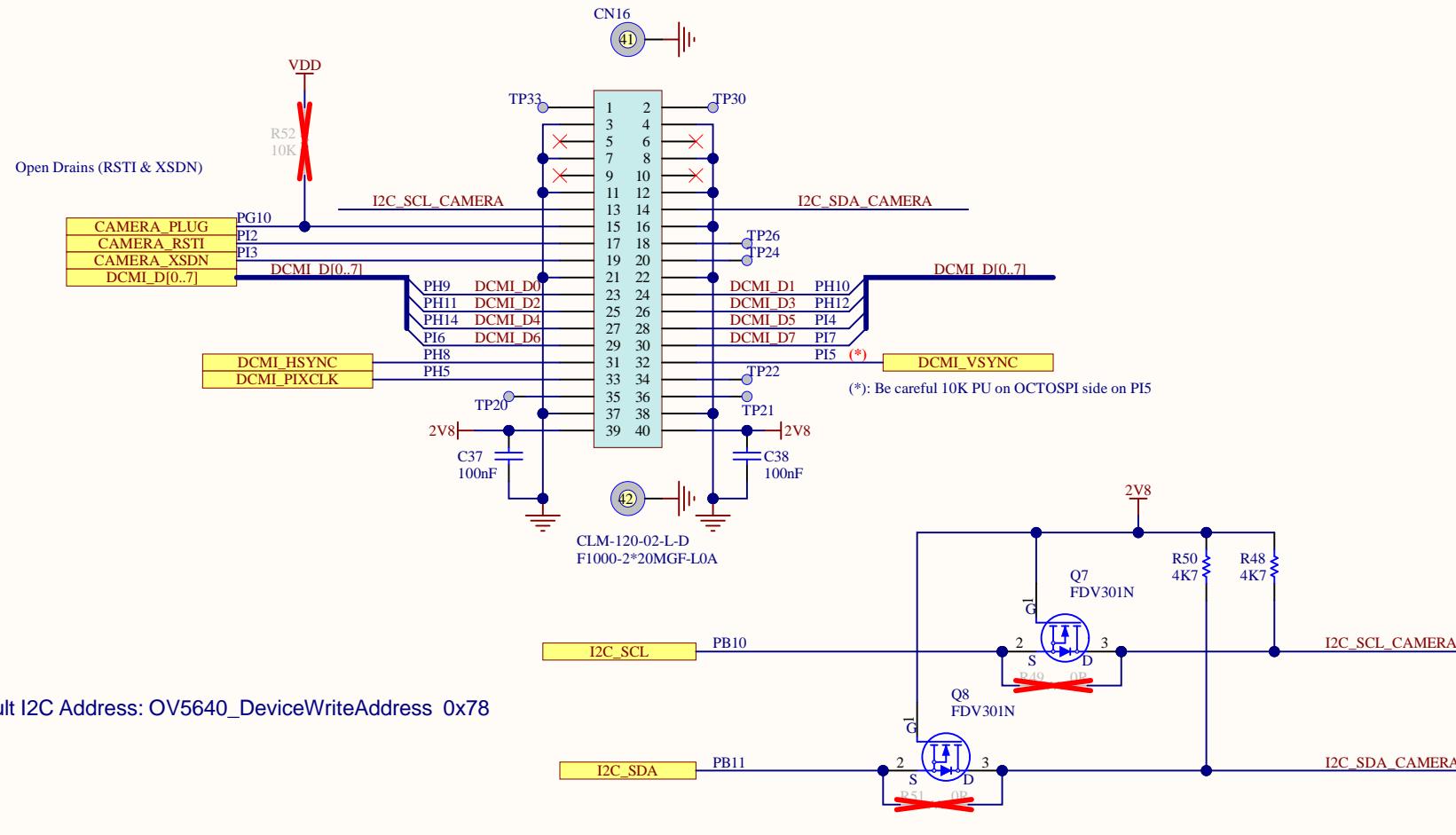
Revision: C-03

Size: A4 Date: 13 JULY 2023 Reference: MB1550



CAMERA MODULE CONNECTOR

Operating range: 2.8 < VDD < 3.6V

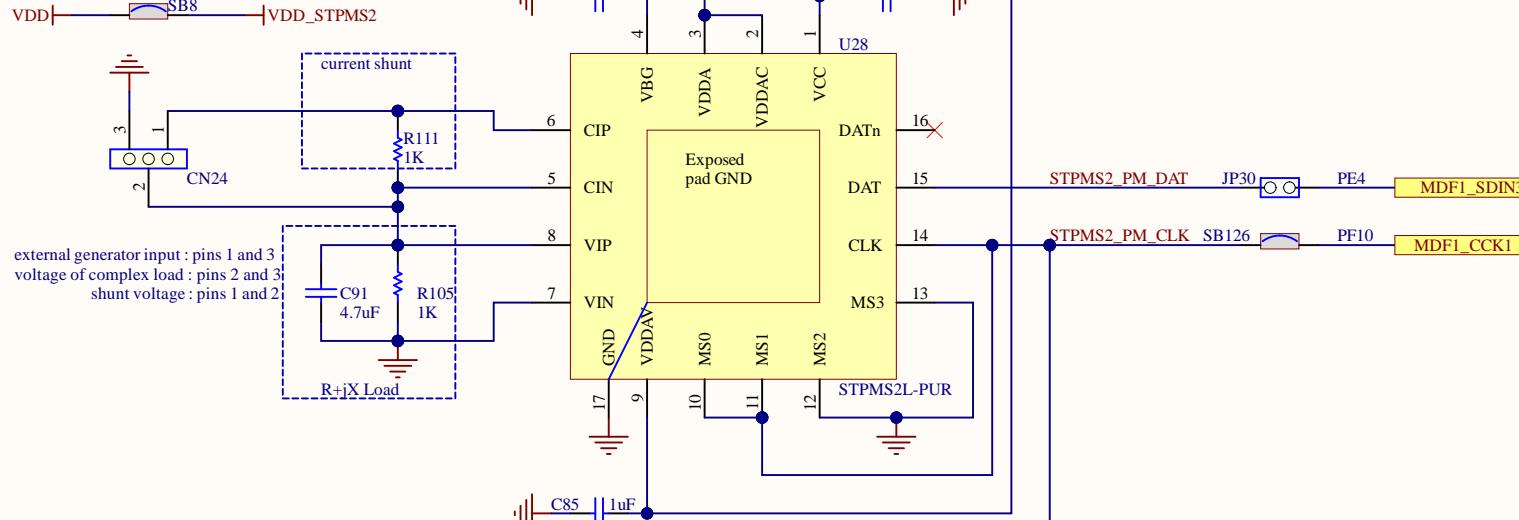


Title: CAMERA		
Project: STM32U575I-EV		
Variant: U575AIQ		
Revision: C-03		
Size: A4	Date: 13 JULY 2023	Reference: MB1550
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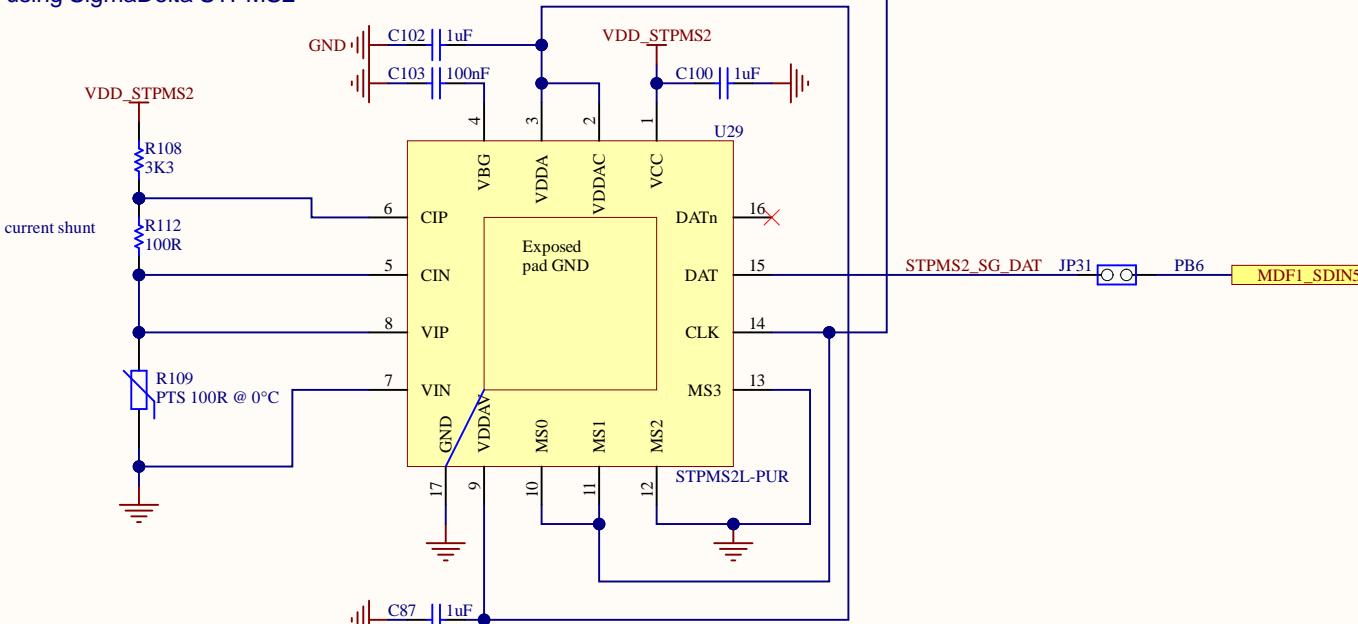


STPM2 power metering

Operating range: 3.2<VDD<5.2V



Measurement using SigmaDelta STPM2



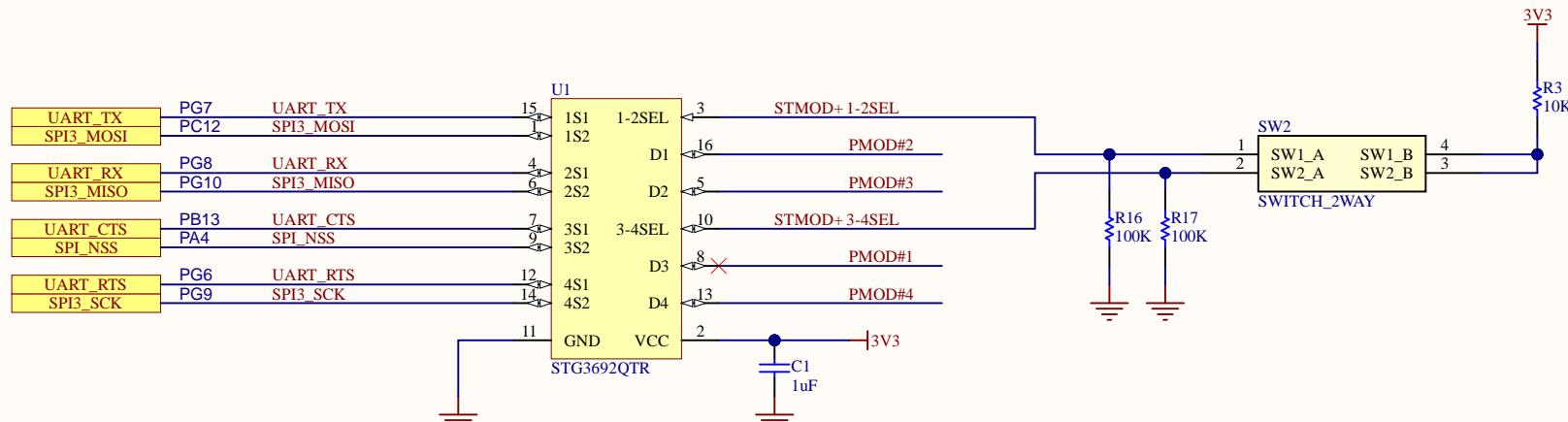
LIMITATIONS: See User Manual for more detail about muxing.

MDF1_SDIN3 shared between EXT-MEMS, STPM2, STMOD+
MDF1_CCK1 shared between EXT-MEMS, STPM2, STMOD+
MDF1_CCK1 exclusive with MC
MDF1_SDIN5 shared between EXT-MEMS, STPM2, STMOD+

Title: STPM2	
Project: STM32U575I-EV	
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PMOD / STMOD+ SWITCH

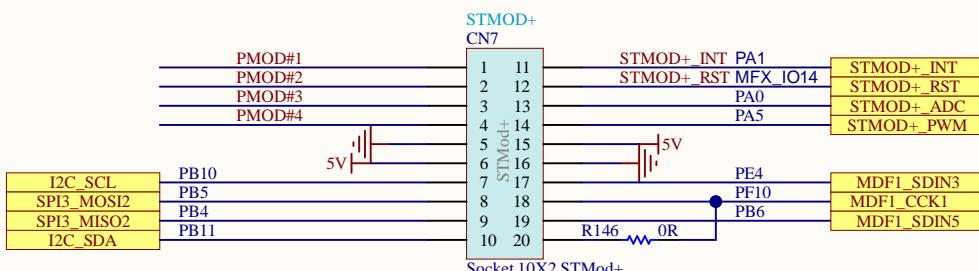


SEL = 1 : Dx connected to xS1
SEL = 0 : Dx connected to xS2

	SPI	SPI/UART	UART (*)
STMOD+ 1-2SEL	0	1	1 (*)
STMOD+ 3-4SEL	0	0	1 (*)
PMOD#1	NSS	NSS	CTS
PMOD#2	MOSIp	TX	TX
PMOD#3	MISOp	RX	RX
PMOD#4	SCLK	SCLK	RTS

(*) default configuration to support MikroBus using STMOD+ MB1280 fan-out board

STMOD+



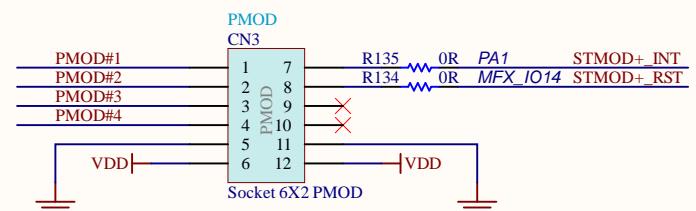
LIMITATIONS : See User Manual for more detail about muxing.

SPI exclusive with VBUS_SENSE, ADC/DAC, TRACE, SDMMC and MC
UART exclusive with TOUCH-KEY, RS232 interface and UCPD

SPI3-MOSI2 exclusive with COMP2 and UCPD
SPI3-MISO2 exclusive with int-MEMS, JTAG and COMP

INT shared between STMOD+ and PMOD
INT exclusive with TAMPER and MC
RST shared between STMOD+ and PMOD
STMOD+_ADC exclusive with OPAMP and MC
STMOD+_PWM exclusive with VBUS_SENSE
MDF1_CCK1 shared between EXT-MEMS, STPM2, STMOD+
MDF1_CCK1 exclusive with MC
MDF1_SDIN3 shared between EXT-MEMS, STPM2, STMOD+
MDF1_SDIN5 shared between EXT-MEMS, STPM2, STMOD+
MDF1_SDIN5 exclusive with MC

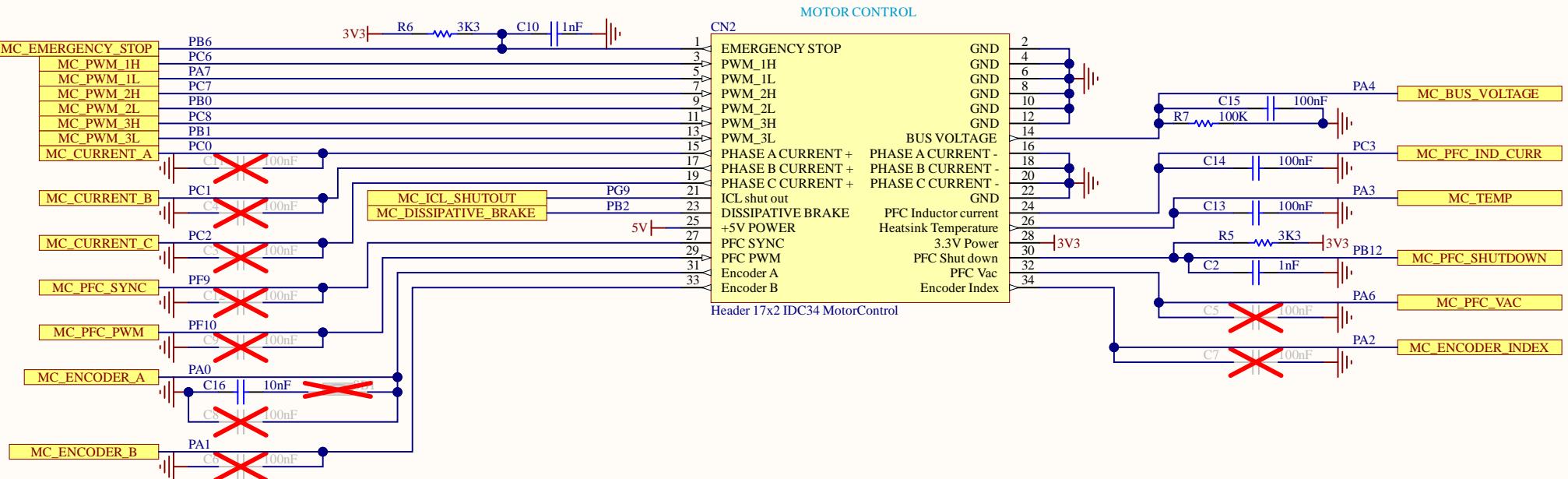
PMOD



LIMITATIONS : See User Manual for more detail about muxing.

RST shared between STMOD+ and PMOD
INT shared between STMOD+ and PMOD
PMOD/STMOD+ INT exclusive with TAMPER and MC
SPI exclusive with VBUS_SENSE, ADC/DAC, TRACE, SDMMC and MC
PMOD/STMOD+ UART exclusive with TOUCH-KEY, RS232 interface and UCPD

MOTOR CONTROL



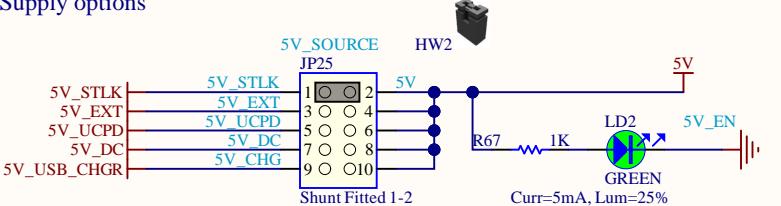
LIMITATIONS: See User Manual for more detail about muxing.

MotorControl exclusive with many functions.
See UM for MC IO configuration

Title: MOTOR CONTROL	
Project: STM32U575I-EV	
Variant: U575AIQ	
Revision: C-03	
Size: A4	Date: 13 JULY 2023
Reference: MB1550	Sheet: 20 of 24

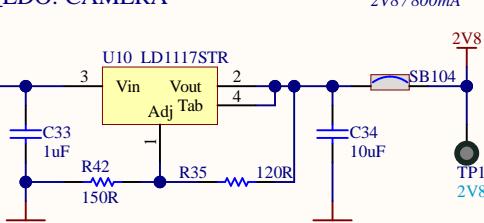


5V Power Supply options

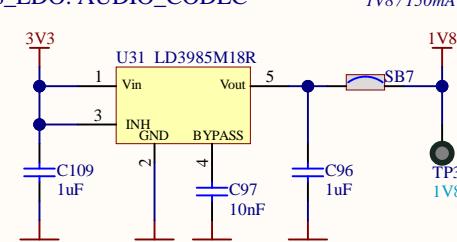


MAX CURRENT 500mA WHEN USING POWER INPUT 5V_STLK

2V8_LDO: CAMERA

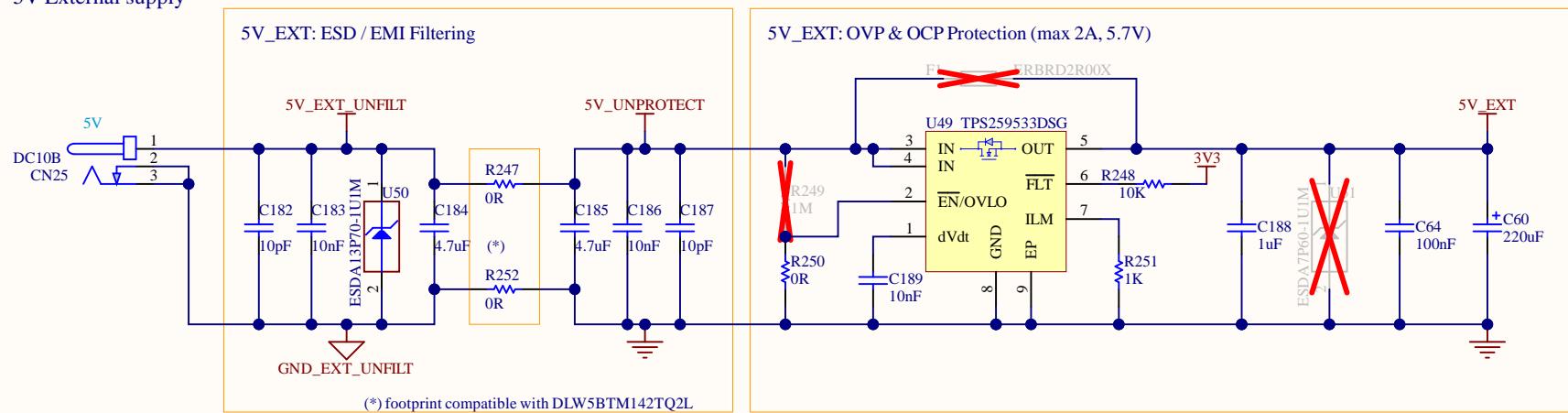


1V8_LDO: AUDIO_CODEC

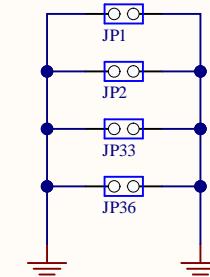


IV8 / 150mA

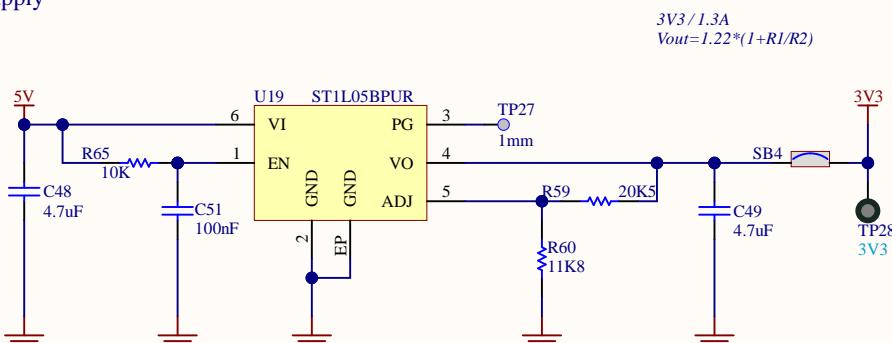
5V External supply



GND TEST POINT

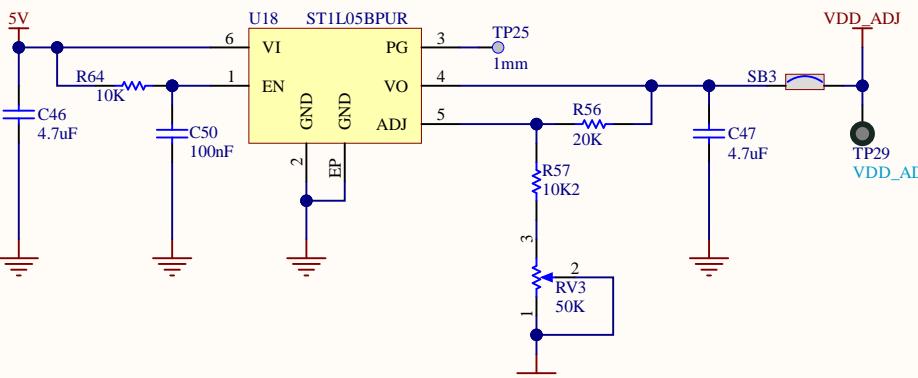


3V3 Supply



3V3 / 1.3A
 $V_{out} = 1.22 * (I + R1/R2)$

VDD_ADJ Supply



VDD_ADJ [1.7V to 3.61V] / 1.3A
 $V_{out} = 1.22 * (I + R1/R2)$

Title: BOARD PWR

Project: STM32U575I-EV

Variant: U575AIQ

Revision: C-03

Reference: MB1550

Size: A4

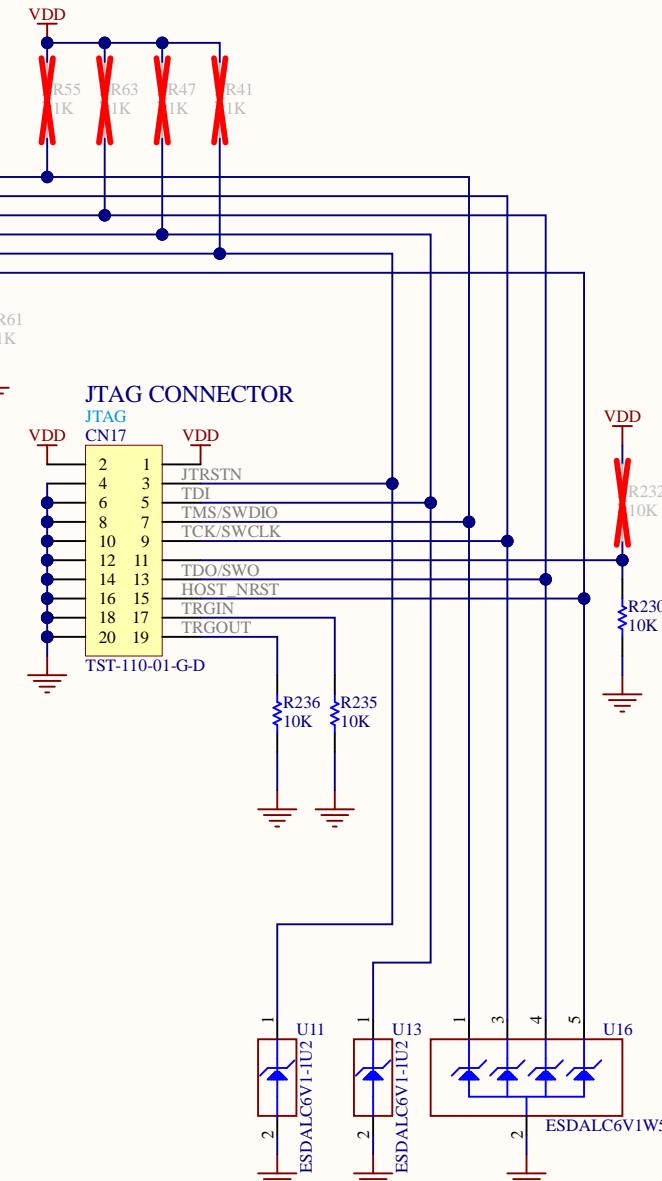
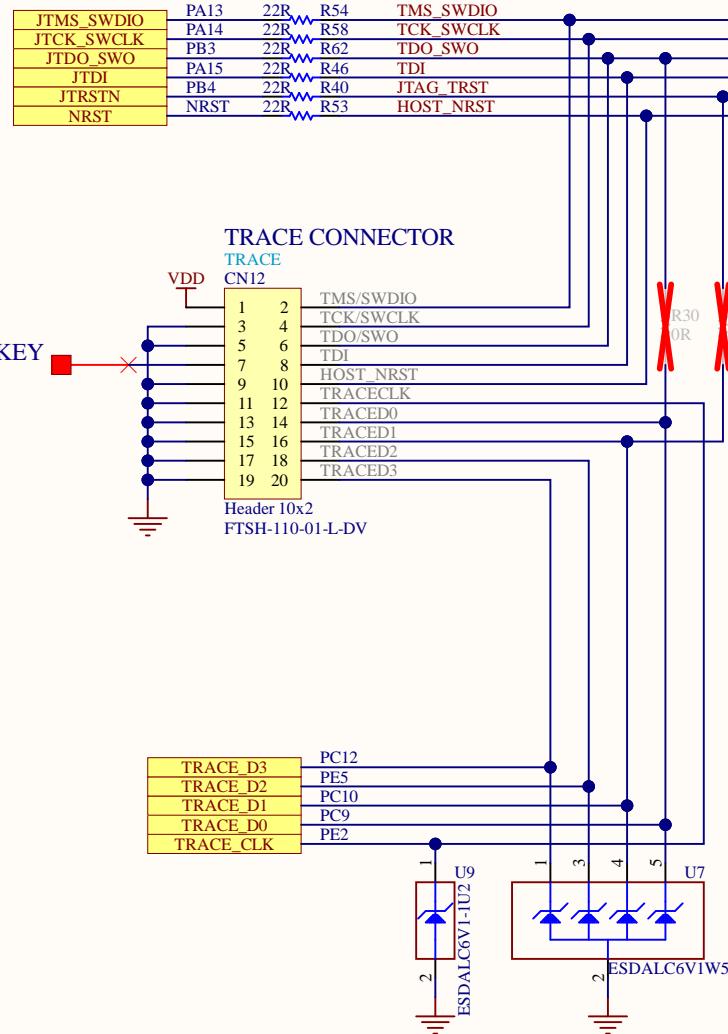
Date: 13 JULY 2023

Sheet: 21 of 24



JTAG & TRACE

To disconnect JTAG connectors from target :
 - Remove 22R resistors

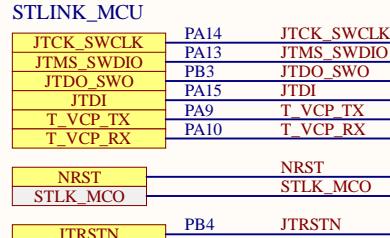


LIMITATIONS: See User Manual for more detail about muxing.

TRACE_D0/D1/D3 exclusive with SDIO_CK/D1/D2
 TRACE_D3 exclusive with STMOD+SPI
 JTAG_TDI exclusive with UCPD_CCI
 JTAG_JTDO exclusive with ADF1_CCK0
 JTAG_NJTRST exclusive with ADF1_SDINO, COMP2 and STMOD+SPI

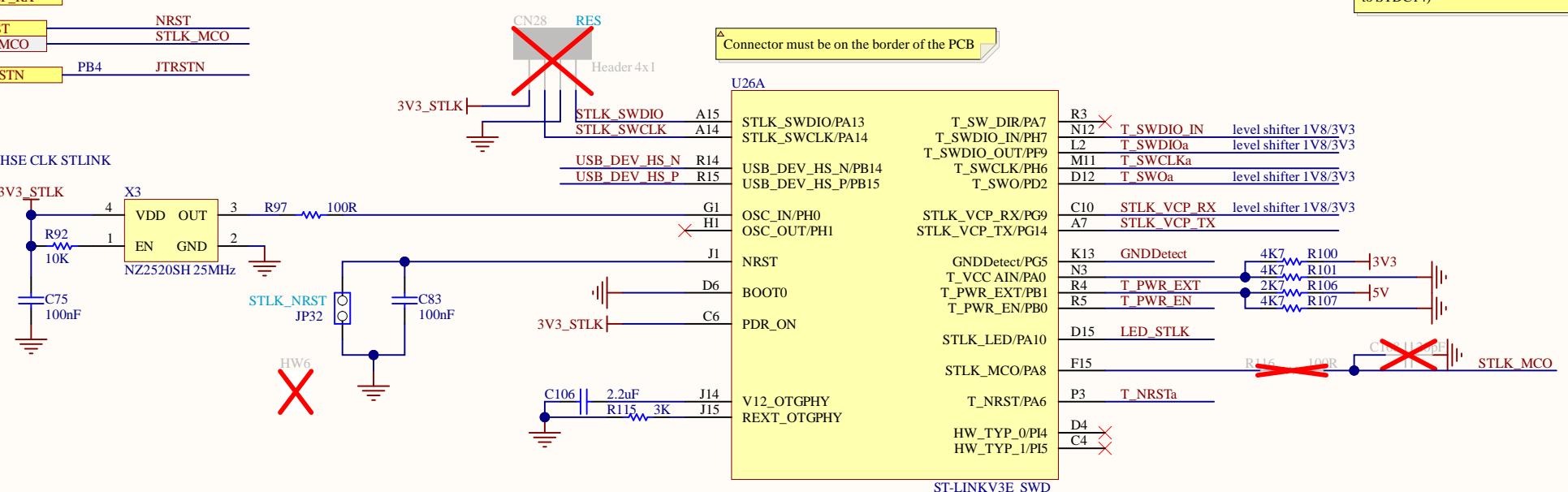
Title: JTAG & TRACE	
Project: STM32U575I-EV	
Variant: U575AIQ	
Revision: C-03	Reference: MB1550
Size: A4	Date: 13 JULY 2023
Sheet: 22 of 24	



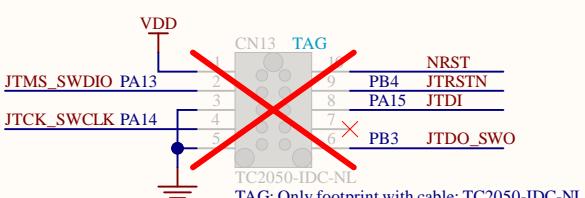


LIMITATION :

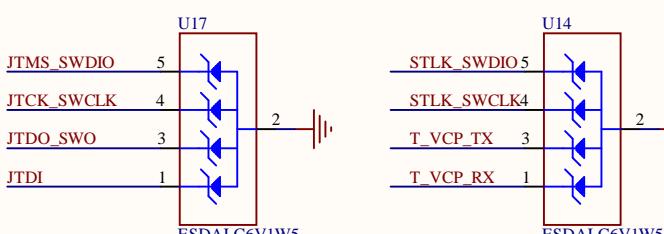
Some JTAG signals are multiplexed with UCPD: JTDO. In case JTDO is plugged, USB TYPE C connector should be disconnected. User need to check that multiplexed signals are not used on both features simultaneously.



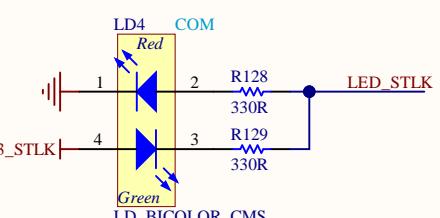
TAG CONNECTOR



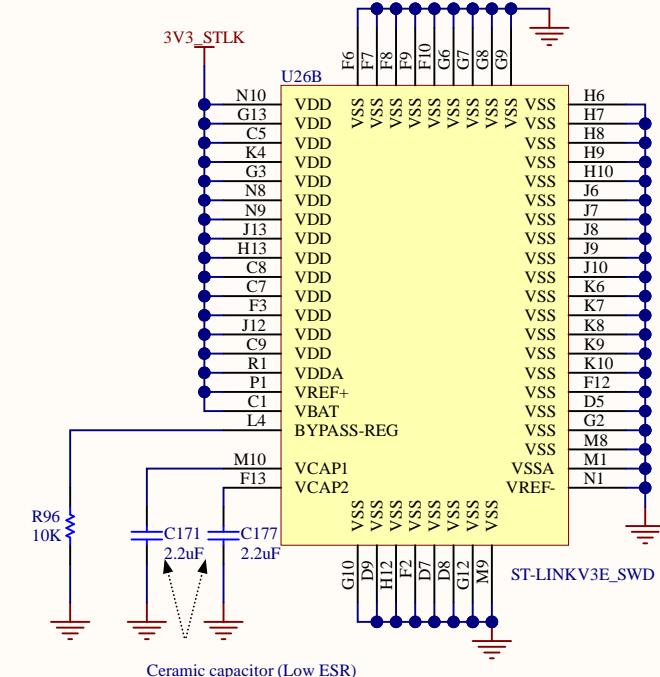
ESD PROTECTIONS



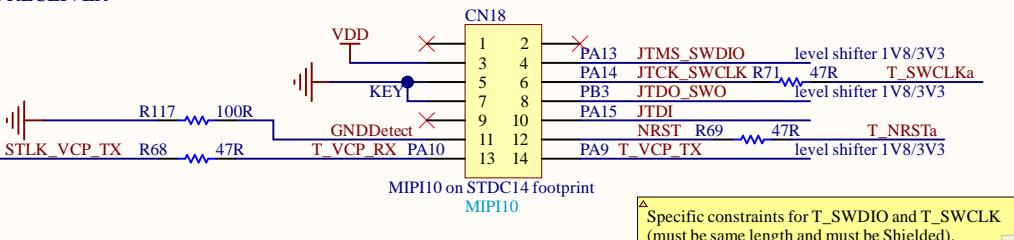
LED STLINK



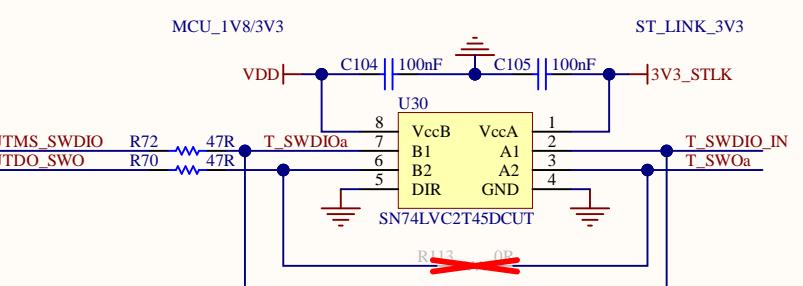
ST-LINK POWER



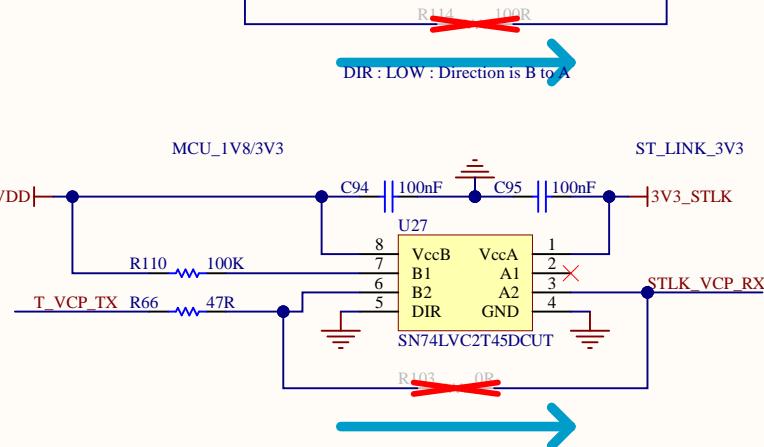
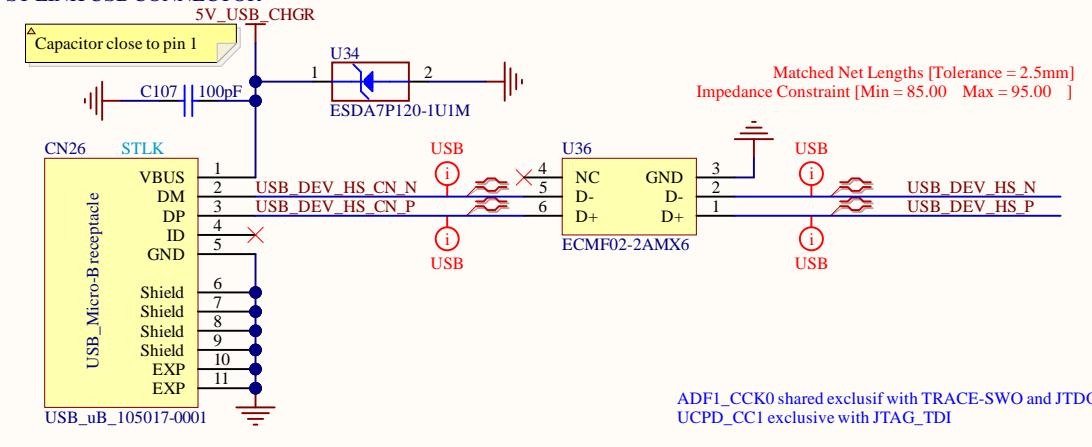
STDC14 RECEIVER



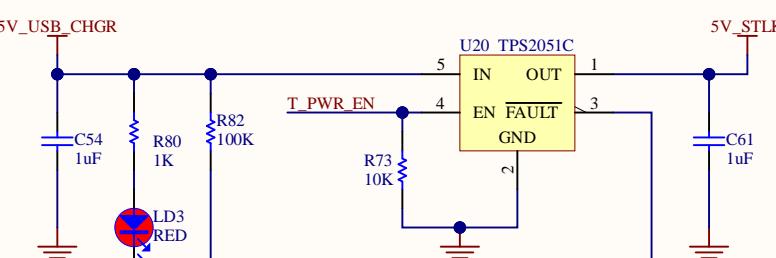
SW LEVEL SHIFTER FOR MCU_1V8



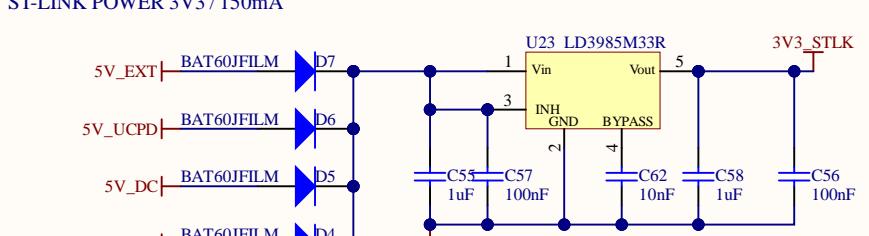
ST-LINK USB CONNECTOR



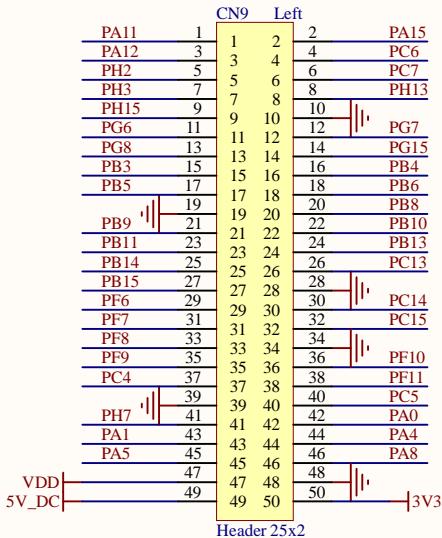
5V ST-LINK PROTECTION



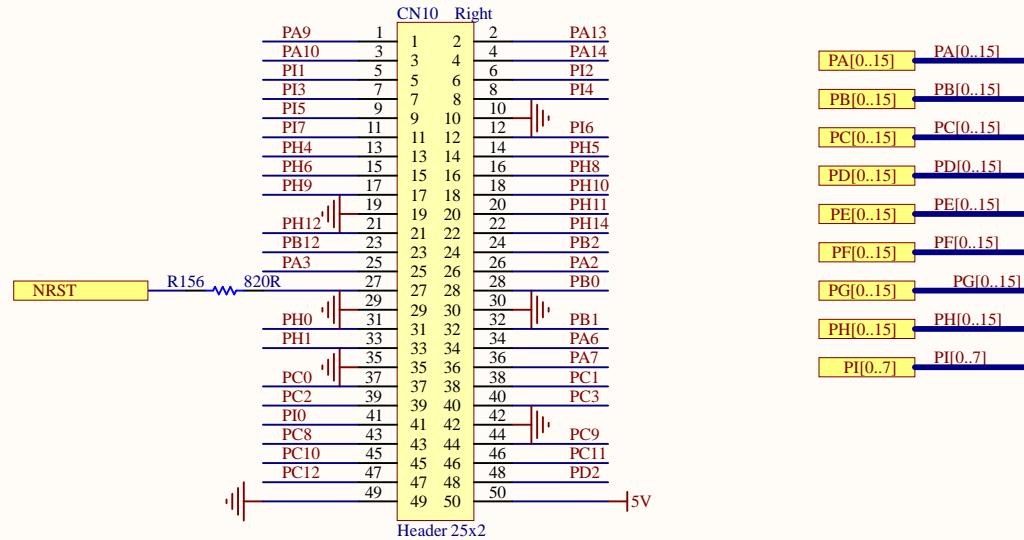
ST-LINK POWER 3V3 / 150mA



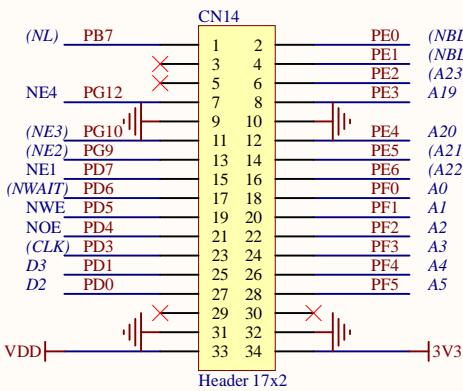
Placed close to MCU



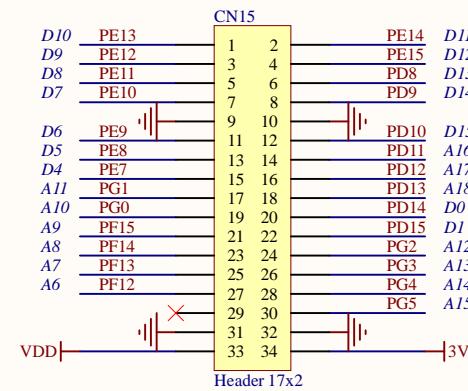
Placed close to MCU

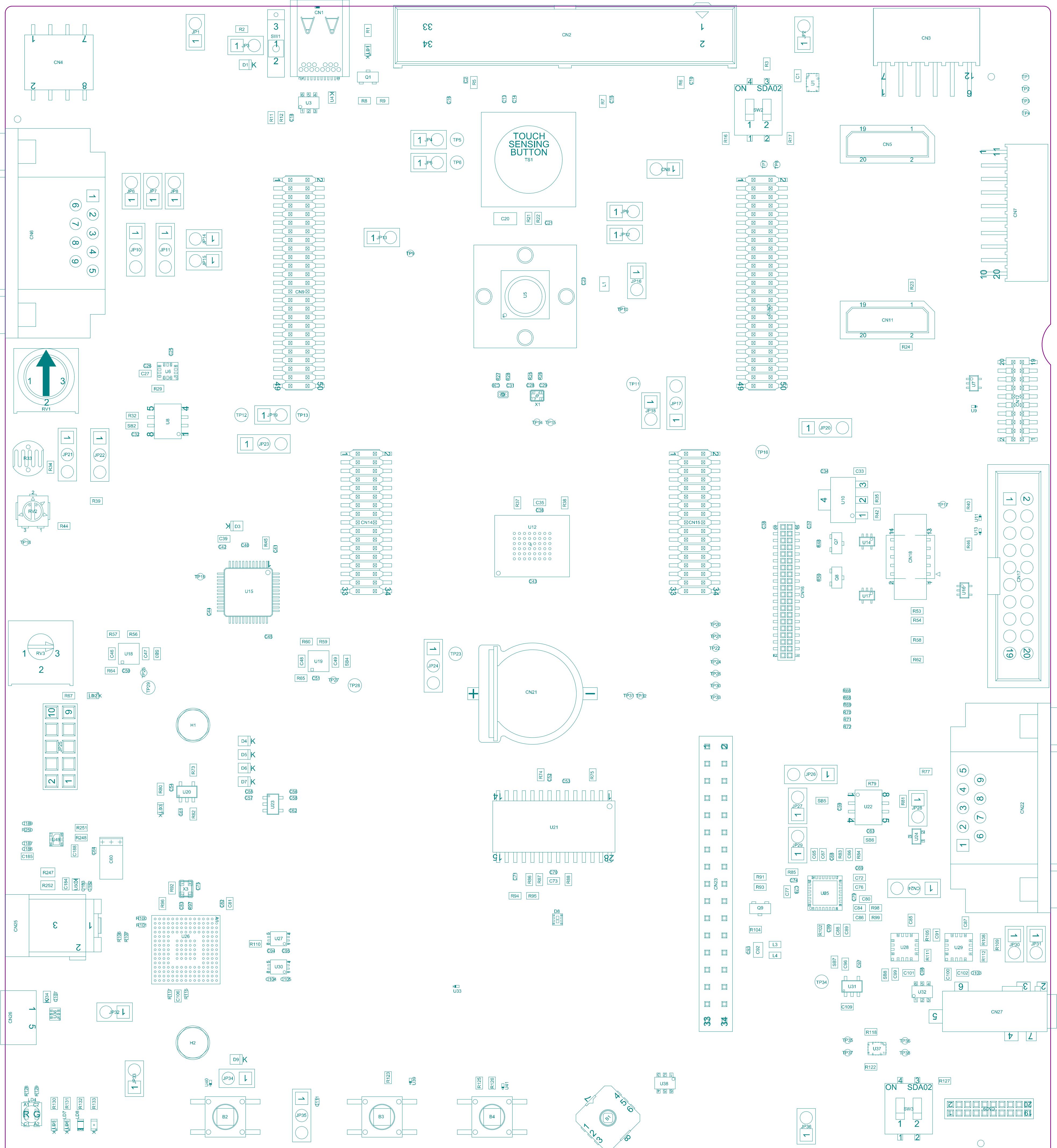


Placed close to memory



Placed close to memory





Project: STM32U575I-EV

Layer: M14-Top Assembly

Gerber: .GM14

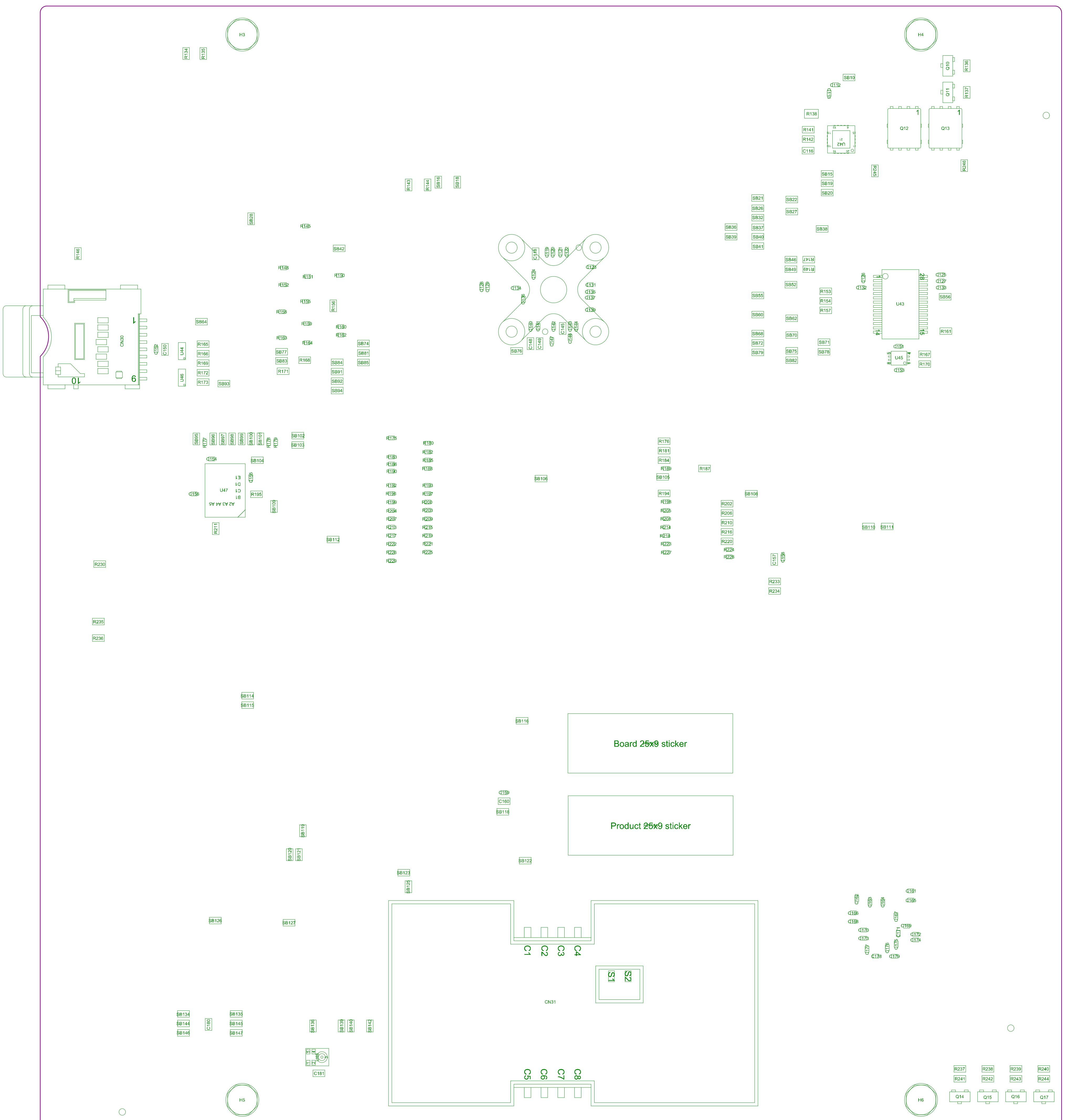
Variant: U575AIQ

Ref: MB1550

Date: 2020-NOV-13

Rev: C





Project: STM32U575I-EV

Layer: M15-Bottom Assembly

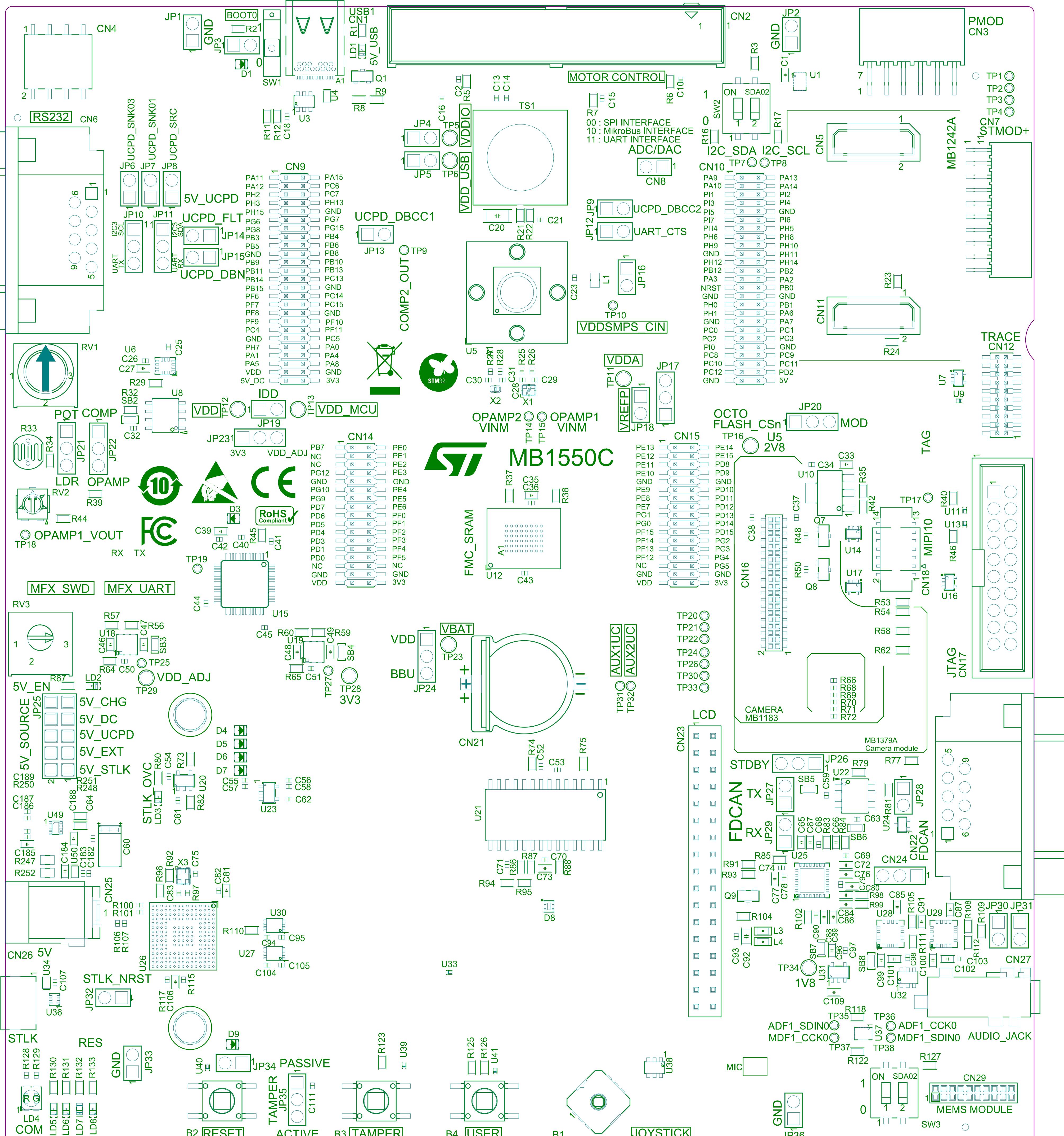
Gerber:.GM15

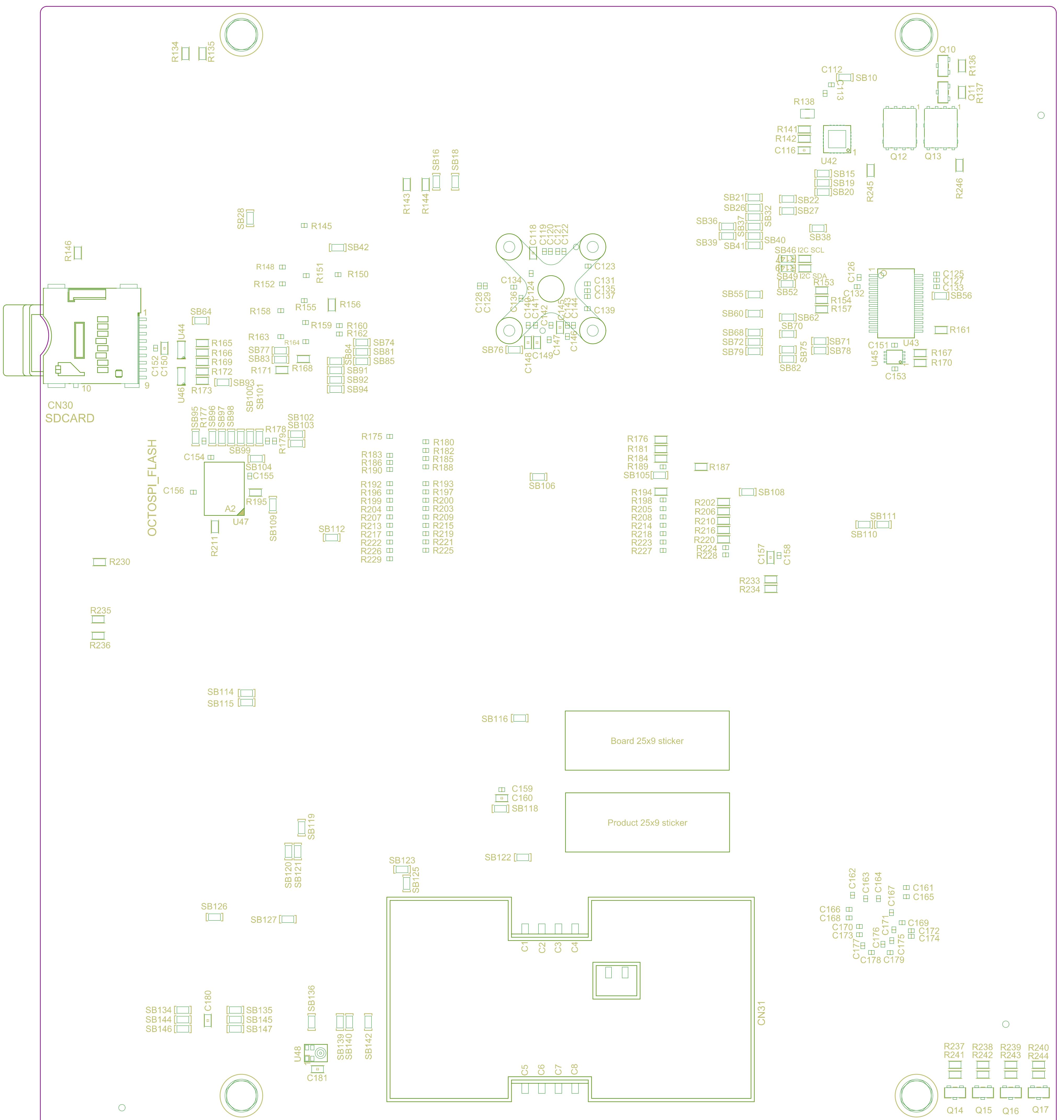
Variant: U575AIQ

Ref: MB1550

Date: 2020-NOV-13







M15-Bottom Assembly

.GM15