

# STM32L552E-EVAL

MB1372

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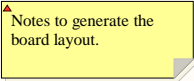
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## Legend

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

Text to be added to silkscreen.

Warning text.



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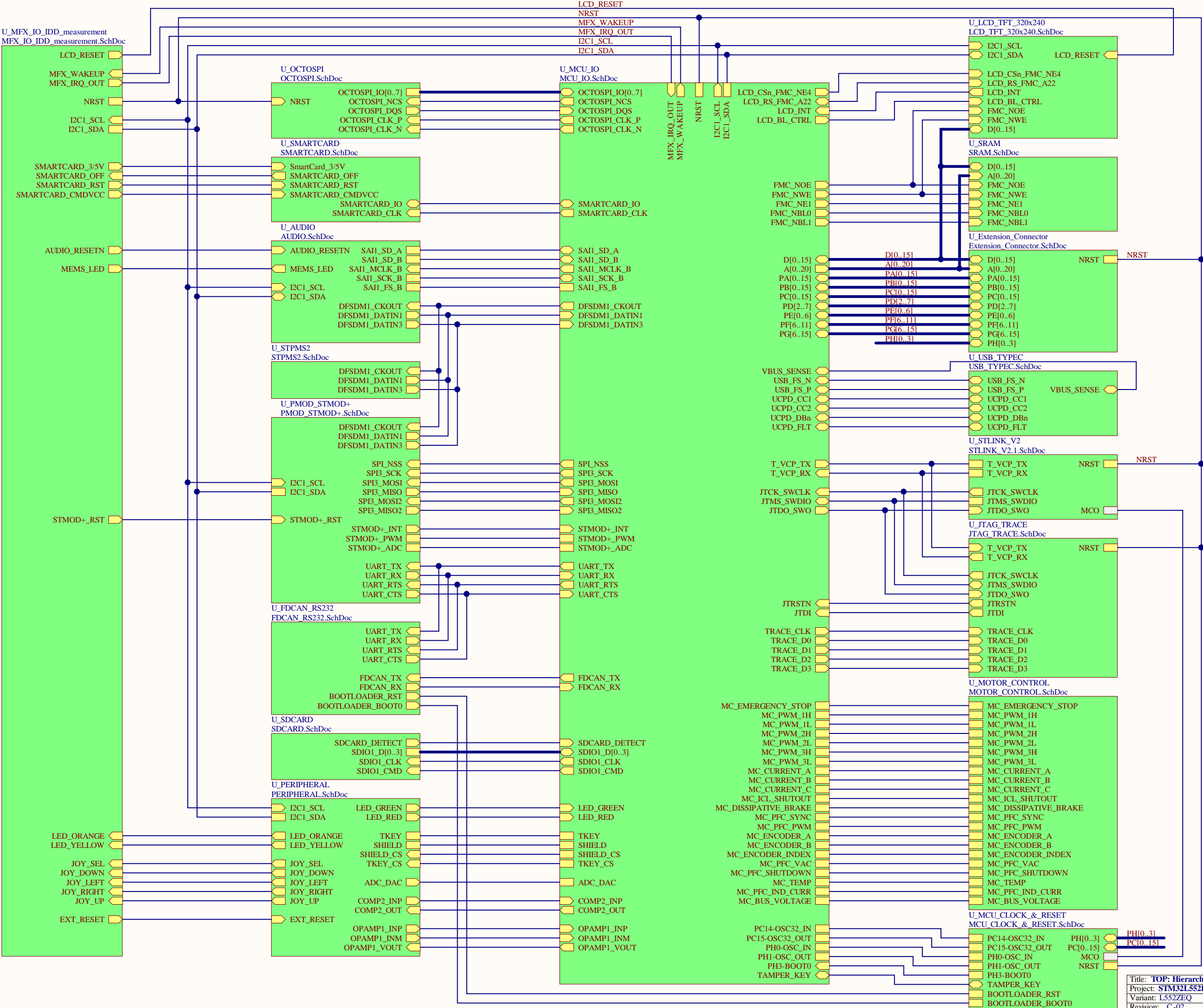
The complete Open Platform License Agreement can be found on [www.st.com/opla](http://www.st.com/opla).

U\_MB1372\_TOP  
MB1372\_TOP.SchDoc



Title: <b>Project overview</b>		
Project: <b>STM32L552E-EVAL</b>		
Variant: <b>L552ZEQ</b>		
Revision: <b>C-02</b>	Reference: <b>MB1372</b>	
Size: <b>A4</b>	Date: <b>27 MAY 2019</b>	Sheet: <b>1</b> of <b>23</b>

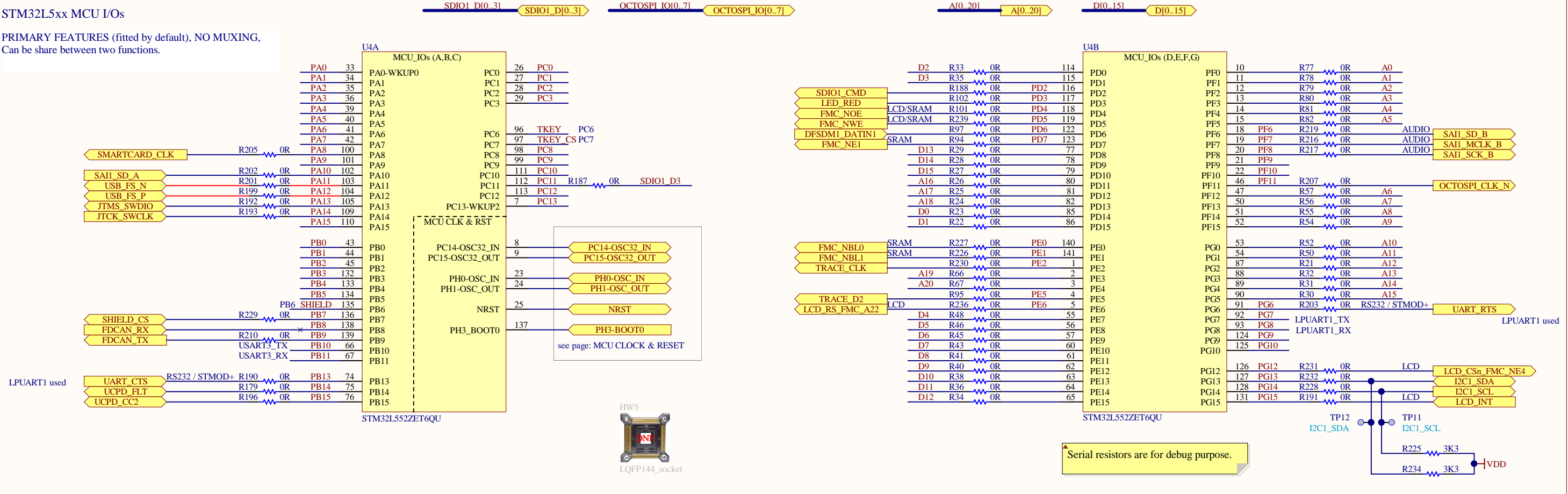






STM32L5xx MCU I/Os

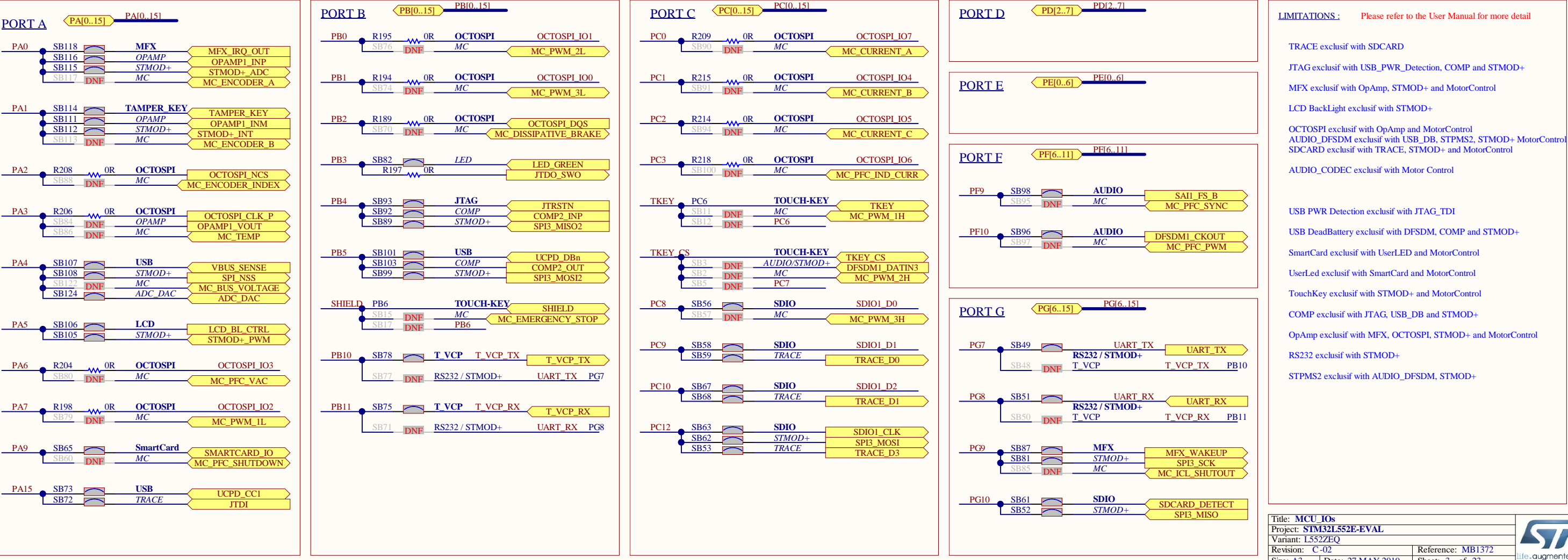
PRIMARY FEATURES (fitted by default), NO MUXING,  
Can be share between two functions.



IO PORT MUXING TABLE

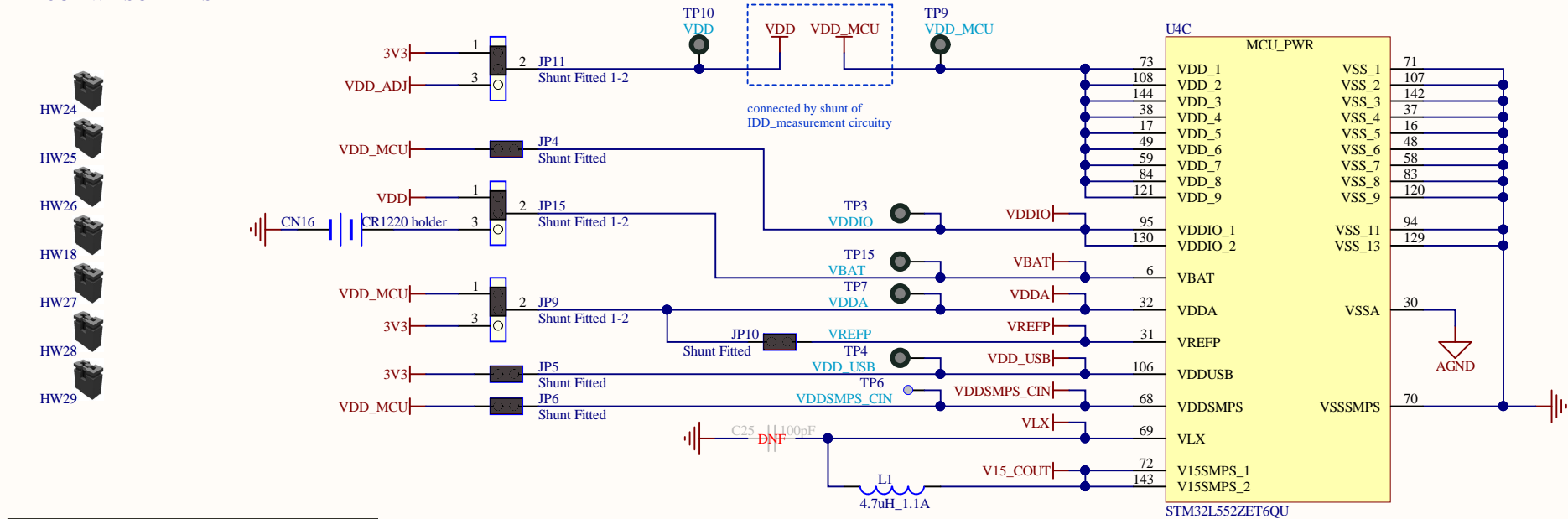
**BOLD: PRIMARY FEATURES** (exclusive use : SB fitted)

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

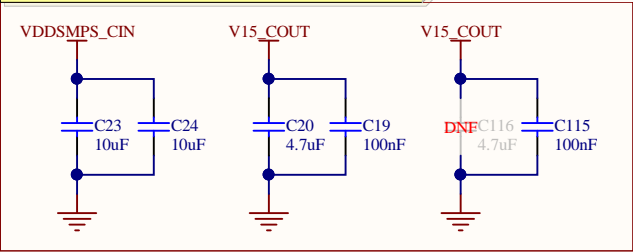




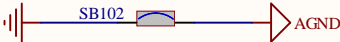
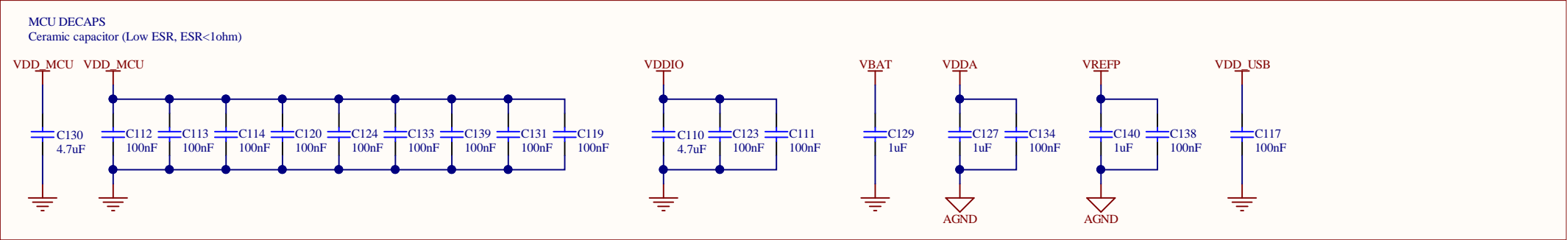
MCU PWR SUPPLIES



▲ "CIN" and "COUT" should be as closed as possible to the LQFP associated pad. COUT 10µF should be place near L1. Or 1 couple of capacitors per pad (4.7µF / 100nF)



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:  $1.65 < V_{DD} < 3.6V$**



one capacitor close to each MFX pins:  
VDD, VDD\_1, VDD\_2, VDD\_3

VDD\_MFX

C42 100nF

C46 100nF

C147 100nF

C47 100nF

C146 4.7uF

Diagram illustrating the pin connections for the MFX module:

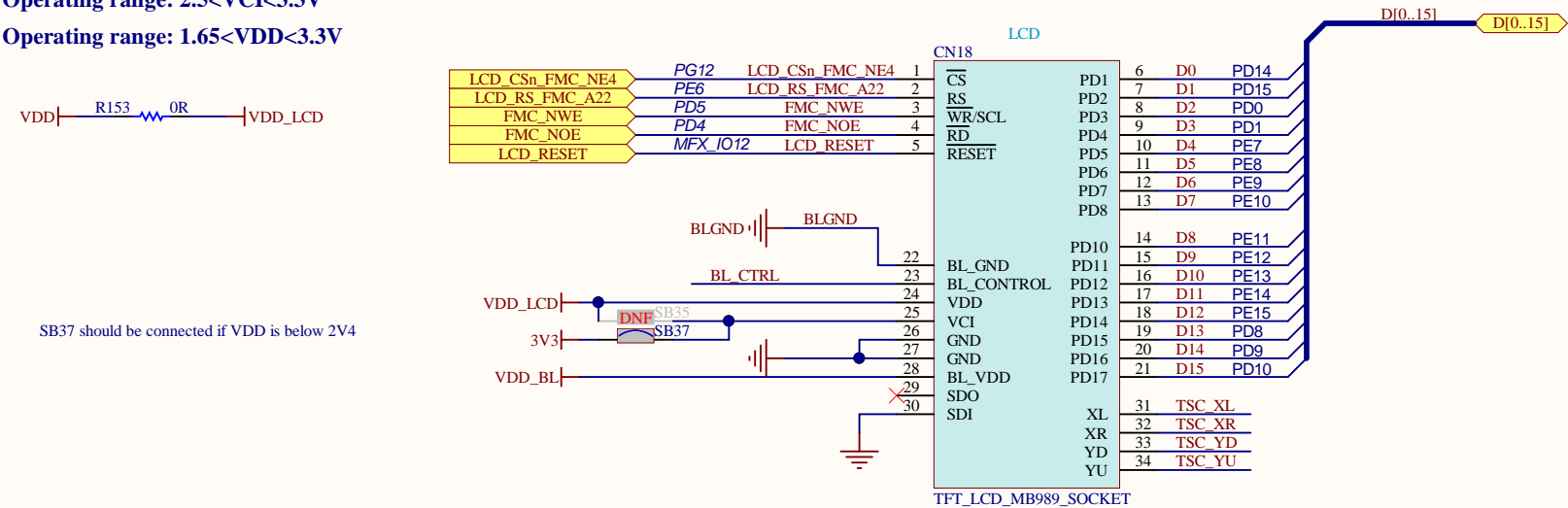
- MFX\_SWD** (CN13)
- VDD\_MFX**
- DNF**
- MFX\_SWCLK**
- MFX\_SWDIO**
- Header 4x1

MFX\_WAKEUP (prio1) exclusif with STMOD+ and MC (prio2)  
MFX\_IRQ\_OUT (prio1) exclusif with OpAmp, STMOD+ and MC (prio2)

TFT LCD SOCKET CONNECTOR

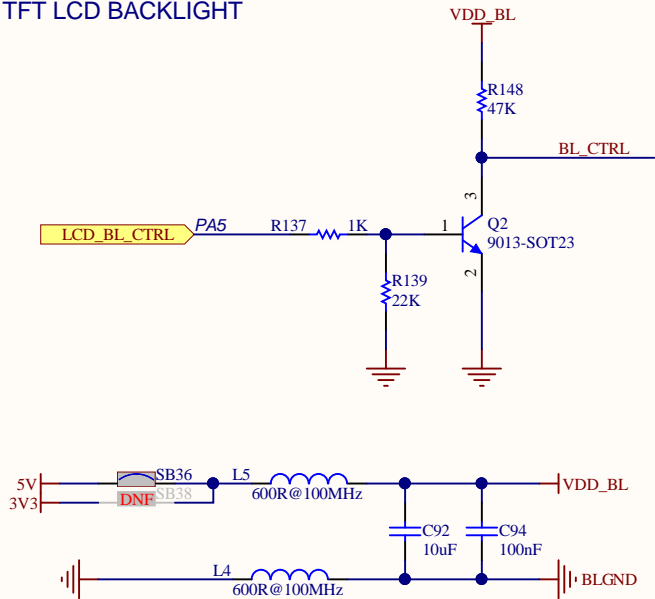
Operating range:  $2.5 < V_{CI} < 3.3V$

Operating range:  $1.65 < V_{DD} < 3.3V$



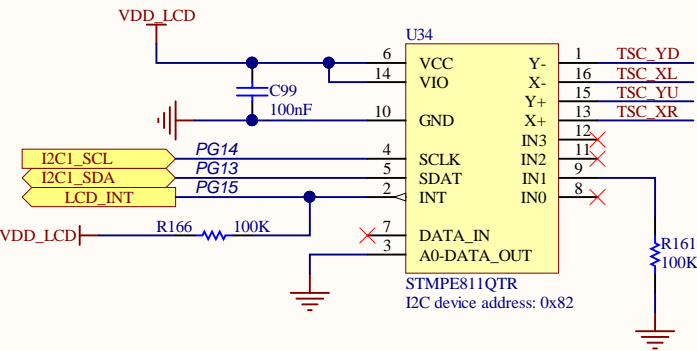
LCD DATA bus should be routed in 50 ohm +/- 15%

TFT LCD BACKLIGHT

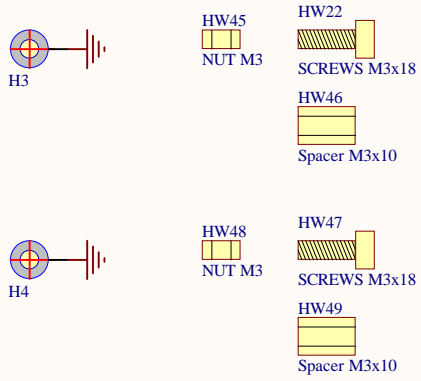


TOUCHSCREEN CONTROLLER

Operating range:  $1V65 < V_{CC} < 3V6$



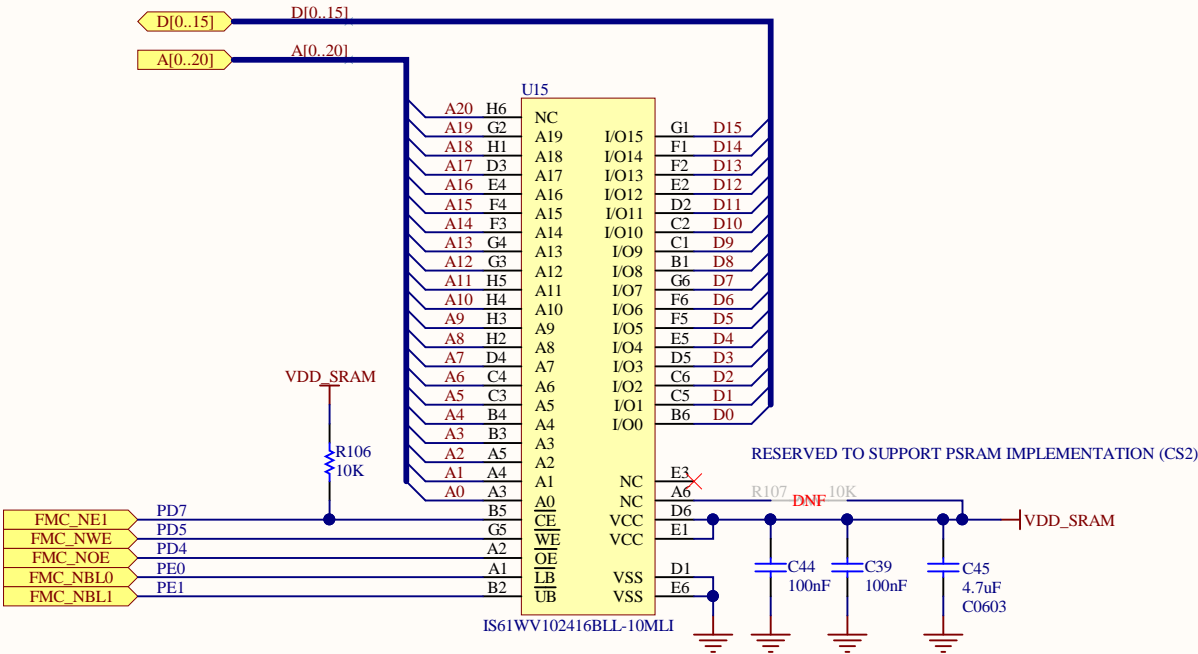
LCD MECHANICAL PARTS



LIMITATIONS : see IO muxing sheet and User Manual for more detail  
LCD\_BL\_CTRL (prio1) exclusiv with STMOD+ (prio2)

SRAM

Operating range: 2.4<VDD<3.6V

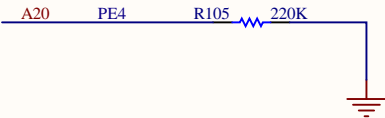


Other memory compatible:  
SRAM 512Kx16: IS61WV51216BLL-10MLI  
PSRAM 512Kx16: IS66WV51216EBLL-55BLI

Place CAPS close to SRAM PWR pin

Default config = A0-A19

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



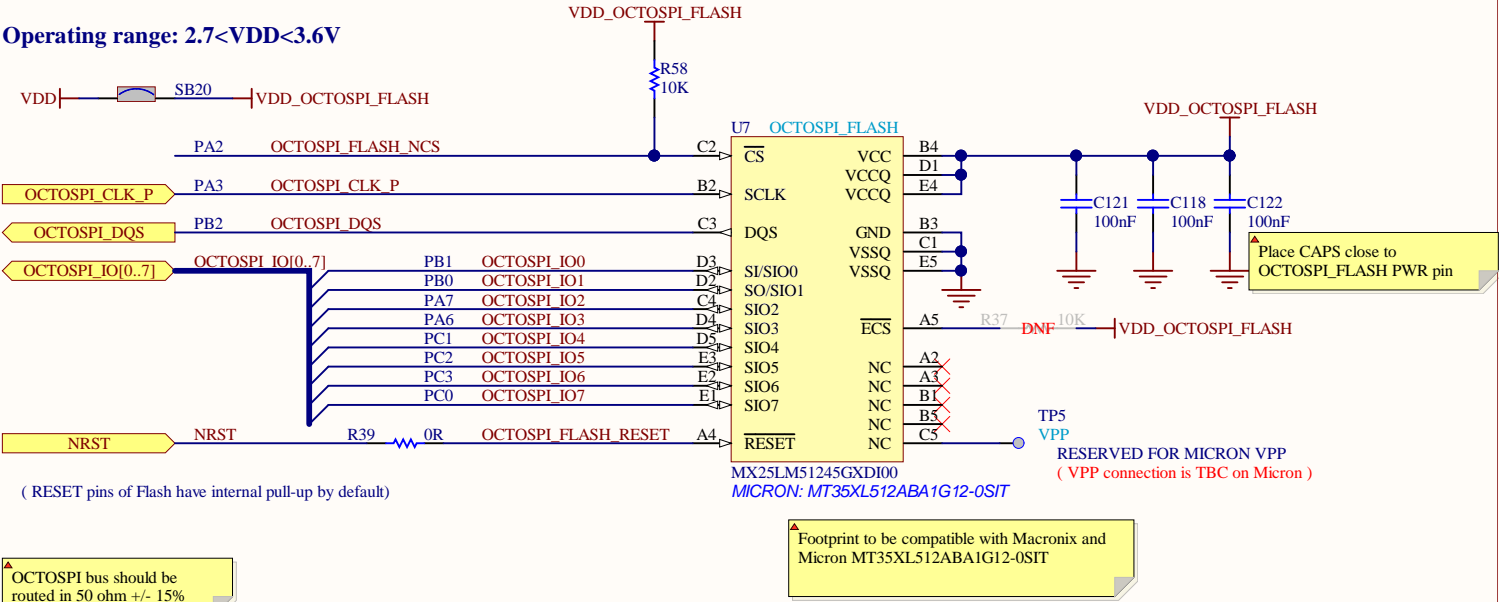
▲ SRAM bus should be routed in 50 ohm +/- 15%

**LIMITATIONS :** see IO muxing sheet and User Manual for more detail

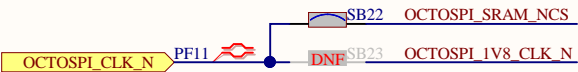
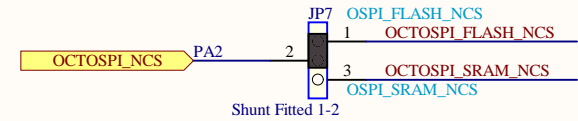
Memory size limited to max 32Mbits by design

OCTOSPI FLASH

Operating range: 2.7<VDD<3.6V



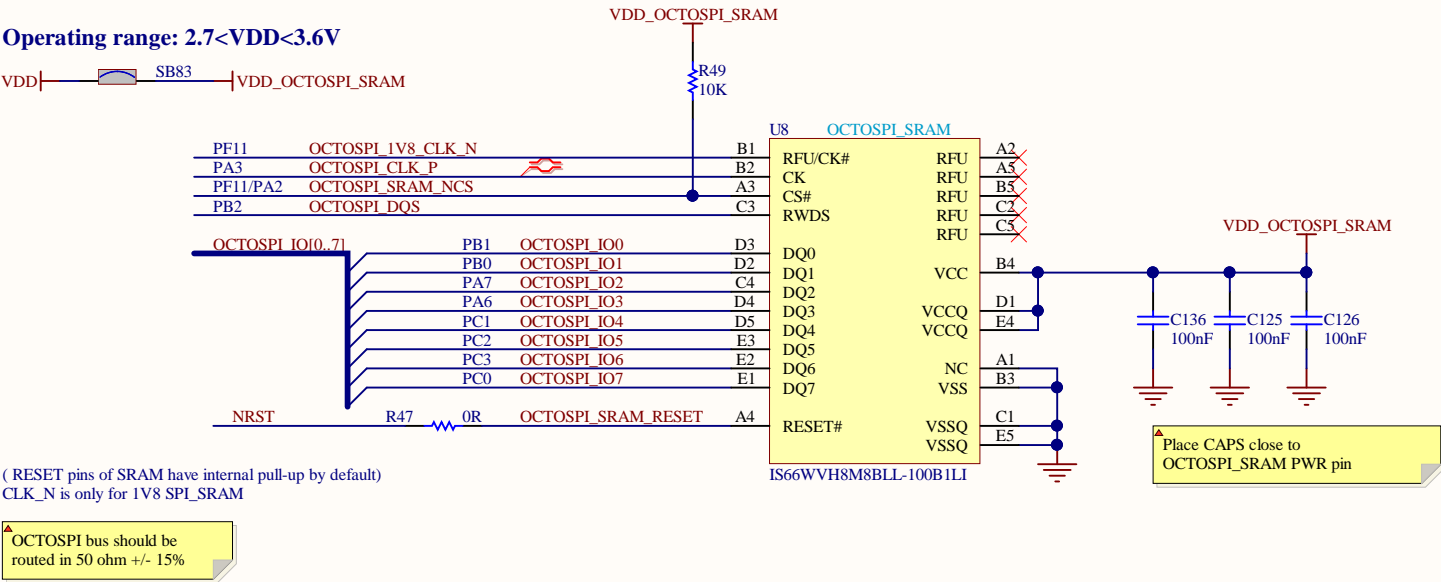
OCTOSPI NCS SELECTION



CK# is for 1V8 package only.  
CK# can be used as IO for CS as optional to used SRAM in // of FLASH  
IF JP7 is set in [2-3] SB22 SHOULD be NOT FITTED

OCTOSPI SRAM

Operating range: 2.7<VDD<3.6V



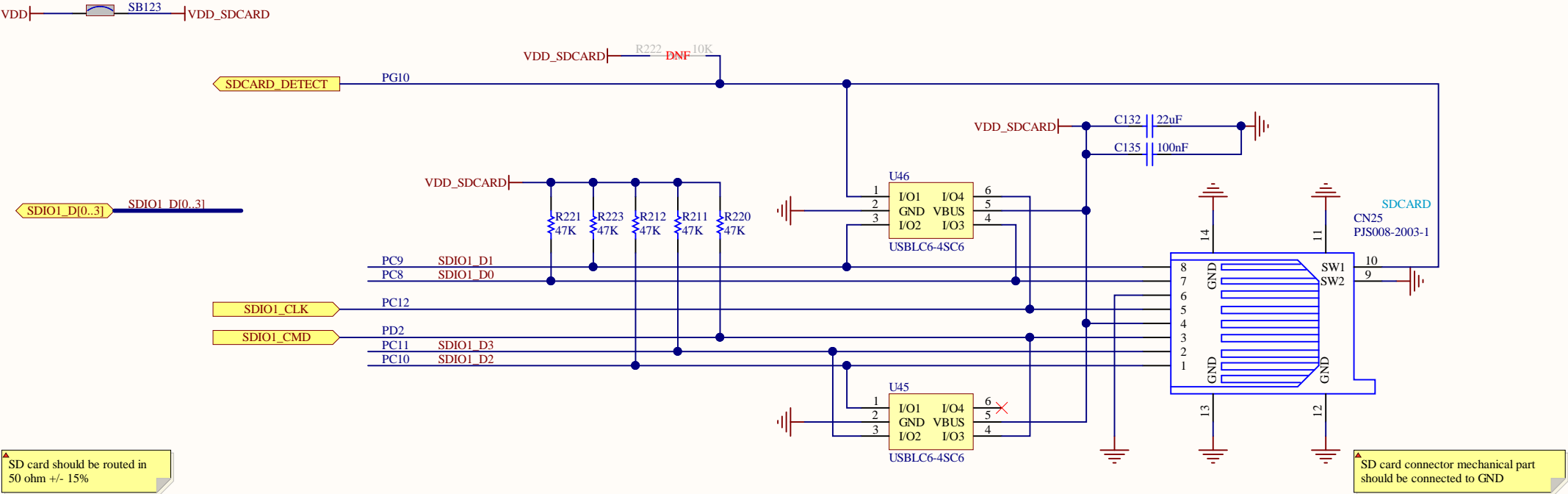
LIMITATIONS : see IO muxing sheet and User Manual for more detail

All OCTOSPI IO shared with MC.  
OCTOSPI (prio1) exclusif with MC (prio2)  
OCTOSPI\_CLK (prio1) exclusif with OpAmp (prio2)





SD CARD  
Operating range: 2.7<VDD<3.6V



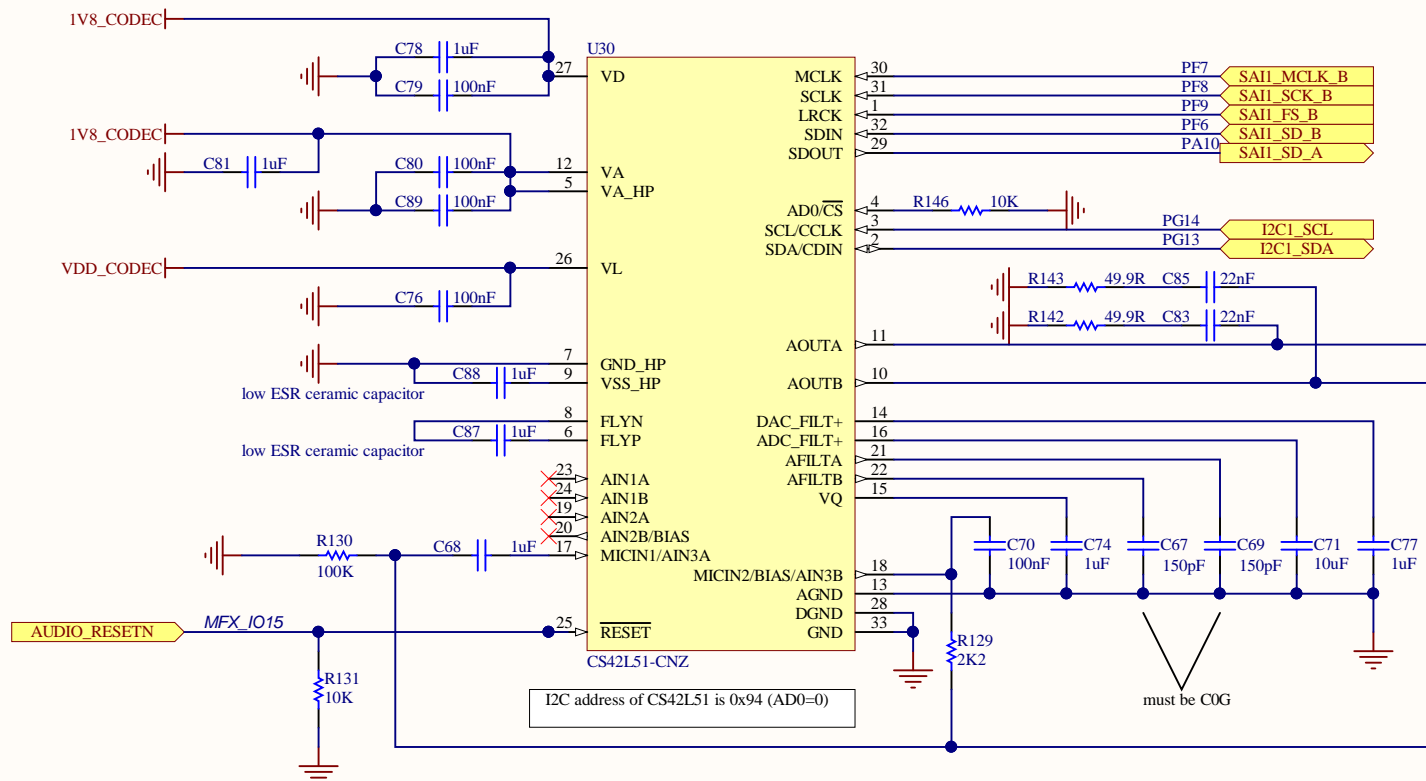
**LIMITATIONS :** see IO muxing sheet and User Manual for more detail

SDIO\_CLK/D1/D2 (prio1) exclusif with TRACE\_D0/D1/D3 (prio2)

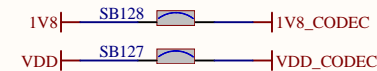
SDIO\_D0 (prio1) exclusif with MC (prio2)

SDIO\_CLK and SD\_CARD\_DETECT (prio1) exclusif with STMOD+ (prio2)

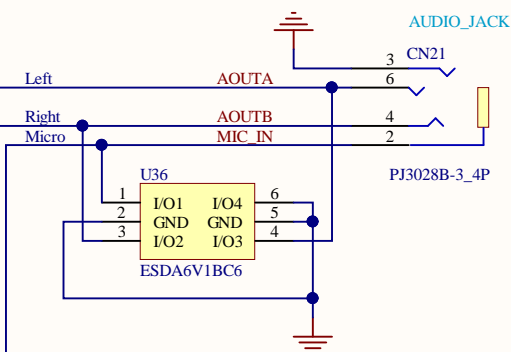
## AUDIO CODEC



**Operating range:  $1.65 < V_L < 3.47V$**   
**Operating range:  $1.65 < V_A/V_D < 2.63V$**



AUDIO STEREO OUTPUT  
with microphone input

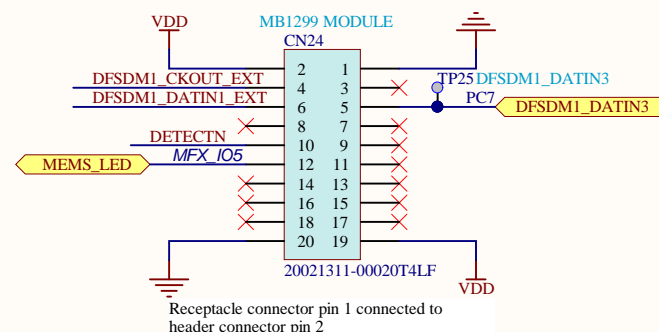
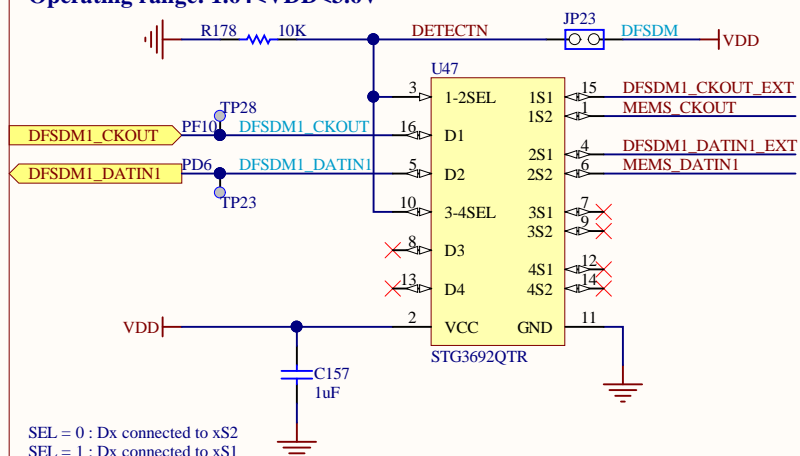


LIMITATIONS: see IO muxing sheet and User Manual for more detail

SAI\_FS\_B (prio1) exclusif with MotorControl (prio2)

## Extension microphones module

**Operating range:  $1.64 < V_{DD} < 3.6V$**

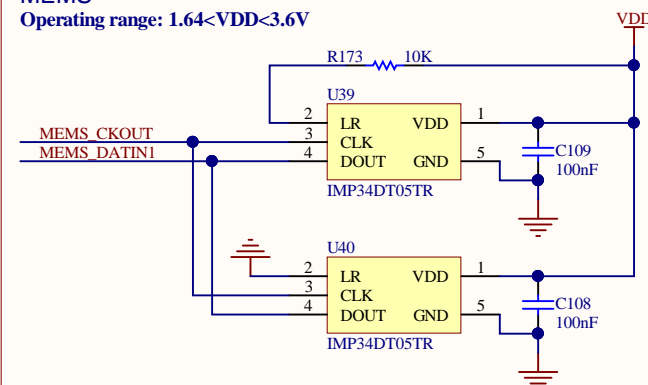


**LIMITATIONS:** see IO muxing sheet and User Manual for more detail

DFSDM1\_CKOUT shared between MEMS, ext MEMS, STPMS2, STMOD+  
 DFSDM1\_CKOUT (pio1) exclusif with MC (prio2)  
 DFSDM1\_DATIN1 (prio1) shared between MEMS, STPMS2 and STMOD+

## MEMS

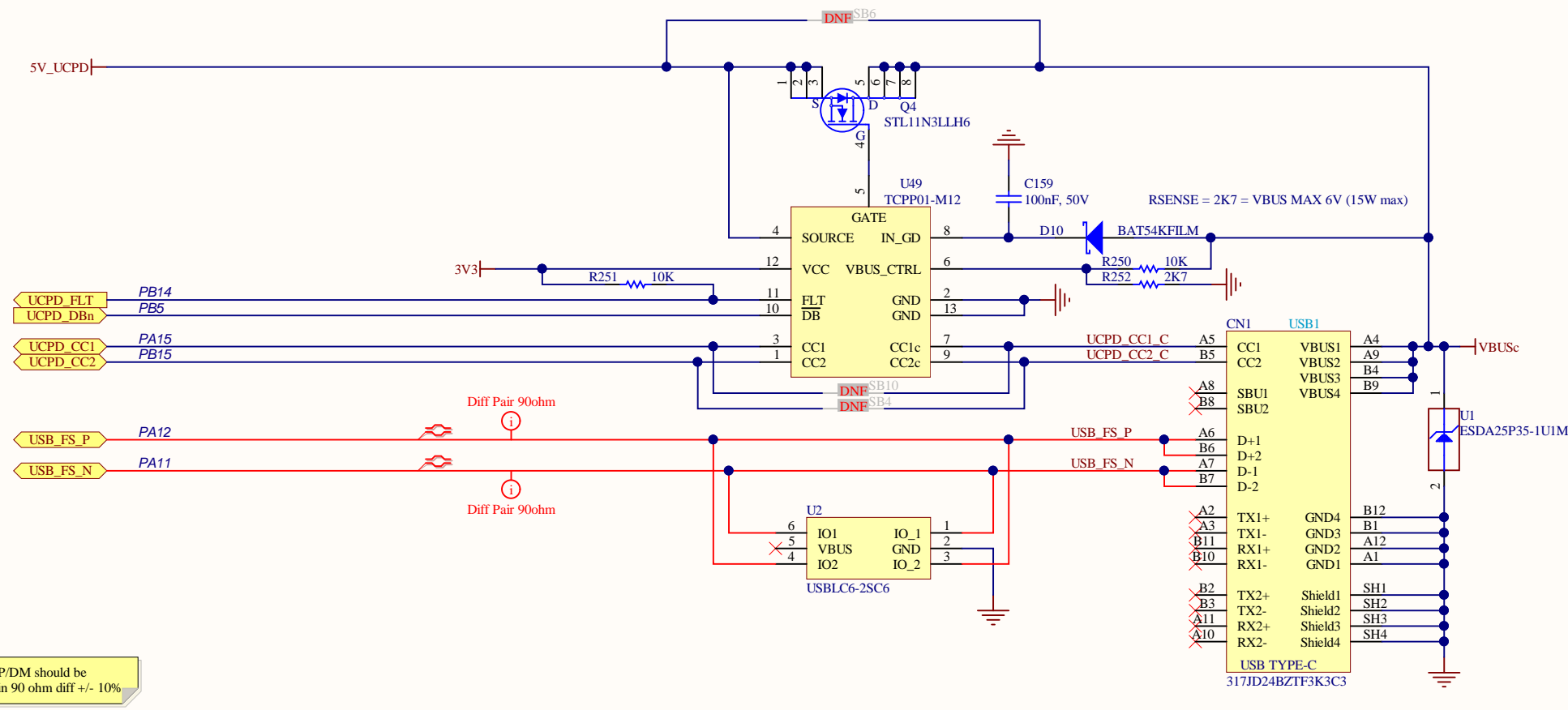
**Operating range:  $1.64 < V_{DD} < 3.6V$**



Title: <b>AUDIO</b>		
Project: <b>STM32L552E-EVAL</b>		
Variant: <b>L552ZEQ</b>		
Revision: <b>C-02</b>		Reference: <b>MB1372</b>
Size: <b>A4</b>	Date: <b>27 MAY 2019</b>	Sheet: <b>11 of 23</b>

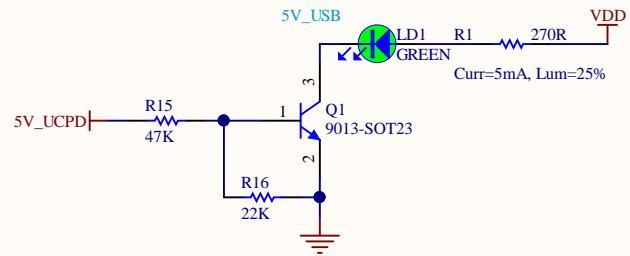


USB\_TYPE\_C

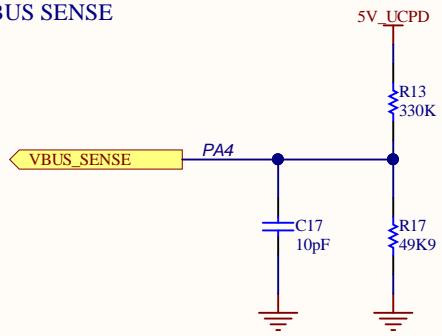


USB DP/DM should be routed in 90 ohm diff +/- 10%

5V\_USB\_LED



VBUS SENSE



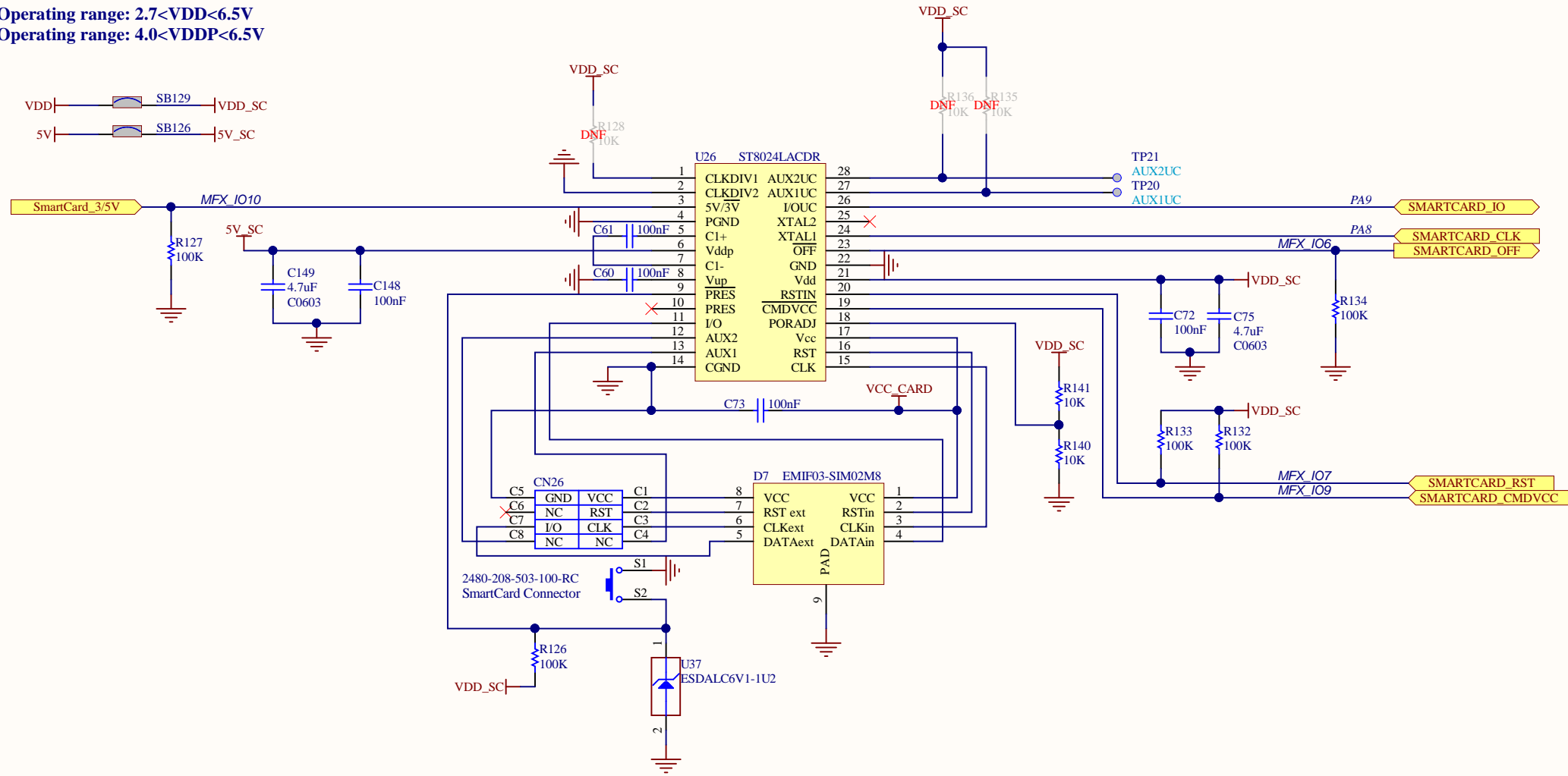
LIMITATIONS : see IO muxing sheet and User Manual for more detail

USB\_CC1 (prio1) exclusif with JTAG\_TDI (prio2)  
USB\_DBN (prio1) exclusif with COMP and STMOD+ (prio2)



SmartCard

Operating range: 2.7<VDD<6.5V  
Operating range: 4.0<VDDP<6.5V



**LIMITATIONS :** see IO muxing sheet and User Manual for more detail

SmartCard\_CLK (prio2) exclusif with UserLED Red (prio1)  
SmartCard\_TX (prio2) exclusif with UserLED Green (prio1) and MC (prio2)

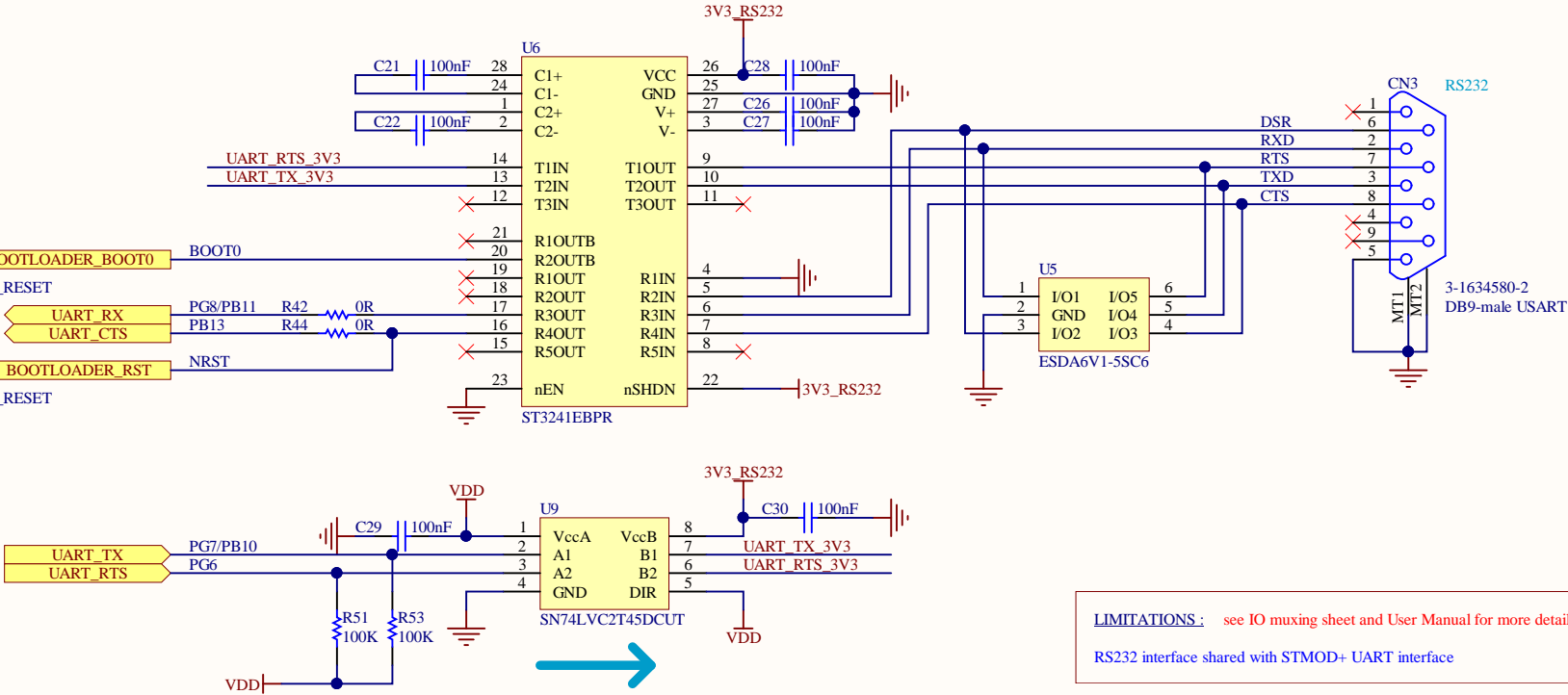
RS232 (USART1)

Operating range: 3V<VCC<5.5V

RS232 interface can be:  
UART3 2wires RX/TX supported UART Bootloader  
LPUART1 4wires RX/TX/RTS/CTS without UART Bootloader

Page: MCU\_CLOCK\_&\_RESET

Page: MCU\_CLOCK\_&\_RESET



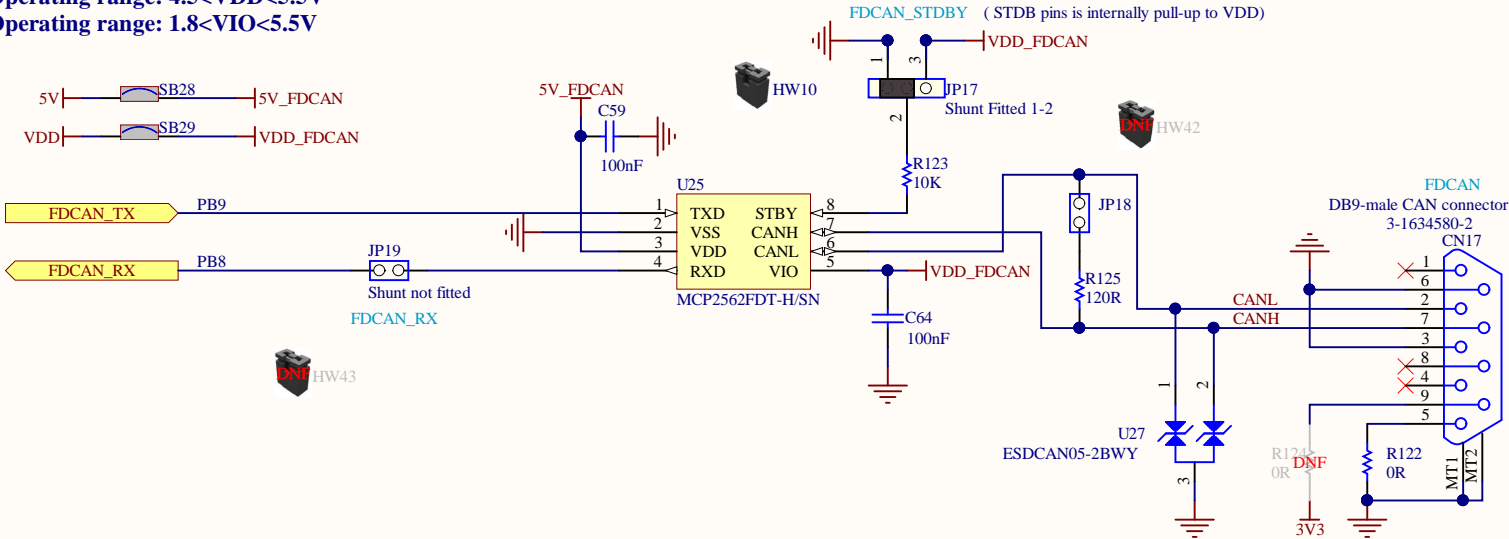
**LIMITATIONS:** see IO muxing sheet and User Manual for more detail

RS232 interface shared with STMOD+ UART interface

CAN FD

Operating range: 4.5<VDD<5.5V

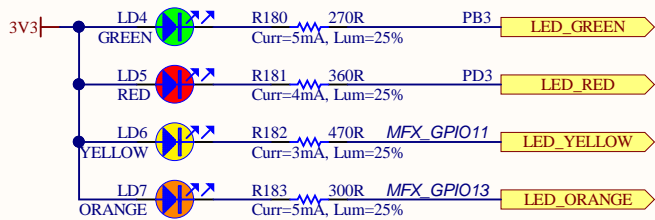
Operating range: 1.8<VIO<5.5V



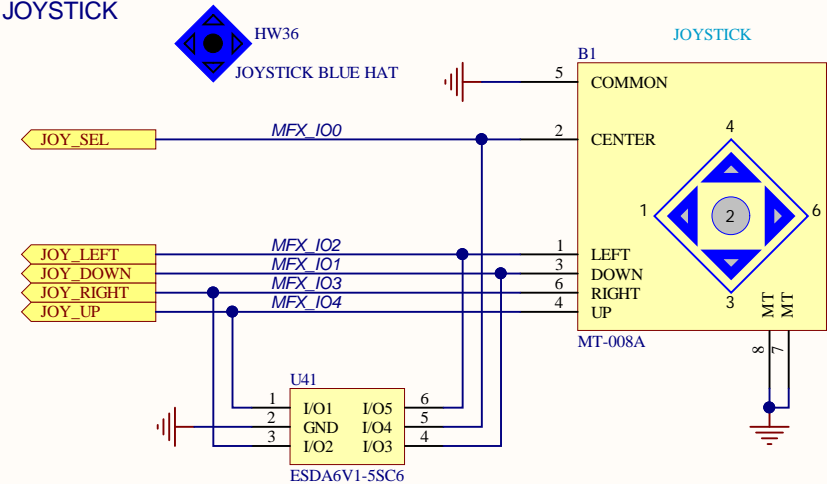
**LIMITATIONS:** see IO muxing sheet and User Manual for more detail

No Limitation

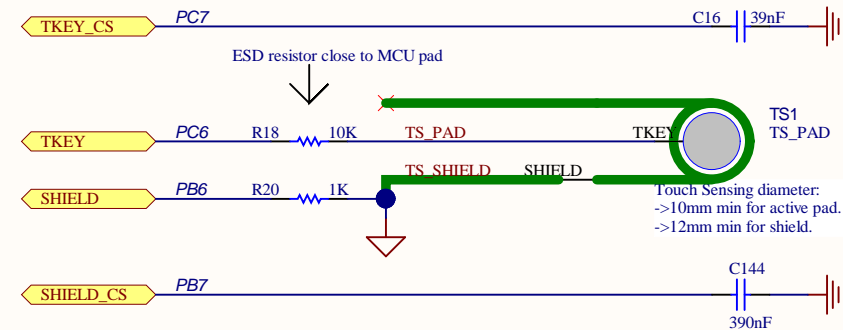
LEDs



JOYSTICK



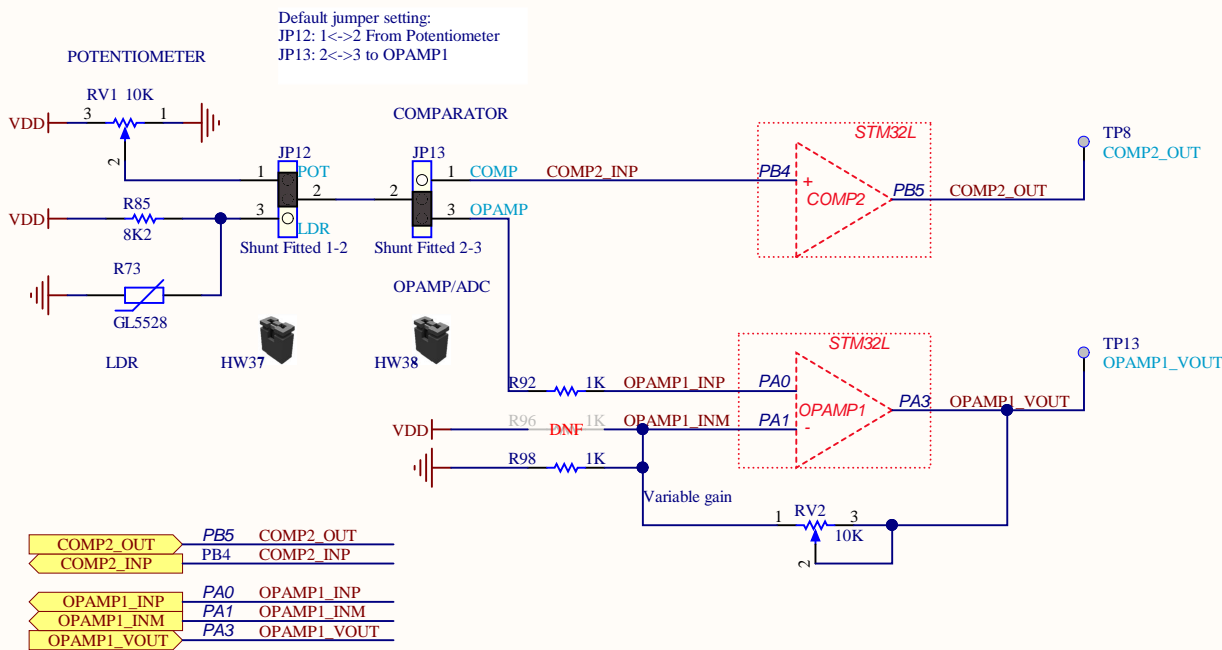
TOUCH\_KEY



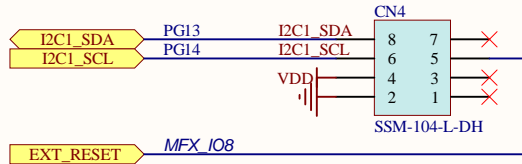
Please refer to STM AN4312: Guidelines for designing touch sensing applications with surface sensors



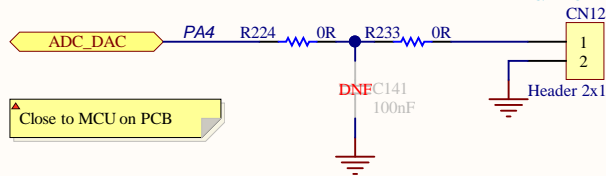
LDR / POTENTIOMETER



EXT\_I2C

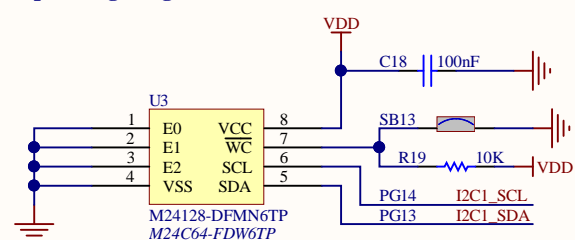


ADC / DAC CONNECTOR



Two pin header for external analog input

I2C EEPROM  
Operating range: 1.7V<VCC<5.5V



I2C address: 0xA0

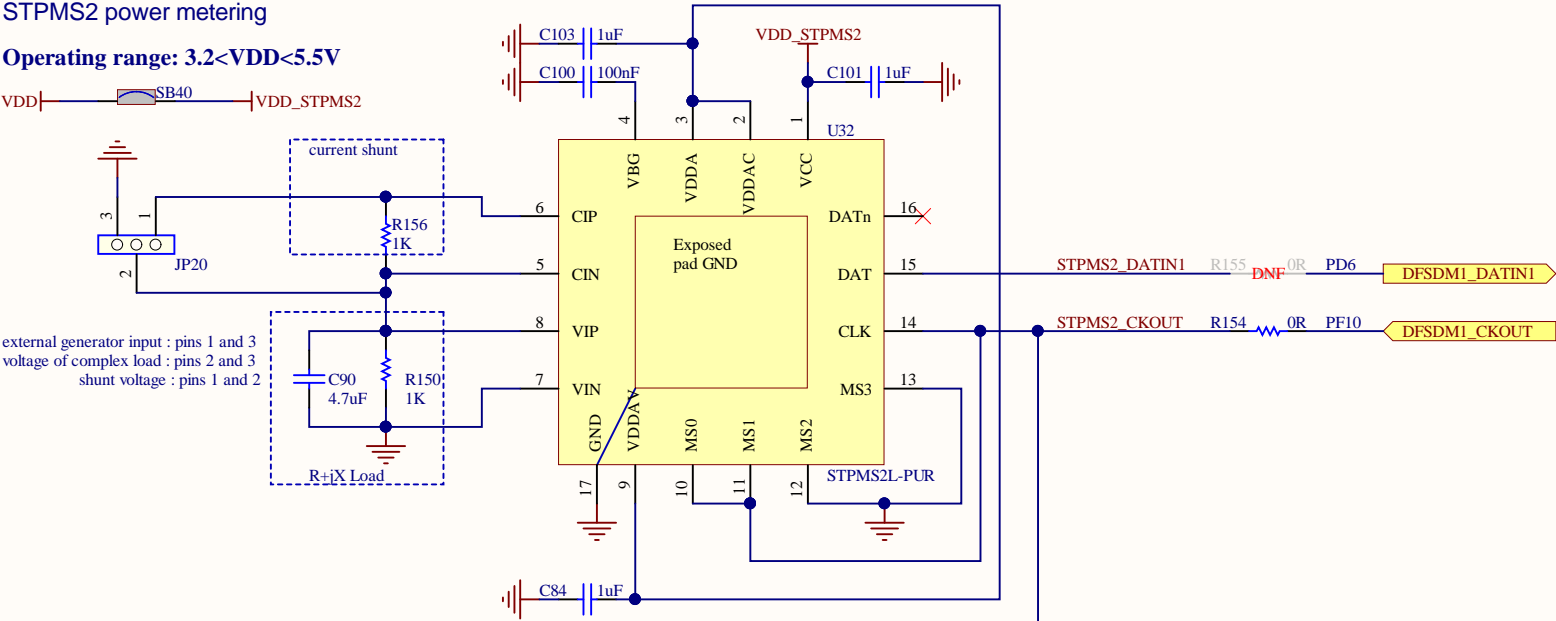
**LIMITATIONS :** see IO muxing sheet and User Manual for more detail

UserLED Green and Red (prio1) exclusif with SmarCard (prio2)  
TouchKey exclusif with STMOD+ and MotorControl  
COMP exclusif with JTAG, USB\_Dbn and STMOD+  
OpAmp exclusif with MFX, OCTOSPI, STMOD+ and MotorControl

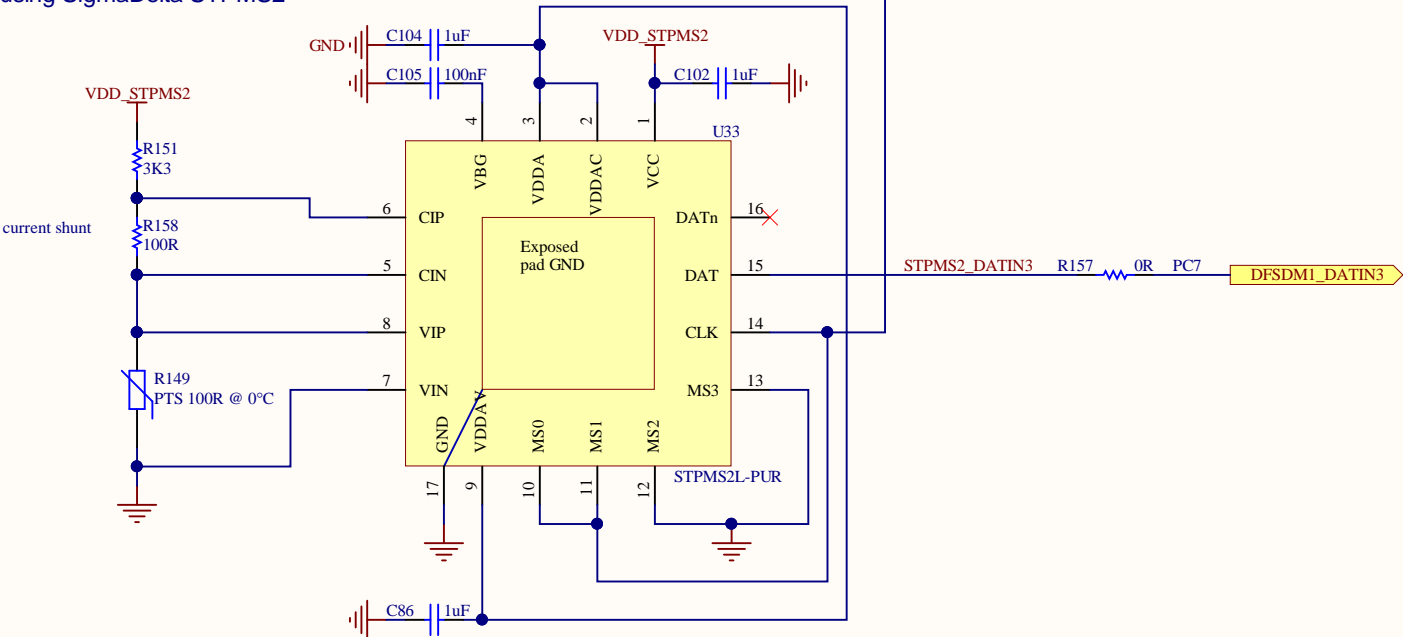


STPMS2 power metering

Operating range:  $3.2 < VDD < 5.5V$



Measurement using SigmaDelta STPMS2

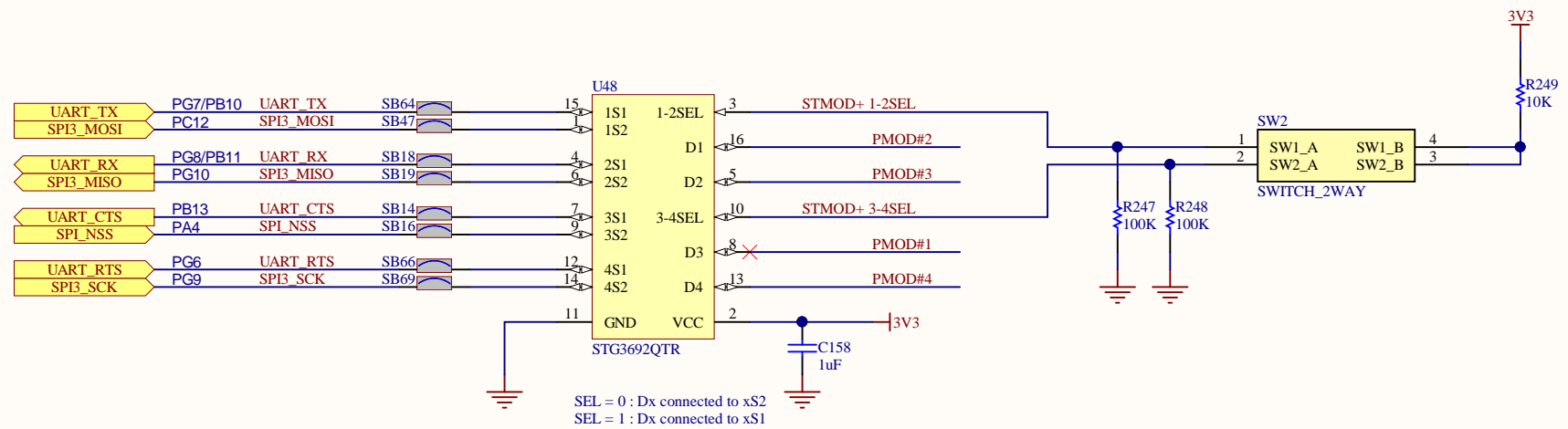


**LIMITATIONS :** see IO muxing sheet and User Manual for more detail

DFSDM1\_CKOUT shared between MEMS, ext MEMS, STPMS2, STMOD+  
DFSDM1\_CKOUT (pio1) exclusif with MC (prio2)  
DFSDM1\_DATIN1 shared between MEMS, STPMS2 and STMOD+  
DFSDM1\_DATIN3 exclusif with TouchKey and MC



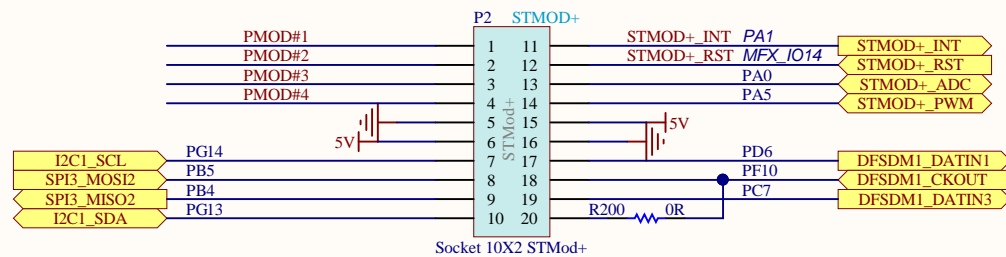
## PMOD / STMOD+ SWITCH



	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

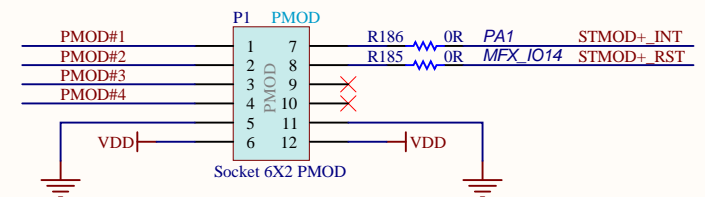
## STMOD+



**LIMITATIONS:** see IO muxing sheet and User Manual for more detail

PMOD exclusif with MFX, SDCARD, RS232, OpAmp, STMOD+, MC

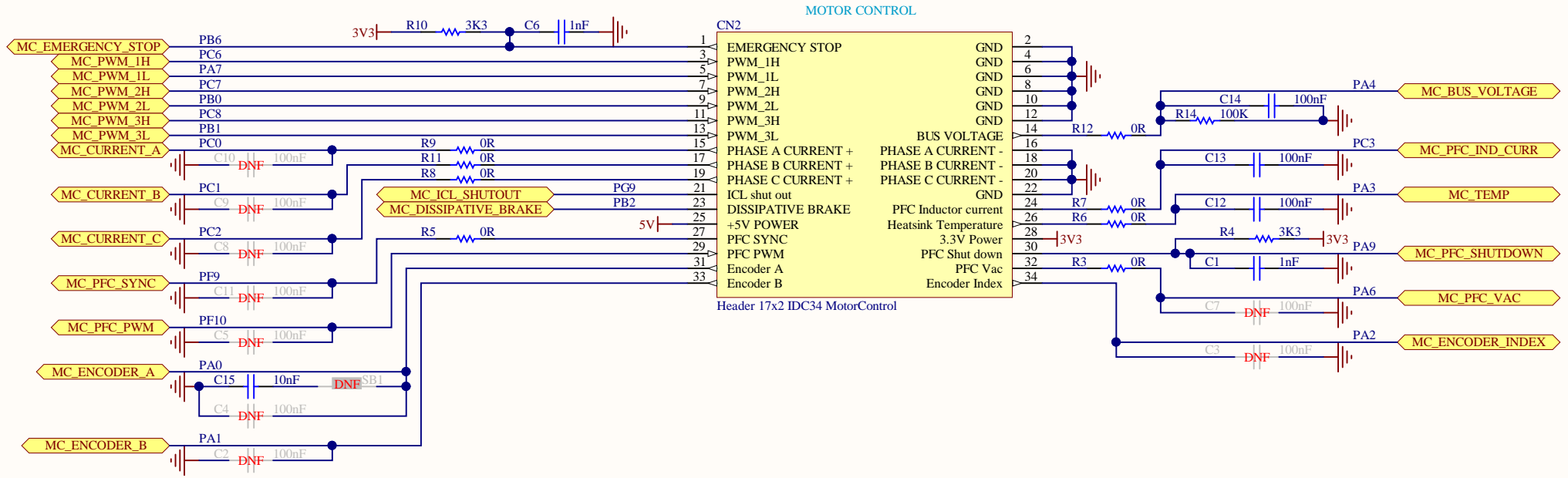
## PMOD



LIMITATIONS: see IO muxing sheet and User Manual for more detail

STMOD+ exclusif with MFX, LCD\_BL, SDCARD, USB, JTAG, MEMS,  
RS232, COMP, OpAmp, PMOD, MC

MOTOR CONTROL



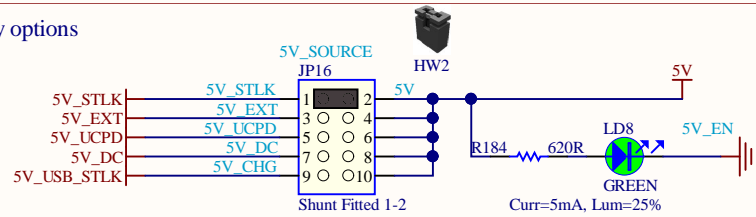
**LIMITATIONS :** see IO muxing sheet and User Manual for more detail

MotorControl exclusif with OCTOSPI, MFX, AUDIO\_CODEC, MEMS, TouchKey, SDCARD, OpAmp, UserLED, SmartCard, STMOD+

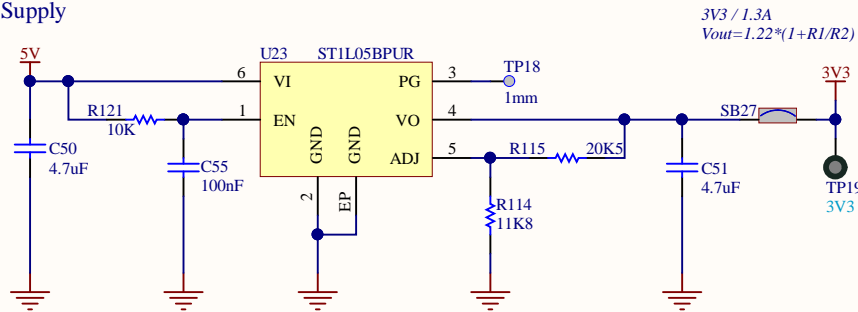
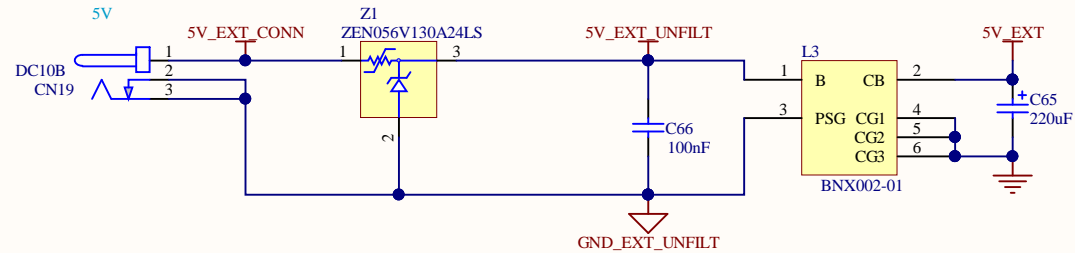
Title: <b>MOTOR CONTROL</b>	
Project: <b>STM32L552E-EVAL</b>	
Variant: <b>L552ZEQ</b>	
Revision: <b>C-02</b>	Reference: <b>MB1372</b>
Size: <b>A4</b>	Date: <b>27 MAY 2019</b>
Sheet: <b>18 of 23</b>	



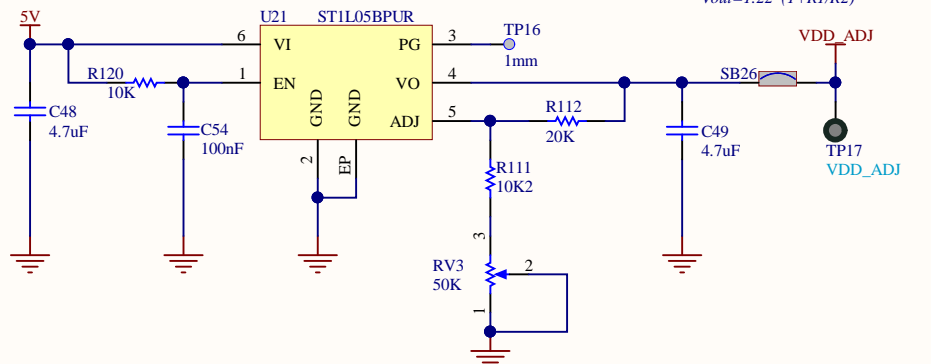
MAX CURRENT 500mA WHEN USING POWER INPUT 5V\_STLK



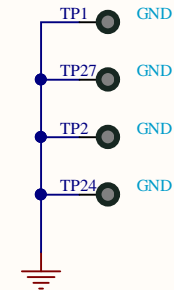
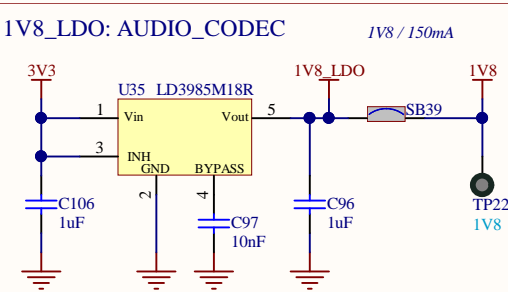
### 3V3 Supply



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## GND TEST POINT

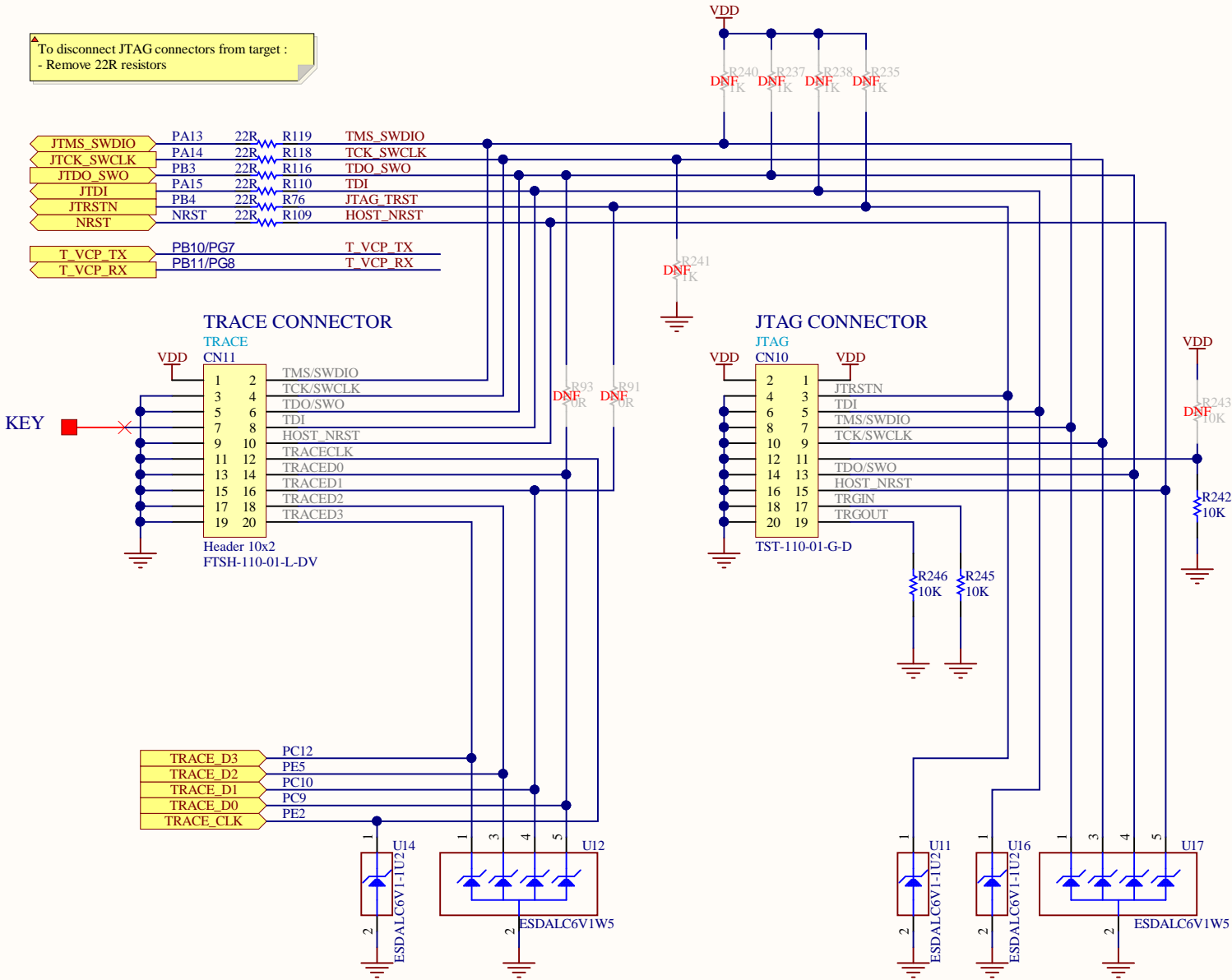


Title: <b>BOARD_PWR</b>		
Project: <b>STM32L552E-EVAL</b>		
Variant: <b>L552ZEQ</b>		
Revision: <b>C-02</b>		Reference: <b>MB1372</b>
Size: <b>A4</b>	Date: <b>27 MAY 2019</b>	Sheet: <b>19 of 23</b>

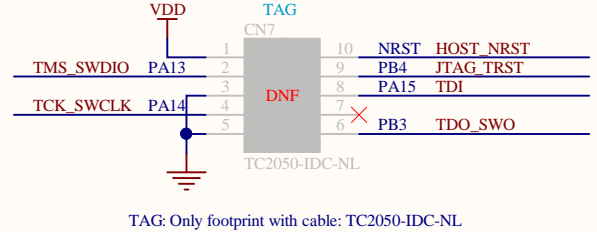


JTAG & TRACE

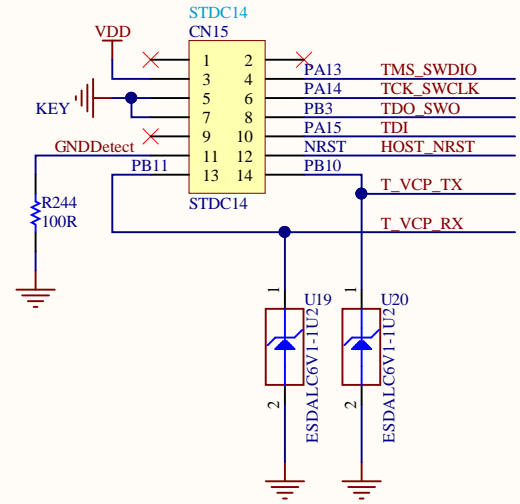
To disconnect JTAG connectors from target :  
- Remove 22R resistors



TAG CONNECTOR



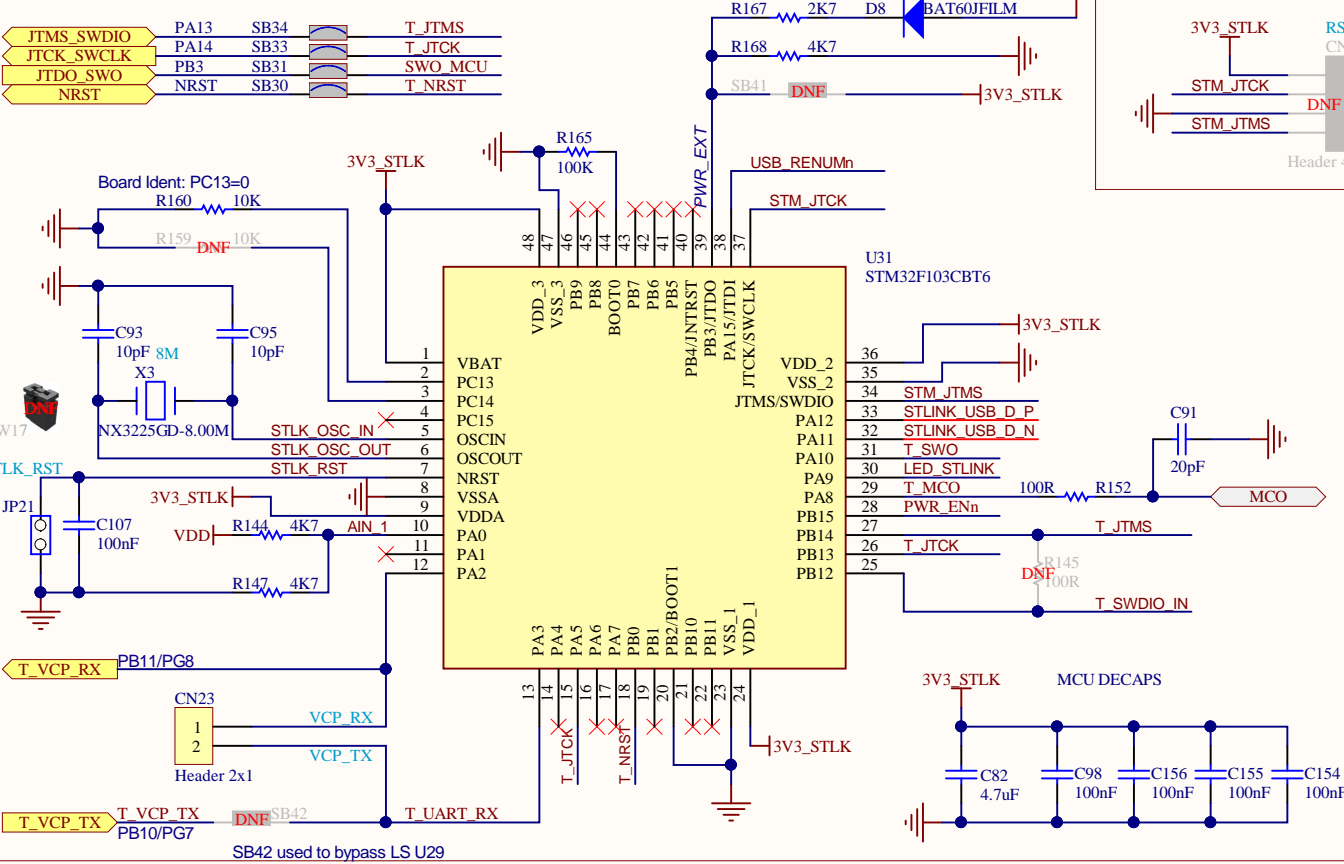
STDC14 RECEIVER



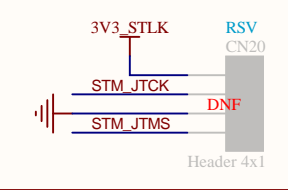
**LIMITATIONS :** see IO muxing sheet and User Manual for more detail

JTAG\_TDI (prio2) exclusif with USB\_CC1 (prio1)  
JTAG\_JTRSTN exclusif with COMP and STMOD+ (prio2)  
TRACE\_D0/D1/D3 exclusif with SDIO\_CK/D1/D2 (prio1)

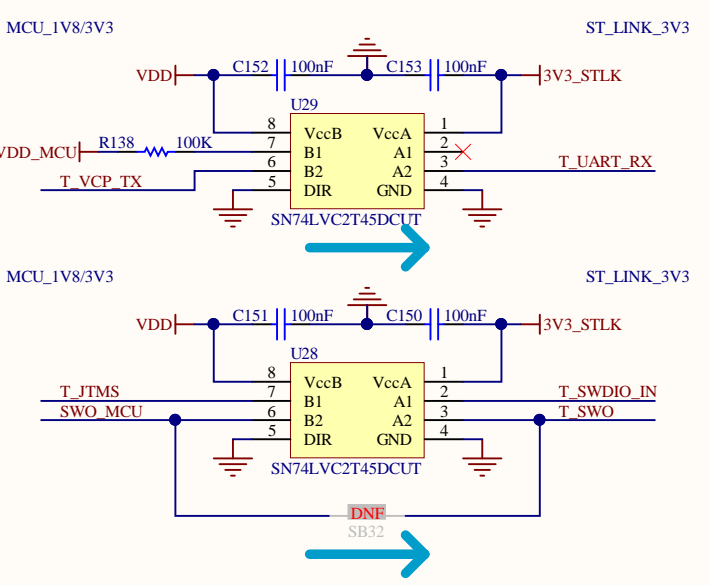
STLINK\_MCU



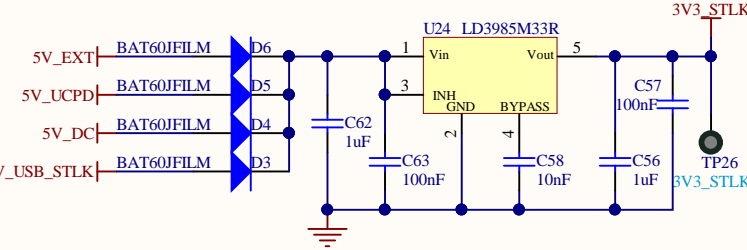
RESERVED



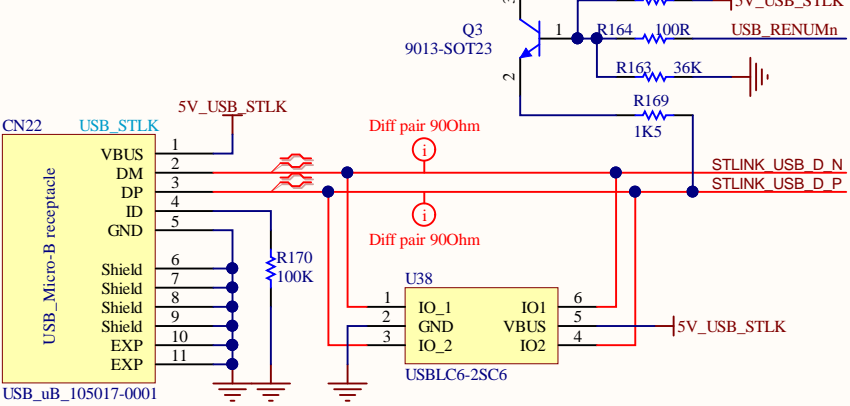
SW LEVEL SHIFTER FOR MCU\_1V8



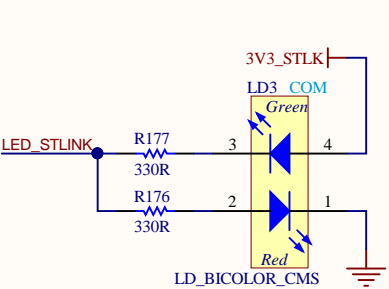
ST-LINK POWER: 3V3 / 150mA



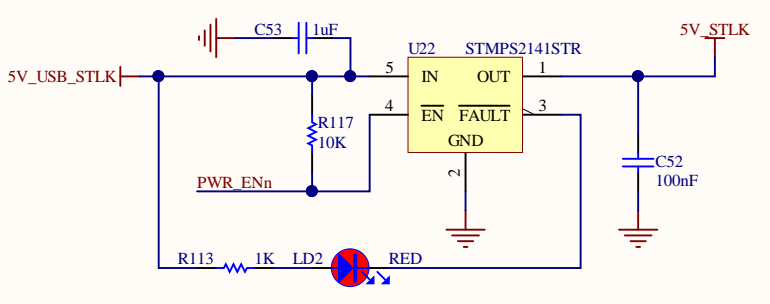
ST-LINK USB CONNECTOR



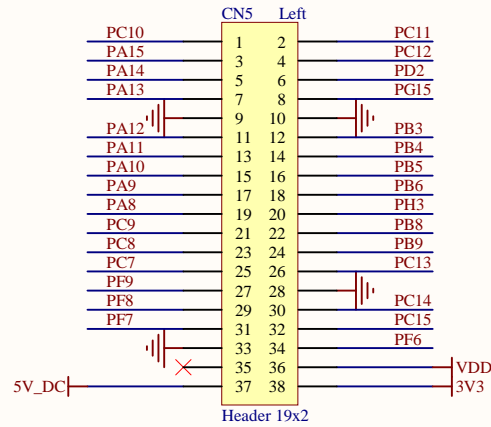
STLINK\_LED: COM



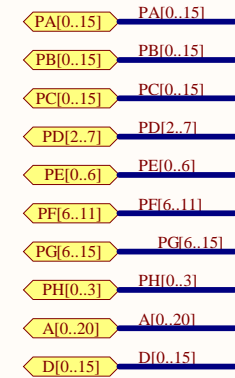
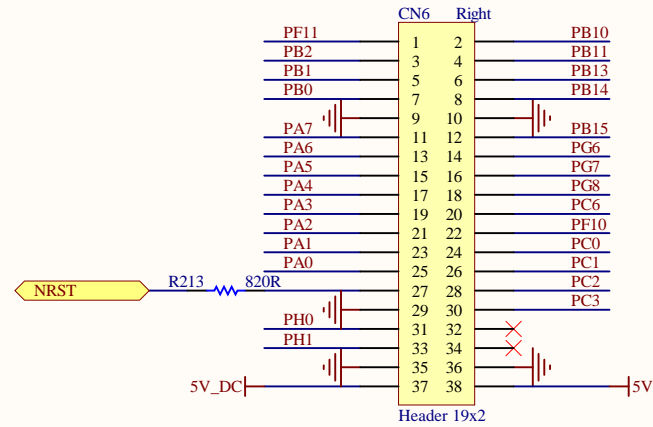
USB 5V POWER SWITCH: 5V / 500mA



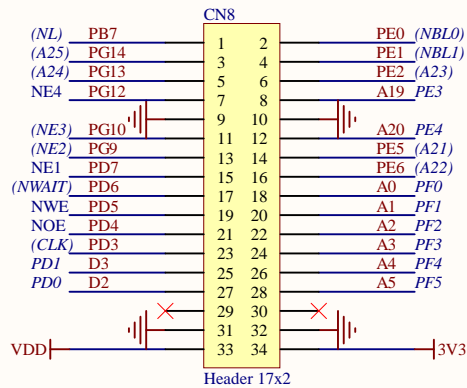
Placed close to MCU



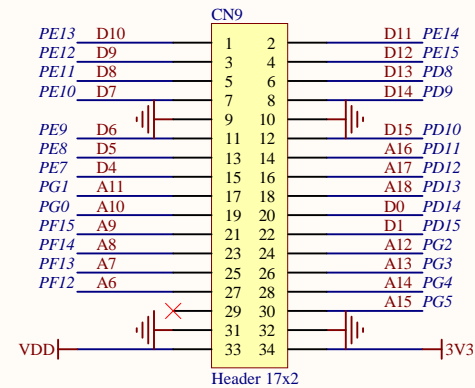
Placed close to MCU



Placed close to memory



Placed close to memory



STICKERS / LOGO

HW100

BOARD REF

MB1372B-01 sywwxxxxx

HW101

BOARD CPN

STM32L552E-EVAL

HW103

PCB

MB1372B

HW104

LOGO ST

HW105

LOGO CE

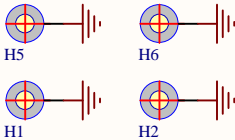
HW106

LOGO ESD

HW107

LOGO ROHS

MECHANICAL PARTS



- HW30

Rubber Foot (D=10mm , H=8mm)
- HW31

Rubber Foot (D=10mm , H=8mm)
- HW32

Rubber Foot (D=10mm , H=8mm)
- HW33

Rubber Foot (D=10mm , H=8mm)
- HW34

Rubber Foot (D=10mm , H=8mm)

ADDED MODULES

HW110

LCD

MB989\_TFT\_LCD\_240x320



