

STM32L552E-EVAL

MB1372

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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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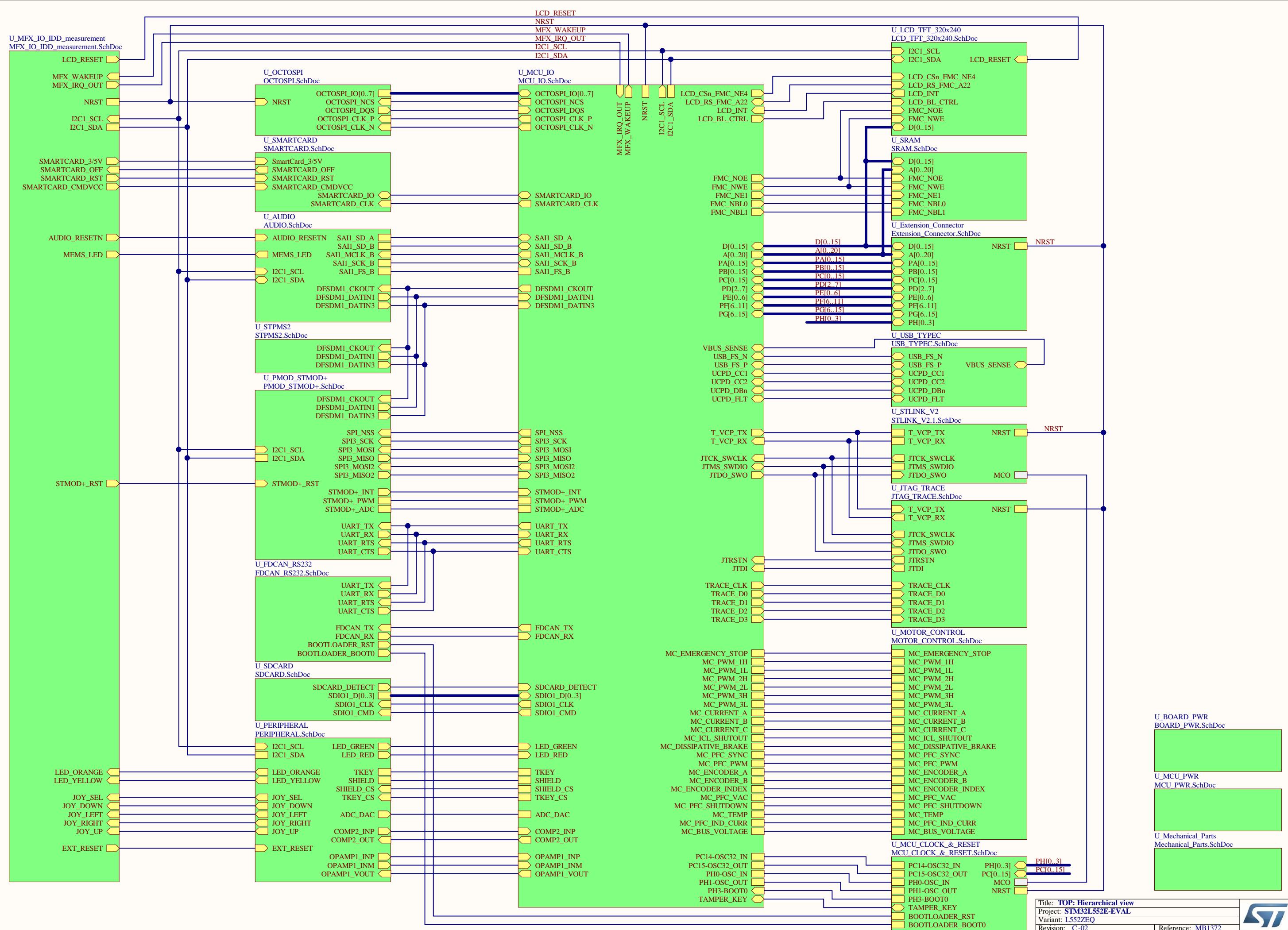
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U_MB1372_TOP
MB1372_TOP.SchDoc

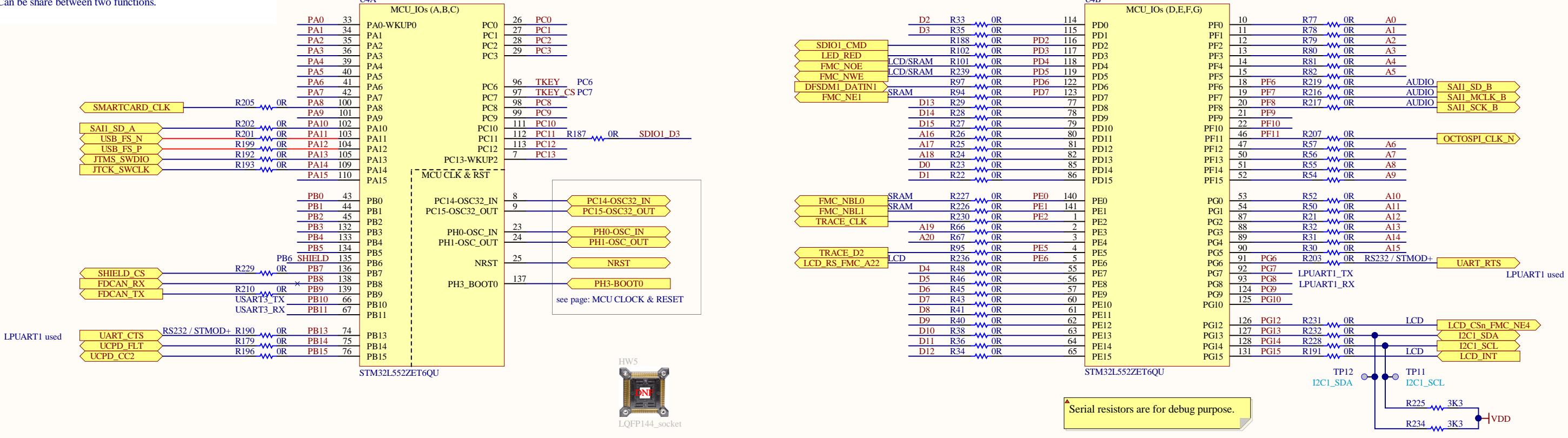
| | |
|-----------|------------------|
| Title: | Project overview |
| Project: | STM32L552E-EVAL |
| Variant: | L552ZEQ |
| Revision: | C-02 |
| Size: | A4 |
| Date: | 27 MAY 2019 |
| Sheet: | 1 of 23 |





STM32L5xx MCU I/Os

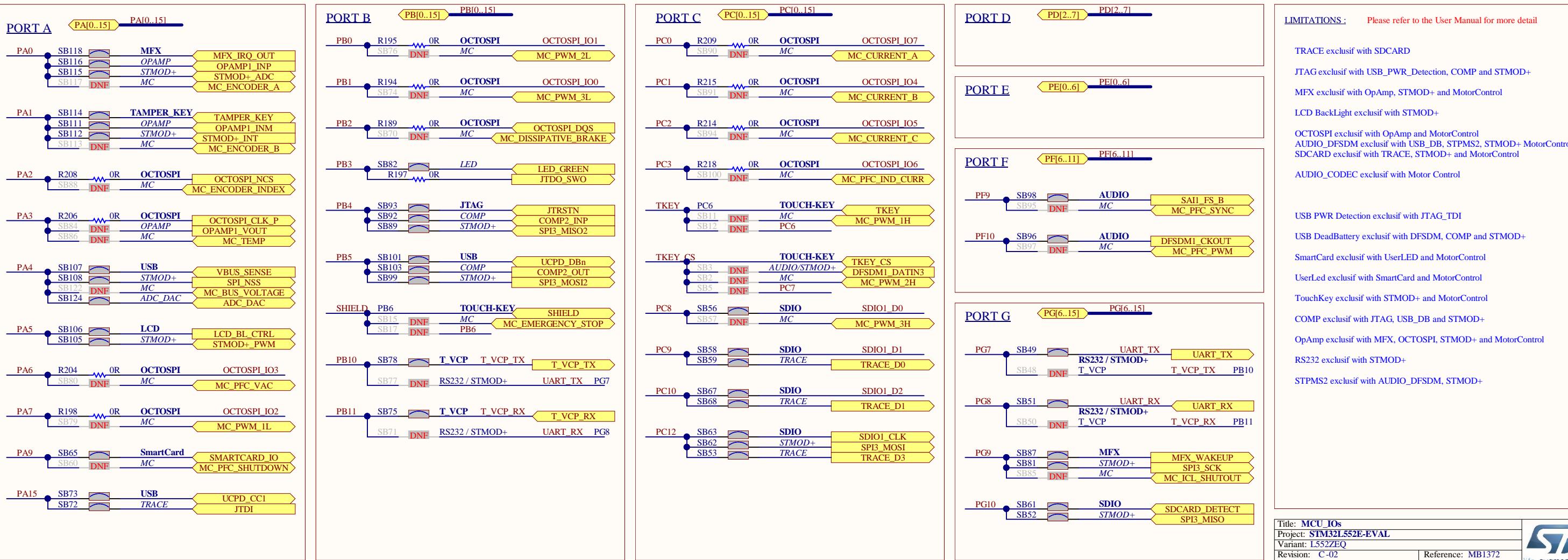
PRIMARY FEATURES (fitted by default), NO MUXING
Can be share between two functions.



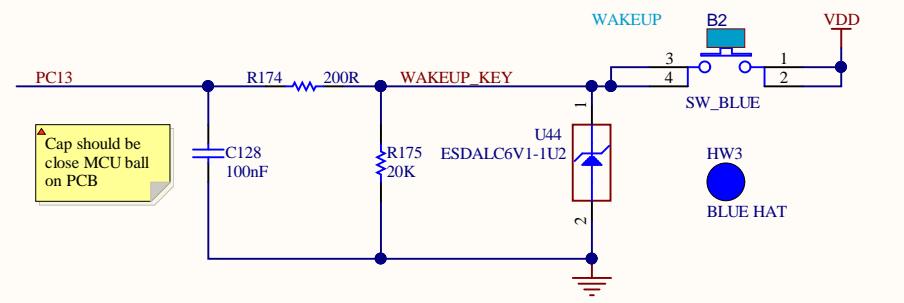
IO PORT MUXING TABLE

BOLD: PRIMARY FEATURES (exclusive use : SB fitted)

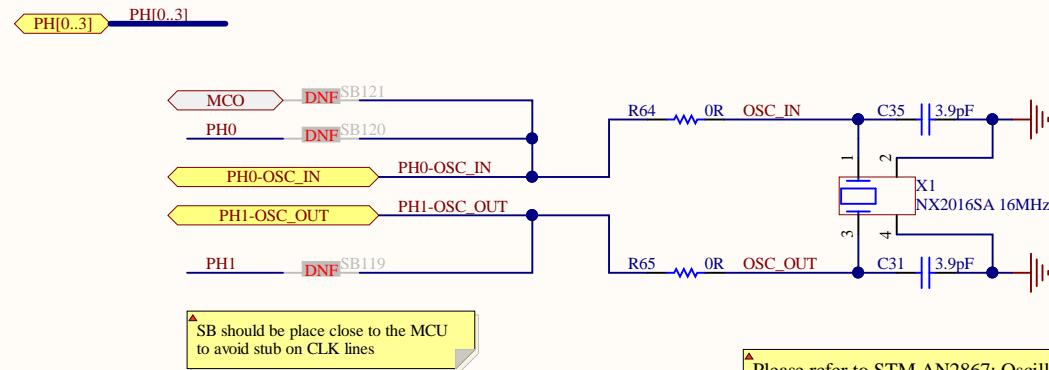
"ITALIC" front: SECONDARY FEATURES (can be not fitted by default)



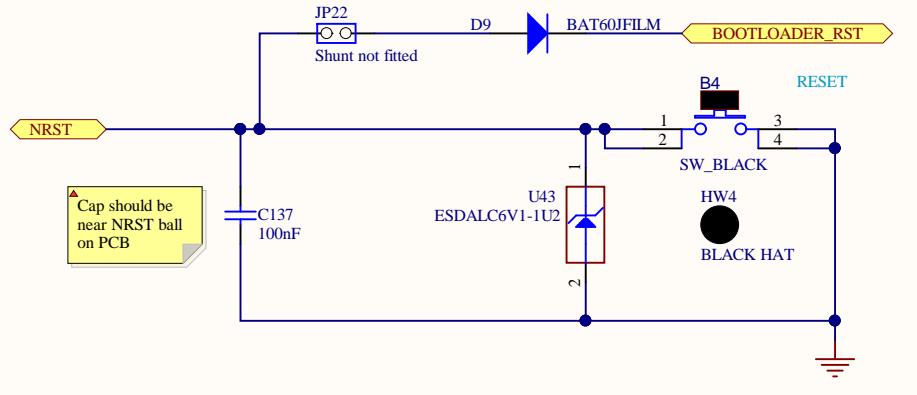
WAKEUP KEY



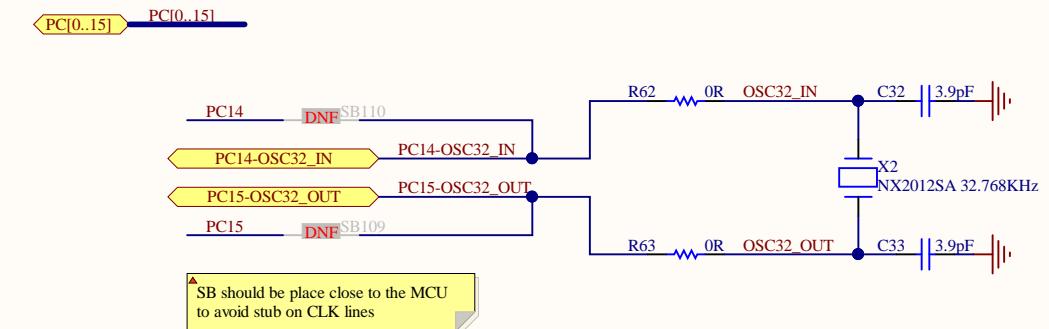
EXTERNAL HSE CLK



RESET FUNCTION

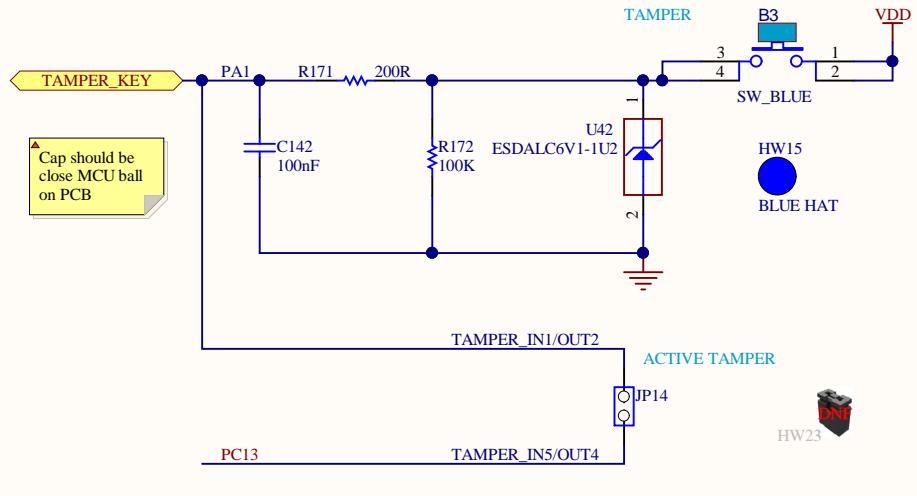


EXTERNAL LSE CLK

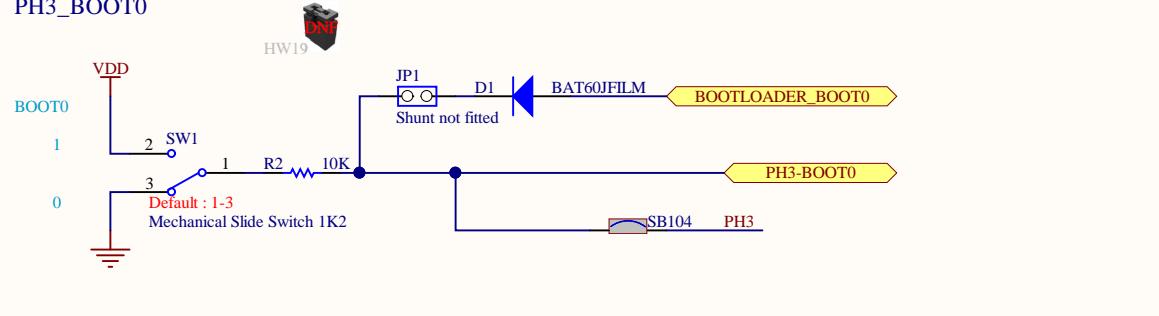


With SOCKET, update C32 and C33 to 1.8pF

TAMPER FUNCTION



PH3_BOOT0



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

NO LIMITATION

Title: MCU_CLOCK & RESET

Project: STM32L552E-EVAL

Variant: L552ZEQ

Revision: C-02

Reference: MB1372

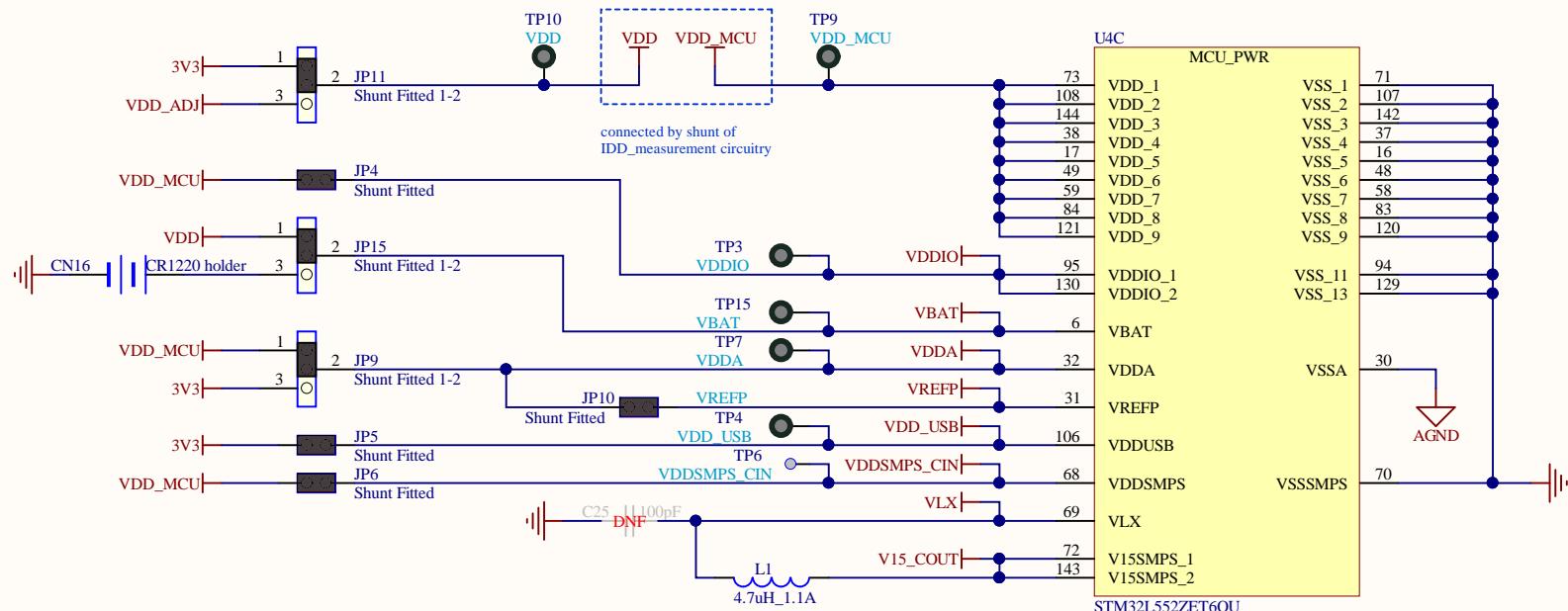
Size: A4

Date: 27 MAY 2019

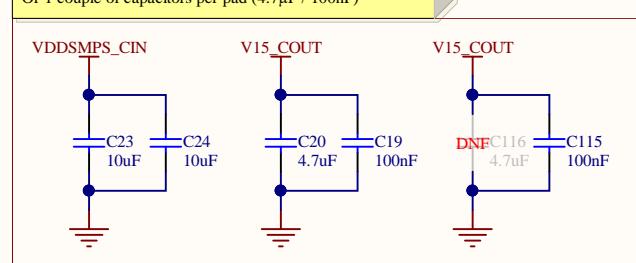
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MCU PWR SUPPLIES



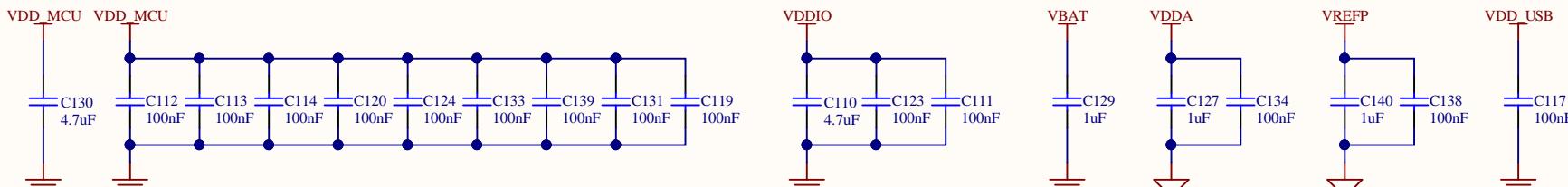
"CIN" and "COUT" should be as closed as possible to the LQFP associated pad. COUT 10µF should be place near L1. Or 1 couple of capacitors per pad (4.7µF / 100nF)



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

MCU DECAPS

Ceramic capacitor (Low ESR, ESR<1ohm)



SB102 → AGND

Title: MCU_PWR

Project: STM32L552E-EVAL

Variant: L552ZEQ

Revision: C-02

Reference: MB1372

Size: A4 Date: 27 MAY 2019

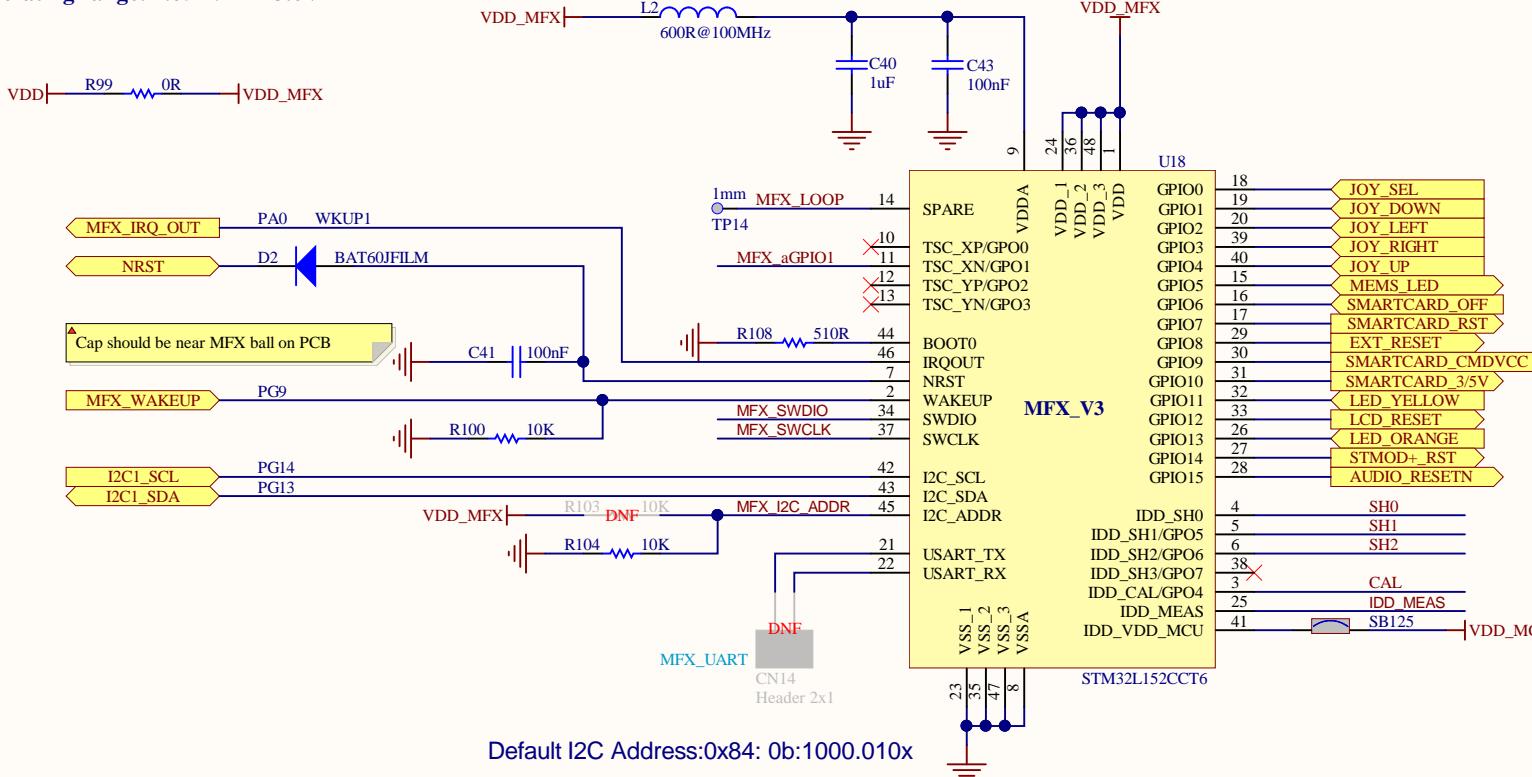
Sheet: 5 of 23



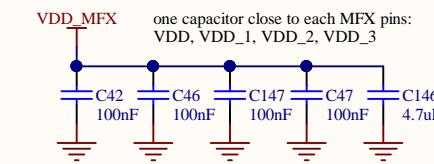
life.augmented

MFX I/O EXPANDER

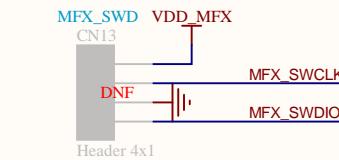
Operating range: $1.65 < VDD < 3.6V$



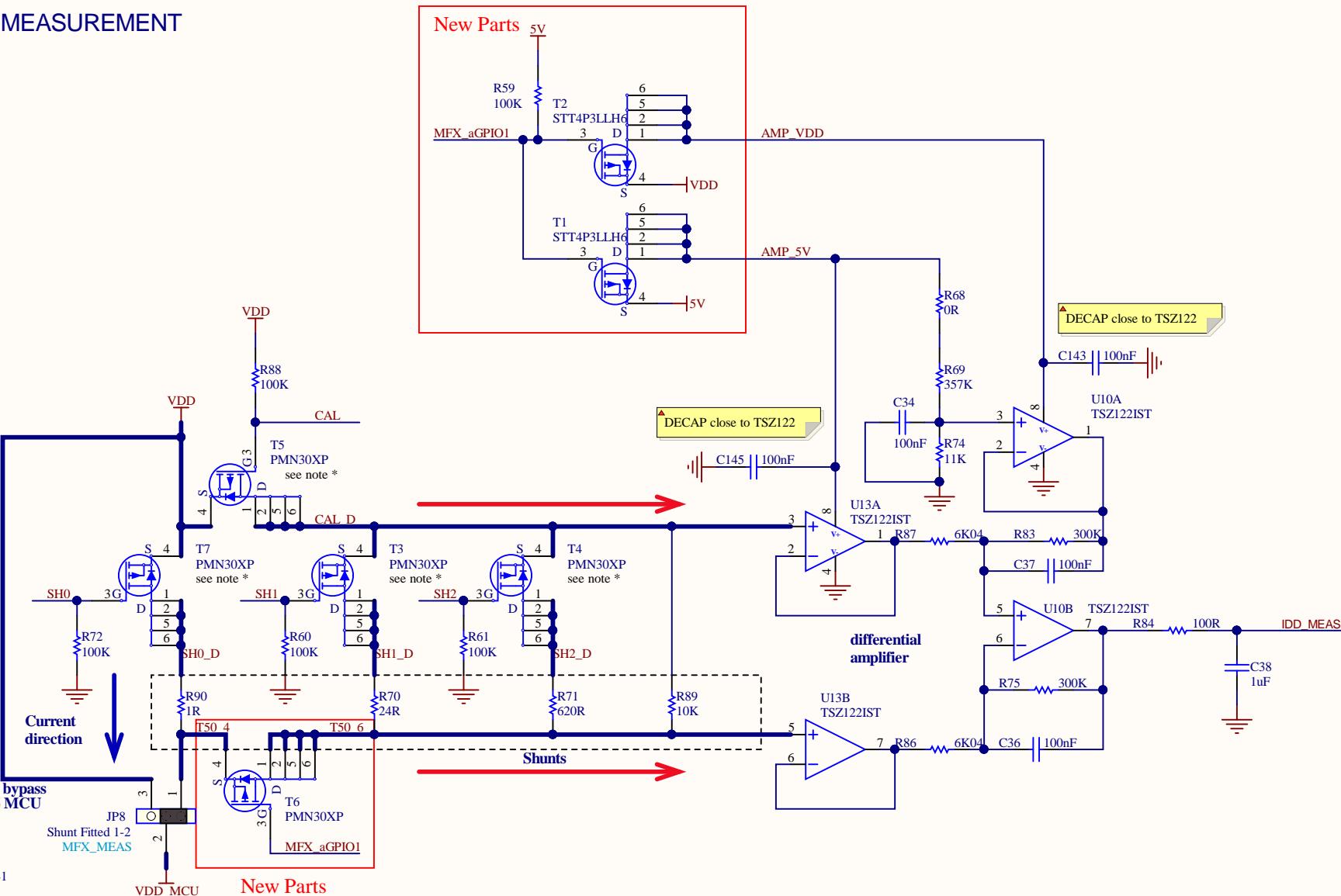
MFX DECAPS



MFX DEBUG SWD INTERFACE



MFX IDD MEASUREMENT



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

MFX_WAKEUP (prior1) exclusif with STMOD+ and MC (prior2)
MFX_IRQ_OUT (prior1) exclusif with OpAmp, STMOD+ and MC (prior2)

| |
|-------------------------------|
| Title: MFX IO IDD Measurement |
| Project: STM32L552E-EVAL |
| Variant: L552ZEQ |
| Revision: C-02 |
| Reference: MB1372 |
| Size: A3 |
| Date: 27 MAY 2019 |
| Sheet: 6 of 23 |

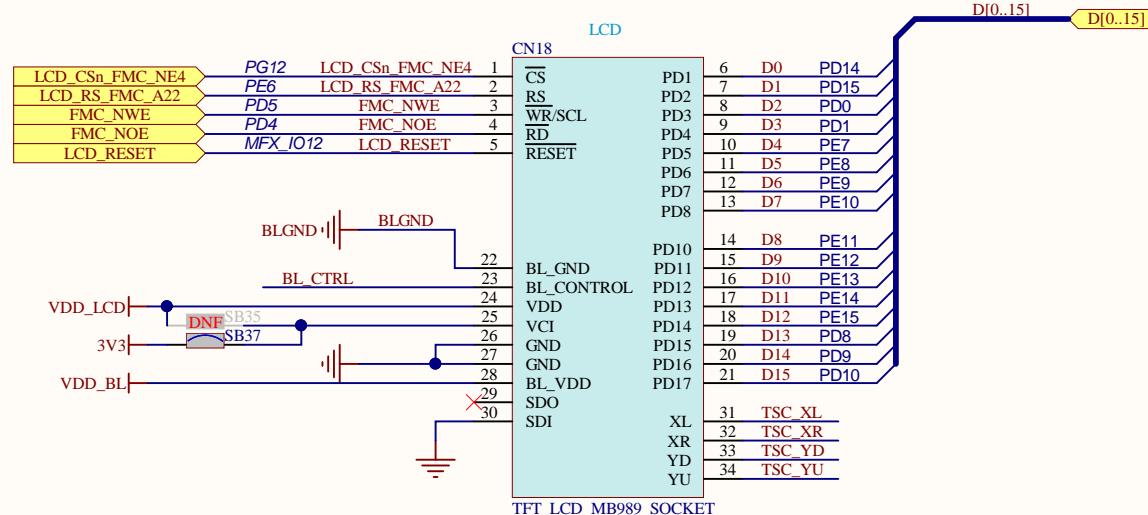


TFT LCD SOCKET CONNECTOR

Operating range: 2.5<VCI<3.3V

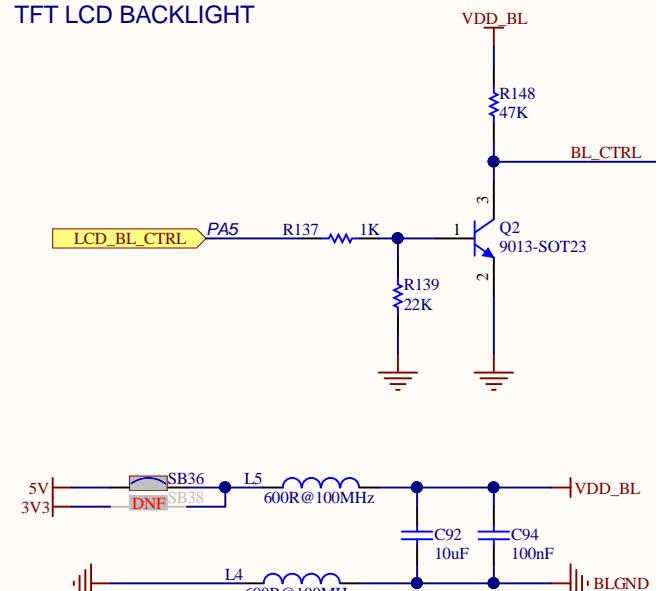
Operating range: 1.65<VDD<3.3V

VDD — R153 OR VDD_LCD



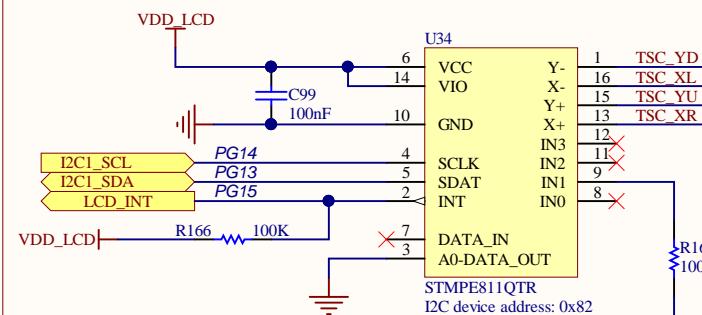
LCD DATA bus should be
routed in 50 ohm +/- 15%

TFT LCD BACKLIGHT

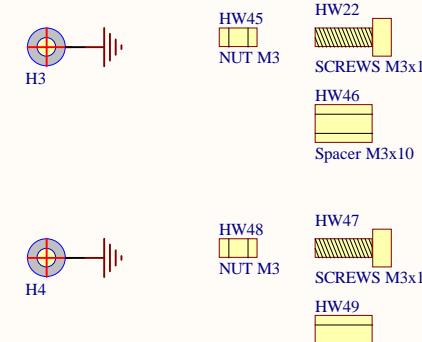


TOUCHSCREEN CONTROLLER

Operating range: 1V65<VCC<3V6



LCD MECHANICAL PARTS

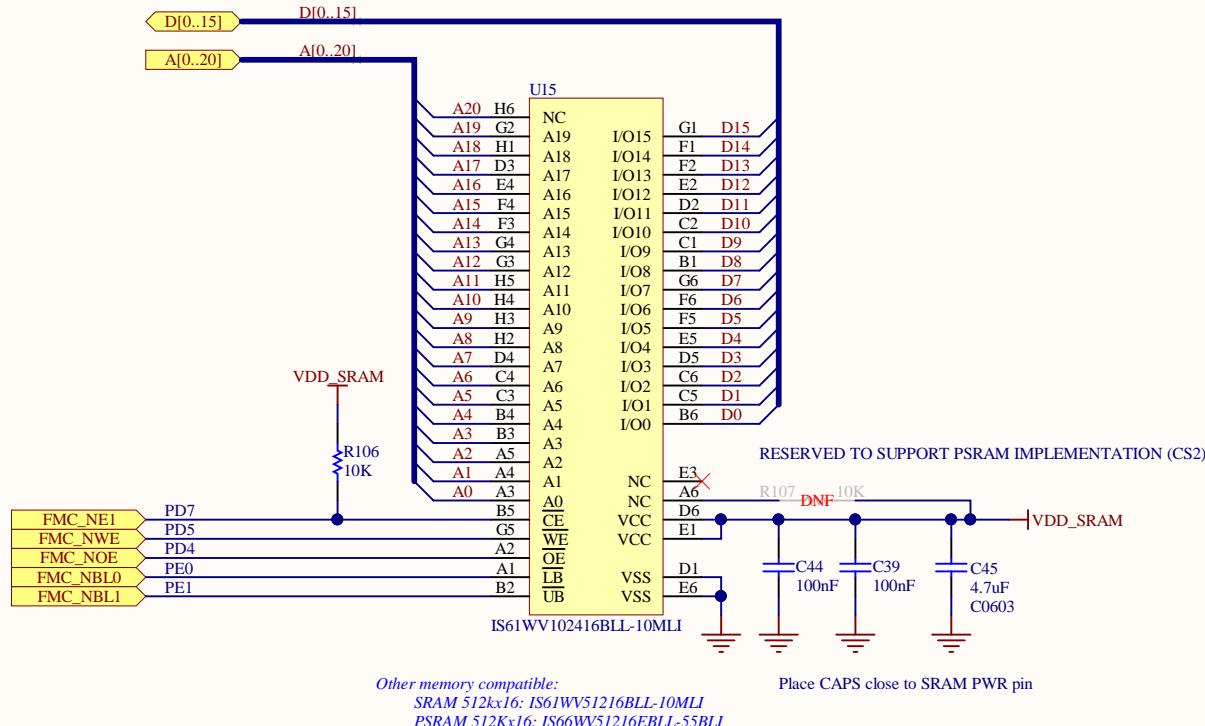


LIMITATIONS: see IO muxing sheet and User Manual for more detail
LCD_BL_CTRL (prio1) exclusif with STMOD+ (prio2)

| Title: LCD | Project: STM32L552E-EVAL |
|-------------------|--------------------------|
| Variant: L552ZEQ | Revision: C-02 |
| Size: A4 | Date: 27 MAY 2019 |
| Reference: MB1372 | Sheet: 7 of 23 |

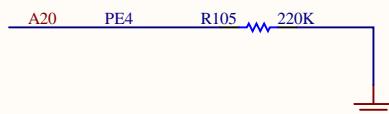
SRAM

Operating range: 2.4<VDD<3.6V



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

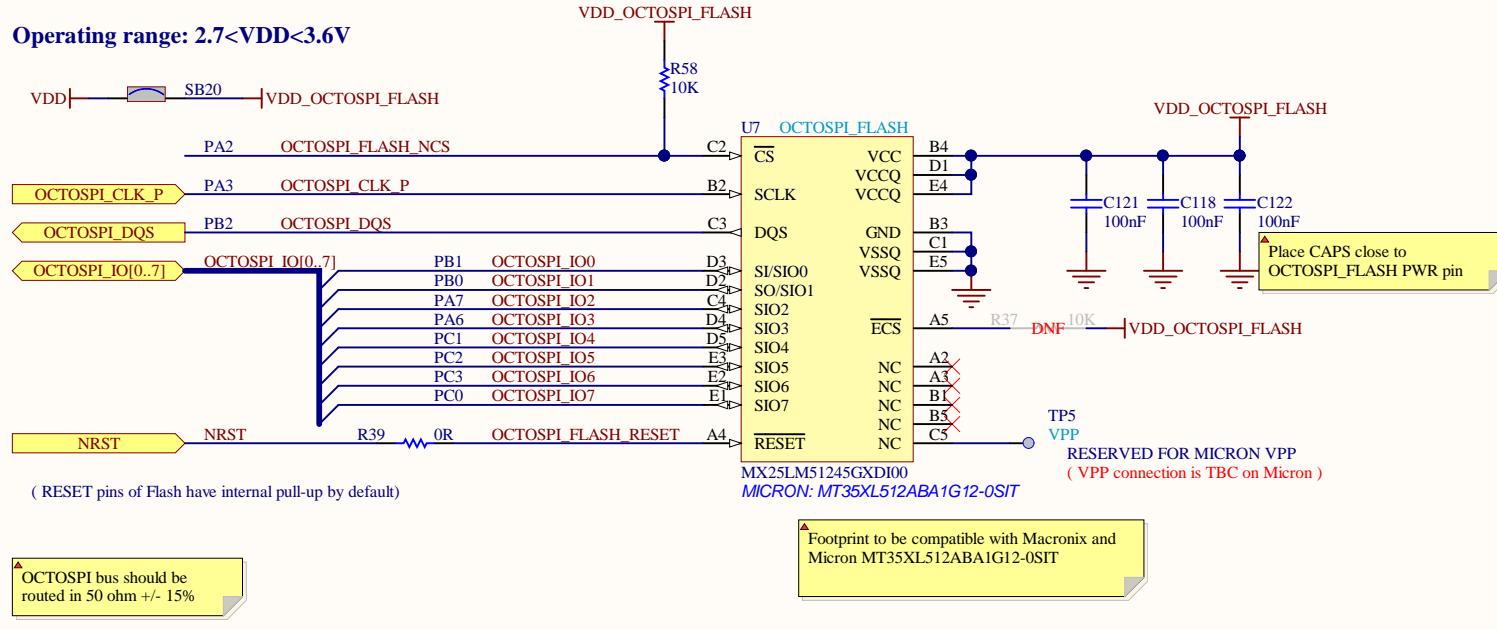
Memory size limited to max 32Mbits by design

| | | |
|--------------------------|-------------------|----------------|
| Title: SRAM | | |
| Project: STM32L552E-EVAL | | |
| Variant: L552ZEQ | | |
| Revision: C-02 | Reference: MB1372 | |
| Size: A4 | Date: 27 MAY 2019 | Sheet: 8 of 23 |

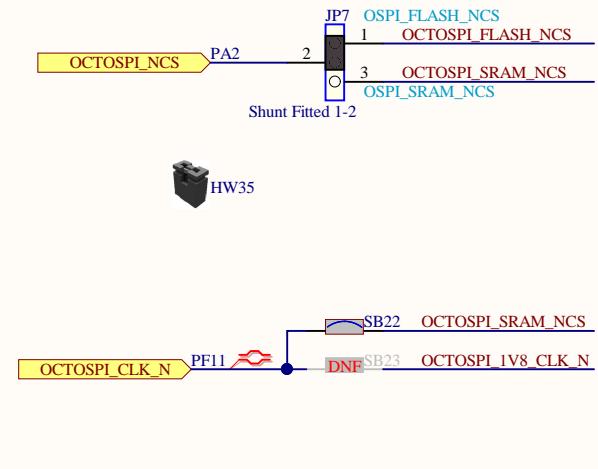


OCTOSPI FLASH

Operating range: 2.7<VDD<3.6V

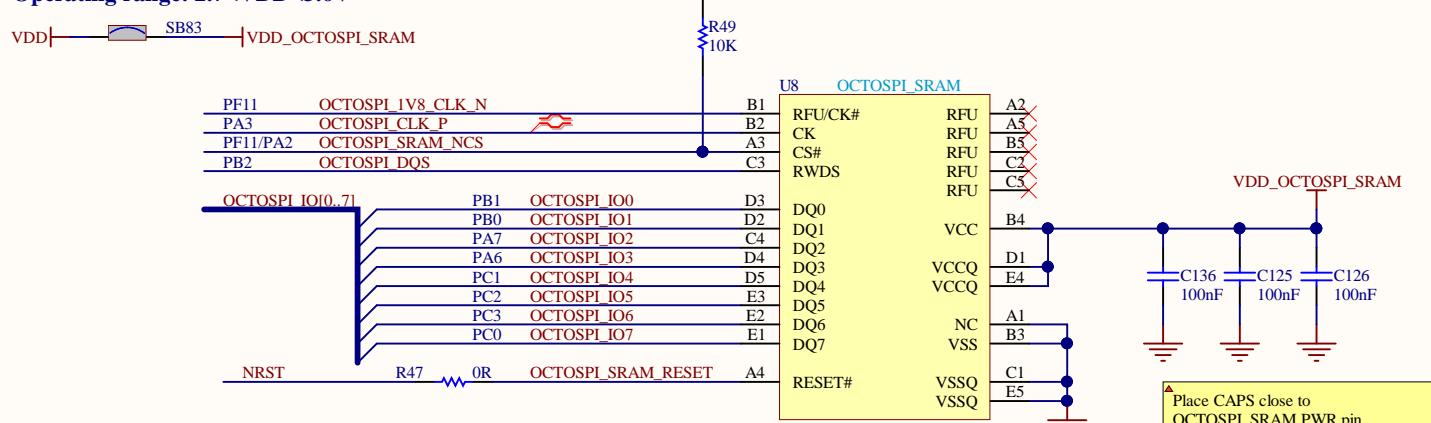


OCTOSPI NCS SELECTION



OCTOSPI SRAM

Operating range: $2.7 \leq V_{DD} \leq 3.6$ V



(RESET pins of SRAM have internal pull-up by default)
CLK_N is only for 1V8 SPI_SRAM

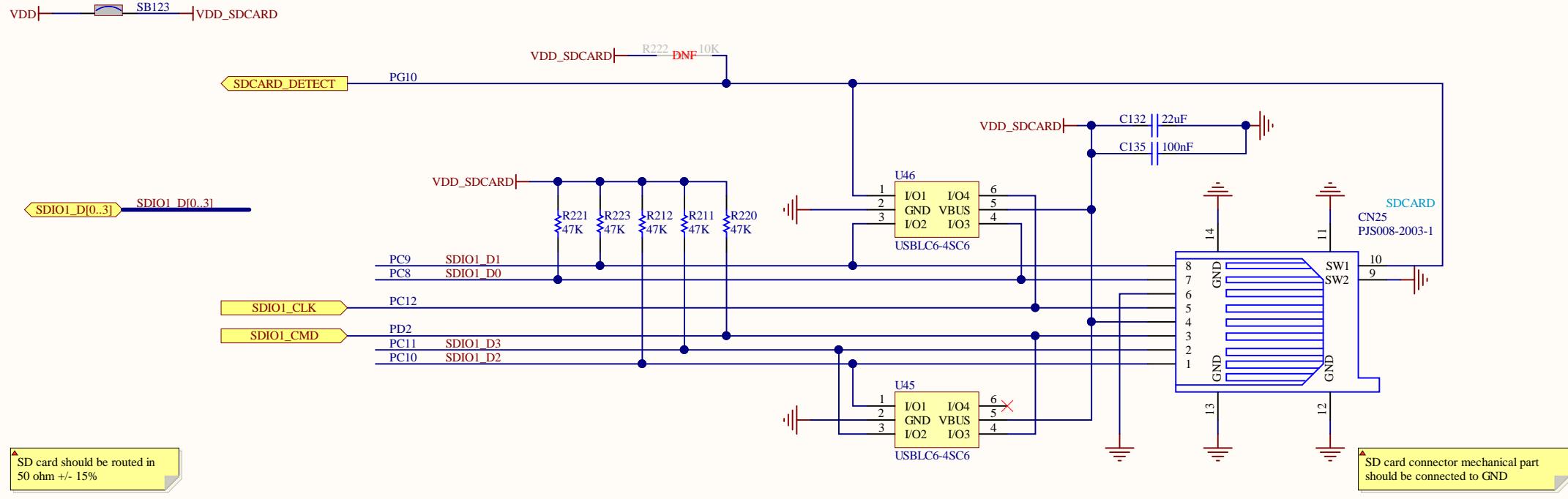
▲ OCTOSPI bus should be routed in 50 ohm +/- 15%

LIMITATIONS : see IQ 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

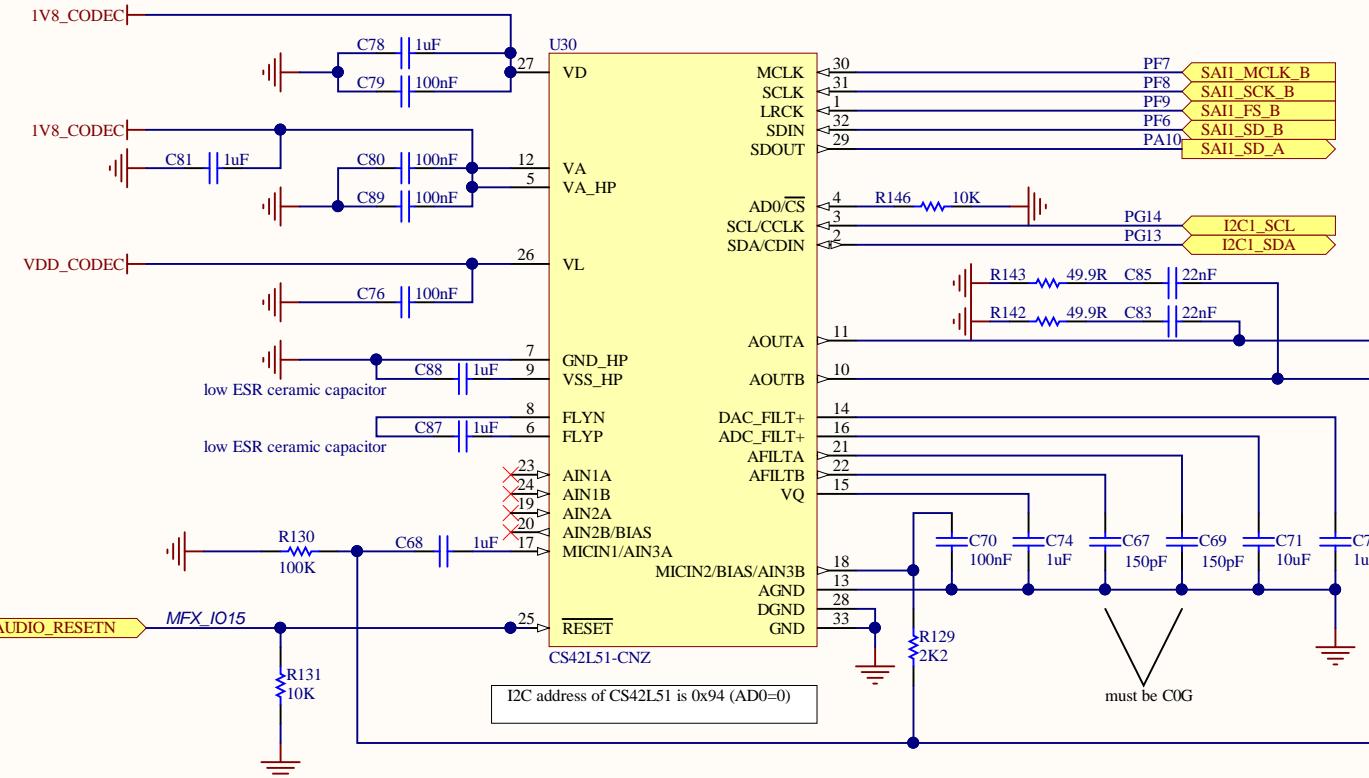
Operating range: 2.7<VDD<3.6V



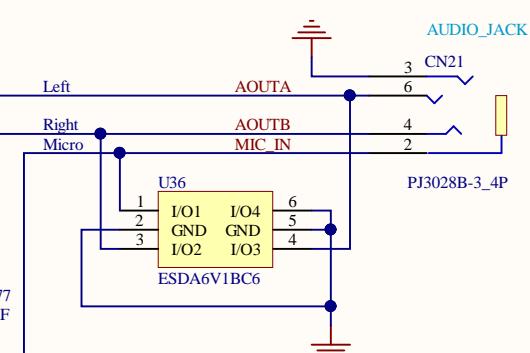
LIMITATIONS: see IO muxing sheet and User Manual for more detail

SDIO_CLK/D1/D2 (prioritization 1) is exclusive with TRACE_D0/D1/D3 (prioritization 2)
SDIO_D0 (prioritization 1) is exclusive with MC (prioritization 2)
SDIO_CLK and SD_CARD_DETECT (prioritization 1) are exclusive with STMOD+ (prioritization 2)

AUDIO CODEC



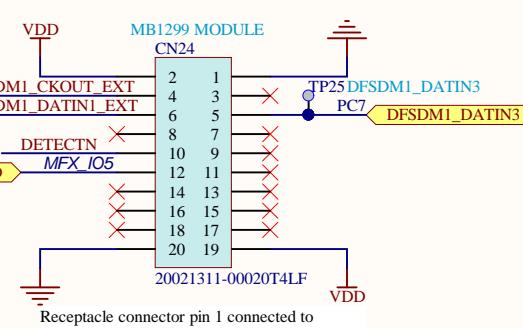
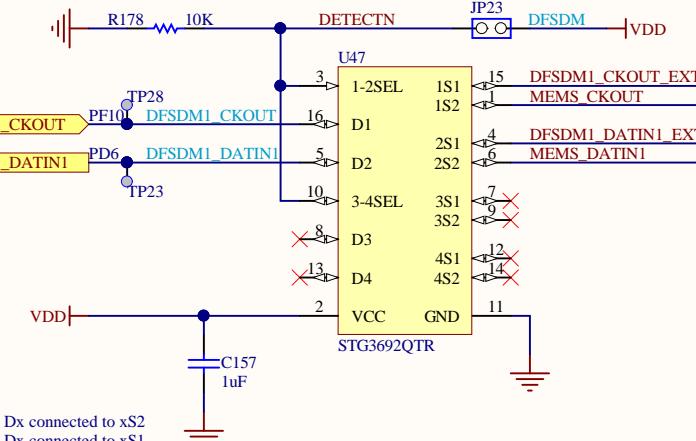
AUDIO STEREO OUTPUT
with microphone input



LIMITATIONS : see IO muxing sheet and User Manual for more detail
SAI_FS_B (prior1) exclusif with MotorControl (prior0)

Extension microphones module

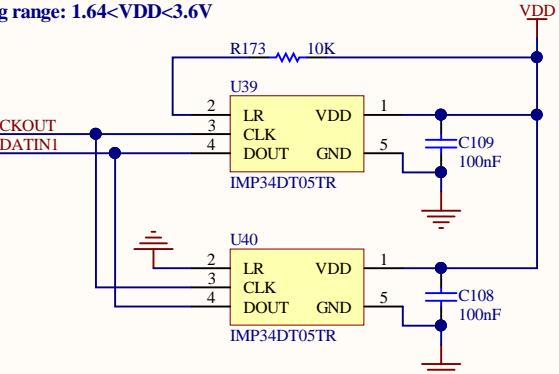
Operating range: 1.64<VDD<3.6V



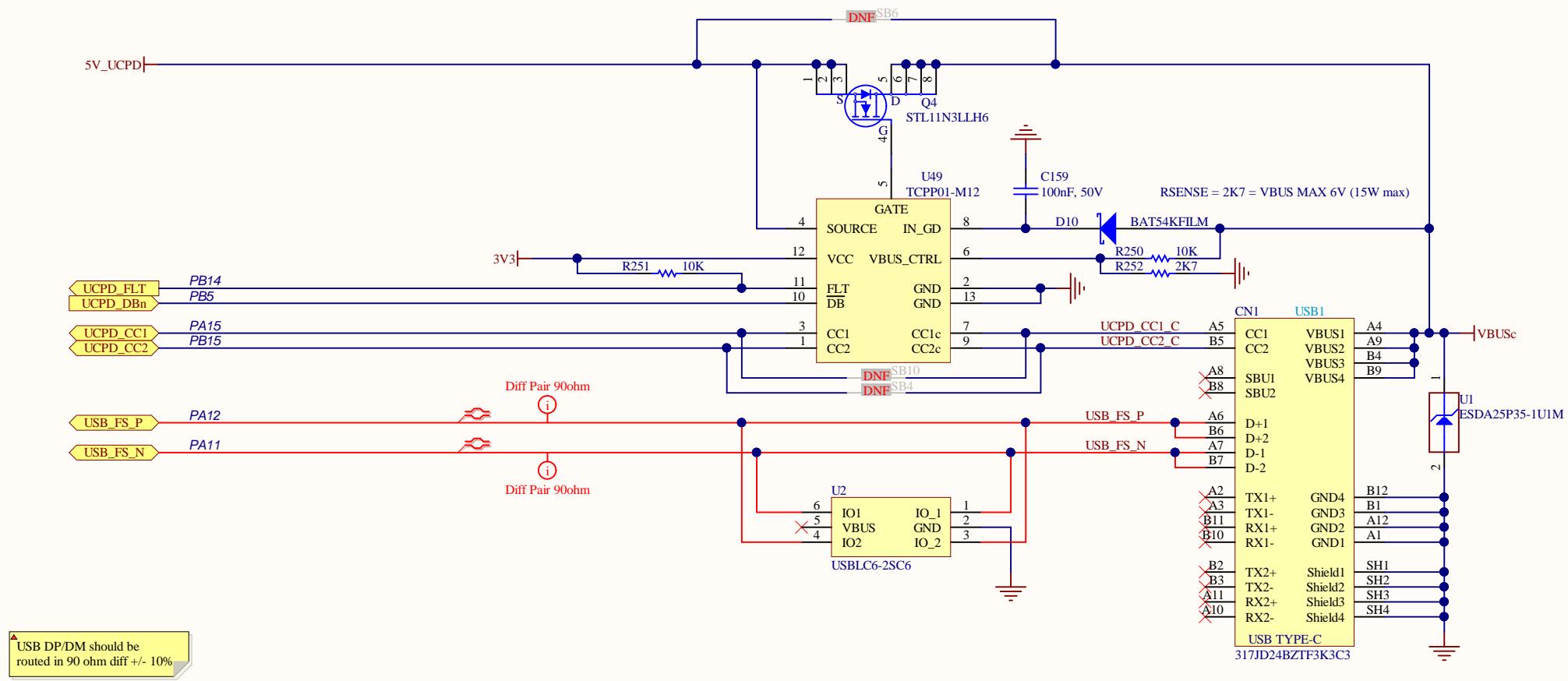
LIMITATIONS : see IO muxing sheet and User Manual for more detail
DFSDM1_CKOUT shared between MEMS, ext MEMS, STPM2, STMOD+
DFSDM1_CKOUT (prior1) exclusif with MC (prior0)
DFSDM1_DATIN1 (prior1) shared between MEMS, STPM2 and STMOD+

MEMS

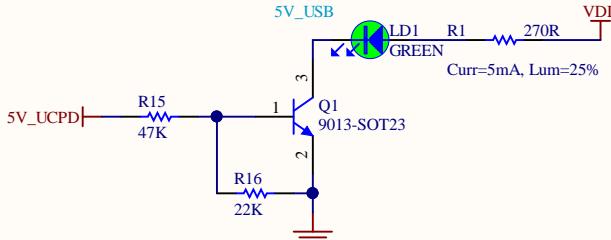
Operating range: 1.64<VDD<3.6V



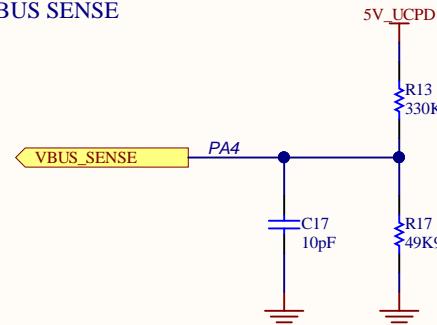
USB_TYPE_C



5V_USB_LED



VBUS SENSE



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

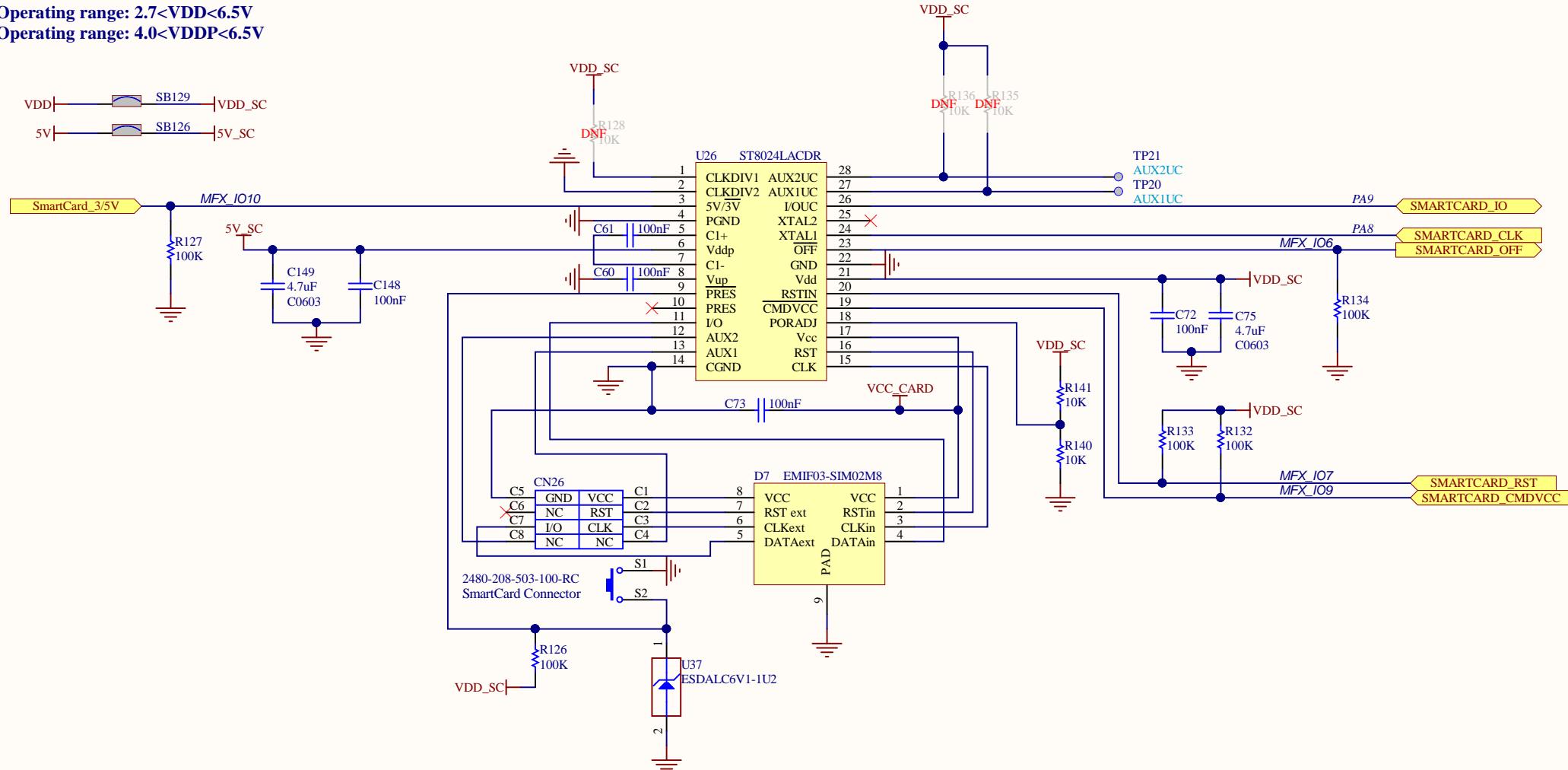
USB_CC1 (prior1) exclusiv with JTAG_TDI (prior2)
USB_DBn (prior1) exclusiv with COMP and STMOD+ (prior2)

| | |
|---------------------------------|--------------------------|
| Title: USB_TYPE_C | |
| Project: STM32L552E-EVAL | |
| Variant: L552ZEQ | |
| Revision: C-02 | Reference: MB1372 |
| Size: A4 | Date: 27 MAY 2019 |
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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 (prior2) exclusif with UserLED Red (prior1)
SmartCard_TX (prior2) exclusif with UserLED Green (prior1) and MC (prior2)

| | | |
|--------------------------|-------------------|-----------------|
| Title: SMARTCARD | | |
| Project: STM32L552E-EVAL | | |
| Variant: L552ZEQ | | |
| Revision: C-02 | Reference: MB1372 | |
| Size: A4 | Date: 27 MAY 2019 | Sheet: 13 of 23 |

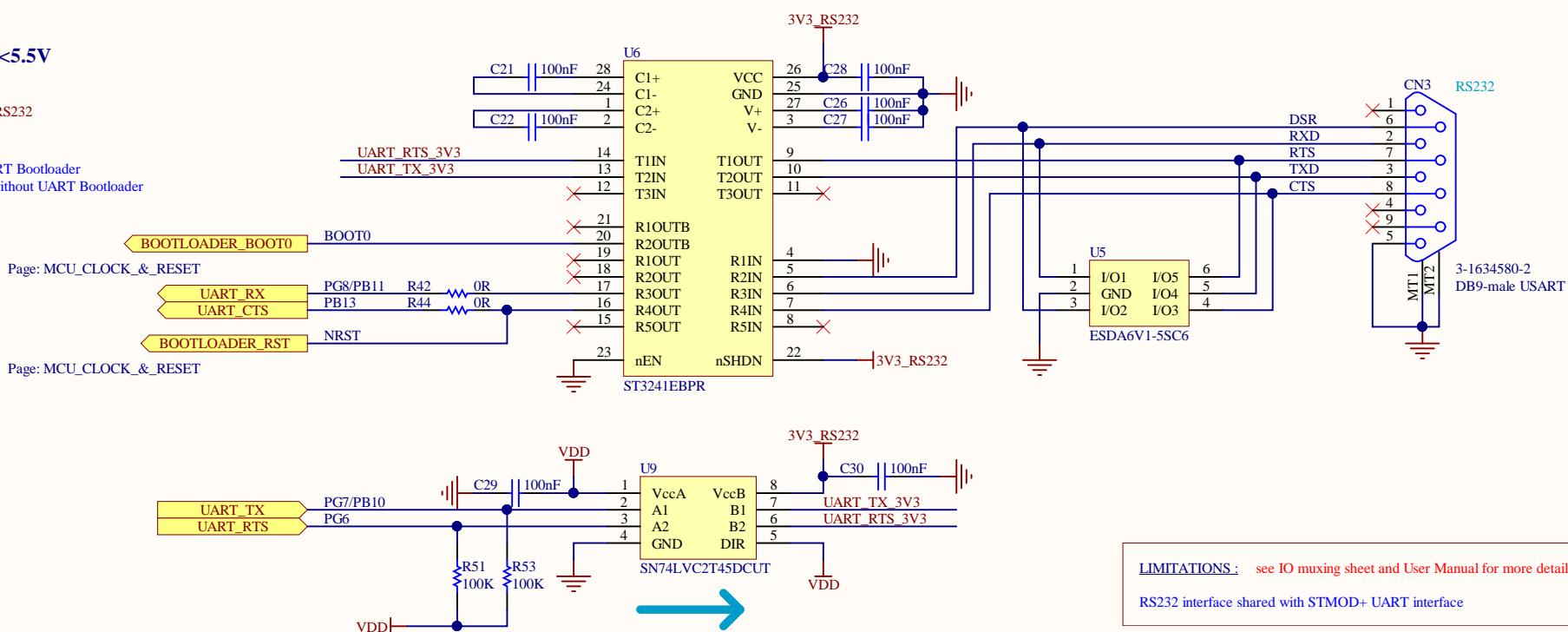


RS232 (USART1)

Operating range: 3V< VCC<5.5V

3V3 — SB21 — 3V3_RS232

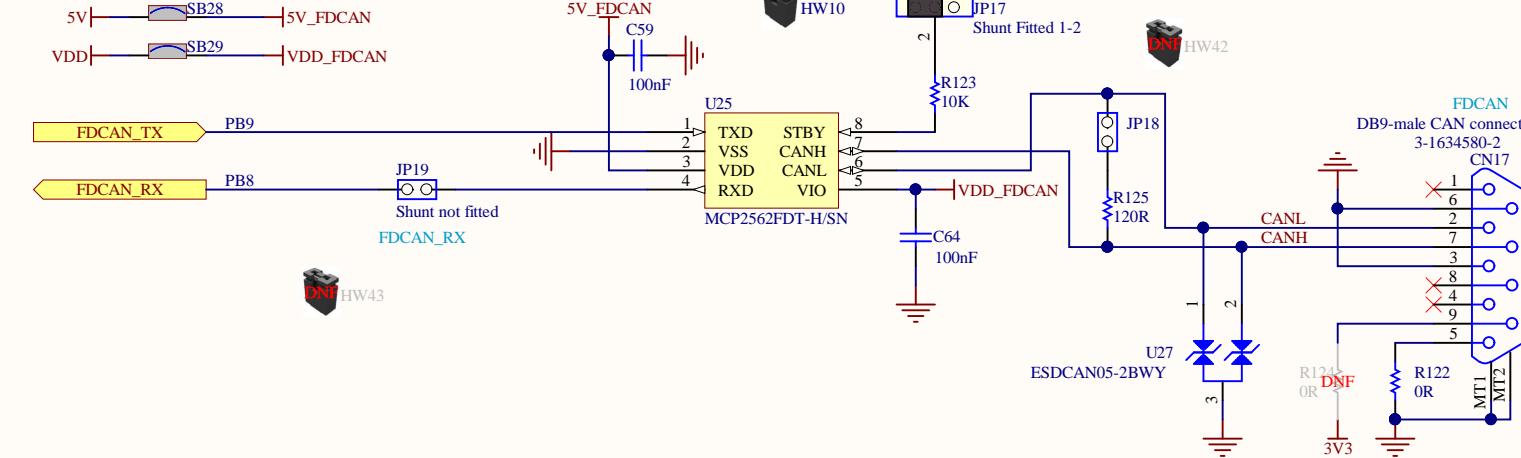
RS232 interface can be:
 UART3 2wires RX/TX supported UART Bootloader
 LPUART1 4wires RX/TX/RTS/CTS without UART Bootloader



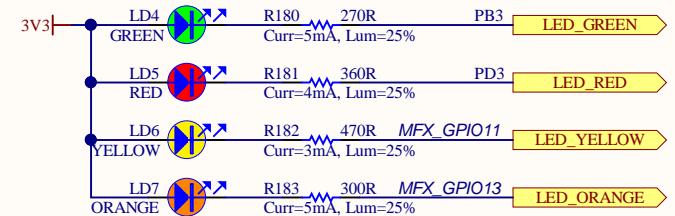
CAN FD

Operating range: 4.5< VDD<5.5V

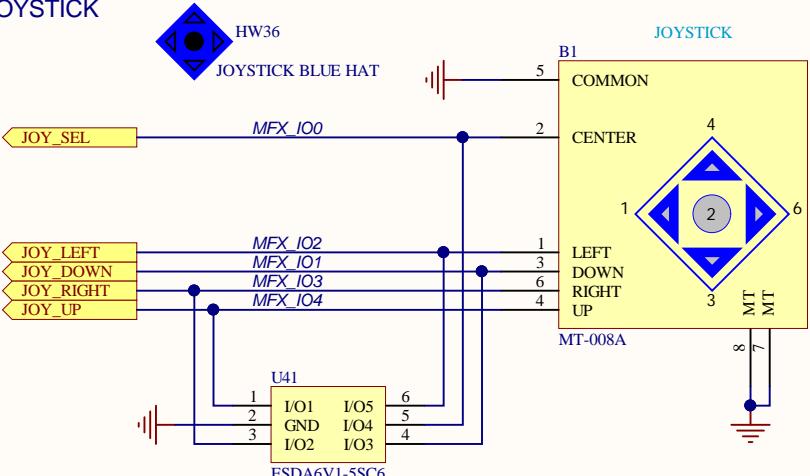
Operating range: 1.8< VIO<5.5V



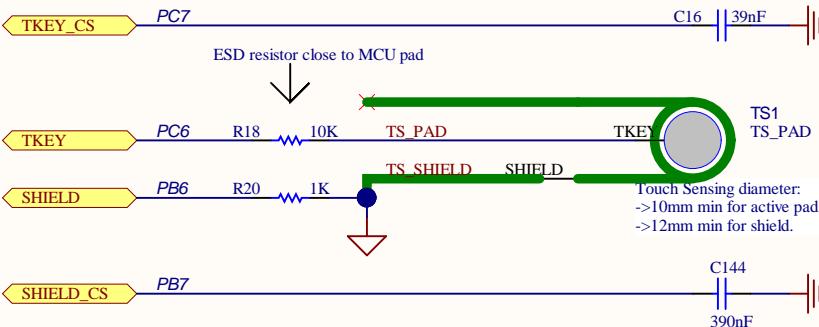
LEDs



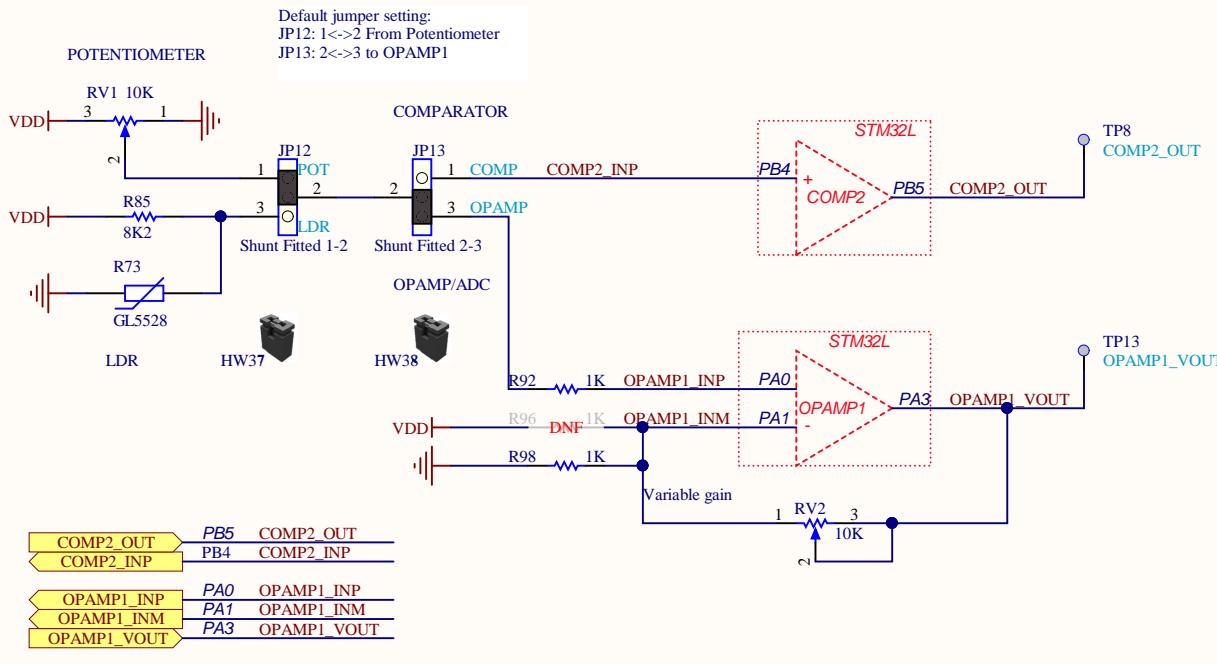
JOYSTICK



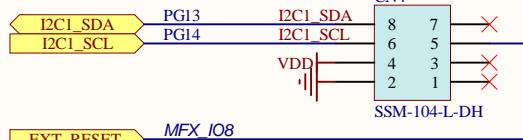
TOUCH_KEY



LDR / POTENTIOMETER

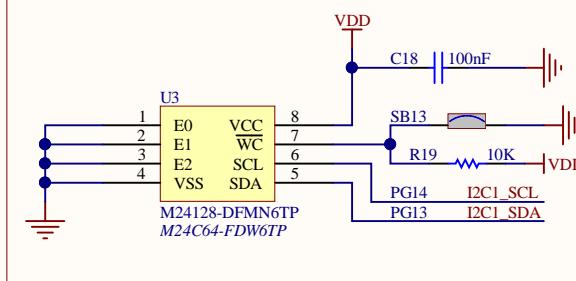


EXT_I2C

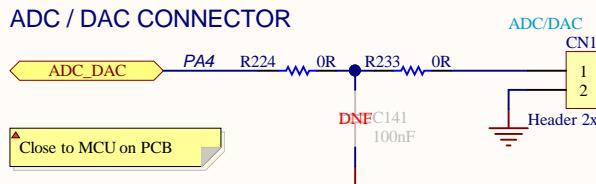


I2C EEPROM

Operating range: 1.7V < VCC < 5.5V



ADC / DAC CONNECTOR



Two pin header for external analog input

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

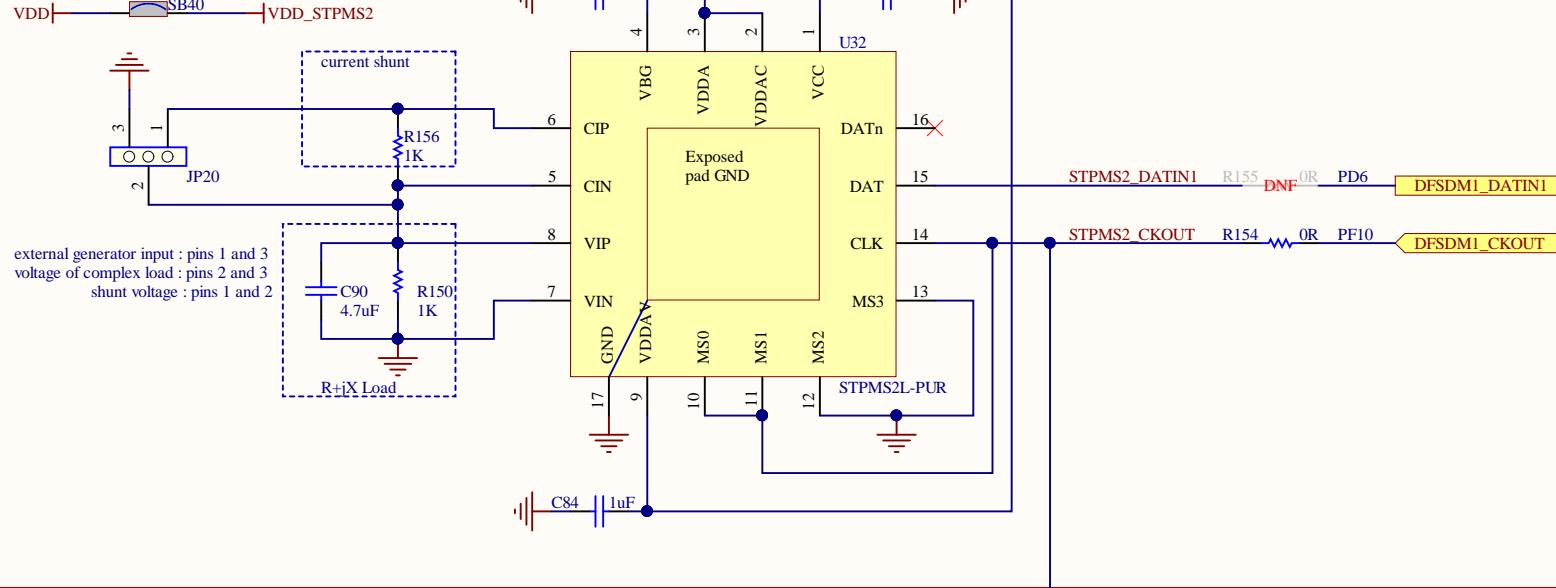
UserLED Green and Red (prior1) exclusif with SmarCard (prior2)
TouchKey exclusif with STMOD+ and MotorControl
COMP exclusif with JTAG, USB_DBN and STMOD+
OpAmp exclusif with MFX, OCTOSPI, STM32+ and MotorControl

| | |
|------------|-------------------|
| Title: | PERIPHERAL |
| Project: | STM32L552E-EVAL |
| Variant: | L552ZEQ |
| Revision: | C-02 |
| Size: A4 | Date: 27 MAY 2019 |
| Reference: | MB1372 |
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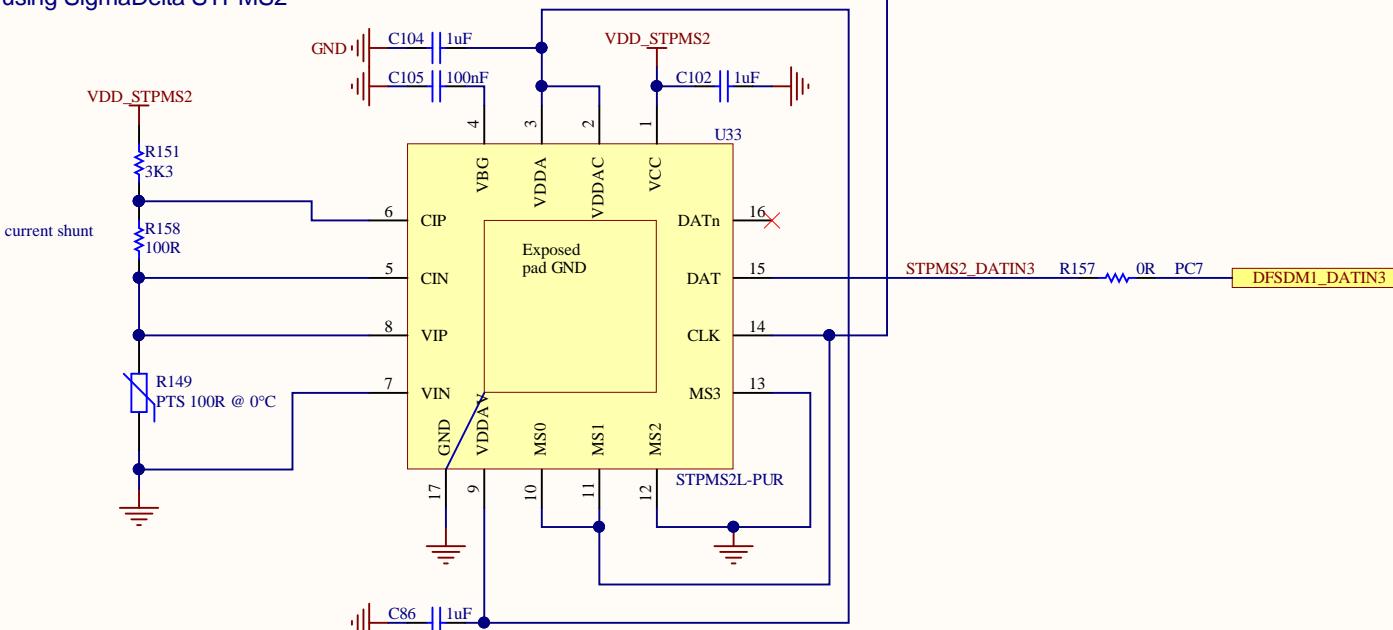


STPM2 power metering

Operating range: $3.2 < VDD < 5.5V$



Measurement using SigmaDelta STPM2

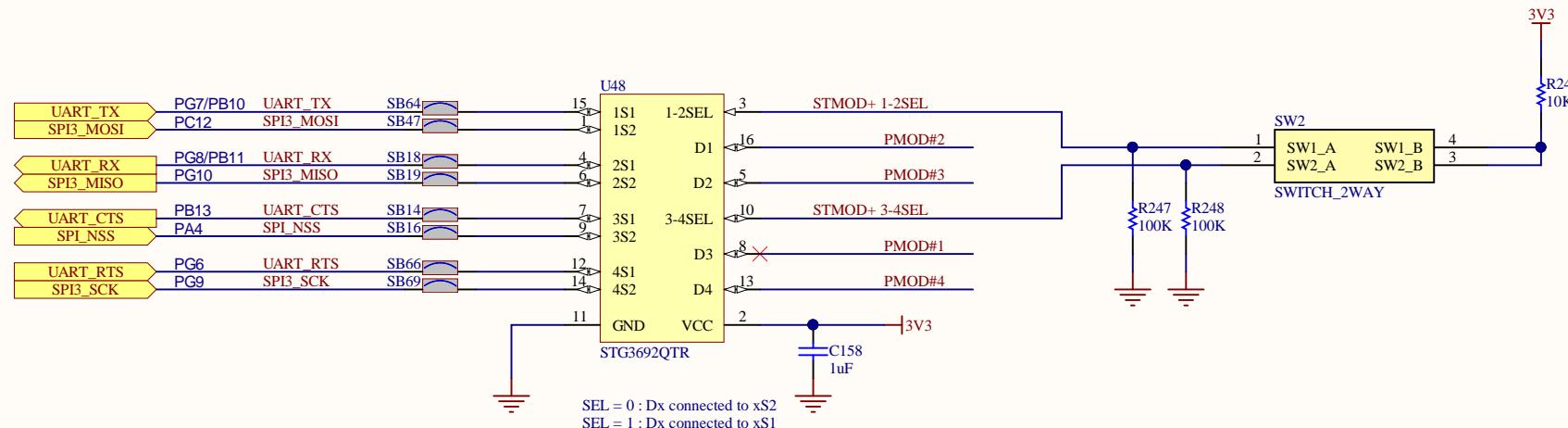


LIMITATIONS: see IO muxing sheet and User Manual for more detail

DFSDM1_CKOUT shared between MEMS, ext MEMS, STPM2, STMOD+
DFSDM1_CKOUT (pio1) exclusif with MC (prio2)
DFSDM1_DATIN1 shared between MEMS, STPM2 and STMOD+
DFSDM1_DATIN3 exclusif with TouchKey and MC

| | | | | |
|--------------|--------------------------|------------------|----------------|-------------------|
| Title: STPM2 | Project: STM32L552E-EVAL | Variant: L552ZEQ | Revision: C-02 | Reference: MB1372 |
| Size: A4 | Date: 27 MAY 2019 | Sheet: 16 of 23 | | life.augmented |

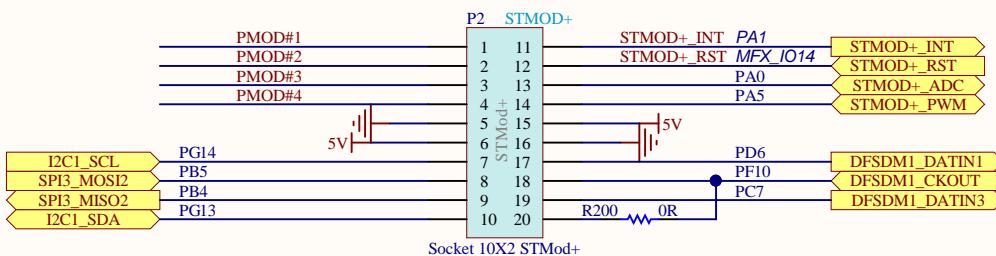
PMOD / STMOD+ SWITCH



| | SPI | SPI/UART (*) | UART |
|---------------|-------------------|--------------|------|
| STMOD+ 1-2SEL | 0 | 1 (*) | 1 |
| STMOD+ 3-4SEL | 0 | 0 (*) | 1 |
| PMOD#1 | NSS | NSS | CTS |
| PMOD#2 | MOSI _p | TX | TX |
| PMOD#3 | MISO _p | RX | RX |
| PMOD#4 | SCLK | SCLK | RTS |

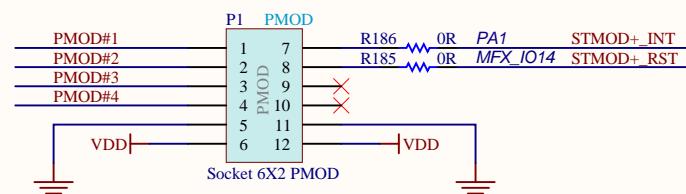
(*) default configuration to support MikroBus using STMOD+ MB1280 fan-out board

STMOD+



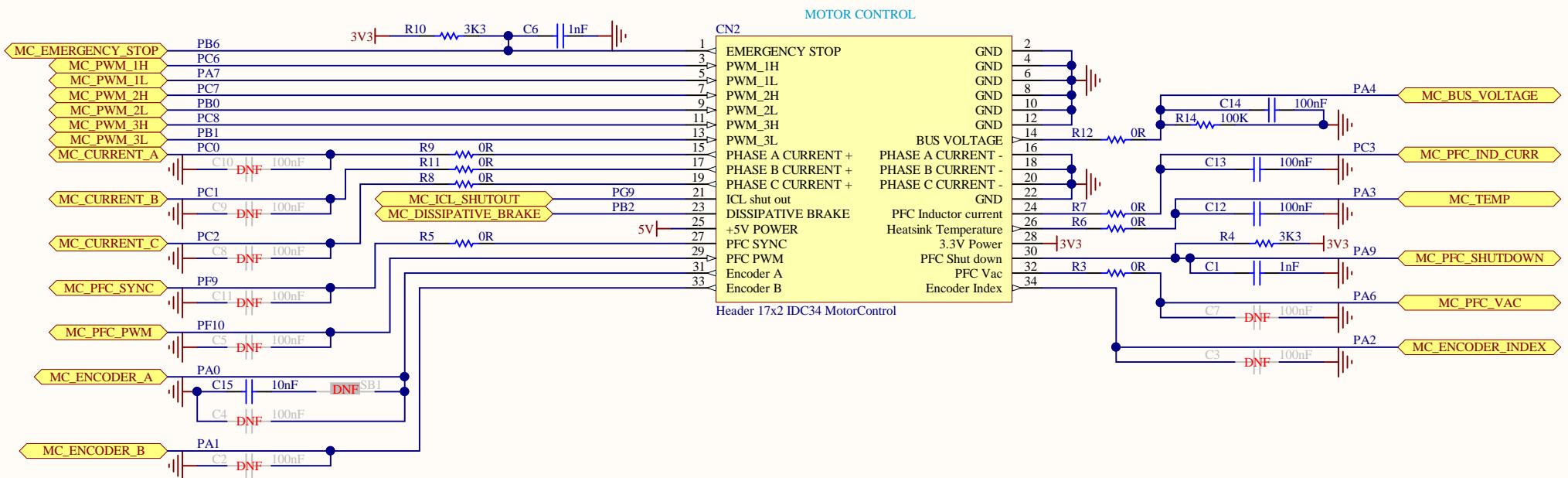
LIMITATIONS : see IO muxing sheet and User Manual for more detail
PMOD exclusif with MFX, SDCARD, RS232, OpAmp, STMOD+, MC

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

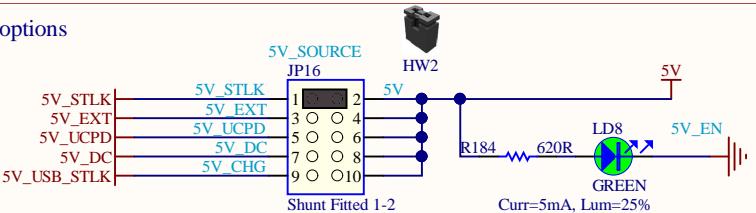
MOTOR CONTROL



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

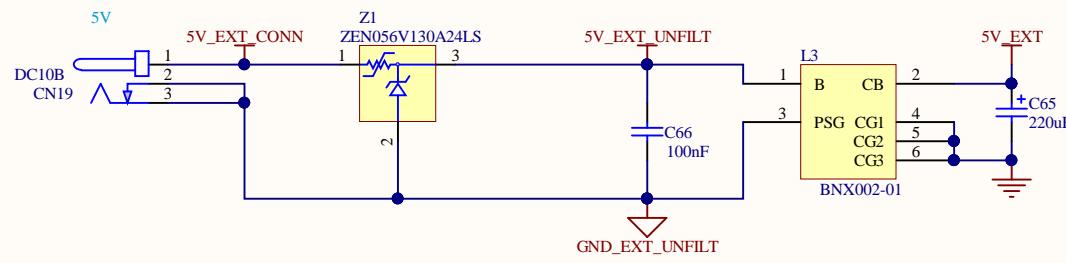
MotorControl exclusif with OCTOSPI, MFX, AUDIO_CODEC, MEMS, TouchKey, SDCARD, OpAmp, UserLED, SmartCard, STMOD+

5V Power Supply options

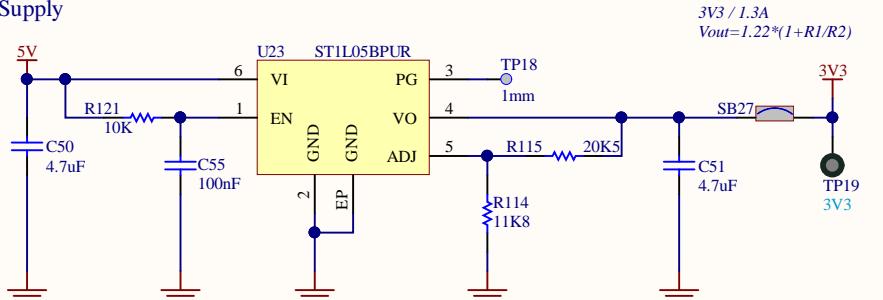


MAX CURRENT 500mA WHEN USING POWER INPUT 5V_STLK

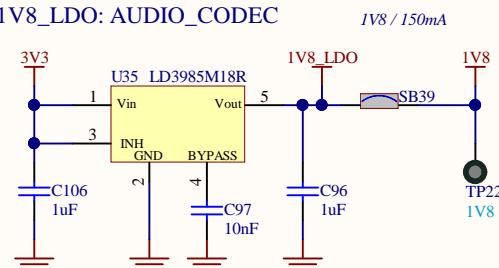
5V External supply



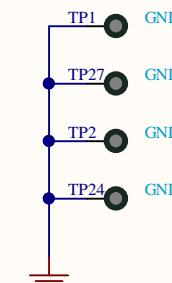
3V3 Supply



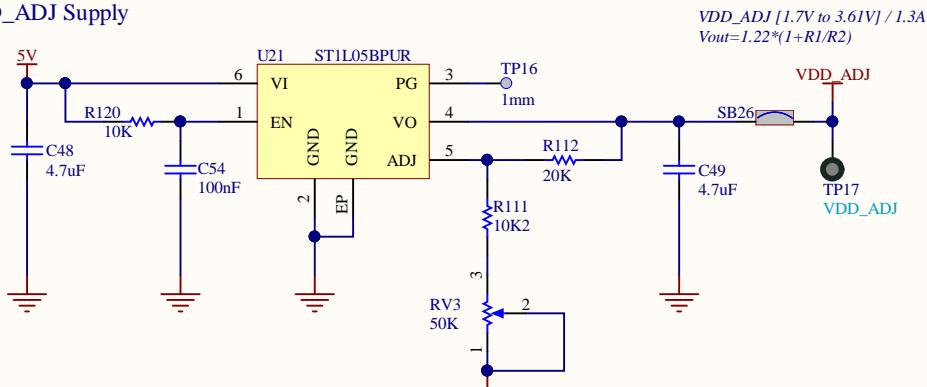
1V8_LDO: AUDIO_CODEC



GND TEST POINT

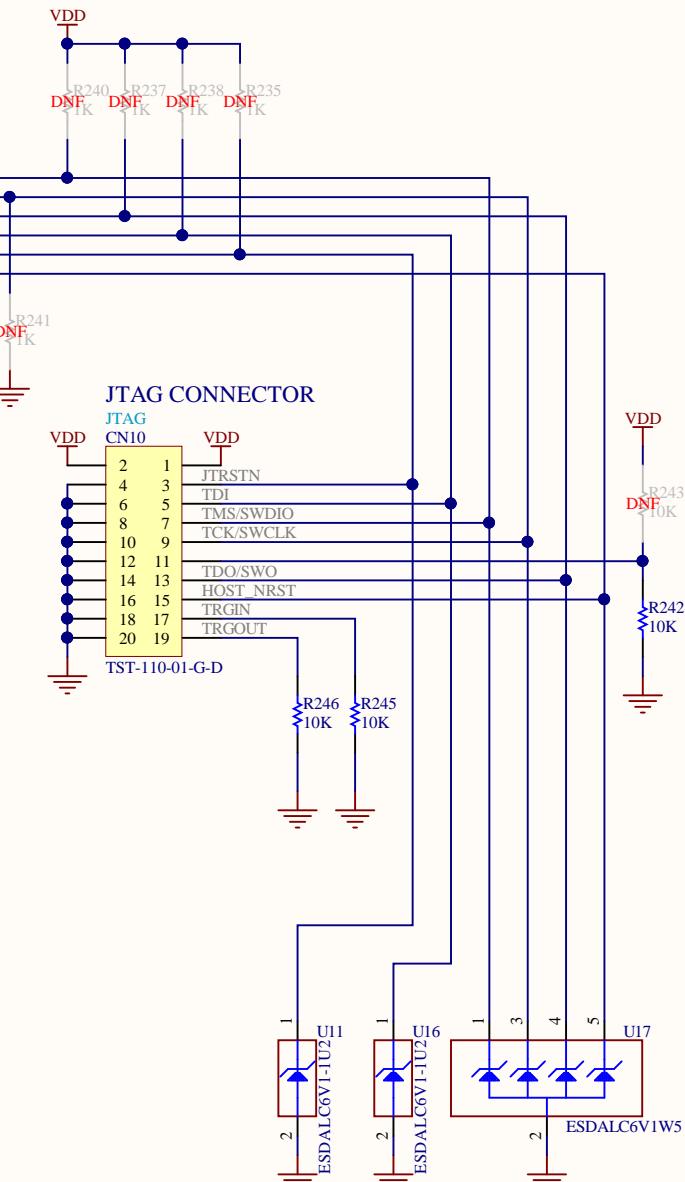
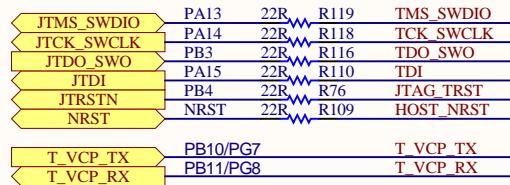


VDD_ADJ Supply

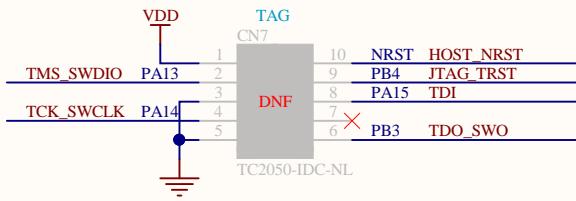


JTAG & TRACE

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

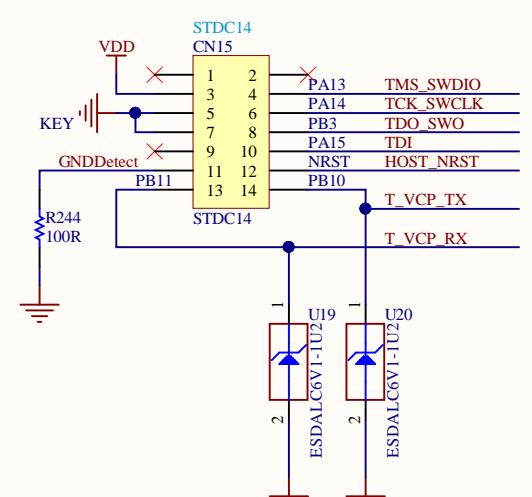


TAG CONNECTOR



TAG: Only footprint with cable: TC2050-IDC-NL

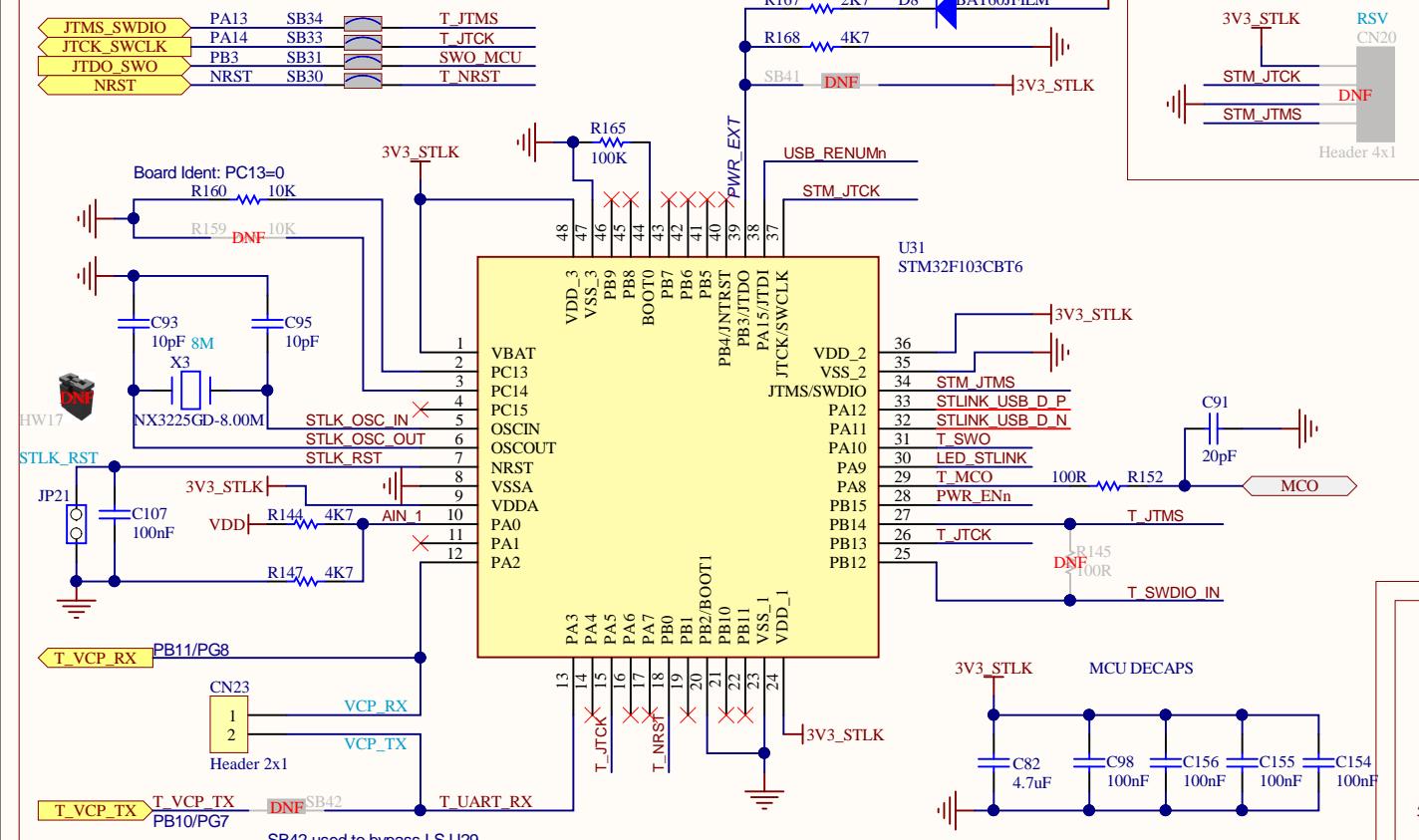
STDC14 RECEIVER



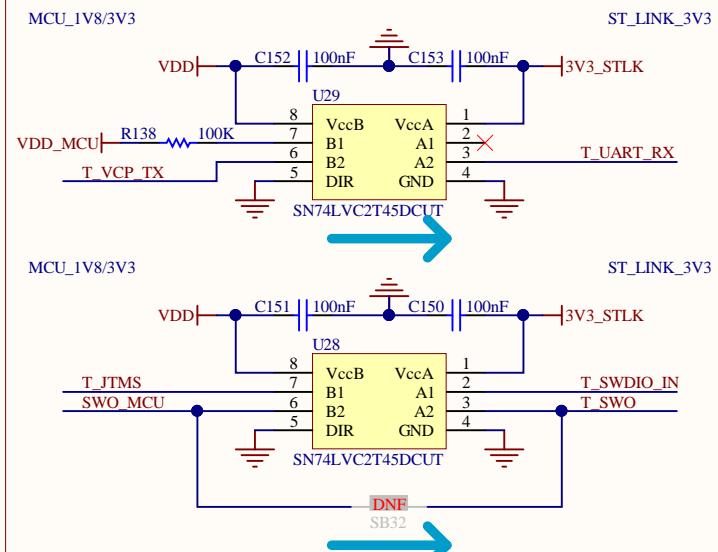
LIMITATIONS : see IO muxing sheet and User Manual for more detail

JTAG_TDI (prior2) exclusif with USB_CC1 (prior1)
 JTAG_JTRSTN exclusif with COMP and STMOD+ (prior2)
 TRACE_D0/D1/D3 exclusif with SDIO_CLK/D1/D2 (prior1)

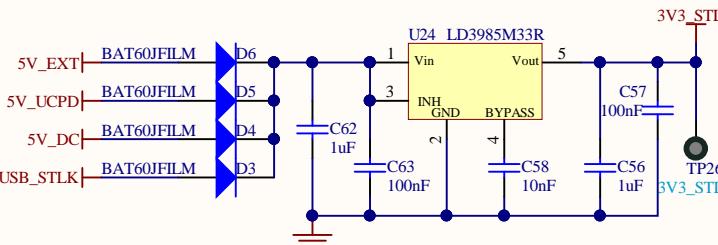
STLINK MCU



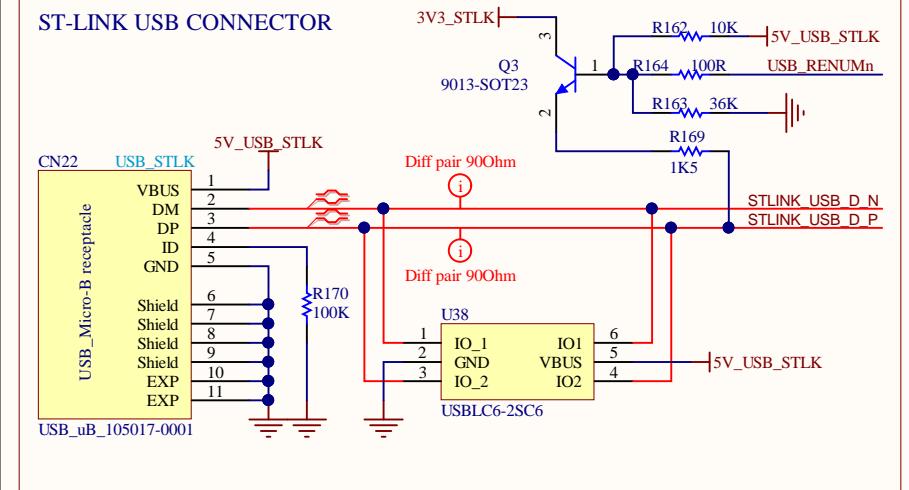
SW LEVEL SHIFTER FOR MCU_1V8



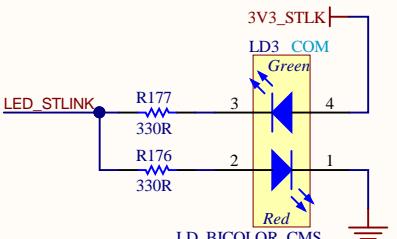
ST-LINK POWER: 3V3 / 150mA



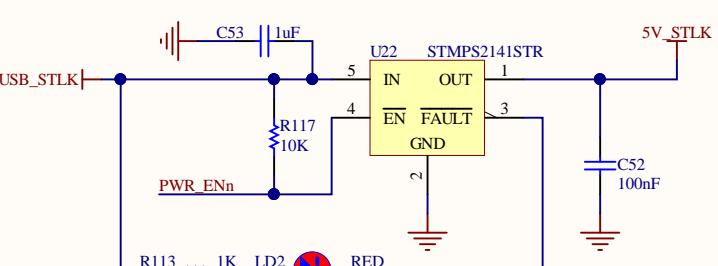
ST-LINK USB CONNECTOR



STLINK_LED: COM



USB 5V POWER SWITCH: 5V / 500mA



Title: STLINK V2.1

Project: STM32L552E-EVAL

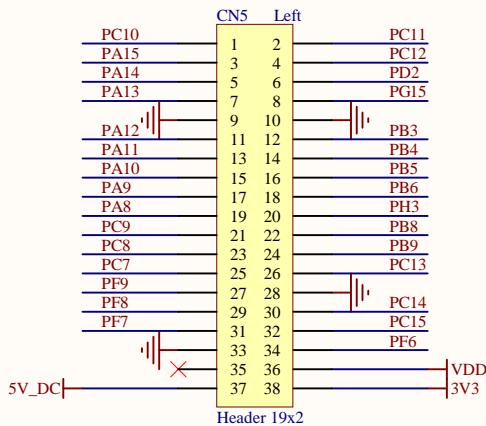
Variant: L552ZEQ

Revision: C-02 Date: 27 MAY 2019 Reference: MB1372

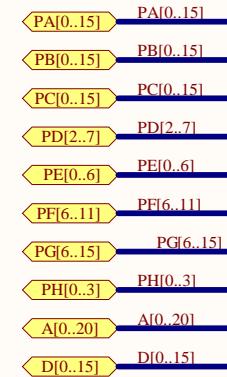
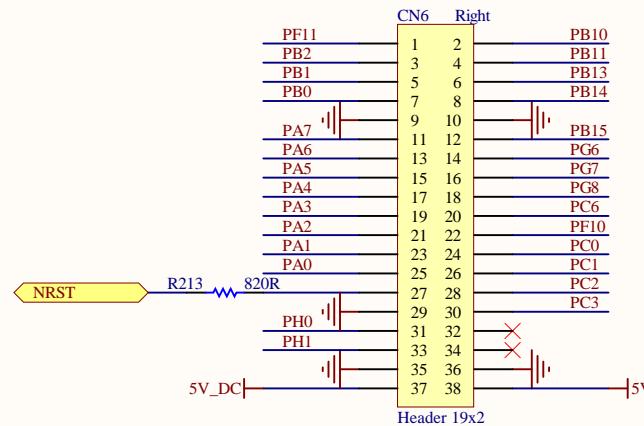
Size: A4 Date: 27 MAY 2019 Sheet: 21 of 23



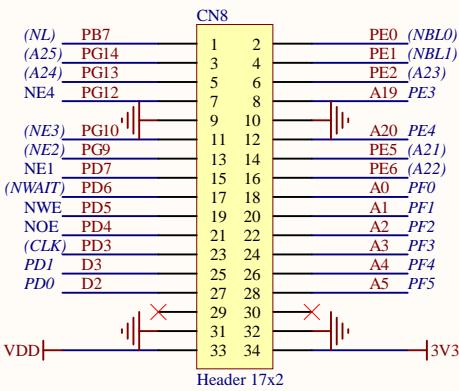
Placed close to MCU



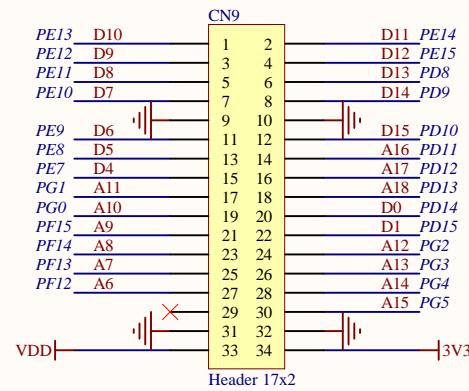
Placed close to MCU



Placed close to memory



Placed close to memory



STICKERS / LOGO

HW100
BOARD REF
MB1372B-01 syywwwxxxxx

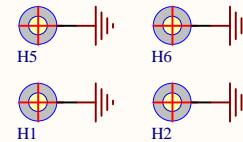
HW101
BOARD CPN
STM32L552E-EVAL

HW103

PCB
MB1372B

HW104 HW105 HW106 HW107
LOGO ST LOGO CE LOGO ESD LOGO ROHS

MECHANICAL PARTS

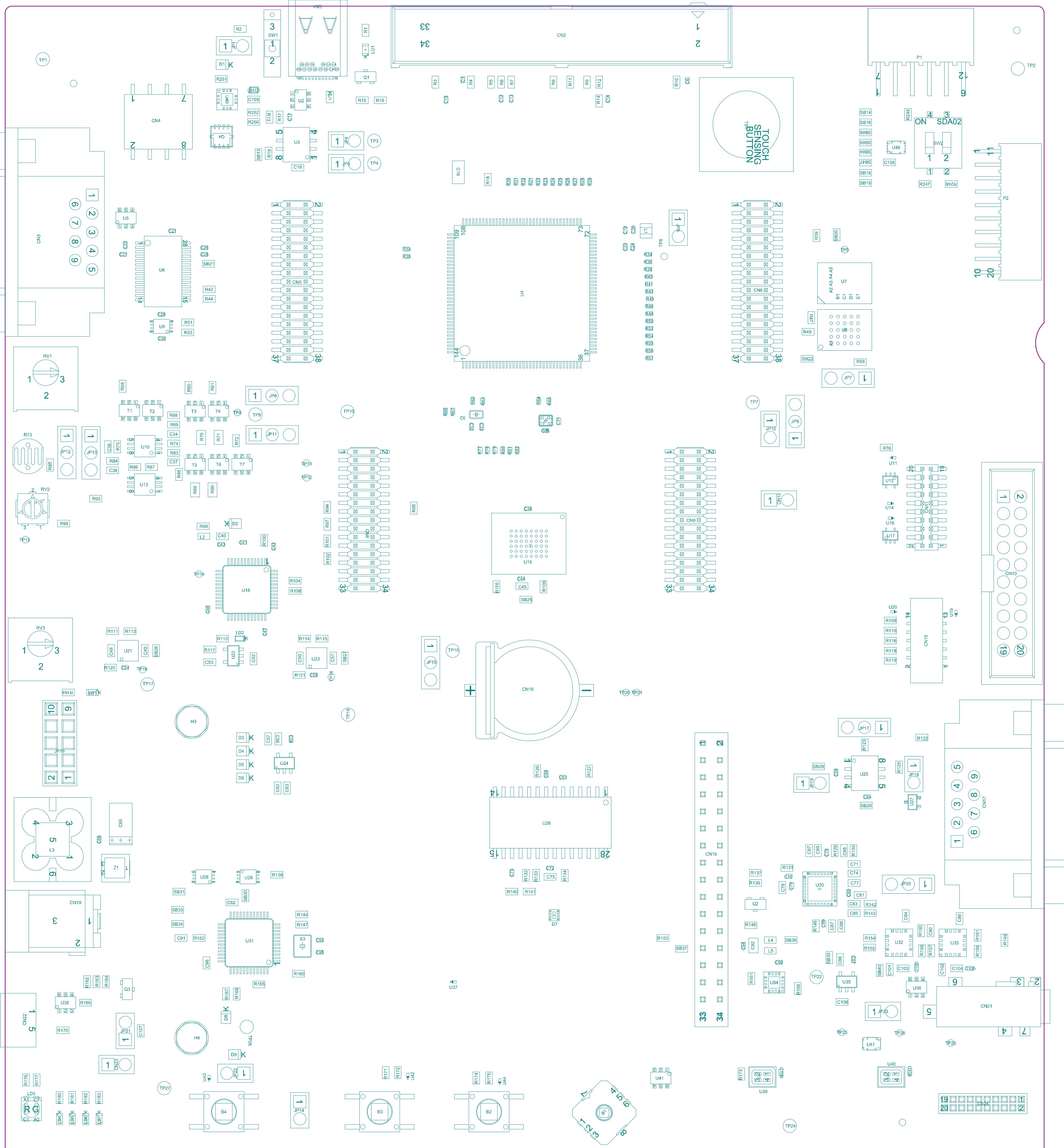


- HW30 Rubber Foot (D=10mm , H=8mm)
HW31 Rubber Foot (D=10mm , H=8mm)
HW32 Rubber Foot (D=10mm , H=8mm)
HW33 Rubber Foot (D=10mm , H=8mm)
HW34 Rubber Foot (D=10mm , H=8mm)

ADDED MODULES

HW110
LCD
MB989_TFT_LCD_240x320

| | |
|-------------------------|-----------------|
| Title: Mechanical Parts | |
| Project: | STM32L552E-EVAL |
| Variant: | L552ZEQ |
| Revision: | C-02 |
| Size: | A4 |
| Date: | 27 MAY 2019 |
| Reference: | MB1372 |
| Sheet: | 23 of 23 |



Project: STM32L552E EVAL

Layer: M14-Top Assembly

Gerber: GM14

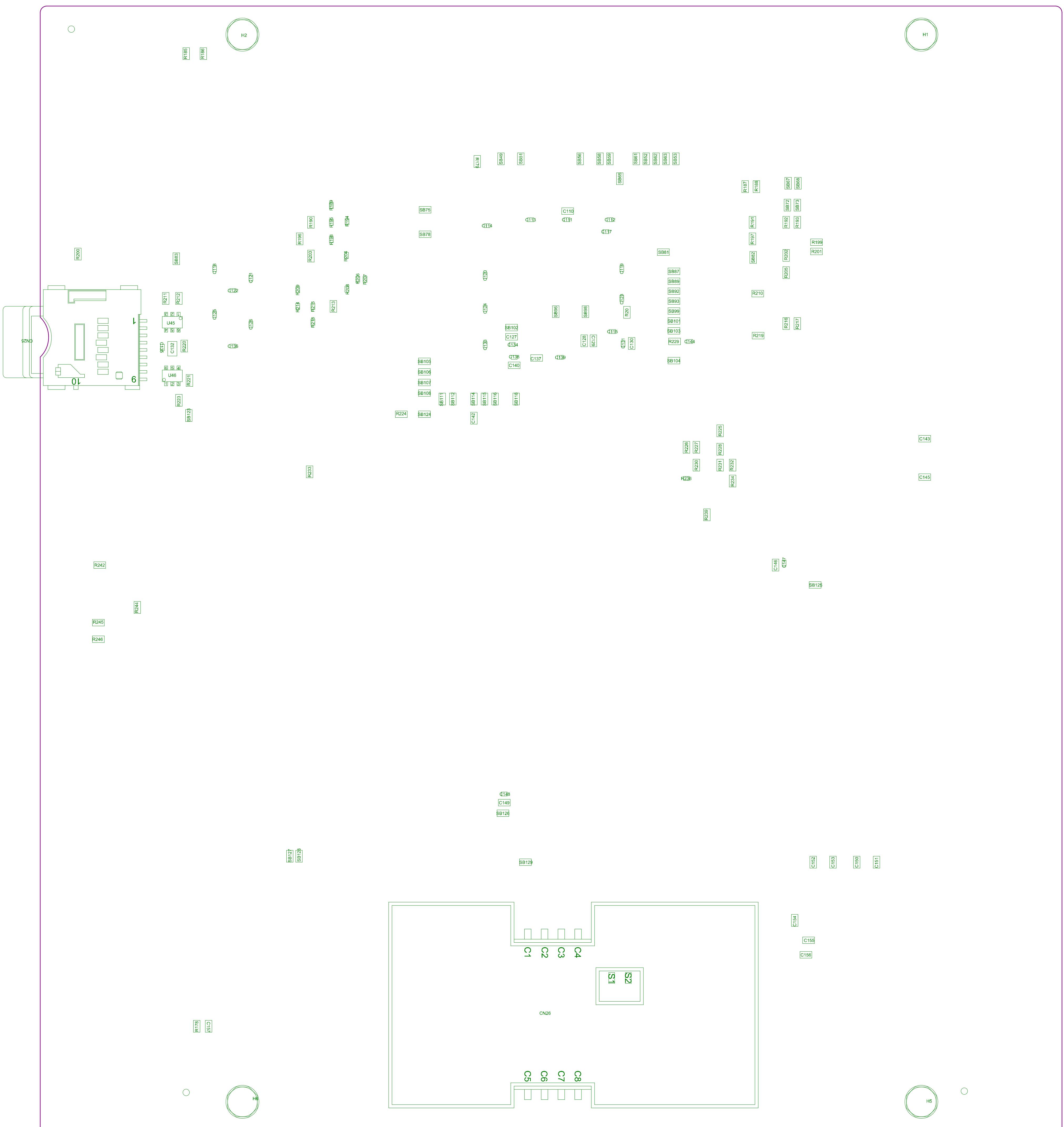
Variant: L552ZEO

Ref: MB1372

Date: 19-FEB-21

Rev. C





Project STM32L552E-EVAL

Project: STM32L552E-EVAL

Layer: M15-Bottom Assembly

Variant: L552ZEQ



