STM32H7B3I-EVAL

MB1331

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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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U_Top
MB1331_TOP.SchDoc

Title: **Project overview**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
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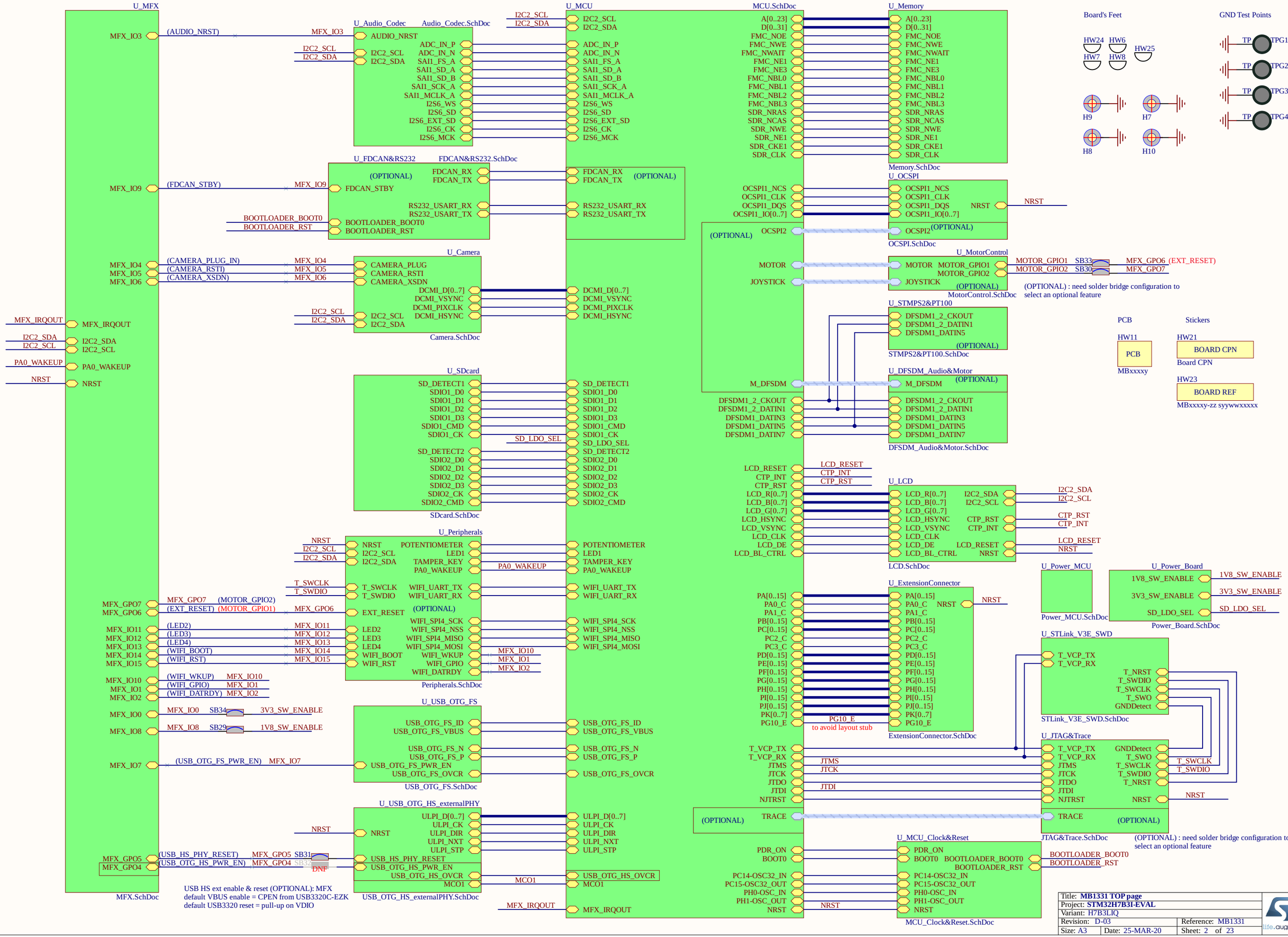
life.augmented


U_MFX
MFX_IO3
(AUDIO_NRST)
MFX_IO9
(FDCAN_STBY)
MFX_IO4
(CAMERA_PLUG_IN)
MFX_IO5
(CAMERA_RSTI)
MFX_IO6
(CAMERA_XSDN)
MFX_IRQOUT
I2C2_SDA
I2C2_SCL
PA0_WAKEUP
NRST
MFX_GPO5
MFX_GPO4
MFX_GPO7
MFX_GPO6
MFX_IO11
MFX_IO12
MFX_IO13
MFX_IO14
MFX_IO15
MFX_IO10
MFX_IO1
MFX_IO2
MFX_IO0
MFX_IO8
MFX_IO7
MFX.SchDoc
USB HS ext enable & reset (OPTIONAL): MFX
default VBUS enable = CPEN from USB3320C-EZK
default USB3320 reset = pull-up on VDIO
U_Audio_Codec
Audio_Codec.SchDoc
AUDIO_NRST
ADC_IN_P
ADC_IN_N
SAI1_FS_A
SAI1_SD_A
SAI1_SD_B
SAI1_SCK_A
SAI1_MCLK_A
I2S6_WS
I2S6_SD
I2S6_EXT_SD
I2S6_CK
I2S6_MCK
U_FDCAN&RS232
FDCAN&RS232.SchDoc
(OPTIONAL)
FDCAN_STBY
FDCAN_RX
FDCAN_TX
RS232_USART_RX
RS232_USART_TX
BOOTLOADER_BOOT0
BOOTLOADER_RST
U_Camera
CAMERA_PLUG
CAMERA_RSTI
CAMERA_XSDN
DCMI_D[0..7]
DCMI_VSYNC
DCMI_PIXCLK
DCMI_HSYNC
Camera.SchDoc
U_SDcard
SD_DETECT1
SDIO1_D0
SDIO1_D1
SDIO1_D2
SDIO1_D3
SDIO1_CMD
SDIO1_CK
SD_LDO_SEL
SD_DETECT2
SDIO2_D0
SDIO2_D1
SDIO2_D2
SDIO2_D3
SDIO2_CK
SDIO2_CMD
SDcard.SchDoc
U_Peripherals
NRST
I2C2_SCL
I2C2_SDA
T_SWCLK
T_SWDIO
EXT_RESET
LED2
LED3
LED4
WIFI_BOOT
WIFI_RST
POTENTIOMETER
LED1
TAMPER_KEY
PA0_WAKEUP
WIFI_UART_TX
WIFI_UART_RX
WIFI_SPI4_SCK
WIFI_SPI4_NSS
WIFI_SPI4_MISO
WIFI_SPI4_MOSI
WIFI_WKUP
WIFI_GPIO
WIFI_DATRDY
Peripherals.SchDoc
U_USB_OTG_FS
USB_OTG_FS_ID
USB_OTG_FS_VBUS
USB_OTG_FS_N
USB_OTG_FS_P
USB_OTG_FS_PWR_EN
USB_OTG_FS_OVCR
USB_OTG_FS.SchDoc
U_USB_OTG_HS_externalPHY
ULPI_D[0..7]
ULPI_CK
ULPI_DIR
ULPI_NXT
ULPI_STP
USB_HS_PHY_RESET
USB_OTG_HS_PWR_EN
USB_OTG_HS_OVCR
MCO1
USB_OTG_HS_externalPHY.SchDoc
U_MCU
I2C2_SCL
I2C2_SDA
ADC_IN_P
ADC_IN_N
SAI1_FS_A
SAI1_SD_A
SAI1_SD_B
SAI1_SCK_A
SAI1_MCLK_A
I2S6_WS
I2S6_SD
I2S6_EXT_SD
I2S6_CK
I2S6_MCK
FDCAN_RX
FDCAN_TX
(OPTIONAL)
RS232_USART_RX
RS232_USART_TX
DCMI_D[0..7]
DCMI_VSYNC
DCMI_PIXCLK
DCMI_HSYNC
SD_DETECT1
SDIO1_D0
SDIO1_D1
SDIO1_D2
SDIO1_D3
SDIO1_CMD
SDIO1_CK
SD_LDO_SEL
SD_DETECT2
SDIO2_D0
SDIO2_D1
SDIO2_D2
SDIO2_D3
SDIO2_CK
SDIO2_CMD
POTENTIOMETER
LED1
TAMPER_KEY
PA0_WAKEUP
WIFI_UART_TX
WIFI_UART_RX
WIFI_SPI4_SCK
WIFI_SPI4_NSS
WIFI_SPI4_MISO
WIFI_SPI4_MOSI
MFX_IO10
MFX_IO1
MFX_IO2
USB_OTG_FS_ID
USB_OTG_FS_VBUS
USB_OTG_FS_N
USB_OTG_FS_P
USB_OTG_FS_OVCR
ULPI_D[0..7]
ULPI_CK
ULPI_DIR
ULPI_NXT
ULPI_STP
MCO1
MFX_IRQOUT
MCU.SchDoc
A[0..23]
D[0..31]
FMC_NOE
FMC_NWE
FMC_NWAIT
FMC_NE1
FMC_NE3
FMC_NBL0
FMC_NBL1
FMC_NBL2
FMC_NBL3
SDR_NRAS
SDR_NCAS
SDR_NWE
SDR_NE1
SDR_CKE1
SDR_CLK
OCSPI1_NCS
OCSPI1_CLK
OCSPI1_DQS
OCSPI1_IO[0..7]
OCSPI2
(OPTIONAL)
MOTOR
JOYSTICK
M_DFSDM
DFSDM1_2_CKOUT
DFSDM1_2_DATIN1
DFSDM1_DATIN3
DFSDM1_DATIN5
DFSDM1_DATIN7
LCD_RESET
PA[0..15]
PA0_C
PA1_C
PB[0..15]
PC[0..15]
PC2_C
PC3_C
PD[0..15]
PE[0..15]
PF[0..15]
PG[0..15]
PH[0..15]
PI[0..15]
PJ[0..15]
PK[0..7]
PG10_E
to avoid layout stub
T_VCP_TX
T_VCP_RX
JTMS
JTCK
JTDO
JTDI
NJTRST
TRACE
(OPTIONAL)
PDR_ON
BOOT0
PC14-OSC32_IN
PC15-OSC32_OUT
PH0-OSC_IN
PH1-OSC_OUT
NRST
U_Memory
A[0..23]
D[0..31]
FMC_NOE
FMC_NWE
FMC_NWAIT
FMC_NE1
FMC_NE3
FMC_NBL0
FMC_NBL1
FMC_NBL2
FMC_NBL3
SDR_NRAS
SDR_NCAS
SDR_NWE
SDR_NE1
SDR_CKE1
SDR_CLK
Memory.SchDoc
U_OCSPI
OCSPI1_NCS
OCSPI1_CLK
OCSPI1_DQS
OCSPI1_IO[0..7]
NRST
OCSPI2
(OPTIONAL)
OCSPI.SchDoc
U_MotorControl
MOTOR
MOTOR_GPIO1
MOTOR_GPIO2
JOYSTICK
(OPTIONAL)
MotorControl.SchDoc
MOTOR_GPIO1
SB33
MFX_GPO6
(EXT_RESET)
MOTOR_GPIO2
SB30
MFX_GPO7
(OPTIONAL) : need solder bridge configuration to
select an optional feature
U_STMPS2&PT100
DFSDM1_2_CKOUT
DFSDM1_2_DATIN1
DFSDM1_DATIN5
(OPTIONAL)
STMPS2&PT100.SchDoc
U_DFSDM_Audio&Motor
M_DFSDM
(OPTIONAL)
DFSDM1_2_CKOUT
DFSDM1_2_DATIN1
DFSDM1_DATIN3
DFSDM1_DATIN5
DFSDM1_DATIN7
DFSDM_Audio&Motor.SchDoc
U_LCD
LCD_R[0..7]
LCD_B[0..7]
LCD_G[0..7]
LCD_HSYNC
LCD_VSYNC
LCD_CLK
LCD_DE
LCD_BL_CTRL
I2C2_SDA
I2C2_SCL
CTP_RST
CTP_INT
LCD_RESET
NRST
LCD.SchDoc
U_ExtensionConnector
PA[0..15]
PA0_C
PA1_C
PB[0..15]
PC[0..15]
PC2_C
PC3_C
PD[0..15]
PE[0..15]
PF[0..15]
PG[0..15]
PH[0..15]
PI[0..15]
PJ[0..15]
PK[0..7]
PG10_E
NRST
ExtensionConnector.SchDoc
U_Power_MCU
Power_MCU.SchDoc
U_Power_Board
1V8_SW_ENABLE
3V3_SW_ENABLE
SD_LDO_SEL
Power_Board.SchDoc
U_STLink_V3E_SWD
T_VCP_TX
T_VCP_RX
T_NRST
T_SWDIO
T_SWCLK
T_SWO
GNDDetect
STLink_V3E_SWD.SchDoc
U_JTAG&Trace
T_VCP_TX
T_VCP_RX
JTMS
JTCK
JTDO
JTDI
NJTRST
NRST
TRACE
(OPTIONAL)
JTAG&Trace.SchDoc
(OPTIONAL) : need solder bridge configuration to
select an optional feature
U_MCU_Clock&Reset
PDR_ON
BOOT0
BOOTLOADER_BOOT0
BOOTLOADER_RST
PC14-OSC32_IN
PC15-OSC32_OUT
PH0-OSC_IN
PH1-OSC_OUT
NRST
MCU_Clock&Reset.SchDoc
Board's Feet
HW24
HW6
HW25
HW7
HW8
H9
H7
H8
H10
GND Test Points
TP
TPG1
TPG2
TPG3
TPG4
PCB
HW11
PCB
MBxxxxy
Stickers
HW21
BOARD CPN
Board CPN
HW23
BOARD REF
MBxxxxy-zz syywwxxxxx
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STM32H7B3LIH6Q MCU I/Os

PRIMARY FEATURES (fitted by default)

U5A — STM32H7B3LIH6QU

(LCD_BL_CTRL) PA3 R258 0R DNF (for motor control)
PA0_WAKEUP R229 0R PA0 P1
LCD_BL_CTRL R236 0R PA1 P2
T_VCP_TX JP40 PA2 R2
T_VCP_RX JP39 (I2S6_MCK or ULPI D0) PA3 R4
(VCP for bootloader) (DCMI_HSYNC or I2S6_WS) PA4 L6
(I2S6_SCK) PA5 N5
(DCMI_PIXCLK or I2S6_EXT_SD) PA6 P5
SDR_NWE R322 0R PA7 R5
MCO1 R308 0R PA8 G11
USB_OTG_FS_VBUS R60 10K PA9 F12
USB_OTG_FS_ID R58 0R PA10 E13
USB_OTG_FS_N USB_OTG_FS_N R63 0R PA11 C15
USB_OTG_FS_P USB_OTG_FS_P R61 0R PA12 C14
PA13 E12
JTMS PA14 B13
JTCK PA15 C12
JTDI
C30 100nF

(jumper config : see below)
DFSDM1_2_CKOUT R271 0R PB0 P6
ULPI_D2 R296 0R PB1 L7
OCSPI1_CLK R283 0R PB2 R6
JTDO PB3 C6
(I2S6_MISO or NJTRST) PB4 B5
(I2S6_MOSI or ULPI_D7) PB5 E7
PB6 A4
DFSDM1_DATIN5 R29 0R PB7 D6
USB_OTG_FS_OVCR DCMI_D6 R110 0R PB8 B4
DCMI_D7 R104 0R PB9 A3
ULPI_D3 R292 0R PB10 R13
ULPI_D4 R295 0R PB11 P13
(DFSDM1_2_DATIN1 or ULPI_D5) PB12 N14
ULPI_D6 R316 0R PB13 M13
T_VCP_TX JP21 Shunt Fitted PB14 M14
T_VCP_RX JP20 Shunt Fitted PB15 M15
(VCP by default)
HW58 HW36

ULPI_STP R255 0R PC0 L3
OCSPI1_IO4 R216 0R PC1 M2
ULPI_DIR R245 0R PC2 J5
ULPI_NXT R261 0R PC3 N3
PC4 M6
OCSPI1_DQS R286 0R PC5 N6
(DCMI_D0 or FMC_NWAIT) PC6 F14
DCMI_D1 R113 0R (FMC_NE1 or DFSDM1_DATIN3) PC7 E15
(SDIO1_D0 or FMC_NE3) PC8 F13
R62 0R PC9 E14
SDIO1_D1 R56 0R PC10 A13
SDIO1_D2 R51 0R PC11 D11
SDIO1_D3 R54 0R PC12 B12
SDIO1_CK R16 0R PC13 F4
TAMPER_KEY R23 0R PC14 D1
PC14-OSC32_IN R24 0R PC15 D2
PC15-OSC32_OUT
see page 4 : MCU CLOCK & RESET
C97 100nF

PA0 C11 PD0 R119 0R D2
PA1 A12 PD1 R373 0R D3
PA2 B11 PD2 R49 0R
PA3 D10 PD3 R48 0R DCMI_D5 — SDIO1_CMD
PA4 C10 PD4 R368 0R — FMC_NOE, FMC_NWE
PA5 B10 PD5 R364 0R
PA6 A10 PD6 R289 0R (OCSPI1_IO6 or SDIO2_CK)
PA7 L12 PD7 R384 0R D13 — SDIO2_CMD
PA8 N15 PD8 R385 0R D14
PA9 L13 PD9 R381 0R D15
PA10 L14 PD10 R359 0R A16
PA11 L15 PD11 R362 0R A17
PA12 K11 PD12 R375 0R A18
PA13 K12 PD13 R391 0R D0
PA14 K13 PD14 R127 0R D1
PA15 PD15

PE0 B3 PE0 R117 0R — FMC_NBL0, FMC_NBL1
PE1 C4 PE1 R114 0R
PE2 E5 PE2 R343 0R — WIFI_SPI4_SCK
PE3 B1 PE3 R337 0R — WIFI_SPI4_NSS (SAI1_SD_B)
PE4 C2 PE4 R116 0R DCMI_D4 (SAI1_FS_A)
PE5 D3 PE5 R69 0R — WIFI_SPI4_MISO (SAI1_SCK_A)
PE6 E4 PE6 R334 0R — WIFI_SPI4_MOSI (SAI1_SD_A)
PE7 M9 PE7 R338 0R D4
PE8 R11 PE8 R96 0R D5
PE9 P11 PE9 R87 0R D6
PE10 N11 PE10 R341 0R D7
PE11 R12 PE11 R102 0R D8
PE12 L9 PE12 R345 0R D9
PE13 M10 PE13 R353 0R D10
PE14 N10 PE14 R105 0R D11
PE15 P12 PE15 R348 0R D12

PF0 G4 PF0 R339 0R A0
PF1 G3 PF1 R335 0R A1
PF2 H1 PF2 R331 0R A2
PF3 J1 PF3 R74 0R A3
PF4 H3 PF4 R66 0R A4
PF5 J2 PF5 R65 0R A5
PF6 J3 PF6 R234 0R OCSPI1_IO3
PF7 J4 PF7 R230 0R OCSPI1_IO2
PF8 K1 PF8 R237 0R OCSPI1_IO0
PF9 K2 PF9 R241 0R OCSPI1_IO1
PF10 M3 PF10
PF11 N8 PF11 R332 0R — SD_DETECT1, SDR_NRAS
PF12 R9 PF12 R326 0R A6
PF13 M8 PF13 R325 0R A7
PF14 P9 PF14 R70 0R A8
PF15 N9 PF15 R103 0R A9

(jumper config : see below)
3V3_AO R279 1K — I2C2_SCL, I2C2_SDA
3V3_AO R43 1K
CTP_INT
OCSPI1_IO5 R272 0R PH3 N4
R275 0R PH4 M5
R35 0R PH5 P4
SDR_NE1 R68 0R PH6 M11
SDR_CKE1 R320 0R PH7 R14
D16 R358 0R PH8 P14
D17 R365 0R PH9 N13
D18 R361 0R PH10 M12
D19 R370 0R PH11 P15
D20 R371 0R PH12 L11
D21 R131 0R PH13 D13
D22 R387 0R PH14 B15
D23 R382 0R PH15 B14
R244 0R
ADC_IN_P — PA0_C P3
ADC_IN_N R250 0R PA1_C R3
POTENTIOMETER JP5 Shunt Fitted
HW10
see page 4 : MCU CLOCK & RESET
PC2_C N1
PC3_C N2
PH0 L1
PH1 L2
NRST K3
BOOT0 C5
PDR_ON D5
PH0-OSC_IN
PH1-OSC_OUT
NRST
BOOT0
PDR_ON

U5B — STM32H7B3LIH6QU

A10 R73 0R PG0 R10
A11 R333 0R PG1 P10
A12 R380 0R PG2 H13
A13 R374 0R PG3 G15
A14 R369 0R PG4 H12
A15 R366 0R PG5 G14
(OCSPI1_NCS or SD_LDO_SEL) PG6 G13
(SAI1_MCLK_A) PG7 G12
R132 0R PG8 F15
SDR_CLK (DCMI_VSYNC or SDIO2_D0) PG9 A9
(DCMI_D2, FMC_NE3 or SDIO2_D1) PG10_E R280 0R PG10 A8
(DCMI_D3 or SDIO2_D2) PG11 B8
R122 0R PG12 C8
SDIO2_D3 PG13 D8
LED1 OCSPI1_IO7 R300 0R PG14 A7
R352 0R PG15 A5
SDR_NCAS

PG0 PI0 C13
PG1 PI1 E11
PG2 PI2 D12
PG3 PI3 A14
PG4 PI4 A2
PG5 PI5 B2
PG6 PI6 C3
PG7 PI7 D4
PG8 PI8 C1
PG9 PI9 E3
PG10 PI10 F3
PG11 PI11 G5
PG12 PI12 H2
PG13 PI13 H5
PG14 PI14 H4
PG15 PI15 M7

PH2 M4
PH3 N4
PH4 M5
PH5 P4
PH6 M11
PH7 R14
PH8 P14
PH9 N13
PH10 M12
PH11 P15
PH12 L11
PH13 D13
PH14 B15
PH15 B14
PA0_C P3
PA1_C R3
PC2_C
PC3_C
PH0 L1
PH1 L2
NRST
BOOT0
PDR_ON

I2C1_SCL R128 0R D24
I2C1_SDA R124 0R D25
R121 0R D26
R378 0R D27
R350 0R — FMC_NBL2, FMC_NBL3
R344 0R
R356 0R D28
R347 0R D29
MFX_IRQOUT
R351 0R D30
R357 0R D31
R297 0R — SD_DETECT2, LCD_HSYNC, LCD_VSYNC, LCD_CLK
R215
R214
R226

470ohms @ 100MHz
R290 LCD_R0
PJ0 N7 R293 LCD_R1
PJ1 P7 R270 LCD_R2
PJ2 R7 R260 LCD_R3
PJ3 R8 R291 LCD_R4
PJ4 P8 R265 LCD_R5
PJ5 N12 R313 LCD_R6
PJ6 K14 R317 LCD_R7
PJ7 K15 R315 LCD_G0
PJ8 J15 R306 LCD_G1
PJ9 J14 R310 LCD_G2
PJ10 J13 R312 LCD_G3
PJ11 J11 R302 LCD_G4
PJ12 E9 R259 LCD_B0
PJ13 D9 R264 LCD_B1
PJ14 C9 R269 LCD_B2
PJ15 B9 R276 LCD_B3

470ohms @ 100MHz
PK0 J12 R305 LCD_G5
PK1 H15 R299 LCD_G6
PK2 H14 R303 LCD_G7
PK3 B7 R256 LCD_B4
PK4 C7 R254 LCD_B5
PK5 A6 R249 LCD_B6
PK6 B6 R243 LCD_B7
PK7 D7 R248 LCD_DE

SECONDARY FEATURES (not fitted by default)

JOYSTICK (OPTIONAL) excl with LCD, SAI, SDRAM 32bits, Trace
JOYSTICK — JOY_SEL R360 0R PI9; JOY_LEFT R363 DNF 0R PD5; JOY_DOWN R367 DNF 0R PD4; JOY_RIGHT R386 DNF 0R PI0; JOY_UP R389 DNF 0R PH13; DNF

FMC A19-A23 (OPTIONAL) excl with CAMERA, Trace, WIFI, MOTOR
PE3 R97 0R A19
PE4 R88 DNF 0R A20
PE5 R324 DNF 0R A21
PE6 R78 DNF 0R A22
PE2 R342 DNF 0R A23
DNF

TRACE (OPTIONAL) excl with CAMERA, SAI, FMC A19-23, WIFI SPI
TRACE — TRACECLK R101 0R PE2; TRACED0 R93 DNF 0R PE3; TRACED1 R340 DNF 0R PE4; TRACED2 R71 DNF 0R PE5; TRACED3 R80 DNF 0R PE6; TRGIN R64 DNF 0R PJ7; TRGOUT R34 DNF 0R PJ12; DNF

CAN FD excl with USB FS
FDCAN_RX SB36 DNF USB_OTG_FS_N
FDCAN_TX SB35 DNF USB_OTG_FS_P
USB HS exclusive with CAMERA & AUDIO I2S6
USB_OTG_HS_OVCR R108 0R PA4 DNF

OCSPI2 (disable FMC, CAMERA & SD CARD 2)
OCSPI2 — OCSPI2_NCS R287 0R PG12; OCSPI2_DQS R354 DNF 0R PG15 (SDNCAS); OCSPI2_CLK_P R319 DNF 0R PF4 (FMC_A4); OCSPI2_CLK_N R318 DNF 0R PF5 (FMC_A5); OCSPI2_IO0 R98 DNF 0R PF0 (FMC_A0); OCSPI2_IO1 R89 DNF 0R PF1 (FMC_A1); OCSPI2_IO2 R82 DNF 0R PF2 (FMC_A2); OCSPI2_IO3 R75 DNF 0R PF3 (FMC_A3); OCSPI2_IO4 R76 DNF 0R PG0 (FMC_A10); OCSPI2_IO5 R77 DNF 0R PG1 (FMC_A11); OCSPI2_IO6 R115 DNF 0R PG10_E (FMC_NE3/DCMI_D2); OCSPI2_IO7 R257 DNF 0R PG11 (SDIO2_D2/DCMI_D3); DNF

MOTOR (OPTIONAL)
excl with SAI, Camera, FMC, LCD, OCSPI1, MCO1, WIFI, USB HS
MOTOR — MOTOR_TIM2_CH1 R213 0R PA0; MOTOR_TIM2_CH2 R235 DNF 0R PA1; MOTOR_TIM2_CH3 R239 DNF 0R PA2; MOTOR_ADC12_INP7 R67 DNF 0R PA7; MOTOR_TIM1_CH1 R301 DNF 0R PA8; MOTOR_TIM1_CH2 R294 DNF 0R PA9; MOTOR_TIM1_CH3 R288 DNF 0R PA10; MOTOR_TIM1_CH1N R81 DNF 0R PE8; MOTOR_TIM1_CH2N R304 DNF 0R PB14; MOTOR_TIM1_CH3N R309 DNF 0R PB15; MOTOR_ADC12_INP10 R253 DNF 0R PC0; MOTOR_ADC12_INP11 R210 DNF 0R PC1; MOTOR_TIM15_CH2 R330 DNF 0R PE6; MOTOR_ADC2_INP1 R219 DNF 0R PC3_C; MOTOR_ADC12_INP4 R277 DNF 0R PC4; MOTOR_ADC12_INP8 R282 DNF 0R PC5; MOTOR_TIM15_BKIN R278 DNF 0R PD2; MOTOR_ADC1_INP6 R72 DNF 0R PF12; MOTOR_TIM1_BKIN R349 DNF 0R PA6; MOTOR_TIM15_CH1 R323 DNF 0R PE5; DNF

MOTOR DFSDM (OPTIONAL)
excl with FMC, LCD, OCSPI1, SD card 2, USB FS
M_DFSDM — MOTOR_DFSDM1_2_CKIN1 R314 0R PB13; MOTOR_DFSDM1_CKIN2 R50 DNF 0R PC4; MOTOR_DFSDM1_CKIN3 R123 DNF 0R PD8; MOTOR_DFSDM1_CKIN4 R284 DNF 0R PD6; MOTOR_DFSDM1_CKIN5 R238 DNF 0R PB7; MOTOR_DFSDM1_CKIN7 R120 DNF 0R PB8; MOTOR_DFSDM1_CKIN0 R246 DNF 0R PC0; MOTOR_DFSDM1_DATIN0 R209 DNF 0R PC1; MOTOR_DFSDM1_DATIN2 R55 DNF 0R PC5; MOTOR_DFSDM1_DATIN4 R95 DNF 0R PE10; DNF
(PB8 = MEMS_LED)

AUDIO DFSDM & LCD RESET (OPTIONAL)
LCD_RESET R240 0R PA2
CTP_RST R281 DNF 0R PC4
DFSDM1_DATIN7 R233 DNF 0R PB9 (DCMI_D7)
DNF

PRIMARY FEATURES (exclusive use : jumper config))

(jumper config : exclusive use)

DCMI, OCSPI1, SDIO1 & I2S6 (primary features)

DFSDM1_2_DATIN1 — 1 — 2 PB12 — ULPI_D5 — 3 — Shunt Fitted 1-2 JP19
OCSPI1_NCS — 1 — 2 PG6 — SD_LDO_SEL — 3 — Shunt Fitted 1-2 JP23
I2S6_SD JP18 Shunt Fitted PB5 — ULPI_D7 JP16
DCMI_PIXCLK — 1 — 2 PA6 — I2S6_EXT_SD 3 — Shunt Fitted 1-2 JP6
I2S6_MCK — 1 — 2 PA3 — ULPI_D0 — 3 — Shunt Fitted 1-2 JP9
I2S6_CK — 1 — 2 PA5 — ULPI_CK — 3 — Shunt Fitted 1-2 JP11

SDIO2, SAI, ULPI (USB HS), FMC NOR/SRAM, DFSDM (secondary features)

DCMI_VSYNC — 1 — 2 PG9 — SDIO2_D0 — 3 — Shunt Fitted 1-2 JP17
OCSPI1_IO6 — 1 — 2 PD6 — SDIO2_CK — 3 — Shunt Fitted 1-2 JP4
FMC_NE1 — 1 — 2 PC7 (DCMI_D1) — DFSDM1_DATIN3 — 3 — Shunt Fitted 2-3 JP35
I2S6_EXT_SD — I2S6_EXT_SD 1 — 2 PB4 — NJTRST — 3 — Shunt Fitted 1-2 JP8
I2S6_WS — 1 — 2 PA4 — DCMI_HSYNC — 3 — Shunt Fitted 1-2 JP7 (CAMERA or AUDIO I2S6)
SAI1_SCK_A JP28 PE5 (SAI)
SAI1_MCLK_A JP14 PG7 (SAI)
SAI1_FS_A JP26 PE4 (SAI)
SAI1_SD_A JP27 PE6 (SAI)
SAI1_SD_B JP34 PE3 (SAI)

ULPI_D1 JP10 PB0 (DFSDM1_CKOUT)
DCMI_D2 R118 0R PG10_E
DCMI_D0 — 1 — 2 PC6 — FMC_NWAIT — 3 — Shunt Fitted 1-2 JP32
DCMI_D3 — 1 — 2 PG11 — SDIO2_D2 — 3 — Shunt Fitted 1-2 JP1
FMC_NE3 — 1 — 2 PG10 — SDIO2_D1 — 3 — Header 3x1 (DCMI_D2) JP2
SDIO1_D0 — 1 — 2 PC8 — FMC_NE3 — 3 — Shunt Fitted 1-2 JP12

HW35 HW31 HW27 HW34 HW39 HW28 HW37 HW32 HW41 HW2 HW3 HW5 HW38 HW49

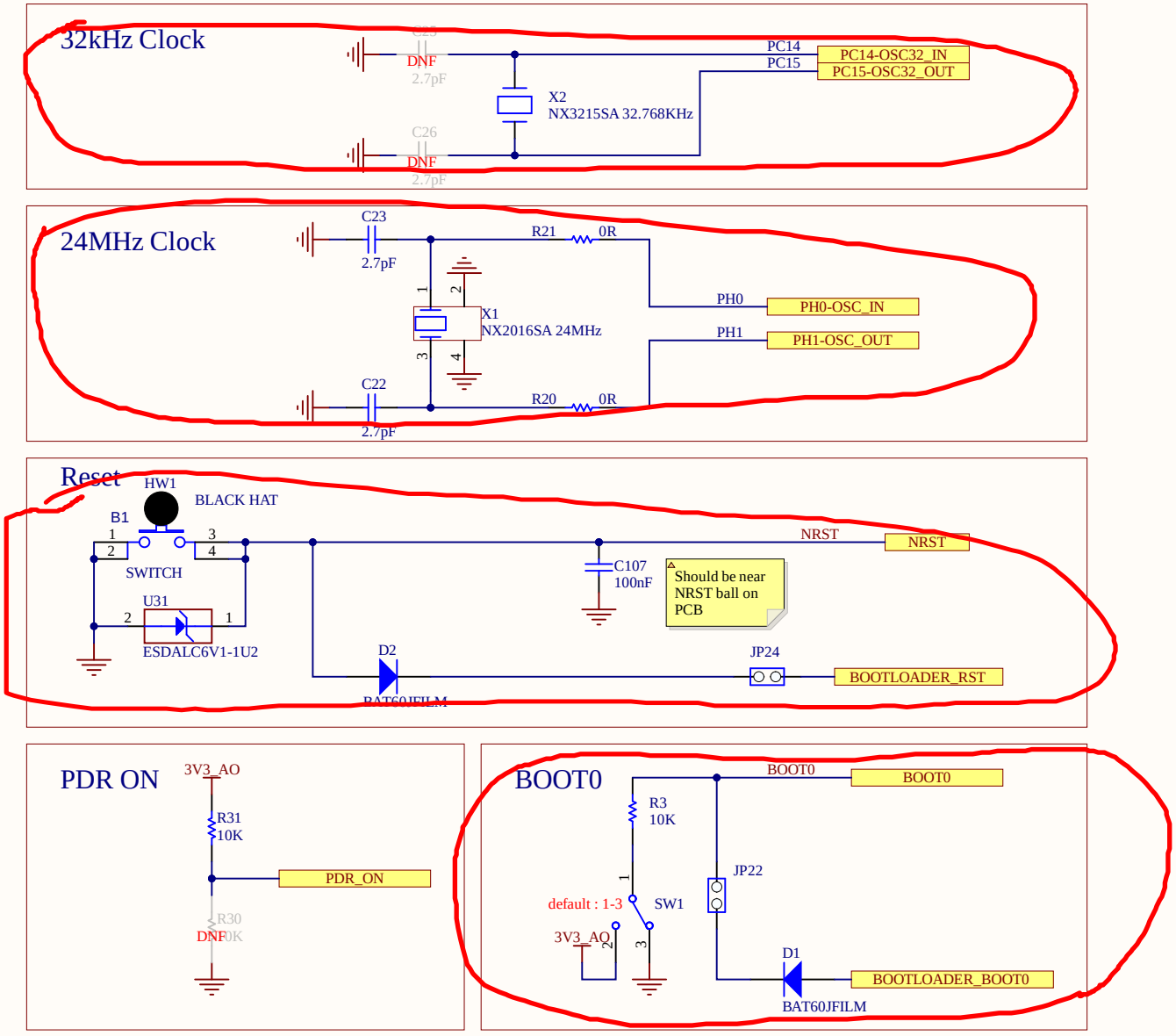
VCP & RS232 UART excl with WIFI UART
WIFI_UART_RX PB15 or PA3 SB48 T_VCP_RX
WIFI_UART_TX PB14 or PA2 SB47 DNF T_VCP_TX
DNF
RS232_USART_RX PB15 or PA3 SB49 T_VCP_RX
RS232_USART_TX PB14 or PA2 SB50 DNF T_VCP_TX

D[0..31] A[0..23] OCSPI1_IO[0..7] ULPI_D[0..7] DCMI_D[0..7] LCD_R[0..7] LCD_G[0..7] LCD_B[0..7] PA[0..15] PB[0..15] PC[0..15] PD[0..15] PE[0..15] PF[0..15] PG[0..15] PH[0..15] PI[0..15] PJ[0..15] PK[0..7]
PA0_C PA1_C PC2_C PC3_C
PG10_E to avoid layout stub

Title: **MCU STM32H7B3LIH6Q**			
Project: **STM32H7B3I-EVAL**			
Variant: H7B3LIQ			
Revision: D-03		Reference: MB1331	
Size: A3	Date: 25-MAR-20	Sheet: 3 of 23	

life.augmented

STM32H7B3LIH6Q MCU CLOCK, RESET & BOOT

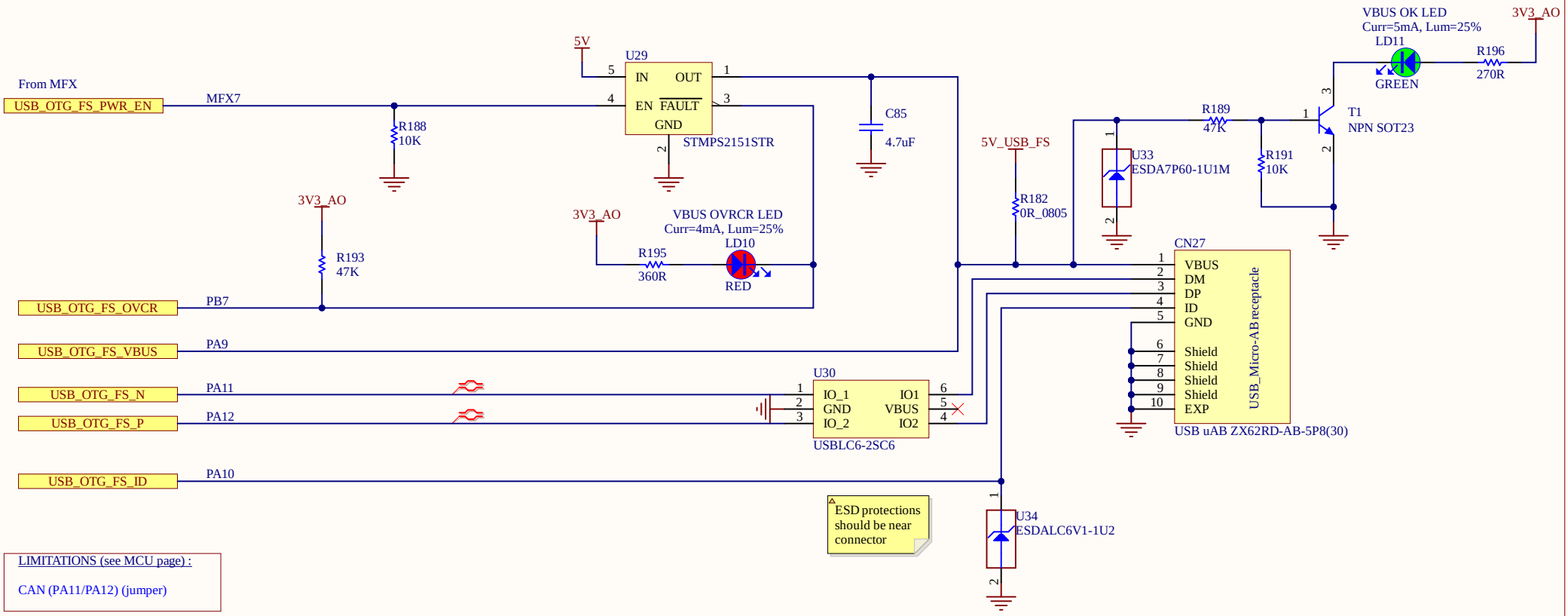


Title: **MCU Clocks and Reset**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
Size: A4	Date: 25-MAR-20	Sheet: 4 of 23

life.augmented

USB_OTG_FS

(Always ON)



LIMITATIONS (see MCU page) :

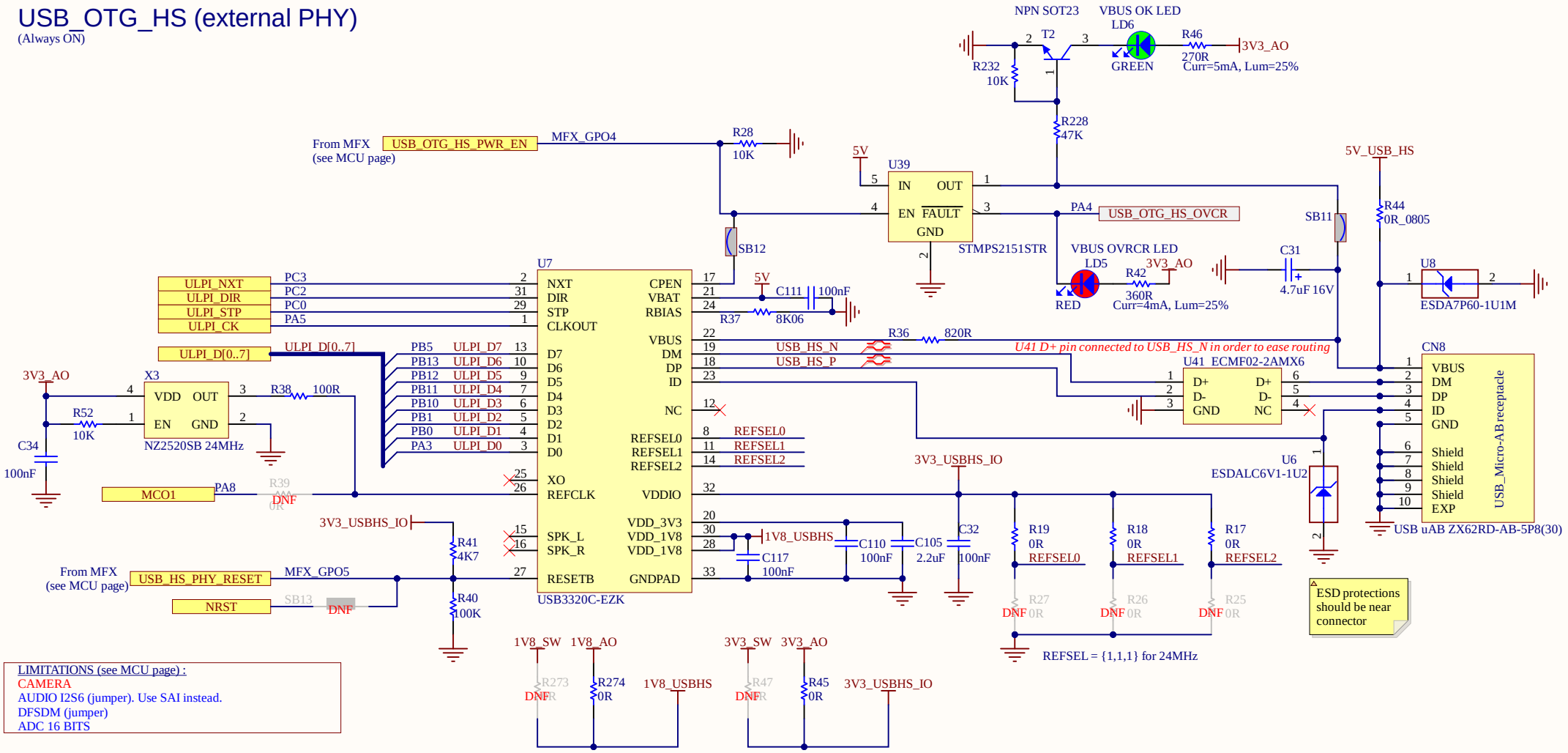
CAN (PA11/PA12) (jumper)

Title: **USB_OTG_FS**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
Size: A4	Date: 25-MAR-20	Sheet: 5 of 23

life.augmented

USB_OTG_HS (external PHY)

(Always ON)



LIMITATIONS (see MCU page) :
CAMERA
AUDIO I2S6 (jumper). Use SAI instead.
DFSDM (jumper)
ADC 16 BITS

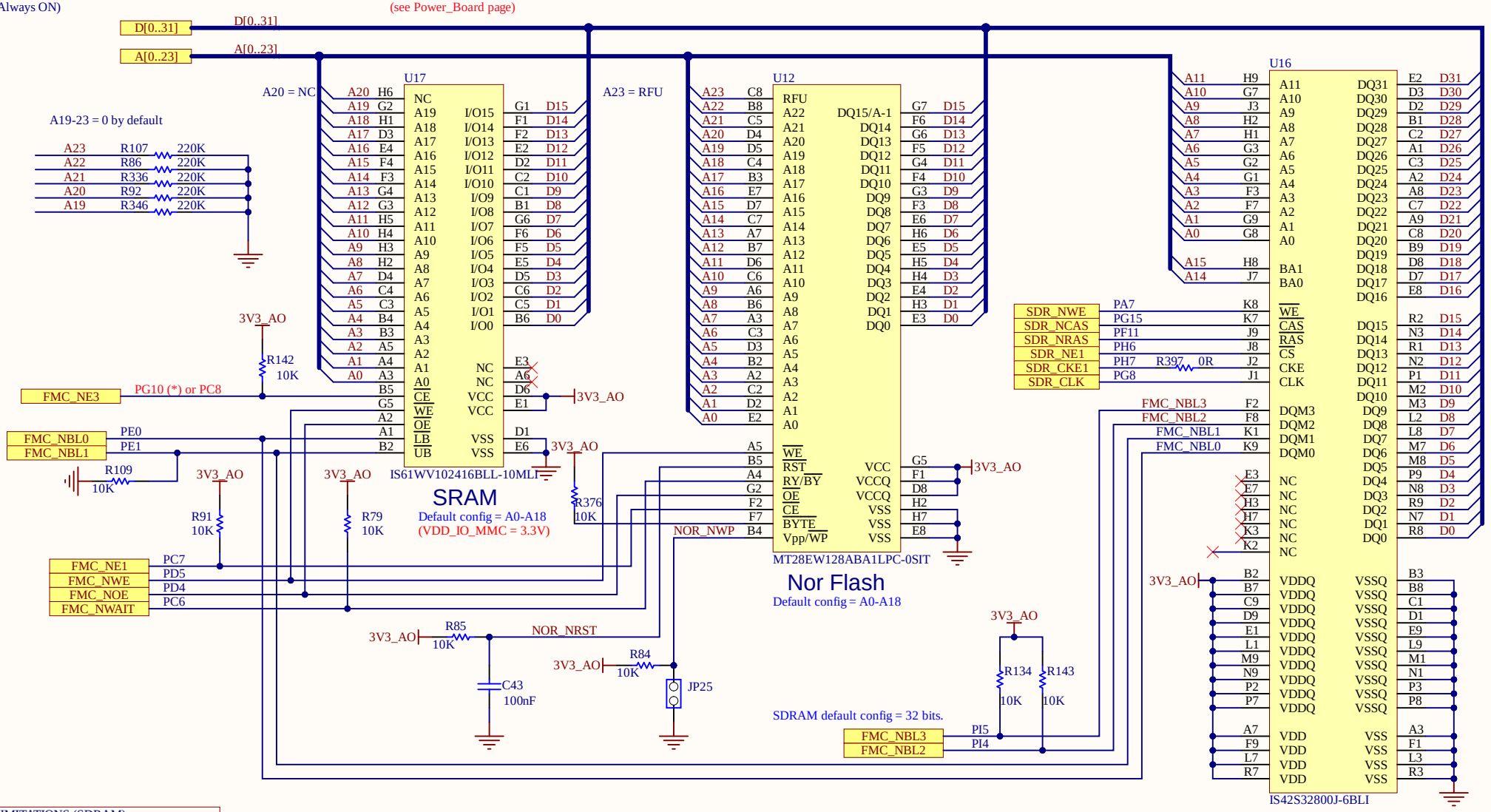
Title: **USB OTG HS with external PHY**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
Size: A4	Date: 25-MAR-20	Sheet: 6 of 23

life.augmented

MEMORIES

(Always ON)

(*) Some SRAM I/Os are supplied by VDD_IO_MMC
(make sure to control MFX0 & PG6)
(see Power_Board page)



LIMITATIONS (SDRAM) :
OCSPI2

LIMITATIONS (NOR) :
CAMERA
OCSPI2, DFSDM DATIN3

LIMITATIONS & BACK-UP (SRAM) :
CAMERA
SD CARD : NE3 = PG10 (if SD CARD 1 is used) / PC8 (if SD CARD 2 is used)
OCSPI2
(*) Make sure to set VDD_IO_MMC = 3.3V

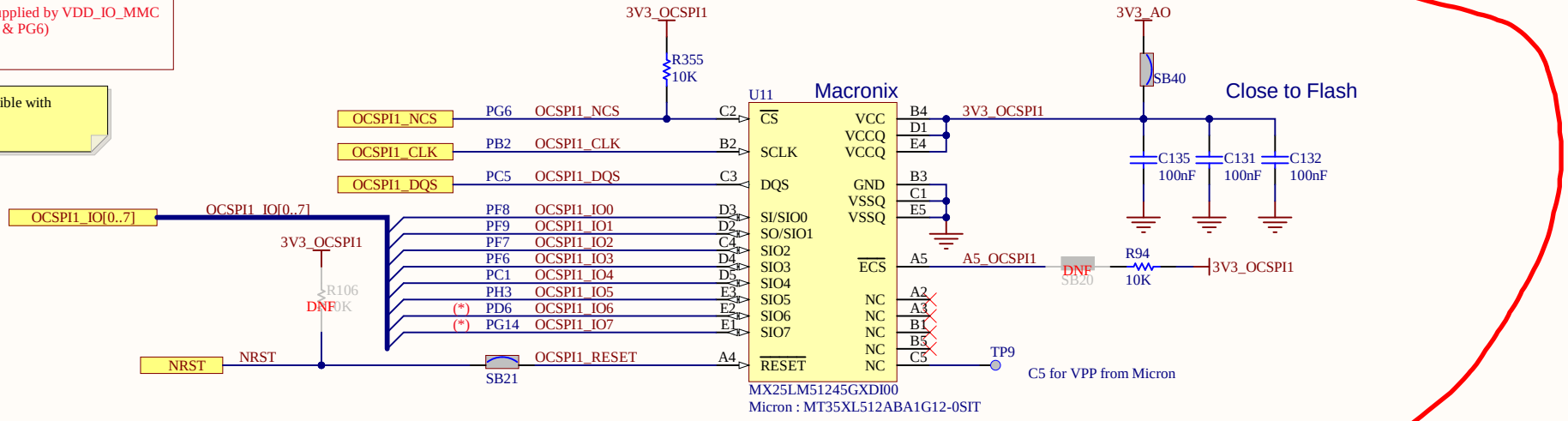
Title: **Memory**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
Size: A4	Date: 25-MAR-20	Sheet: 7 of 23

life.augmented

OCSPI 1

(*) Some OCSPI1 I/Os are supplied by VDD_IO_MMC
(make sure to control MFX0 & PG6)
(see Power_Board page)

Double footprint to be compatible with
Macronix and Micron
MT35XL512ABA1G12-0SIT

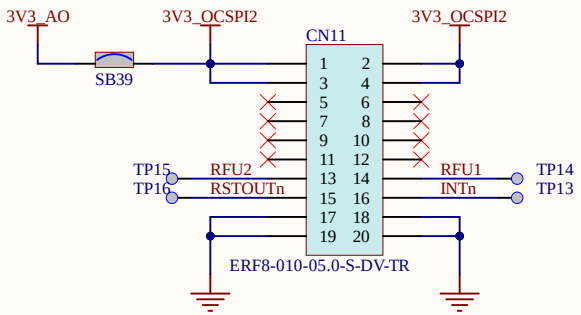


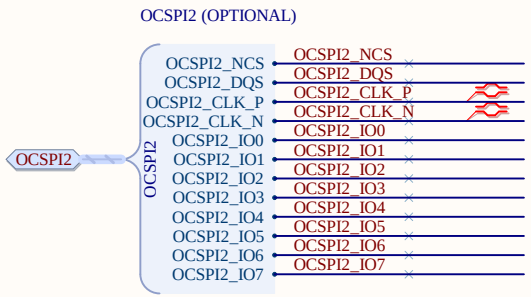
LIMITATIONS (see MCU page) :
SD CARD 2 (jumper)
(*) Make sure to set VDD_IO_MMC = 3.3V

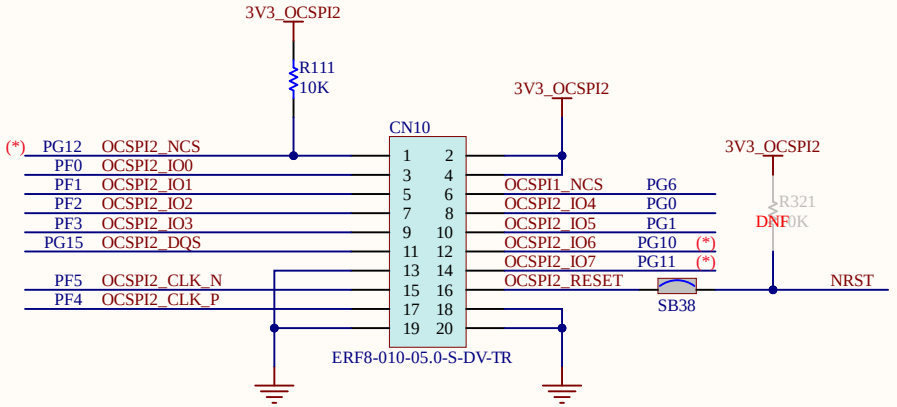
OCSPI 2 (MB1242 Module connector)

(*) Some OCSPI2 I/Os are supplied by VDD_IO_MMC
(make sure to control MFX0 & PG6)
(see Power_Board page)

HW29
DNF
MB1242 - ERM8 BGA24 Octal SPI module







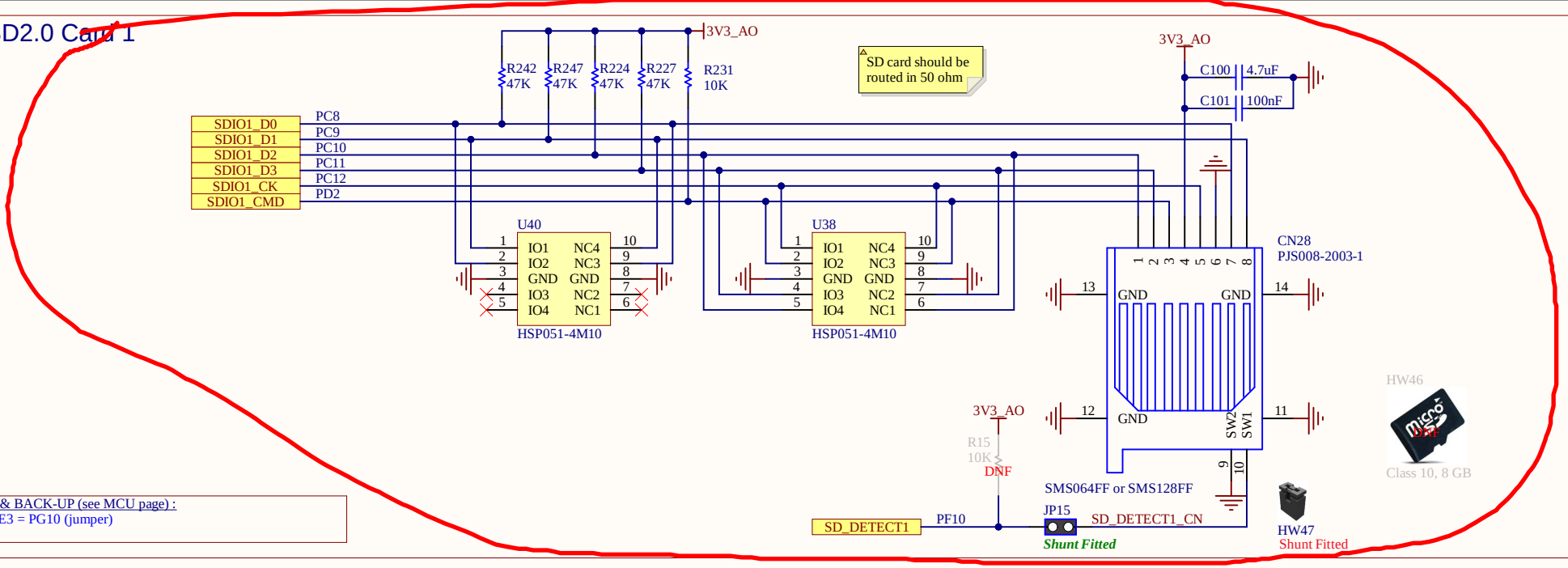
LIMITATIONS & BACK-UP (see MCU page):
FMC (NOR, SRAM & SDRAM)
SD CARD 2 (jumper)
(*) Make sure to set VDD_IO_MMC = 3.3V

Title: **OCSPI**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
Size: A4	Date: 25-MAR-20	Sheet: 8 of 23

life.augmented

MICRO SD2.0 Card 1

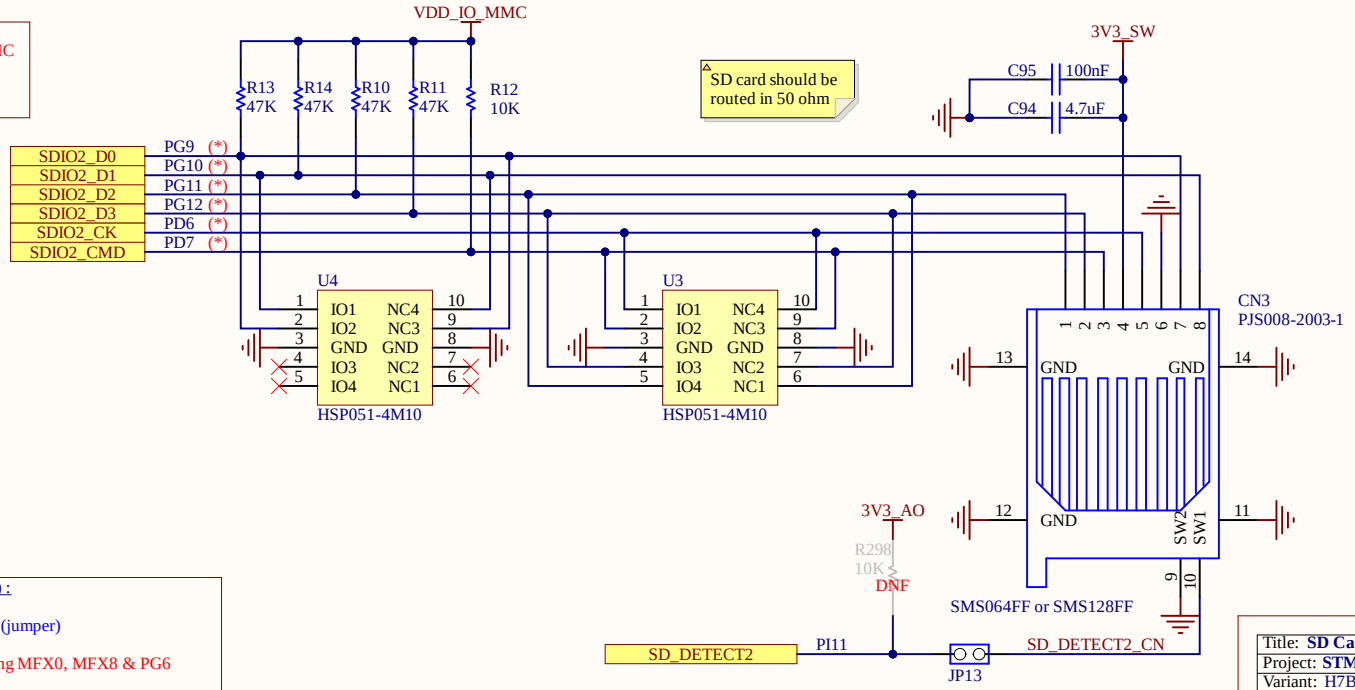
3V3 only
(Always ON)



LIMITATIONS & BACK-UP (see MCU page) :
SRAM FMC NE3 = PG10 (jumper)

MICRO SD 3.0 Card 2

(*) SD CARD 2 is supplied by VDD_IO_MMC
(make sure to control MFX0, MFX8 & PG6)
(see Power_Board page)



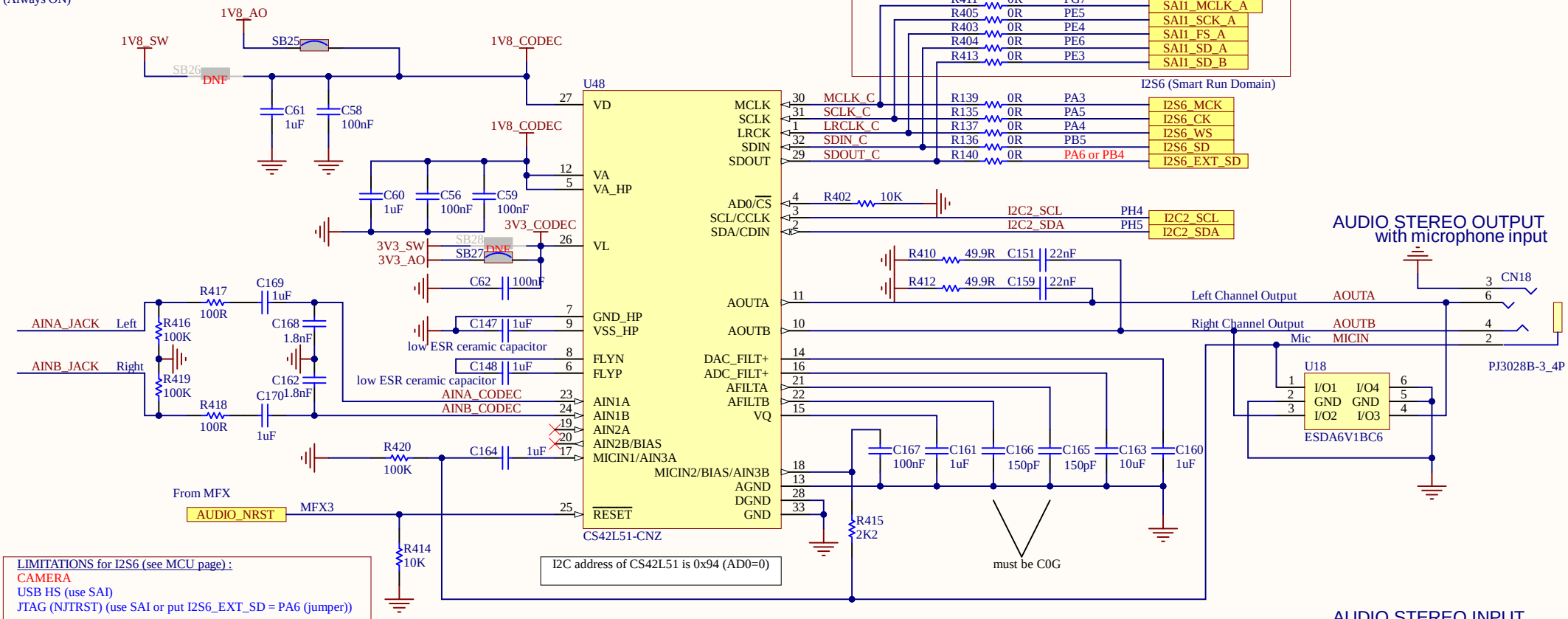
LIMITATIONS & BACK-UP (see MCU page) :
OCSPI1, CAMERA (jumper)
SRAM : Back-up = use PC8 instead of PG10 (jumper)
OCSPI2
(*) Make sure to control VDD_IO_MMC using MFX0, MFX8 & PG6

Title: **SD Card**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
Size: A4	Date: 25-MAR-20	Sheet: 9 of 23

life.augmented

AUDIO CODEC & ADC

(Always ON)



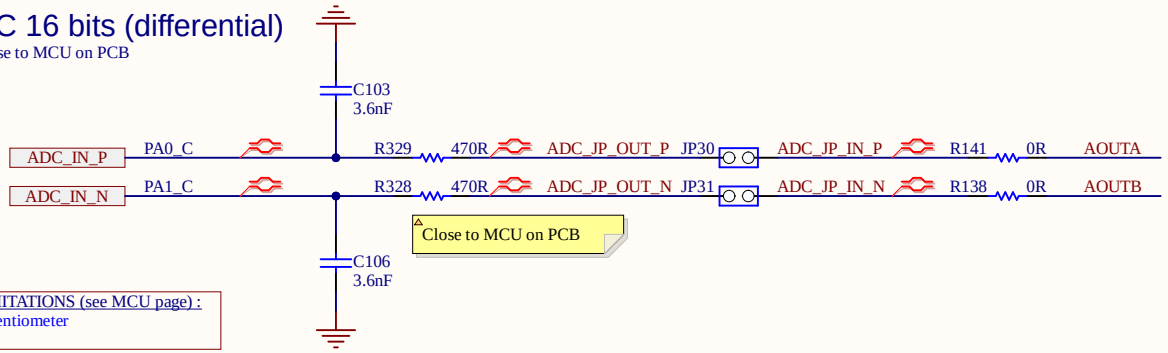
AUDIO STEREO OUTPUT
with microphone input

LIMITATIONS for I2S6 (see MCU page) :
CAMERA
USB HS (use SAI)
JTAG (NJTRST) (use SAI or put I2S6_EXT_SD = PA6 (jumper))

LIMITATIONS for SAI (see MCU page) :
CAMERA, WIFI SPI (use I2S6)

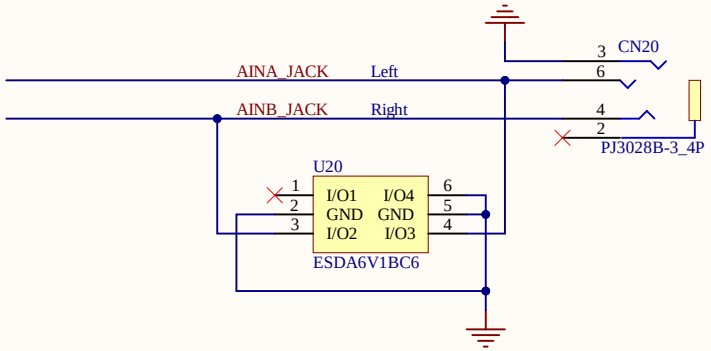
ADC 16 bits (differential)

Close to MCU on PCB



LIMITATIONS (see MCU page) :
Potentiometer

AUDIO STEREO INPUT



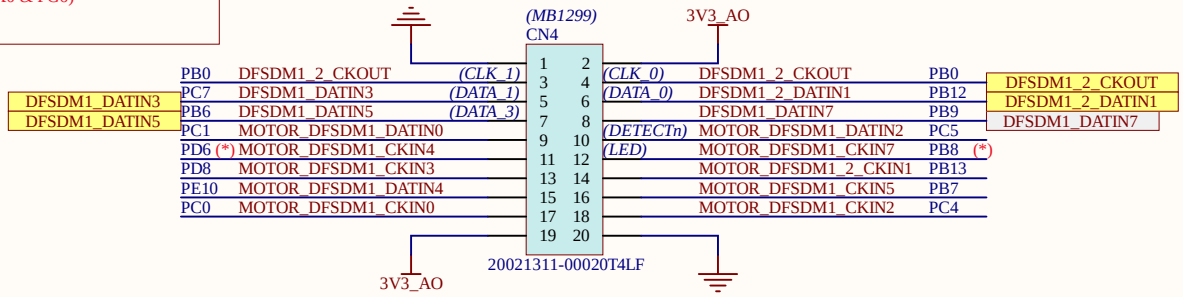
Title: **Audio Codec**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
Size: A4	Date: 25-MAR-20	Sheet: 10 of 23

life.augmented

DFSDM AUDIO & MOTOR

(*) Some DFSDM I/Os are supplied by VDD_IO_MMC
(make sure to control MFX0 & PG6)
(see Power_Board page)

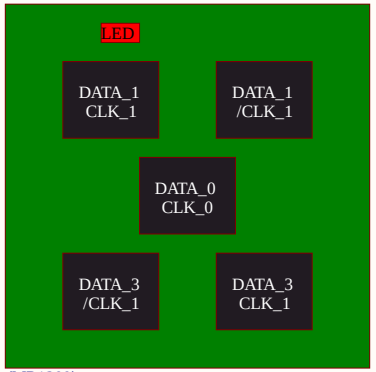
Extension DFSDM module



HW30

DNF

MB1299-5_MEMS_Microphone_Expansion_Board



(MB1299)
CLK0 & CLK1 = data valid when clk is high
/CLK1 = data valid when clk is low

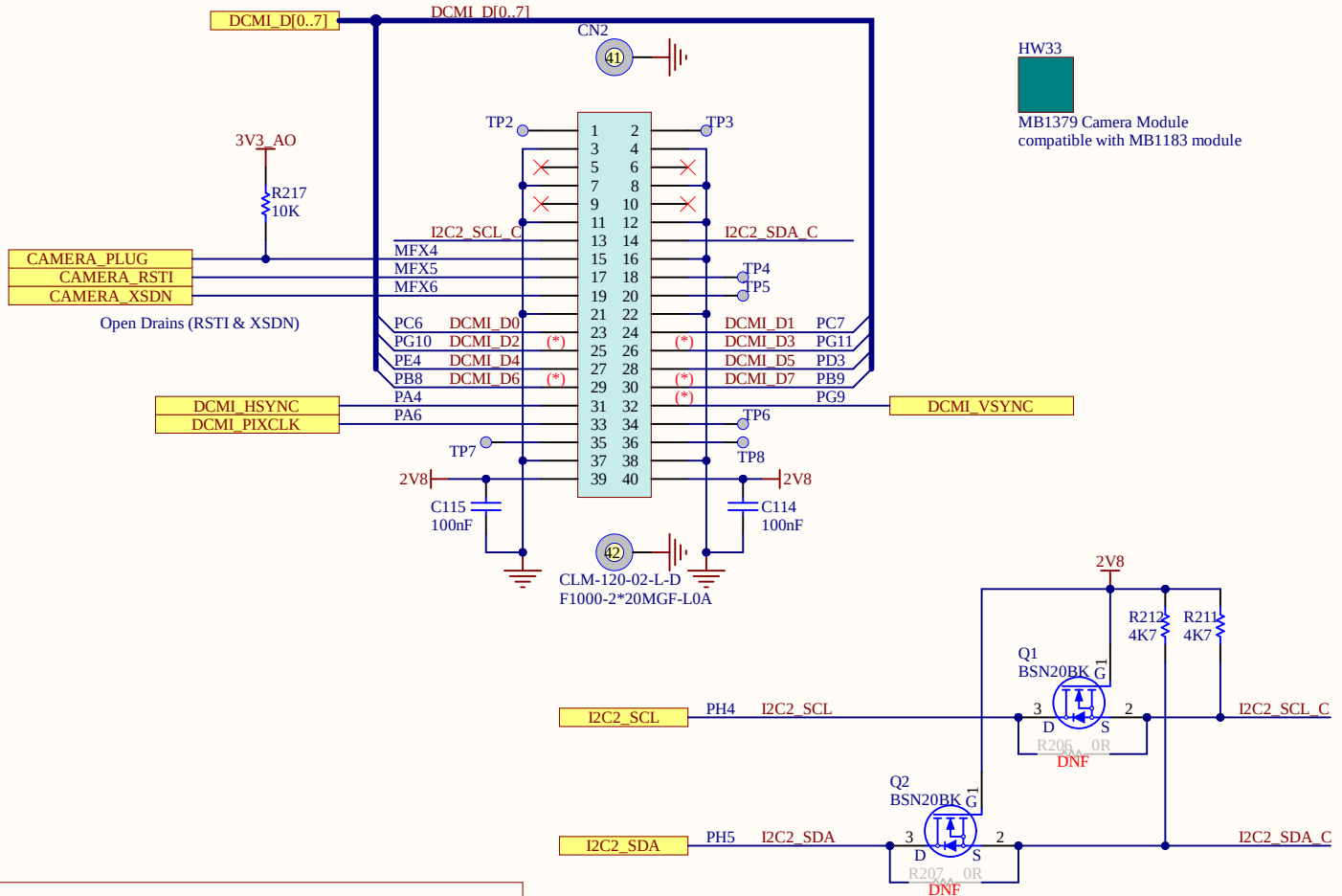
LIMITATIONS AUDIO DFSDMx4 (see MCU page) :
(*) Make sure to set VDD_IO_MMC = 3.3V
CAMERA
USB HS, FMC NOR (jumper)

Title: **Audio & Motor DFSDM**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
Size: A4	Date: 25-MAR-20	Sheet: 11 of 23

life.augmented

CAMERA MODULE CONNECTOR

(*) Some DCMI I/O are supplied by VDD_IO_MMC
(make sure to control MFX0 & PG6)
(see Power_Board page)



LIMITATIONS (see MCU page) :
AUDIO (I2S6), DFSDM
AUDIO (SAI), SRAM, NOR, SD CARD 2, OCSPI2
(*) Make sure to set VDD_IO_MMC = 3.3V

Title: **Camera**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
Size: A4	Date: 25-MAR-20	Sheet: 12 of 23

life.augmented

RGB LCD MODULE CONNECTORS

(Always ON)

H2 H3 H1 H6 H4 H5

CN23 — FH52E-40S-05SH

			1	MT1	MT1
	PI14	LCD_CLK_CN	2		
			3		
LCD_R[0..7]	LCD_R[0..7]	PI15	LCD_R0	4	
		PJ0	LCD_R1	5	
		PJ1	LCD_R2	6	
		PJ2	LCD_R3	7	
		PJ3	LCD_R4	8	
		PJ4	LCD_R5	9	
		PJ5	LCD_R6	10	
		PJ6	LCD_R7	11	
				12	
LCD_G[0..7]	LCD_G[0..7]	PJ7	LCD_G0	13	
		PJ8	LCD_G1	14	
		PJ9	LCD_G2	15	
		PJ10	LCD_G3	16	
		PJ11	LCD_G4	17	
		PK0	LCD_G5	18	
		PK1	LCD_G6	19	
		PK2	LCD_G7	20	
				21	
LCD_B[0..7]	LCD_B[0..7]	PJ12	LCD_B0	22	
		PJ13	LCD_B1	23	
		PJ14	LCD_B2	24	
		PJ15	LCD_B3	25	
		PK3	LCD_B4	26	
		PK4	LCD_B5	27	
		PK5	LCD_B6	28	
		PK6	LCD_B7	29	
				30	
LCD_HSYNC		PI12	LCD_HSYNC	31	
LCD_VSYNC		PI13	LCD_VSYNC	32	
LCD_DE		PK7	LCD_DE	33	
			LCD_RESET_CN	34	
				35	
				36	
				37	
				38	
LCD_BL_CTRL		PA1	LCD_BL_CTRL	39	
				40	MT2 MT2

CN30 — FTSH-105-01-L-DV-K

		1	2	
I2C2_SDA	PH5 I2C2_SDA	3	4	5V_LCD
I2C2_SCL	PH4 I2C2_SCL	5	6	5V_LCD
		7	8	
CTP_RST_CN		9	10	CTP_INT PH2 CTP_INT

3V3_AO

1.2A

R159 600R @ 100MHz 5V

C76 100nF C75 10uF

3V3_AO C79 100nF

HW44 687740100002 (with EMI shielding)

HW9 FFSD cable FFSD-05-D-06.00-01-N

HW40 MB1370 - LCD WVGA 7 inches daughter board

LCD_CLK PI14 LCD_CLK R285 0R LCD_CLK_CN

C200 DNF 10pF C201 DNF 10pF

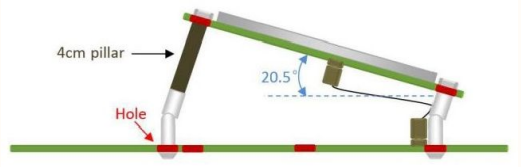
NRST LCD_RESET PA2 LCD_RESET NRST R125 0R DNF LCD_RESET_CN

CTP_RST PC4 CTP_RST NRST R155 0R DNF CTP_RST_CN

R156 0R DNF

LIMITATIONS (see MCU page) :
If using Motor control, LCD BL CTRL = PA2 (instead of PA1)

LCD MODULE MECHANICAL ASSEMBLY



HW14 HW18 HW20 NUT M3 HW22 — Nylon Pillar M3 x 31.75mm — Hinged Standoff M3 2x12.5mm — Screw, M3, 8 mm

HW16 HW15 NUT M3 HW70 — Hinged Standoff M3 2x12.5mm — Screw, M3, 8 mm

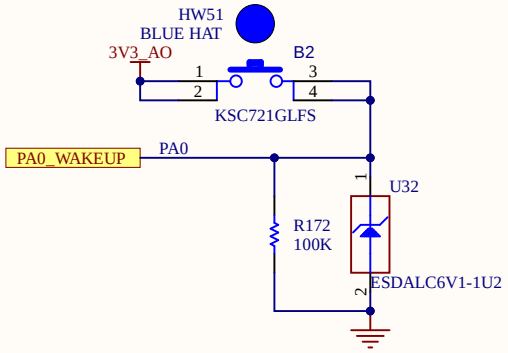
HW13 HW54 HW19 NUT M3 HW26 — Nylon Pillar M3 x 31.75mm — Hinged Standoff M3 2x12.5mm — Screw, M3, 8 mm

HW17 HW68 NUT M3 HW69 — Hinged Standoff M3 2x12.5mm — Screw, M3, 8 mm

Title: **LCD**			
Project: **STM32H7B3I-EVAL**			
Variant: H7B3LIQ			
Revision: D-03		Reference: MB1331	
Size: A4	Date: 25-MAR-20	Sheet: 13 of 23	

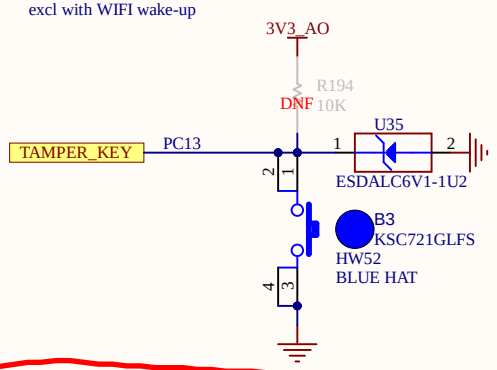
life.augmented

USER WAKE-UP BUTTON

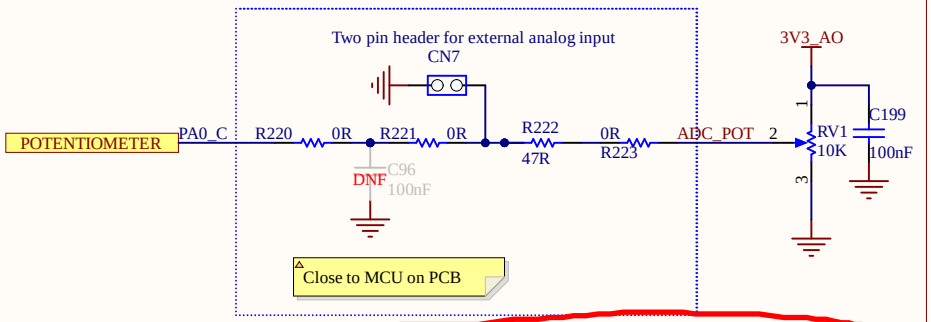


TAMPER & KEY BUTTON

excl with WIFI wake-up

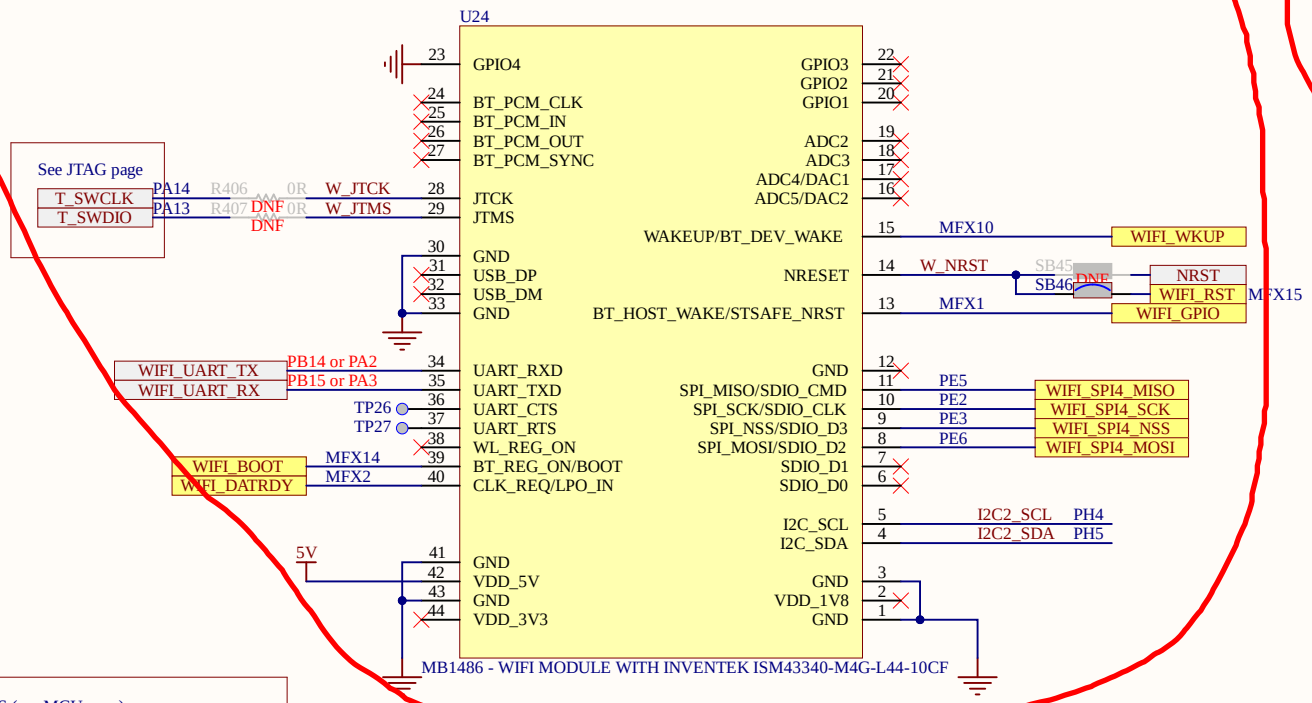


POTENTIOMETER



MB1486 - WIFI MODULE WITH INVENTEK ISM43340-M4G-L44-10CF

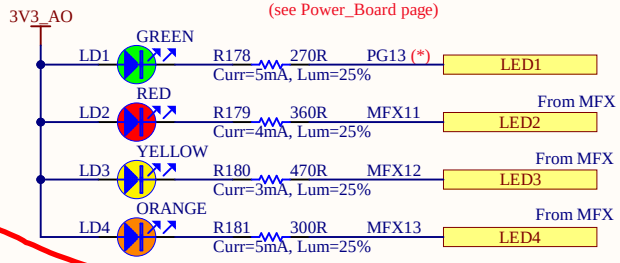
(WIFI SPI by default)
(Always ON)



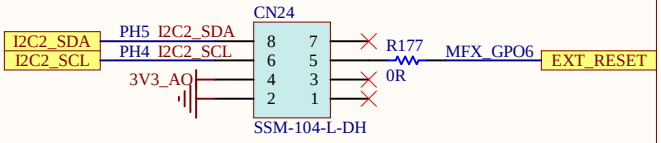
LIMITATIONS (see MCU page) :
EXT I2C

LEDs

(*) LED1 I/O is supplied by VDD_IO_MMC
(make sure to control MFX0 & PG6)
(see Power_Board page)



EXT_I2C



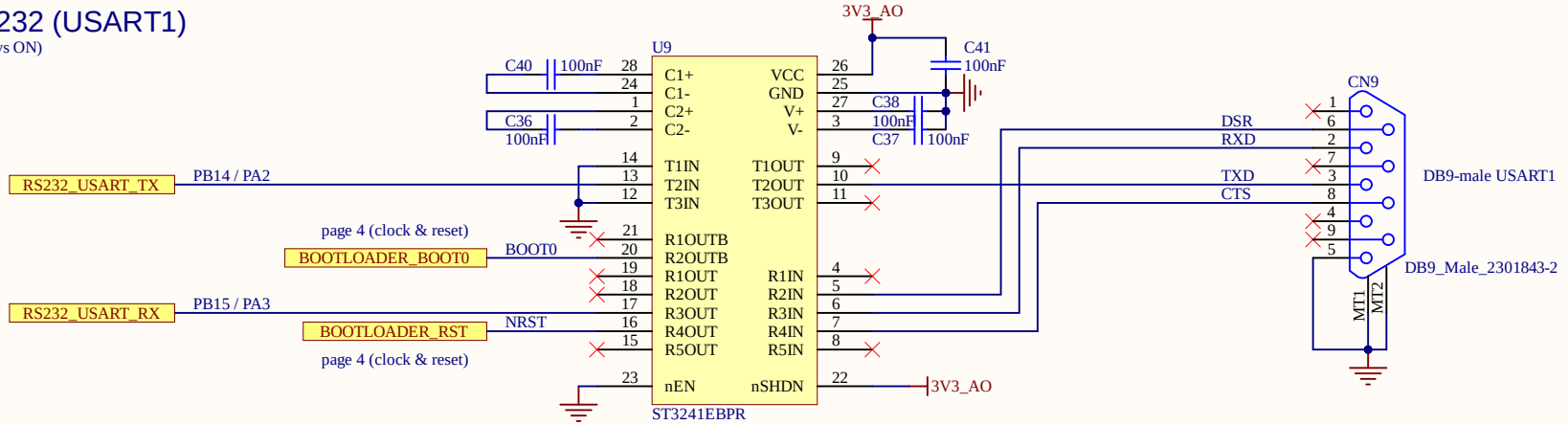
LIMITATIONS (see MCU page) :
WIFI

Title: **Peripherals**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
Size: A4	Date: 25-MAR-20	Sheet: 14 of 23

life.augmented

RS232 (USART1)

(Always ON)



LIMITATIONS (see MCU page) :

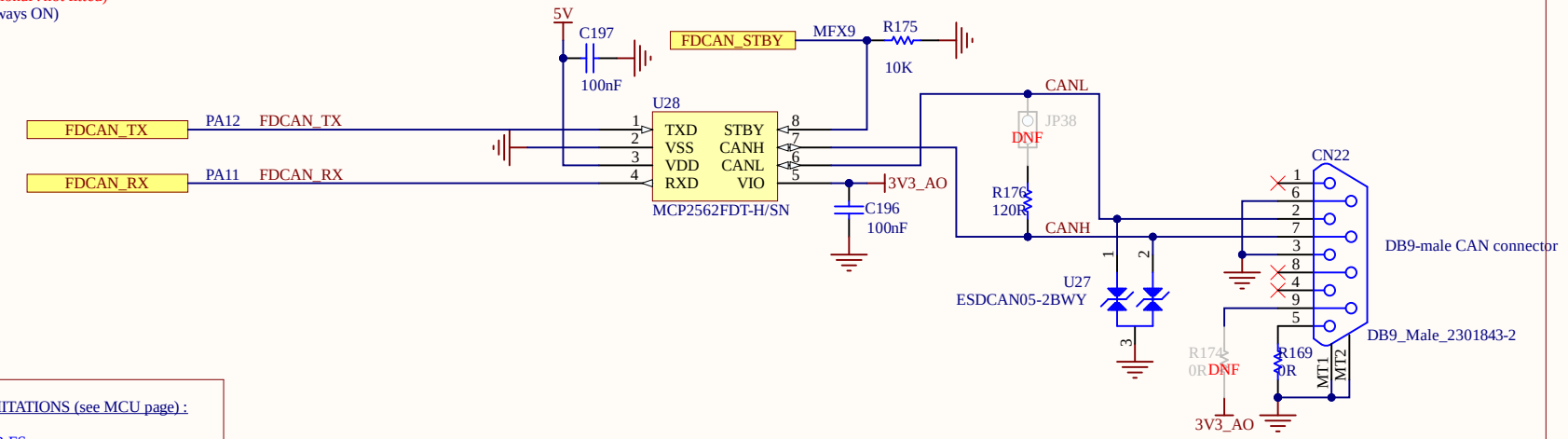
PB14/PB15 : not a bootloader compatible UART

PA2/PA3 : AUDIO I2S6, USB HS, MOTOR CONTROL

CAN FD

(optional : not fitted)

(Always ON)



LIMITATIONS (see MCU page) :

USB FS

Title: **FDCAN & OCSPI**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
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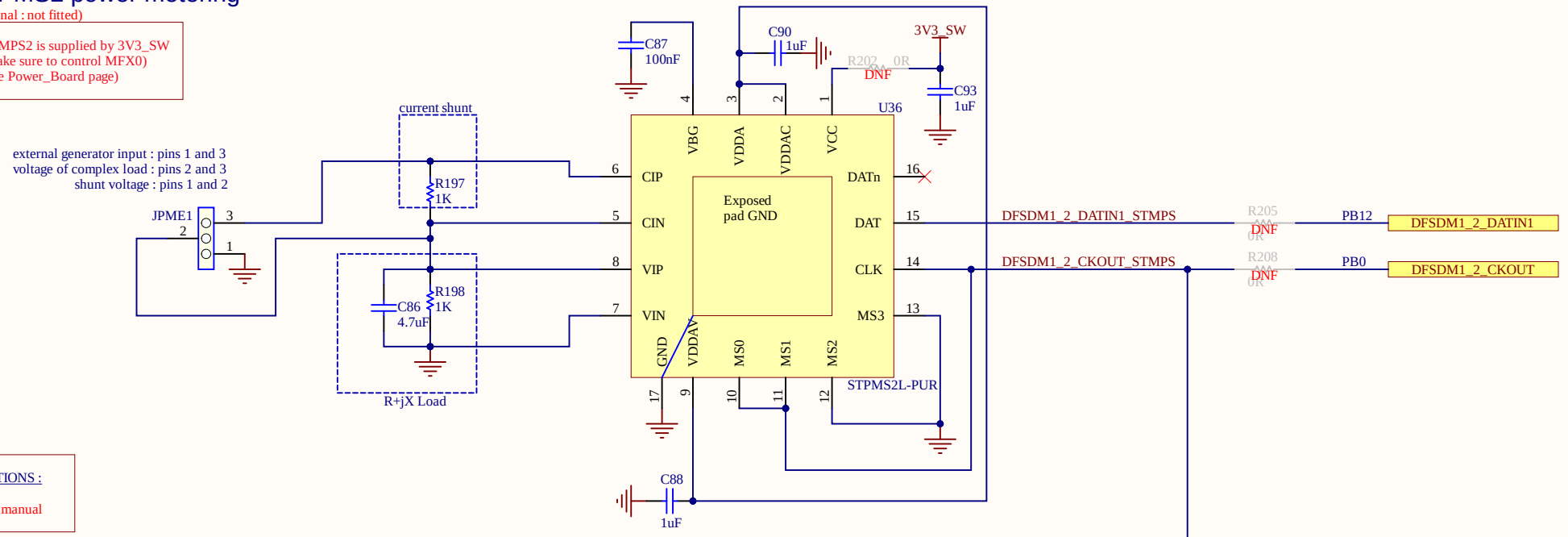
life.augmented

STPMS2 power metering

(optional : not fitted)

STMPS2 is supplied by 3V3_SW
(make sure to control MFX0)
(see Power_Board page)



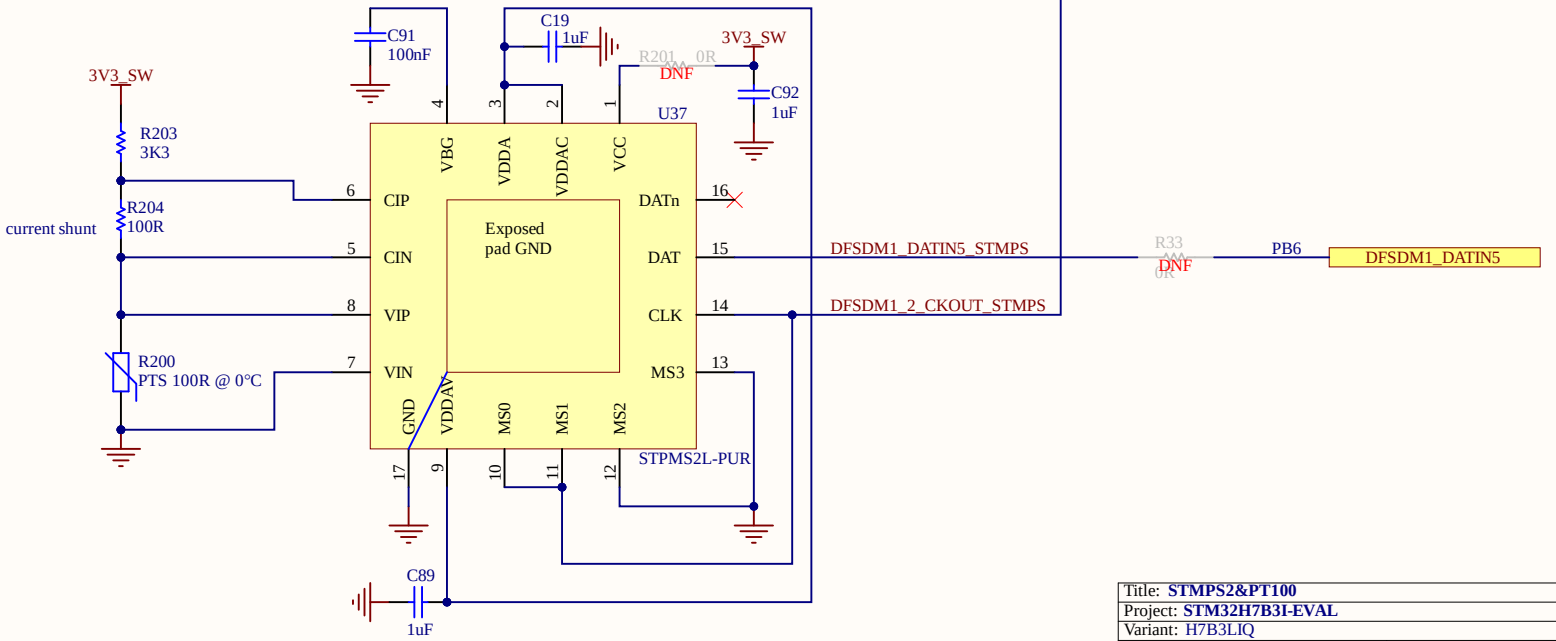
LIMITATIONS :

See user manual

PT100 measurement using SigmaDelta STPMS2

(optional : not fitted)

STMPS2 is supplied by 3V3_SW
(make sure to control MFX0)
(see Power_Board page)



LIMITATIONS :

See user manual

Title: **STMPS2&PT100**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
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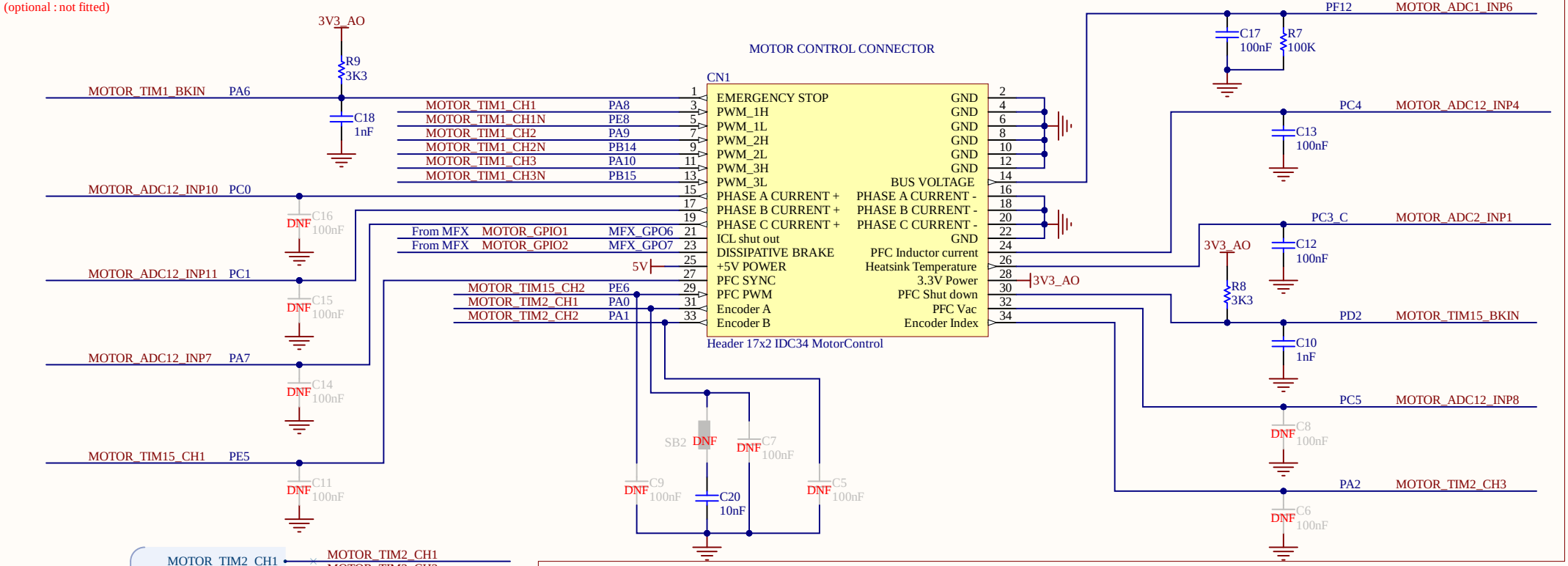
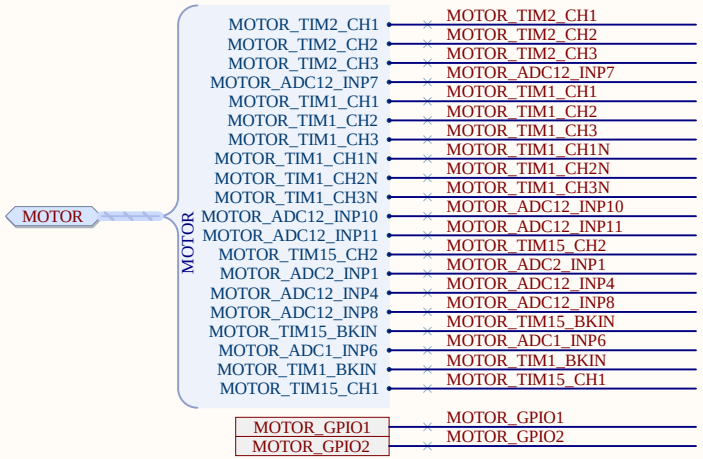
life.augmented

MOTOR CONTROL

(optional : not fitted)

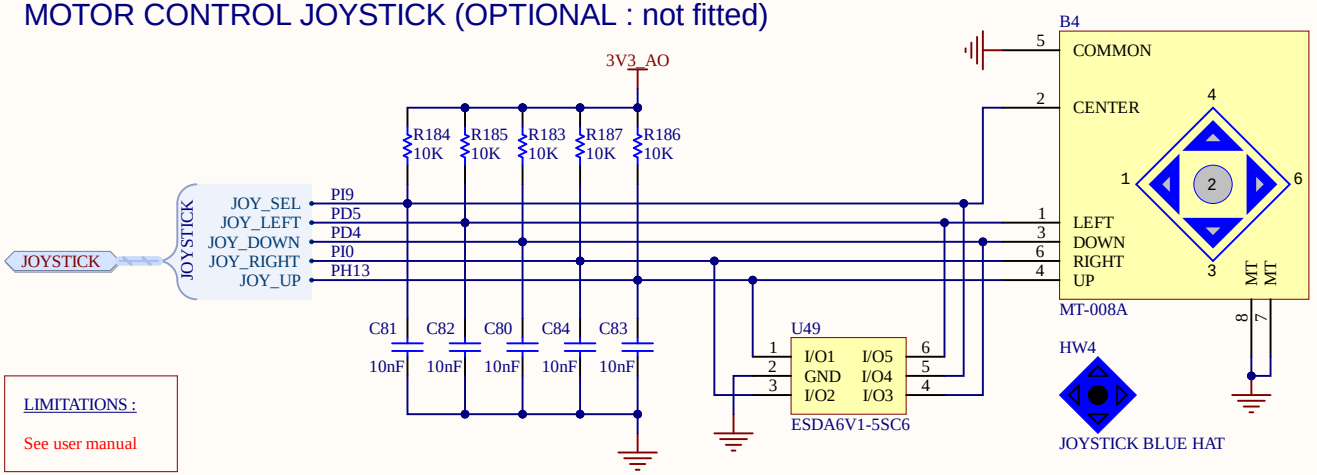




LIMITATIONS :

See user manual

MOTOR CONTROL JOYSTICK (OPTIONAL : not fitted)



LIMITATIONS :

See user manual

Title: **Motor Control**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
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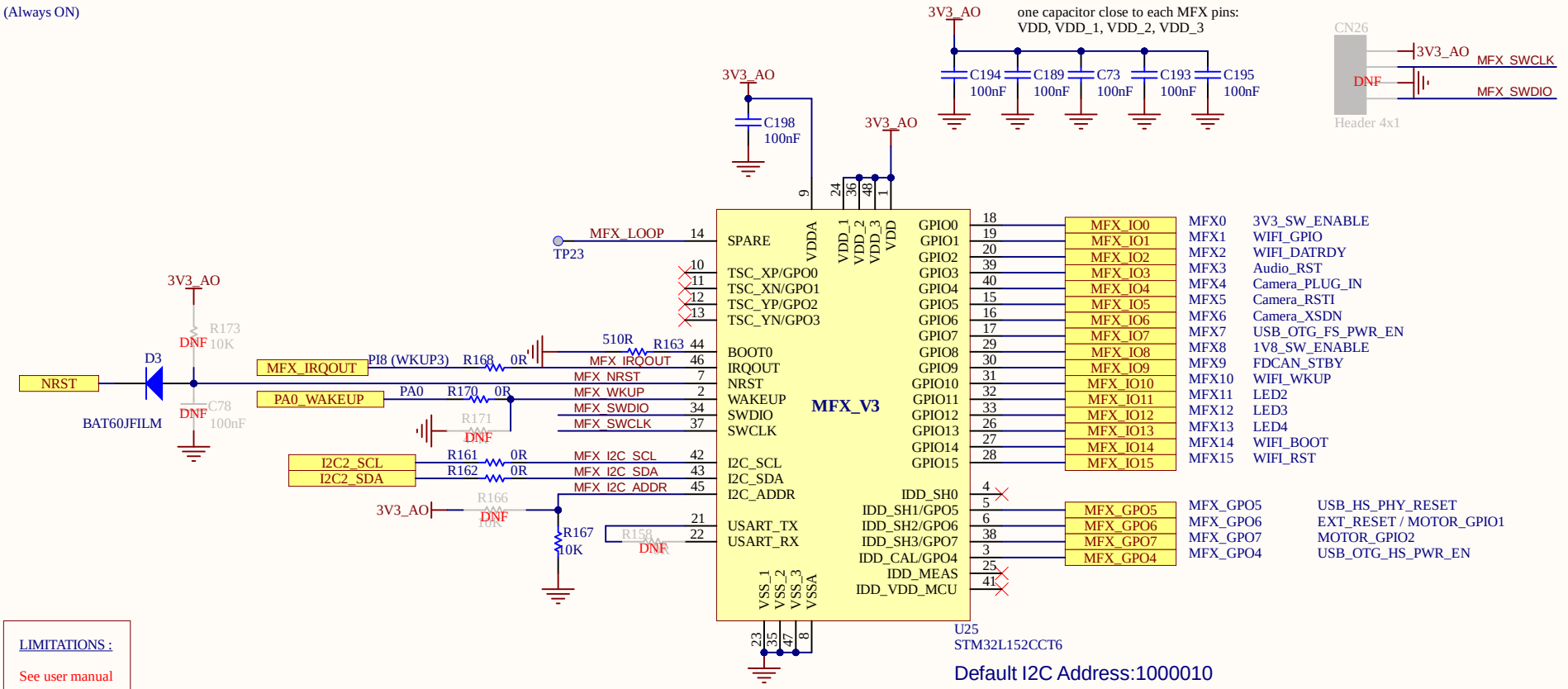
life.augmented

MFX I/O EXPANDER

(Always ON)



LIMITATIONS :

See user manual

Title: **MFX I/O Expander**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
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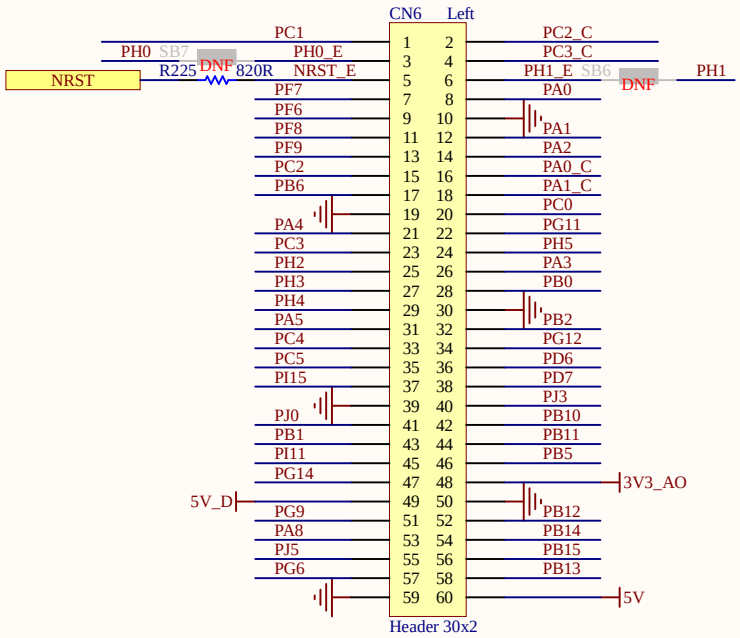
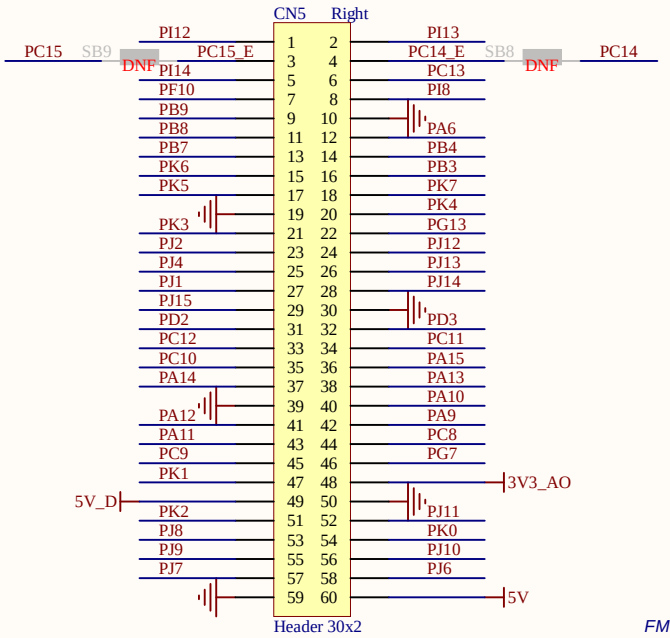
life.augmented

MCU EXTENSION CONNECTORS

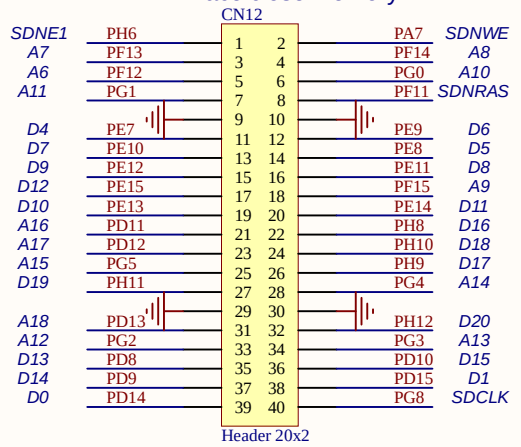


FTR-130-03-L-D-LC (Samtec)
or FTR-130-53-L-D-LC (Samtec) ?



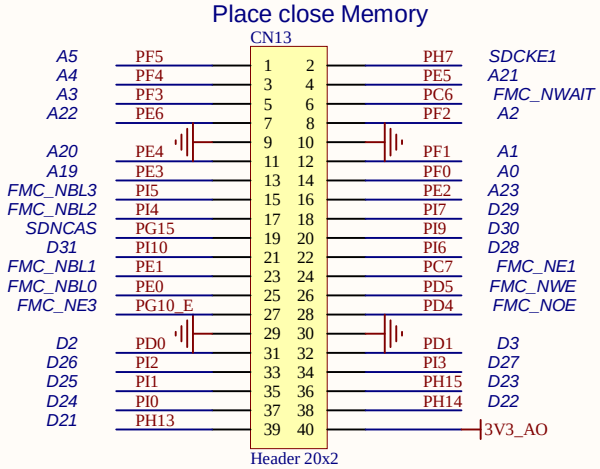
FTR-130-03-L-D-LC (Samtec)
or FTR-130-53-L-D-LC (Samtec) ?

Place close Memory

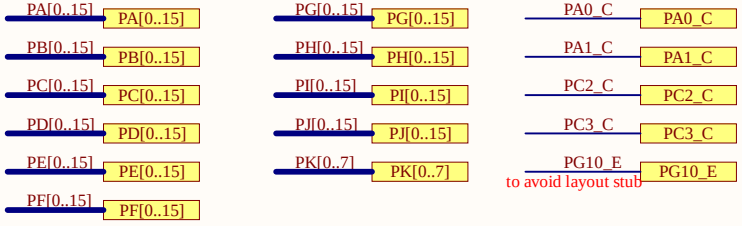


FTR-120-03-L-D-LC (Samtec)
or FTR-120-53-L-D-LC (Samtec) ?

Place close Memory



FTR-120-03-L-D-LC (Samtec)
or FTR-120-53-L-D-LC (Samtec) ?

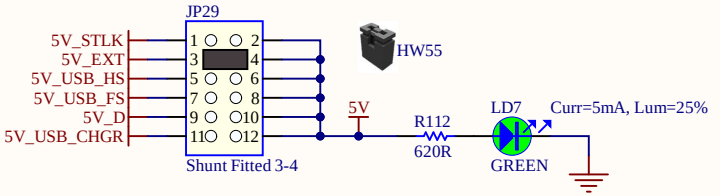


Title: **Extension Connectors**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
Size: A4	Date: 25-MAR-20	Sheet: 19 of 23

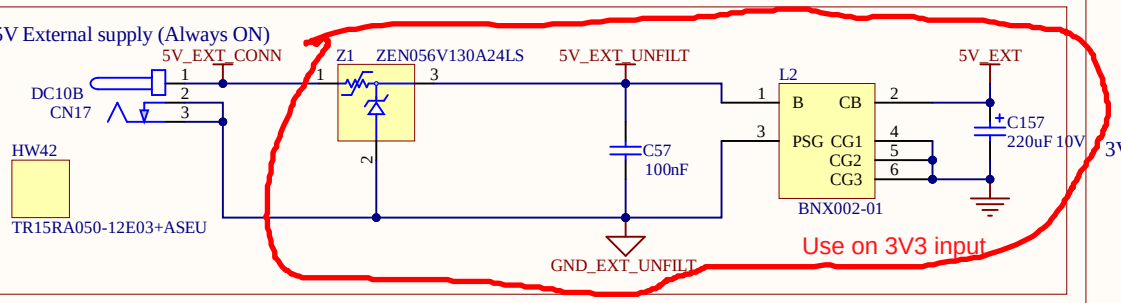
life.augmented

BOARD POWER

5V Power Supply options

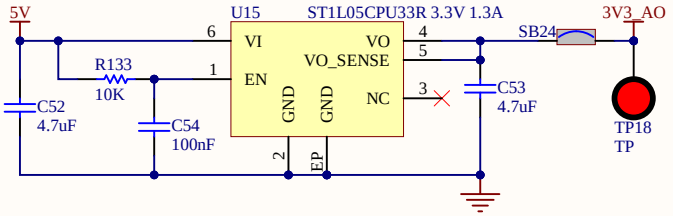


5V External supply (Always ON)

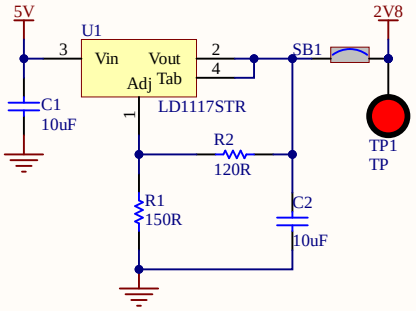


3V3 Supply (Always ON)

See Power MCU page
(also provides power to MCU VDD)

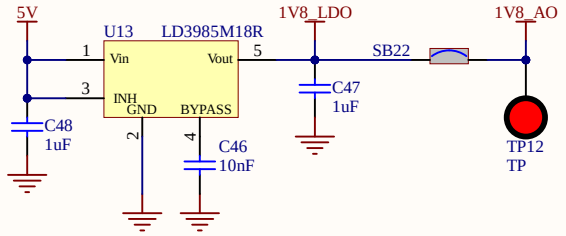


2V8 supply (Always ON)

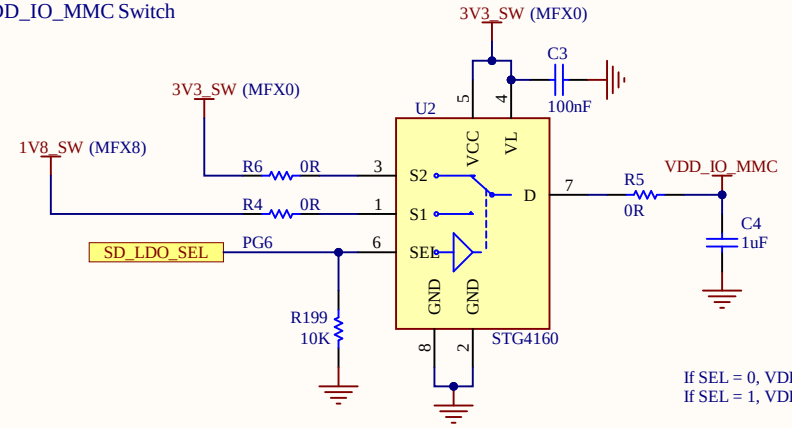


1V8 (Always ON)

See Power MCU page : can be replaced by MCU internal SMPS



VDD_IO_MMC Switch

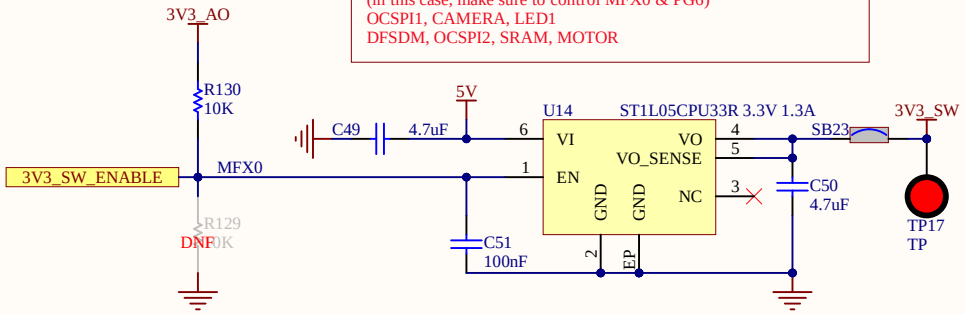


If SEL = 0, VDD_MMC = 3V3 (default)
If SEL = 1, VDD_MMC = 1V8

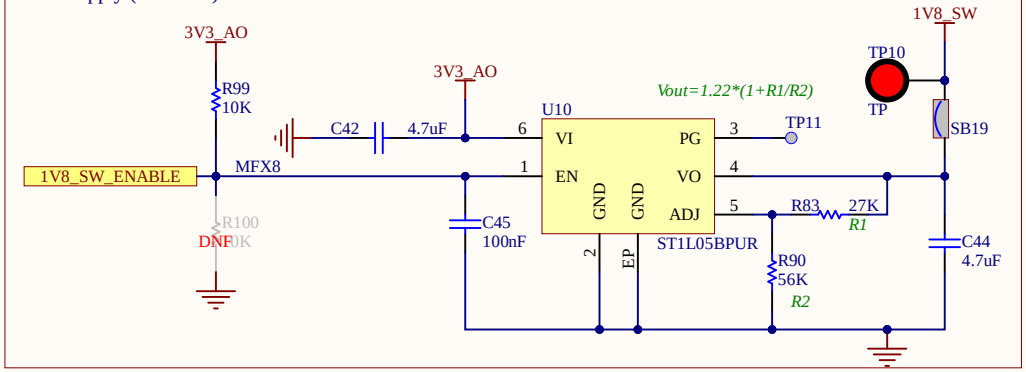
3V3 Supply (Switched)

SD CARD 2 is supplied by VDD_IO_MMC
(in this case, make sure to control MFX0, MFX8 & PG6)

Following interfaces are supplied by VDD_IO_MMC = 3.3V only
(in this case, make sure to control MFX0 & PG6)
OCSPI1, CAMERA, LED1
DFSDM, OCSPI2, SRAM, MOTOR



1V8 Supply (Switched)



Title: **Board Power**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
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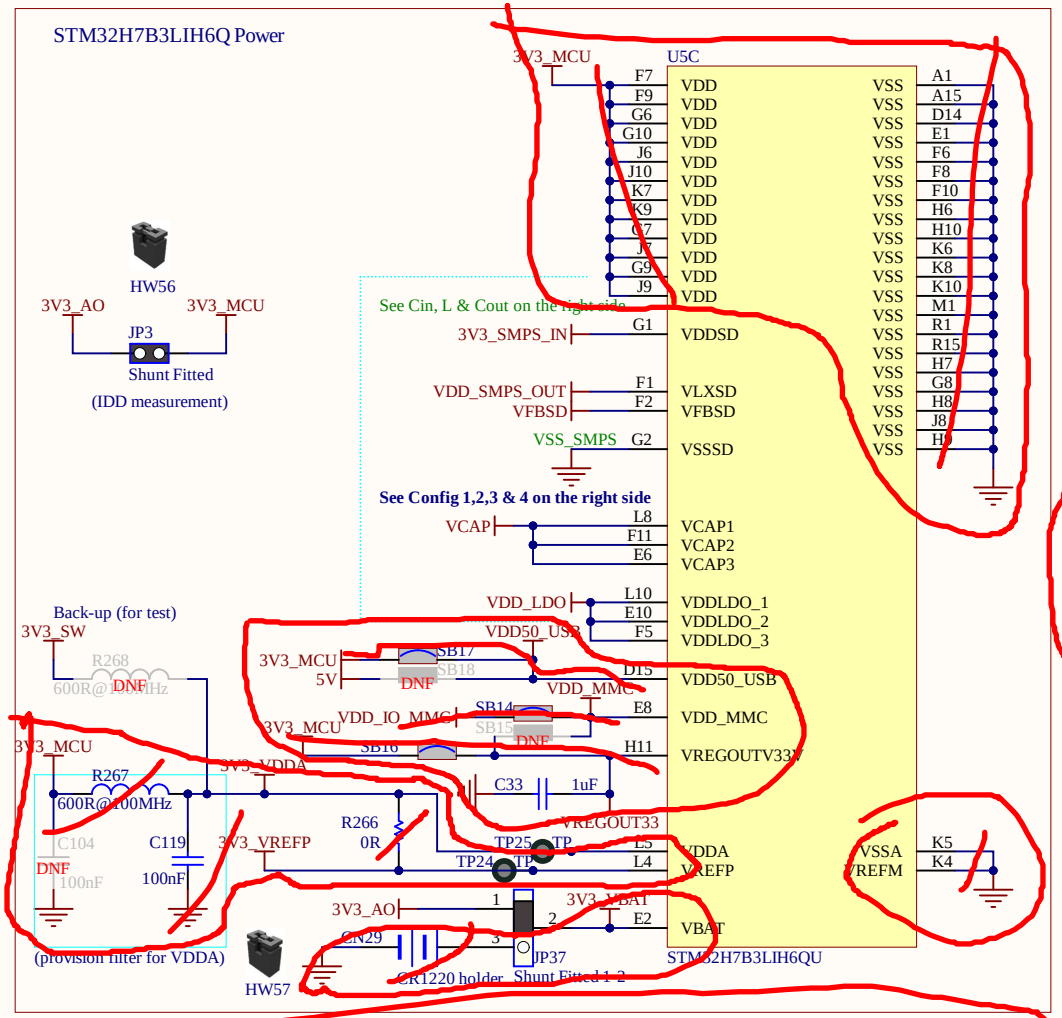
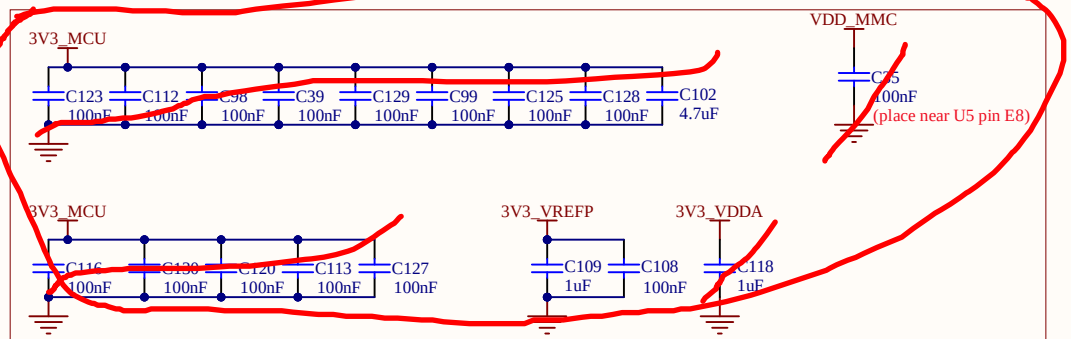
life.augmented

MCU POWER

STM32H7B3LIH6Q Power

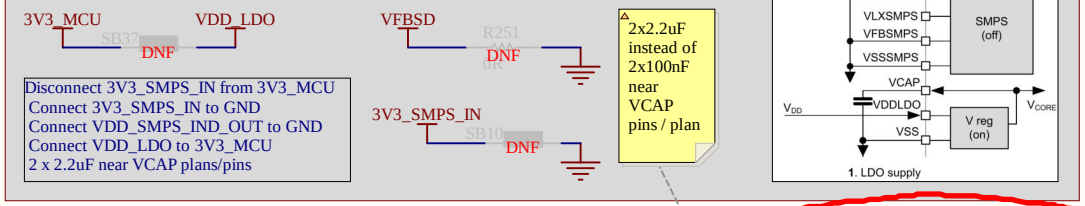




Internal LDO/SMPS Supply Configuration

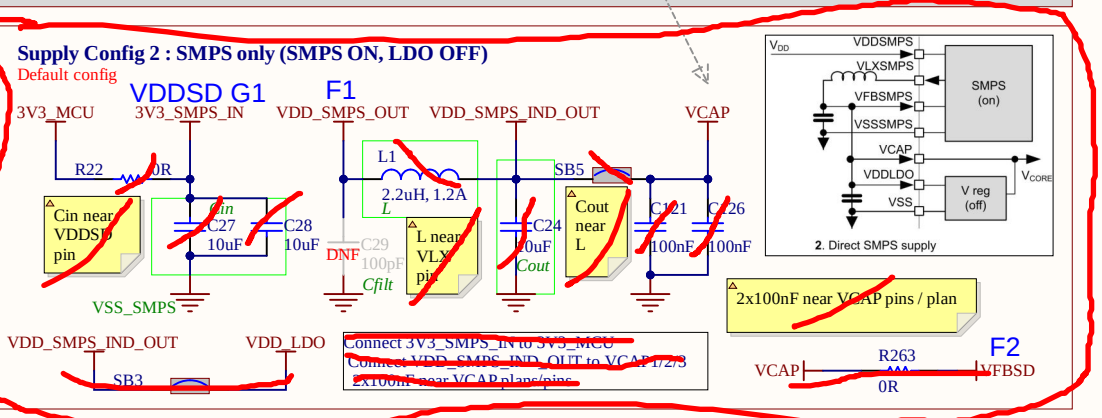
For further details, please see UM2662 User Manual and RM0455 STM32H7A3 Reference Manual

Supply Config 1 : LDO only (SMPS OFF, LDO ON)

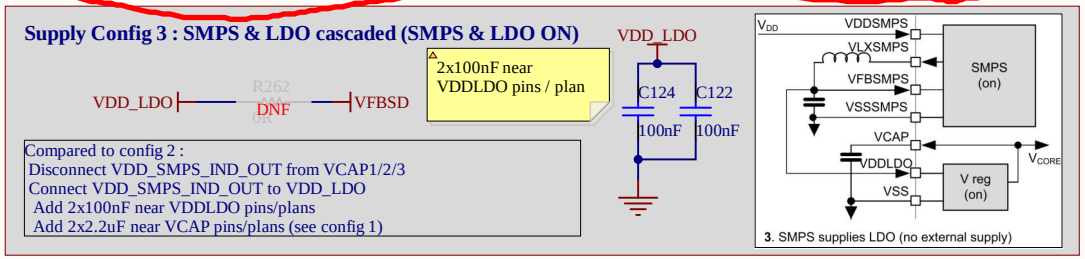


Supply Config 2 : SMPS only (SMPS ON, LDO OFF)

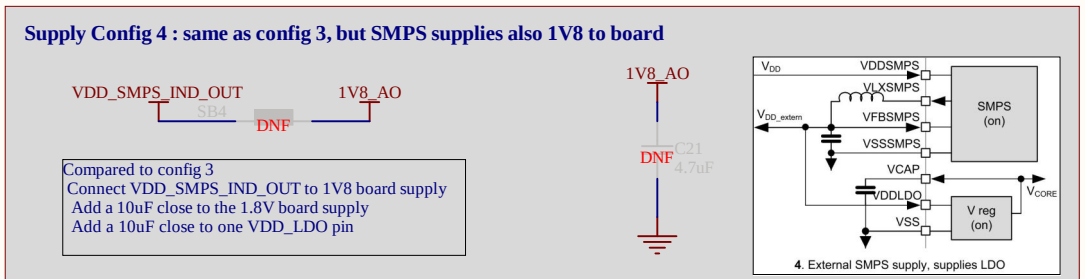
Default config



Supply Config 3 : SMPS & LDO cascaded (SMPS & LDO ON)



Supply Config 4 : same as config 3, but SMPS supplies also 1V8 to board



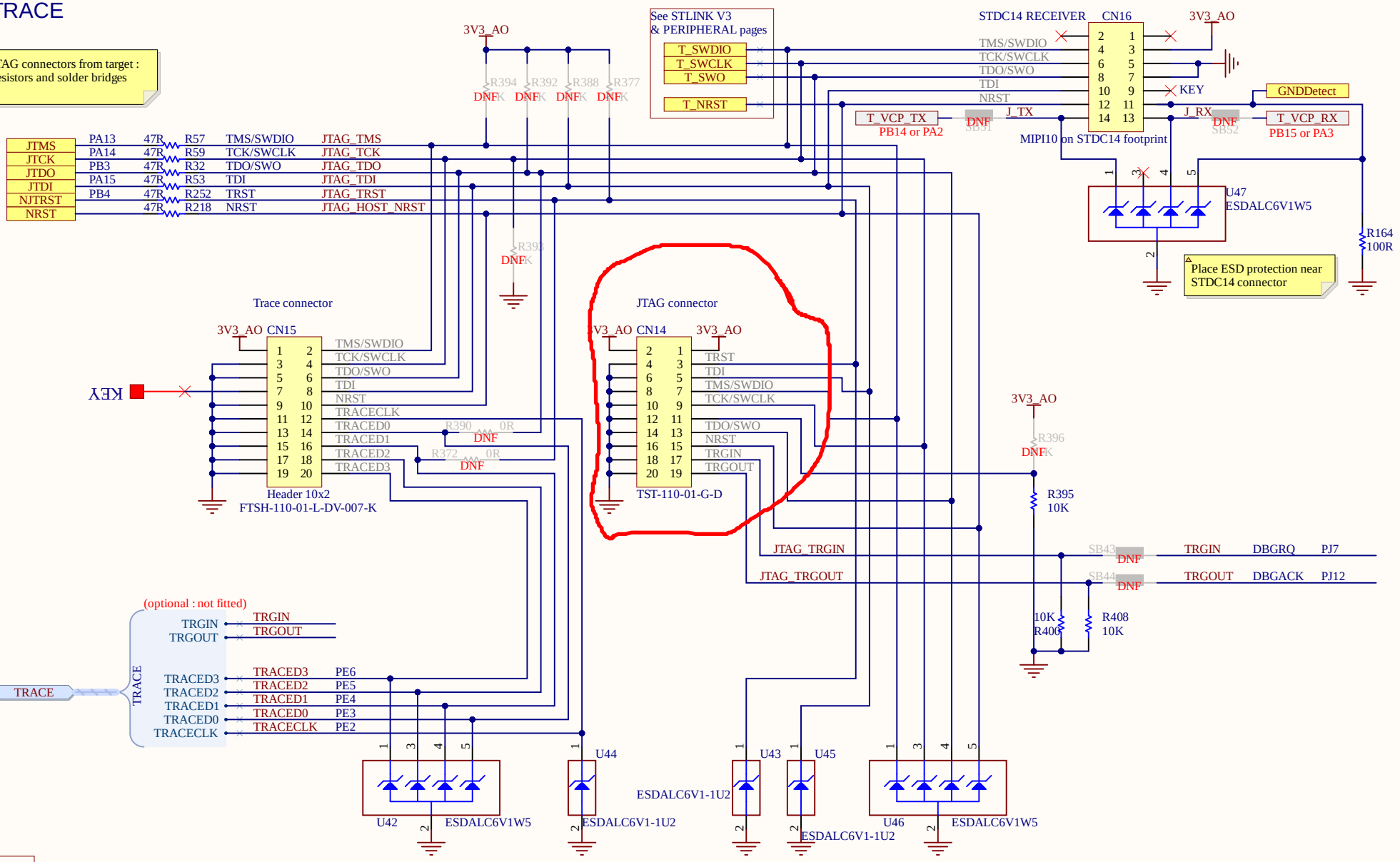
Title: **MCU Power**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
Size: A4	Date: 25-MAR-20	Sheet: 21 of 23

life.augmented

JTAG & TRACE

(Always ON)

To disconnect JTAG connectors from target :
- Remove 47R resistors and solder bridges



LIMITATIONS :

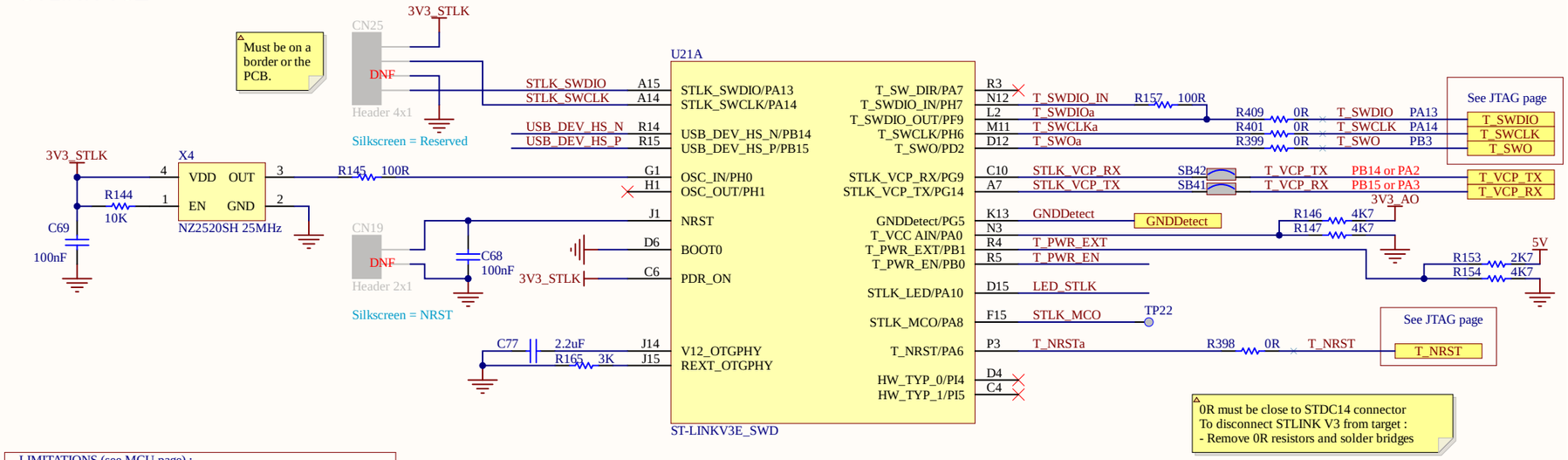
see User Manual

Title: **JTAG & Trace**		
Project: **STM32H7B3I-EVAL**		
Variant: H7B3LIQ		
Revision: D-03		Reference: MB1331
Size: A4	Date: 25-MAR-20	Sheet: 22 of 23

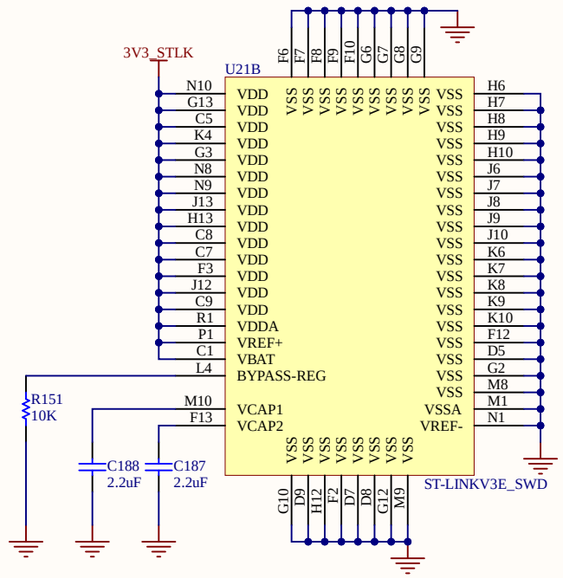
life.augmented

STLINK V3E SWD
(Always ON)

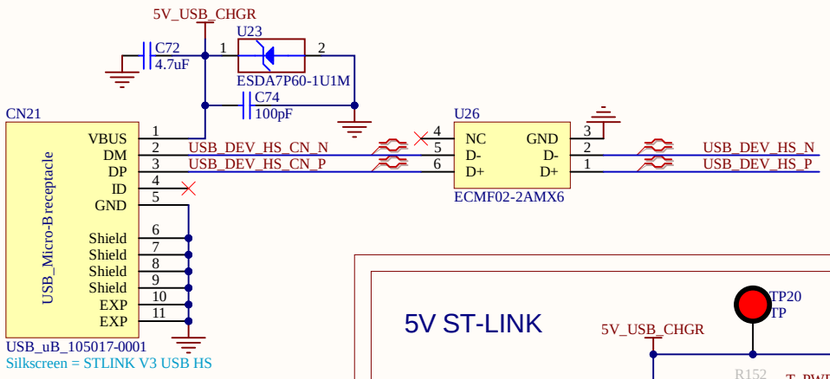
STLINK V3E



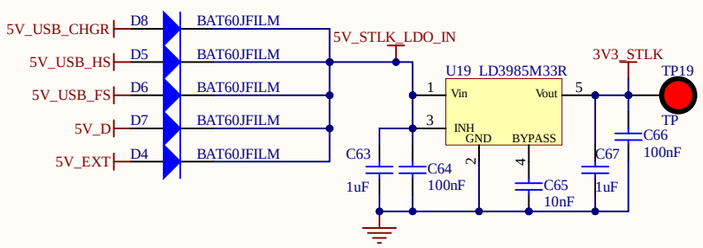
POWER



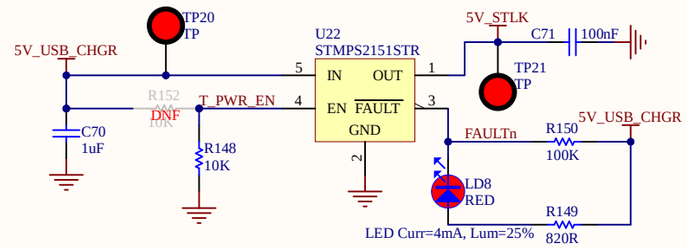
STLINK USB HS & 5V USB CHARGER



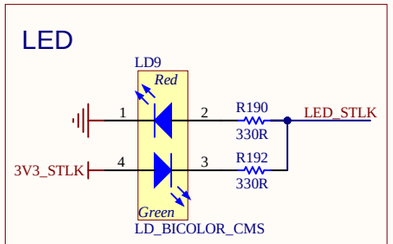
3.3V ST-LINK

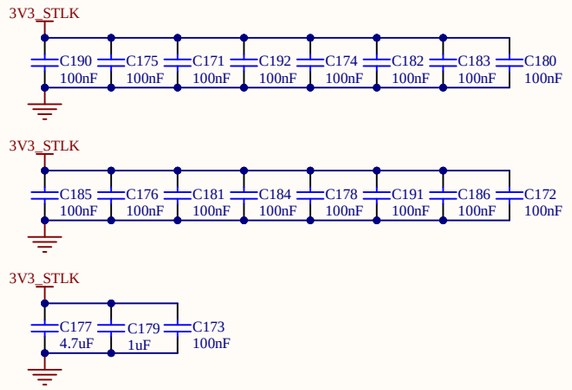


5V ST-LINK



LED





Title: **ST-LINK V3 SWD Module**			
Project: **STM32H7B3I-EVAL**			
Variant: H7B3LIQ			
Revision: D-03		Reference: MB1331	
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ANTENNA ZONE
KEEP OUT AREA

Project: STM32H7B3I-EVAL	
Layer: M14-Top Assembly	Gerber: .GM14
Variant: H7B3LIQ	Ref: MB1331
Date: 25-MAR-20	Rev: D

Project: STM32H7B3I-EVAL	
Layer: M15-Bottom Assembly	Gerber:.GM15
Variant: H7B3LIQ	Ref: MB1331
Date: 25-MAR-20	Rev: D