32F723EDISCOVERY

MB1260

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Legend

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

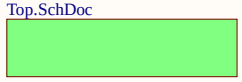
Text to be added to silkscreen.

Warning text.

Notes to generate the board layout.

Open Platform License Agreement

U_Top
Top.SchDoc



Title: **Project overview**		
Project: **32F723EDISCOVERY**		
Variant: F723E		
Revision: D-03		Reference: MB1260
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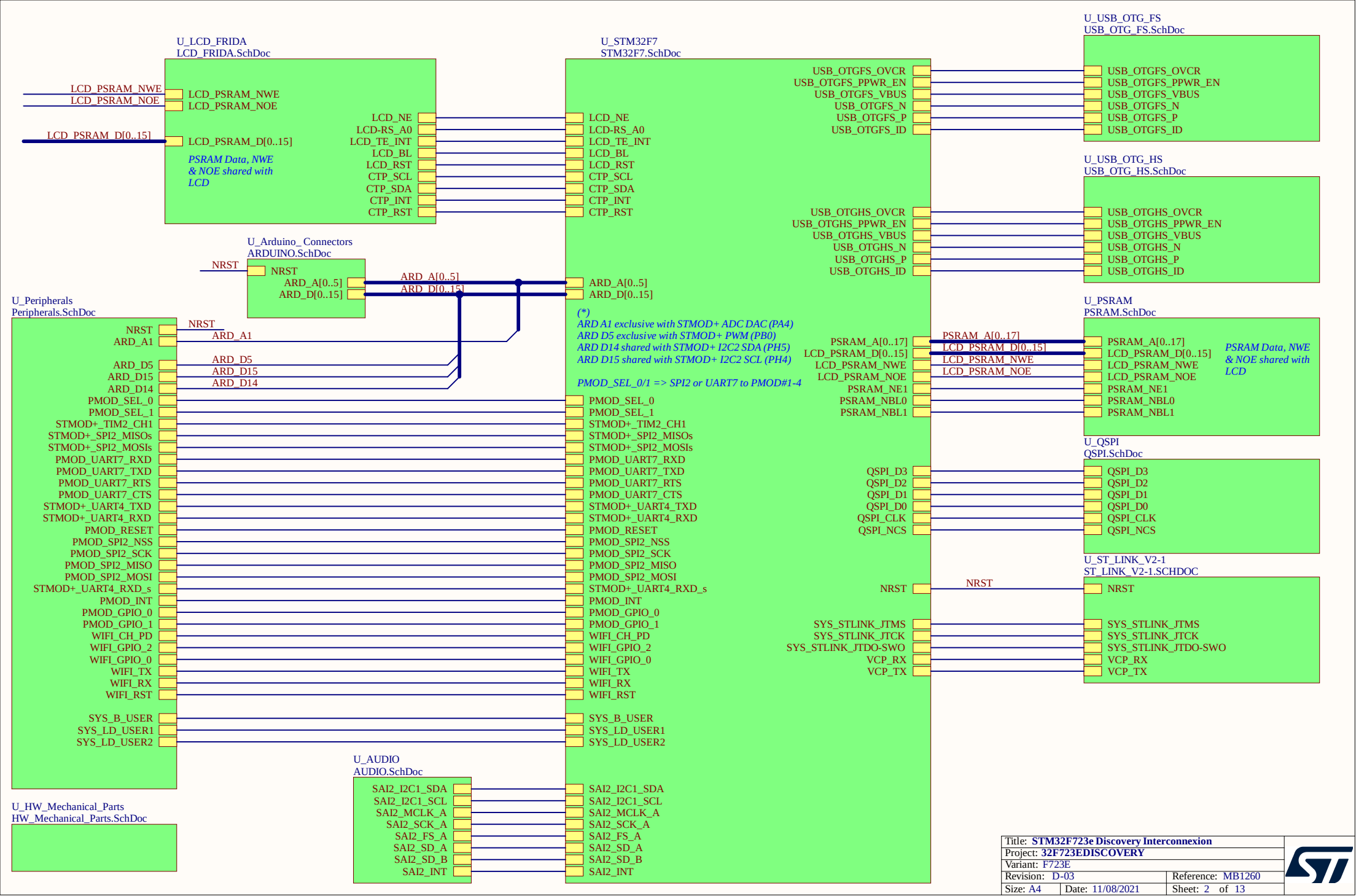

Title: **STM32F723e Discovery Interconnexion**		
Project: **32F723EDISCOVERY**		
Variant: F723E		
Revision: D-03		Reference: MB1260
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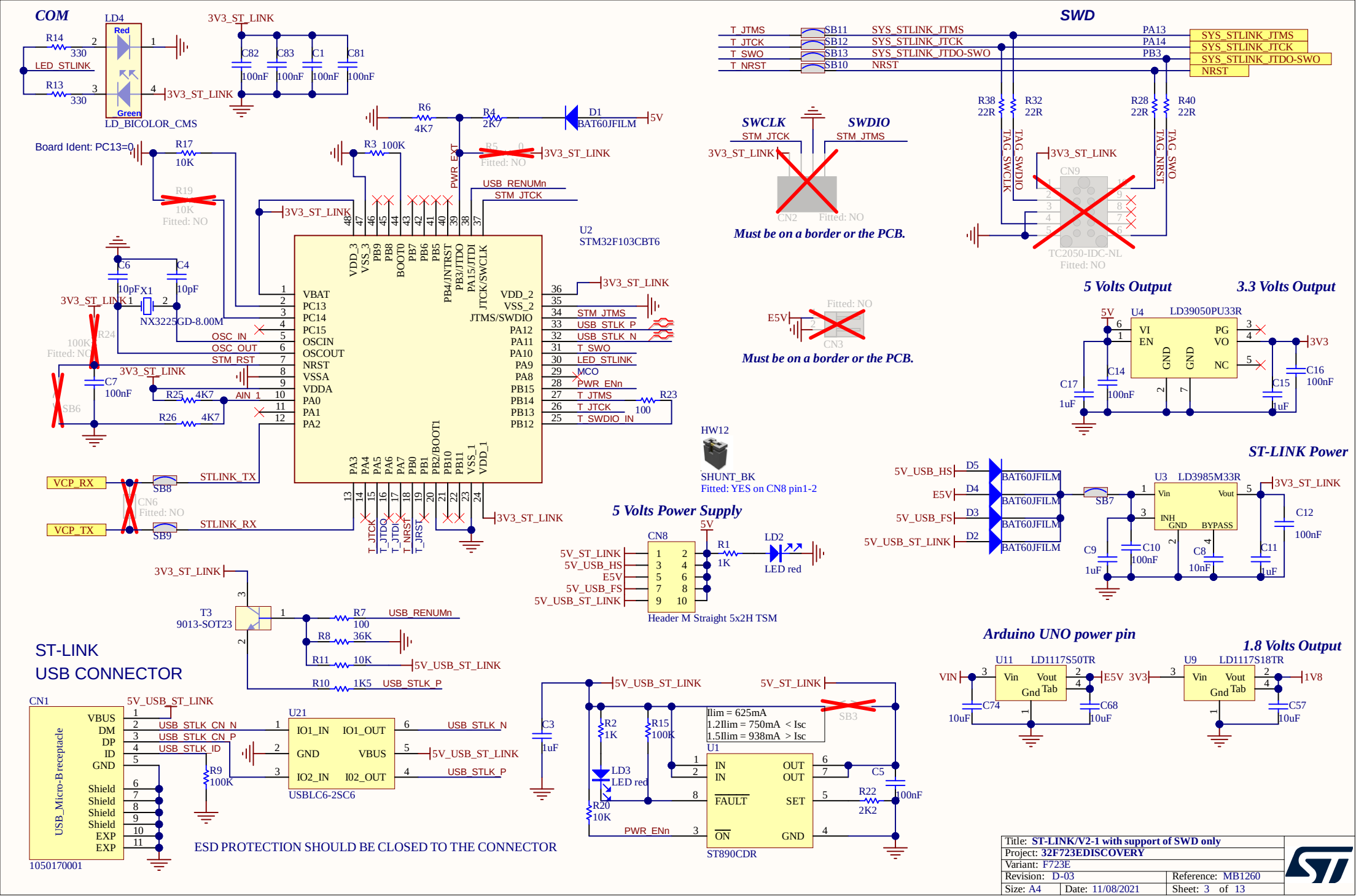
COM
LD4
Red
Green
LD_BICOLOR_CMS
R14 330
R13 330
LED_STLINK
3V3_ST_LINK
C82 100nF
C83 100nF
C1 100nF
C81 100nF
R6 4K7
R4 2K7
D1 BAT60JFILM
5V
R3 100K
R5 0
Fitted: NO
PWR_EXT
USB_RENUMn
STM_JTCK
Board Ident: PC13=0
R17 10K
R19 10K
Fitted: NO
U2
STM32F103CBT6
VBAT
PC13
PC14
PC15
OSCIN
OSCOUT
NRST
VSSA
VDDA
PA0
PA1
PA2
VDD_2
VSS_2
JTMS/SWDIO
PA12
PA11
PA10
PA9
PA8
PB15
PB14
PB13
PB12
STM_JTMS
USB_STLK_P
USB_STLK_N
T_SWO
LED_STLINK
MCO
PWR_ENn
T_JTMS
T_JTCK
T_SWDIO_IN
C6 10pF
C4 10pF
X1
NX3225GD-8.00M
OSC_IN
OSC_OUT
STM_RST
R24 100K
Fitted: NO
C7 100nF
SB6
R25 4K7
R26 4K7
AIN_1
VCP_RX
VCP_TX
SB8
SB9
STLINK_TX
STLINK_RX
CN6
Fitted: NO
T_JTCK
T_JTDO
T_JTDI
T_NRST
T_JRST
SWD
T_JTMS
T_JTCK
T_SWO
T_NRST
SB11
SB12
SB13
SB10
SYS_STLINK_JTMS
SYS_STLINK_JTCK
SYS_STLINK_JTDO-SWO
NRST
PA13
PA14
PB3
R38 22R
R32 22R
R28 22R
R40 22R
TAG_SWDIO
TAG_SWCLK
TAG_NRST
TAG_SWO
CN9
TC2050-IDC-NL
Fitted: NO
SWCLK
SWDIO
STM_JTCK
STM_JTMS
CN2
Fitted: NO
Must be on a border or the PCB.
E5V
CN3
Fitted: NO
Must be on a border or the PCB.
5 Volts Output
3.3 Volts Output
U4
LD39050PU33R
VI
EN
GND
PG
VO
NC
C14 100nF
C15 1uF
C16 100nF
C17 1uF
HW12
SHUNT_BK
Fitted: YES on CN8 pin1-2
5 Volts Power Supply
CN8
5V_ST_LINK
5V_USB_HS
E5V
5V_USB_FS
5V_USB_ST_LINK
R1 1K
LD2
LED red
Header M Straight 5x2H TSM
ST-LINK Power
5V_USB_HS
E5V
5V_USB_FS
5V_USB_ST_LINK
D5
D4
D3
D2
BAT60JFILM
SB7
U3
LD3985M33R
Vin
Vout
INH
GND
BYPASS
C9 1uF
C10 100nF
C8 10nF
C11 1uF
C12 100nF
ST-LINK
USB CONNECTOR
T3
9013-SOT23
R7 100
R8 36K
R11 10K
R10 1K5
USB_STLK_P
CN1
USB_Micro-B receptacle
VBUS
DM
DP
ID
GND
Shield
EXP
USB_STLK_CN_N
USB_STLK_CN_P
USB_STLK_ID
R9 100K
U21
USBLC6-2SC6
IO1_IN
IO1_OUT
GND
VBUS
IO2_IN
I02_OUT
1050170001
ESD PROTECTION SHOULD BE CLOSED TO THE CONNECTOR
C3 1uF
R2 1K
R15 100K
R20 10K
LD3
LED red
PWR_ENn
Ilim = 625mA
1.2Ilim = 750mA < Isc
1.5Ilim = 938mA > Isc
SB3
U1
ST890CDR
IN
OUT
FAULT
SET
ON
GND
C5 100nF
R22 2K2
Arduino UNO power pin
1.8 Volts Output
U11
LD1117S50TR
U9
LD1117S18TR
VIN
E5V
3V3
1V8
C74 10uF
C68 10uF
C57 10uF
Title: ST-LINK/V2-1 with support of SWD only
Project: 32F723EDISCOVERY
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Reference: MB1260
Size: A4
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TP7 TP11 TP12 TP4 TP6

SAI2_SCK_A SAI2_FS_A SAI2_SD_A SAI2_SD_B SAI2_INT SAI2_I2C1_SDA SAI2_I2C1_SCL SAI2_MCLK_A

QSPI_D3 QSPI_D2 QSPI_D1 QSPI_D0 QSPI_CLK QSPI_NCS

SYS_B_USER SYS_LD_USER1 SYS_LD_USER2 SYS_STLINK_JTMS SYS_STLINK_JTCK SYS_STLINK_JTDO-SWO VCP_RX VCP_TX

USB_OTGHS_OVCR USB_OTGHS_PPWR_EN USB_OTGHS_VBUS USB_OTGHS_N USB_OTGHS_P USB_OTGHS_ID

USB_OTGFS_OVCR USB_OTGFS_PPWR_EN USB_OTGFS_VBUS USB_OTGFS_N USB_OTGFS_P USB_OTGFS_ID

PSRAM_A[0..17] LCD_PSRAM_D[0..15] LCD_PSRAM_NWE LCD_PSRAM_NOE PSRAM_NE1 PSRAM_NBL0 PSRAM_NBL1

LCD_NE LCD-RS_A0 LCD_TE_INT LCD_BL LCD_RST

CTP_INT CTP_RST CTP_SCL CTP_SDA

ARD_A[0..5] ARD_D[0..15]

(*)
ARD A1 conflict with STMOD+ ADC DAC (PA4)
ARD D5 conflict with STMOD+ PWM (PB0)
ARD D14 shared with STMOD+ I2C2 SDA (PH5)
ARD D15 shared with STMOD+ I2C2 SCL (PH4)

WIFI_TX WIFI_RX WIFI_RST WIFI_GPIO_0 WIFI_GPIO_2 WIFI_CH_PD

STMOD+_TIM2_CH1 STMOD+_SPI2_MISOs STMOD+_SPI2_MOSIs PMOD_UART7_RXD PMOD_UART7_TXD PMOD_UART7_RTS PMOD_UART7_CTS STMOD+_UART4_TXD STMOD+_UART4_RXD PMOD_RESET PMOD_SPI2_NSS PMOD_SPI2_SCK PMOD_SPI2_MISO PMOD_SPI2_MOSI STMOD+_UART4_RXD_s PMOD_INT PMOD_GPIO_0 PMOD_GPIO_1 PMOD_SEL_0 PMOD_SEL_1

PMOD_SEL_0/1 => SPI2 or UART7 to PMOD#1-4

U8A

SYS_B_USER ARD_D10 ARD_D1 ARD_D0 ARD_A1 ARD_D13 ARD_A0 SYS_LD_USER1 CTP_SCL USB_OTGFS_VBUS USB_OTGFS_ID USB_OTGFS_N USB_OTGFS_P SYS_STLINK_JTMS SYS_STLINK_JTCK STMOD+_TIM2_CH1

ARD_D5 SYS_LD_USER2 QSPI_CLK SYS_STLINK_JTDO-SWO ARD_D12 ARD_D11 QSPI_NCS NC1 SAI2_I2C1_SCL SAI2_I2C1_SDA USB_OTGFS_OVCR PMOD_INT USB_OTGHS_ID USB_OTGHS_VBUS USB_OTGHS_N USB_OTGHS_P

PC14-OSC32_IN PC15-OSC32_OUT PH0-OSCIN PH1-OSCOUT NRST BOOT0 PDRON PDR_ON

PA0-WKUP PA1 PA2 PA3 PA4 PA5 PA6 PA7 PA8 PA9 PA10 PA11 PA12 PA13 PA14 PA15 PB0 PB1 PB2 PB3 PB4 PB5 PB6 PB7 PB8 PB9 PB10 PB11 PB12 PB13 PB14-OTG_HS_DM PB15-OTG_HS_DP PC14-OSC32_IN PC15-OSC32_OUT PH0-OSC_IN PH1-OSC_OUT NRST BOOT0 PDR_ON

PC0 PC1 PC2 PC3 PC4 PC5 PC6 PC7 PC8 PC9 PC10 PC11 PC12 PC13-ANTI_TAMP OTG_HS_REXT OTG_HS_VDD12

M2 PC0 ARD_A4
M3 PC1 ARD_A5
M4 PC2 STMOD+_SPI2_MISOs
M5 PC3 STMOD+_SPI2_MOSIs
N5 PC4 ARD_A2
P5 PC5 ARD_D2
H15 PC6 VCP_TX
G15 PC7 VCP_RX
G14 PC8 LCD_TE_INT
F14 PC9 QSPI_D0
B14 PC10 QSPI_D1
B13 PC11 STMOD+_UART4_RXD_s
A12 PC12 WIFI_RX
D1 PC13 NC11

J15 REXT_OTGPHY
J14 V12_OTGPHY

U8B

LCD_PSRAM_D2 LCD_PSRAM_D3 WIFI_TX LCD_PSRAM_D13 LCD_PSRAM_D14 LCD_PSRAM_D15 PSRAM_A16 PSRAM_A17 QSPI_D3 LCD_PSRAM_D0 LCD_PSRAM_D1

PSRAM_NBL0 PSRAM_NBL1 QSPI_D2 ARD_D7 ARD_D8 ARD_D3 ARD_D6 LCD_PSRAM_D4 LCD_PSRAM_D5 LCD_PSRAM_D6 LCD_PSRAM_D7 LCD_PSRAM_D8 LCD_PSRAM_D9 LCD_PSRAM_D10 LCD_PSRAM_D11 LCD_PSRAM_D12

PSRAM_A0 PSRAM_A1 PSRAM_A2 PSRAM_A3 PSRAM_A4 PSRAM_A5 PMOD_UART7_RXD PMOD_UART7_TXD PMOD_UART7_RTS PMOD_UART7_CTS ARD_A3 PMOD_RESET PSRAM_A6 PSRAM_A7 PSRAM_A8 PSRAM_A9

PD0 PD1 PD2 PD3 PD4 PD5 PD6 PD7 PD8 PD9 PD10 PD11 PD12 PD13 PD14 PD15 PE0 PE1 PE2 PE3 PE4 PE5 PE6 PE7 PE8 PE9 PE10 PE11 PE12 PE13 PE14 PE15 PF0 PF1 PF2 PF3 PF4 PF5 PF6 PF7 PF8 PF9 PF10 PF11 PF12 PF13 PF14 PF15

PG0 PG1 PG2 PG3 PG4 PG5 PG8 PG9 PG10 PG11 PG12 PG13 PG14 PG15 PH2 PH3 PH4 PH5 PH6 PH7 PH8 PH9 PH10 PH11 PH12 PH13 PH14 PH15 PI0 PI1 PI2 PI3 PI4 PI5 PI6 PI7 PI8-ANTI_TAMP2 PI9 PI10 PI11

B12 C12 D12 D11 D10 C11 B11 A11 P15 P14 N15 N14 N13 M15 M14 L14 A4 A3 A2 A1 B1 B2 B3 R8 P8 P9 R9 P10 R10 N11 P11 R11 E2 H3 H2 J2 J3 K3 K2 K1 L3 L2 R6 P6 N6 R7 P7

N7 PG0 PSRAM_A10
M7 PG1 PSRAM_A11
L15 PG2 PSRAM_A12
K15 PG3 PSRAM_A13
K14 PG4 PSRAM_A14
K13 PG5 PSRAM_A15

H14 PG8 USB_OTGFS_PPWR_EN
C10 PG9 LCD_NE
B10 PG10 SAI2_SD_B
B9 PG11 NC4
B8 PG12 PMOD_GPIO_0
A8 PG13 WIFI_GPIO_0
A7 PG14 WIFI_RST
B7 PG15 SAI2_INT

F4 PH2 PMOD_GPIO_1
G4 PH3 ARD_D4
H4 PH4 ARD_D15
J4 PH5 ARD_D14
M11 PH6 ARD_D9
N12 PH7 LCD_RST
M12 PH8 CTP_SDA
M13 PH9 CTP_RST
L13 PH10 USB_OTGHS_OVCR
L12 PH11 LCD_BL
K12 PH12 USB_OTGHS_PPWR_EN
E12 PH13 STMOD+_UART4_TXD
E13 PH14 STMOD+_UART4_RXD
D13 PH15 PMOD_SEL_0

E14 PI0 PMOD_SPI2_NSS
D14 PI1 PMOD_SPI2_SCK
C14 PI2 PMOD_SPI2_MISO
C13 PI3 PMOD_SPI2_MOSI
D4 PI4 SAI2_MCLK_A
C4 PI5 SAI2_SCK_A
C3 PI6 SAI2_SD_A
C2 PI7 SAI2_FS_A
D2 PI8 NC8
D3 PI9 CTP_INT
E3 PI10 PMOD_SEL_1
E4 PI11 NC10

U8C

VDD1 VDD2 VDD3 VDD4 VDD5 VDD6 VDD7 VDD8 VDD_USB33 VDD_MMC33 VDD11 VDD13 VDD14 VDD15

VSS VSS2 VSS3 VSS5 VSS6 VSSA VREF- VCAP1 VCAP2

VDDA VREF+ VBAT BYPASS-REG

VSS15 VSS14 VSS13 VSS11 VSS10 VSS9 VSS7

STM32F723IEK

	SPI	UART/SPI	UART
PMOD_SEL_0	0	1 (*)	1
PMOD_SEL_1	0	0 (*)	1
PMOD#1	NSS	NSS	CTS
PMOD#2	MOSIp	TX	TX
PMOD#3	MISOp	RX	RX
PMOD#4	SCK	SCK	RTS

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

3V3 VDD VDDA NRST

R52 2K7 R44 2K7 R42 2K7 R49 0 R51 100 R50 0 R36 10K R43 10K R37 10K R45 10K R55 10K R27 0 R62 0 R61 10K R54 3K 1% R101 0

C48 4.7pF C51 4.7pF C55 100nF C93 100nF C54 2.2uF C49 2.2uF C58 2.2uF C65 1uF C60 100nF C66 4.7uF C34 4.7uF C64 1uF C59 100nF C38 C47 C39 C36 C52 C53 C62 C46 C61 C45 C37 C40 C44 C56 100nF

X2 NX3215SA-32.768K

X3 VDD OUT EN GND NZ2520SH-25.00M OSC_25M

Place near MCU

L1 FCM1608KF-601T03

JP1

TP5 TP8 TP13 TP14 TP15

Ceramic capacitor (Low ESR)

Title:	**STM32F723e Connexion**
Project:	**32F723EDISCOVERY**
Variant:	F723E
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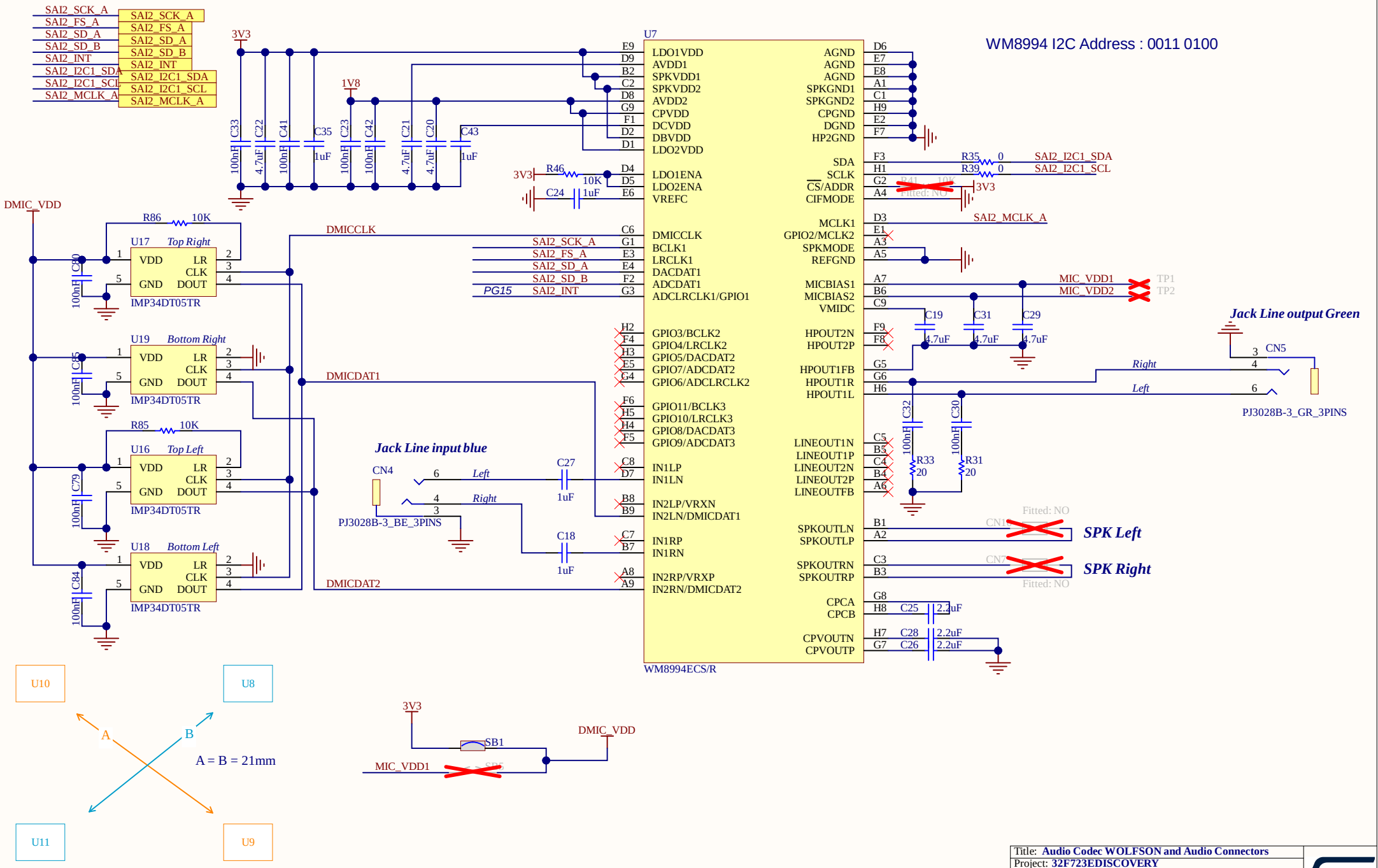

Title: **Audio Codec WOLFSON and Audio Connectors**		
Project: **32F723EDISCOVERY**		
Variant: F723E		
Revision: D-03		Reference: MB1260
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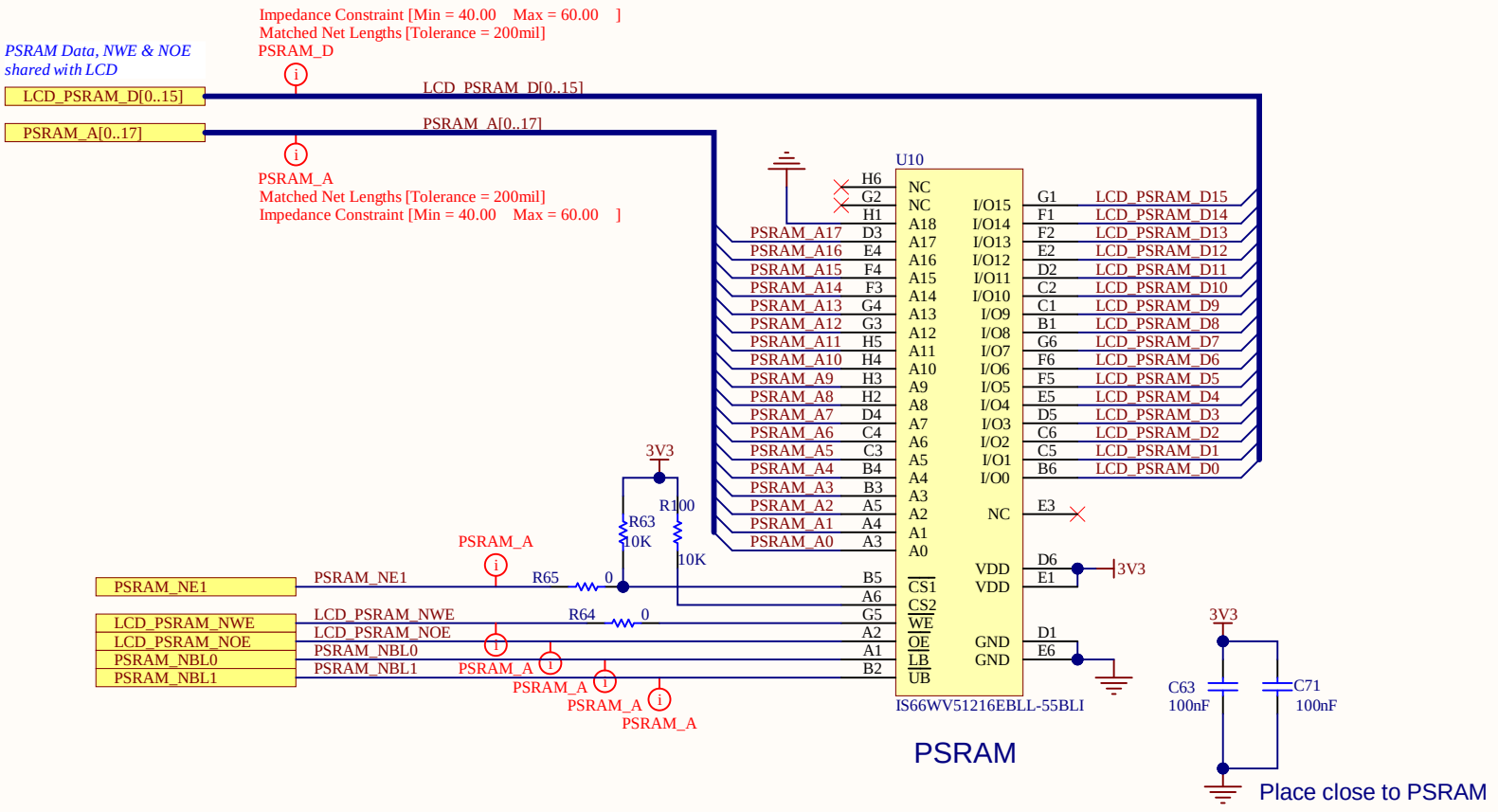

Title: **PSRAM**		
Project: **32F723EDISCOVERY**		
Variant: F723E		
Revision: D-03		Reference: MB1260
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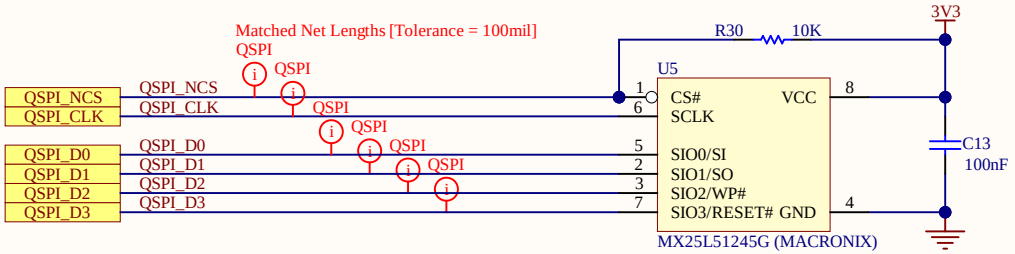
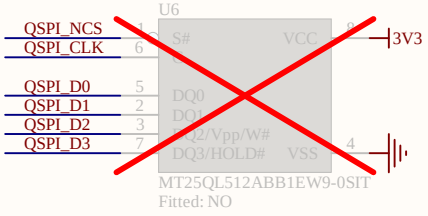
Quad SPI Flash Memory





Title: **Quad SPI Flash Memory (MICRON)**		
Project: **32F723EDISCOVERY**		
Variant: F723E		
Revision: D-03		Reference: MB1260
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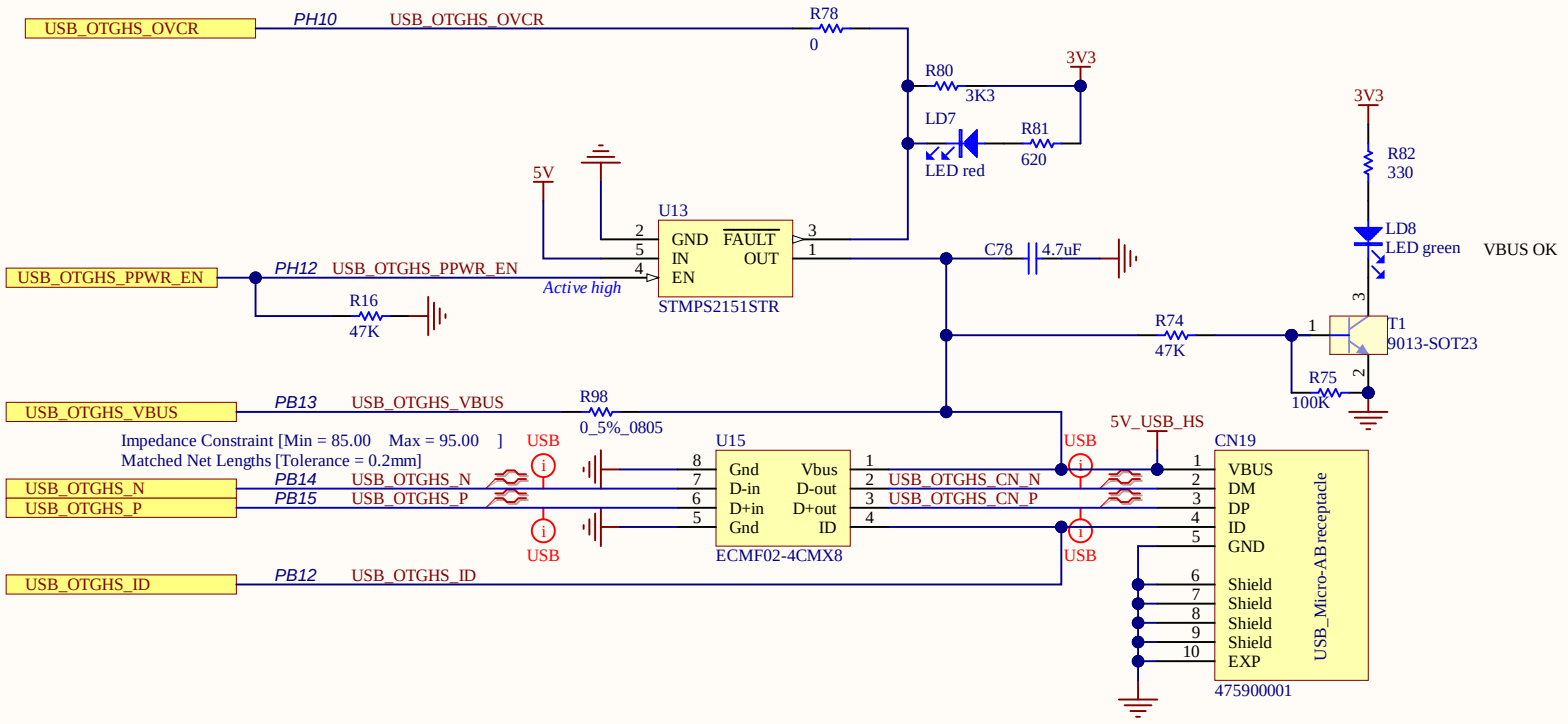
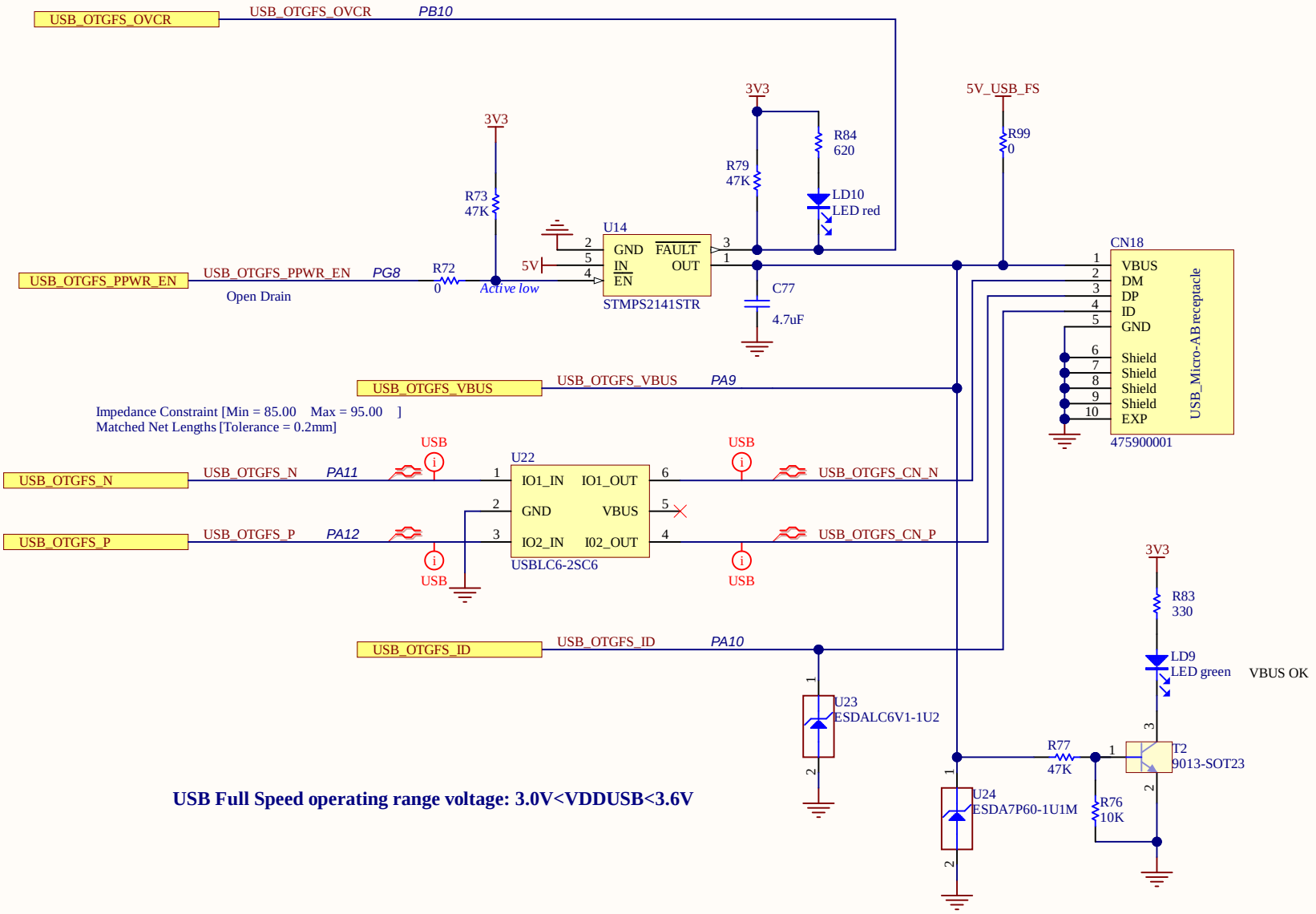


Title: **USB OTG HS PHY with micro A-B connector**		
Project: **32F723EDISCOVERY**		
Variant: F723E		
Revision: D-03		Reference: MB1260
Size: A4	Date: 11/08/2021	Sheet: 8 of 13



Title: **USB OTG FS**		
Project: **32F723EDISCOVERY**		
Variant: F723E		
Revision: D-03		Reference: MB1260
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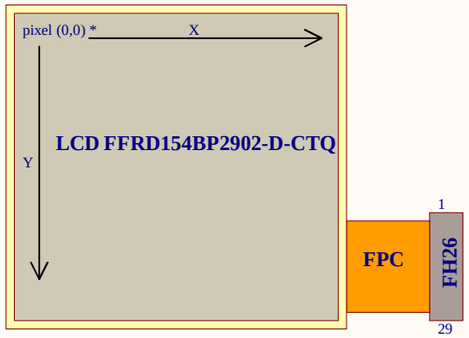
LCD FRIDA

Top side: layout of CN12



*: standard orientation. Rotations by 90, 180, 270 degrees possible by registers.

240x240 pixels TFT LCD

ZZ1

FRD154BP2902-D-CTQ

CN17

	1	GND	FMARK	2	LCD_TE_INT — PC8
LCD_PSRAM_D15	3	DB15	DB14	4	LCD_PSRAM_D14
LCD_PSRAM_D13	5	DB13	DB12	6	LCD_PSRAM_D12
LCD_PSRAM_D11	7	DB11	DB10	8	LCD_PSRAM_D10
LCD_PSRAM_D9	9	DB9	DB8	10	LCD_PSRAM_D8
LCD_PSRAM_D7	11	DB7	DB6	12	LCD_PSRAM_D6
LCD_PSRAM_D5	13	DB5	DB4	14	LCD_PSRAM_D4
LCD_PSRAM_D3	15	DB3	DB2	16	LCD_PSRAM_D2
LCD_PSRAM_D1	17	DB1	DB0	18	LCD_PSRAM_D0
LCD_PSRAM_NOE	19	/RD	/WR	20	LCD_PSRAM_NWE
PF0 — LCD-RS_A0	21	RS	/CS	22	LCD_NE — PG9
PH7 — LCD_RST	23	RESET	IM	24	
VDD	25	IOVCC	VCI	26	3V3
LEDK	29	GND	LEDA	28	LEDA
		LEDK			

FH26W-29S-0.3SHW(60)

R68 100K — VDD

SB16 open and SB15 closed = IM high: LCD in 16bits mode
SB16 closed and SB15 opened = IMlow : LCD in 8bits mode

SB16 — SB15 — R70 100K — VDD

VDD_MCU operating voltage range: 1.65 to 3.6V

PSRAM Data, NWE & NOE shared with LCD

LCD_PSRAM_D[0..15]	LCD_PSRAM_D[0..15]
LCD_NE	LCD_NE
LCD-RS_A0	LCD-RS_A0
LCD_PSRAM_NWE	LCD_PSRAM_NWE
LCD_PSRAM_NOE	LCD_PSRAM_NOE
LCD_TE_INT	LCD_TE_INT
LCD_BL	LCD_BL
LCD_RST	LCD_RST

CONTROL TOUCH PANEL

CTP_SCL	CTP_SCL
CTP_SDA	CTP_SDA
CTP_INT	CTP_INT
CTP_RST	CTP_RST

CTP_RST — PH9

C2 100nF — 3V3

SB4

Capacitive Touch Panel connector of FRD154BP2902-CTP

Pull-down to insure CTP is in Reset at power-on

R21 100K

CN16

	10	GND	GND	1	
	9	VDD	INT	2	PI9 — CTP_INT
SB2	8	IOVCC	GND	3	
	7	RESET	SDA	4	PH8 — CTP_SDA
	6	GND	SCL	5	PA8 — CTP_SCL

DF37NB-10DS-0.4V(51)

I2C max clock: 400kHz

R18 100K

Pull-down to insure CTP is in Reset even if PH9 not driven

LCD BACKLIGHT

Common mode supply filter

Layout: parts close to STLD40D and grouped in same area with BLGND as local ground plane

3V3 — L2 Fitted: NO FCM1608KF-601T03

5V — L3 FCM1608KF-601T03

L5 FCM1608KF-601T03

C67 10uF — C69 100nF — BLGND

L4 FCM1608KF-601T03 — VL

C70 100nF — C72 10nF — C73 4.7uF — BLGND

L6 4.7uH 1A 30%

Z1 STPS1L40M

U12 STLD40DPUR

8	SW	Vo	6
1	Vi	NC	5
7	EN		
3	GND	FB	4
9	PGND	Rset	2

BLGND

C75 4.7uF — C76 10nF — BLGND

L8 FCM1608KF-601T03 — LEDA

LEDK

R67 100K — R66 10 — BLGND

current regulated at 15mA

LCD_BL — PH11

L7 FCM1608KF-601T03

R71 100K Fitted: NO — 3V3

R69 100K — BLGND

Backlight control: ON/OFF or dimmer by low frequency (1 to 10kHz typ.) PWM using TIM5_CH2

Backlight driver & PFC connector for LCD panel

Title: **LCD_Frida**			
Project: **32F723EDISCOVERY**			
Variant: F723E			
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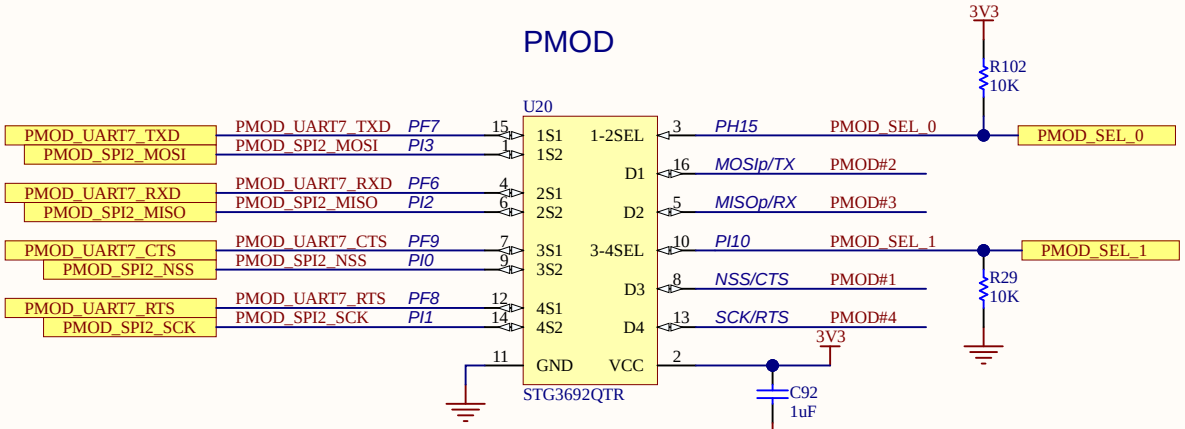
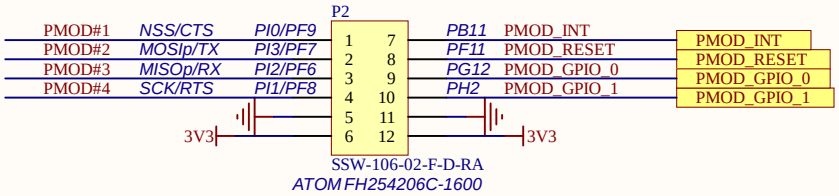
PMOD

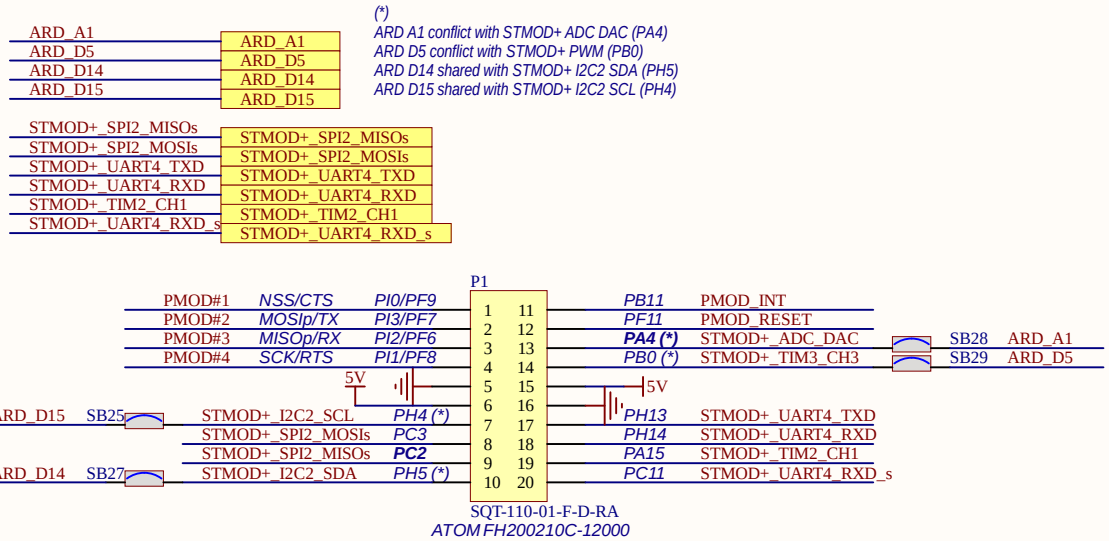


	SPI	UART/SPI	UART
PMOD_SEL_0	0	1 (*)	1
PMOD_SEL_1	0	0 (*)	1
PMOD#1	NSS	NSS	CTS
PMOD#2	MOSIp	TX	TX
PMOD#3	MISOp	RX	RX
PMOD#4	SCK	SCK	RTS

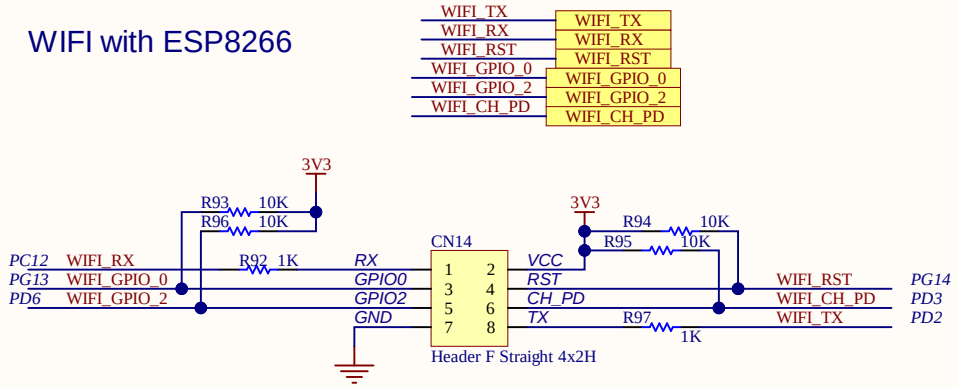
(*) default configuration to support MikroBus modules using MB1280 fan-out board

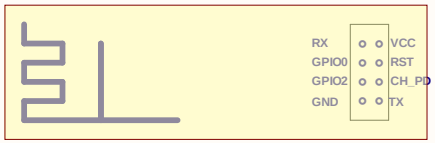


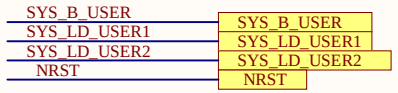
STMod+



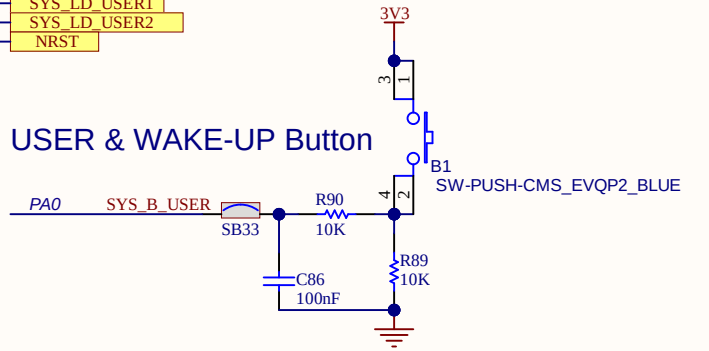
WIFI with ESP8266



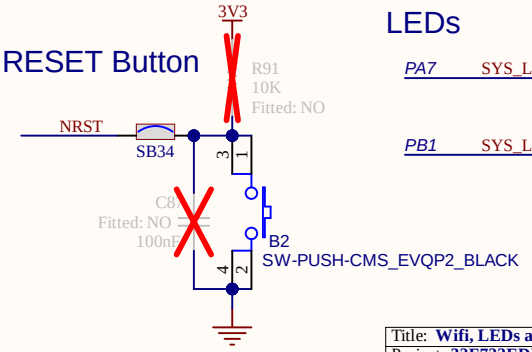




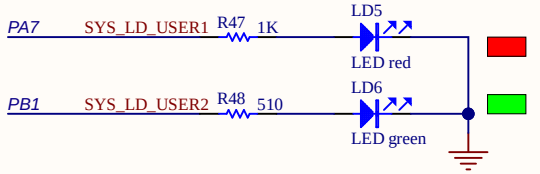
USER & WAKE-UP Button



RESET Button

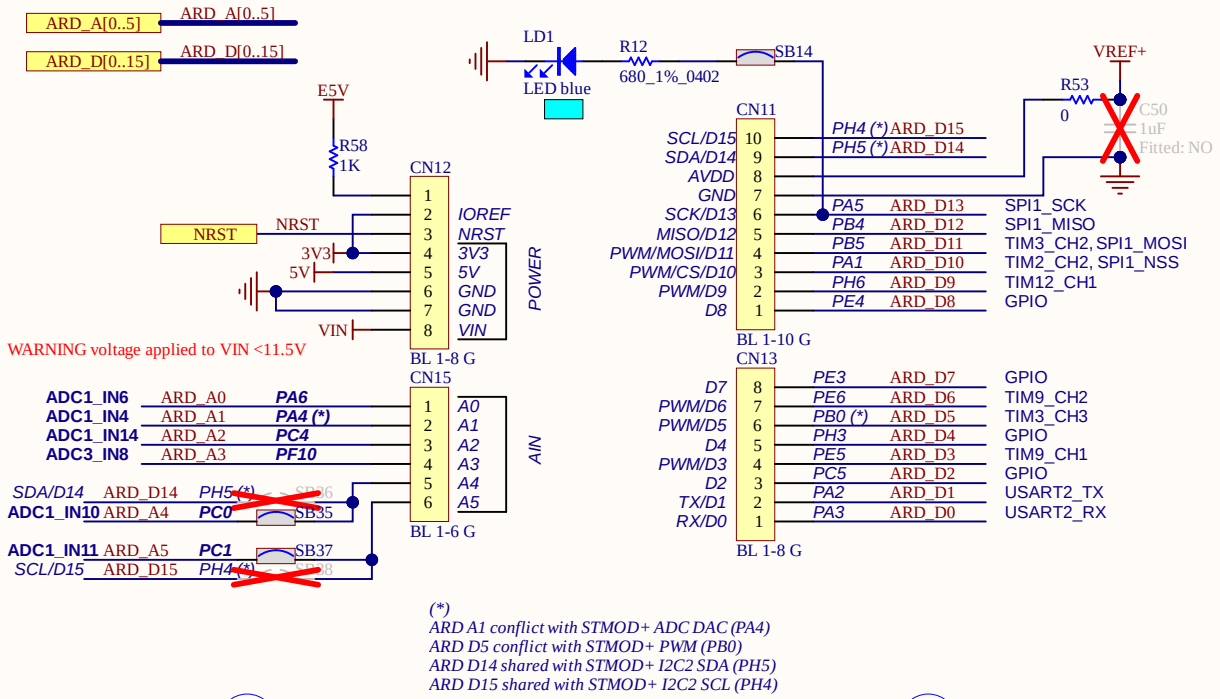


LEDs



Title: **Wifi, LEDs and Push Button**		
Project: **32F723EDISCOVERY**		
Variant: F723E		
Revision: D-03		Reference: MB1260
Size: A4	Date: 11/08/2021	Sheet: 11 of 13

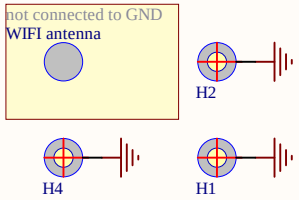
Arduino UNO connector



(*)
ARD A1 conflict with STMOD+ ADC DAC (PA4)
ARD D5 conflict with STMOD+ PWM (PB0)
ARD D14 shared with STMOD+ I2C2 SDA (PH5)
ARD D15 shared with STMOD+ I2C2 SCL (PH4)

Title: **Arduino UNO connectors**		
Project: **32F723EDISCOVERY**		
Variant: F723E		
Revision: D-03		Reference: MB1260
Size: A4	Date: 11/08/2021	Sheet: 12 of 13

HW Mechanical parts



H2

H4

H1

STICKER BOARD
HW1

STICKER PRODUCT
HW2

Title: **HW Mechanical parts**		
Project: **32F723EDISCOVERY**		
Variant: F723E		
Revision: D-03		Reference: MB1260
Size: A4	Date: 11/08/2021	Sheet: 13 of 13