Carte STM32H743 LHEEA

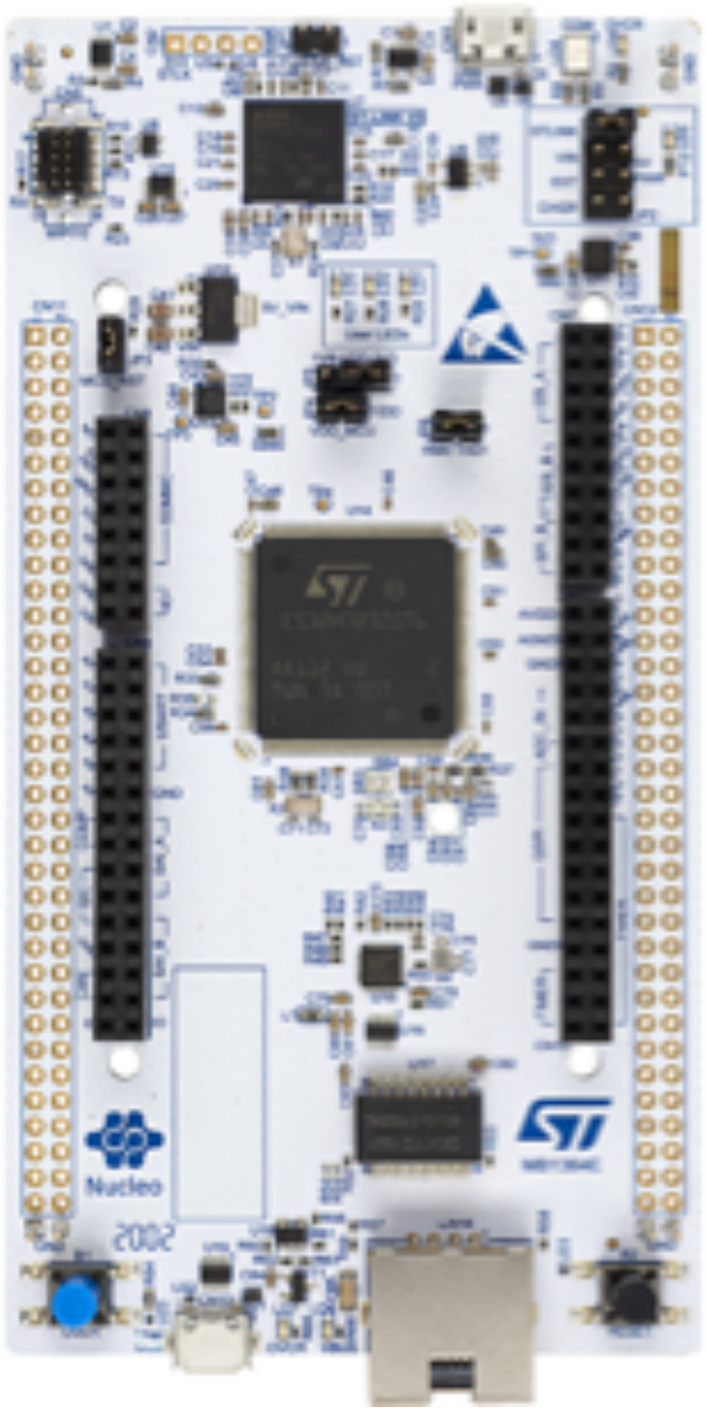
Pierre Molinaro

15 novembre 2020

Nucleo-H743ZI2

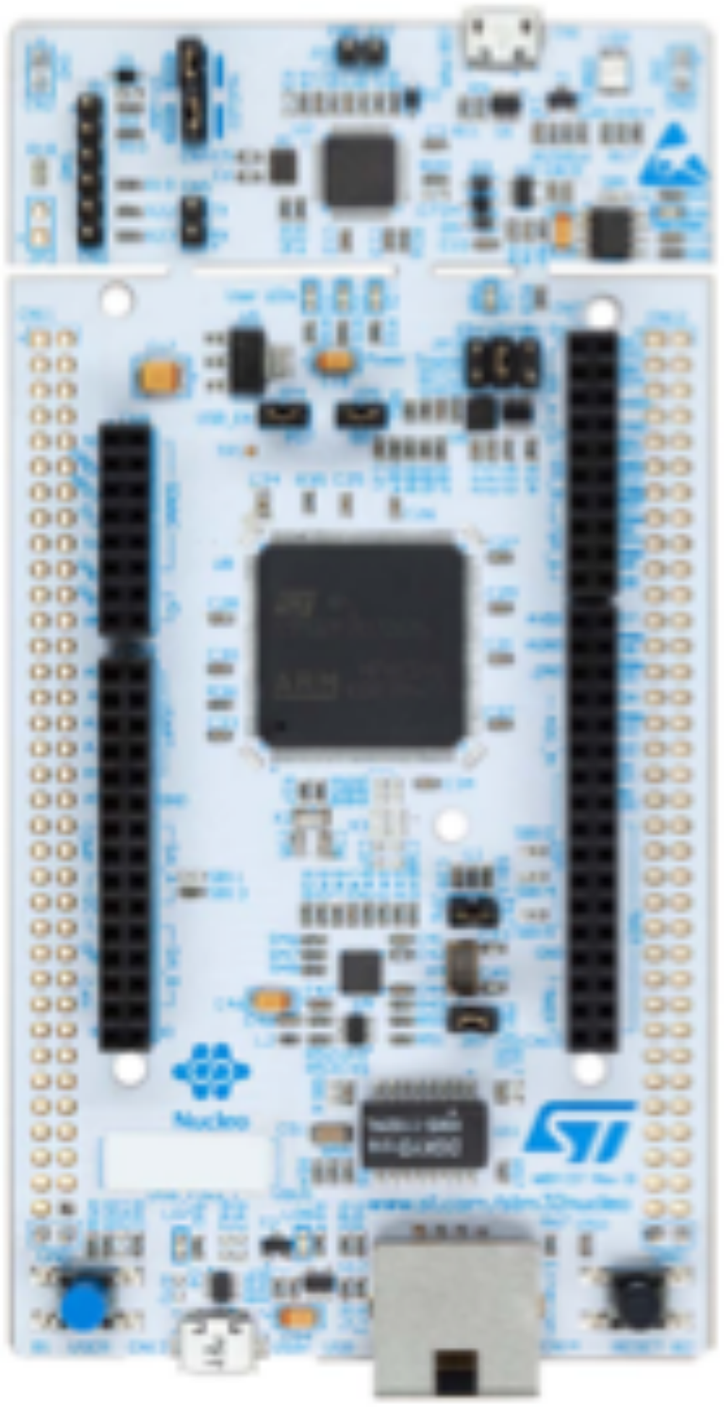
Ne pas confondre STM32-H743ZI2 et STM32-H743ZI

STM32-H743ZI2



Décrit par UM2407

STM32-H743ZI



Décrit par UM1974

Ports réservés

Le manuel utilisateur UM2407 liste les ports réservés. L'idée est de conserver la possibilité d'utiliser l'Ethernet et l'USB.

Table 10. USART3 connection

Pin name	Function	Virtual COM port (default configuration)	ST morpho connection
PD8	USART3 TX	SB5 ON and SB7 OFF	SB5 OFF and SB7 ON
PD9	USART3 RX	SB6 ON and SB4 OFF	SB6 OFF and SB4 ON

Table 11. LPUART1 connection

Pin name	Function	Virtual COM port	ARDUINO® D0 and D1	ST morpho connection
PB6	LPUART1 TX	SB9 ON SB8 and SB18 OFF	SB8 ON SB9 and SB18 OFF	SB9 OFF and SB18 OFF
PB7	LPUART1 RX	SB34 ON SB12 and SB68 OFF	SB68 ON SB34 and SB66 OFF	SB12 OFF and SB34 OFF

ES série utilisée par le moniteur Arduino

Port	Fonction
PB0	Led Nucleo — verte (User LD1)
PE1	Led Nucleo — jaune (User LD2)
PB14	Led Nucleo — rouge (User LD3)
PC13	Poussoir Nucleo — bleu (B1 User)

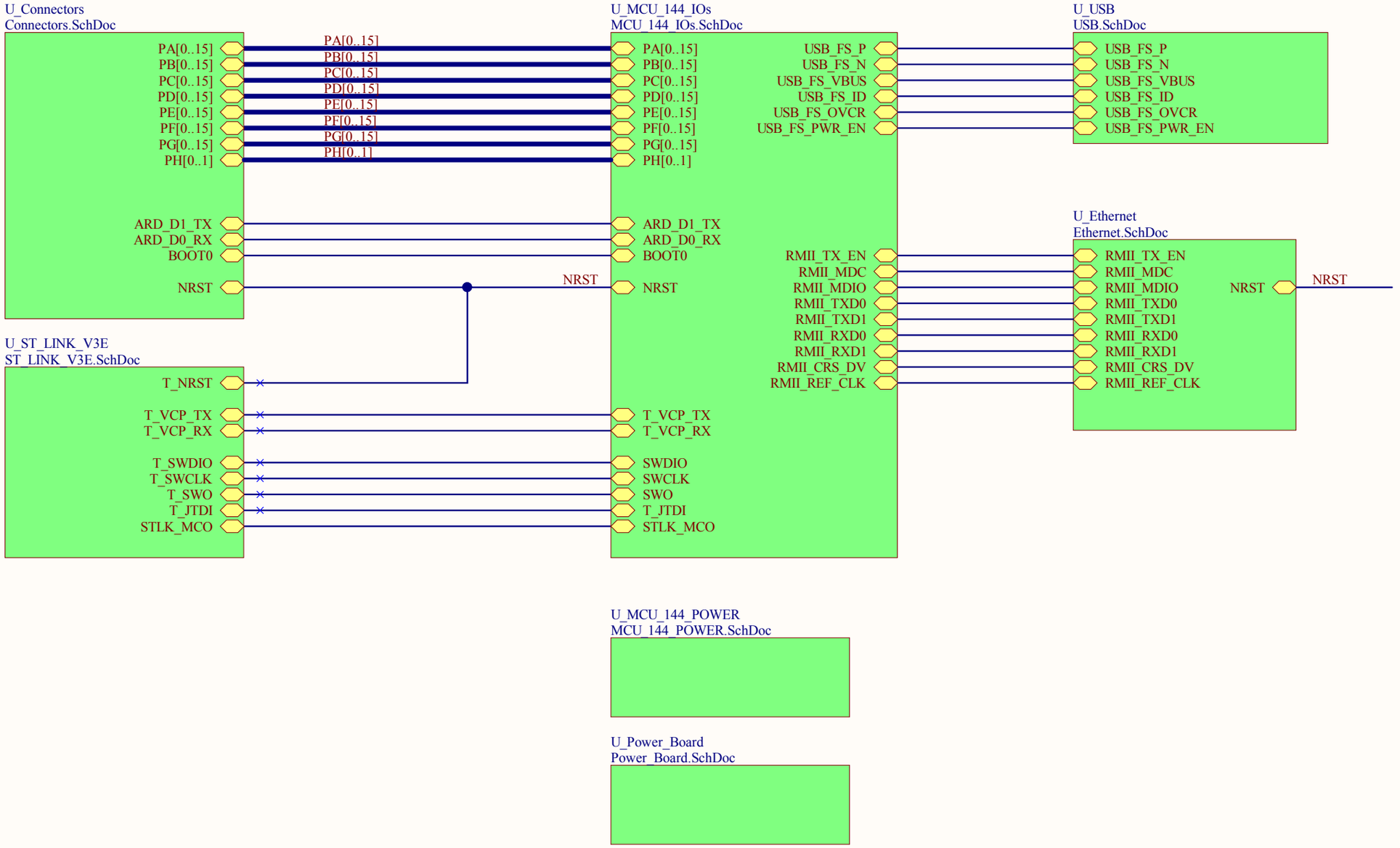
Table 12. USB pin configuration

Pin name	Function	Configuration when using USB connector	Configuration when using ST morpho connector	Remark
PA8	USB SOF	-	-	Test point TP4
PA9	USB V_{BUS}	SB23 ON	SB23 OFF	-
PA10	USB ID	SB24 ON	SB24 OFF	-
PA11	USB DM	SB21 ON	SB21 OFF	-
PA12	USB DP	SB22 ON	SB22 OFF	-
PD10	USB PWR EN	SB77 ON	SB77 OFF	-
PG7	USB FS OVCR	SB76 ON	SB76 OFF	-

Table 13. Ethernet pin configuration

Pin name	Function	Conflict with ST Zio connector signal	Configuration when using Ethernet	Configuration when using ST Zio or ST morpho connector
PA1	RMII Reference Clock	-	SB57 ON	SB57 OFF
PA2	RMII MDIO	-	SB72 ON	SB72 OFF
PC1	RMII MDC	-	SB64 ON	SB64 OFF
PA7	RMII RX Data Valid	-	SB31 ON	SB31 OFF
PC4	RMII RXD0	-	SB36 ON	SB36 OFF
PC5	RMII RXD1	-	SB29 ON	SB29 OFF
PG11	RMII TX Enable	-	SB27 ON	SB27 OFF
PG13	RXII TXD0	-	SB30 ON	SB30 OFF
PB13	RMII TXD1	I2S_A_CK	JP6 ON	JP6 OFF

Schéma (1/8)

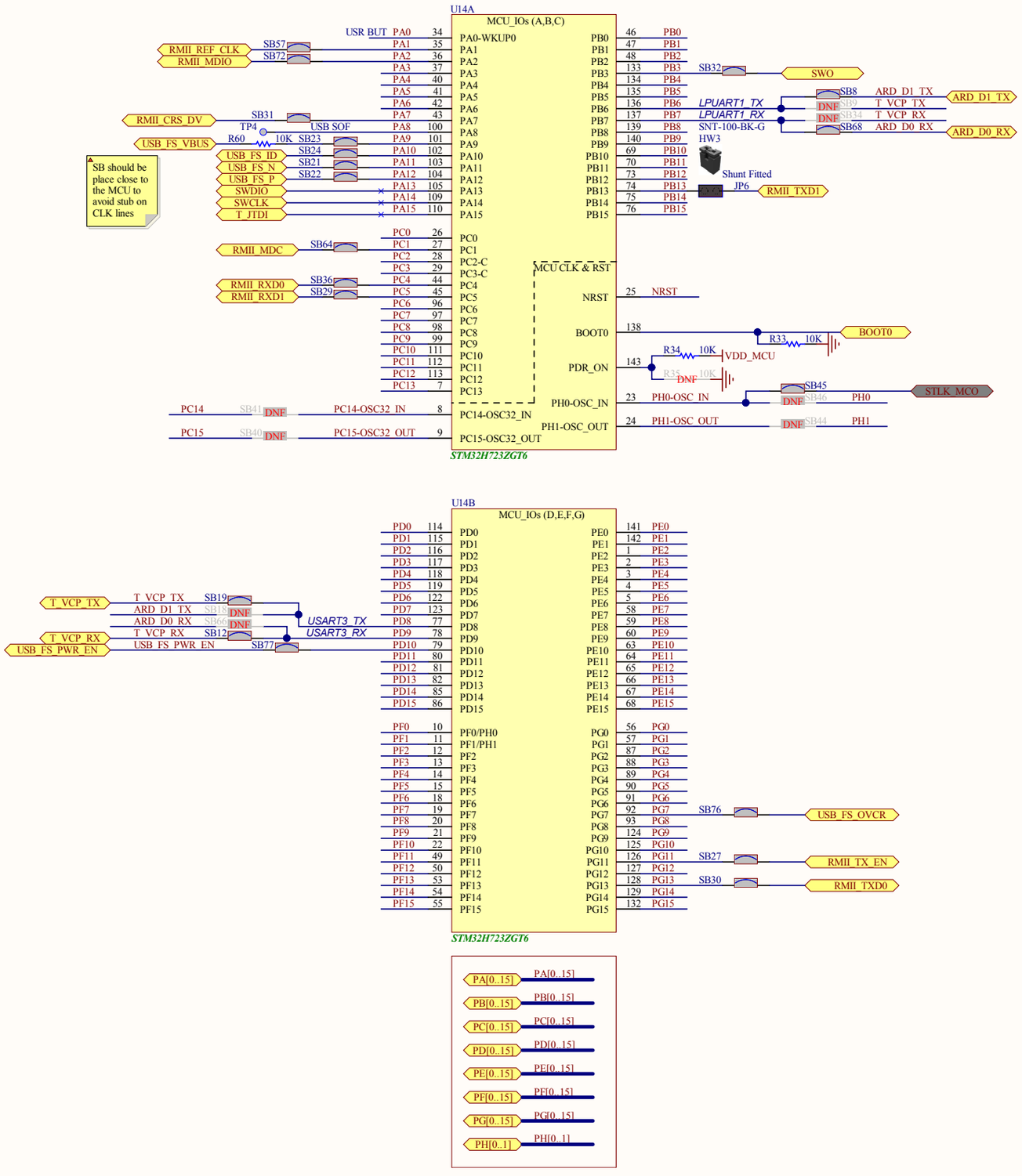


Title: **MB1364 Top: hierarchical view**		
Project: **NUCLEO 144 H7 LEGACY**		
Variant: H723ZG		
Revision: E -01		Reference: MB1364
Size: A4	Date: 16-OCT-2019	Sheet: 2 of 9

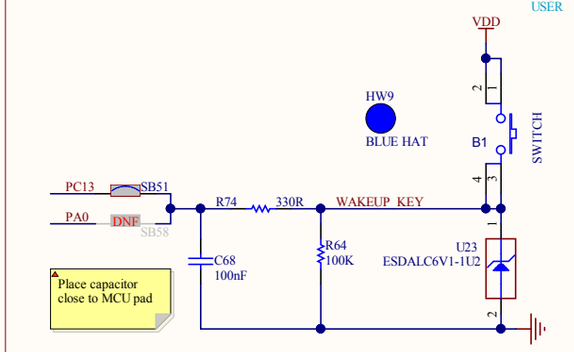
life.augmented

Schéma (2/8)

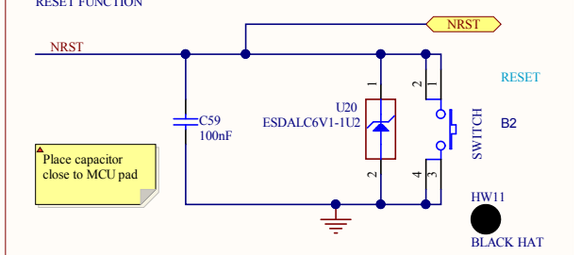
MCU IO CLK and RST



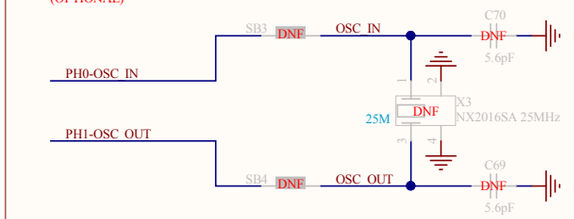
USER BUTTON



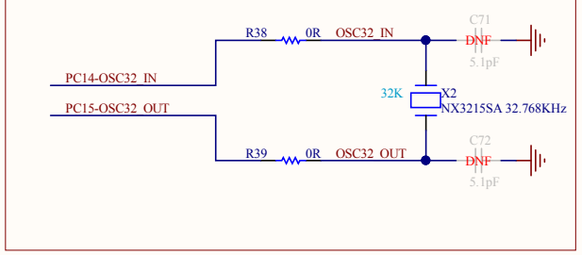
RESET FUNCTION



EXTERNAL HSE CLK
(OPTIONAL)



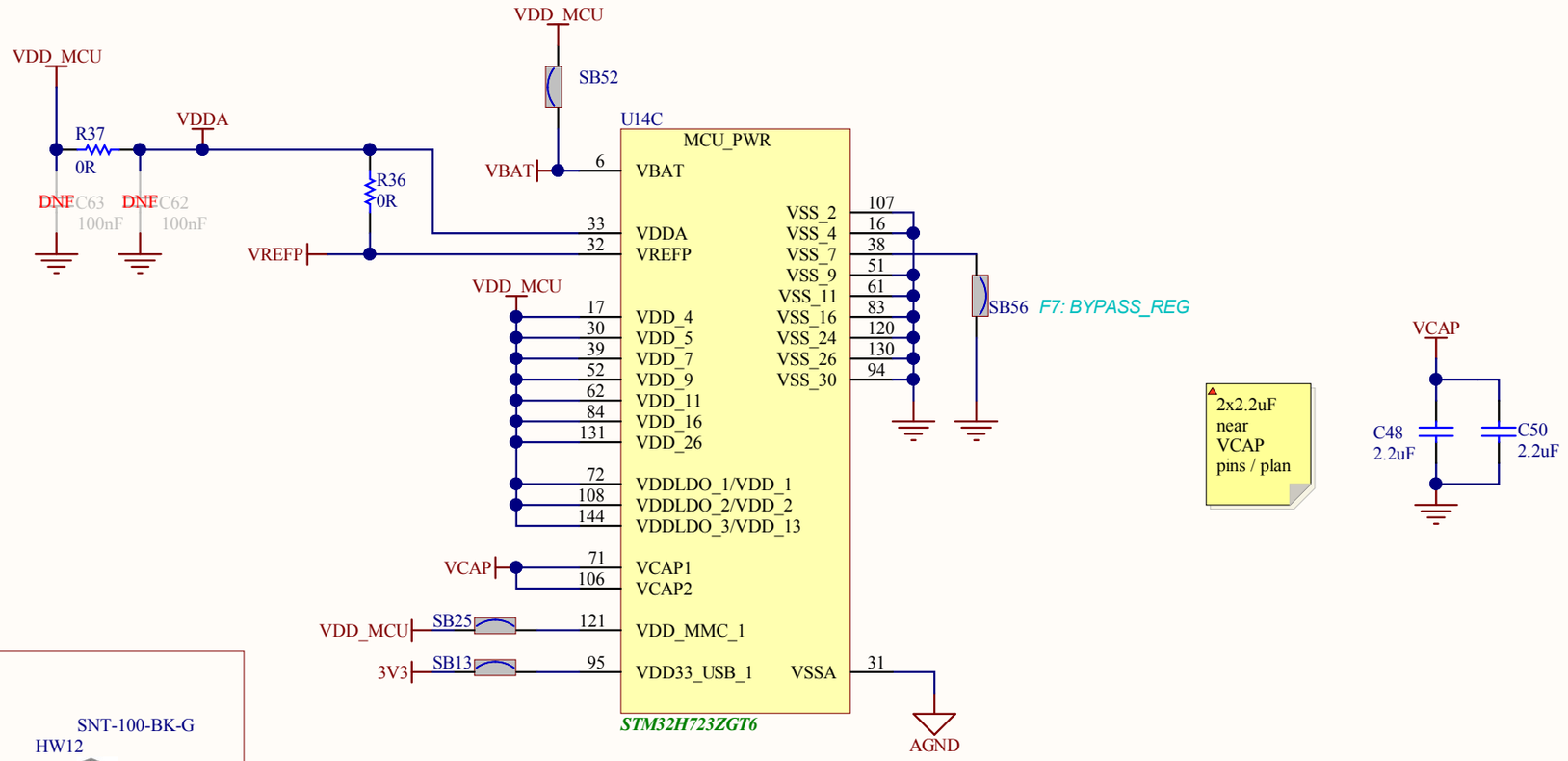
EXTERNAL LSE CLK

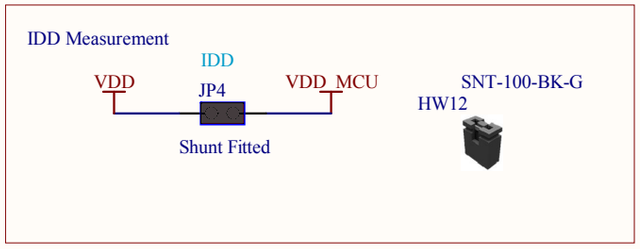


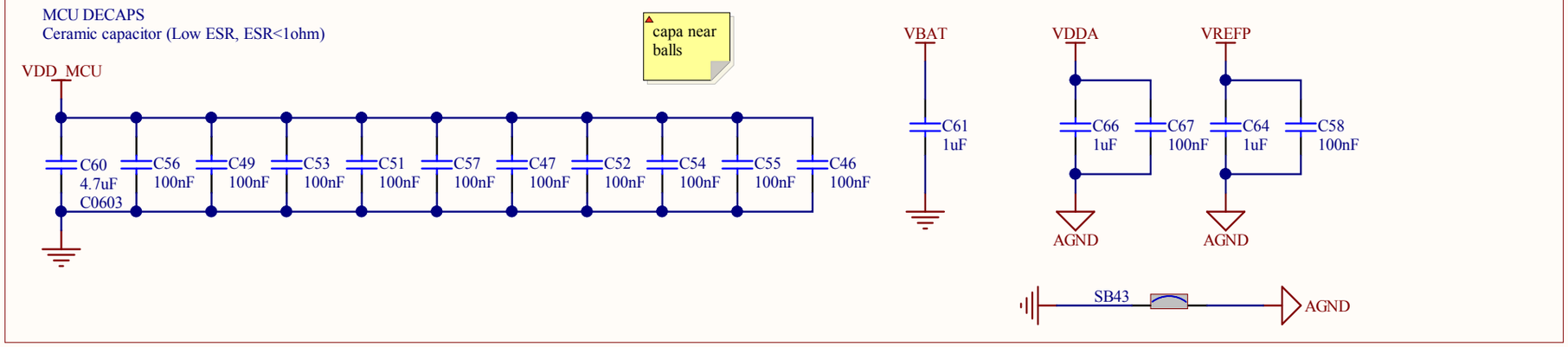
Title: MCU 144 I/Os			
Project: NUCLEO 144 H7 LEGACY			
Variant: H723ZG			
Revision: E-01		Reference: MB1364	
Size: A3	Date: 16-OCT-2019	Sheet: 3 of 9	

Schéma (3/8)

MCU PWR SUPPLIES



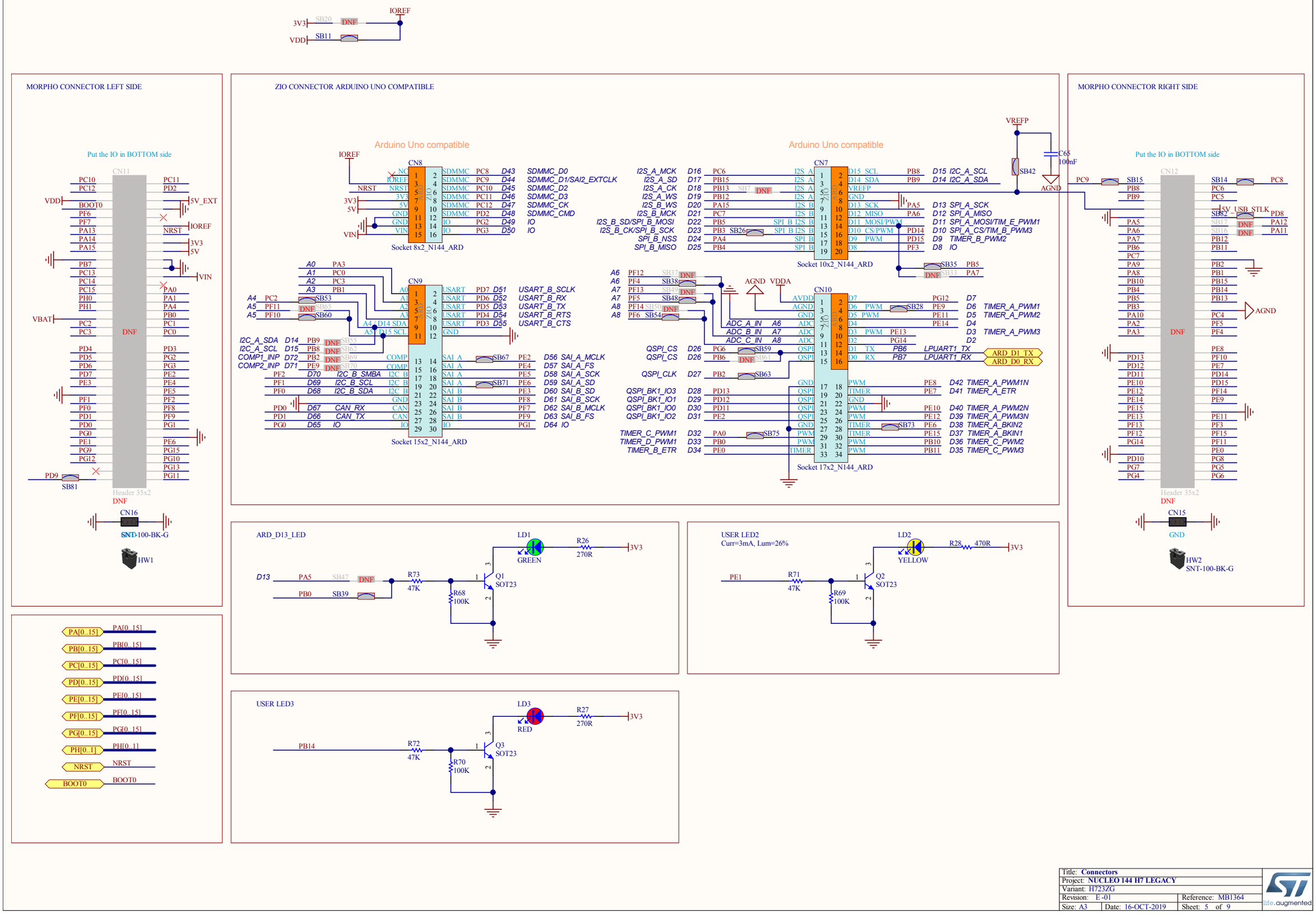




Title: **MCU 144 POWER**		
Project: **NUCLEO 144 H7 LEGACY**		
Variant: H723ZG		
Revision: E -01		Reference: MB1364
Size: A4	Date: 16-OCT-2019	Sheet: 4 of 9

life.augmented

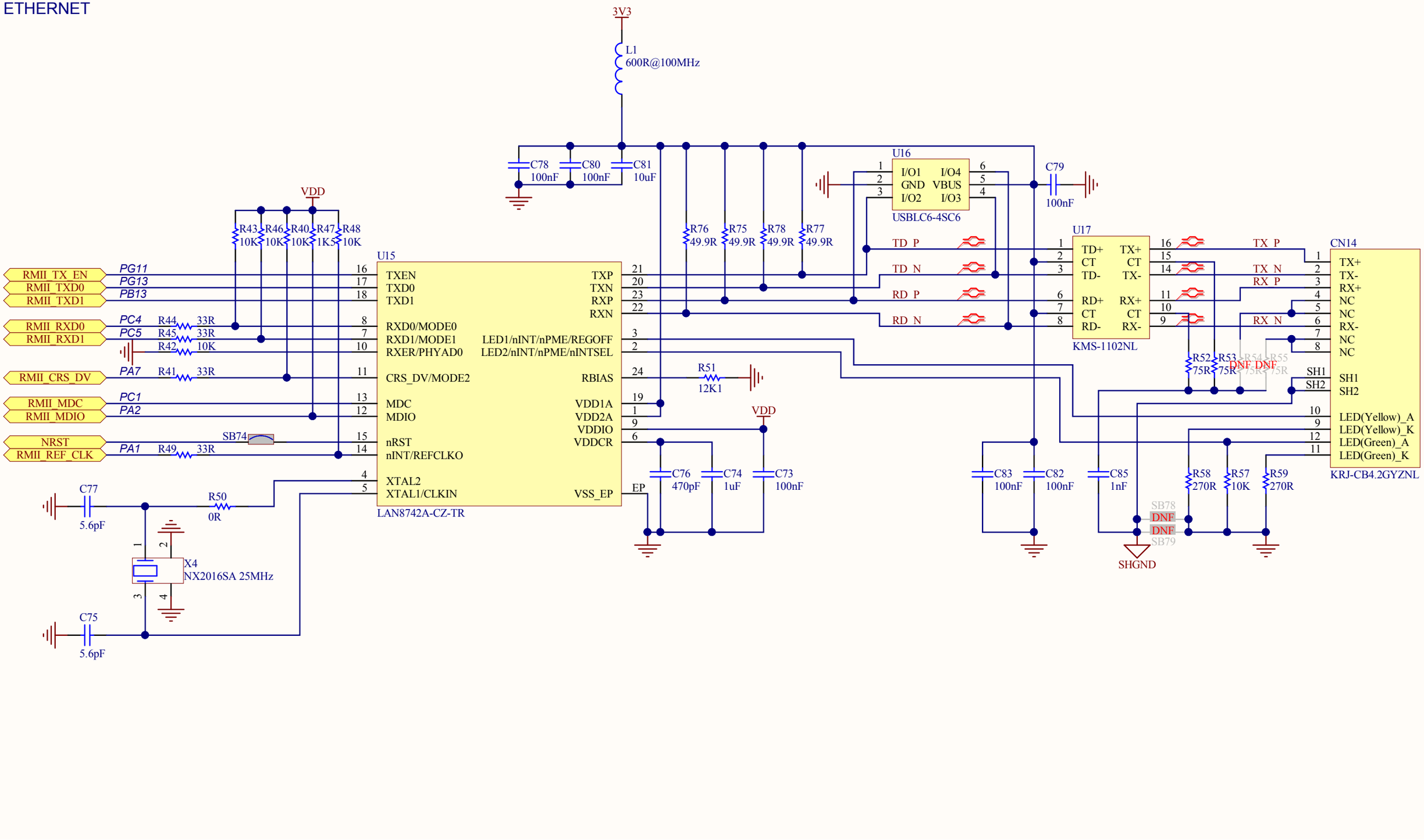
Schéma (4/8)



Title: **Connectors**			
Project: **NUCLEO 144 H7 LEGACY**			
Variant: H723ZG			
Revision: E -01		Reference: MB1364	
Size: A3	Date: 16-OCT-2019	Sheet: 5 of 9	life.augmented

Schéma (5/8)

ETHERNET

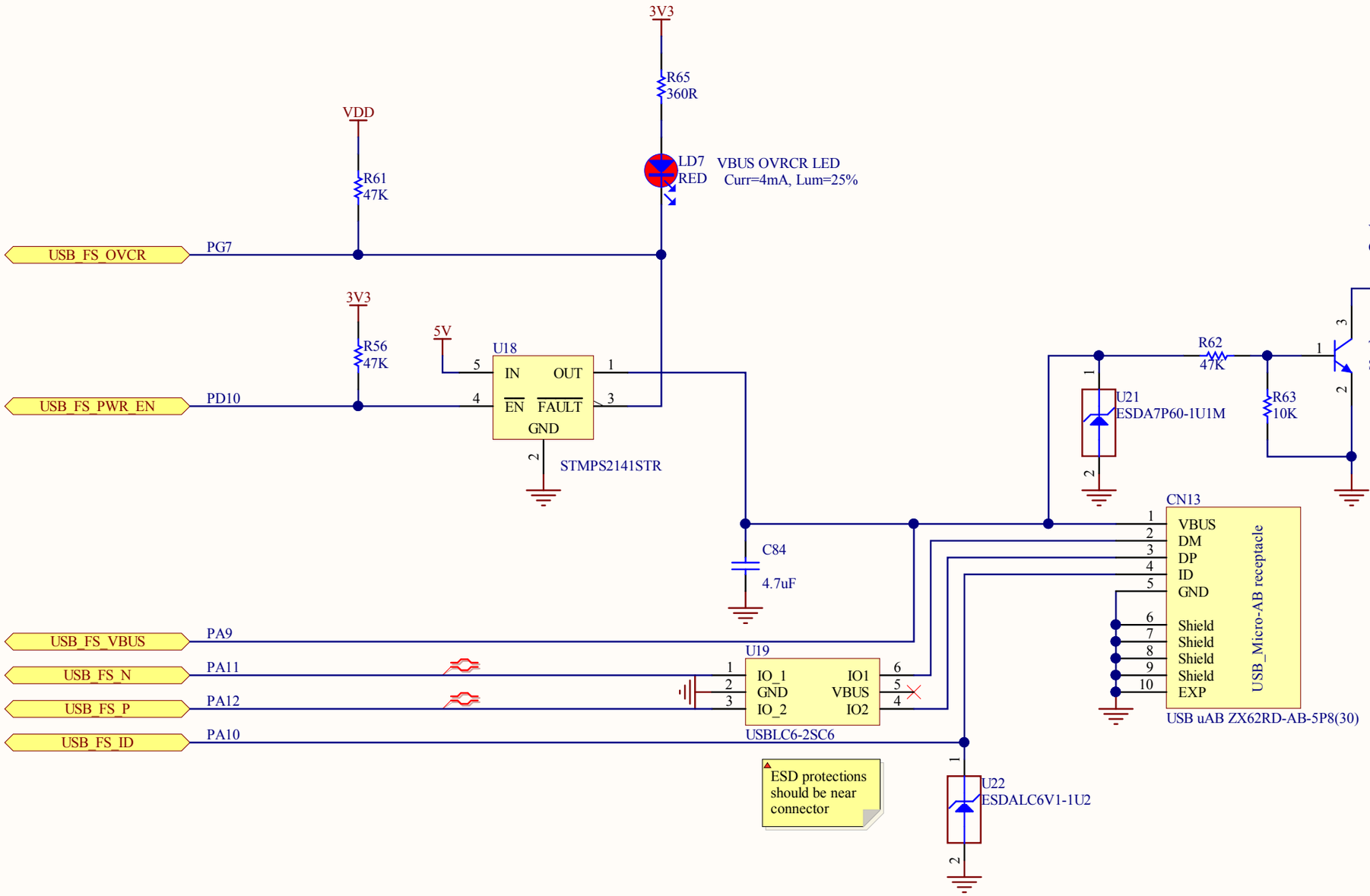


Title: **Ethernet PHY with RJ45 connector**			
Project: **NUCLEO 144 H7 LEGACY**			
Variant: H723ZG			
Revision: E -01		Reference: MB1364	
Size: A4	Date: 16-OCT-2019	Sheet: 6 of 9	

life.augmented

Schéma (6/8)

USB

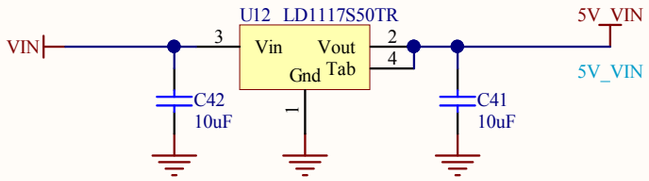


Title: **USB**		
Project: **NUCLEO 144 H7 LEGACY**		
Variant: H723ZG		
Revision: E-01		Reference: MB1364
Size: A4	Date: 16-OCT-2019	Sheet: 7 of 9

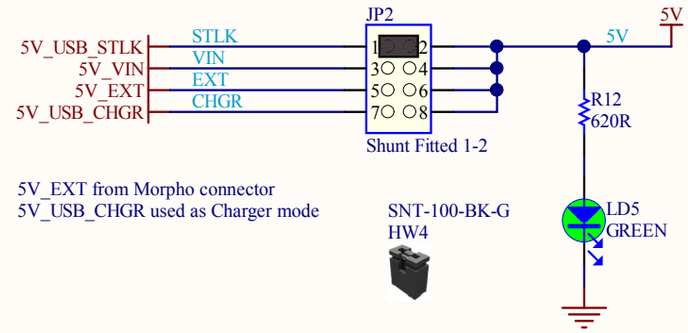
life.augmented

Schéma (7/8)

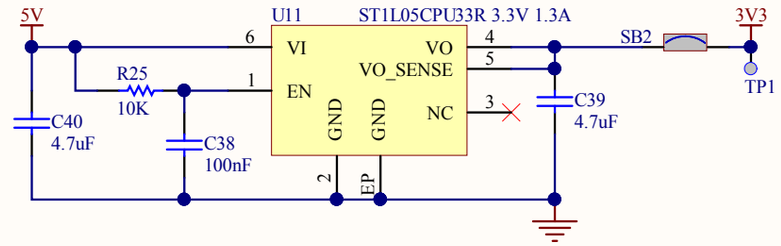
VIN / 5V PWR



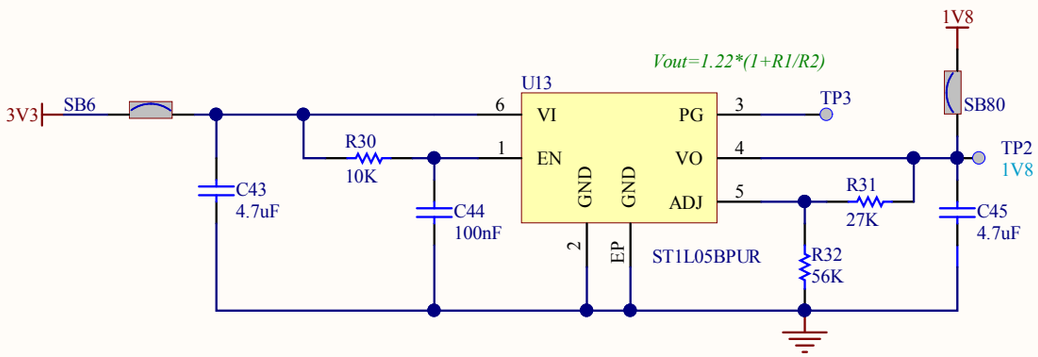
5V PWR SELECTION

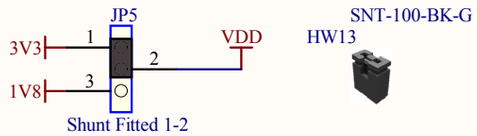


3V3 PWR



1V8 PWR

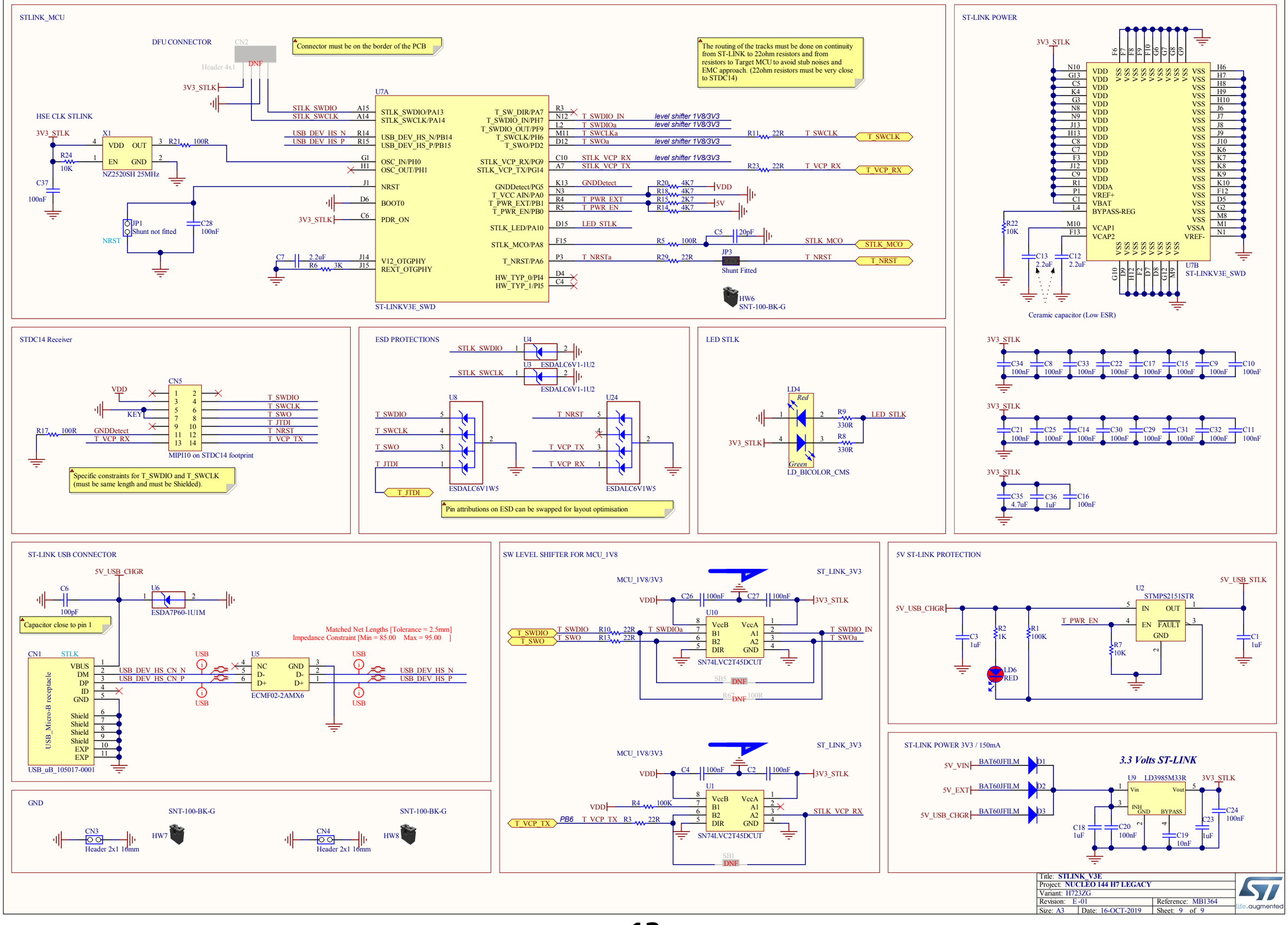




Title: **MAIN POWER 5V / 3V3 / 1V8**		
Project: **NUCLEO 144 H7 LEGACY**		
Variant: H723ZG		
Revision: E -01		Reference: MB1364
Size: A4	Date: 16-OCT-2019	Sheet: 8 of 9

life.augmented

Schéma (8/8)


STLINK_MCU
DFU CONNECTOR
CN2
Header 4x1
DNF
Connector must be on the border of the PCB
The routing of the tracks must be done on continuity from ST-LINK to 22ohm resistors and from resistors to Target MCU to avoid stub noises and EMC approach. (22ohm resistors must be very close to STDC14)
3V3_STLK
HSE CLK STLINK
X1
NZ2520SH 25MHz
R24 10K
R21 100R
C37 100nF
JP1 Shunt not fitted
NRST
C28 100nF
U7A
ST-LINKV3E_SWD
STLK_SWDIO
STLK_SWCLK
USB_DEV_HS_N
USB_DEV_HS_P
OSC_IN/PH0
OSC_OUT/PH1
NRST
BOOT0
PDR_ON
V12_OTGPHY
REXT_OTGPHY
T_SW_DIR/PA7
T_SWDIO_IN/PH7
T_SWDIO_OUT/PF9
T_SWCLK/PH6
T_SWO/PD2
STLK_VCP_RX/PG9
STLK_VCP_TX/PG14
GNDDetect/PG5
T_VCC AIN/PA0
T_PWR_EXT/PB1
T_PWR_EN/PB0
STLK_LED/PA10
STLK_MCO/PA8
T_NRST/PA6
HW_TYP_0/PI4
HW_TYP_1/PI5
T_SWDIO_IN
T_SWDIOa
T_SWCLKa
T_SWOa
T_VCP_RX
T_VCP_TX
GNDDetect
T_PWR_EXT
T_PWR_EN
LED_STLK
T_NRSTa
level shifter 1V8/3V3
R11 22R
R23 22R
R20 4K7
R18 4K7
R15 2K7
R14 4K7
VDD
5V
C5 20pF
R5 100R
JP3 Shunt Fitted
T_NRST
HW6 SNT-100-BK-G
ST-LINK POWER
U7B ST-LINKV3E_SWD
R22 10K
C13 2.2uF
C12 2.2uF
Ceramic capacitor (Low ESR)
STDC14 Receiver
CN5
MIPI10 on STDC14 footprint
KEY
R17 100R
Specific constraints for T_SWDIO and T_SWCLK (must be same length and must be Shielded).
ESD PROTECTIONS
U4
U3 ESDALC6V1-1U2
ESDALC6V1W5
U8
U24
T_JTDI
Pin attributions on ESD can be swapped for layout optimisation
LED STLK
LD4
Red
Green
LD_BICOLOR_CMS
R9 330R
R8 330R
C34 100nF
C8 100nF
C33 100nF
C22 100nF
C17 100nF
C15 100nF
C9 100nF
C10 100nF
C21 100nF
C25 100nF
C14 100nF
C30 100nF
C29 100nF
C31 100nF
C32 100nF
C11 100nF
C35 4.7uF
C36 1uF
C16 100nF
ST-LINK USB CONNECTOR
5V_USB_CHGR
C6 100pF
U6 ESDA7P60-1U1M
Capacitor close to pin 1
CN1 STLK
USB_Micro-B receptacle
USB_uB_105017-0001
U5
ECMF02-2AMX6
Matched Net Lengths [Tolerance = 2.5mm]
Impedance Constraint [Min = 85.00 Max = 95.00]
SW LEVEL SHIFTER FOR MCU_1V8
MCU_1V8/3V3
ST_LINK_3V3
U10
U1
SN74LVC2T45DCUT
R10 22R
R13 22R
R67 100R
R4 100K
R3 22R
5V ST-LINK PROTECTION
U2 STMPS2151STR
C3 1uF
R2 1K
R1 100K
R7 10K
LD6 RED
C1 1uF
ST-LINK POWER 3V3 / 150mA
3.3 Volts ST-LINK
U9 LD3985M33R
BAT60JFILM
C18 1uF
C20 100nF
C19 10nF
C23 1uF
C24 100nF
GND
SNT-100-BK-G
CN3 Header 2x1 16mm
CN4 Header 2x1 16mm
HW7
HW8
Title: STLINK_V3E
Project: NUCLEO 144 H7 LEGACY
Variant: H723ZG
Revision: E-01
Reference: MB1364
Size: A3
Date: 16-OCT-2019
Sheet: 9 of 9

Multiplexage des ports du STM32H743

Multiplexage des fonctions (1/11)

Table 10. Port A alternate functions

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS	TIM1/2/16/17/LPTIM1/HRTIM1	SAI1/TIM3/4/5/12/HRTIM1	LPUART/TIM8/LPTIM2/3/4/5/HRTIM1/DFSDM1	I2C1/2/3/4/USART1/TIM15/LPTIM2/DFSDM1/CEC	SPI1/2/3/4/5/6/CEC	SPI2/3/SAI1/3/I2C4/UART4/DFSDM1	SPI2/3/6/USART1/2/3/6/UART7/SDMMC1	SPI6/SAI2/4/UART4/5/8/LPUART/SDMMC1/SPDIFRX1	SAI4/FDCAN1/2/TIM13/14/QUADSPI/FMC/SDMMC2/LCD/SPDIFRX1	SAI2/4/TIM8/QUADSPI/SDMMC2/OTG1_HS/OTG2_FS/LCD	I2C4/UART7/SWPMI1/TIM1/8/DFSDM1/SDMMC2/MDIOS/ETH	TIM1/8/FMC/SDMMC1/MDIOS/OTG1_FS/LCD	TIM1/DCMI/LCD/COMP	UART5/LCD	SYS
Port A	PA0	-	TIM2_CH1/TIM2_ETR	TIM5_CH1	TIM8_ETR	TIM15_BKIN	-	-	USART2_CTS/USART2_NSS	UART4_TX	SDMMC2_CMD	SAI2_SD_B	ETH_MII_CRS	-	-	-	EVENT-OUT
	PA1	-	TIM2_CH2	TIM5_CH2	LPTIM3_OUT	TIM15_CH1N	-	-	USART2_RTS/USART2_DE	UART4_RX	QUADSPI_BK1_IO3	SAI2_MCLK_B	ETH_MII_RX_CLK/ETH_RMII_REF_CLK	-	-	LCD_R2	EVENT-OUT
	PA2	-	TIM2_CH3	TIM5_CH3	LPTIM4_OUT	TIM15_CH1	-	-	USART2_TX	SAI2_SCK_B	-	-	ETH_MDIO	MDIOS_MDIO	-	LCD_R1	EVENT-OUT
	PA3	-	TIM2_CH4	TIM5_CH4	LPTIM5_OUT	TIM15_CH2	-	-	USART2_RX	-	LCD_B2	OTG_HS_ULPI_D0	ETH_MII_COL	-	-	LCD_B5	EVENT-OUT
	PA4	D1PWREN	-	TIM5_ETR	-	-	SPI1_NSS/I2S1_WS	SPI3_NSS/I2S3_WS	USART2_CK	SPI6_NSS	-	-	-	OTG_HS_SOF	DCMI_HSYNC	LCD_VSYNC	EVENT-OUT
	PA5	D2PWREN	TIM2_CH1/TIM2_ETR	-	TIM8_CH1N	-	SPI1_SCK/I2S1_CK	-	-	SPI6_SCK	-	OTG_HS_ULPI_CK	-	-	-	LCD_R4	EVENT-OUT
	PA6	-	TIM1_BKIN	TIM3_CH1	TIM8_BKIN	-	SPI1_MISO/I2S1_SDI	-	-	SPI6_MISO	TIM13_CH1	TIM8_BKIN_COMP12	MDIOS_MDC	TIM1_BKIN_COMP12	DCMI_PIXCLK	LCD_G2	EVENT-OUT
	PA7	-	TIM1_CH1N	TIM3_CH2	TIM8_CH1N	-	SPI1_MOSI/I2S1_SDO	-	-	SPI6_MOSI	TIM14_CH1	-	ETH_MII_RX_DV/ETH_RMII_CRS_DV	FMC_SDNWE	-	-	EVENT-OUT
	PA8	MCO1	TIM1_CH1	HRTIM_CHB2	TIM8_BKIN2	I2C3_SCL	-	-	USART1_CK	-	-	OTG_FS_SOF	UART7_RX	TIM8_BKIN2_COMP12	LCD_B3	LCD_R6	EVENT-OUT
	PA9	-	TIM1_CH2	HRTIM_CHC1	LPUART1_TX	I2C3_SMBA	SPI2_SCK/I2S2_CK	-	USART1_TX	-	FDCAN1_RXFD_MODE	-	-	-	DCMI_D0	LCD_R5	EVENT-OUT
	PA10	-	TIM1_CH3	HRTIM_CHC2	LPUART1_RX	-	-	-	USART1_RX	-	FDCAN1_TXFD_MODE	OTG_FS_ID	MDIOS_MDIO	LCD_B4	DCMI_D1	LCD_B1	EVENT-OUT
	PA11	-	TIM1_CH4	HRTIM_CHD1	LPUART1_CTS	-	SPI2_NSS/I2S2_WS	UART4_RX	USART1_CTS/USART1_NSS	-	FDCAN1_RX	OTG_FS_DM	-	-	-	LCD_R4	EVENT-OUT
	PA12	-	TIM1_ETR	HRTIM_CHD2	LPUART1_RTS/LPUART1_DE	-	SPI2_SCK/I2S2_CK	UART4_TX	USART1_RTS/USART1_DE	SAI2_FS_B	FDCAN1_TX	OTG_FS_DP	-	-	-	LCD_R5	EVENT-OUT

Multiplexage des fonctions (2/11)

Table 10. Port A alternate functions (continued)

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS	TIM1/2/16/17/LPTIM1/HRTIM1	SAI1/TIM3/4/5/12/HRTIM1	LPUART/TIM8/LPTIM2/3/4/5/HRTIM1/DFSDM1	I2C1/2/3/4/USART1/TIM15/LPTIM2/DFSDM1/CEC	SPI1/2/3/4/5/6/CEC	SPI2/3/SAI1/3/I2C4/UART4/DFSDM1	SPI2/3/6/USART1/2/3/6/UART7/SDMMC1	SPI6/SAI2/4/UART4/5/8/LPUART/SDMMC1/SPDIFRX1	SAI4/FDCAN1/2/TIM13/14/QUADSPI/FMC/SDMMC2/LCD/SPDIFRX1	SAI2/4/TIM8/QUADSPI/SDMMC2/OTG1_HS/OTG2_FS/LCD	I2C4/UART7/SWPMI1/TIM1/8/DFSDM1/SDMMC2/MDIOS/ETH	TIM1/8/FMC/SDMMC1/MDIOS/OTG1_FS/LCD	TIM1/DCMI/LCD/COMP	UART5/LCD	SYS
Port A	PA13	JTMS-SWDIO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	EVENT-OUT
	PA14	JTCK-SWCLK	-	-	-	-	-	-	-	-	-	-	-	-	-	-	EVENT-OUT
	PA15	JTDI	TIM2_CH1/TIM2_ETR	HRTIM_FLT1	-	CEC	SPI1_NSS/I2S1_WS	SPI3_NSS/I2S3_WS	SPI6_NSS	UART4_RTS/UART4_DE	-	-	UART7_TX	-	-	-	EVENT-OUT

Table 11. Port B alternate functions

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS	TIM1/2/16/17/LPTIM1/HRTIM1	SAI1/TIM3/4/5/12/HRTIM1	LPUART/TIM8/LPTIM2/3/4/5/HRTIM1/DFSDM1	I2C1/2/3/4/USART1/TIM15/LPTIM2/DFSDM1/CEC	SPI1/2/3/4/5/6/CEC	SPI2/3/SAI1/3/I2C4/UART4/DFSDM1	SPI2/3/6/USART1/2/3/6/UART7/SDMMC1	SPI6/SAI2/4/UART4/5/8/LPUART/SDMMC1/SPDIFRX1	SAI4/FDCAN1/2/TIM13/14/QUADSPI/FMC/SDMMC2/LCD/SPDIFRX1	SAI2/4/TIM8/QUADSPI/SDMMC2/OTG1_HS/OTG2_FS/LCD	I2C4/UART7/SWPMI1/TIM1/8/DFSDM1/SDMMC2/MDIOS/ETH	TIM1/8/FMC/SDMMC1/MDIOS/OTG1_FS/LCD	TIM1/DCMI/LCD/COMP	UART5/LCD	SYS
Port B	PB0	-	TIM1_CH2N	TIM3_CH3	TIM8_CH2N	-	-	DFSDM1_CKOUT	-	UART4_CTS	LCD_R3	OTG_HS_ULPI_D1	ETH_MII_RXD2	-	-	LCD_G1	EVENT-OUT
	PB1	-	TIM1_CH3N	TIM3_CH4	TIM8_CH3N	-	-	DFSDM1_DATIN1	-	-	LCD_R6	OTG_HS_ULPI_D2	ETH_MII_RXD3	-	-	LCD_G0	EVENT-OUT
	PB2	RTC_OUT	-	SAI1_D1	-	DFSDM1_CKIN1	-	SAI1_SD_A	SPI3_MOSI/I2S3_SDO	SAI4_SD_A	QUADSPI_CLK	SAI4_D1	-	-	-	-	EVENT-OUT
	PB3	JTDO/TRACESWO	TIM2_CH2	HRTIM_FLT4	-	-	SPI1_SCK/I2S1_CK	SPI3_SCK/I2S3_CK	-	SPI6_SCK	SDMMC2_D2	CRS_SYNC	UART7_RX	-	-	-	EVENT-OUT
	PB4	NJTRST	TIM16_BKIN	TIM3_CH1	HRTIM_EEV6	-	SPI1_MISO/I2S1_SDI	SPI3_MISO/I2S3_SDI	SPI2_NSS/I2S2_WS	SPI6_MISO	SDMMC2_D3	-	UART7_TX	-	-	-	EVENT-OUT
	PB5	-	TIM17_BKIN	TIM3_CH2	HRTIM_EEV7	I2C1_SMBA	SPI1_MOSI/I2S1_SDO	I2C4_SMBA	SPI3_MOSI/I2S3_SDO	SPI6_MOSI	FDCAN2_RX	OTG_HS_ULPI_D7	ETH_PPS_OUT	FMC_SDCKE1	DCMI_D10	UART5_RX	EVENT-OUT
	PB6	-	TIM16_CH1N	TIM4_CH1	HRTIM_EEV8	I2C1_SCL	CEC	I2C4_SCL	USART1_TX	LPUART1_TX	FDCAN2_TX	QUADSPI_BK1_NCS	DFSDM1_DATIN5	FMC_SDNE1	DCMI_D5	UART5_TX	EVENT-OUT
	PB7	-	TIM17_CH1N	TIM4_CH2	HRTIM_EEV9	I2C1_SDA	-	I2C4_SDA	USART1_RX	LPUART1_RX	FDCAN2_TXFD_MODE	-	DFSDM1_CKIN5	FMC_NL	DCMI_VSYNC	-	EVENT-OUT

Multiplexage des fonctions (3/11)

Table 11. Port B alternate functions (continued)

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS	TIM1/2/16/17/LPTIM1/HRTIM1	SAI1/TIM3/4/5/12/HRTIM1	LPUART/TIM8/LPTIM2/3/4/5/HRTIM1/DFSDM1	I2C1/2/3/4/USART1/TIM15/LPTIM2/DFSDM1/CEC	SPI1/2/3/4/5/6/CEC	SPI2/3/SAI1/3/I2C4/UART4/DFSDM1	SPI2/3/6/USART1/2/3/6/UART7/SDMMC1	SPI6/SAI2/4/UART4/5/8/LPUART/SDMMC1/SPDIFRX1	SAI4/FDCAN1/2/TIM13/14/QUADSPI/FMC/SDMMC2/LCD/SPDIFRX1	SAI2/4/TIM8/QUADSPI/SDMMC2/OTG1_HS/OTG2_FS/LCD	I2C4/UART7/SWPMI1/TIM1/8/DFSDM1/SDMMC2/MDIOS/ETH	TIM1/8/FMC/SDMMC1/MDIOS/OTG1_FS/LCD	TIM1/DCMI/LCD/COMP	UART5/LCD	SYS
Port B	PB8	-	TIM16_CH1	TIM4_CH3	DFSDM1_CKIN7	I2C1_SCL	-	I2C4_SCL	SDMMC1_CKIN	UART4_RX	FDCAN1_RX	SDMMC2_D4	ETH_MII_TXD3	SDMMC1_D4	DCMI_D6	LCD_B6	EVENT-OUT
	PB9	-	TIM17_CH1	TIM4_CH4	DFSDM1_DATIN7	I2C1_SDA	SPI2_NSS/I2S2_WS	I2C4_SDA	SDMMC1_CDIR	UART4_TX	FDCAN1_TX	SDMMC2_D5	I2C4_SMBA	SDMMC1_D5	DCMI_D7	LCD_B7	EVENT-OUT
	PB10	-	TIM2_CH3	HRTIM_SCOUT	LPTIM2_IN1	I2C2_SCL	SPI2_SCK/I2S2_CK	DFSDM1_DATIN7	USART3_TX	-	QUADSPI_BK1_NCS	OTG_HS_ULPI_D3	ETH_MII_RX_ER	-	-	LCD_G4	EVENT-OUT
	PB11	-	TIM2_CH4	HRTIM_SCIN	LPTIM2_ETR	I2C2_SDA	-	DFSDM1_CKIN7	USART3_RX	-	-	OTG_HS_ULPI_D4	ETH_MII_TX_EN/ETH_RMII_TX_EN	-	-	LCD_G5	EVENT-OUT
	PB12	-	TIM1_BKIN	-	-	I2C2_SMBA	SPI2_NSS/I2S2_WS	DFSDM1_DATIN1	USART3_CK	-	FDCAN2_RX	OTG_HS_ULPI_D5	ETH_MII_TXD0/ETH_RMII_TXD0	OTG_HS_ID	TIM1_BKIN_COMP12	UART5_RX	EVENT-OUT
	PB13	-	TIM1_CH1N	-	LPTIM2_OUT	-	SPI2_SCK/I2S2_CK	DFSDM1_CKIN1	USART3_CTS/USART3_NSS	-	FDCAN2_TX	OTG_HS_ULPI_D6	ETH_MII_TXD1/ETH_RMII_TXD1	-	-	UART5_TX	EVENT-OUT
	PB14	-	TIM1_CH2N	TIM12_CH1	TIM8_CH2N	USART1_TX	SPI2_MISO/I2S2_SDI	DFSDM1_DATIN2	USART3_RTS/USART3_DE	UART4_RTS/UART4_DE	SDMMC2_D0	-	-	OTG_HS_DM	-	-	EVENT-OUT
	PB15	RTC_REFIN	TIM1_CH3N	TIM12_CH2	TIM8_CH3N	USART1_RX	SPI2_MOSI/I2S2_SDO	DFSDM1_CKIN2	-	UART4_CTS	SDMMC2_D1	-	-	OTG_HS_DP	-	-	EVENT-OUT

Multiplexage des fonctions (4/11)

Table 12. Port C alternate functions

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS	TIM1/2/16/17/LPTIM1/HRTIM1	SAI1/TIM3/4/5/12/HRTIM1	LPUART/TIM8/LPTIM2/3/4/5/HRTIM1/DFSDM1	I2C1/2/3/4/USART1/TIM15/LPTIM2/DFSDM1/CEC	SPI1/2/3/4/5/6/CEC	SPI2/3/SAI1/3/I2C4/UART4/DFSDM1	SPI2/3/6/USART1/2/3/6/UART7/SDMMC1	SPI6/SAI2/4/UART4/5/8/LPUART/SDMMC1/SPDIFRX1	SAI4/FDCAN1/2/TIM13/14/QUADSPI/FMC/SDMMC2/LCD/SPDIFRX1	SAI2/4/TIM8/QUADSPI/SDMMC2/OTG1_HS/OTG2_FS/LCD	I2C4/UART7/SWPMI1/TIM1/8/DFSDM1/SDMMC2/MDIOS/ETH	TIM1/8/FMC/SDMMC1/MDIOS/OTG1_FS/LCD	TIM1/DCMI/LCD/COMP	UART5/LCD	SYS
Port C	PC0	-	-	-	DFSDM1_CKIN0	-	-	DFSDM1_DATIN4	-	SAI2_FS_B	-	OTG_HS_ULPI_STP	-	FMC_SDNWE	-	LCD_R5	EVENT-OUT
	PC1	TRACED0	-	SAI1_D1	DFSDM1_DATIN0	DFSDM1_CKIN4	SPI2_MOSI/I2S2_SDO	SAI1_SD_A	-	SAI4_SD_A	SDMMC2_CK	SAI4_D1	ETH_MDC	MDIOS_MDC	-	-	EVENT-OUT
	PC2	CDSLEEP	-	-	DFSDM1_CKIN1	-	SPI2_MISO/I2S2_SDI	DFSDM1_CKOUT	-	-	-	OTG_HS_ULPI_DIR	ETH_MII_TXD2	FMC_SDNE0	-	-	EVENT-OUT
	PC3	CSLEEP	-	-	DFSDM1_DATIN1	-	SPI2_MOSI/I2S2_SDO	-	-	-	-	OTG_HS_ULPI_NXT	ETH_MII_TX_CLK	FMC_SDCKE0	-	-	EVENT-OUT
	PC4	-	-	-	DFSDM1_CKIN2	-	I2S1_MCK	-	-	-	SPDIFRX1_IN3	-	ETH_MII_RXD0/ETH_RMII_RXD0	FMC_SDNE0	-	-	EVENT-OUT
	PC5	-	-	SAI1_D3	DFSDM1_DATIN2	-	-	-	-		SPDIFRX1_IN4	SAI4_D3	ETH_MII_RXD1/ETH_RMII_RXD1	FMC_SDCKE0	COMP1_OUT	-	EVENT-OUT
	PC6	-	HRTIM_CHA1	TIM3_CH1	TIM8_CH1	DFSDM1_CKIN3	I2S2_MCK	-	USART6_TX	SDMMC1_D0DIR	FMC_NWAIT	SDMMC2_D6	-	SDMMC1_D6	DCMI_D0	LCD_HSYNC	EVENT-OUT
	PC7	TRGIO	HRTIM_CHA2	TIM3_CH2	TIM8_CH2	DFSDM1_DATIN3	-	I2S3_MCK	USART6_RX	SDMMC1_D123DIR	FMC_NE1	SDMMC2_D7	SWPMI_TX	SDMMC1_D7	DCMI_D1	LCD_G6	EVENT-OUT
	PC8	TRACED1	HRTIM_CHB1	TIM3_CH3	TIM8_CH3	-	-	-	USART6_CK	UART5_RTS/UART5_DE	FMC_NE2/FMC_NCE	-	SWPMI_RX	SDMMC1_D0	DCMI_D2	-	EVENT-OUT
	PC9	MCO2	-	TIM3_CH4	TIM8_CH4	I2C3_SDA	I2S_CKIN	-	-	UART5_CTS	QUADSPI_BK1_IO0	LCD_G3	SWPMI_SUSPEND	SDMMC1_D1	DCMI_D3	LCD_B2	EVENT-OUT
	PC10	-	-	HRTIM_EEV1	DFSDM1_CKIN5	-	-	SPI3_SCK/I2S3_CK	USART3_TX	UART4_TX	QUADSPI_BK1_IO1	-	-	SDMMC1_D2	DCMI_D8	LCD_R2	EVENT-OUT
	PC11	-	-	HRTIM_FLT2	DFSDM1_DATIN5	-	-	SPI3_MISO/I2S3_SDI	USART3_RX	UART4_RX	QUADSPI_BK2_NCS	-	-	SDMMC1_D3	DCMI_D4	-	EVENT-OUT
	PC12	TRACED3	-	HRTIM_EEV2	-	-	-	SPI3_MOSI/I2S3_SDO	USART3_CK	UART5_TX	-	-	-	SDMMC1_CK	DCMI_D9	-	EVENT-OUT
	PC13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	EVENT-OUT

Multiplexage des fonctions (5/11)

Table 12. Port C alternate functions (continued)

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS	TIM1/2/16/17/LPTIM1/HRTIM1	SAI1/TIM3/4/5/12/HRTIM1	LPUART/TIM8/LPTIM2/3/4/5/HRTIM1/DFSDM1	I2C1/2/3/4/USART1/TIM15/LPTIM2/DFSDM1/CEC	SPI1/2/3/4/5/6/CEC	SPI2/3/SAI1/3/I2C4/UART4/DFSDM1	SPI2/3/6/USART1/2/3/6/UART7/SDMMC1	SPI6/SAI2/4/UART4/5/8/LPUART/SDMMC1/SPDIFRX1	SAI4/FDCAN1/2/TIM13/14/QUADSPI/FMC/SDMMC2/LCD/SPDIFRX1	SAI2/4/TIM8/QUADSPI/SDMMC2/OTG1_HS/OTG2_FS/LCD	I2C4/UART7/SWPMI1/TIM1/8/DFSDM1/SDMMC2/MDIOS/ETH	TIM1/8/FMC/SDMMC1/MDIOS/OTG1_FS/LCD	TIM1/DCMI/LCD/COMP	UART5/LCD	SYS
Port C	PC14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	EVENT-OUT
	PC15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	EVENT-OUT

Table 13. Port D alternate functions

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS	TIM1/2/16/17/LPTIM1/HRTIM1	SAI1/TIM3/4/5/12/HRTIM1	LPUART/TIM8/LPTIM2/3/4/5/HRTIM1/DFSDM1	I2C1/2/3/4/USART1/TIM15/LPTIM2/DFSDM1/CEC	SPI1/2/3/4/5/6/CEC	SPI2/3/SAI1/3/I2C4/UART4/DFSDM1	SPI2/3/6/USART1/2/3/6/UART7/SDMMC1	SPI6/SAI2/4/UART4/5/8/LPUART/SDMMC1/SPDIFRX1	SAI4/FDCAN1/2/TIM13/14/QUADSPI/FMC/SDMMC2/LCD/SPDIFRX1	SAI2/4/TIM8/QUADSPI/SDMMC2/OTG1_HS/OTG2_FS/LCD	I2C4/UART7/SWPMI1/TIM1/8/DFSDM1/SDMMC2/MDIOS/ETH	TIM1/8/FMC/SDMMC1/MDIOS/OTG1_FS/LCD	TIM1/DCMI/LCD/COMP	UART5/LCD	SYS
Port D	PD0	-	-	-	DFSDM1_CKIN6	-	-	SAI3_SCK_A	-	UART4_RX	FDCAN1_RX	-	-	FMC_D2/FMC_DA2	-	-	EVENT-OUT
	PD1	-	-	-	DFSDM1_DATIN6	-	-	SAI3_SD_A	-	UART4_TX	FDCAN1_TX	-	-	FMC_D3/FMC_DA3	-	-	EVENT-OUT
	PD2	TRACED2	-	TIM3_ETR	-	-	-	-	-	UART5_RX	-	-	-	SDMMC1_CMD	DCMI_D11	-	EVENT-OUT
	PD3	-	-	-	DFSDM1_CKOUT	-	SPI2_SCK/I2S2_CK	-	USART2_CTS/USART2_NSS	-	-	-	-	FMC_CLK	DCMI_D5	LCD_G7	EVENT-OUT
	PD4	-	-	HRTIM_FLT3	-	-	-	SAI3_FS_A	USART2_RTS/USART2_DE	-	FDCAN1_RXFD_MODE	-	-	FMC_NOE	-	-	EVENT-OUT
	PD5	-	-	HRTIM_EEV3	-	-	-	-	USART2_TX	-	FDCAN1_TXFD_MODE	-	-	FMC_NWE	-	-	EVENT-OUT
	PD6	-	-	SAI1_D1	DFSDM1_CKIN4	DFSDM1_DATIN1	SPI3_MOSI/I2S3_SDO	SAI1_SD_A	USART2_RX	SAI4_SD_A	FDCAN2_RXFD_MODE	SAI4_D1	SDMMC2_CK	FMC_NWAIT	DCMI_D10	LCD_B2	EVENT-OUT
	PD7	-	-	-	DFSDM1_DATIN4	-	SPI1_MOSI/I2S1_SDO	DFSDM1_CKIN1	USART2_CK	-	SPDIFRX1_IN1	-	SDMMC2_CMD	FMC_NE1	-	-	EVENT-OUT

Multiplexage des fonctions (6/11)

Table 13. Port D alternate functions (continued)

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS	TIM1/2/16/17/LPTIM1/HRTIM1	SAI1/TIM3/4/5/12/HRTIM1	LPUART/TIM8/LPTIM2/3/4/5/HRTIM1/DFSDM1	I2C1/2/3/4/USART1/TIM15/LPTIM2/DFSDM1/CEC	SPI1/2/3/4/5/6/CEC	SPI2/3/SAI1/3/I2C4/UART4/DFSDM1	SPI2/3/6/USART1/2/3/6/UART7/SDMMC1	SPI6/SAI2/4/UART4/5/8/LPUART/SDMMC1/SPDIFRX1	SAI4/FDCAN1/2/TIM13/14/QUADSPI/FMC/SDMMC2/LCD/SPDIFRX1	SAI2/4/TIM8/QUADSPI/SDMMC2/OTG1_HS/OTG2_FS/LCD	I2C4/UART7/SWPMI1/TIM1/8/DFSDM1/SDMMC2/MDIOS/ETH	TIM1/8/FMC/SDMMC1/MDIOS/OTG1_FS/LCD	TIM1/DCMI/LCD/COMP	UART5/LCD	SYS
Port D	PD8	-	-	-	DFSDM1_CKIN3	-	-	SAI3_SCK_B	USART3_TX	-	SPDIFRX1_IN2	-	-	FMC_D13/FMC_DA13	-	-	EVENT-OUT
	PD9	-	-	-	DFSDM1_DATIN3	-	-	SAI3_SD_B	USART3_RX	-	FDCAN2_RXFD_MODE	-	-	FMC_D14/FMC_DA14	-	-	EVENT-OUT
	PD10	-	-	-	DFSDM1_CKOUT	-	-	SAI3_FS_B	USART3_CK	-	FDCAN2_TXFD_MODE	-	-	FMC_D15/FMC_DA15	-	LCD_B3	EVENT-OUT
	PD11	-	-	-	LPTIM2_IN2	I2C4_SMBA	-	-	USART3_CTS/USART3_NSS	-	QUADSPI_BK1_IO0	SAI2_SD_A	-	FMC_A16	-	-	EVENT-OUT
	PD12	-	LPTIM1_IN1	TIM4_CH1	LPTIM2_IN1	I2C4_SCL	-	-	USART3_RTS/USART3_DE	-	QUADSPI_BK1_IO1	SAI2_FS_A	-	FMC_A17	-	-	EVENT-OUT
	PD13	-	LPTIM1_OUT	TIM4_CH2	-	I2C4_SDA	-	-		-	QUADSPI_BK1_IO3	SAI2_SCK_A	-	FMC_A18	-	-	EVENT-OUT
	PD14	-	-	TIM4_CH3	-	-	-	SAI3_MCLK_B	-	UART8_CTS	-	-	-	FMC_D0/FMC_DA0	-	-	EVENT-OUT
	PD15	-	-	TIM4_CH4	-	-	-	SAI3_MCLK_A	-	UART8_RTS/UART8_DE	-	-	-	FMC_D1/FMC_DA1	-	-	EVENT-OUT

Multiplexage des fonctions (7/11)

Table 14. Port E alternate functions

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS	TIM1/2/16/17/LPTIM1/HRTIM1	SAI1/TIM3/4/5/12/HRTIM1	LPUART/TIM8/LPTIM2/3/4/5/HRTIM1/DFSDM1	I2C1/2/3/4/USART1/TIM15/LPTIM2/DFSDM1/CEC	SPI1/2/3/4/5/6/CEC	SPI2/3/SAI1/3/I2C4/UART4/DFSDM1	SPI2/3/6/USART1/2/3/6/UART7/SDMMC1	SPI6/SAI2/4/UART4/5/8/LPUART/SDMMC1/SPDIFRX1	SAI4/FDCAN1/2/TIM13/14/QUADSPI/FMC/SDMMC2/LCD/SPDIFRX1	SAI2/4/TIM8/QUADSPI/SDMMC2/OTG1_HS/OTG2_FS/LCD	I2C4/UART7/SWPMI1/TIM1/8/DFSDM1/SDMMC2/MDIOS/ETH	TIM1/8/FMC/SDMMC1/MDIOS/OTG1_FS/LCD	TIM1/DCMI/LCD/COMP	UART5/LCD	SYS
Port E	PE0	-	LPTIM1_ETR	TIM4_ETR	HRTIM_SCIN	LPTIM2_ETR	-	-	-	UART8_RX	FDCAN1_RXFD_MODE	SAI2_MCLK_A	-	FMC_NBL0	DCMI_D2	-	EVENT-OUT
	PE1	-	LPTIM1_IN2	-	HRTIM_SCOUT	-	-	-	-	UART8_TX	FDCAN1_TXFD_MODE	-	-	FMC_NBL1	DCMI_D3	-	EVENT-OUT
	PE2	TRACECLK	-	SAI1_CK1	-	-	SPI4_SCK	SAI1_MCLK_A	-	SAI4_MCLK_A	QUADSPI_BK1_IO2	SAI4_CK1	ETH_MII_TXD3	FMC_A23	-	-	EVENT-OUT
	PE3	TRACED0	-	-	-	TIM15_BKIN	-	SAI1_SD_B	-	SAI4_SD_B	-	-	-	FMC_A19	-	-	EVENT-OUT
	PE4	TRACED1	-	SAI1_D2	DFSDM1_DATIN3	TIM15_CH1N	SPI4_NSS	SAI1_FS_A	-	SAI4_FS_A	-	SAI4_D2	-	FMC_A20	DCMI_D4	LCD_B0	EVENT-OUT
	PE5	TRACED2	-	SAI1_CK2	DFSDM1_CKIN3	TIM15_CH1	SPI4_MISO	SAI1_SCK_A	-	SAI4_SCK_A	-	SAI4_CK2	-	FMC_A21	DCMI_D6	LCD_G0	EVENT-OUT
	PE6	TRACED3	TIM1_BKIN2	SAI1_D1	-	TIM15_CH2	SPI4_MOSI	SAI1_SD_A	-	SAI4_SD_A	SAI4_D1	SAI2_MCLK_B	TIM1_BKIN2_COMP12	FMC_A22	DCMI_D7	LCD_G1	EVENT-OUT
	PE7	-	TIM1_ETR	-	DFSDM1_DATIN2	-	-	-	UART7_RX	-	-	QUADSPI_BK2_IO0	-	FMC_D4/FMC_DA4	-	-	EVENT-OUT
	PE8	-	TIM1_CH1N	-	DFSDM1_CKIN2	-	-	-	UART7_TX	-	-	QUADSPI_BK2_IO1	-	FMC_D5/FMC_DA5	COMP2_OUT	-	EVENT-OUT
	PE9	-	TIM1_CH1	-	DFSDM1_CKOUT	-	-	-	UART7_RTS/UART7_DE	-	-	QUADSPI_BK2_IO2	-	FMC_D6/FMC_DA6	-	-	EVENT-OUT
	PE10	-	TIM1_CH2N	-	DFSDM1_DATIN4	-	-	-	UART7_CTS	-	-	QUADSPI_BK2_IO3	-	FMC_D7/FMC_DA7	-	-	EVENT-OUT
	PE11	-	TIM1_CH2	-	DFSDM1_CKIN4	-	SPI4_NSS	-	-	-	-	SAI2_SD_B	-	FMC_D8/FMC_DA8	-	LCD_G3	EVENT-OUT
	PE12	-	TIM1_CH3N	-	DFSDM1_DATIN5	-	SPI4_SCK	-	-	-	-	SAI2_SCK_B	-	FMC_D9/FMC_DA9	COMP1_OUT	LCD_B4	EVENT-OUT
	PE13	-	TIM1_CH3	-	DFSDM1_CKIN5	-	SPI4_MISO	-	-	-	-	SAI2_FS_B	-	FMC_D10/FMC_DA10	COMP2_OUT	LCD_DE	EVENT-OUT

Multiplexage des fonctions (8/11)

Table 14. Port E alternate functions (continued)

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS	TIM1/2/16/17/LPTIM1/ HRTIM1	SAI1/TIM3/ 4/5/12/ HRTIM1	LPUART/ TIM8/ LPTIM2/3/4 /5/HRTIM1/ DFSDM1	I2C1/2/3/4/ USART1/ TIM15/ LPTIM2/ DFSDM1/ CEC	SPI1/2/3/4/ 5/6/CEC	SPI2/3/SAI1 /3/I2C4/ UART4/ DFSDM1	SPI2/3/6/ USART1/2/ 3/6/UART7/ SDMMC1	SPI6/SAI2/ 4/UART4/5/ 8/LPUART/ SDMMC1/ SPDIFRX1	SAI4/ FDCAN1/2/ TIM13/14/ QUADSPI/ FMC/ SDMMC2/ LCD/ SPDIFRX1	SAI2/4/ TIM8/ QUADSPI/ SDMMC2/ OTG1_HS/ OTG2_FS/ LCD	I2C4/ UART7/ SWPMI1/ TIM1/8/ DFSDM1/ SDMMC2/ MDIOS/ ETH	TIM1/8/FMC /SDMMC1/ MDIOS/ OTG1_FS/ LCD	TIM1/DCMI /LCD/ COMP	UART5/ LCD	SYS
Port E	PE14	-	TIM1_CH4	-	-	-	SPI4_ MOSI	-	-	-	-	SAI2_ MCLK_B	-	FMC_D11/ FMC_DA11	-	LCD_CLK	EVENT-OUT
	PE15	-	TIM1_BKIN	-	-	-	-	-	-	-	-		-	FMC_D12/ FMC_DA12	TIM1_BKIN _COMP12/ COMP_ TIM1_BKIN	LCD_R7	EVENT-OUT

Multiplexage des fonctions (9/11)

Table 15. Port F alternate functions

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS	TIM1/2/16/17/LPTIM1/HRTIM1	SAI1/TIM3/4/5/12/HRTIM1	LPUART/TIM8/LPTIM2/3/4/5/HRTIM1/DFSDM1	I2C1/2/3/4/USART1/TIM15/LPTIM2/DFSDM1/CEC	SPI1/2/3/4/5/6/CEC	SPI2/3/SAI1/3/I2C4/UART4/DFSDM1	SPI2/3/6/USART1/2/3/6/UART7/SDMMC1	SPI6/SAI2/4/UART4/5/8/LPUART/SDMMC1/SPDIFRX1	SAI4/FDCAN1/2/TIM13/14/QUADSPI/FMC/SDMMC2/LCD/SPDIFRX1	SAI2/4/TIM8/QUADSPI/SDMMC2/OTG1_HS/OTG2_FS/LCD	I2C4/UART7/SWPMI1/TIM1/8/DFSDM1/SDMMC2/MDIOS/ETH	TIM1/8/FMC/SDMMC1/MDIOS/OTG1_FS/LCD	TIM1/DCMI/LCD/COMP	UART5/LCD	SYS
Port F	PF0	-	-	-	-	I2C2_SDA	-	-	-	-	-	-	-	FMC_A0	-	-	EVENT-OUT
	PF1	-	-	-	-	I2C2_SCL	-	-	-	-	-	-	-	FMC_A1	-	-	EVENT-OUT
	PF2	-	-	-	-	I2C2_SMBA	-	-	-	-	-	-	-	FMC_A2	-	-	EVENT-OUT
	PF3	-	-	-	-	-	-	-	-	-	-	-	-	FMC_A3	-	-	EVENT-OUT
	PF4	-	-	-	-	-	-	-	-	-	-	-	-	FMC_A4	-	-	EVENT-OUT
	PF5	-	-	-	-	-	-	-	-	-	-	-	-	FMC_A5	-	-	EVENT-OUT
	PF6	-	TIM16_CH1	-	-	-	SPI5_NSS	SAI1_SD_B	UART7_RX	SAI4_SD_B	QUADSPI_BK1_IO3	-	-	-	-	-	EVENT-OUT
	PF7	-	TIM17_CH1	-	-	-	SPI5_SCK	SAI1_MCLK_B	UART7_TX	SAI4_MCLK_B	QUADSPI_BK1_IO2	-	-	-	-	-	EVENT-OUT
	PF8	-	TIM16_CH1N	-	-	-	SPI5_MISO	SAI1_SCK_B	UART7_RTS/UART7_DE	SAI4_SCK_B	TIM13_CH1	QUADSPI_BK1_IO0	-	-	-	-	EVENT-OUT
	PF9	-	TIM17_CH1N	-	-	-	SPI5_MOSI	SAI1_FS_B	UART7_CTS	SAI4_FS_B	TIM14_CH1	QUADSPI_BK1_IO1	-	-	-	-	EVENT-OUT
	PF10	-	TIM16_BKIN	SAI1_D3	-	-	-	-	-	-	QUADSPI_CLK	SAI4_D3	-	-	DCMI_D11	LCD_DE	EVENT-OUT
	PF11	-	-	-	-	-	SPI5_MOSI	-	-	-	-	SAI2_SD_B	-	FMC_SDNRAS	DCMI_D12	-	EVENT-OUT
	PF12	-	-	-	-	-	-	-	-	-	-	-	-	FMC_A6	-	-	EVENT-OUT
	PF13	-	-	-	DFSDM1_DATIN6	I2C4_SMBA	-	-	-	-	-	-	-	FMC_A7	-	-	EVENT-OUT
	PF14	-	-	-	DFSDM1_CKIN6	I2C4_SCL	-	-	-	-	-	-	-	FMC_A8	-	-	EVENT-OUT
	PF15	-	-	-	-	I2C4_SDA	-	-	-	-	-	-	-	FMC_A9	-	-	EVENT-OUT

Multiplexage des fonctions (10/11)

Table 16. Port G alternate functions

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS	TIM1/2/16/17/LPTIM1/HRTIM1	SAI1/TIM3/4/5/12/HRTIM1	LPUART/TIM8/LPTIM2/3/4/5/HRTIM1/DFSDM1	I2C1/2/3/4/USART1/TIM15/LPTIM2/DFSDM1/CEC	SPI1/2/3/4/5/6/CEC	SPI2/3/SAI1/3/I2C4/UART4/DFSDM1	SPI2/3/6/USART1/2/3/6/UART7/SDMMC1	SPI6/SAI2/4/UART4/5/8/LPUART/SDMMC1/SPDIFRX1	SAI4/FDCAN1/2/TIM13/14/QUADSPI/FMC/SDMMC2/LCD/SPDIFRX1	SAI2/4/TIM8/QUADSPI/SDMMC2/OTG1_HS/OTG2_FS/LCD	I2C4/UART7/SWPMI1/TIM1/8/DFSDM1/SDMMC2/MDIOS/ETH	TIM1/8/FMC/SDMMC1/MDIOS/OTG1_FS/LCD	TIM1/DCMI/LCD/COMP	UART5/LCD	SYS
Port G	PG0	-	-	-	-	-	-	-	-	-	-	-	-	FMC_A10	-	-	EVENT-OUT
	PG1	-	-	-	-	-	-	-	-	-	-	-	-	FMC_A11	-	-	EVENT-OUT
	PG2	-	-	-	TIM8_BKIN	-	-	-	-	-	-	-	TIM8_BKIN_COMP12	FMC_A12	-	-	EVENT-OUT
	PG3	-	-	-	TIM8_BKIN2	-	-	-	-	-	-	-	TIM8_BKIN2_COMP12	FMC_A13	-	-	EVENT-OUT
	PG4	-	TIM1_BKIN2	-	-	-	-	-	-	-	-	-	TIM1_BKIN2_COMP12	FMC_A14/FMC_BA0	-	-	EVENT-OUT
	PG5	-	TIM1_ETR	-	-	-	-	-	-	-	-	-	-	FMC_A15/FMC_BA1	-	-	EVENT-OUT
	PG6	-	TIM17_BKIN	HRTIM_CHE1	-	-	-	-	-	-	-	QUADSPI_BK1_NCS	-	FMC_NE3	DCMI_D12	LCD_R7	EVENT-OUT
	PG7	-	-	HRTIM_CHE2	-	-	-	SAI1_MCLK_A	USART6_CK	-	-	-	-	FMC_INT	DCMI_D13	LCD_CLK	EVENT-OUT
	PG8	-	-	-	TIM8_ETR	-	SPI6_NSS	-	USART6_RTS/USART6_DE	SPDIFRX1_IN3	-	-	ETH_PPS_OUT	FMC_SDCLK	-	LCD_G7	EVENT-OUT
	PG9	-	-	-	-	-	SPI1_MISO/I2S1_SDI	-	USART6_RX	SPDIFRX1_IN4	QUADSPI_BK2_IO2	SAI2_FS_B	-	FMC_NE2/FMC_NCE	DCMI_VSYNC	-	EVENT-OUT
	PG10	-	-	HRTIM_FLT5	-	-	SPI1_NSS/I2S1_WS	-	-	-	LCD_G3	SAI2_SD_B	-	FMC_NE3	DCMI_D2	LCD_B2	EVENT-OUT
	PG11	-	LPTIM1_IN2	HRTIM_EEV4	-	-	SPI1_SCK/I2S1_CK	-	-	SPDIFRX1_IN1	-	SDMMC2_D2	ETH_MII_TX_EN/ETH_RMII_TX_EN	-	DCMI_D3	LCD_B3	EVENT-OUT
	PG12	-	LPTIM1_IN1	HRTIM_EEV5	-	-	SPI6_MISO		USART6_RTS/USART6_DE	SPDIFRX1_IN2	LCD_B4	-	ETH_MII_TXD1/ETH_RMII_TXD1	FMC_NE4	-	LCD_B1	EVENT-OUT
	PG13	TRACED0	LPTIM1_OUT	HRTIM_EEV10	-	-	SPI6_SCK	-	USART6_CTS/USART6_NSS	-	-	-	ETH_MII_TXD0/ETH_RMII_TXD0	FMC_A24	-	LCD_R0	EVENT-OUT

Multiplexage des fonctions (11/11)

Table 16. Port G alternate functions (continued)

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS	TIM1/2/16/17/LPTIM1/HRTIM1	SAI1/TIM3/4/5/12/HRTIM1	LPUART/TIM8/LPTIM2/3/4/5/HRTIM1/DFSDM1	I2C1/2/3/4/USART1/TIM15/LPTIM2/DFSDM1/CEC	SPI1/2/3/4/5/6/CEC	SPI2/3/SAI1/3/I2C4/UART4/DFSDM1	SPI2/3/6/USART1/2/3/6/UART7/SDMMC1	SPI6/SAI2/4/UART4/5/8/LPUART/SDMMC1/SPDIFRX1	SAI4/FDCAN1/2/TIM13/14/QUADSPI/FMC/SDMMC2/LCD/SPDIFRX1	SAI2/4/TIM8/QUADSPI/SDMMC2/OTG1_HS/OTG2_FS/LCD	I2C4/UART7/SWPMI1/TIM1/8/DFSDM1/SDMMC2/MDIOS/ETH	TIM1/8/FMC/SDMMC1/MDIOS/OTG1_FS/LCD	TIM1/DCMI/LCD/COMP	UART5/LCD	SYS
Port G	PG14	TRACED1	LPTIM1_ETR	-	-	-	SPI6_MOSI	-	USART6_TX		QUADSPI_BK2_IO3	-	ETH_MII_TXD1/ETH_RMII_TXD1	FMC_A25	-	LCD_B0	EVENT-OUT
	PG15	-	-	-	-	-	-	-	USART6_CTS/USART6_NSS	-	-	-	-	FMC_SDNCAS	DCMI_D13	-	EVENT-OUT

Ports des SPI

SPI	NSS	SCK	MISO	MOSI
SPI1	PA4, PA15, PG10	PA5, ~~PB3~~, PG11	PA6, PB4, PG9	~~PA7~~, PB5, PD7
SPI2	~~PA11~~, ~~PA12~~, PB4, PB9, PB12	~~PA9~~, PB10, ~~PB13~~, PD3	~~PB14~~, PC2	PB15, ~~PC1~~, PC3, PD6
SPI3	PA4, PA15	~~PB3~~, PC10	PB4, PC11	PB2, PB5, PC12
SPI4	PE4, PE11	PE2, PE12	PE5, PE13	PE6, PE14
SPI5	PF6	PF7	PF8	PF9, PF11
SPI6	PA4, PA15, PG8	PA5, ~~PB3~~, ~~PG13~~	PA6, PB4, PG12	~~PA7~~, PB5, PG14

Analog / Digital Converters (1/3)

3 ADC (ADC1, ADC2, ADC3). Chaque ADC a 20 entrées possibles.

Figure 134. ADC1 connectivity

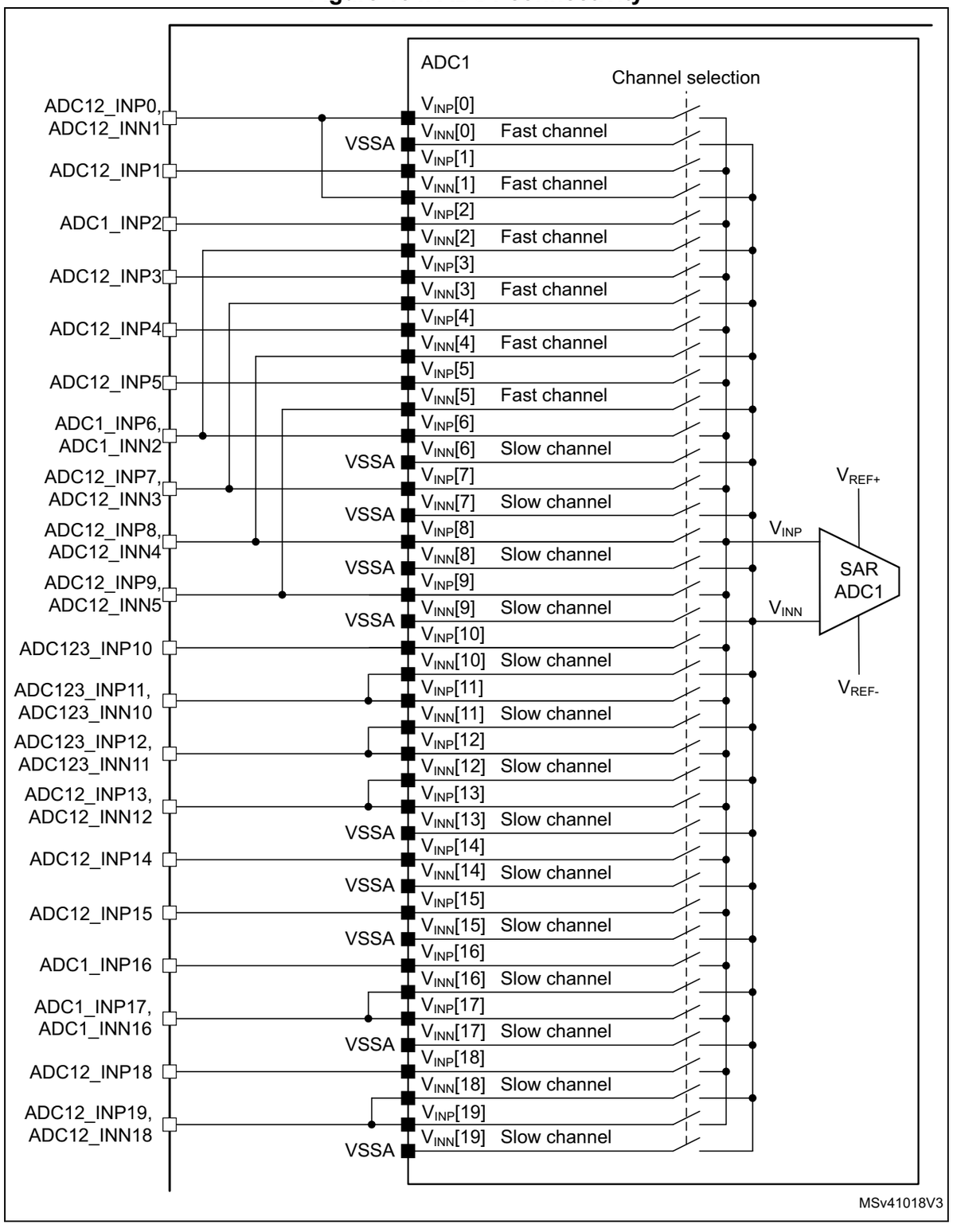
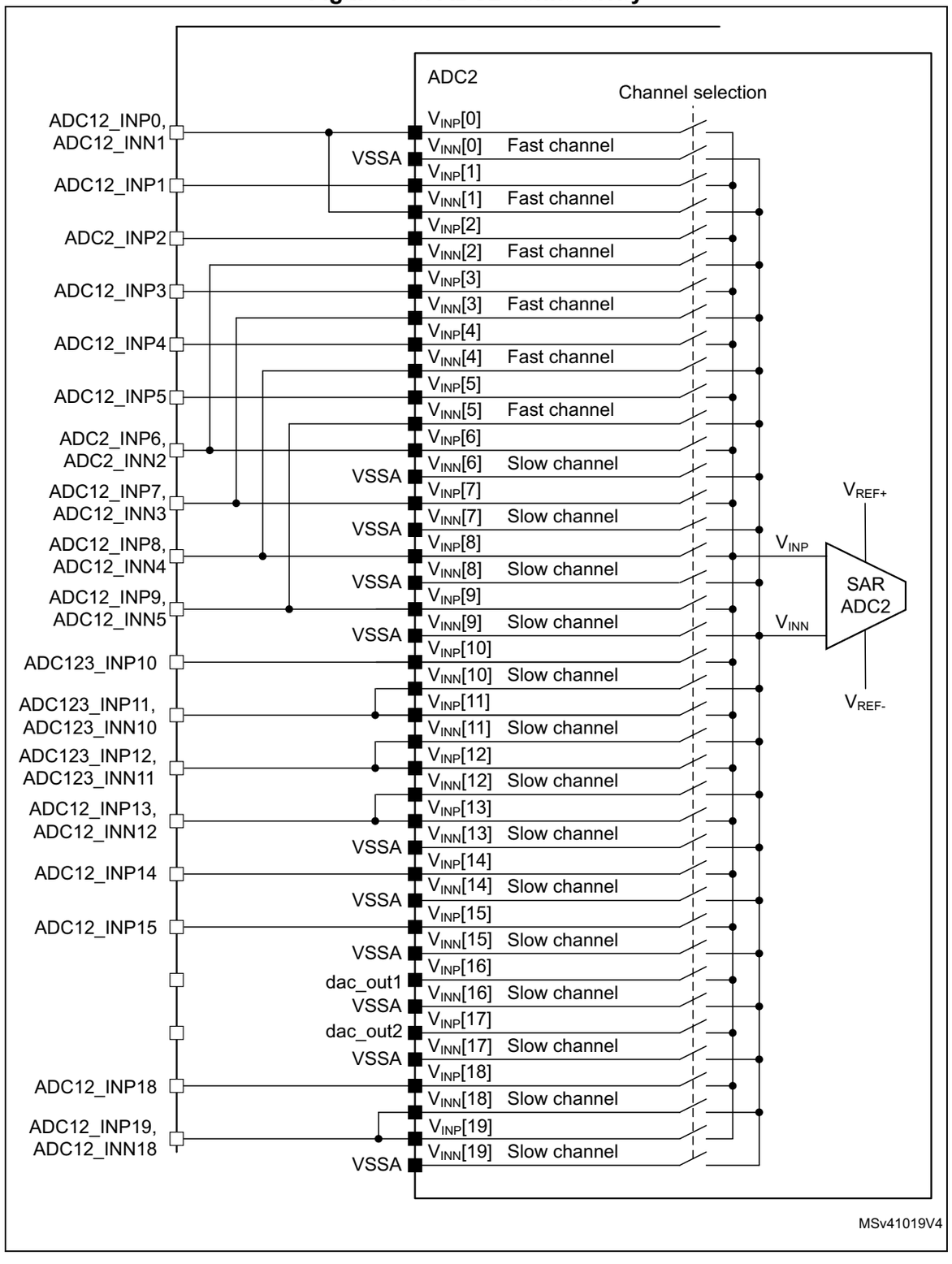
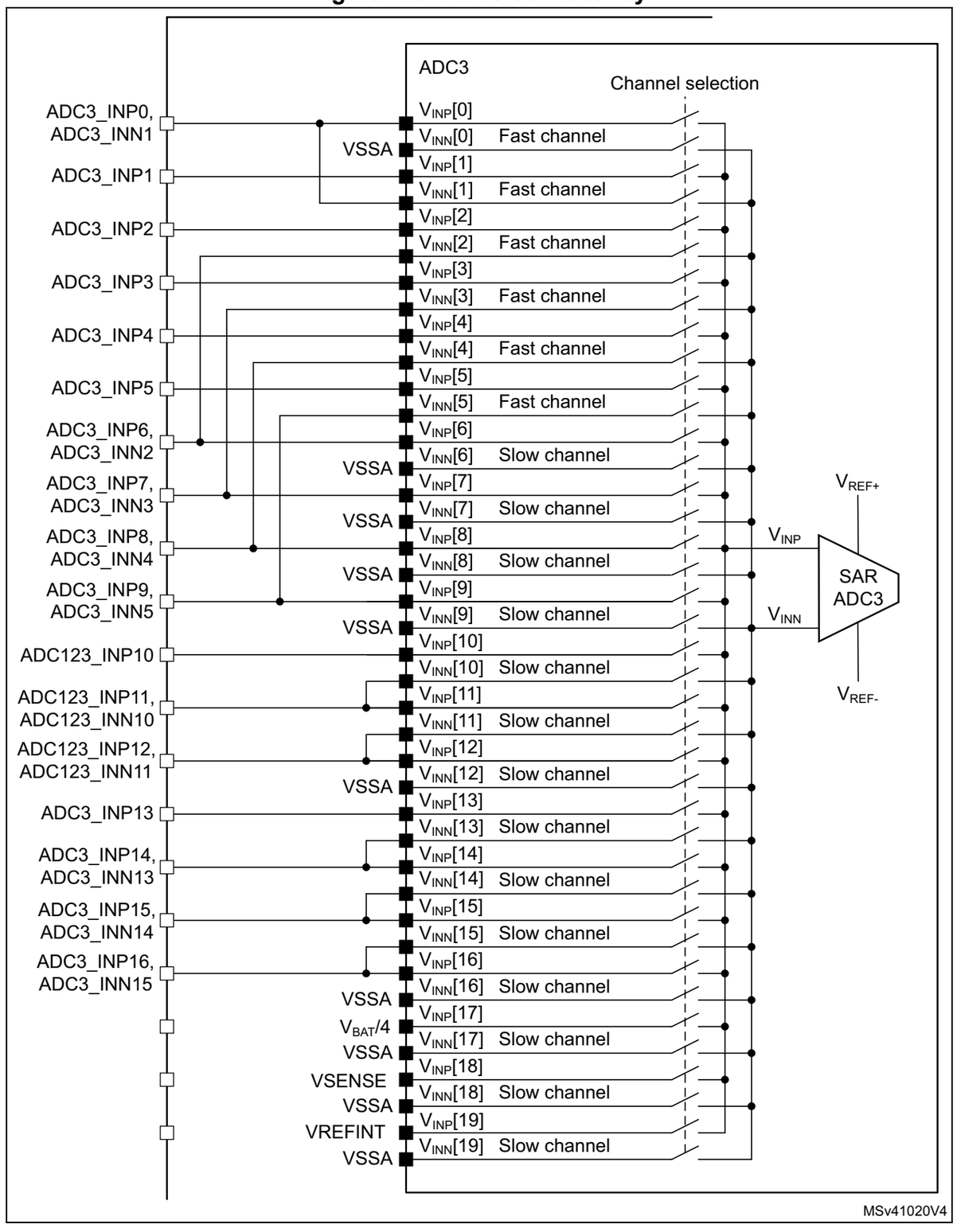


Figure 135. ADC2 connectivity



Analog / Digital Converters (2/3)

Figure 136. ADC3 connectivity



Analog / Digital Converters (3/3)

Port	Entrée analogique
PA0	**Attention, configuration particulière**
~~PA1~~	~~**Attention, configuration particulière**~~
~~PA2~~	~~ADC12_INP14~~
PA3	ADC12_INP15
PA4	ADC12_INP18
PA5	ADC12_INN18, ADC12_INP19
PA6	ADC12_INP3
~~PA7~~	~~ADC12_INN3, ADC12_INP7~~

Port	Entrée analogique
PB0	ADC12_INN5, ADC12_INP9
PB1	ADC12_INP5

Port	Entrée analogique
PC0	ADC123_INP10
~~PC1~~	~~ADC123_INN10, ADC123_INP11~~
PC2	**Attention, configuration particulière**
PC3	ADC3_INP1
~~PC4~~	~~ADC12_INP4~~
~~PC5~~	~~ADC12_INN4, ADC12_INP8~~

Port	Entrée analogique
PF3	ADC3_INP5
PF4	ADC3_INN5, ADC3_INP9
PF5	ADC3_INP4
PF6	ADC3_INN4, ADC3_INP8
PF7	ADC3_INP3
PF8	ADC3_INN3, ADC3_INP7
PF9	ADC3_INP2
PF10	ADC3_INN2, ADC3_INP6
PF11	ADC1_INP2
PF12	ADC1_INN2, ADC1_INP6
PF13	ADC2_INP2
PF14	ADC2_INN2, ADC2_INP6

Digital / Analog Converters (3/3)

Port	Sortie analogique
PA4	DAC1_OUT1
PA5	DAC1_OUT2

Affectation des ports (1/7)

Port	Zio	Fonction	Commentaires
PA0		**Led — 0**	
PA1		**RMII_REF_CLK**	
PA2		**RMII_MDIO**	
PA3	ZIO	**Led — 1**	
PA4	ZIO	**DAC1_OUT1**	Sortie Analogique
PA5		**SPI1_SCK**	
PA6		**ADC12_INP3**	Entrée analogique 0
PA7	ZIO	**RMII_CRS_DV**	
PA8		**USB_OTG_FS_SOF**	
PA9		**USB_VBUS**	
PA10		**USB_ID**	
PA11		**USB_DM**	
PA12		**USB_DP**	
PA13		**TMS**	
PA14		**TCK**	
PA15	ZIO	**SPI3_NSS**	

Affectation des ports (2/7)

Port	Zio	Fonction	Commentaires
PB0		**NUCLEO : LED VERTE**	
PB1		**ADC12_INP5**	Entrée analogique 1
PB2		**Led — 2**	
PB3	ZIO	**NUCLEO : SWO**	
PB4	ZIO	**SPI1_MISO**	
PB5	ZIO	**SPI1_MOSI**	
PB6		**ARDUINO D1 TX**	
PB7		**ARDUINO D0 RX**	
PB8	ZIO	**Interrupteur DIL — 0**	
PB9	ZIO	**Interrupteur DIL — 1**	
PB10		**SPI2_SCK**	
PB11		**Interrupteur DIL — 2**	
PB12	ZIO	**SPI2_NSS**	
PB13	ZIO	**NUCLEO : RMII_TXD1**	
PB14		**NUCLEO : LED ROUGE**	
PB15	ZIO	**SPI2_MOSI**	

Affectation des ports (3/7)

Port	Zio	Fonction	Commentaires
PC0	ZIO	**Afficheur LCD - D5**	
PC1		**NUCLEO : RMII_MDC**	
PC2		**SPI2_MISO**	
PC3	ZIO	**ADC3_INP1**	Entrée analogique 2
PC4		**NUCLEO : RMII_RXD0**	
PC5		**NUCLEO : RMII_RXD1**	
PC6	ZIO	**Encodeur CLIC**	
PC7	ZIO	**RAM externe — /CE**	
PC8	ZIO	**Encodeur A**	
PC9	ZIO	**Encodeur B**	
PC10	ZIO	**SPI3_SCK**	
PC11	ZIO	**SPI3_MISO**	
PC12	ZIO	**SPI3_MOSI**	
PC13		**NUCLEO : USER_BTN**	
PC14		**NUCLEO : OSC 32.768 Hz IN**	
PC15		**NUCLEO : OSC 32.768 Hz OUT**	

Affectation des ports (4/7)

Port	Zio	Fonction	Commentaires
PD0		**RAM externe — D2**	
PD1	ZIO	**RAM externe — D3**	
PD2	ZIO	**Afficheur LCD — D6**	
PD3	ZIO	**Afficheur LCD — D7**	
PD4	ZIO	**RAM externe — /OE**	
PD5	ZIO	**RAM externe — /WE**	
PD6	ZIO	**Afficheur LCD — RS**	
PD7	ZIO	**Afficheur LCD — E**	
PD8		**NUCLEO : STLK_RX**	
PD9		**NUCLEO : STLK_TX**	
PD10		**USB_OTG_FS_PWR_EN**	
PD11		**RAM externe — A16**	
PD12		**RAM externe — A17**	
PD13		**RAM externe — A18**	
PD14		**RAM externe — D0**	
PD15		**RAM externe — D1**	

Affectation des ports (5/7)

Port	Zio	Fonction	Commentaires
PE0		**Poussoir — 0**	
PE1		**LED_NUCLEO (jaune)**	
PE2		**Poussoir — 1**	
PE3		**RAM externe — A19**	
PE4		**RAM externe — A20**	
PE5		**Poussoir — 2**	
PE6		**Poussoir — 3**	
PE7		**RAM externe — D4**	
PE8		**RAM externe — D5**	
PE9		**RAM externe — D6**	
PE10		**RAM externe — D7**	
PE11		**commande TOR — 0**	
PE12		**commande TOR — 1**	
PE13		**commande TOR — 2**	
PE14		**commande TOR — 3**	
PE15		**commande TOR — 4**	

Affectation des ports (6/7)

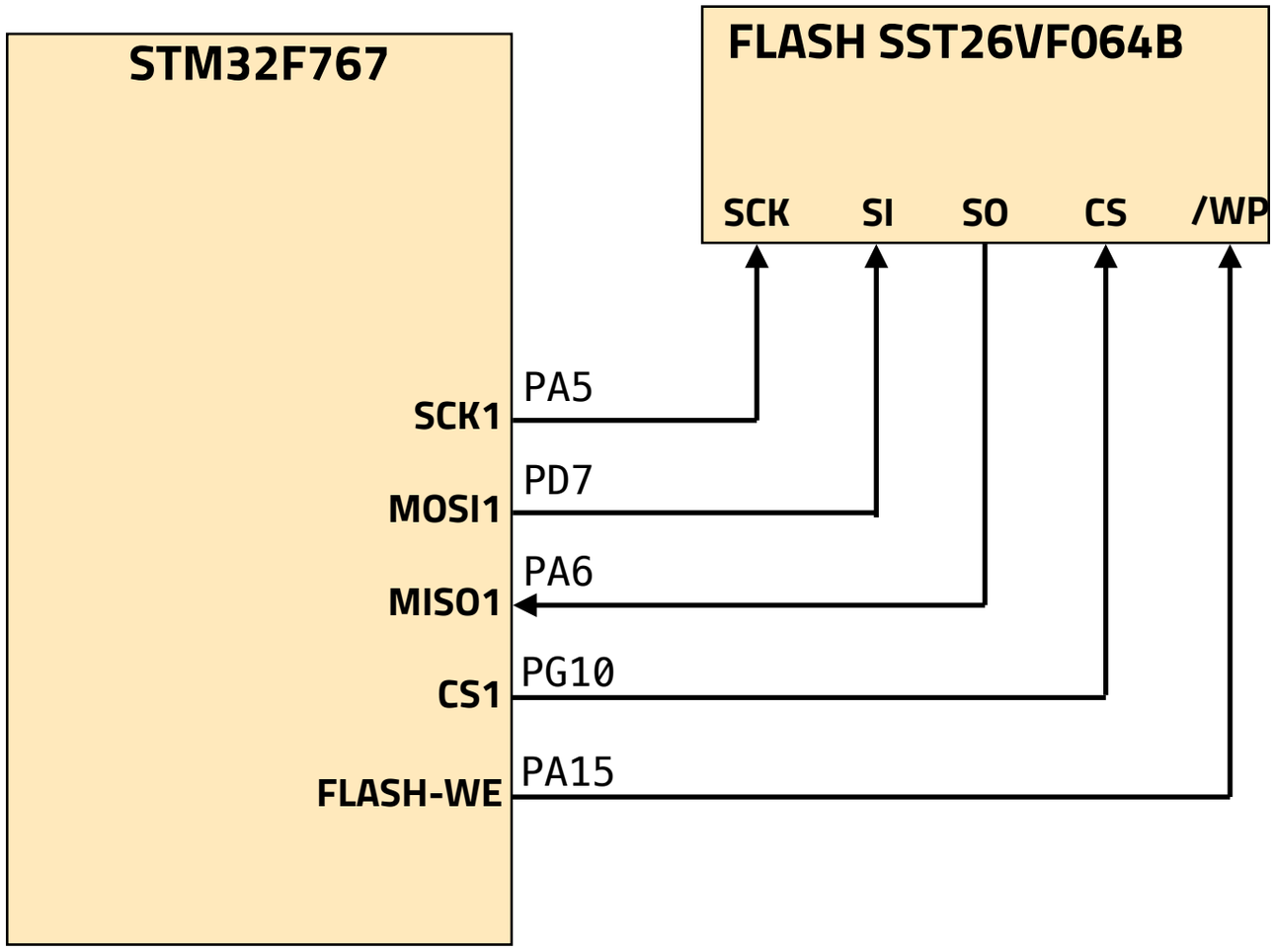
Port	Zio	Fonction	Commentaires
PF0	ZIO	**RAM externe — A0**	
PF1	ZIO	**RAM externe — A1**	
PF2	ZIO	**RAM externe — A2**	
PF3	ZIO	**RAM externe — A3**	
PF4		**RAM externe — A4**	
PF5		**RAM externe — A5**	
PF6		**SPI5_NSS**	
PF7	ZIO	**SPI5_SCK**	
PF8	ZIO	**SPI5_MISO**	
PF9	ZIO	**SPI5_MOSI**	
PF10		**commande TOR — 5**	
PF11		**ADC1_INP2**	Entrée analogique 3
PF12		**RAM externe — A6**	
PF13		**RAM externe — A7**	
PF14		**RAM externe — A8**	
PF15		**RAM externe — A9**	

Affectation des ports (7/7)

Port	Zio	Fonction	Commentaires
PG0	ZIO	**RAM externe — A10**	
PG1	ZIO	**RAM externe — A11**	
PG2	ZIO	**RAM externe — A12**	
PG3	ZIO	**RAM externe — A13**	
PG4		**RAM externe — A14**	
PG5		**RAM externe — A15**	
PG6		**Afficheur LCD — D4**	
PG7		**NUCLEO : USB_GPIO_IN**	
PG8		**commande TOR — 6**	
PG9		**commande TOR — 7**	
PG10		**SPI1_NSS**	
PG11		**NUCLEO : RMII_TX_EN**	
PG12		**commande TOR — 8**	
PG13		**NUCLEO : RMII_TXD0**	
PG14		**Interrupteur DIL — 3**	
PG15		**commande TOR — 9**	

SPI1 : Flash 8Mio

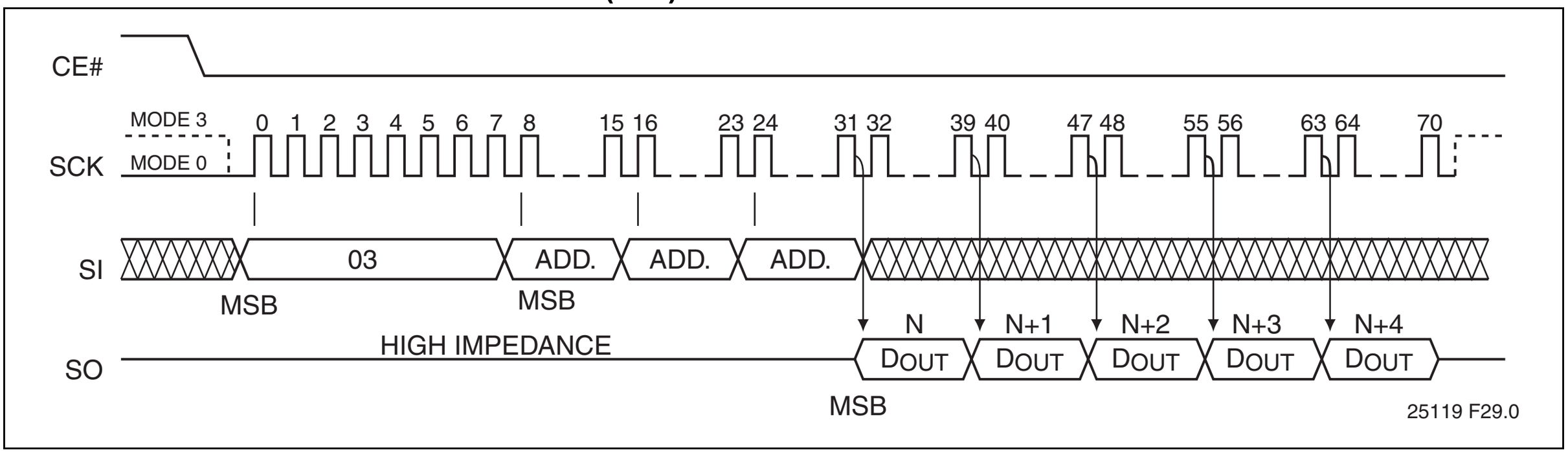
Utilisation du SPI1



Flash SST26VF064B : lecture

L'adresse est sur 24 bits (8 Mio = 2^{23} octets).

FIGURE 5-2: READ SEQUENCE (SPI)



Flash SST26VF064B : effacement

L'effacement s'effectue secteur par secteur. Un secteur occupe 4096 octets (2048 secteurs).

Avant tout instruction d'effacement, il faut exécuter l'instruction **WREN** qui autorise l'exécution d'une instruction d'effacement (ou d'écriture).

FIGURE 5-33: WRITE-ENABLE SEQUENCE (SPI)

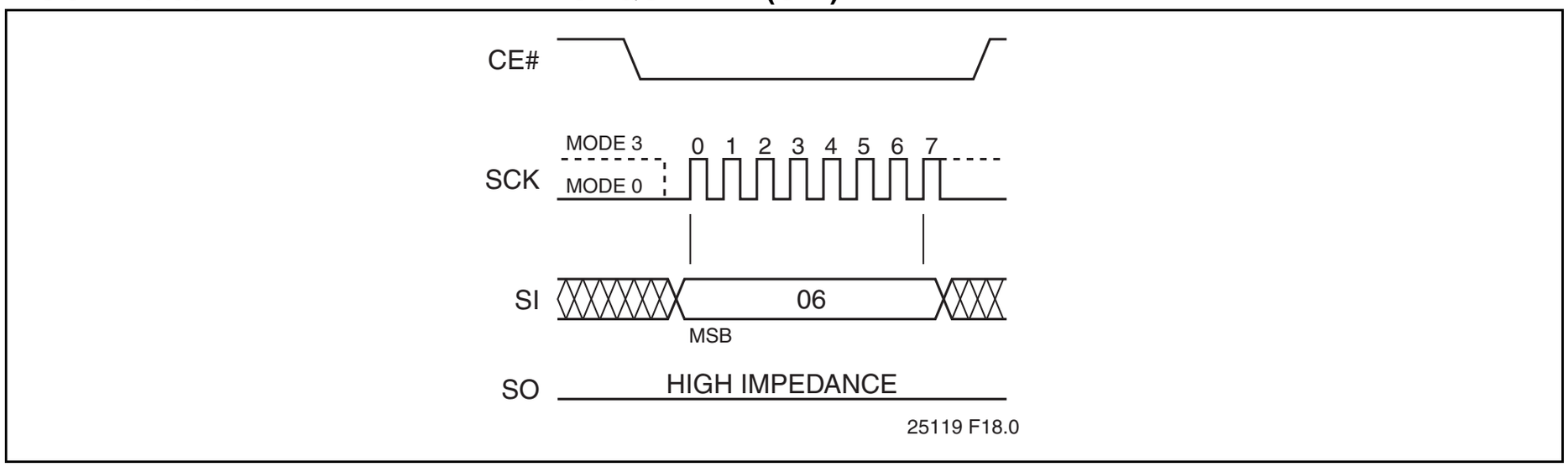
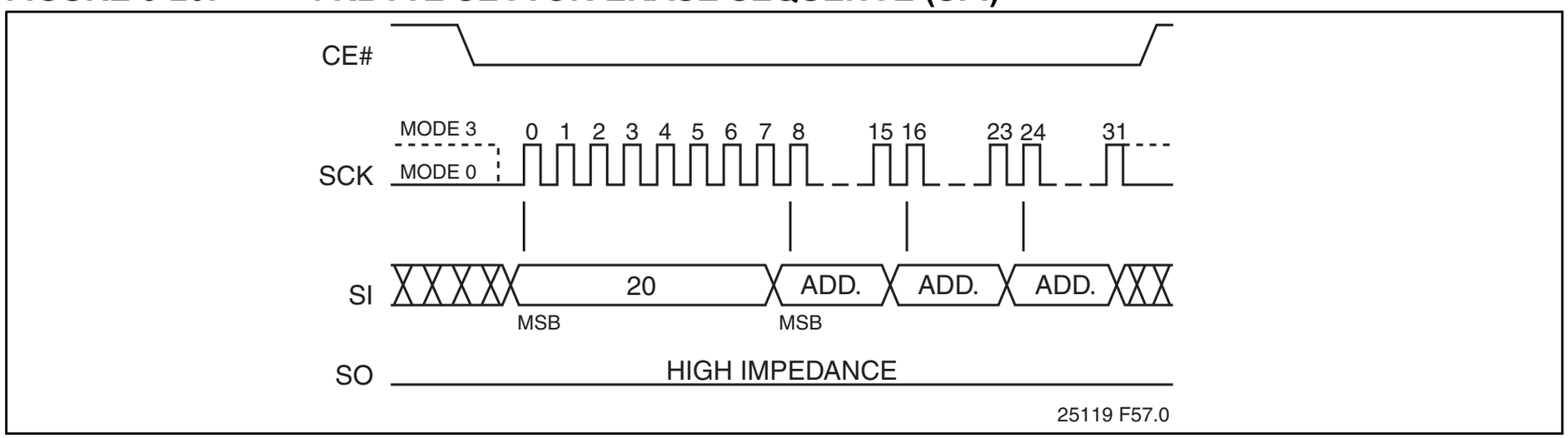


FIGURE 5-20: 4 KBYTE SECTOR-ERASE SEQUENCE (SPI)

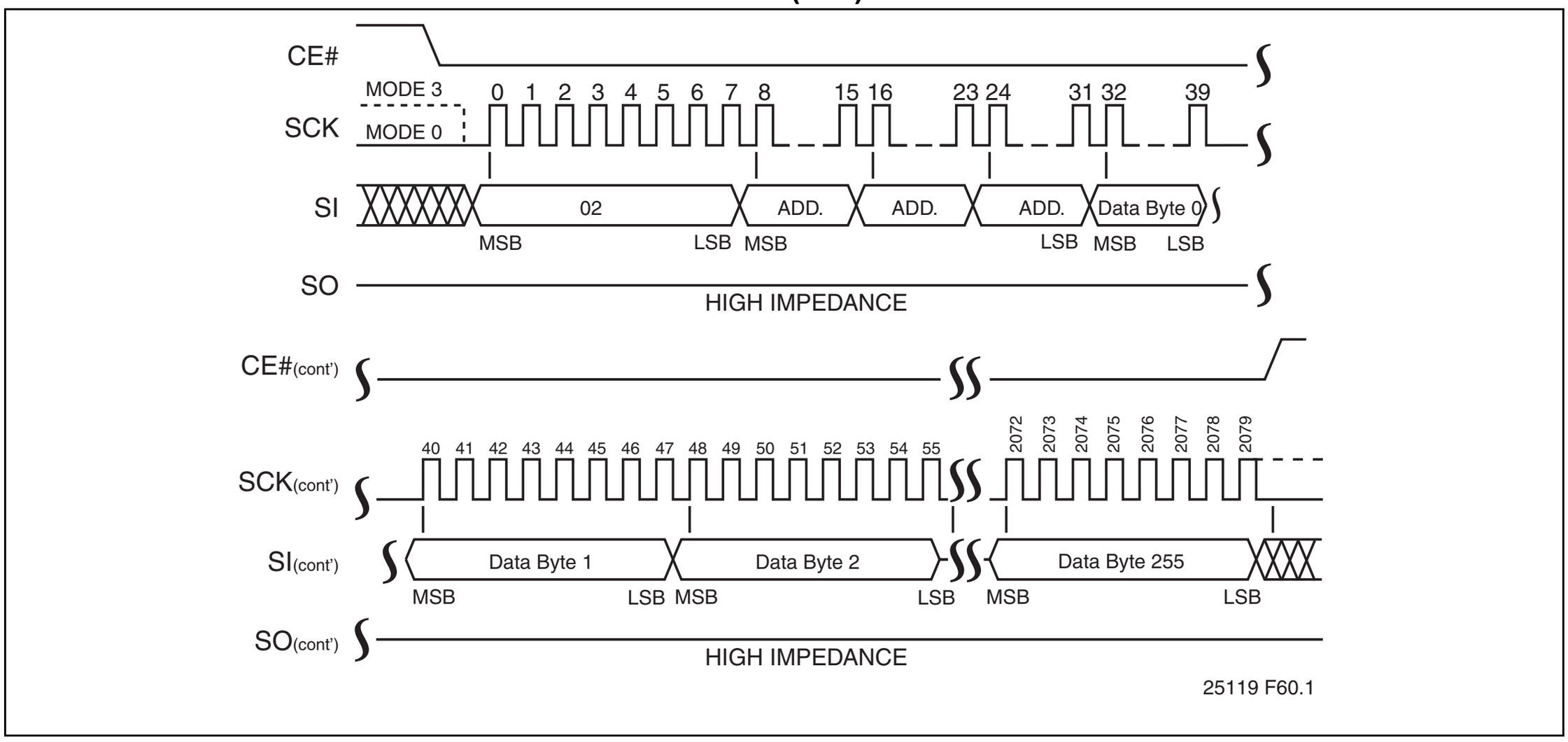


Flash SST26VF064B : écriture

L'écriture s'effectue page par page. Une page occupe 256 octets (65536 pages).

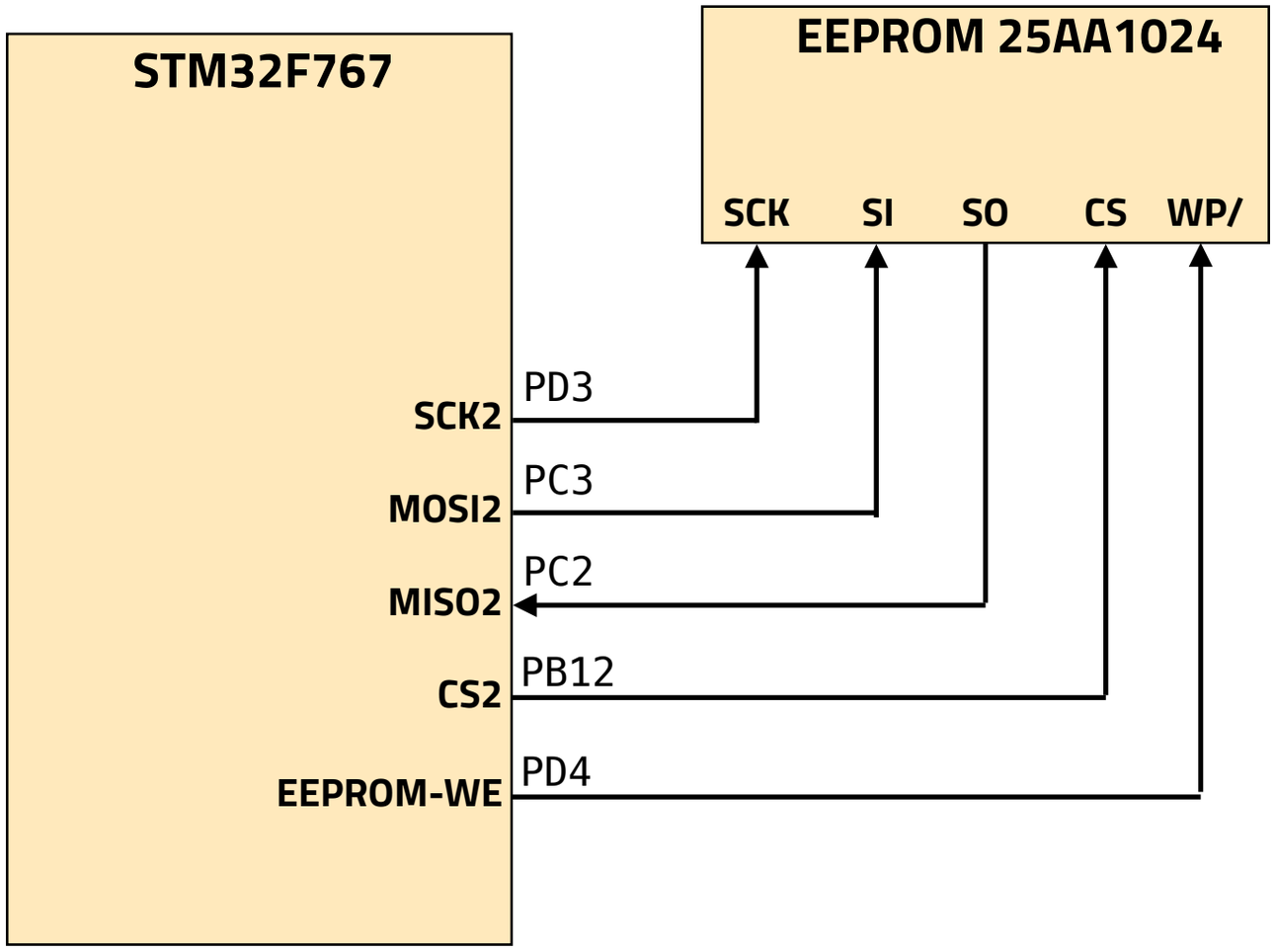
Avant tout instruction d'écriture, il faut exécuter l'instruction WREN qui autorise l'exécution d'une instruction d'effacement (ou d'écriture).

FIGURE 5-26: PAGE-PROGRAM SEQUENCE (SPI)



SPI2 : EEPROM

Utilisation du SPI2



SRAM Externe

Flexible Memory Controller

Le STM32H743 intègre un module FMC (Flexible Memory Controller) qui permet d'interfacer une mémoire externe, telle une SRAM. La note d'application AN4761 explique comment procéder.

Les ports utilisés par le FMC sont fixes, on n'a aucun choix possible. Pour interfacer une SRAM de 2 Mio, les ports sont :

Fonction	Port
A0	PF0
A1	PF1
A2	PF2
A3	PF3
A4	PF4
A5	PF5
A6	PF12
A7	PF13
A8	PF14
A9	PF15
A10	PG0
A11	PG1

Fonction	Port
A11	PG1
A12	PG2
A13	PG3
A14	PG4
A15	PG5
A16	PD11
A17	PD12
A18	PD13
A19	PE3
A20	PE4

Fonction	Port
$\overline{CS}$	PC7
$\overline{OE}$	PD4
$\overline{WE}$	PD5
D0	PD14
D1	PD15
D2	PD0
D3	PD1
D4	PE7
D5	PE8
D6	PE9
D7	PE10