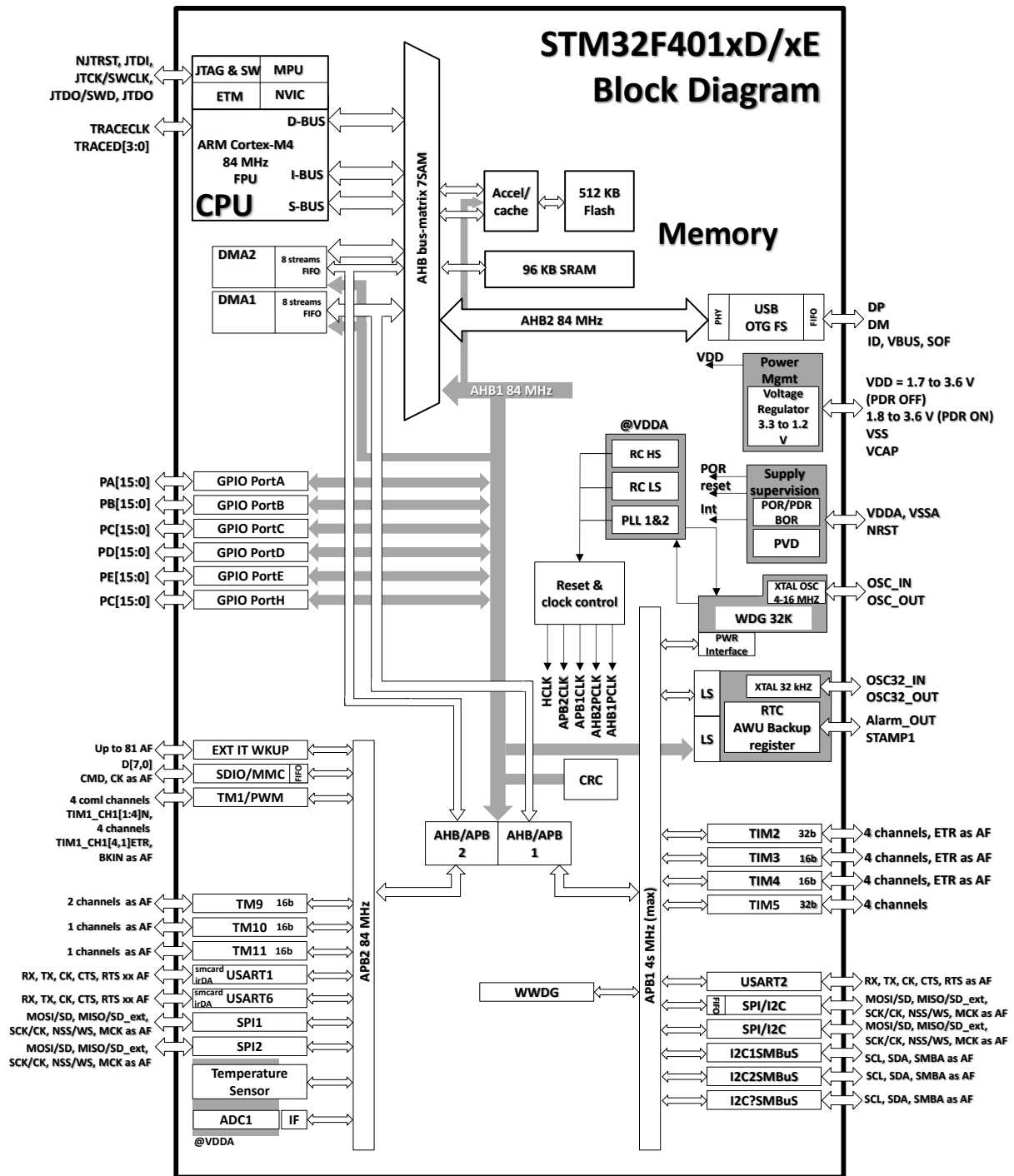


EEEN20019 Microcomputer Engineering 2

Excerpt from Data Sheet: NucleoF401RE Pin-Out



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Table 7. Legend/abbreviations used in the pinout table

Name	Abbreviation	Definition
Pin name	Unless otherwise specified in brackets below the pin name, the pin function during and after reset is the same as the actual pin name	
Pin type	S	Supply pin
	I	Input only pin
	I/O	Input/ output pin
I/O structure	FT	5 V tolerant I/O
	B	Dedicated BOOT0 pin
	NRST	Bidirectional reset pin with embedded weak pull-up resistor
Notes	Unless otherwise specified by a note, all I/Os are set as floating inputs during and after reset	
Alternate functions	Functions selected through GPIOx_AFR registers	
Additional functions	Functions directly selected/enabled through peripheral registers	

Table 8. STM32F401xD/xE pin definitions

Pin Number					Pin name (function after reset) ⁽¹⁾	Pin type	I/O structure	Notes	Alternate functions	Additional functions
UQFN48	WLCSP49	LQFP64	LQFP100	UFBGA100						
		-			PE2	I/O	FT	-	SPI4_SCK, TRACECLK, EVENTOUT	-
		-			PE3	I/O	FT	-	TRACED0, EVENTOUT	-
		-			PE4	I/O	FT	-	SPI4_NSS, TRACED1, EVENTOUT	-
		-			PE5	I/O	FT	-	SPI4_MISO, TIM9_CH1, TRACED2, EVENTOUT	-
		-			PE6	I/O	FT	-	SPI4_MOSI, TIM9_CH2, TRACED3, EVENTOUT	-
		-			VSS	S	-	-	-	-
		-			VDD	S	-	-	-	-
		1			VBAT	S	-	-	-	-
		2			PC13	I/O	FT	(2) (3)	EVENTOUT,	RTC_TAMP1, RTC_OUT, RTC_TS

Table 8. STM32F401xD/xE pin definitions (continued)

Pin Number			Pin name (function after reset) ⁽¹⁾	Pin type	I/O structure	Notes	Alternate functions	Additional functions
	LQFP64							
	3		PC14- OSC32_IN (PC14)	I/O	FT	(2) (3) (4)	EVENTOUT	OSC32_IN
	4		PC15- OSC32_OUT (PC15)	I/O	FT	(2) (3) (4)	EVENTOUT	OSC32_OUT
	-		VSS	S	-	-	-	-
	-		VDD	S	-	-	-	-
	5		PH0-OSC_IN (PH0)	I/O	FT	(4)	EVENTOUT	OSC_IN
	6		PH1- OSC_OUT (PH1)	I/O	FT	(4)	EVENTOUT	OSC_OUT
	7		NRST	I/O	FT	-	EVENTOUT	-
	8		PC0	I/O	FT	-	EVENTOUT	ADC1_IN10
	9		PC1	I/O	FT	-	EVENTOUT	ADC1_IN11
	10		PC2	I/O	FT	-	SPI2_MISO, I2S2ext_SD, EVENTOUT	ADC1_IN12
	11		PC3	I/O	FT	-	SPI2_MOSI/I2S2_SD, EVENTOUT	ADC1_IN13
	-		VDD	S	-	-	-	-
	12		VSSA/VREF-	S	-	-	-	-
	-		VSSA	S	-	-	-	-
	-		VREF-	S	-	-	-	-
	13		VDDA/VREF+	S	-	-	-	-
	-		VREF+	S	-	-	-	-
	-		VDDA	S	-	-	-	-
	14		PA0	I/O	FT	(5)	USART2_CTS, TIM2_CH1/TIM2_ETR, TIM5_CH1, EVENTOUT	ADC1_IN0, WKUP
	15		PA1	I/O	FT	-	USART2_RTS, TIM2_CH2, TIM5_CH2, EVENTOUT	ADC1_IN1
	16		PA2	I/O	FT	-	USART2_TX, TIM2_CH3, TIM5_CH3, TIM9_CH1, EVENTOUT	ADC1_IN2

Table 8. STM32F401xD/xE pin definitions (continued)

Pin Number		Pin name (function after reset) ⁽¹⁾	Pin type	I/O structure	Notes	Alternate functions	Additional functions
	LQFP64						
17		PA3	I/O	FT	-	USART2_RX, TIM2_CH4, TIM5_CH4, TIM9_CH2, EVENTOUT	ADC1_IN3
18		VSS	S	-	-	-	-
19		VDD	S	-	-	-	-
-		BYPASS_REG	I	FT	-	-	-
20		PA4	I/O	FT	-	SPI1_NSS, SPI3_NSS/I2S3_WS, USART2_CK, EVENTOUT	ADC1_IN4
21		PA5	I/O	FT	-	SPI1_SCK, TIM2_CH1/TIM2_ETR, EVENTOUT	ADC1_IN5
22		PA6	I/O	FT	-	SPI1_MISO, TIM1_BKIN, TIM3_CH1, EVENTOUT	ADC1_IN6
23		PA7	I/O	FT	-	SPI1_MOSI, TIM1_CH1N, TIM3_CH2, EVENTOUT	ADC1_IN7
24		PC4	I/O	FT	-	EVENTOUT	ADC1_IN14
25		PC5	I/O	FT	-	EVENTOUT	ADC1_IN15
26		PB0	I/O	FT	-	TIM1_CH2N, TIM3_CH3, EVENTOUT	ADC1_IN8
27		PB1	I/O	FT	-	TIM1_CH3N, TIM3_CH4, EVENTOUT	ADC1_IN9
28		PB2	I/O	FT	-	EVENTOUT	BOOT1
-		PE7	I/O	FT	-	TIM1_ETR, EVENTOUT	-
-		PE8	I/O	FT	-	TIM1_CH1N, EVENTOUT	-
-		PE9	I/O	FT	-	TIM1_CH1, EVENTOUT	-
-		PE10	I/O	FT	-	TIM1_CH2N, EVENTOUT	-
-		PE11	I/O	FT	-	SPI4_NSS, TIM1_CH2, EVENTOUT	-
-		PE12	I/O	FT	-	SPI4_SCK, TIM1_CH3N, EVENTOUT	-
-		PE13	I/O	FT	-	SPI4_MISO, TIM1_CH3, EVENTOUT	-

Table 8. STM32F401xD/xE pin definitions (continued)

Pin Number		Pin name (function after reset) ⁽¹⁾	Pin type	I/O structure	Notes	Alternate functions	Additional functions
LQFP64	-	PD1	I/O	FT	-	EVENTOUT	-
	54	PD2	I/O	FT	-	TIM3_ETR, SDIO_CMD, EVENTOUT	-
	-	PD3	I/O	FT	-	SPI2_SCK/I2S2_CK, USART2_CTS, EVENTOUT	-
	-	PD4	I/O	FT	-	USART2_RTS, EVENTOUT	-
	-	PD5	I/O	FT	-	USART2_TX, EVENTOUT	-
	-	PD6	I/O	FT	-	SPI3_MOSI/I2S3_SD, USART2_RX, EVENTOUT	-
	-	PD7	I/O	FT	-	USART2_CK, EVENTOUT	-
	55	PB3 (JTDO-SWO)	I/O	FT	-	JTDO-SWO, SPI1_SCK, SPI3_SCK/I2S3_CK, I2C2_SDA, TIM2_CH2, EVENTOUT	-
	56	PB4 (NJTRST)	I/O	FT	-	NJTRST, SPI1_MISO, SPI3_MISO, I2S3ext_SD, I2C3_SDA, TIM3_CH1, EVENTOUT	-
	57	PB5	I/O	FT	-	SPI1_MOSI, SPI3_MOSI/I2S3_SD, I2C1_SMBA, TIM3_CH2, EVENTOUT	-
	58	PB6	I/O	FT	-	I2C1_SCL, USART1_TX, TIM4_CH1, EVENTOUT	-
	59	PB7	I/O	FT	-	I2C1_SDA, USART1_RX, TIM4_CH2, EVENTOUT	-
	60	BOOT0	I	B	-	-	V _{PP}
	61	PB8	I/O	FT	-	I2C1_SCL, TIM4_CH3, TIM10_CH1, SDIO_D4, EVENTOUT	-
	62	PB9	I/O	FT	-	SPI2_NSS/I2S2_WS, I2C1_SDA, TIM4_CH4, TIM11_CH1, SDIO_D5, EVENTOUT	-
	-	PE0	I/O	FT	-	TIM4_ETR, EVENTOUT	-
	-	PE1	I/O	FT	-	EVENTOUT	-

Table 8. STM32F401xD/xE pin definitions (continued)

Pin Number			Pin name (function after reset) ⁽¹⁾	Pin type	I/O structure	Notes	Alternate functions	Additional functions
	LQFP64							
	39		PC8	I/O	FT	-	USART6_CK, TIM3_CH3, SDIO_D0, EVENTOUT	-
	40		PC9	I/O	FT	-	I2S_CKIN, I2C3_SDA, TIM3_CH4, SDIO_D1, MCO_2, EVENTOUT	-
	41		PA8	I/O	FT	-	I2C3_SCL, USART1_CK, TIM1_CH1, OTG_FS_SOF, MCO_1, EVENTOUT	-
	42		PA9	I/O	FT	-	I2C3_SMBA, USART1_TX, TIM1_CH2, EVENTOUT	OTG_FS_VBUS
	43		PA10	I/O	FT	-	USART1_RX, TIM1_CH3, OTG_FS_ID, EVENTOUT	-
	44		PA11	I/O	FT	-	USART1_CTS, USART6_TX, TIM1_CH4, OTG_FS_DM, EVENTOUT	-
	45		PA12	I/O	FT	-	USART1_RTS, USART6_RX, TIM1_ETR, OTG_FS_DP, EVENTOUT	-
	46		PA13 (JTMS- SWDIO)	I/O	FT	-	JTMS-SWDIO, EVENTOUT	-
	-		VCAP2	S	-	-	-	-
	47		VSS	S	-	-	-	-
	48		VDD	S	-	-	-	-
	-		VDD	S	-	-	-	-
	49		PA14 (JTCK- SWCLK)	I/O	FT	-	JTCK-SWCLK, EVENTOUT	-
	50		PA15 (JTDI)	I/O	FT	-	JTDI, SPI1_NSS, SPI3_NSS/I2S3_WS, TIM2_CH1/TIM2_ETR, JTDI, EVENTOUT	-
	51		PC10	I/O	FT	-	SPI3_SCK/I2S3_CK, SDIO_D2, EVENTOUT	-
	52		PC11	I/O	FT	-	I2S3ext_SD, SPI3_MISO, SDIO_D3, EVENTOUT	-
	53		PC12	I/O	FT	-	SPI3_MOSI/I2S3_SD, SDIO_CK, EVENTOUT	-
	-		PD0	I/O	FT	-	EVENTOUT	-