4.11 Alternate functions

Table 13. Alternate function

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS_AF	LPTIM1/TIM2/5/15/16/17	I2C3/TIM1/2/3/4/8/15/GPCOMP1	I2C3/SAI1/USB/TIM8/15/GPCOMP3	I2C1/2/3/TIM1/8/16/17	SPI1/2/3/I2S2/3/UART4/TIM8/Infrared	SPI2/3/I2S2/3/TIM1/8/Infrared	USART1/2/3	I2C3/4/UART4/LPUART1/GPCOMP1/2/3	TIM1/8/15/FDCAN1	TIM2/3/4/8/17	LPTIM1/TIM1/8/FDCAN1	LPUART1/SAI1/TIM1	SAI1/OPAMP2	UART4/SAI1/TIM2/15/UCPD1	EVENT
Port A	PA0	-	TIM2_CH1	-	-	-	-	-	USART2_CTS	COMP1_OUT	TIM8_BKIN	TIM8_ETR	-	-	-	TIM2_ETR	EVENT OUT
	PA1	RTC_REFIN	TIM2_CH2	-	-	-	-	-	USART2_RTS_DE	-	TIM15_CH1N	-	-	-	-	-	EVENT OUT
	PA2	-	TIM2_CH3	-	-	-	-	-	USART2_TX	COMP2_OUT	TIM15_CH1	-	-	LPUART1_TX	-	UCPD1_FRSTX	EVENT OUT
	PA3	-	TIM2_CH4	-	SAI1_CK1	-	-	-	USART2_RX	-	TIM15_CH2	-	-	LPUART1_RX	SAI1_MCLK_A	-	EVENT OUT
	PA4	-	-	TIM3_CH2	-	-	SPI1_NSS	SPI3_NSS/I2S3_WS	USART2_CK	-	-	-	-	-	SAI1_FS_B	-	EVENT OUT
	PA5	-	TIM2_CH1	TIM2_ETR	-	-	SPI1_SCK	-	-	-	-	-	-	-	-	UCPD1_FRSTX	EVENT OUT
	PA6	-	TIM16_CH1	TIM3_CH1	-	TIM8_BKIN	SPI1_MISO	TIM1_BKIN	-	COMP1_OUT	-	-	-	LPUART1_CTS	-	-	EVENT OUT
	PA7	-	TIM17_CH1	TIM3_CH2	-	TIM8_CH1N	SPI1_MOSI	TIM1_CH1N	-	COMP2_OUT	-	-	-	-	-	UCPD1_FRSTX	EVENT OUT
	PA8	MCO	-	I2C3_SCL	-	I2C2_SDA	I2S2_MCK	TIM1_CH1	USART1_CK	-	-	TIM4_ETR	-	SAI1_CK2	-	SAI1_SCK_A	EVENT OUT
	PA9	-	-	I2C3_SMBA	-	I2C2_SCL	I2S3_MCK	TIM1_CH2	USART1_TX	-	TIM15_BKIN	TIM2_CH3	-	-	-	SAI1_FS_A	EVENT OUT
	PA10	-	TIM17_BKIN	-	USB_CRS_SYNC	I2C2_SMBA	SPI2_MISO	TIM1_CH3	USART1_RX	-	-	TIM2_CH4	TIM8_BKIN	SAI1_D1	-	SAI1_SD_A	EVENT OUT
	PA11	-	-	-	-	-	SPI2_MOSI/I2S2_SD	TIM1_CH1N	USART1_CTS	COMP1_OUT	FDCAN1_RX	TIM4_CH1	TIM1_CH4	TIM1_BKIN2	-	-	EVENT OUT
	PA12	-	TIM16_CH1	-	-	-	I2SCKIN	TIM1_CH2N	USART1_RTS_DE	COMP2_OUT	FDCAN1_TX	TIM4_CH2	TIM1_ETR	-	-	-	EVENT OUT
	PA13	SWDIO-JTMS	TIM16_CH1N	-	-	I2C1_SCL	IR_OUT	-	USART3_CTS	-	-	TIM4_CH3	-	-	SAI1_SD_B	-	EVENT OUT
	PA14	SWCLK-JTCK	LPTIM1_OUT	-	-	I2C1_SDA	TIM8_CH2	TIM1_BKIN	USART2_TX	-	-	-	-	-	SAI1_FS_B	-	EVENT OUT
	PA15	JTDI	TIM2_CH1	TIM8_CH1	-	I2C1_SCL	SPI1_NSS	SPI3_NSS/I2S3_WS	USART2_RX	UART4_RTS_DE	TIM1_BKIN	-	-	-	-	TIM2_ETR	EVENT OUT

Table 13. Alternate function (continued)

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS_AF	LPTIM1/TIM2/5/15/16/17	I2C3/TIM1/2/3/4/8/15/GPCOMP1	I2C3/SAI1/USB/TIM8/15/GPCOMP3	I2C1/2/3/TIM1/8/16/17	SPI1/2/3/I2S2/3/UART4/TIM8/Infrared	SPI2/3/I2S2/3/TIM1/8/Infrared	USART1/2/3	I2C3/4/UART4/LPUART1/GPCOMP1/2/3	TIM1/8/15/FDCAN1	TIM2/3/4/8/17	LPTIM1/TIM1/8/FDCAN1	LPUART1/SAI1/TIM1	SAI1/OPAMP2	UART4/SAI1/TIM2/15/UCPD1	EVENT
Port B	PB0	-	-	TIM3_CH3	-	TIM8_CH2N	-	TIM1_CH2N	-	-	-	-	-	-	-	UCPD1_FRSTX	EVENTOUT
	PB1	-	-	TIM3_CH4	-	TIM8_CH3N	-	TIM1_CH3N	-	COMP4_OUT	-	-	-	LPUART1_RTS_DE	-	-	EVENTOUT
	PB2	RTC_OUT2	LPTIM1_OUT	-	-	I2C3_SMBA	-	-	-	-	-	-	-	-	-	-	EVENTOUT
	PB3	JTDO-TRACESWO	TIM2_CH2	TIM4_ETR	USB_CRS_SYNC	TIM8_CH1N	SPI1_SCK	SPI3_SCK/I2S3_CK	USART2_TX	-	-	TIM3_ETR	-	-	-	SAI1_SCK_B	EVENTOUT
	PB4	JTRST	TIM16_CH1	TIM3_CH1	-	TIM8_CH2N	SPI1_MISO	SPI3_MISO	USART2_RX	-	-	TIM17_BKIN	-	-	-	SAI1_MCLK_B	EVENTOUT
	PB5	-	TIM16_BKIN	TIM3_CH2	TIM8_CH3N	I2C1_SMBA	SPI1_MOSI	SPI3_MOSI/I2S3_SD	USART2_CK	I2C3_SDA	-	TIM17_CH1	LPTIM1_IN1	SAI1_SD_B	-	-	EVENTOUT
	PB6	-	TIM16_CH1N	TIM4_CH1	-	-	TIM8_CH1	TIM8_ETR	USART1_TX	COMP4_OUT	-	TIM8_BKIN2	LPTIM1_ETR	-	-	SAI1_FS_B	EVENTOUT
	PB7	-	TIM17_CH1N	TIM4_CH2	-	I2C1_SDA	TIM8_BKIN	-	USART1_RX	COMP3_OUT	-	TIM3_CH4	LPTIM1_IN2	-	-	UART4_CTS	EVENTOUT
	PB8	-	TIM16_CH1	TIM4_CH3	SAI1_CK1	I2C1_SCL	-	-	USART3_RX	COMP1_OUT	FDCAN1_RX	TIM8_CH2	-	TIM1_BKIN	-	SAI1_MCLK_A	EVENTOUT
	PB9	-	TIM17_CH1	TIM4_CH4	SAI1_D2	I2C1_SDA	-	IR_OUT	USART3_TX	COMP2_OUT	FDCAN1_TX	TIM8_CH3	-	TIM1_CH3N	-	SAI1_FS_A	EVENTOUT
	PB10	-	TIM2_CH3	-	-	-	-	-	USART3_TX	LPUART1_RX	-	-	-	TIM1_BKIN	-	SAI1_SCK_A	EVENTOUT
	PB11	-	TIM2_CH4	-	-	-	-	-	USART3_RX	LPUART1_TX	-	-	-	-	-	-	EVENTOUT
	PB12	-	-	-	-	I2C2_SMBA	SPI2_NSS/I2S2_WS	TIM1_BKIN	USART3_CK	LPUART1_RTS_DE	-	-	-	-	-	-	EVENTOUT
	PB13	-	-	-	-	-	SPI2_SCK/I2S2_CK	TIM1_CH1N	USART3_CTS	LPUART1_CTS	-	-	-	-	-	-	EVENTOUT
	PB14	-	TIM15_CH1	-	-	-	SPI2_MISO	TIM1_CH2N	USART3_RTS_DE	COMP4_OUT	-	-	-	-	-	-	EVENTOUT
	PB15	RTC_REFIN	TIM15_CH2	TIM15_CH1N	COMP3_OUT	TIM1_CH3N	SPI2_MOSI/I2S2_SD	-	-	-	-	-	-	-	-	-	EVENTOUT

Table 13. Alternate function (continued)

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS_AF	LPTIM1/TIM2/5/15/16/17	I2C3/TIM1/2/3/4/8/15/GPCOMP1	I2C3/SAI1/USB/TIM8/15/GPCOMP3	I2C1/2/3/TIM1/8/16/17	SPI1/2/3/I2S2/3/UART4/TIM8/Infrared	SPI2/3/I2S2/3/TIM1/8/Infrared	USART1/2/3	I2C3/4/UART4/LPUART1/GPCOMP1/2/3	TIM1/8/15/FDCAN1	TIM2/3/4/8/17	LPTIM1/TIM1/8/FDCAN1	LPUART1/SAI1/TIM1	SAI1/OPAMP2	UART4/SAI1/TIM2/15/UCPD1	EVENT
Port C	PC0	-	LPTIM1_IN1	TIM1_CH1	-	-	-	-	-	LPUART1_RX	-	-	-	-	-	-	EVENT OUT
	PC1	-	LPTIM1_OUT	TIM1_CH2	-	-	-	-	-	LPUART1_TX	-	-	-	-	SAI1_SD_A	-	EVENT OUT
	PC2	-	LPTIM1_IN2	TIM1_CH3	COMP3_OUT	-	-	-	-	-	-	-	-	-	-	-	EVENT OUT
	PC3	-	LPTIM1_ETR	TIM1_CH4	SAI1_D1	-	-	TIM1_BKIN2	-	-	-	-	-	-	SAI1_SD_A	-	EVENT OUT
	PC4	-	-	TIM1_ETR	-	I2C2_SCL	-	-	USART1_TX	-	-	-	-	-	-	-	EVENT OUT
	PC5	-	-	TIM15_BKIN	SAI1_D3	-	-	TIM1_CH4N	USART1_RX	-	-	-	-	-	-	-	EVENT OUT
	PC6	-	-	TIM3_CH1	-	TIM8_CH1	-	I2S2_MCK	-	-	-	-	-	-	-	-	EVENT OUT
	PC7	-	-	TIM3_CH2	-	TIM8_CH2	-	I2S3_MCK	-	-	-	-	-	-	-	-	EVENT OUT
	PC8	-	-	TIM3_CH3	-	TIM8_CH3	-	-	-	I2C3_SCL	-	-	-	-	-	-	EVENT OUT
	PC9	-	-	TIM3_CH4	-	TIM8_CH4	I2SCKIN	TIM8_BKIN2	-	I2C3_SDA	-	-	-	-	-	-	EVENT OUT
	PC10	-	-	-	-	TIM8_CH1N	UART4_TX	SPI3_SCK/I2S3_CK	USART3_TX	-	-	-	-	-	-	-	EVENT OUT
	PC11	-	-	-	-	TIM8_CH2N	UART4_RX	SPI3_MISO	USART3_RX	I2C3_SDA	-	-	-	-	-	-	EVENT OUT
	PC12	-	-	-	-	TIM8_CH3N	-	SPI3_MOSI/I2S3_SD	USART3_CK	-	-	-	-	-	-	UCPD1_FRSTX	EVENT OUT
	PC13	-	-	TIM1_BKIN	-	TIM1_CH1N	-	TIM8_CH4N	-	-	-	-	-	-	-	-	EVENT OUT
	PC14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	EVENT OUT
	PC15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	EVENT OUT

Table 13. Alternate function (continued)

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS_AF	LPTIM1/TIM2/5/15/16/17	I2C3/TIM1/2/3/4/8/15/GPCOMP1	I2C3/SAI1/USB/TIM8/15/GPCOMP3	I2C1/2/3/TIM1/8/16/17	SPI1/2/3/I2S2/3/UART4/TIM8/Infrared	SPI2/3/I2S2/3/TIM1/8/Infrared	USART1/2/3	I2C3/4/UART4/LPUART1/GPCOMP1/2/3	TIM1/8/15/FDCAN1	TIM2/3/4/8/17	LPTIM1/TIM1/8/FDCAN1	LPUART1/SAI1/TIM1	SAI1/OPAMP2	UART4/SAI1/TIM2/15/UCPD1	EVENT
Port D	PD0	-	-	-	-	-	-	TIM8_CH4N	-	-	FDCAN1_RX	-	-	-	-	-	EVENT OUT
	PD1	-	-	-	-	TIM8_CH4	-	TIM8_BKIN2	-	-	FDCAN1_TX	-	-	-	-	-	EVENT OUT
	PD2	-	-	TIM3_ETR	-	TIM8_BKIN	-	-	-	-	-	-	-	-	-	-	EVENT OUT
	PD3	-	-	TIM2_CH1/TIM2_ETR	-	-	-	-	USART2_CTS	-	-	-	-	-	-	-	EVENT OUT
	PD4	-	-	TIM2_CH2	-	-	-	-	USART2_RTS_DE	-	-	-	-	-	-	-	EVENT OUT
	PD5	-	-	-	-	-	-	-	USART2_TX	-	-	-	-	-	-	-	EVENT OUT
	PD6	-	-	TIM2_CH4	SAI1_D1	-	-	-	USART2_RX	-	-	-	-	-	SAI1_SD_A	-	EVENT OUT
	PD7	-	-	TIM2_CH3	-	-	-	-	USART2_CK	-	-	-	-	-	-	-	EVENT OUT
	PD8	-	-	-	-	-	-	-	USART3_TX	-	-	-	-	-	-	-	EVENT OUT
	PD9	-	-	-	-	-	-	-	USART3_RX	-	-	-	-	-	-	-	EVENT OUT
	PD10	-	-	-	-	-	-	-	USART3_CK	-	-	-	-	-	-	-	EVENT OUT
	PD11	-	-	-	-	-	-	-	USART3_CTS	-	-	-	-	-	-	-	EVENT OUT
	PD12	-	-	TIM4_CH1	-	-	-	-	USART3_RTS_DE	-	-	-	-	-	-	-	EVENT OUT
	PD13	-	-	TIM4_CH2	-	-	-	-	-	-	-	-	-	-	-	-	EVENT OUT
	PD14	-	-	TIM4_CH3	-	-	-	-	-	-	-	-	-	-	-	-	EVENT OUT
	PD15	-	-	TIM4_CH4	-	-	-	SPI2_NSS	-	-	-	-	-	-	-	-	EVENT OUT

Table 13. Alternate function (continued)

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS_AF	LPTIM1/TIM2/5/15/16/17	I2C3/TIM1/2/3/4/8/15/GPCOMP1	I2C3/SAI1/USB/TIM8/15/GPCOMP3	I2C1/2/3/TIM1/8/16/17	SPI1/2/3/I2S2/3/UART4/TIM8/Infrared	SPI2/3/I2S2/3/TIM1/8/Infrared	USART1/2/3	I2C3/4/UART4/LPUART1/GPCOMP1/2/3	TIM1/8/15/FDCAN1	TIM2/3/4/8/17	LPTIM1/TIM1/8/FDCAN1	LPUART1/SAI1/TIM1	SAI1/OPAMP2	UART4/SAI1/TIM2/15/UCPD1	EVENT
Port E	PE0	-	-	TIM4_ETR	-	TIM16_CH1	-	-	USART1_TX	-	-	-	-	-	-	-	EVENTOUT
	PE1	-	-	-	-	TIM17_CH1	-	-	USART1_RX	-	-	-	-	-	-	-	EVENTOUT
	PE2	TRACECK	-	TIM3_CH1	SAI1_CK1	-	-	-	-	-	-	-	-	-	SAI1_MCLK_A	-	EVENTOUT
	PE3	TRACED0	-	TIM3_CH2	-	-	-	-	-	-	-	-	-	-	SAI1_SD_B	-	EVENTOUT
	PE4	TRACED1	-	TIM3_CH3	SAI1_D2	-	-	-	-	-	-	-	-	-	SAI1_FS_A	-	EVENTOUT
	PE5	TRACED2	-	TIM3_CH4	SAI1_CK2	-	-	-	-	-	-	-	-	-	SAI1_SCK_A	-	EVENTOUT
	PE6	TRACED3	-	-	SAI1_D1	-	-	-	-	-	-	-	-	-	SAI1_SD_A	-	EVENTOUT
	PE7	-	-	TIM1_ETR	-	-	-	-	-	-	-	-	-	-	SAI1_SD_B	-	EVENTOUT
	PE8	-	-	TIM1_CH1N	-	-	-	-	-	-	-	-	-	-	SAI1_SCK_B	-	EVENTOUT
	PE9	-	-	TIM1_CH1	-	-	-	-	-	-	-	-	-	-	SAI1_FS_B	-	EVENTOUT
	PE10	-	-	TIM1_CH2N	-	-	-	-	-	-	-	-	-	-	SAI1_MCLK_B	-	EVENTOUT
	PE11	-	-	TIM1_CH2	-	-	-	-	-	-	-	-	-	-	-	-	EVENTOUT
	PE12	-	-	TIM1_CH3N	-	-	-	-	-	-	-	-	-	-	-	-	EVENTOUT
	PE13	-	-	TIM1_CH3	-	-	-	-	-	-	-	-	-	-	-	-	EVENTOUT
	PE14	-	-	TIM1_CH4	-	-	-	TIM1_BKIN2	-	-	-	-	-	-	-	-	EVENTOUT
	PE15	-	-	TIM1_BKIN	-	-	-	TIM1_CH4N	USART3_RX	-	-	-	-	-	-	-	EVENTOUT

Table 13. Alternate function (continued)

Port		AF0	AF1	AF2	AF3	AF4	AF5	AF6	AF7	AF8	AF9	AF10	AF11	AF12	AF13	AF14	AF15
		SYS_AF	LPTIM1/TIM2/5/15/16/17	I2C3/TIM1/2/3/4/8/15/ GPCOMP1	I2C3/SAI1/ USB/TIM8/15/ GPCOMP3	I2C1/2/3/ TIM1/8/16/17	SPI1/2/3/ I2S2/3/ UART4 /TIM8/Infrared	SPI2/3/ I2S2/3/ TIM1/8/ Infrared	USART1/2/3	I2C3/4 /UART4/ LPUART1/ GPCOMP1/2/3	TIM1/8/15/ FDCAN1	TIM2/3/4/8/17	LPTIM1/TIM1/8/FDCAN1	LPUART1/ SAI1/TIM1	SAI1/ OPAMP2	UART4/SAI1/TIM2/15/ UCPD1	EVENT
Port F	PF0	-	-	-	-	I2C2_ SDA	SPI2_NSS/ I2S2_WS	TIM1_ CH3N	-	-	-	-	-	-	-	-	EVENT OUT
	PF1	-	-	-	-	-	SPI2_SCK/ I2S2_CK	-	-	-	-	-	-	-	-	-	EVENT OUT
	PF2	-	-	-	-	I2C2_ SMBA	-	-	-	-	-	-	-	-	-	-	EVENT OUT
	PF9	-	-	-	TIM15_CH1	-	SPI2_SCK	-	-	-	-	-	-	-	SAI1_FS_B	-	EVENT OUT
	PF10	-	-	-	TIM15_CH2	-	SPI2_SCK	-	-	-	-	-	-	-	SAI1_D3	-	EVENT OUT
Port G	PG10	MCO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	EVENT OUT

5 Electrical characteristics

5.1 Parameter conditions

Unless otherwise specified, all voltages are referenced to V_{SS}.

5.1.1 Minimum and maximum values

Unless otherwise specified, the minimum and maximum values are guaranteed in the worst conditions of ambient temperature, supply voltage and frequencies by tests in production on 100% of the devices with an ambient temperature at T_A = 25 °C and T_A = $T_A$max (given by the selected temperature range).

Data based on characterization results, design simulation and/or technology characteristics are indicated in the table footnotes and are not tested in production. Based on characterization, the minimum and maximum values refer to sample tests and represent the mean value plus or minus three times the standard deviation (mean ±3σ).

5.1.2 Typical values

Unless otherwise specified, typical data are based on T_A = 25 °C, V_{DD} = V_{DDA} = 3 V. They are given only as design guidelines and are not tested.

Typical ADC accuracy values are determined by characterization of a batch of samples from a standard diffusion lot over the full temperature range, where 95% of the devices have an error less than or equal to the value indicated (mean ±2σ).

5.1.3 Typical curves

Unless otherwise specified, all typical curves are given only as design guidelines and are not tested.

5.1.4 Loading capacitor

The loading conditions used for pin parameter measurement are shown in *Figure 14*.

5.1.5 Pin input voltage

The input voltage measurement on a pin of the device is described in *Figure 15*.

Figure 14. Pin loading conditions

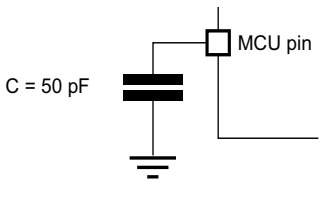

Figure 15. Pin input voltage