

Pin	Name	Type	I/O	Alternate Functions	Additional functions
1	VBAT	S			
2	PC13	I/O	FT	EVENTOUT	RTC_AF1
3	PC14-OSC32_IN (PC14)			EVENTOUT	OSC32_IN
4	PC15- OSC32_OUT (PC15)	I/O	FT	EVENTOUT	OSC32_OUT
5	PH0-OSC_IN (PH0)	I/O	FT	EVENTOUT	OSC_IN
6	PH1-OSC_OUT (PH1)	I/O	FT	EVENTOUT	OSC_OUT
7	NRST	I/O	RST		
8	PC0	I/O	FT	OTG_HS_ULPI_STP/ EVENTOUT	ADC123_IN10
9	PC1	I/O	FT	ETH_MDC/ EVENTOUT	ADC123_IN11
10	PC2	I/O	FT	SPI2_MISO / OTG_HS_ULPI_DIR / TH_MII_TXD2 /I2S2ext_SD/ EVENTOUT	ADC123_IN12
11	PC3	I/O	FT	SPI2_MOSI / I2S2_SD / OTG_HS_ULPI_NXT / ETH_MII_TX_CLK/ EVENTOUT	ADC123_IN13
12	VSSA	S			
13	VDDA	S			

14	PA0-WKUP (PA0)	I/O	FT	USART2_CTS/ UART4_TX/ ETH_MII_CRS / TIM2_CH1_ETR/ TIM5_CH1 / TIM8_ETR/ EVENTOUT	ADC123_IN0/ WKUP
15	PA1	I/O	FT	USART2_RTS / UART4_RX/ ETH_RMII_REF_CLK / ETH_MII_RX_CLK / TIM5_CH2 / TIMM2_CH2/ EVENTOUT	ADC123_IN1
16	PA2	I/O	FT	USART2_TX/TIM5_CH3 / TIM9_CH1 / TIM2_CH3 / ETH_MDIO/ EVENTOUT	ADC123_IN2
17	PA3	I/O	FT	USART2_RX/TIM5_CH4 / TIM9_CH2 / TIM2_CH4 / OTG_HS_ULPI_D0 / ETH_MII_COL/ EVENTOUT	ADC123_IN3
18	VSS	S			
19	VDD	S			
20	PA4	I/O	TTa	SPI1_NSS / SPI3_NSS / USART2_CK / DCMI_HSYNC / OTG_HS_SOF/ I2S3_WS/ EVENTOUT	ADC12_IN4/ DAC1_OUT

21	PA5	I/O	TTa	SPI1_SCK/ OTG_HS_ULPI_CK / TIM2_CH1_ETR/ TIM8_CHIN/ EVENTOUT	ADC12_IN5/ DAC2_OUT
22	PA6	I/O	FT	SPI1_MISO / TIM8_BKIN/TIM13_CH1 / DCMI_PIXCLK / TIM3_CH1 / TIM1_BKIN/ EVENTOUT	ADC12_IN6
23	PA7	I/O	FT	SPI1_MOSI/ TIM8_CH1N / TIM14_CH1/TIM3_CH2/ ETH_MII_RX_DV / TIM1_CH1N / RMII_CRS_DV/ EVENTOUT	ADC12_IN7
24	PC4	I/O	FT	ETH_RMII_RX_D0 / ETH_MII_RX_D0/ EVENTOUT	ADC12_IN14
25	PC5	I/O	FT	ETH_RMII_RX_D1 / ETH_MII_RX_D1/ EVENTOUT	ADC12_IN15
26	PB0	I/O	FT	TIM3_CH3 / TIM8_CH2N/ OTG_HS_ULPI_D1/ ETH_MII_RXD2 / TIM1_CH2N/ EVENTOUT	ADC12_IN8

27	PB1	I/O	FT	TIM3_CH4 / TIM8_CH3N/ OTG_HS_ULPI_D2/ ETH_MII_RXD3 / OTG_HS_INTN / TIM1_CH3N/ EVENTOUT	ADC12_IN9
28	PB2-BOOT1 (PB2)	I/O	FT	EVENTOUT	
29	PB10	I/O	FT	SPI2_SCK / I2S2_CK / I2C2_SCL/ USART3_TX / OTG_HS_ULPI_D3 / ETH_MII_RX_ER / TIM2_CH3/ EVENTOUT	
30	PB11	I/O	FT	I2C2_SDA/USART3_RX/ OTG_HS_ULPI_D4 / ETH_RMII_TX_EN/ ETH_MII_TX_EN / TIM2_CH4/ EVENTOUT	
31	VCAP_1	S			
32	VDD	S			
33	PB12	I/O	FT	SPI2_NSS / I2S2_WS / I2C2_SMBA/ USART3_CK/ TIM1_BKIN / CAN2_RX / OTG_HS_ULPI_D5/ ETH_RMII_TXD0 / ETH_MII_TXD0/ OTG_HS_ID/ EVENTOUT	

34	PB13	I/O	FT	SPI2_SCK / I2S2_CK / USART3_CTS/ TIM1_CH1N /CAN2_TX / OTG_HS_ULPI_D6 / ETH_RMII_TXD1 / ETH_MII_TXD1/ EVENTOUT	OTG_HS_VBUS
35	PB14	I/O	FT	SPI2_MISO/ TIM1_CH2N / TIM12_CH1 / OTG_HS_DM/ USART3_RTS / TIM8_CH2N/I2S2ext_SD/ EVENTOUT	
36	PB15	I/O	FT	SPI2_MOSI / I2S2_SD/ TIM1_CH3N / TIM8_CH3N / TIM12_CH2 / OTG_HS_DP/ EVENTOUT	
37	PC6	I/O	FT	I2S2_MCK / TIM8_CH1/SDIO_D6 / USART6_TX / DCMI_D0/TIM3_CH1/ EVENTOUT	
38	PC7	I/O	FT	I2S3_MCK / TIM8_CH2/SDIO_D7 / USART6_RX / DCMI_D1/TIM3_CH2/ EVENTOUT	

39	PC8	I/O	FT	TIM8_CH3/SDIO_D0 /TIM3_CH3/ USART6_CK / DCMI_D2/ EVENTOUT	
40	PC9	I/O	FT	I2S_CKIN/ MCO2 / TIM8_CH4/SDIO_D1 / /I2C3_SDA / DCMI_D3 / TIM3_CH4/ EVENTOUT	
41	PA8	I/O	FT	MCO1 / USART1_CK/ TIM1_CH1/ I2C3_SCL/ OTG_FS_SOF/ EVENTOUT	
42	PA9	I/O	FT	USART1_TX/ TIM1_CH2 / I2C3_SMBA / DCMI_D0/ EVENTOUT	OTG_FS_VBUS
43	PA10	I/O	FT	USART1_RX/ TIM1_CH3/ OTG_FS_ID/DCMI_D1/ EVENTOUT	
44	PA11	I/O	FT	USART1_CTS / CAN1_RX / TIM1_CH4 / OTG_FS_DM/ EVENTOUT	
45	PA12	I/O	FT	USART1_RTS / CAN1_TX/ TIM1_ETR/ OTG_FS_DP/ EVENTOUT	
46	PA1 (JTMS-SWDIO)	I/O	FT	JTMS-SWDIO/ EVENTOUT	
47	VCAP_2	S			
48	VDD	S			
49	PA14 (JTCK-SWCLK)	I/O	FT	JTCK-SWCLK/ EVENTOUT	

50	PA15 (JTDI)	I/O	FT	JTDI/ SPI3_NSS/ I2S3_WS/TIM2_CH1_ETR / SPI1_NSS / EVENTOUT	
51	PC10	I/O	FT	SPI3_SCK / I2S3_CK/ UART4_TX/SDIO_D2 / DCMI_D8 / USART3_TX/ EVENTOUT	
52	PC11	I/O	FT	UART4_RX/ SPI3_MISO / SDIO_D3 / DCMI_D4/USART3_RX / I2S3ext_SD/ EVENTOUT	
53	PC12	I/O	FT	UART5_TX/SDIO_CK / DCMI_D9 / SPI3_MOSI /I2S3_SD / USART3_CK/ EVENTOUT	
54	PD2	I/O	FT	TIM3_ETR/UART5_RX/ SDIO_CMD / DCMI_D11/ EVENTOUT	
55	PB3 (JTDO/ TRACESWO)	I/O	FT	JTDO/ TRACESWO/ SPI3_SCK / I2S3_CK / TIM2_CH2 / SPI1_SCK/ EVENTOUT	
56	PB4 (NJTRST)	I/O	FT	NJTRST/ SPI3_MISO / TIM3_CH1 / SPI1_MISO / I2S3ext_SD/ EVENTOUT	

57	PB5	I/O	FT	I2C1_SMBA/ CAN2_RX / OTG_HS_ULPI_D7 / ETH_PPS_OUT/TIM3_CH 2 / SPI1_MOSI/ SPI3_MOSI / DCMI_D10 / I2S3_SD/ EVENTOUT	
58	PB6	I/O	FT	I2C1_SCL/ TIM4_CH1 / CAN2_TX / DCMI_D5/USART1_TX/ EVENTOUT	
59	PB7	I/O	FT	I2C1_SDA / FSMC_NL / DCMI_VSYNC / USART1_RX/ TIM4_CH2/ EVENTOUT	
60	BOOT0	I	B		VPP
61	PB8	I/O	FT	TIM4_CH3/SDIO_D4/ TIM10_CH1 / DCMI_D6 / ETH_MII_TXD3 / I2C1_SCL/ CAN1_RX/ EVENTOUT	
62	PB9	I/O	FT	SPI2_NSS/ I2S2_WS / TIM4_CH4/ TIM11_CH1/ SDIO_D5 / DCMI_D7 / I2C1_SDA / CAN1_TX/ EVENTOUT	
63	VSS	S			
64	VDD	S			



LCD	LMC16213A	TLCD_RS		3.3V-5V 변환
		TLCD_E		3.3V-5V 변환
		TLCD_D7		
		TLCD_D6		3.3V-5V 변환
		TLCD_D5		3.3V-5V 변환
		TLCD_D4		3.3V-5V 변환
UART		RX_LED2		USBtoSerial/UART_RX/LED(S1 ON)
		TX_LED1		USBtoSerial/UART_TX/LED(S1 ON)
		UART_EN	S3로제어	H: LED/Bluetooth , L: USB2Serial
DC Motor	TB6552FNG	DC_MOTOR_P		LL : Stop HL :M+High M-Low HH : Short brake
		DC_MOTOR_N		
		DCMOTOR_PWM		
JOG Switch		JOG_BRT	Right	평상시 Low, 동작시 High, Schmitt trigger
		JOG_AUP	Up	
		JOG_LCEN	Center	
		JOG_CLT	Left	
		JOG_DDN	Down	
I2C		SCL	with P/U	PCA9535(address 0100000) : 7-segment
		SDA	with P/U	SHT20(address ) : Temp/Humi sensor
				BH1750(address ) : Light sensor

SPI		SPI_SCLK		
		SPI_MOSI		
		SPI_MISO		
		ADC_CS		ADC : CH0-CDS/CH1-VR/CH2-SOUND
		EEPROM_CS		EEPROM : AT25160B
Piezo		PIEZO		
IR receiver		IR_RECEIVE		
PIR		PIR		
Ultrasonic		ULTRA_TRIG		
		ULTRA_ECHO		
Analog		A_CDS		
		A_PIR		
		A_SOUND		
		A_VR		
[MCU board]				
USB to UART		UART1_RX		
		UART1_TX		
CAN		CAN_TX		
		CAN_RX		
LED		LED0		Low ON

		LED1		Low ON
		LED2		Low ON
		LED3		Low ON
SW_Button		SW_BT0		Push High
		SW_BT1		Push High
		SW_BT2		Push High
Ext_Crystal		XTAL0		25MHz
		XTAL1		
Accel/Gyro		SCL		MPU-6050
		SDA		
		ACCEL_INT		
Servo		SERVO1		
		SERVO2		
SWD		SWCLK		
		SWDIO		
Raspberry Pi		UART3_TX		
		UART3_RX		
		SCL		
		SDA		

Pin	Name	Type	I/O	Alternate Functions	Additional functions		
14	PA0-WKUP (PA0)	I/O	FT	USART2_CTS/ UART4_TX/ ETH_MII_CRS / TIM2_CH1_ETR/ TIM5_CH1 / TIM8_ETR/ EVENTOUT	ADC123_IN0/ WKUP		A_CDS
15	PA1	I/O	FT	USART2_RTS / UART4_RX/ ETH_RMII_REF_CLK / ETH_MII_RX_CLK / TIM5_CH2 / TIMM2_CH2/ EVENTOUT	ADC123_IN1		A_PIR
21	PA5	I/O	TTa	SPI1_SCK/ OTG_HS_ULPI_CK / TIM2_CH1_ETR/ TIM8_CHIN/ EVENTOUT	ADC12_IN5/ DAC2_OUT		A_SOUND
20	PA4	I/O	TTa	SPI1_NSS / SPI3_NSS / USART2_CK / DCMI_HSYNC / OTG_HS_SOF/ I2S3_WS/ EVENTOUT	ADC12_IN4/ DAC1_OUT		A_VR
54	PD2	I/O	FT	TIM3_ETR/UART5_RX/ SDIO_CMD / DCMI_D11/ EVENTOUT			ACCEL_INT

23	PA7	I/O	FT	SPI1_MOSI/ TIM8_CH1N / TIM14_CH1/TIM3_CH2/ ETH_MII_RX_DV / TIM1_CH1N / RMII_CRS_DV/ EVENTOUT	ADC12_IN7		ADC_CS
61	PB8	I/O	FT	TIM4_CH3/SDIO_D4/ TIM10_CH1 / DCMI_D6 / ETH_MII_TXD3 / I2C1_SCL/ CAN1_RX/ EVENTOUT			CAN_RX
62	PB9	I/O	FT	SPI2_NSS/ I2S2_WS / TIM4_CH4/ TIM11_CH1/ SDIO_D5 / DCMI_D7 / I2C1_SDA / CAN1_TX/ EVENTOUT			CAN_TX
59	PB7	I/O	FT	I2C1_SDA / FSMC_NL / DCMI_VSYNC / USART1_RX/ TIM4_CH2/ EVENTOUT			DC_MOTOR_N
58	PB6	I/O	FT	I2C1_SCL/ TIM4_CH1 / CAN2_TX / DCMI_D5/USART1_TX/ EVENTOUT			DC_MOTOR_P
22	PA6	I/O	FT	SPI1_MISO / TIM8_BKIN/TIM13_CH1 / DCMI_PIXCLK / TIM3_CH1 / TIM1_BKIN/ EVENTOUT	ADC12_IN6		DCMOTOR_PWM

50	PA15 (JTDI)	I/O	FT	JTDI/ SPI3_NSS/ I2S3_WS/TIM2_CH1_ETR / SPI1_NSS / EVENTOUT			EEPROM_CS
35	PB14	I/O	FT	SPI2_MISO/ TIM1_CH2N / TIM12_CH1 / OTG_HS_DM/ USART3_RTS / TIM8_CH2N/I2S2ext_SD/ EVENTOUT			IR_RECEIVE
26	PB0	I/O	FT	TIM3_CH3 / TIM8_CH2N/ OTG_HS_ULPI_D1/ ETH_MII_RXD2 / TIM1_CH2N/ EVENTOUT	ADC12_IN8		JOG_AUP
34	PB13	I/O	FT	SPI2_SCK / I2S2_CK / USART3_CTS/ TIM1_CH1N /CAN2_TX / OTG_HS_ULPI_D6 / ETH_RMII_TXD1 / ETH_MII_TXD1/ EVENTOUT	OTG_HS_VBUS		JOG_BRT
27	PB1	I/O	FT	TIM3_CH4 / TIM8_CH3N/ OTG_HS_ULPI_D2/ ETH_MII_RXD3 / OTG_HS_INTN / TIM1_CH3N/ EVENTOUT	ADC12_IN9		JOG_LCEN

33	PB12	I/O	FT	SPI2_NSS / I2S2_WS / I2C2_SMBA/ USART3_CK/ TIM1_BKIN / CAN2_RX / OTG_HS_ULPI_D5/ ETH_RMII_TXD0 / ETH_MII_TXD0/ OTG_HS_ID/ EVENTOUT			JOG_LCEN
28	PB2-BOOT1 (PB2)	I/O	FT	EVENTOUT			JOG_LCEN
10	PC2	I/O	FT	SPI2_MISO / OTG_HS_ULPI_DIR / TH_MII_TXD2 /I2S2ext_SD/ EVENTOUT	ADC123_IN12		LED0
11	PC3	I/O	FT	SPI2_MOSI / I2S2_SD / OTG_HS_ULPI_NXT / ETH_MII_TX_CLK/ EVENTOUT	ADC123_IN13		LED1
24	PC4	I/O	FT	ETH_RMII_RX_D0 / ETH_MII_RX_D0/ EVENTOUT	ADC12_IN14		LED2
25	PC5	I/O	FT	ETH_RMII_RX_D1 / ETH_MII_RX_D1/ EVENTOUT	ADC12_IN15		LED3
36	PB15	I/O	FT	SPI2_MOSI / I2S2_SD/ TIM1_CH3N / TIM8_CH3N / TIM12_CH2 / OTG_HS_DP/ EVENTOUT			PIEZO

29	PB10	I/O	FT	SPI2_SCK / I2S2_CK / I2C2_SCL/ USART3_TX / OTG_HS_ULPI_D3 / ETH_MII_RX_ER / TIM2_CH3/ EVENTOUT			SCL
30	PB11	I/O	FT	I2C2_SDA/USART3_RX/ OTG_HS_ULPI_D4 / ETH_RMII_TX_EN/ ETH_MII_TX_EN / TIM2_CH4/ EVENTOUT			SDA
37	PC6	I/O	FT	I2S2_MCK / TIM8_CH1/SDIO_D6 / USART6_TX / DCMI_D0/TIM3_CH1/ EVENTOUT			SERVO1
38	PC7	I/O	FT	I2S3_MCK / TIM8_CH2/SDIO_D7 / USART6_RX / DCMI_D1/TIM3_CH2/ EVENTOUT			SERVO2
56	PB4 (NJTRST)	I/O	FT	NJTRST/ SPI3_MISO / TIM3_CH1 / SPI1_MISO / I2S3ext_SD/ EVENTOUT			SPI_MISO
57	PB5	I/O	FT	I2C1_SMBA/ CAN2_RX / OTG_HS_ULPI_D7 / ETH_PPS_OUT/TIM3_CH 2 / SPI1_MOSI/ SPI3_MOSI / DCMI_D10 / I2S3_SD/ EVENTOUT			SPI_MOSI



55	PB3 (JTDO/ TRACESWO)	I/O	FT	JTDO/ TRACESWO/ SPI3_SCK / I2S3_CK / TIM2_CH2 / SPI1_SCK/ EVENTOUT			SPI_SCLK
41	PA8	I/O	FT	MCO1 / USART1_CK/ TIM1_CH1/ I2C3_SCL/ OTG_FS_SOF/ EVENTOUT			SW_BT0
44	PA11	I/O	FT	USART1_CTS / CAN1_RX / TIM1_CH4 / OTG_FS_DM/ EVENTOUT			SW_BT1
45	PA12	I/O	FT	USART1_RTS / CAN1_TX/ TIM1_ETR/ OTG_FS_DP/ EVENTOUT			SW_BT2
53	PC12	I/O	FT	UART5_TX/SDIO_CK / DCMI_D9 / SPI3_MOSI /I2S3_SD / USART3_CK/ EVENTOUT			TLCD_D4
2	PC13	I/O	FT	EVENTOUT	RTC_AF1		TLCD_D5
3	PC14-OSC32_IN (PC14)			EVENTOUT	OSC32_IN		TLCD_D6
4	PC15- OSC32_OUT (PC15)	I/O	FT	EVENTOUT	OSC32_OUT		TLCD_D7
40	PC9	I/O	FT	I2S_CKIN/ MCO2 / TIM8_CH4/SDIO_D1 / /I2C3_SDA / DCMI_D3 / TIM3_CH4/ EVENTOUT			TLCD_E

39	PC8	I/O	FT	TIM8_CH3/SDIO_D0 /TIM3_CH3/ USART6_CK / DCM1_D2/ EVENTOUT			TLCD_RS
17	PA3	I/O	FT	USART2_RX/TIM5_CH4 / TIM9_CH2 / TIM2_CH4 / OTG_HS_ULPI_D0 / ETH_MII_COL/ EVENTOUT	ADC123_IN3		UART_RX_LED2
16	PA2	I/O	FT	USART2_TX/TIM5_CH3 / TIM9_CH1 / TIM2_CH3 / ETH_MDIO/ EVENTOUT	ADC123_IN2		UART_TX_LED1
43	PA10	I/O	FT	USART1_RX/ TIM1_CH3/ OTG_FS_ID/DCMI_D1/ EVENTOUT			UART1_RX
42	PA9	I/O	FT	USART1_TX/ TIM1_CH2 / I2C3_SMBA / DCM1_D0/ EVENTOUT	OTG_FS_VBUS		UART1_TX
9	PC1	I/O	FT	ETH_MDC/ EVENTOUT	ADC123_IN11		ULTRA_ECHO
8	PC0	I/O	FT	OTG_HS_ULPI_STP/ EVENTOUT	ADC123_IN10		ULTRA_TRIG
60	BOOT0	I	B		VPP		
7	NRST	I/O	RST				
46	PA13 (JTMS-SWDIO)	I/O	FT	JTMS-SWDIO/ EVENTOUT		SWDIO	
49	PA14 (JTCK-SWCLK)	I/O	FT	JTCK-SWCLK/ EVENTOUT		SWCLK	

51	PC10	I/O	FT	SPI3_SCK / I2S3_CK/ UART4_TX/SDIO_D2 / DCMI_D8 / USART3_TX/ EVENTOUT		UART3_TX	
52	PC11	I/O	FT	UART4_RX/ SPI3_MISO / SDIO_D3 / DCMI_D4/USART3_RX / I2S3ext_SD/ EVENTOUT		UART3_RX	
5	PH0-OSC_IN (PH0)	I/O	FT	EVENTOUT	OSC_IN	25MHz	
6	PH1-OSC_OUT (PH1)	I/O	FT	EVENTOUT	OSC_OUT		
1	VBAT	S					
31	VCAP_1	S					
47	VCAP_2	S					
19	VDD	S					
32	VDD	S					
48	VDD	S					
64	VDD	S					
13	VDDA	S					
18	VSS	S					
63	VSS	S					
12	VSSA	S					