1. Description

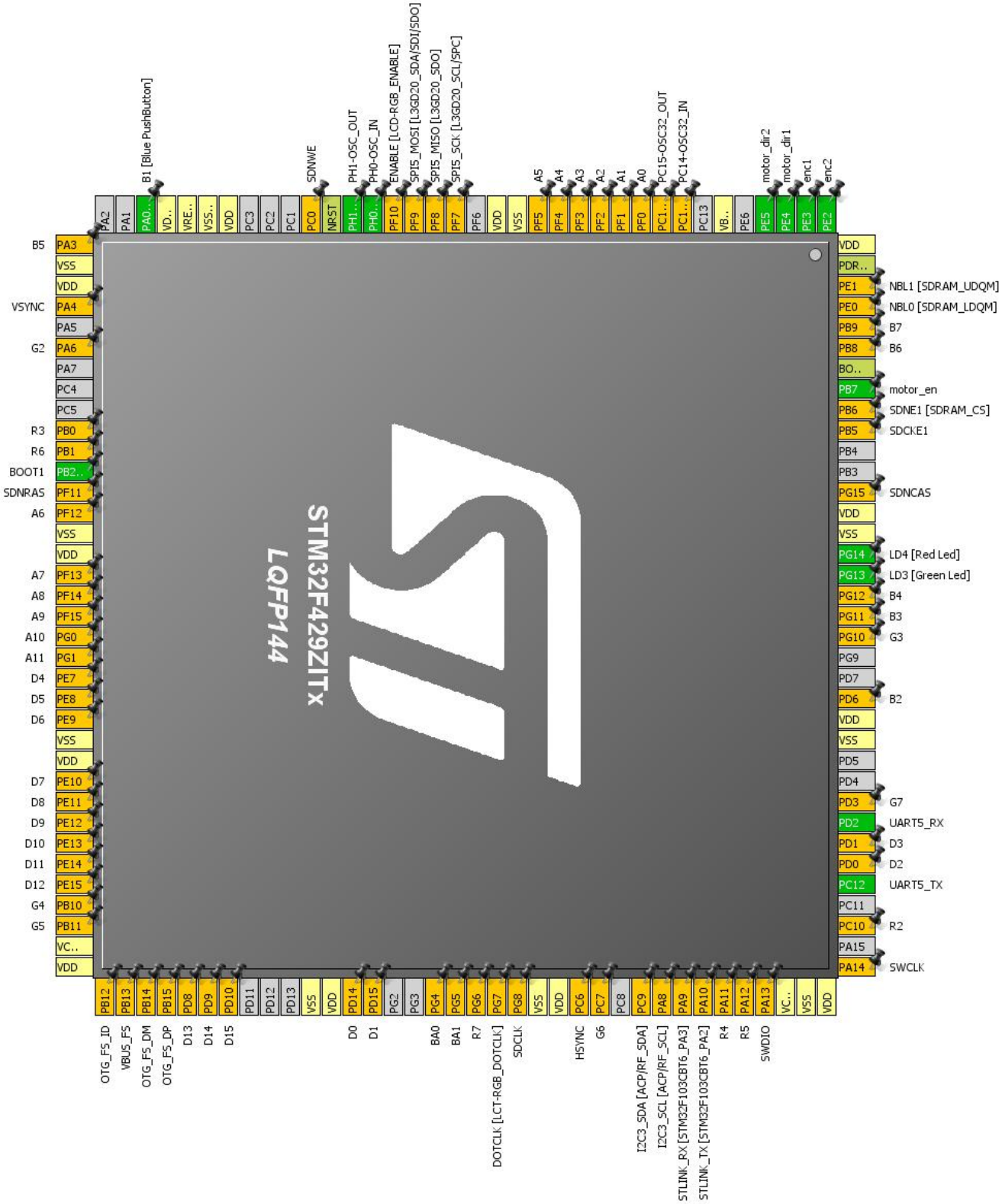
1.1. Project

Project Name	printer_motor
Board Name	STM32F429I-DISC1
Generated with:	STM32CubeMX 4.23.0
Date	05/10/2019

1.2. MCU

MCU Series	STM32F4
MCU Line	STM32F429/439
MCU name	STM32F429ZITx
MCU Package	LQFP144
MCU Pin number	144

2. Pinout Configuration



3. Pins Configuration

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	PE2	I/O	GPIO_EXTI2	enc2
2	PE3	I/O	GPIO_EXTI3	enc1
3	PE4 *	I/O	GPIO_Output	motor_dir1
4	PE5 *	I/O	GPIO_Output	motor_dir2
6	VBAT	Power		
8	PC14/OSC32_IN **	I/O	RCC_OSC32_IN	PC14-OSC32_IN
9	PC15/OSC32_OUT **	I/O	RCC_OSC32_OUT	PC15-OSC32_OUT
10	PF0 **	I/O	FMC_A0	A0
11	PF1 **	I/O	FMC_A1	A1
12	PF2 **	I/O	FMC_A2	A2
13	PF3 **	I/O	FMC_A3	A3
14	PF4 **	I/O	FMC_A4	A4
15	PF5 **	I/O	FMC_A5	A5
16	VSS	Power		
17	VDD	Power		
19	PF7 **	I/O	SPI5_SCK	SPI5_SCK [L3GD20_SCL/SPC]
20	PF8 **	I/O	SPI5_MISO	SPI5_MISO [L3GD20_SDO]
21	PF9 **	I/O	SPI5_MOSI	SPI5_MOSI [L3GD20_SDA/SDI/SDO]
22	PF10 **	I/O	LTDC_DE	ENABLE [LCD-RGB_ENABLE]
23	PH0/OSC_IN	I/O	RCC_OSC_IN	PH0-OSC_IN
24	PH1/OSC_OUT	I/O	RCC_OSC_OUT	PH1-OSC_OUT
25	NRST	Reset		
26	PC0 **	I/O	FMC_SDNWE	SDNWE
30	VDD	Power		
31	VSSA	Power		
32	VREF+	Power		
33	VDDA	Power		
34	PA0/WKUP	I/O	GPIO_EXTI0	B1 [Blue PushButton]
37	PA3 **	I/O	LTDC_B5	B5
38	VSS	Power		
39	VDD	Power		
40	PA4 **	I/O	LTDC_VSYNC	VSYNC
42	PA6 **	I/O	LTDC_G2	G2

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
46	PB0 **	I/O	LTDC_R3	R3
47	PB1 **	I/O	LTDC_R6	R6
48	PB2/BOOT1 *	I/O	GPIO_Input	BOOT1
49	PF11 **	I/O	FMC_SDNRAS	SDNRAS
50	PF12 **	I/O	FMC_A6	A6
51	VSS	Power		
52	VDD	Power		
53	PF13 **	I/O	FMC_A7	A7
54	PF14 **	I/O	FMC_A8	A8
55	PF15 **	I/O	FMC_A9	A9
56	PG0 **	I/O	FMC_A10	A10
57	PG1 **	I/O	FMC_A11	A11
58	PE7 **	I/O	FMC_D4	D4
59	PE8 **	I/O	FMC_D5	D5
60	PE9 **	I/O	FMC_D6	D6
61	VSS	Power		
62	VDD	Power		
63	PE10 **	I/O	FMC_D7	D7
64	PE11 **	I/O	FMC_D8	D8
65	PE12 **	I/O	FMC_D9	D9
66	PE13 **	I/O	FMC_D10	D10
67	PE14 **	I/O	FMC_D11	D11
68	PE15 **	I/O	FMC_D12	D12
69	PB10 **	I/O	LTDC_G4	G4
70	PB11 **	I/O	LTDC_G5	G5
71	VCAP_1	Power		
72	VDD	Power		
73	PB12 **	I/O	USB_OTG_HS_ID	OTG_FS_ID
74	PB13 **	I/O	USB_OTG_HS_VBUS	VBUS_FS
75	PB14 **	I/O	USB_OTG_HS_DM	OTG_FS_DM
76	PB15 **	I/O	USB_OTG_HS_DP	OTG_FS_DP
77	PD8 **	I/O	FMC_D13	D13
78	PD9 **	I/O	FMC_D14	D14
79	PD10 **	I/O	FMC_D15	D15
83	VSS	Power		
84	VDD	Power		
85	PD14 **	I/O	FMC_D0	D0
86	PD15 **	I/O	FMC_D1	D1
89	PG4 **	I/O	FMC_BA0	BA0

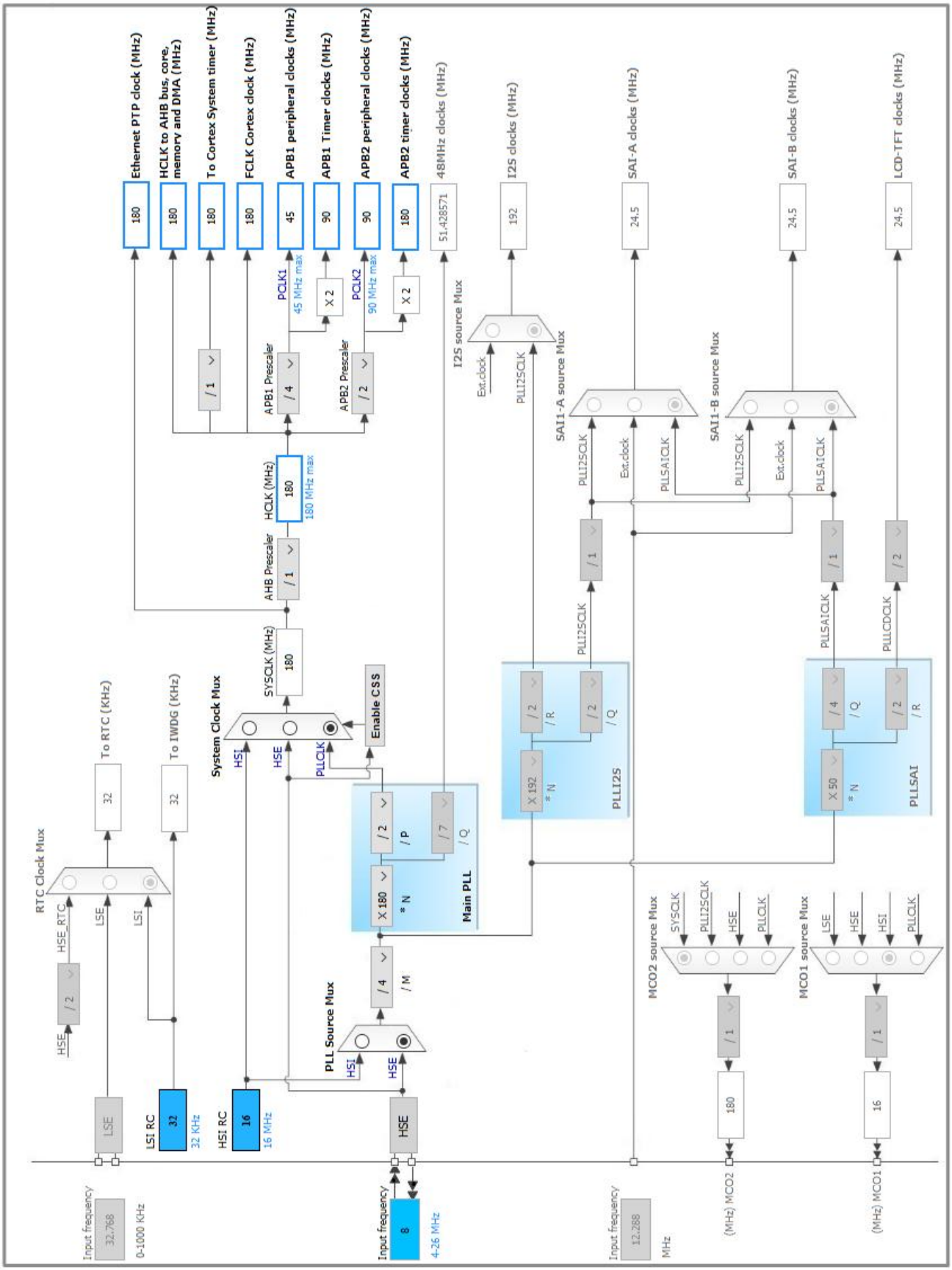
Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
90	PG5 **	I/O	FMC_BA1	BA1
91	PG6 **	I/O	LTDC_R7	R7
92	PG7 **	I/O	LTDC_CLK	DOTCLK [LCT-RGB_DOTCLK]
93	PG8 **	I/O	FMC_SDCLK	SDCLK
94	VSS	Power		
95	VDD	Power		
96	PC6 **	I/O	LTDC_HSYNC	HSYNC
97	PC7 **	I/O	LTDC_G6	G6
99	PC9 **	I/O	I2C3_SDA	I2C3_SDA [ACP/RF_SDA]
100	PA8 **	I/O	I2C3_SCL	I2C3_SCL [ACP/RF_SCL]
101	PA9 **	I/O	USART1_TX	STLINK_RX [STM32F103CBT6_PA3]
102	PA10 **	I/O	USART1_RX	STLINK_TX [STM32F103CBT6_PA2]
103	PA11 **	I/O	LTDC_R4	R4
104	PA12 **	I/O	LTDC_R5	R5
105	PA13 **	I/O	SYS_JTMS-SWDIO	SWDIO
106	VCAP_2	Power		
107	VSS	Power		
108	VDD	Power		
109	PA14 **	I/O	SYS_JTCK-SWCLK	SWCLK
111	PC10 **	I/O	LTDC_R2	R2
113	PC12	I/O	UART5_TX	
114	PD0 **	I/O	FMC_D2	D2
115	PD1 **	I/O	FMC_D3	D3
116	PD2	I/O	UART5_RX	
117	PD3 **	I/O	LTDC_G7	G7
120	VSS	Power		
121	VDD	Power		
122	PD6 **	I/O	LTDC_B2	B2
125	PG10 **	I/O	LTDC_G3	G3
126	PG11 **	I/O	LTDC_B3	B3
127	PG12 **	I/O	LTDC_B4	B4
128	PG13 *	I/O	GPIO_Output	LD3 [Green Led]
129	PG14 *	I/O	GPIO_Output	LD4 [Red Led]
130	VSS	Power		
131	VDD	Power		
132	PG15 **	I/O	FMC_SDNCAS	SDNCAS
135	PB5 **	I/O	FMC_SDCKE1	SDCKE1

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
136	PB6 **	I/O	FMC_SDNE1	SDNE1 [SDRAM_CS]
137	PB7 *	I/O	GPIO_Output	motor_en
138	BOOT0	Boot		
139	PB8 **	I/O	LTDC_B6	B6
140	PB9 **	I/O	LTDC_B7	B7
141	PE0 **	I/O	FMC_NBL0	NBL0 [SDRAM_LDQM]
142	PE1 **	I/O	FMC_NBL1	NBL1 [SDRAM_UDQM]
143	PDR_ON	Reset		
144	VDD	Power		

* The pin is affected with an I/O function

** The pin is affected with a peripheral function but no peripheral mode is activated

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

5.1.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Enabled
Data Cache	Enabled
Flash Latency(WS)	5 WS (6 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
TIM Prescaler Selection	Disabled
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

Power Parameters:

Power Regulatror Voltage Scale	Power Regulator Voltage Scale 1
Power Over Drive	Enabled

5.2. SYS

Timebase Source: SysTick

5.3. UART5

Mode: Asynchronous

5.3.1. Parameter Settings:

Basic Parameters:

Baud Rate	115200
Word Length	8 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
RCC	PH0/OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	PH0-OSC_IN
	PH1/OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	PH1-OSC_OUT
UART5	PC12	UART5_TX	Alternate Function Push Pull	Pull-up	**Very High ***	
	PD2	UART5_RX	Alternate Function Push Pull	Pull-up	**Very High ***	
Single Mapped Signals	PC14/OSC32_IN	RCC_OSC32_IN	n/a	n/a	n/a	PC14-OSC32_IN
	PC15/OSC32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a	PC15-OSC32_OUT
	PF0	FMC_A0	Alternate Function Push Pull	No pull-up and no pull-down	Very High	A0
	PF1	FMC_A1	Alternate Function Push Pull	No pull-up and no pull-down	Very High	A1
	PF2	FMC_A2	Alternate Function Push Pull	No pull-up and no pull-down	Very High	A2
	PF3	FMC_A3	Alternate Function Push Pull	No pull-up and no pull-down	Very High	A3
	PF4	FMC_A4	Alternate Function Push Pull	No pull-up and no pull-down	Very High	A4
	PF5	FMC_A5	Alternate Function Push Pull	No pull-up and no pull-down	Very High	A5
	PF7	SPI5_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	SPI5_SCK [L3GD20_SCL/SPC]
	PF8	SPI5_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Low	SPI5_MISO [L3GD20_SDO]
	PF9	SPI5_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Low	SPI5_MOSI [L3GD20_SDA/SDI/SDO]
	PF10	LTDC_DE	Alternate Function Push Pull	No pull-up and no pull-down	Low	ENABLE [LCD-RGB_ENABLE]
	PC0	FMC_SDNWE	Alternate Function Push Pull	No pull-up and no pull-down	Very High	SDNWE
	PA3	LTDC_B5	Alternate Function Push Pull	No pull-up and no pull-down	Low	B5
	PA4	LTDC_VSYNC	Alternate Function Push Pull	No pull-up and no pull-down	Low	VSYNC
	PA6	LTDC_G2	Alternate Function Push Pull	No pull-up and no pull-down	Low	G2
	PB0	LTDC_R3	Alternate Function Push Pull	No pull-up and no pull-down	Low	R3
	PB1	LTDC_R6	Alternate Function Push Pull	No pull-up and no pull-down	Low	R6
	PF11	FMC_SDNRAS	Alternate Function Push Pull	No pull-up and no pull-down	Very High	SDNRAS
	PF12	FMC_A6	Alternate Function Push Pull	No pull-up and no pull-down	Very High	A6
	PF13	FMC_A7	Alternate Function Push Pull	No pull-up and no pull-down	Very High	A7

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PF14	FMC_A8	Alternate Function Push Pull	No pull-up and no pull-down	Very High	A8
	PF15	FMC_A9	Alternate Function Push Pull	No pull-up and no pull-down	Very High	A9
	PG0	FMC_A10	Alternate Function Push Pull	No pull-up and no pull-down	Very High	A10
	PG1	FMC_A11	Alternate Function Push Pull	No pull-up and no pull-down	Very High	A11
	PE7	FMC_D4	Alternate Function Push Pull	No pull-up and no pull-down	Very High	D4
	PE8	FMC_D5	Alternate Function Push Pull	No pull-up and no pull-down	Very High	D5
	PE9	FMC_D6	Alternate Function Push Pull	No pull-up and no pull-down	Very High	D6
	PE10	FMC_D7	Alternate Function Push Pull	No pull-up and no pull-down	Very High	D7
	PE11	FMC_D8	Alternate Function Push Pull	No pull-up and no pull-down	Very High	D8
	PE12	FMC_D9	Alternate Function Push Pull	No pull-up and no pull-down	Very High	D9
	PE13	FMC_D10	Alternate Function Push Pull	No pull-up and no pull-down	Very High	D10
	PE14	FMC_D11	Alternate Function Push Pull	No pull-up and no pull-down	Very High	D11
	PE15	FMC_D12	Alternate Function Push Pull	No pull-up and no pull-down	Very High	D12
	PB10	LTDC_G4	Alternate Function Push Pull	No pull-up and no pull-down	Low	G4
	PB11	LTDC_G5	Alternate Function Push Pull	No pull-up and no pull-down	Low	G5
	PB12	USB_OTG_HS_ID	Alternate Function Push Pull	No pull-up and no pull-down	Low	OTG_FS_ID
	PB13	USB_OTG_HS_VBUS	Input mode	No pull-up and no pull-down	n/a	VBUS_FS
	PB14	USB_OTG_HS_DM	Alternate Function Push Pull	No pull-up and no pull-down	Low	OTG_FS_DM
	PB15	USB_OTG_HS_DP	Alternate Function Push Pull	No pull-up and no pull-down	Low	OTG_FS_DP
	PD8	FMC_D13	Alternate Function Push Pull	No pull-up and no pull-down	Very High	D13
	PD9	FMC_D14	Alternate Function Push Pull	No pull-up and no pull-down	Very High	D14
	PD10	FMC_D15	Alternate Function Push Pull	No pull-up and no pull-down	Very High	D15
	PD14	FMC_D0	Alternate Function Push Pull	No pull-up and no pull-down	Very High	D0
	PD15	FMC_D1	Alternate Function Push Pull	No pull-up and no pull-down	Very High	D1
	PG4	FMC_BA0	Alternate Function Push Pull	No pull-up and no pull-down	Very High	BA0
	PG5	FMC_BA1	Alternate Function Push Pull	No pull-up and no pull-down	Very High	BA1
	PG6	LTDC_R7	Alternate Function Push Pull	No pull-up and no pull-down	Low	R7
	PG7	LTDC_CLK	Alternate Function Push Pull	No pull-up and no pull-down	Low	DOTCLK [LCT-RGB_DOTCLK]
	PG8	FMC_SDCLK	Alternate Function Push Pull	No pull-up and no pull-down	Very High	SDCLK
	PC6	LTDC_HSYNC	Alternate Function Push Pull	No pull-up and no pull-down	Low	HSYNC
	PC7	LTDC_G6	Alternate Function Push Pull	No pull-up and no pull-down	Low	G6
	PC9	I2C3_SDA	Alternate Function Open Drain	Pull-up	Low	I2C3_SDA [ACP/RF_SDA]
	PA8	I2C3_SCL	Alternate Function Open Drain	Pull-up	Low	I2C3_SCL [ACP/RF_SCL]
	PA9	USART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	STLINK_RX [STM32F103CBT6_PA3]

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PA10	USART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	STLINK_TX [STM32F103CBT6_PA2]
	PA11	LTDC_R4	Alternate Function Push Pull	No pull-up and no pull-down	Low	R4
	PA12	LTDC_R5	Alternate Function Push Pull	No pull-up and no pull-down	Low	R5
	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	SWDIO
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	SWCLK
	PC10	LTDC_R2	Alternate Function Push Pull	No pull-up and no pull-down	Low	R2
	PD0	FMC_D2	Alternate Function Push Pull	No pull-up and no pull-down	Very High	D2
	PD1	FMC_D3	Alternate Function Push Pull	No pull-up and no pull-down	Very High	D3
	PD3	LTDC_G7	Alternate Function Push Pull	No pull-up and no pull-down	Low	G7
	PD6	LTDC_B2	Alternate Function Push Pull	No pull-up and no pull-down	Low	B2
	PG10	LTDC_G3	Alternate Function Push Pull	No pull-up and no pull-down	Low	G3
	PG11	LTDC_B3	Alternate Function Push Pull	No pull-up and no pull-down	Low	B3
	PG12	LTDC_B4	Alternate Function Push Pull	No pull-up and no pull-down	Low	B4
	PG15	FMC_SDNCAS	Alternate Function Push Pull	No pull-up and no pull-down	Very High	SDNCAS
	PB5	FMC_SDCKE1	Alternate Function Push Pull	No pull-up and no pull-down	Very High	SDCKE1
	PB6	FMC_SDNE1	Alternate Function Push Pull	No pull-up and no pull-down	Very High	SDNE1 [SDRAM_CS]
	PB8	LTDC_B6	Alternate Function Push Pull	No pull-up and no pull-down	Low	B6
	PB9	LTDC_B7	Alternate Function Push Pull	No pull-up and no pull-down	Low	B7
	PE0	FMC_NBL0	Alternate Function Push Pull	No pull-up and no pull-down	Very High	NBL0 [SDRAM_LDQM]
	PE1	FMC_NBL1	Alternate Function Push Pull	No pull-up and no pull-down	Very High	NBL1 [SDRAM_UDQM]
GPIO	PE2	GPIO_EXTI2	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	enc2
	PE3	GPIO_EXTI3	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	enc1
	PE4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	motor_dir1
	PE5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	motor_dir2
	PA0/WKUP	GPIO_EXTI0	**External Event Mode with Rising edge trigger detection ***	No pull-up and no pull-down	n/a	B1 [Blue PushButton]
	PB2/BOOT1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BOOT1
	PG13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD3 [Green Led]
	PG14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD4 [Red Led]
	PB7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	motor_en

6.2. DMA configuration

nothing configured in DMA service

6.3. NVIC configuration

Interrupt Table	Enable	Preenmption Priority	SubPriority
Non maskable interrupt	true	0	0
Hard fault interrupt	true	0	0
Memory management fault	true	0	0
Pre-fetch fault, memory access fault	true	0	0
Undefined instruction or illegal state	true	0	0
System service call via SWI instruction	true	0	0
Debug monitor	true	0	0
Pendable request for system service	true	0	0
System tick timer	true	0	0
EXTI line2 interrupt	true	0	0
EXTI line3 interrupt	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
UART5 global interrupt	unused		
FPU global interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F4
Line	STM32F429/439
MCU	STM32F429ZITx
Datasheet	024030_Rev9

7.2. Parameter Selection

Temperature	25
Vdd	null

8. Software Project

8.1. Project Settings

Name	Value
Project Name	printer_motor
Project Folder	D:\Projects\STMicro\printer_motor\printer_motor
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_F4 V1.18.0

8.2. Code Generation Settings

Name	Value
STM32Cube Firmware Library Package	Copy only the necessary library files
Generate peripheral initialization as a pair of '.c/.h' files	No
Backup previously generated files when re-generating	No
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No