



1. Description

1.1. Project

Project Name	stm-cerbrus
Board Name	custom
Generated with:	STM32CubeMX 6.5.0
Date	07/06/2022

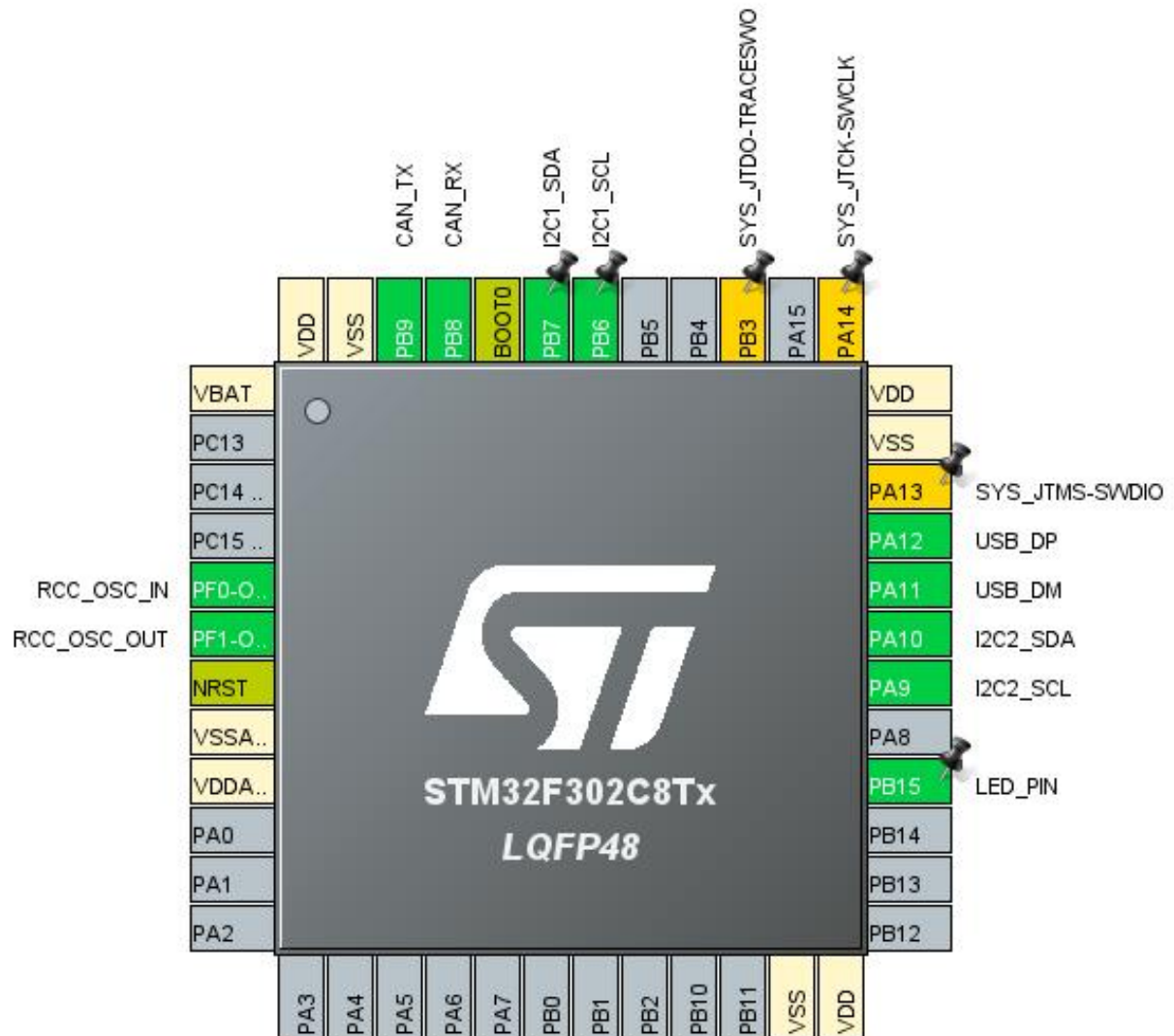
1.2. MCU

MCU Series	STM32F3
MCU Line	STM32F302
MCU name	STM32F302C8Tx
MCU Package	LQFP48
MCU Pin number	48

1.3. Core(s) information

Core(s)	Arm Cortex-M4
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2. Pinout Configuration



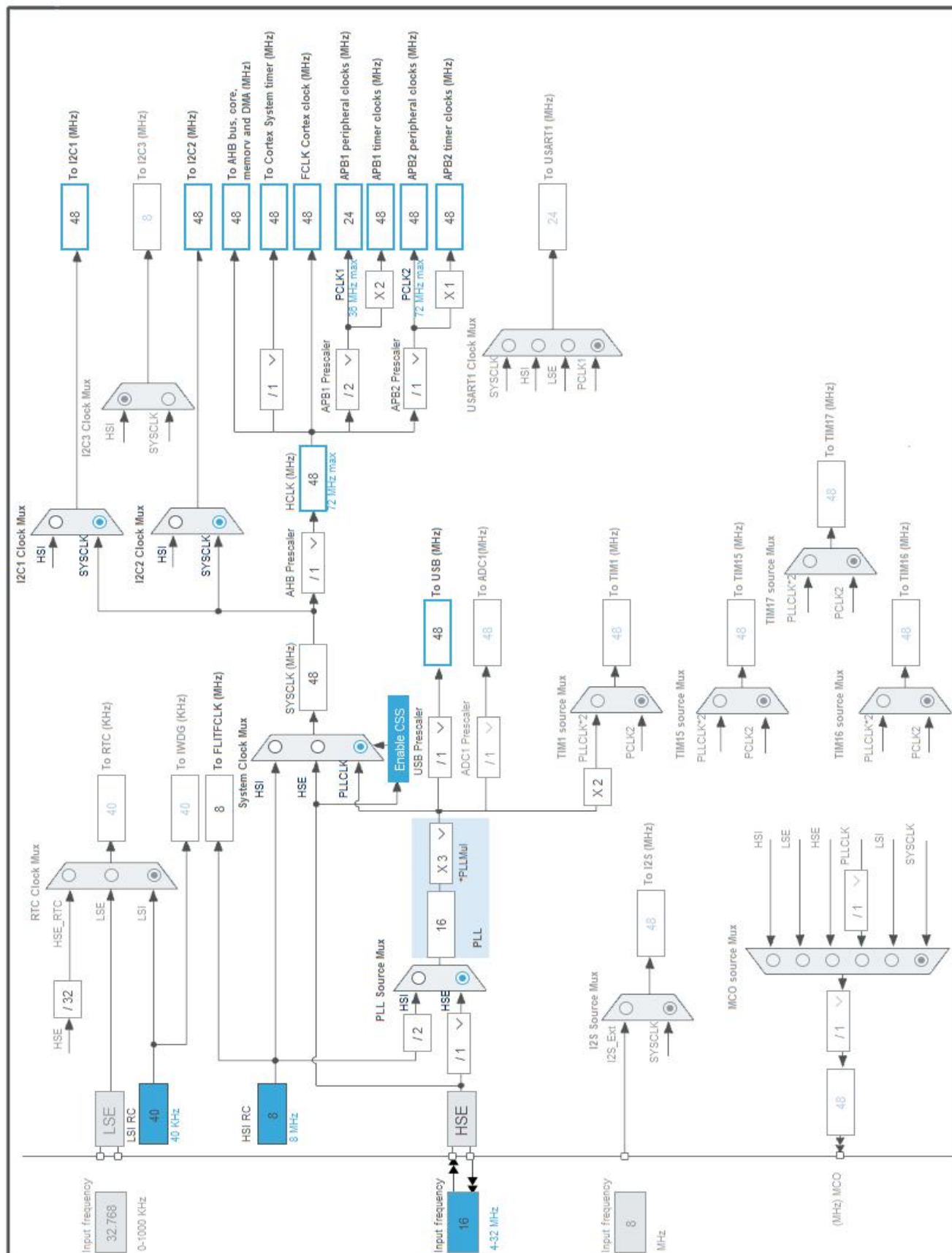
3. Pins Configuration

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
5	PF0-OSC_IN	I/O	RCC_OSC_IN	
6	PF1-OSC_OUT	I/O	RCC_OSC_OUT	
7	NRST	Reset		
8	VSSA/VREF-	Power		
9	VDDA/VREF+	Power		
23	VSS	Power		
24	VDD	Power		
28	PB15 *	I/O	GPIO_Output	LED_PIN
30	PA9	I/O	I2C2_SCL	
31	PA10	I/O	I2C2_SDA	
32	PA11	I/O	USB_DM	
33	PA12	I/O	USB_DP	
34	PA13 **	I/O	SYS_JTMS-SWDIO	
35	VSS	Power		
36	VDD	Power		
37	PA14 **	I/O	SYS_JTCK-SWCLK	
39	PB3 **	I/O	SYS_JTDO-TRACESWO	
42	PB6	I/O	I2C1_SCL	
43	PB7	I/O	I2C1_SDA	
44	BOOT0	Boot		
45	PB8	I/O	CAN_RX	
46	PB9	I/O	CAN_TX	
47	VSS	Power		
48	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. Software Project

5.1. Project Settings

Name	Value
Project Name	stm-cerbrus
Project Folder	C:\Users\v-singhmanp\git\stm-cerbrus
Toolchain / IDE	EWARM V8.32
Firmware Package Name and Version	STM32Cube FW_F3 V1.11.3
Application Structure	Advanced
Generate Under Root	No
Do not generate the main()	No
Minimum Heap Size	0x200
Minimum Stack Size	0x400

5.2. Code Generation Settings

Name	Value
STM32Cube MCU packages and embedded software	Copy all used libraries into the project folder
Generate peripheral initialization as a pair of '.c/.h' files	No
Backup previously generated files when re-generating	No
Keep User Code when re-generating	Yes
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No
Enable Full Assert	No

5.3. Advanced Settings - Generated Function Calls

Rank	Function Name	Peripheral Instance Name
1	SystemClock_Config	RCC
2	MX_GPIO_Init	GPIO
3	MX_CAN_Init	CAN
4	MX_I2C1_Init	I2C1
5	MX_I2C2_Init	I2C2
6	MX_USB_DEVICE_Init	USB_DEVICE

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32F3
Line	STM32F302
MCU	STM32F302C8Tx
Datasheet	DS9896_Rev7

6.2. Parameter Selection

Temperature	25
Vdd	3.6

6.3. Battery Selection

Battery	Li-SOCL2(A3400)
Capacity	3400.0 mAh
Self Discharge	0.08 %/month
Nominal Voltage	3.6 V
Max Cont Current	100.0 mA
Max Pulse Current	200.0 mA
Cells in series	1
Cells in parallel	1

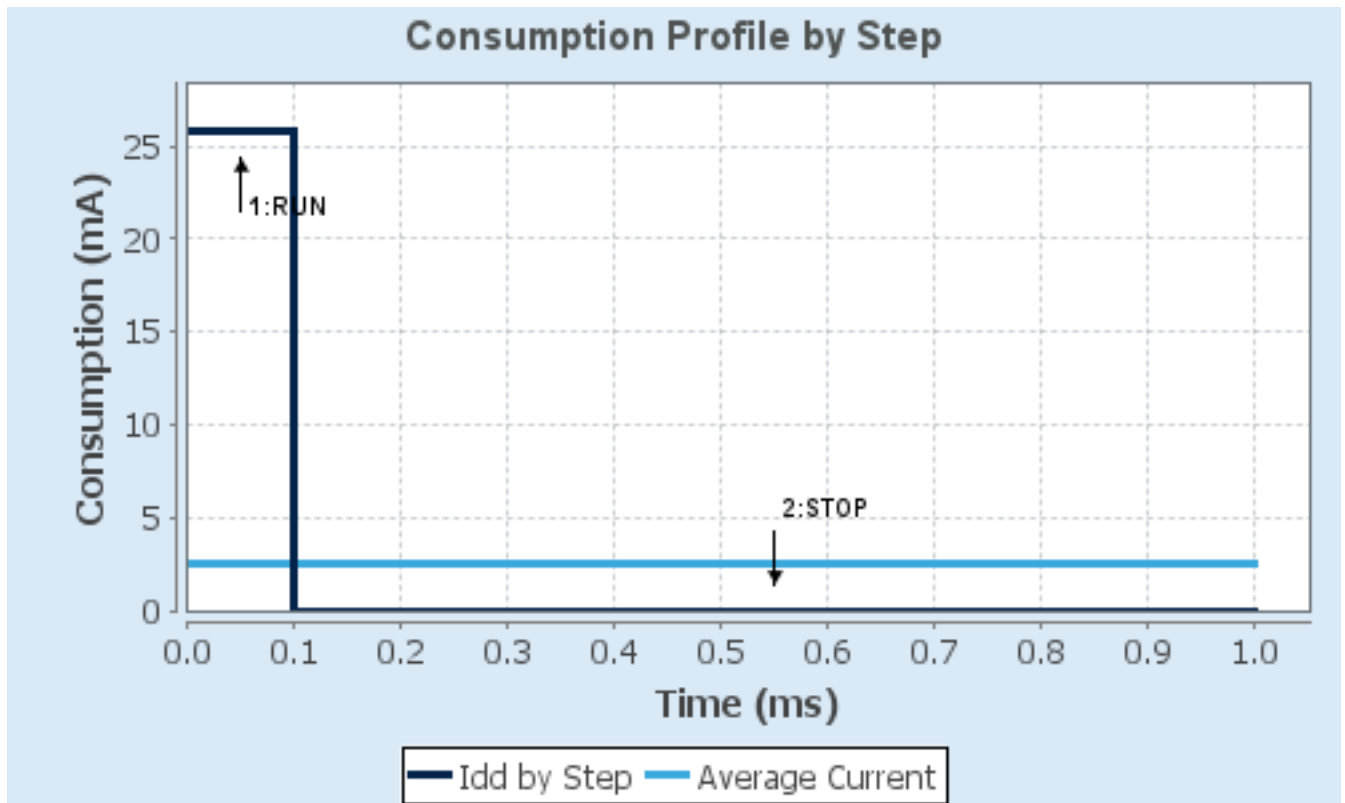
6.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP
Vdd	3.6	3.6
Voltage Source	Battery	Battery
Range	No Scale	No Scale
Fetch Type	FLASH	n/a
CPU Frequency	72 MHz	0 Hz
Clock Configuration	HSEBYP PLL	Regulator LP
Clock Source Frequency	8 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	25.75 mA	8.32 μ A
Duration	0.1 ms	0.9 ms
DMIPS	63.0	0.0
Ta Max	99.9	105
Category	In DS Table	In DS Table

6.5. Results

Sequence Time	1 ms	Average Current	2.58 mA
Battery Life	1 month, 24 days, 8 hours	Average DMIPS	63.0 DMIPS

6.6. Chart



7. Peripherals and Middlewares Configuration

7.1. CAN

mode: Activated

7.1.1. Parameter Settings:

Bit Timings Parameters:

Prescaler (for Time Quantum)	16
Time Quantum	666.6666666666666 *
Time Quanta in Bit Segment 1	1 Time
Time Quanta in Bit Segment 2	1 Time
Time for one Bit	2000 *
Baud Rate	500000 *
ReSynchronization Jump Width	1 Time

Basic Parameters:

Time Triggered Communication Mode	Disable
Automatic Bus-Off Management	Disable
Automatic Wake-Up Mode	Disable
Automatic Retransmission	Disable
Receive Fifo Locked Mode	Disable
Transmit Fifo Priority	Disable

Advanced Parameters:

Operating Mode	Normal
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7.2. I2C1

I2C: I2C

7.2.1. Parameter Settings:

Timing configuration:

I2C Speed Mode	Standard Mode
I2C Speed Frequency (KHz)	100
Rise Time (ns)	0
Fall Time (ns)	0
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	0x20303E5D *

Slave Features:

Clock No Stretch Mode	Disabled
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General Call Address Detection	Disabled
Primary Address Length selection	7-bit
Dual Address Acknowledged	Disabled
Primary slave address	0

7.3. I2C2

I2C: I2C

7.3.1. Parameter Settings:

Timing configuration:

I2C Speed Mode	Standard Mode
I2C Speed Frequency (KHz)	100
Rise Time (ns)	0
Fall Time (ns)	0
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	0x20303E5D *

Slave Features:

Clock No Stretch Mode	Disabled
General Call Address Detection	Disabled
Primary Address Length selection	7-bit
Dual Address Acknowledged	Disabled
Primary slave address	0

7.4. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

7.4.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Prefetch Buffer	Enabled
Flash Latency(WS)	1 WS (2 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
HSE Startup Timeout Value (ms)	100
LSE Startup Timeout Value (ms)	5000

7.5. SYS

Timebase Source: SysTick

7.6. USB

mode: Device (FS)

7.6.1. Parameter Settings:

Basic Parameters:

Speed	Full Speed 12MBit/s
Physical interface	Internal Phy

Power Parameters:

Low Power	Disabled
Battery Charging	Disabled

7.7. USB_DEVICE

Class For FS IP: Download Firmware Update Class (DFU)

7.7.1. Parameter Settings:

Basic Parameters:

USBD_MAX_NUM_INTERFACES (Maximum number of supported interfaces)	1
USBD_MAX_NUM_CONFIGURATION (Maximum number of supported configuration)	1
USBD_MAX_STR_DESC_SIZ (Maximum size for the string descriptors)	512
USBD_SUPPORT_USER_STRING_DESC (Enable user string descriptor)	Enabled
USBD_SELF_POWERED (Enabled self power)	Enabled
USBD_DEBUG_LEVEL (USBD Debug Level)	0: No debug message

Class Parameters:

USBD_DFU_MAX_ITF_NUM (DFU maximum interface numbers)	1
USBD_DFU_XFER_SIZE	1024
USBD_DFU_APP_DEFAULT_ADD (Base Address 0x)	0x08000000 *
USBD_DFU_MEDIA Interface	@Internal Flash /0x08000000/03*016Ka,01*016Kg,01*064Kg,07*128Kg,04*016Kg,01*064Kg,07*1

7.7.2. Device Descriptor:

Device Descriptor:

VID (Vendor Identifier)	1155
LANGID_STRING (Language Identifier)	English(United States)
MANUFACTURER_STRING (Manufacturer Identifier)	STMicroelectronics
Device Descriptor FS:	
PID (Product Identifier)	57105
PRODUCT_STRING (Product Identifier)	STM32 DownLoad Firmware Update
CONFIGURATION_STRING (Configuration Identifier)	DFU Config
INTERFACE_STRING (Interface Identifier)	DFU Interface

* User modified value

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
CAN	PB8	CAN_RX	Alternate Function Push Pull	No pull-up and no pull-down	High *	
	PB9	CAN_TX	Alternate Function Push Pull	No pull-up and no pull-down	High *	
I2C1	PB6	I2C1_SCL	Alternate Function Open Drain	No pull-up and no pull-down	High *	
	PB7	I2C1_SDA	Alternate Function Open Drain	No pull-up and no pull-down	High *	
I2C2	PA9	I2C2_SCL	Alternate Function Open Drain	No pull-up and no pull-down	High *	
	PA10	I2C2_SDA	Alternate Function Open Drain	No pull-up and no pull-down	High *	
RCC	PF0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PF1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
USB	PA11	USB_DM	n/a	n/a	n/a	
	PA12	USB_DP	n/a	n/a	n/a	
Single Mapped Signals	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
	PB3	SYS_JTDO-TRACESWO	n/a	n/a	n/a	
GPIO	PB15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED_PIN

8.2. DMA configuration

nothing configured in DMA service

8.3. NVIC configuration

8.3.1. NVIC

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	15	0
USB low priority remap interrupt	true	0	0
PVD interrupt through EXTI line16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
CAN TX and USB high priority interrupts	unused		
CAN RX0 and USB low priority interrupts	unused		
CAN RX1 interrupt	unused		
CAN SCE interrupt	unused		
I2C1 event global interrupt / I2C1 wake-up interrupt through EXTI line 23	unused		
I2C1 error interrupt	unused		
I2C2 event global interrupt / I2C2 wake-up interrupt through EXTI line 24	unused		
I2C2 error interrupt	unused		
USB high priority remap interrupt	unused		
Floating point unit interrupt	unused		

8.3.2. NVIC Code generation

Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
Non maskable interrupt	false	true	false
Hard fault interrupt	false	true	false
Memory management fault	false	true	false
Pre-fetch fault, memory access fault	false	true	false
Undefined instruction or illegal state	false	true	false
System service call via SWI instruction	false	true	false
Debug monitor	false	true	false
Pendable request for system service	false	true	false

Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
System tick timer	false	true	true
USB low priority remap interrupt	false	true	true


* User modified value









9. System Views

9.1. Category view

9.1.1. Current

Middleware

USB_DEVICE 

System Core	Analog	Timers	Connectivity	Multimedia	Computing
DMA			CAN 		
GPIO 			I2C1 		
IIVIC 			I2C2 		
RCC 			USB 		
SYS 					

10. Docs & Resources

Type	Link
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_embedded_software_solutions.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32_eval-tools_portfolio.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32_stm8_functional-safety-packages.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_software_development_tools.pdf
Training Material	https://www.st.com/resource/en/sales_guide/sg_sc2155.pdf
Brochures	https://www.st.com/resource/en/brochure/brstm32f3.pdf
Flyers	https://www.st.com/resource/en/flyer/flnucleolrwan.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32nucleo.pdf
Flyers	https://www.st.com/resource/en/flyer/flstmcsuite.pdf
Flyers	https://www.st.com/resource/en/flyer/flpowerstbd.pdf
Flyers	https://www.st.com/resource/en/flyer/fldpstpf11120.pdf
Product Certifications	https://www.st.com/resource/en/certification_document/stm32_authentication_can.pdf
Application Notes	https://www.st.com/resource/en/application_note/an1181-electrostatic-discharge-sensitivity-measurement-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an1709-emc-design-guide-for-stm8-stm32-and-legacy-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2548-using-the-stm32f0f1f3gxlx-series-dma-controller-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2606-stm32-microcontroller-system-memory-boot-mode-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2639-soldering-recommendations-and-package-information-for-leadfree-ecopack-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2834-how-to-get-the-

best-adc-accuracy-in-stm32-microcontrollers-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an3126-audio-and-waveform-generation-using-the-dac-in-stm32-products-stmicroelectronics.pdf

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Application Notes https://www.st.com/resource/en/application_note/an3156-usb-dfu-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an3236-increase-the-number-of-touchkeys-for-touch-sensing-applications-on-mcus-stmicroelectronics.pdf

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Application Notes https://www.st.com/resource/en/application_note/an4013-stm32-crossseries-timer-overview-stmicroelectronics.pdf

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Application Notes https://www.st.com/resource/en/application_note/an4099-implementation-of-transmitters-and-receivers-for-infrared-remote-control-protocols-with-mcus-of-the-stm32f0-and-stm32f3-series-stmicroelectronics.pdf

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& Software stmicroelectronics.pdf

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Application Notes [https://www.st.com/resource/en/application_note/an4435-guidelines-for-](https://www.st.com/resource/en/application_note/an4435-guidelines-for-obtaining-ulcsaiec-607301603351-class-b-certification-in-any-stm32-application-stmicroelectronics.pdf)
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for related Tools smbuspmibus-embedded-software-expansion-for-stm32cube-

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& Software	stmicroelectronics.pdf
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Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5394-getting-started-with-projects-based-on-the-stm32l5-series-in-stm32cubeide-stmicroelectronics.pdf
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