
STM32
CubeMX

1. Description

1.1. Project

Project Name	stm32g473
Board Name	custom
Generated with:	STM32CubeMX 6.2.1
Date	12/07/2021

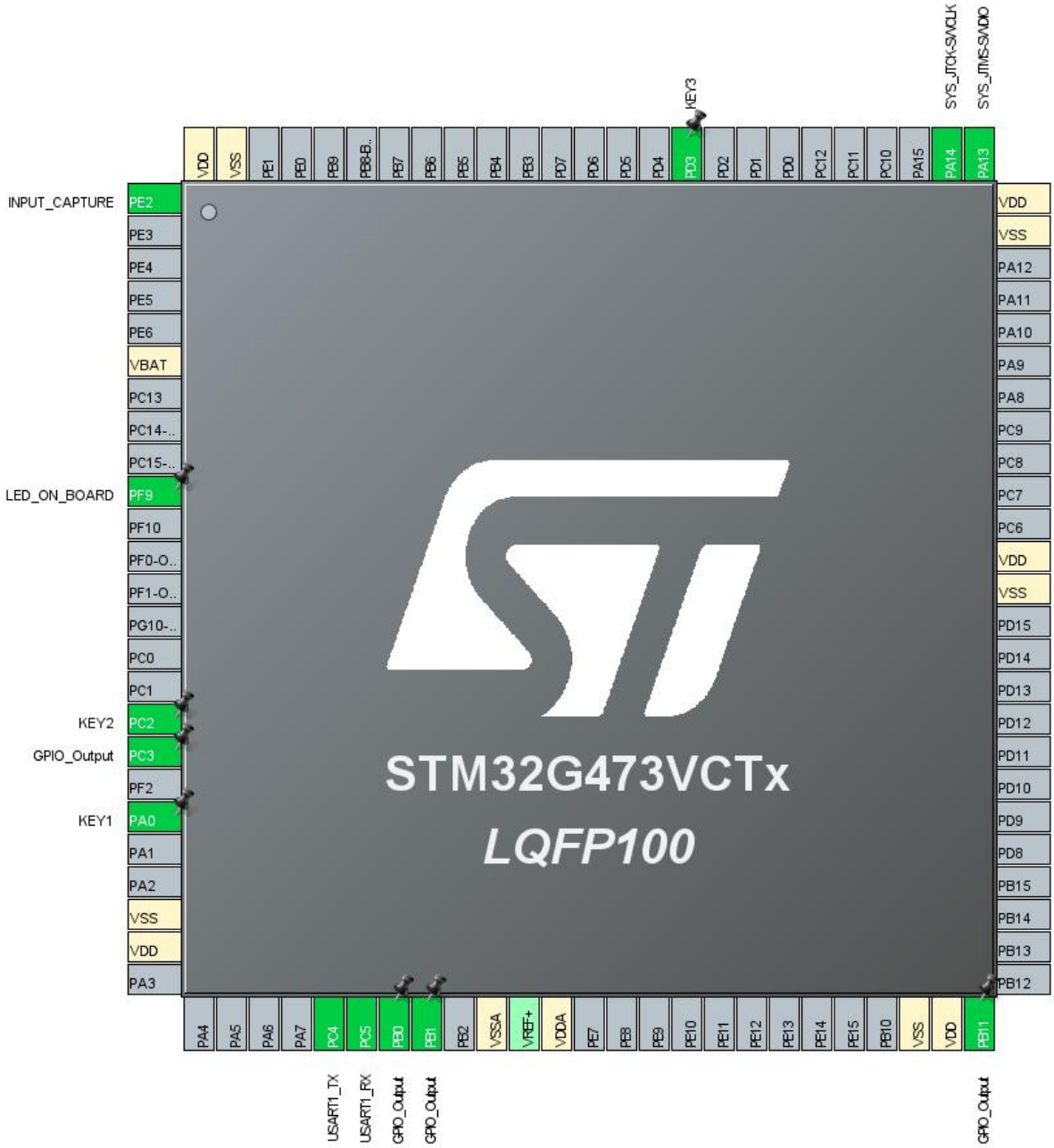
1.2. MCU

MCU Series	STM32G4
MCU Line	STM32G4x3
MCU name	STM32G473VCTx
MCU Package	LQFP100
MCU Pin number	100

1.3. Core(s) information

Core(s)	ARM Cortex-M4

2. Pinout Configuration

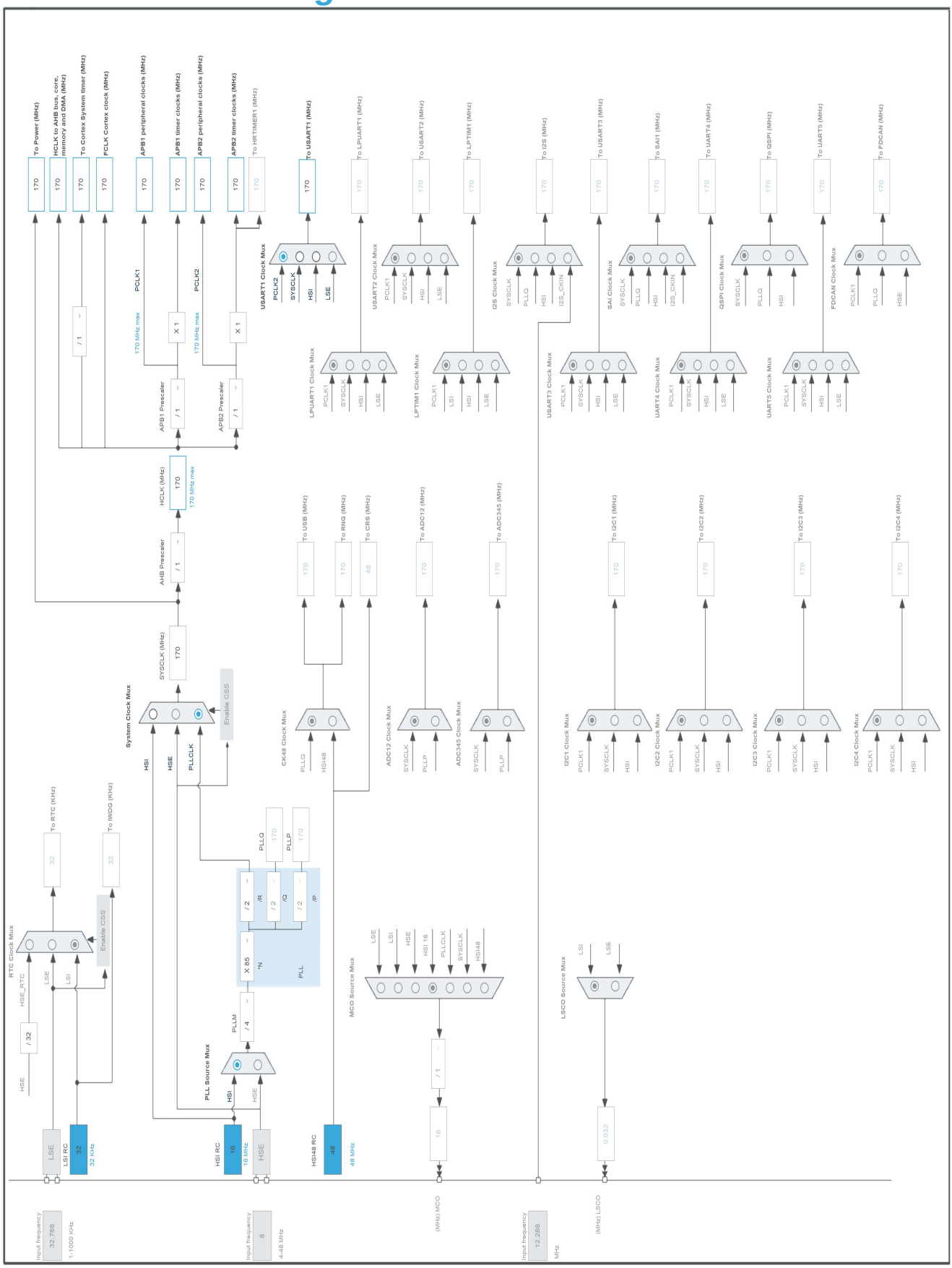


3. Pins Configuration

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	PE2	I/O	TIM3_CH1	INPUT_CAPTURE
6	VBAT	Power		
10	PF9 *	I/O	GPIO_Output	LED_ON_BOARD
17	PC2 *	I/O	GPIO_Input	KEY2
18	PC3 *	I/O	GPIO_Output	
20	PA0 *	I/O	GPIO_Input	KEY1
23	VSS	Power		
24	VDD	Power		
30	PC4	I/O	USART1_TX	
31	PC5	I/O	USART1_RX	
32	PB0 *	I/O	GPIO_Output	
33	PB1 *	I/O	GPIO_Output	
35	VSSA	Power		
37	VDDA	Power		
48	VSS	Power		
49	VDD	Power		
50	PB11 *	I/O	GPIO_Output	
63	VSS	Power		
64	VDD	Power		
74	VSS	Power		
75	VDD	Power		
76	PA13	I/O	SYS_JTMS-SWDIO	
77	PA14	I/O	SYS_JTCK-SWCLK	
85	PD3 *	I/O	GPIO_Input	KEY3
99	VSS	Power		
100	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. Software Project

5.1. Project Settings

Name	Value
Project Name	stm32g473
Project Folder	D:\GIT\Robot\stm32g473_demo
Toolchain / IDE	MDK-ARM V5.27
Firmware Package Name and Version	STM32Cube FW_G4 V1.4.0
Application Structure	Advanced
Generate Under Root	No
Do not generate the main()	No
Minimum Heap Size	0x2000
Minimum Stack Size	0x4000

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	Yes
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	MX_GPIO_Init	GPIO
2	SystemClock_Config	RCC
3	MX_USART1_UART_Init	USART1
4	MX_TIM17_Init	TIM17
5	MX_TIM3_Init	TIM3

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32G4
Line	STM32G4x3
MCU	STM32G473VCTx
Datasheet	DS12712_Rev0

6.2. Parameter Selection

Temperature	25
Vdd	3.0

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

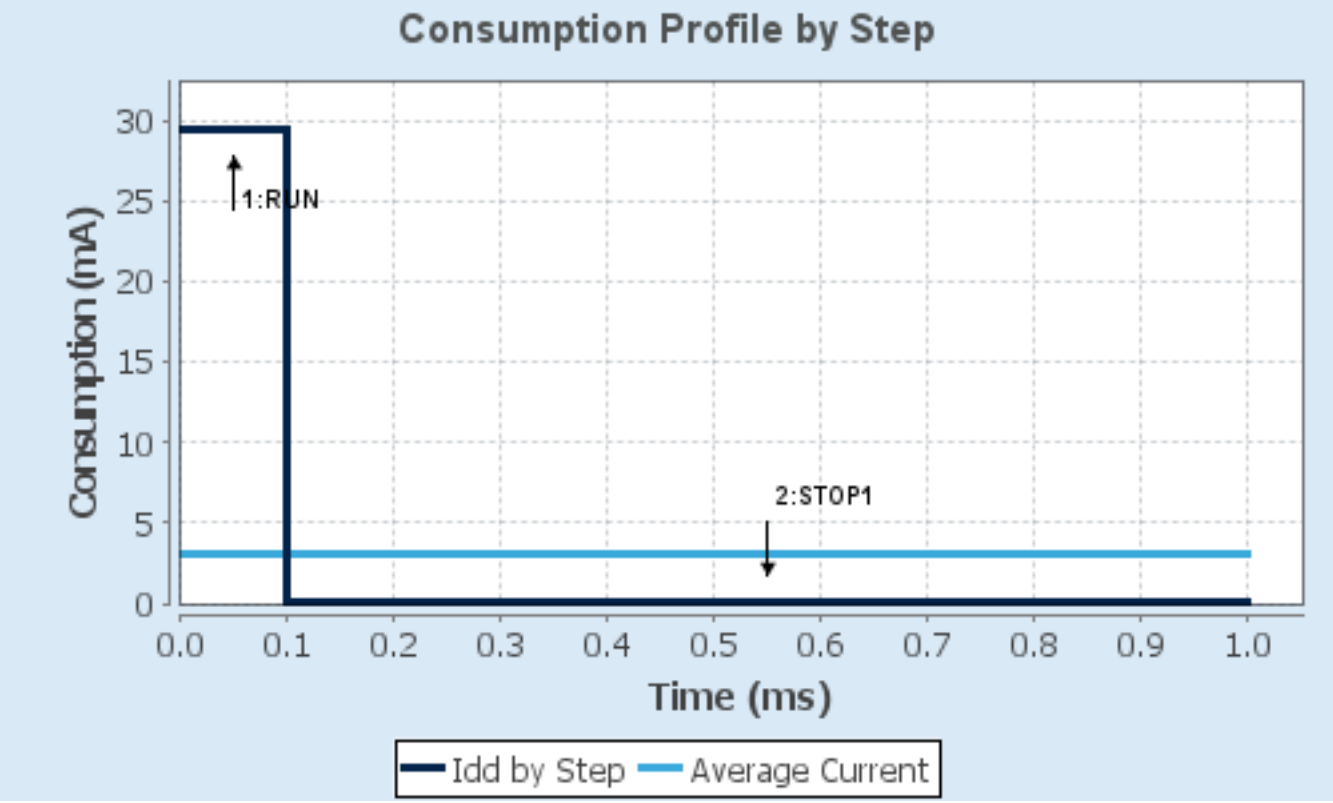
6.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP1
Vdd	3.0	3.0
Voltage Source	Battery	Battery
Range	Range1-Boost	NoRange
Fetch Type	FLASH/DualBank/ART	NA
CPU Frequency	170 MHz	0 Hz
Clock Configuration	HSE BYP PLL	ALL CLOCKS OFF
Clock Source Frequency	4 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	29.5 mA	80.5 µA
Duration	0.1 ms	0.9 ms
DMIPS	213.0	0.0
Ta Max	123.27	129.98
Category	In DS Table	In DS Table

6.5. Results

Sequence Time	1 ms	Average Current	3.02 mA
Battery Life	1 month, 16 days, 9 hours	Average DMIPS	212.5 DMIPS

6.6. Chart


Consumption Profile by Step
Consumption (mA)
30
25
20
15
10
5
0
1:RUN
2:STOP1
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Time (ms)
Idd by Step
Average Current

7. Peripherals and Middlewares Configuration

7.1. RCC

7.1.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Disabled
Data Cache	Enabled
Flash Latency(WS)	4 WS (5 CPU cycle)

RCC Parameters:

HSI Calibration Value	64
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1 boost

Peripherals Clock Configuration:

Generate the peripherals clock configuration	TRUE

7.2. SYS

Debug: Serial Wire

Timebase Source: SysTick

mode: save power of non-active UCPD - deactive Dead Battery pull-up

7.3. TIM3

Channel1: Input Capture direct mode

7.3.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**1700-1 ***
Counter Mode	Up
Dithering	Disable
Counter Period (AutoReload Register - 16 bits value)	65535
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)

Trigger Event Selection TRGO	Reset (UG bit from TIMx_EGR)

Input Capture Channel 1:

Polarity Selection	Rising Edge
IC Selection	Direct
Prescaler Division Ratio	No division
Input Filter (4 bits value)	0

7.4. TIM17

mode: Activated

7.4.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**17-1 ***
Counter Mode	Up
Dithering	Disable
Counter Period (AutoReload Register - 16 bits value)	**10-1 ***
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0
auto-reload preload	Disable

7.5. USART1

Mode: Multiprocessor Communication

7.5.1. Parameter Settings:

Basic Parameters:

Baud Rate	**460800 ***
Word Length	8 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples
Single Sample	Disable
Wake-Up Method	Idle Line
ClockPrescaler	1
Fifo Mode	Disable
Txfifo Threshold	1 eighth full configuration

Rxfifo Threshold	1 eighth full configuration

Advanced Features:

Auto Baudrate	Disable
TX Pin Active Level Inversion	Disable
RX Pin Active Level Inversion	Disable
Data Inversion	Disable
TX and RX Pins Swapping	Disable
Overrun	Enable
DMA on RX Error	Enable
MSB First	Disable

*** User modified value**

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
TIM3	PE2	TIM3_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	INPUT_CAPTURE
USART1	PC4	USART1_TX	Alternate Function Open Drain	No pull-up and no pull-down	**Very High ***	
	PC5	USART1_RX	Alternate Function Open Drain	No pull-up and no pull-down	**Very High ***	
GPIO	PF9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED_ON_BOARD
	PC2	GPIO_Input	Input mode	**Pull-up ***	n/a	KEY2
	PC3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	**Very High ***	
	PA0	GPIO_Input	Input mode	**Pull-up ***	**n/a**	KEY1
	PB0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	**Very High ***	
	PB1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	**Very High ***	
	PB11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	**Very High ***	
	PD3	GPIO_Input	Input mode	**Pull-up ***	**n/a**	KEY3

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
Prefetch 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
TIM1 trigger and commutation interrupts and TIM17 global interrupt	true	0	0
TIM3 global interrupt	true	0	0
USART1 global interrupt / USART1 wake-up interrupt through EXTI line 25	true	0	0
PVD/PVM1/PVM2/PVM3/PVM4 interrupts through EXTI lines 16/38/39/40/41	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
FPU global 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
Prefetch 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
System tick timer	false	true	true
TIM1 trigger and commutation interrupts and TIM17 global interrupt	false	true	true
TIM3 global interrupt	false	true	true
USART1 global interrupt / USART1 wake-up interrupt through EXTI line 25	false	true	true

*** User modified value**

9. System Views

9.1. Category view

9.1.1. Current

10. Docs & Resources

Type	Link
Datasheet	http://www.st.com/resource/en/datasheet/DM00528822.pdf
Reference manual	http://www.st.com/resource/en/reference_manual/DM00355726.pdf
Programming manual	http://www.st.com/resource/en/programming_manual/DM00046982.pdf
Errata sheet	http://www.st.com/resource/en/errata_sheet/DM00500968.pdf
Application note	http://www.st.com/resource/en/application_note/CD00160362.pdf
Application note	http://www.st.com/resource/en/application_note/CD00167594.pdf
Application note	http://www.st.com/resource/en/application_note/CD00259245.pdf
Application note	http://www.st.com/resource/en/application_note/CD00264342.pdf
Application note	http://www.st.com/resource/en/application_note/CD00264379.pdf
Application note	http://www.st.com/resource/en/application_note/DM00042534.pdf
Application note	http://www.st.com/resource/en/application_note/DM00072315.pdf
Application note	http://www.st.com/resource/en/application_note/DM00074240.pdf
Application note	http://www.st.com/resource/en/application_note/DM00081379.pdf
Application note	http://www.st.com/resource/en/application_note/DM00083249.pdf
Application note	http://www.st.com/resource/en/application_note/DM00129215.pdf
Application note	http://www.st.com/resource/en/application_note/DM00151811.pdf
Application note	http://www.st.com/resource/en/application_note/DM00257177.pdf
Application note	http://www.st.com/resource/en/application_note/DM00272912.pdf
Application note	http://www.st.com/resource/en/application_note/DM00226326.pdf
Application note	http://www.st.com/resource/en/application_note/DM00355687.pdf
Application note	http://www.st.com/resource/en/application_note/DM00311483.pdf
Application note	http://www.st.com/resource/en/application_note/DM00380469.pdf
Application note	http://www.st.com/resource/en/application_note/DM00395696.pdf
Application note	http://www.st.com/resource/en/application_note/DM00493651.pdf
Application note	http://www.st.com/resource/en/application_note/DM00535045.pdf

Application note	http://www.st.com/resource/en/application_note/DM00536349.pdf
Application note	http://www.st.com/resource/en/application_note/DM00605707.pdf
Application note	http://www.st.com/resource/en/application_note/DM00607955.pdf
Application note	http://www.st.com/resource/en/application_note/DM00610467.pdf
Application note	http://www.st.com/resource/en/application_note/DM00625282.pdf
Application note	http://www.st.com/resource/en/application_note/DM00442716.pdf
Application note	http://www.st.com/resource/en/application_note/DM00625700.pdf
Application note	http://www.st.com/resource/en/application_note/DM00725181.pdf