

1. Description

1.1. Project

Project Name	switch_pwm
Board Name	P-NUCLEO-WB55-NUCLEO
Generated with:	STM32CubeMX 6.5.0
Date	08/04/2022

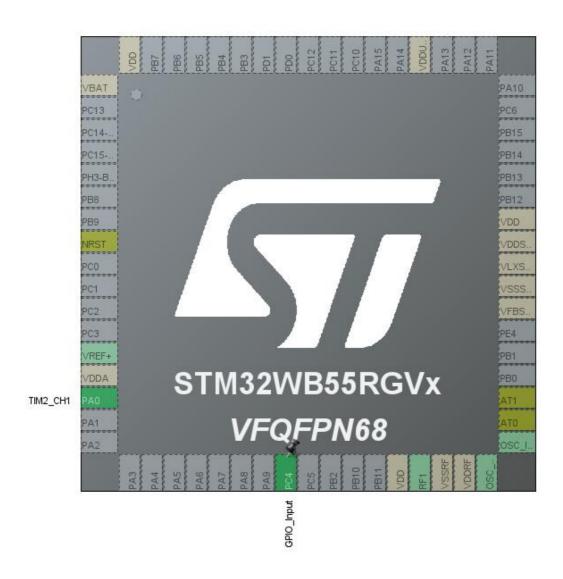
1.2. MCU

MCU Series	STM32WB
MCU Line	STM32WBx5
MCU name	STM32WB55RGVx
MCU Package	VFQFPN68
MCU Pin number	68

1.3. Core(s) information

Core(s)	ARM Cortex-M4

2. Pinout Configuration

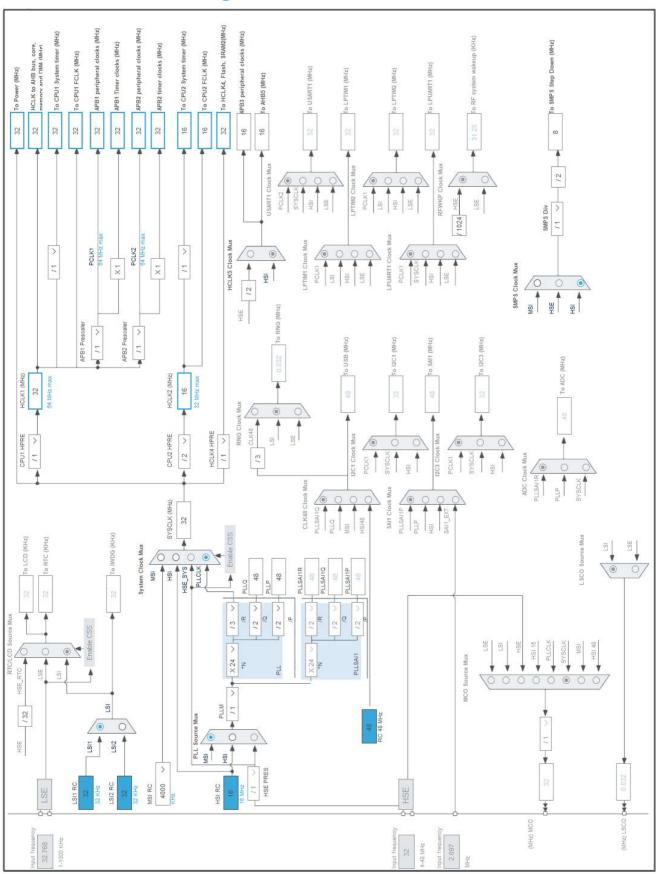


3. Pins Configuration

Pin Number VFQFPN68	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
8	NRST	Reset		
14	VDDA	Power		
15	PA0	I/O	TIM2_CH1	
25	PC4 *	I/O	GPIO_Input	
30	VDD	Power		
32	VSSRF	Power		
33	VDDRF	Power		
36	AT0	NC		
37	AT1	NC		
41	VFBSMPS	Power		
42	VSSSMPS	Power		
43	VLXSMPS	Power		
44	VDDSMPS	Power		
45	VDD	Power		
55	VDDUSB	Power		
68	VDD	Power		

^{*} The pin is affected with an I/O function

4. Clock Tree Configuration



Page 4

5. Software Project

5.1. Project Settings

Name	Value	
Project Name	switch_pwm	
Project Folder	C:\ST\STM32\switch_pwm	
Toolchain / IDE	STM32CubeIDE	
Firmware Package Name and Version	STM32Cube FW_WB V1.13.3	
Application Structure	Advanced	
Generate Under Root	Yes	
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 only the necessary library files
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	No
consumption)	
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_TIM2_Init	TIM2	

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32WB
Line	STM32WBx5
MCU	STM32WB55RGVx
Datasheet	DS11929_Rev3

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

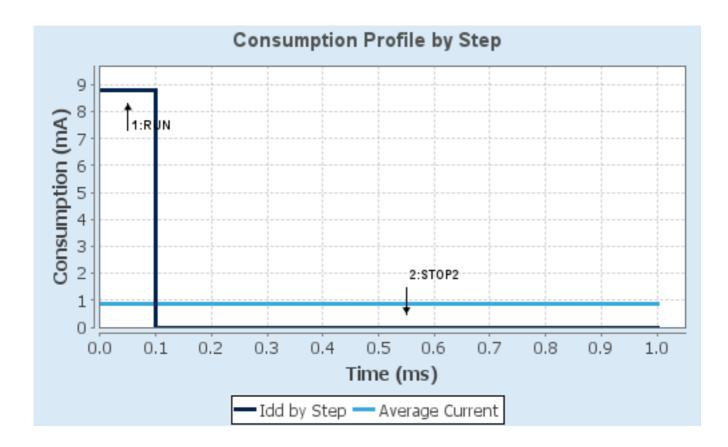
6.4. Sequence

Step	Step1	Step2
<u>Mode</u>	RUN	STOP2
Vdd	3.0	3.0
Voltage Source	Battery	Battery
Range	Range1-High	NoRange
Fetch Type	SRAM1/Flash-PowerDown	FLASH/ART/CACHE
CPU Frequency	64 MHz	0 Hz
Clock Configuration	HSI PLL Regulator_ON	ALL CLOCKS OFF
		Regulator ON
Clock Source Frequency	16 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	8.8 mA	1.85 µA
Duration	0.1 ms	0.9 ms
DMIPS	80.0	0.0
Ta Max	103.76	105
Category	In DS Table	In DS Table

6.5. Results

Sequence Time	1 ms	Average Current	881.66 µA
Battery Life	5 months, 7 days,	Average DMIPS	8.0 DMIPS
_	21 hours	_	

6.6. Chart



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) 1 WS (2 CPU cycle)

RCC Parameters:

HSI Calibration Value 16

MSI Calibration Value 0

MSI Auto Calibration Disabled

MSI State Enabled

HSI State Enabled
HSE Startup Timout Value (ms) 100
LSE Startup Timout Value (ms) 5000

Power Parameters:

Power Regulator Voltage Scale Power Regulator Voltage Scale 1

Peripherals Clock Configuration:

Generate the peripherals clock configuration TRUE

7.2. SYS

Timebase Source: SysTick

7.3. TIM2

Channel1: PWM Generation CH1

7.3.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)

Counter Mode

Counter Period (AutoReload Register - 32 bits value)

Internal Clock Division (CKD)

auto-reload preload

31 *

Up

No Division

Enable *

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)

Clear Input:

Clear Input Source Disable

PWM Generation Channel 1:

Mode PWM mode 1

Pulse (32 bits value)

Output compare preload

Fast Mode

CH Polarity

By 999 *

Enable

Disable

High

^{*} User modified value

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull	Max	User Label
				down	Speed	
TIM2	PA0	TIM2_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
GPIO	PC4	GPIO_Input	Input mode	Pull-up *	n/a	

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		
PVD/PVM0/PVM2 interrupts through EXTI lines 16/31/33	unused				
Flash global interrupt	unused				
RCC global interrupt	unused				
CPU2 SEV interrupt through EXTI line 40 and PWR CPU2 HOLD wake-up interrupt	unused				
TIM2 global interrupt	unused				
PWR switching on the fly, end of BLE activity, end of 802.15.4 activity, end of critical radio phase interrupt		unused			
FPU global interrupt		unused			

8.3.2. NVIC Code generation

Enabled interrupt Table	Select for init	Generate IRQ	Call HAL handler
	sequence ordering	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

* User modified value

9. System Views

9.1. Category view

9.1.1. Current

Middleware							
System Core	Analog	Timers	Connectivity	Multimedia	Security	Computing	Utilities
DMA		TIM2 ♥					
GPIO ⊘							
NVIC 🔮							
RCC ⊘							
SYS 🤡							

10. Docs & Resources

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