

## 1. Description

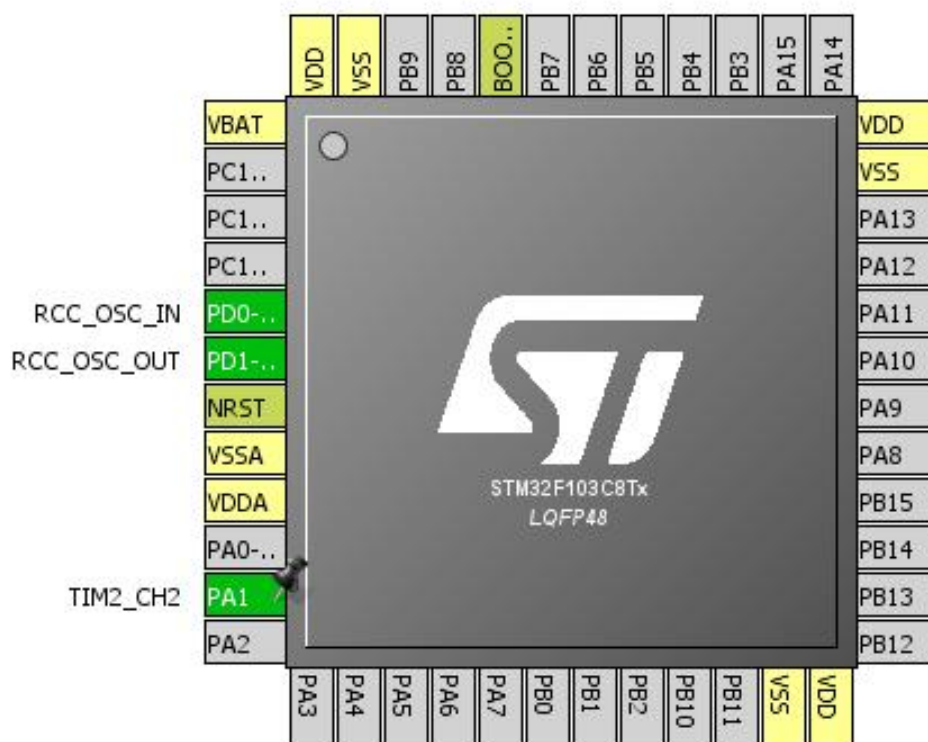
### 1.1. Project

|                 |                    |
|-----------------|--------------------|
| Project Name    | PWM                |
| Board Name      | PWM                |
| Generated with: | STM32CubeMX 4.19.0 |
| Date            | 03/22/2017         |

### 1.2. MCU

|                |               |
|----------------|---------------|
| MCU Series     | STM32F1       |
| MCU Line       | STM32F103     |
| MCU name       | STM32F103C8Tx |
| MCU Package    | LQFP48        |
| MCU Pin number | 48            |

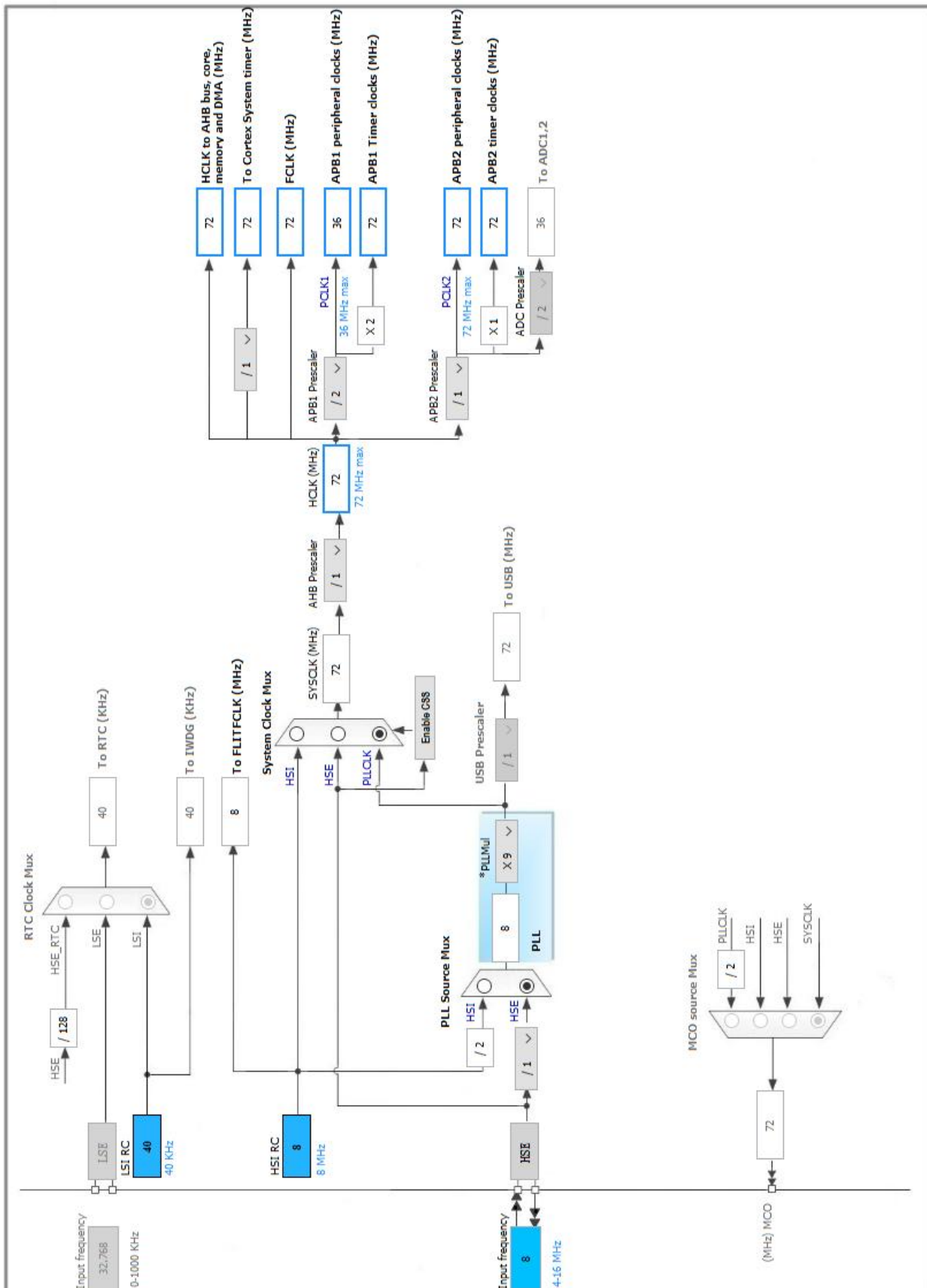
## 2. Pinout Configuration



### 3. Pins Configuration

| Pin Number<br>LQFP48 | Pin Name<br>(function after<br>reset) | Pin Type | Alternate<br>Function(s) | Label |
|----------------------|---------------------------------------|----------|--------------------------|-------|
| 1                    | VBAT                                  | Power    |                          |       |
| 5                    | PD0-OSC_IN                            | I/O      | RCC_OSC_IN               |       |
| 6                    | PD1-OSC_OUT                           | I/O      | RCC_OSC_OUT              |       |
| 7                    | NRST                                  | Reset    |                          |       |
| 8                    | VSSA                                  | Power    |                          |       |
| 9                    | VDDA                                  | Power    |                          |       |
| 11                   | PA1                                   | I/O      | TIM2_CH2                 |       |
| 23                   | VSS                                   | Power    |                          |       |
| 24                   | VDD                                   | Power    |                          |       |
| 35                   | VSS                                   | Power    |                          |       |
| 36                   | VDD                                   | Power    |                          |       |
| 44                   | BOOT0                                 | Boot     |                          |       |
| 47                   | VSS                                   | Power    |                          |       |
| 48                   | VDD                                   | Power    |                          |       |

## 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                |
| Prefetch Buffer   | Enabled            |
| Flash Latency(WS) | 2 WS (3 CPU cycle) |

###### RCC Parameters:

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

### 5.2. SYS

Debug: No Debug

Timebase Source: SysTick

### 5.3. TIM2

#### Channel2: PWM Generation CH2

##### 5.3.1. Parameter Settings:

###### Counter Settings:

|   |                 |
|---|-----------------|
| Prescaler (PSC - 16 bits value)                       | <b>80-1 *</b>   |
| Counter Mode  | Up              |
| Counter Period (AutoReload Register - 16 bits value ) | <b>1000-1 *</b> |
| Internal Clock Division (CKD)                         | No Division     |

###### Trigger Output (TRGO) Parameters:

|                         |  |
|-------------------------|--|
| Master/Slave Mode       | Disable (no sync between this TIM (Master) and its Slaves) |
| Trigger Event Selection | Reset (UG bit from TIMx_EGR)                               |

###### PWM Generation Channel 2:

|      |            |
|------|------------|
| Mode | PWM mode 1 |
|------|------------|

|                       |         |
|-----------------------|---------|
| Pulse (16 bits value) | 0       |
| Fast Mode             | Disable |
| CH Polarity           | High    |

\* **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  | PD0-OSC_IN  | RCC_OSC_IN  | n/a                          | n/a                    | n/a       |            |
|      | PD1-OSC_OUT | RCC_OSC_OUT | n/a                          | n/a                    | n/a       |            |
| TIM2 | PA1         | TIM2_CH2    | Alternate Function Push Pull | n/a                    | Low       |            |

### 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           |
| 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           |
| TIM2 global interrupt                   | true   | 0                    | 0           |
| PVD interrupt through EXTI line 16      | unused |                      |             |
| Flash global interrupt                  | unused |                      |             |
| RCC global interrupt                    | unused |                      |             |

\* User modified value



## ***7. Power Consumption Calculator report***

### 7.1. Microcontroller Selection

|           |               |
|-----------|---------------|
| Series    | STM32F1       |
| Line      | STM32F103     |
| MCU       | STM32F103C8Tx |
| Datasheet | 13587_Rev17   |

### 7.2. Parameter Selection

|             |     |
|-------------|-----|
| Temperature | 25  |
| Vdd         | 3.3 |

## 8. Software Project

### 8.1. Project Settings

| Name                              | Value                          |
|-----------------------------------|--------------------------------|
| Project Name                      | PWM                            |
| Project Folder                    | E:\Open103C-Demo-HAL\4.PWM\PWM |
| Toolchain / IDE                   | MDK-ARM V5                     |
| Firmware Package Name and Version | STM32Cube FW_F1 V1.4.0         |

### 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   | Yes                                   |
| 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                                    |