

1. Description

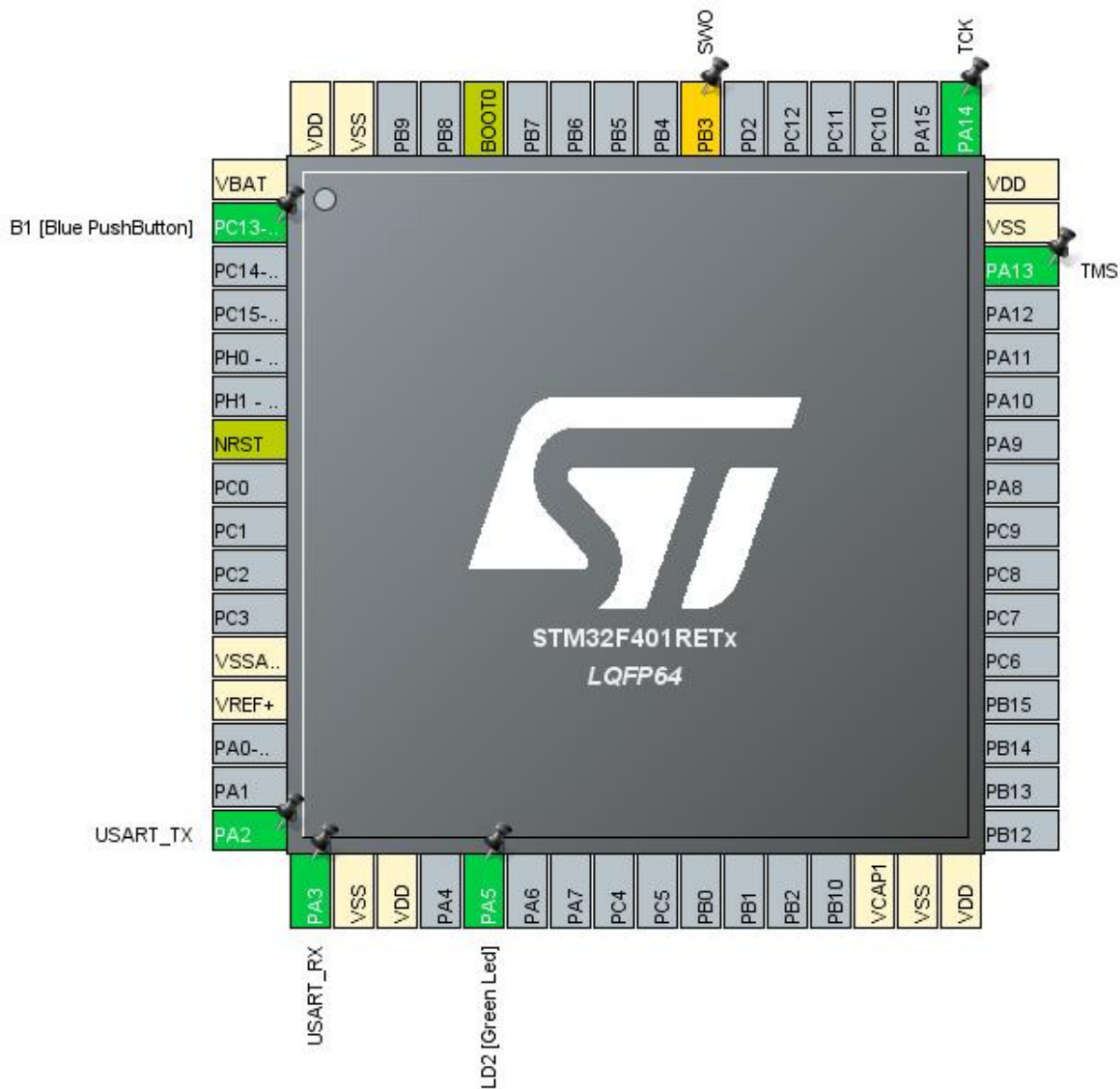
1.1. Project

| | |
|-----------------|-------------------|
| Project Name | F401RE_ |
| Board Name | NUCLEO-F401RE |
| Generated with: | STM32CubeMX 5.3.0 |
| Date | 09/11/2019 |

1.2. MCU

| | |
|----------------|---------------|
| MCU Series | STM32F4 |
| MCU Line | STM32F401 |
| MCU name | STM32F401RETx |
| MCU Package | LQFP64 |
| MCU Pin number | 64 |

2. Pinout Configuration



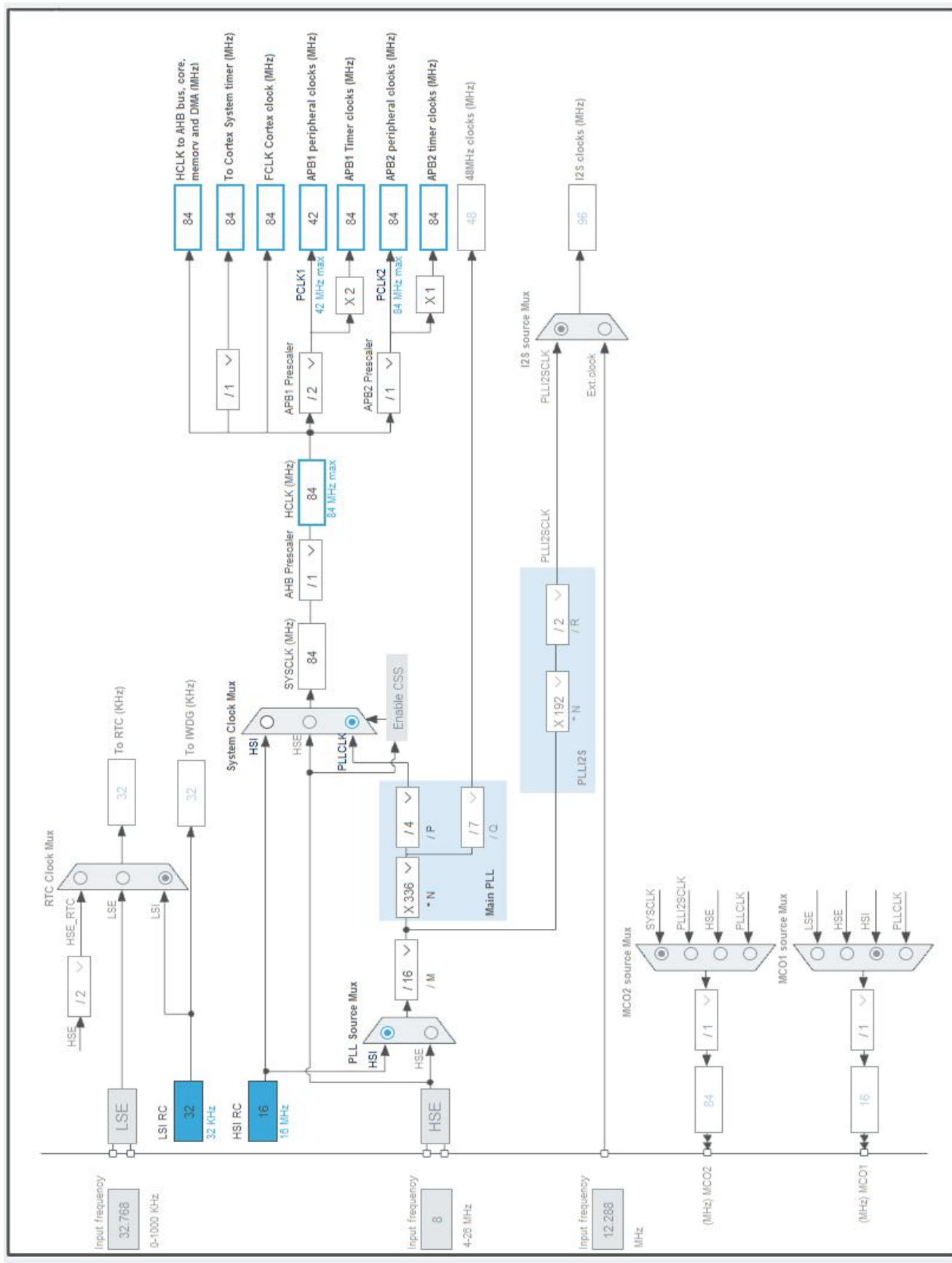
3. Pins Configuration

| Pin Number LQFP64 | Pin Name (function after reset) | Pin Type | Alternate Function(s) | Label |
|----------------------|---------------------------------------|----------|--------------------------|----------------------|
| 1 | VBAT | Power | | |
| 2 | PC13-ANTI_TAMP | I/O | GPIO_EXTI13 | B1 [Blue PushButton] |
| 7 | NRST | Reset | | |
| 12 | VSSA/VREF- | Power | | |
| 13 | VREF+ | Power | | |
| 16 | PA2 | I/O | USART2_TX | USART_TX |
| 17 | PA3 | I/O | USART2_RX | USART_RX |
| 18 | VSS | Power | | |
| 19 | VDD | Power | | |
| 21 | PA5 * | I/O | GPIO_Output | LD2 [Green Led] |
| 30 | VCAP1 | Power | | |
| 31 | VSS | Power | | |
| 32 | VDD | Power | | |
| 46 | PA13 | I/O | SYS_JTMS-SWDIO | TMS |
| 47 | VSS | Power | | |
| 48 | VDD | Power | | |
| 49 | PA14 | I/O | SYS_JTCK-SWCLK | TCK |
| 55 | PB3 ** | I/O | SYS_JTDO-SWO | SWO |
| 60 | BOOT0 | Boot | | |
| 63 | VSS | Power | | |
| 64 | 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 | F401RE_ |
| Project Folder | D:\Electronique_STM32\workspace_board\F401RE_ |
| Toolchain / IDE | TrueSTUDIO |
| Firmware Package Name and Version | STM32Cube FW_F4 V1.24.1 |

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 | Yes |
| Backup previously generated files 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 |

6. Power Consumption Calculator report

6.1. Microcontroller Selection

| | |
|-----------|---------------|
| Series | STM32F4 |
| Line | STM32F401 |
| MCU | STM32F401RETx |
| Datasheet | 025644_Rev3 |

6.2. Parameter Selection

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

7. IPs and Middleware Configuration

7.1. RCC

7.1.1. Parameter Settings:

System Parameters:

| | |
|-------------------|--------------------|
| VDD voltage (V) | 3.3 |
| Instruction Cache | Enabled |
| Prefetch Buffer | Enabled |
| Data Cache | Enabled |
| Flash Latency(WS) | 2 WS (3 CPU cycle) |

RCC Parameters:

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

Power Parameters:

| | |
|-------------------------------|---------------------------------|
| Power Regulator Voltage Scale | Power Regulator Voltage Scale 2 |
|-------------------------------|---------------------------------|

7.2. SYS

Debug: Serial Wire

Timebase Source: SysTick

7.3. TIM10

mode: Activated

7.3.1. Parameter Settings:

Counter Settings:

| | |
|---|---------------|
| Prescaler (PSC - 16 bits value) | 4999 * |
| Counter Mode | Up |
| Counter Period (AutoReload Register - 16 bits value) | 7999 * |
| Internal Clock Division (CKD) | No Division |
| auto-reload preload | Disable |

7.4. TIM11

mode: Activated

7.4.1. Parameter Settings:

Counter Settings:

| | |
|---|---------------|
| Prescaler (PSC - 16 bits value) | 199 * |
| Counter Mode | Up |
| Counter Period (AutoReload Register - 16 bits value) | 1999 * |
| Internal Clock Division (CKD) | No Division |
| auto-reload preload | Disable |

7.5. USART2

Mode: Asynchronous

7.5.1. Parameter Settings:

Basic Parameters:

| | |
|-------------|---------------------------|
| Baud Rate | 921600 * |
| 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**

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 | TMS |
| | PA14 | SYS_JTCK-SWCLK | n/a | n/a | n/a | TCK |
| USART2 | PA2 | USART2_TX | Alternate Function Push Pull | * | Low | USART_TX |
| | PA3 | USART2_RX | Alternate Function Push Pull | * | Low | USART_RX |
| Single Mapped Signals | PB3 | SYS_JTDO-SWO | n/a | n/a | n/a | SWO |
| GPIO | PC13-ANTI_TAMP | GPIO_EXTI13 | External Interrupt Mode with Falling edge trigger detection | No pull-up and no pull-down | n/a | B1 [Blue PushButton] |
| | PA5 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LD2 [Green Led] |

8.2. DMA configuration

nothing configured in DMA service

8.3. 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 |
| TIM1 update interrupt and TIM10 global interrupt | true | 0 | 0 |
| TIM1 trigger and commutation interrupts and TIM11 global interrupt | true | 0 | 0 |
| USART2 global interrupt | true | 0 | 0 |
| EXTI line[15:10] interrupts | true | 0 | 0 |
| PVD interrupt through EXTI line 16 | unused | | |
| Flash global interrupt | unused | | |
| RCC global interrupt | unused | | |
| FPU global interrupt | unused | | |

* User modified value

9. Software Pack Report