

1. Description

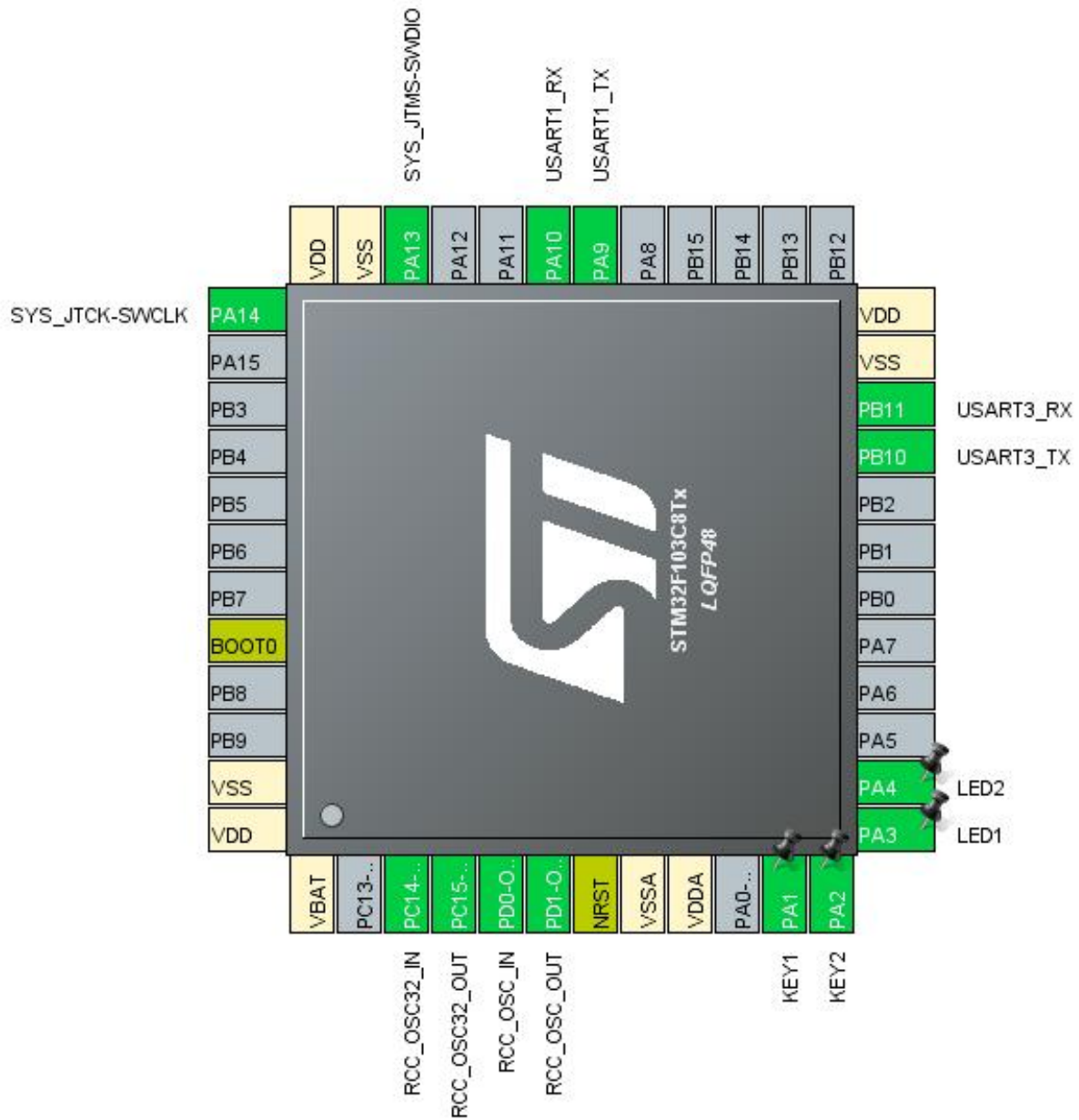
1.1. Project

| | |
|-----------------|---------------------|
| Project Name | F103C8T6_Mini_Board |
| Board Name | custom |
| Generated with: | STM32CubeMX 5.3.0 |
| Date | 09/17/2019 |

1.2. MCU

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

2. Pinout Configuration



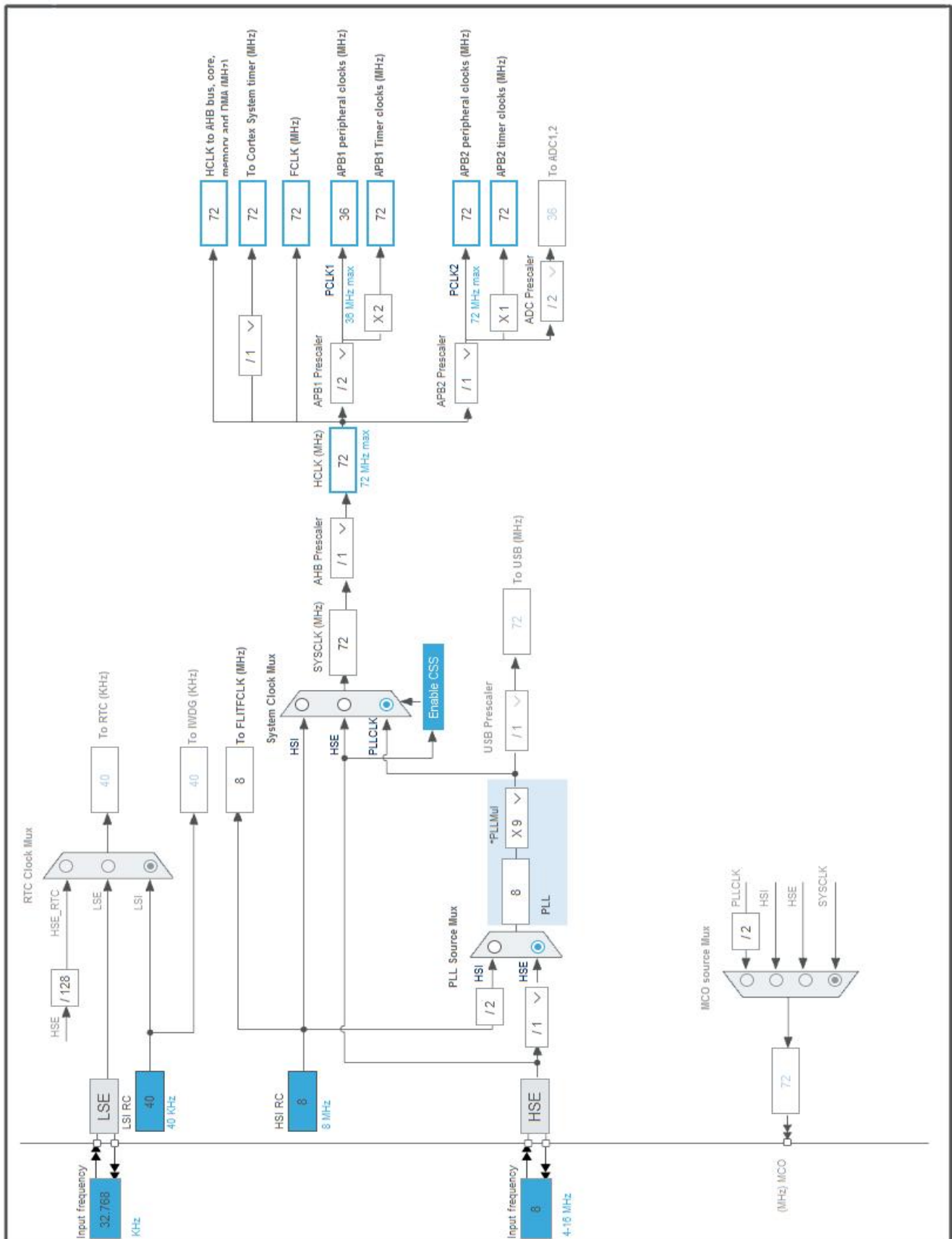
(Rotated -90°)

3. Pins Configuration

| Pin Number LQFP48 | Pin Name (function after reset) | Pin Type | Alternate Function(s) | Label |
|----------------------|---------------------------------------|----------|--------------------------|-------|
| 1 | VBAT | Power | | |
| 3 | PC14-OSC32_IN | I/O | RCC_OSC32_IN | |
| 4 | PC15-OSC32_OUT | I/O | RCC_OSC32_OUT | |
| 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 | GPIO_Input | KEY1 |
| 12 | PA2 * | I/O | GPIO_Input | KEY2 |
| 13 | PA3 * | I/O | GPIO_Output | LED1 |
| 14 | PA4 * | I/O | GPIO_Output | LED2 |
| 21 | PB10 | I/O | USART3_TX | |
| 22 | PB11 | I/O | USART3_RX | |
| 23 | VSS | Power | | |
| 24 | VDD | Power | | |
| 30 | PA9 | I/O | USART1_TX | |
| 31 | PA10 | I/O | USART1_RX | |
| 34 | PA13 | I/O | SYS_JTMS-SWDIO | |
| 35 | VSS | Power | | |
| 36 | VDD | Power | | |
| 37 | PA14 | I/O | SYS_JTCK-SWCLK | |
| 44 | BOOT0 | Boot | | |
| 47 | VSS | Power | | |
| 48 | 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 | F103C8T6_Mini_Board |
| Project Folder | C:\Users\Administrator\Desktop\F103C8T6_Mini_Board |
| Toolchain / IDE | EWARM V8 |
| Firmware Package Name and Version | STM32Cube FW_F1 V1.8.0 |

5.2. Code Generation Settings

| Name | Value |
|---|--|
| STM32Cube MCU packages and embedded software | Add necessary library files as reference in the toolchain project configuration file |
| 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 |

6. Power Consumption Calculator report

6.1. Microcontroller Selection

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

6.2. Parameter Selection

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

7. IPs and Middleware Configuration

7.1. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

7.1.1. 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 |

7.2. SYS

Debug: Serial Wire

Timebase Source: SysTick

7.3. USART1

Mode: Asynchronous

7.3.1. Parameter Settings:

Basic Parameters:

| | |
|-------------|---------------------------|
| Baud Rate | 38400 * |
| Word Length | 8 Bits (including Parity) |
| Parity | None |
| Stop Bits | 1 |

Advanced Parameters:

| | |
|----------------|----------------------|
| Data Direction | Receive and Transmit |
| Over Sampling | 16 Samples |

7.4. USART3

Mode: Asynchronous

7.4.1. Parameter Settings:

Basic Parameters:

| | |
|-------------|---------------------------|
| Baud Rate | 38400 * |
| 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 |
|--------|----------------|----------------|------------------------------|-----------------------------|---------------|------------|
| RCC | PC14-OSC32_IN | RCC_OSC32_IN | n/a | n/a | n/a | |
| | PC15-OSC32_OUT | RCC_OSC32_OUT | n/a | n/a | n/a | |
| | PD0-OSC_IN | RCC_OSC_IN | n/a | n/a | n/a | |
| | PD1-OSC_OUT | RCC_OSC_OUT | n/a | n/a | n/a | |
| SYS | PA13 | SYS_JTMS-SWDIO | n/a | n/a | n/a | |
| | PA14 | SYS_JTCK-SWCLK | n/a | n/a | n/a | |
| USART1 | PA9 | USART1_TX | Alternate Function Push Pull | n/a | High * | |
| | PA10 | USART1_RX | Input mode | No pull-up and no pull-down | n/a | |
| USART3 | PB10 | USART3_TX | Alternate Function Push Pull | n/a | High * | |
| | PB11 | USART3_RX | Input mode | No pull-up and no pull-down | n/a | |
| GPIO | PA1 | GPIO_Input | Input mode | Pull-up * | n/a | KEY1 |
| | PA2 | GPIO_Input | Input mode | Pull-up * | n/a | KEY2 |
| | PA3 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED1 |
| | PA4 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LED2 |

8.2. DMA configuration

| DMA request | Stream | Direction | Priority |
|-------------|---------------|----------------------|-----------------|
| USART1_RX | DMA1_Channel5 | Peripheral To Memory | Low |
| USART3_RX | DMA1_Channel3 | Peripheral To Memory | Medium * |

USART1_RX: DMA1_Channel5 DMA request Settings:

Mode: Normal
Peripheral Increment: Disable
Memory Increment: **Enable ***
Peripheral Data Width: Byte
Memory Data Width: Byte

USART3_RX: DMA1_Channel3 DMA request Settings:

Mode: Normal
Peripheral Increment: Disable
Memory Increment: **Enable ***
Peripheral Data Width: Byte
Memory Data Width: Byte

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 |
| 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 |
| DMA1 channel3 global interrupt | true | 2 | 0 |
| DMA1 channel5 global interrupt | true | 2 | 0 |
| USART1 global interrupt | true | 1 | 0 |
| USART3 global interrupt | true | 0 | 0 |
| PVD interrupt through EXTI line 16 | unused | | |
| Flash global interrupt | unused | | |
| RCC global interrupt | unused | | |

* User modified value

9. Software Pack Report