

1. Description

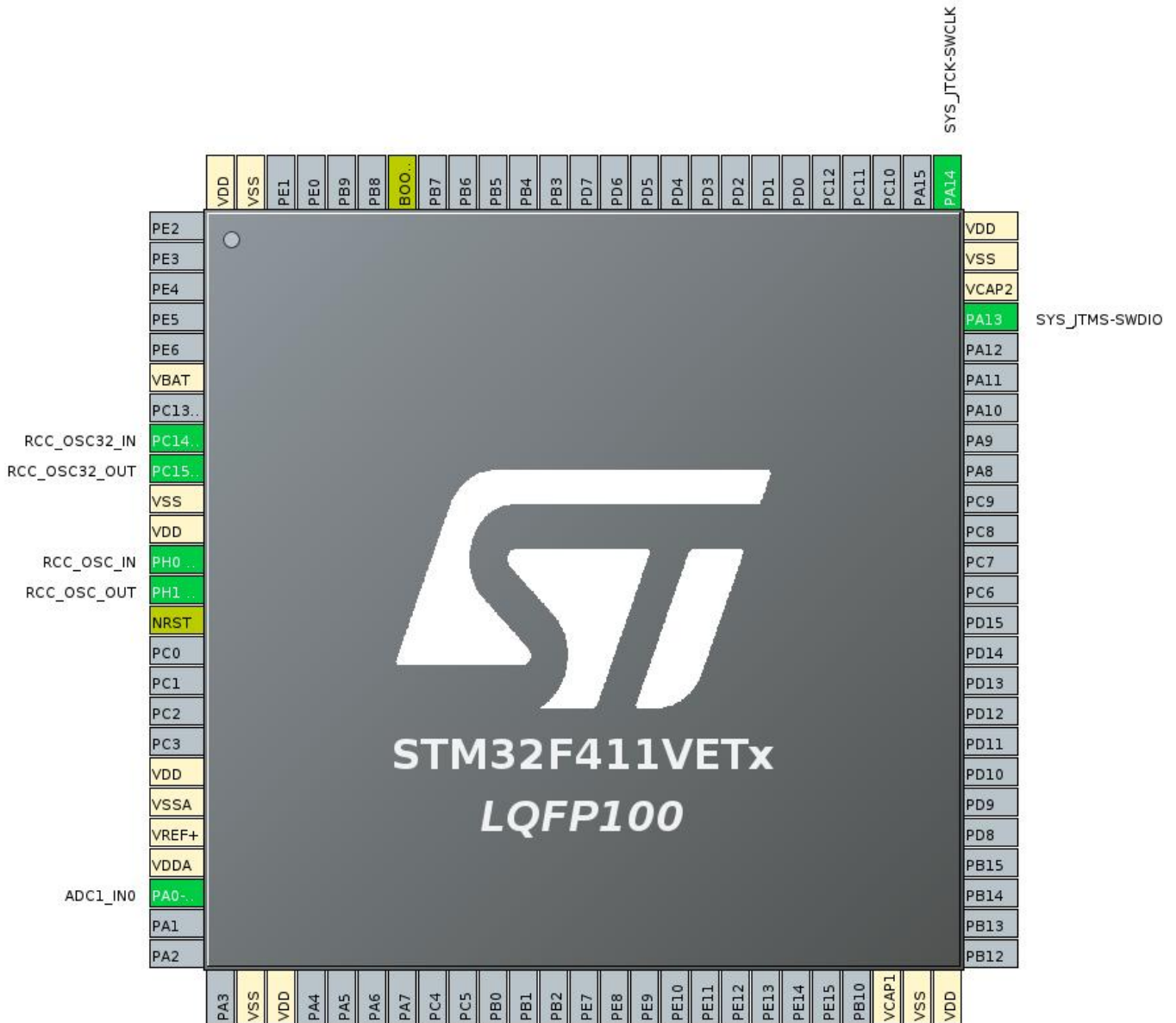
1.1. Project

| | |
|-----------------|--------------------------|
| Project Name | ADC_ContinuousConversion |
| Board Name | STM32F411E-DISCO |
| Generated with: | STM32CubeMX 5.5.0 |
| Date | 09/23/2020 |

1.2. MCU

| | |
|----------------|---------------|
| MCU Series | STM32F4 |
| MCU Line | STM32F411 |
| MCU name | STM32F411VETx |
| MCU Package | LQFP100 |
| MCU Pin number | 100 |

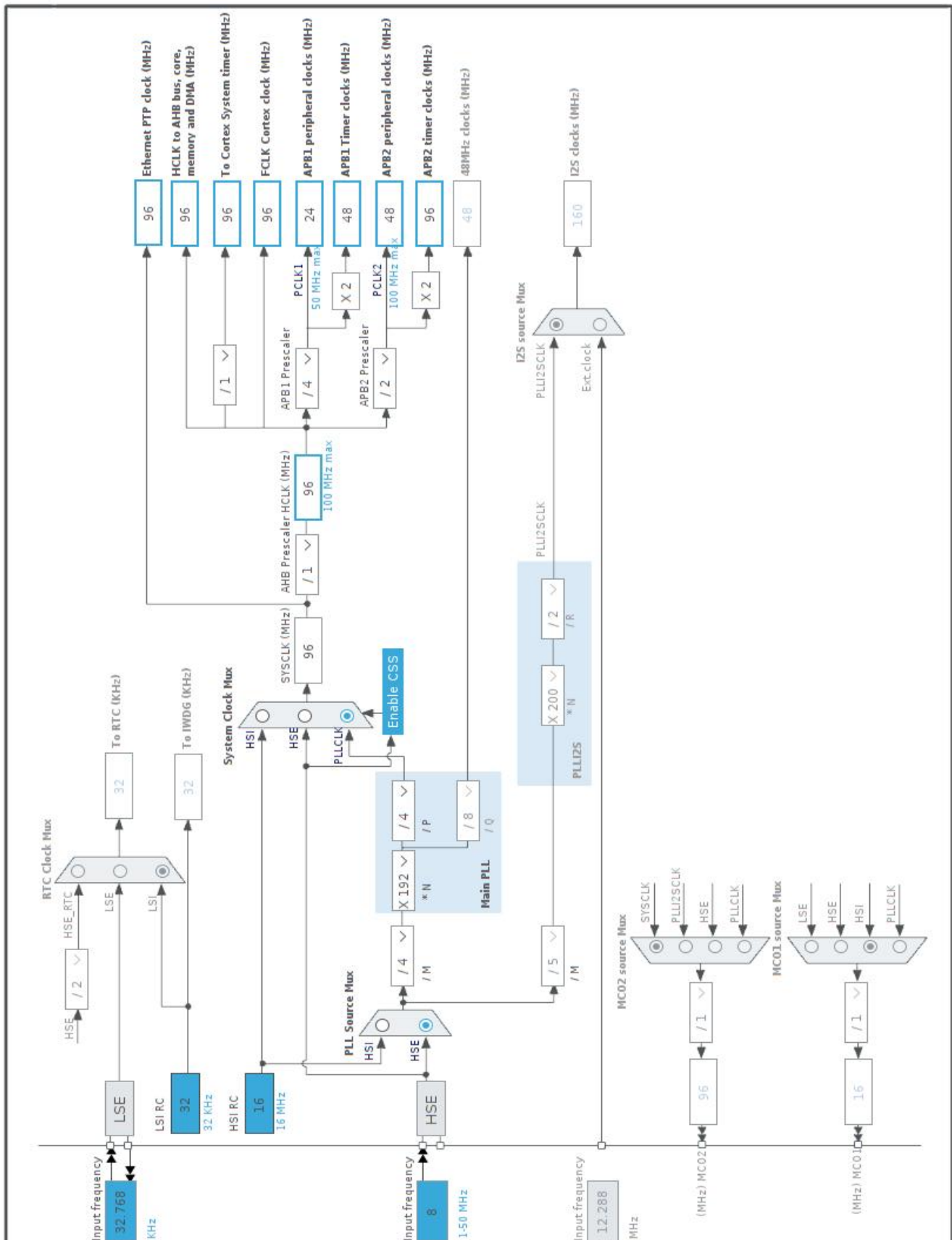
2. Pinout Configuration



3. Pins Configuration

| Pin Number LQFP100 | Pin Name (function after reset) | Pin Type | Alternate Function(s) | Label |
|-----------------------|---------------------------------------|----------|--------------------------|-------|
| 6 | VBAT | Power | | |
| 8 | PC14-OSC32_IN | I/O | RCC_OSC32_IN | |
| 9 | PC15-OSC32_OUT | I/O | RCC_OSC32_OUT | |
| 10 | VSS | Power | | |
| 11 | VDD | Power | | |
| 12 | PH0 - OSC_IN | I/O | RCC_OSC_IN | |
| 13 | PH1 - OSC_OUT | I/O | RCC_OSC_OUT | |
| 14 | NRST | Reset | | |
| 19 | VDD | Power | | |
| 20 | VSSA | Power | | |
| 21 | VREF+ | Power | | |
| 22 | VDDA | Power | | |
| 23 | PA0-WKUP | I/O | ADC1_IN0 | |
| 27 | VSS | Power | | |
| 28 | VDD | Power | | |
| 48 | VCAP1 | Power | | |
| 49 | VSS | Power | | |
| 50 | VDD | Power | | |
| 72 | PA13 | I/O | SYS_JTMS-SWDIO | |
| 73 | VCAP2 | Power | | |
| 74 | VSS | Power | | |
| 75 | VDD | Power | | |
| 76 | PA14 | I/O | SYS_JTCK-SWCLK | |
| 94 | BOOT0 | Boot | | |
| 99 | VSS | Power | | |
| 100 | VDD | Power | | |

4. Clock Tree Configuration



5. Software Project

5.1. Project Settings

| Name | Value |
|-----------------------------------|--|
| Project Name | ADC_ContinuousConversion |
| Project Folder | /home/quang/Desktop/Mastering-STM32/ADC_ContinuousConversion |
| Toolchain / IDE | STM32CubeIDE |
| Firmware Package Name and Version | STM32Cube FW_F4 V1.24.2 |

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 |
| 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 | STM32F411 |
| MCU | STM32F411VETx |
| Datasheet | 026289_Rev6 |

6.2. Parameter Selection

| | |
|-------------|------|
| Temperature | 25 |
| Vdd | null |

7. IPs and Middleware Configuration

7.1. ADC1

mode: IN0

7.1.1. Parameter Settings:

ADC_Settings:

| | |
|-------------------------------|--|
| Clock Prescaler | PCLK2 divided by 2 |
| Resolution | 12 bits (15 ADC Clock cycles) |
| Data Alignment | Right alignment |
| Scan Conversion Mode | Disabled |
| Continuous Conversion Mode | Enabled * |
| Discontinuous Conversion Mode | Disabled |
| DMA Continuous Requests | Disabled |
| End Of Conversion Selection | EOC flag at the end of single channel conversion |

ADC_Regular_ConversionMode:

| | |
|------------------------------------|---|
| Number Of Conversion | 1 |
| External Trigger Conversion Source | Regular Conversion launched by software |
| External Trigger Conversion Edge | None |
| <u>Rank</u> | 1 |
| Channel | Channel 0 |
| Sampling Time | 480 Cycles * |

ADC_Injected_ConversionMode:

| | |
|-----------------------|---|
| Number Of Conversions | 0 |
|-----------------------|---|

WatchDog:

| | |
|-----------------------------|-------|
| Enable Analog WatchDog Mode | false |
|-----------------------------|-------|

7.2. GPIO

7.3. RCC

High Speed Clock (HSE): BYPASS Clock Source

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

7.3.1. Parameter Settings:

System Parameters:

| | |
|-------------------|---------|
| VDD voltage (V) | 3.3 |
| Instruction Cache | Enabled |
| Prefetch Buffer | Enabled |

| | |
|-------------------|--------------------|
| Data Cache | Enabled |
| Flash Latency(WS) | 3 WS (4 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 1 |
|-------------------------------|---------------------------------|

7.4. SYS

Debug: Serial Wire

Timebase Source: SysTick

* User modified value

8. System Configuration

8.1. GPIO configuration

| IP | Pin | Signal | GPIO mode | GPIO pull/up pull down | Max Speed | User Label |
|------|----------------|----------------|-------------|-----------------------------|-----------|------------|
| ADC1 | PA0-WKUP | ADC1_IN0 | Analog mode | No pull-up and no pull-down | n/a | |
| 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 | |
| | PH0 - OSC_IN | RCC_OSC_IN | n/a | n/a | n/a | |
| | PH1 - 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 | |

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 |
| PVD interrupt through EXTI line 16 | unused | | |
| Flash global interrupt | unused | | |
| RCC global interrupt | unused | | |
| ADC1 global interrupt | unused | | |
| FPU global interrupt | unused | | |

* User modified value

9. Software Pack Report