



1. Description

1.1. Project

| | |
|-----------------|--------------------|
| Project Name | TIM |
| Board Name | STM32F407G-DISC1 |
| Generated with: | STM32CubeMX 6.10.0 |
| Date | 01/06/2024 |

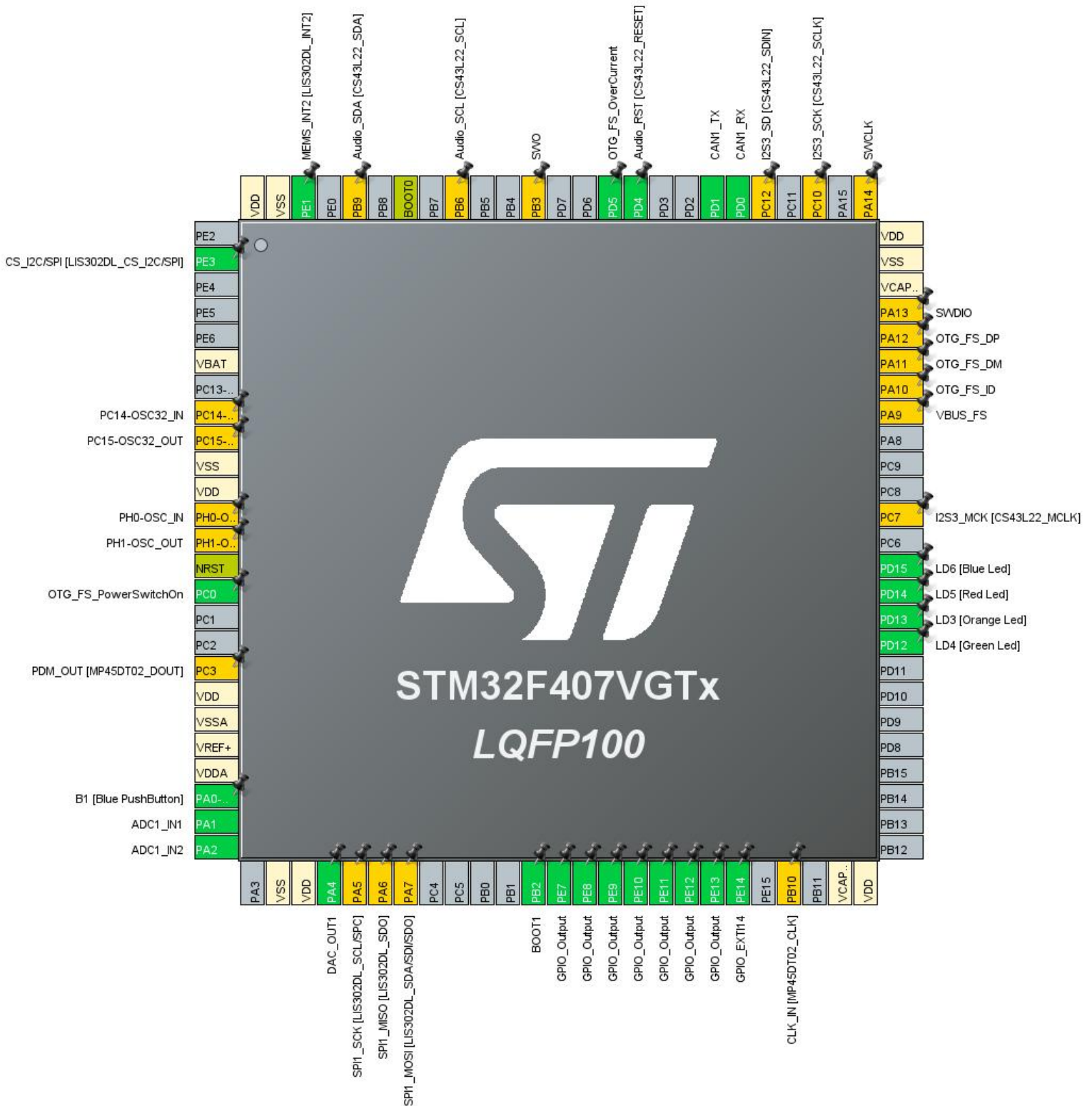
1.2. MCU

| | |
|----------------|---------------|
| MCU Series | STM32F4 |
| MCU Line | STM32F407/417 |
| MCU name | STM32F407VGTx |
| MCU Package | LQFP100 |
| MCU Pin number | 100 |

1.3. Core(s) information

| | |
|---------|---------------|
| Core(s) | Arm Cortex-M4 |
|---------|---------------|

2. Pinout Configuration



3. Pins Configuration

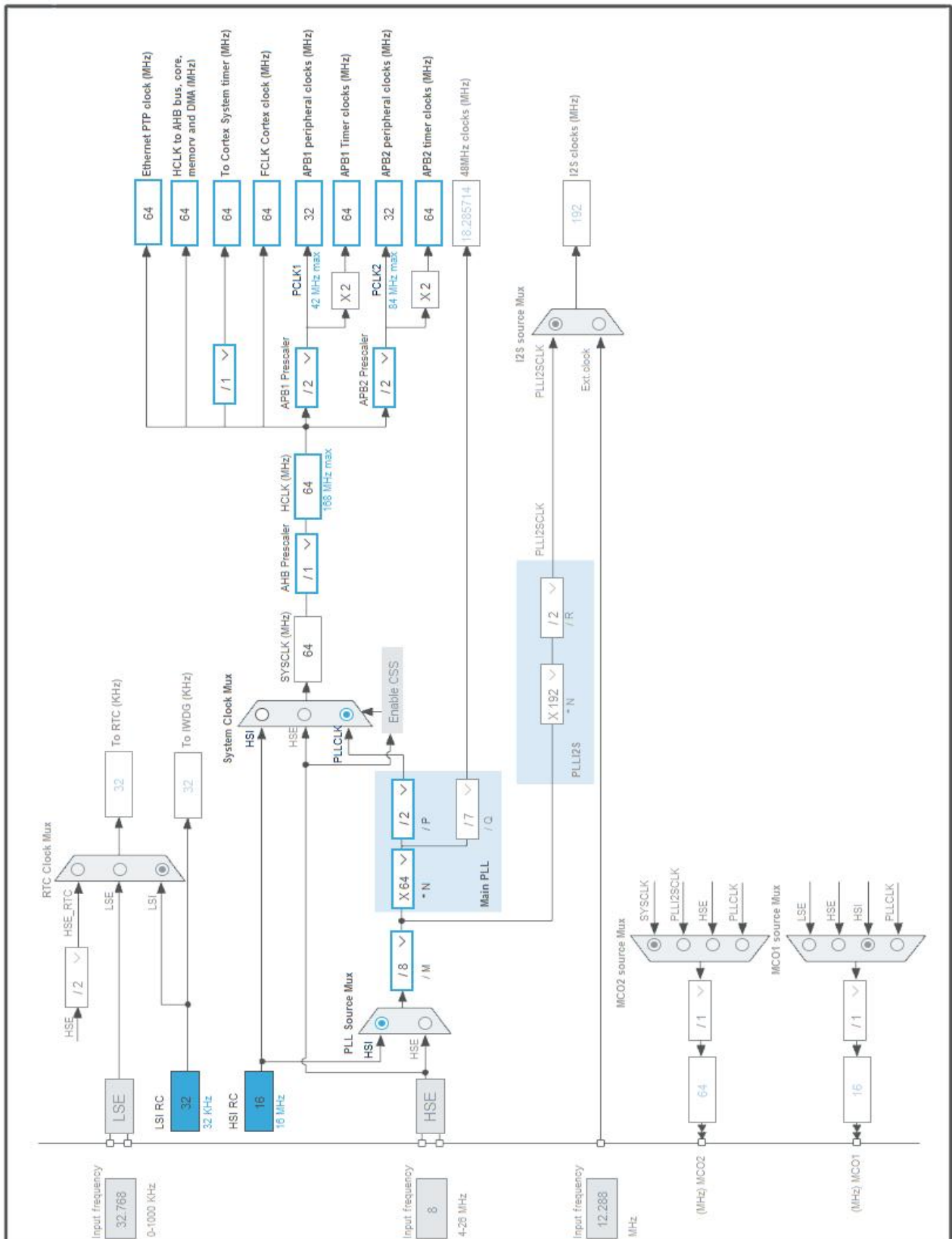
| Pin Number LQFP100 | Pin Name (function after reset) | Pin Type | Alternate Function(s) | Label |
|-----------------------|---------------------------------------|----------|--------------------------|-------------------------------------|
| 2 | PE3 * | I/O | GPIO_Output | CS_I2C/SPI [LIS302DL_CS_I2C/SPI] |
| 6 | VBAT | Power | | |
| 8 | PC14-OSC32_IN ** | I/O | RCC_OSC32_IN | PC14-OSC32_IN |
| 9 | PC15-OSC32_OUT ** | I/O | RCC_OSC32_OUT | PC15-OSC32_OUT |
| 10 | VSS | Power | | |
| 11 | VDD | Power | | |
| 12 | PH0-OSC_IN ** | I/O | RCC_OSC_IN | PH0-OSC_IN |
| 13 | PH1-OSC_OUT ** | I/O | RCC_OSC_OUT | PH1-OSC_OUT |
| 14 | NRST | Reset | | |
| 15 | PC0 * | I/O | GPIO_Output | OTG_FS_PowerSwitchOn |
| 18 | PC3 ** | I/O | I2S2_SD | PDM_OUT [MP45DT02_DOUT] |
| 19 | VDD | Power | | |
| 20 | VSSA | Power | | |
| 21 | VREF+ | Power | | |
| 22 | VDDA | Power | | |
| 23 | PA0-WKUP | I/O | GPIO_EXTI0 | B1 [Blue PushButton] |
| 24 | PA1 | I/O | ADC1_IN1 | |
| 25 | PA2 | I/O | ADC1_IN2 | |
| 27 | VSS | Power | | |
| 28 | VDD | Power | | |
| 29 | PA4 | I/O | DAC_OUT1 | |
| 30 | PA5 ** | I/O | SPI1_SCK | SPI1_SCK [LIS302DL_SCL/SPC] |
| 31 | PA6 ** | I/O | SPI1_MISO | SPI1_MISO [LIS302DL_SDO] |
| 32 | PA7 ** | I/O | SPI1_MOSI | SPI1_MOSI [LIS302DL_SDA/SDI/SDO] |
| 37 | PB2 * | I/O | GPIO_Input | BOOT1 |
| 38 | PE7 * | I/O | GPIO_Output | |
| 39 | PE8 * | I/O | GPIO_Output | |
| 40 | PE9 * | I/O | GPIO_Output | |
| 41 | PE10 * | I/O | GPIO_Output | |
| 42 | PE11 * | I/O | GPIO_Output | |
| 43 | PE12 * | I/O | GPIO_Output | |
| 44 | PE13 * | I/O | GPIO_Output | |

| Pin Number LQFP100 | Pin Name (function after reset) | Pin Type | Alternate Function(s) | Label |
|-----------------------|---------------------------------------|----------|--------------------------|------------------------------|
| 45 | PE14 | I/O | GPIO_EXTI14 | |
| 47 | PB10 ** | I/O | I2S2_CK | CLK_IN [MP45DT02_CLK] |
| 49 | VCAP_1 | Power | | |
| 50 | VDD | Power | | |
| 59 | PD12 * | I/O | GPIO_Output | LD4 [Green Led] |
| 60 | PD13 * | I/O | GPIO_Output | LD3 [Orange Led] |
| 61 | PD14 * | I/O | GPIO_Output | LD5 [Red Led] |
| 62 | PD15 * | I/O | GPIO_Output | LD6 [Blue Led] |
| 64 | PC7 ** | I/O | I2S3_MCK | I2S3_MCK [CS43L22_MCLK] |
| 68 | PA9 ** | I/O | USB_OTG_FS_VBUS | VBUS_FS |
| 69 | PA10 ** | I/O | USB_OTG_FS_ID | OTG_FS_ID |
| 70 | PA11 ** | I/O | USB_OTG_FS_DM | OTG_FS_DM |
| 71 | PA12 ** | I/O | USB_OTG_FS_DP | OTG_FS_DP |
| 72 | PA13 ** | I/O | SYS_JTMS-SWDIO | SWDIO |
| 73 | VCAP_2 | Power | | |
| 74 | VSS | Power | | |
| 75 | VDD | Power | | |
| 76 | PA14 ** | I/O | SYS_JTCK-SWCLK | SWCLK |
| 78 | PC10 ** | I/O | I2S3_CK | I2S3_SCK [CS43L22_SCLK] |
| 80 | PC12 ** | I/O | I2S3_SD | I2S3_SD [CS43L22_SDIN] |
| 81 | PD0 | I/O | CAN1_RX | |
| 82 | PD1 | I/O | CAN1_TX | |
| 85 | PD4 * | I/O | GPIO_Output | Audio_RST [CS43L22_RESET] |
| 86 | PD5 * | I/O | GPIO_Input | OTG_FS_OverCurrent |
| 89 | PB3 ** | I/O | SYS_JTDO-SWO | SWO |
| 92 | PB6 ** | I/O | I2C1_SCL | Audio_SCL [CS43L22_SCL] |
| 94 | BOOT0 | Boot | | |
| 96 | PB9 ** | I/O | I2C1_SDA | Audio_SDA [CS43L22_SDA] |
| 98 | PE1 | I/O | GPIO_EXTI1 | MEMS_INT2 [LIS302DL_INT2] |
| 99 | VSS | Power | | |
| 100 | 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 | TIM |
| Project Folder | C:\FSAE\dal-fsae\DMS-24-DEVICE_DRIVERS\TIM |
| Toolchain / IDE | STM32CubeIDE |
| Firmware Package Name and Version | STM32Cube FW_F4 V1.27.1 |
| 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 consumption) | No |
| 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_DMA_Init | DMA |
| 4 | MX_TIM1_Init | TIM1 |
| 5 | MX_CAN1_Init | CAN1 |
| 6 | MX_ADC1_Init | ADC1 |
| 7 | MX_DAC_Init | DAC |
| 8 | MX_TIM6_Init | TIM6 |

1. Power Consumption Calculator report

1.1. Microcontroller Selection

| | |
|-----------|---------------|
| Series | STM32F4 |
| Line | STM32F407/417 |
| MCU | STM32F407VGTx |
| Datasheet | DS8626_Rev8 |

1.2. Parameter Selection

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

1.3. 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 |

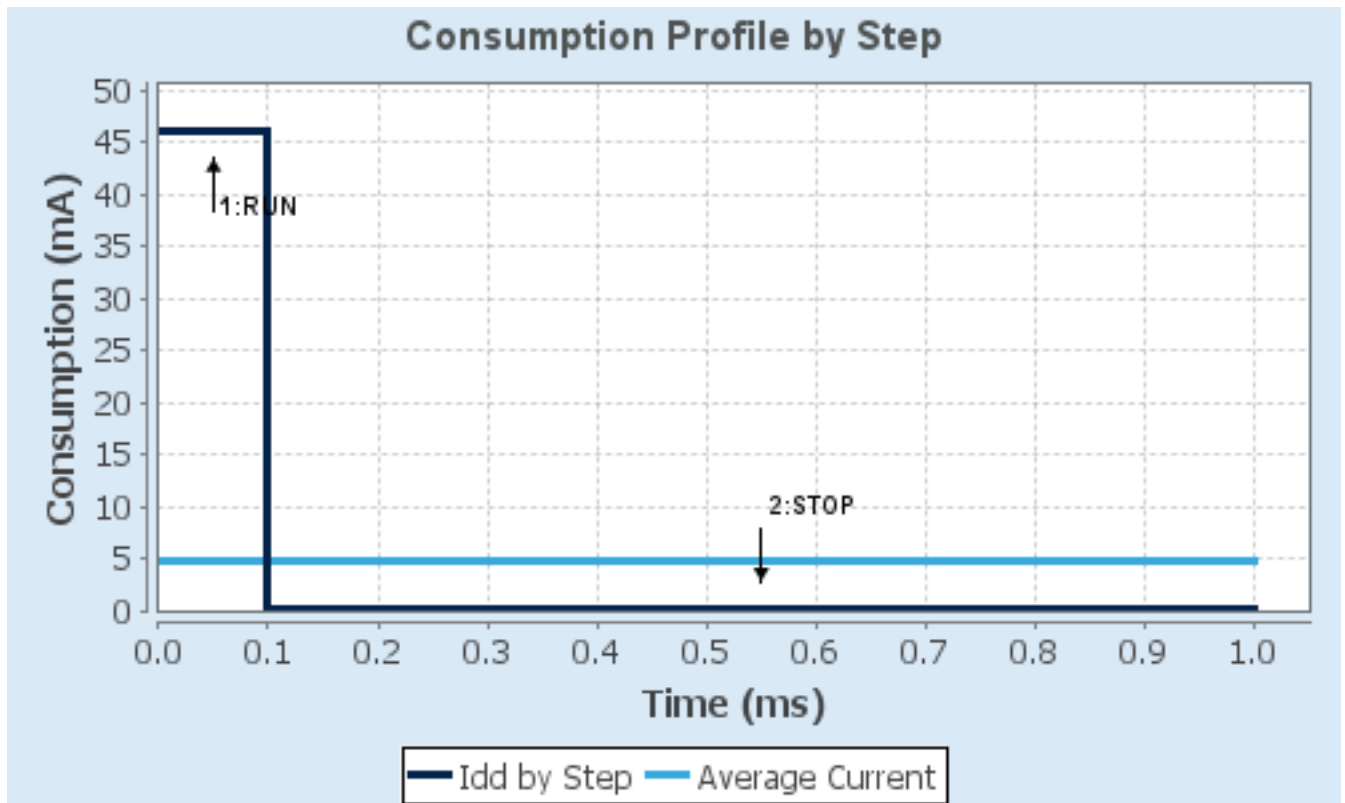
1.4. Sequence

| | | |
|-------------------------------|-------------|---------------------------|
| Step | Step1 | Step2 |
| Mode | RUN | STOP |
| Vdd | 3.3 | 3.3 |
| Voltage Source | Battery | Battery |
| Range | Scale1-High | No Scale |
| Fetch Type | FLASH | n/a |
| CPU Frequency | 168 MHz | 0 Hz |
| Clock Configuration | HSE PLL | Regulator LP Flash-PwrDwn |
| Clock Source Frequency | 4 MHz | 0 Hz |
| Peripherals | | |
| Additional Cons. | 0 mA | 0 mA |
| Average Current | 46 mA | 280 μ A |
| Duration | 0.1 ms | 0.9 ms |
| DMIPS | 210.0 | 0.0 |
| Ta Max | 98.47 | 104.96 |
| Category | In DS Table | In DS Table |

1.5. Results

| | | | |
|---------------|------------------|-----------------|-------------|
| Sequence Time | 1 ms | Average Current | 4.85 mA |
| Battery Life | 29 days, 4 hours | Average DMIPS | 210.0 DMIPS |

1.6. Chart



2. Peripherals and Middlewares Configuration

2.1. ADC1

mode: IN1

mode: IN2

2.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode Independent mode

ADC_Settings:

Clock Prescaler PCLK2 divided by 2

Resolution **8 bits (11 ADC Clock cycles) ***

Data Alignment Right alignment

Scan Conversion Mode Enabled

Continuous Conversion Mode **Enabled ***

Discontinuous Conversion Mode Disabled

DMA Continuous Requests **Enabled ***

End Of Conversion Selection **EOC flag at the end of all conversions ***

ADC_Regular_ConversionMode:

Number Of Conversion **2 ***

External Trigger Conversion Source Regular Conversion launched by software

External Trigger Conversion Edge None

Rank 1

Channel Channel 1

Sampling Time 3 Cycles

Rank **2 ***

Channel **Channel 2 ***

Sampling Time 3 Cycles

ADC_Injected_ConversionMode:

Number Of Conversions 0

WatchDog:

Enable Analog WatchDog Mode false

2.2. CAN1

mode: Activated

2.2.1. Parameter Settings:

Bit Timings Parameters:

| | |
|------------------------------|------------------|
| Prescaler (for Time Quantum) | 16 |
| Time Quantum | 500.0 * |
| Time Quanta in Bit Segment 1 | 2 Times * |
| Time Quanta in Bit Segment 2 | 1 Time |
| Time for one Bit | 2000 * |
| Baud Rate | 500000 * |
| ReSynchronization Jump Width | 1 Time |

Basic Parameters:

| | |
|-----------------------------------|---------|
| Time Triggered Communication Mode | Disable |
| Automatic Bus-Off Management | Disable |
| Automatic Wake-Up Mode | Disable |
| Automatic Retransmission | Disable |
| Receive Fifo Locked Mode | Disable |
| Transmit Fifo Priority | Disable |

Advanced Parameters:

| | |
|----------------|--------|
| Operating Mode | Normal |
|----------------|--------|

2.3. DAC

mode: OUT1 Configuration

2.3.1. Parameter Settings:

DAC Out1 Settings:

| | |
|---------------|--------|
| Output Buffer | Enable |
| Trigger | None |

2.4. RCC

2.4.1. 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 |
| HSE Startup Timeout Value (ms) | 100 |
| LSE Startup Timeout Value (ms) | 5000 |
| Power Parameters: | |
| Power Regulator Voltage Scale | Power Regulator Voltage Scale 1 |

2.5. SYS

Timebase Source: SysTick

2.6. TIM1

Clock Source : Internal Clock

2.6.1. Parameter Settings:

Counter Settings:

| | |
|---|-------------------|
| Prescaler (PSC - 16 bits value) | 64-1 * |
| Counter Mode | Up |
| Counter Period (AutoReload Register - 16 bits value) | 0xffff-1 * |
| Internal Clock Division (CKD) | No Division |
| Repetition Counter (RCR - 8 bits value) | 0 |
| auto-reload preload | Disable |

Trigger Output (TRGO) Parameters:

| | |
|-----------------------------|--|
| Master/Slave Mode (MSM bit) | Disable (Trigger input effect not delayed) |
| Trigger Event Selection | Reset (UG bit from TIMx_EGR) |

2.7. TIM6

mode: Activated

2.7.1. Parameter Settings:

Counter Settings:

| | |
|---|---------|
| Prescaler (PSC - 16 bits value) | 0 |
| Counter Mode | Up |
| Counter Period (AutoReload Register - 16 bits value) | 65535 |
| auto-reload preload | Disable |

Trigger Output (TRGO) Parameters:

| | |
|-------------------------|------------------------------|
| Trigger Event Selection | Reset (UG bit from TIMx_EGR) |
|-------------------------|------------------------------|

*** User modified value**

3. System Configuration

3.1. GPIO configuration

| IP | Pin | Signal | GPIO mode | GPIO pull/up pull down | Max Speed | User Label |
|-----------------------|----------------|-----------------|------------------------------|-----------------------------|-------------|----------------------------------|
| ADC1 | PA1 | ADC1_IN1 | Analog mode | No pull-up and no pull-down | n/a | |
| | PA2 | ADC1_IN2 | Analog mode | No pull-up and no pull-down | n/a | |
| CAN1 | PD0 | CAN1_RX | Alternate Function Push Pull | No pull-up and no pull-down | Very High * | |
| | PD1 | CAN1_TX | Alternate Function Push Pull | No pull-up and no pull-down | Very High * | |
| DAC | PA4 | DAC_OUT1 | Analog mode | No pull-up and no pull-down | n/a | |
| Single Mapped Signals | PC14-OSC32_IN | RCC_OSC32_IN | n/a | n/a | n/a | PC14-OSC32_IN |
| | PC15-OSC32_OUT | RCC_OSC32_OUT | n/a | n/a | n/a | PC15-OSC32_OUT |
| | PH0-OSC_IN | RCC_OSC_IN | n/a | n/a | n/a | PH0-OSC_IN |
| | PH1-OSC_OUT | RCC_OSC_OUT | n/a | n/a | n/a | PH1-OSC_OUT |
| | PC3 | I2S2_SD | Alternate Function Push Pull | No pull-up and no pull-down | Low | PDM_OUT [MP45DT02_DOUT] |
| | PA5 | SPI1_SCK | Alternate Function Push Pull | No pull-up and no pull-down | Low | SPI1_SCK [LIS302DL_SCL/SPC] |
| | PA6 | SPI1_MISO | Alternate Function Push Pull | No pull-up and no pull-down | Low | SPI1_MISO [LIS302DL_SDO] |
| | PA7 | SPI1_MOSI | Alternate Function Push Pull | No pull-up and no pull-down | Low | SPI1_MOSI [LIS302DL_SDA/SDI/SDO] |
| | PB10 | I2S2_CK | Alternate Function Push Pull | No pull-up and no pull-down | Low | CLK_IN [MP45DT02_CLK] |
| | PC7 | I2S3_MCK | Alternate Function Push Pull | No pull-up and no pull-down | Low | I2S3_MCK [CS43L22_MCLK] |
| | PA9 | USB_OTG_FS_VBUS | Input mode | No pull-up and no pull-down | n/a | VBUS_FS |
| | PA10 | USB_OTG_FS_ID | Alternate Function Push Pull | No pull-up and no pull-down | Low | OTG_FS_ID |
| | PA11 | USB_OTG_FS_DM | Alternate Function Push Pull | No pull-up and no pull-down | Low | OTG_FS_DM |
| | PA12 | USB_OTG_FS_DP | Alternate Function Push Pull | No pull-up and no pull-down | Low | OTG_FS_DP |
| | PA13 | SYS_JTMS-SWDIO | n/a | n/a | n/a | SWDIO |
| | PA14 | SYS_JTCK-SWCLK | n/a | n/a | n/a | SWCLK |

| IP | Pin | Signal | GPIO mode | GPIO pull/up pull down | Max Speed | User Label |
|------|----------|--------------|---|-----------------------------|-----------|-------------------------------------|
| | PC10 | I2S3_CK | Alternate Function Push Pull | No pull-up and no pull-down | Low | I2S3_SCK [CS43L22_SCLK] |
| | PC12 | I2S3_SD | Alternate Function Push Pull | No pull-up and no pull-down | Low | I2S3_SD [CS43L22_SDIN] |
| | PB3 | SYS_JTDO-SWO | n/a | n/a | n/a | SWO |
| | PB6 | I2C1_SCL | Alternate Function Open Drain | Pull-up * | Low | Audio_SCL [CS43L22_SCL] |
| | PB9 | I2C1_SDA | Alternate Function Open Drain | Pull-up * | Low | Audio_SDA [CS43L22_SDA] |
| GPIO | PE3 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | CS_I2C/SPI [LIS302DL_CS_I2C/SPI] |
| | PC0 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | OTG_FS_PowerSwitchOn |
| | PA0-WKUP | GPIO_EXTI0 | External Interrupt Mode with Rising/Falling edge | No pull-up and no pull-down | n/a | B1 [Blue PushButton] |
| | PB2 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | BOOT1 |
| | PE7 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PE8 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PE9 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PE10 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PE11 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PE12 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PE13 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | |
| | PE14 | GPIO_EXTI14 | External Interrupt Mode with Rising edge trigger detection | No pull-up and no pull-down | n/a | |
| | PD12 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LD4 [Green Led] |
| | PD13 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LD3 [Orange Led] |
| | PD14 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LD5 [Red Led] |
| | PD15 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | LD6 [Blue Led] |
| | PD4 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | Audio_RST [CS43L22_RESET] |
| | PD5 | GPIO_Input | Input mode | No pull-up and no pull-down | n/a | OTG_FS_OverCurrent |
| | PE1 | GPIO_EXTI1 | External Event Mode with Rising edge trigger detection * | No pull-up and no pull-down | n/a | MEMS_INT2 [LIS302DL_INT2] |

3.2. DMA configuration

| DMA request | Stream | Direction | Priority |
|-------------|--------------|----------------------|----------|
| ADC1 | DMA2_Stream0 | Peripheral To Memory | Low |

ADC1: DMA2_Stream0 DMA request Settings:

Mode: **Circular ***
Use fifo: Disable
Peripheral Increment: Disable
Memory Increment: **Enable ***
Peripheral Data Width: Half Word
Memory Data Width: Half Word

3.3. NVIC configuration

3.3.1. 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 |
| 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 |
| EXTI line0 interrupt | true | 0 | 0 |
| DMA2 stream0 global interrupt | true | 0 | 0 |
| PVD interrupt through EXTI line 16 | unused | | |
| Flash global interrupt | unused | | |
| RCC global interrupt | unused | | |
| ADC1, ADC2 and ADC3 global interrupts | unused | | |
| CAN1 TX interrupts | unused | | |
| CAN1 RX0 interrupts | unused | | |
| CAN1 RX1 interrupt | unused | | |
| CAN1 SCE interrupt | unused | | |
| TIM1 break interrupt and TIM9 global interrupt | unused | | |
| TIM1 update interrupt and TIM10 global interrupt | unused | | |
| TIM1 trigger and commutation interrupts and TIM11 global interrupt | unused | | |
| TIM1 capture compare interrupt | unused | | |
| EXTI line[15:10] interrupts | unused | | |
| TIM6 global interrupt, DAC1 and DAC2 underrun error interrupts | unused | | |
| FPU global interrupt | unused | | |

3.3.2. NVIC Code generation

| Enabled interrupt Table | Select for init sequence ordering | Generate IRQ handler | Call HAL handler |
|--|-----------------------------------|----------------------|------------------|
| Non maskable interrupt | false | true | false |
| Hard fault interrupt | false | true | false |
| Memory management fault | false | true | false |
| Pre-fetch fault, memory access fault | false | true | false |
| Undefined instruction or illegal state | false | true | false |

| Enabled interrupt Table | Select for init sequence ordering | Generate IRQ handler | Call HAL handler |
|---|--------------------------------------|-------------------------|------------------|
| 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 |
| EXTI line0 interrupt | false | true | true |
| DMA2 stream0 global interrupt | false | true | true |

* User modified value

4. System Views

4.1. Category view

4.1.1. Current

| Middleware | | | | | | |
|-------------|--------|--------|--------------|------------|----------|-----------|
| System Core | Analog | Timers | Connectivity | Multimedia | Security | Computing |
| DMA ✓ | ADC1 ✓ | TIM1 ✓ | CAN1 ✓ | | | |
| GPIO ⚠ | DAC ✓ | TIM6 ✓ | | | | |
| NVIC ✓ | | | | | | |
| RCC ✓ | | | | | | |
| SYS ✓ | | | | | | |

5. Docs & Resources

| Type | Link |
|----------------------------|---|
| BSDL files | https://www.st.com/resource/en/bsdl_model/stm32f405-415_407-417_bsdl.zip |
| IBIS models | https://www.st.com/resource/en/ibis_model/stm32f405-415_407-417_ibis.zip |
| System View Description | https://www.st.com/resource/en/svd/stm32f4_svd.zip |
| Presentations | https://www.st.com/resource/en/product_presentation/stm32-stm8_embedded_software_solutions.pdf |
| Presentations | https://www.st.com/resource/en/product_presentation/stm32_eval_tools_portfolio.pdf |
| Presentations | https://www.st.com/resource/en/product_presentation/stm32_stm8_functional-safety-packages.pdf |
| Presentations | https://www.st.com/resource/en/product_presentation/stm32-stm8_software_development_tools.pdf |
| Presentations | https://www.st.com/resource/en/product_presentation/microcontrollers-stm32-family-overview.pdf |
| Brochures | https://www.st.com/resource/en/brochure/products-and-solutions-for-plcs-and-smart-i-os.pdf |
| Flyers | https://www.st.com/resource/en/flyer/flstm32nucleo.pdf |
| Flyers | https://www.st.com/resource/en/flyer/flstmcsuite.pdf |
| Flyers | https://www.st.com/resource/en/flyer/flstm32trust.pdf |
| Product Certifications | https://www.st.com/resource/en/certification_document/stm32_authentication_can.pdf |
| Application Notes | https://www.st.com/resource/en/application_note/an1181-electrostatic-discharge-sensitivity-measurement-stmicroelectronics.pdf |
| Application Notes | https://www.st.com/resource/en/application_note/an1709-emc-design-guide-for-stm8-stm32-and-legacy-mcus-stmicroelectronics.pdf |
| Application Notes | https://www.st.com/resource/en/application_note/an2606-stm32-microcontroller-system-memory-boot-mode-stmicroelectronics.pdf |

- Application Notes https://www.st.com/resource/en/application_note/an2639-soldering-recommendations-and-package-information-for-leadfree-ecopack-mcus-and-mpus-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an2867-oscillator-design-guide-for-stm8afals-stm32-mcus-and-mpus-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an2945-stm8s-and-stm32-mcus-a-consistent-832bit-product-line-for-painless-migration-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an3070-managing-the-driver-enable-signal-for-rs485-and-iolink-communications-with-the-stm32s-usart-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an3126-audio-and-waveform-generation-using-the-dac-in-stm32-products-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an3154-can-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an3155-usart-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an3156-usb-dfu-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an3364-migration-and-compatibility-guidelines-for-stm32-microcontroller-applications-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an3371-using-the-hardware-realtime-clock-rtc-in-stm32-f0-f2-f3-f4-and-l1-series-of-mcus-stmicroelectronics.pdf
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