# 1. Description

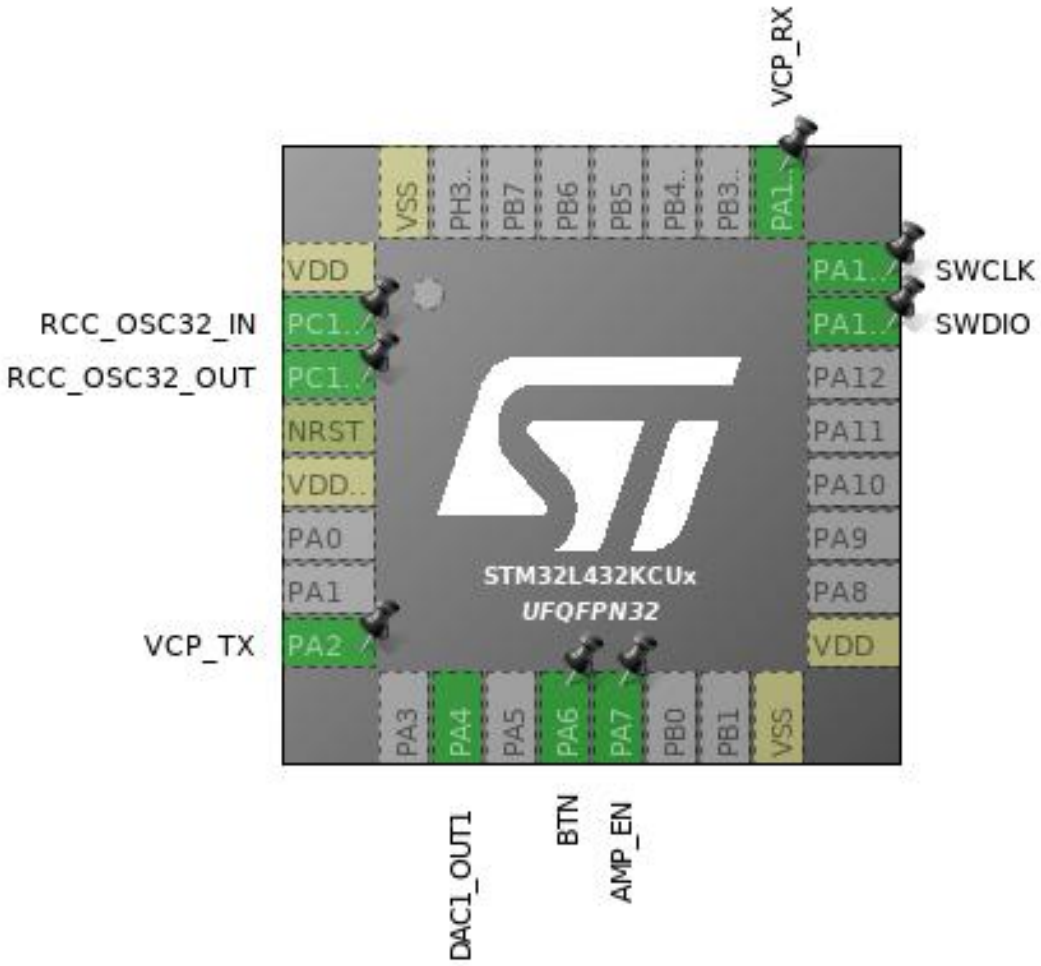
## 1.1. Project

| | |
|---|---|
| Project Name | pdmtest |
| Board Name | NUCLEO-L432KC |
| Generated with: | STM32CubeMX 4.27.0 |
| Date | 10/11/2018 |

## 1.2. MCU

| | |
|---|---|
| MCU Series | STM32L4 |
| MCU Line | STM32L4x2 |
| MCU name | STM32L432KCUx |
| MCU Package | UFQFPN32 |
| MCU Pin number | 32 |

## 2. Pinout Configuration

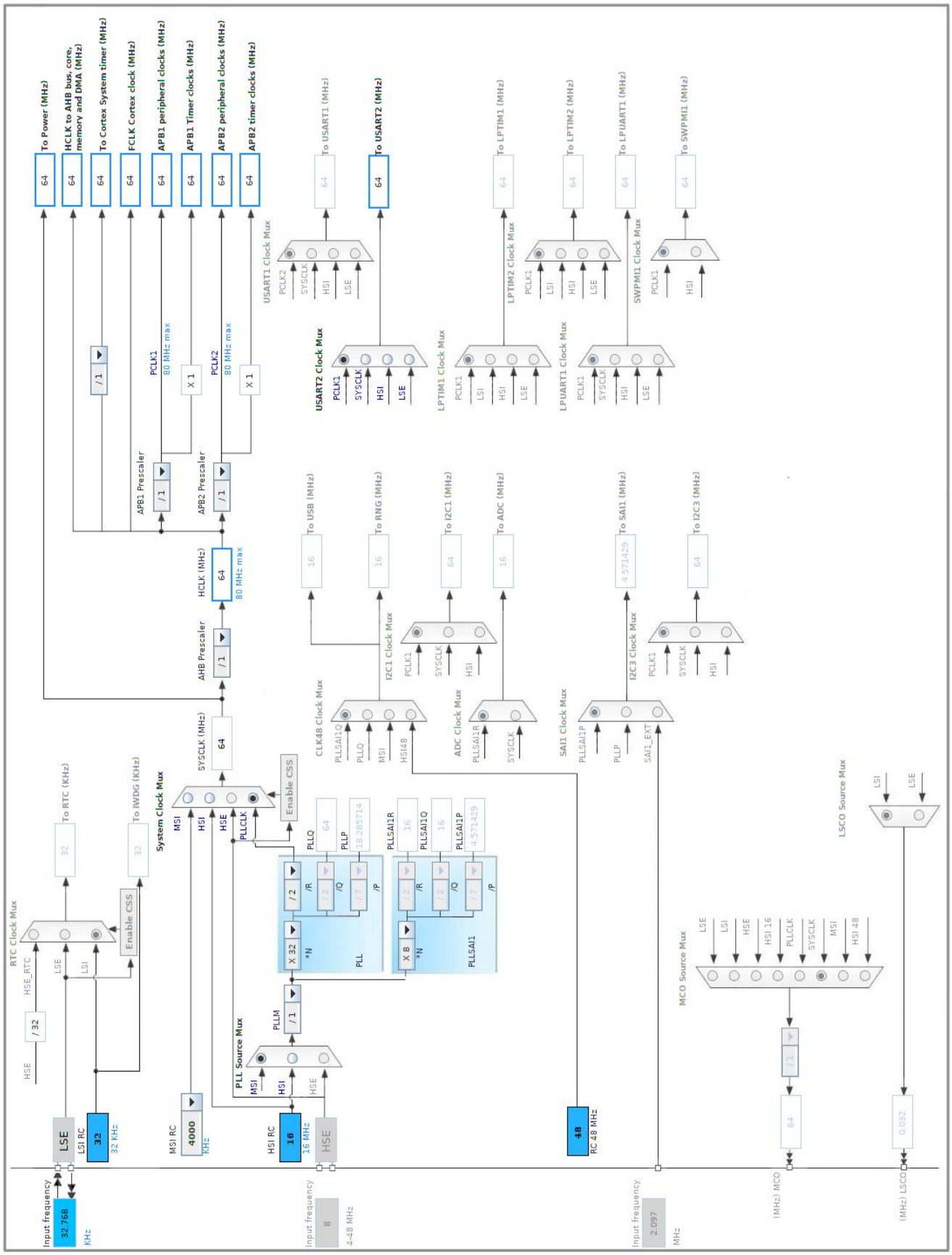


# 3. Pins Configuration

| Pin Number UFQFPN32 | Pin Name (function after reset) | Pin Type | Alternate Function(s) | Label |
|---|---|---|---|---|
| 1 | VDD | Power | | |
| 2 | PC14-OSC32_IN (PC14) | I/O | RCC_OSC32_IN | |
| 3 | PC15-OSC32_OUT (PC15) | I/O | RCC_OSC32_OUT | |
| 4 | NRST | Reset | | |
| 5 | VDDA/VREF+ | Power | | |
| 8 | PA2 | I/O | USART2_TX | VCP_TX |
| 10 | PA4 | I/O | DAC1_OUT1 | |
| 12 | PA6 | I/O | GPIO_EXTI6 | BTN |
| 13 | PA7 * | I/O | GPIO_Output | AMP_EN |
| 16 | VSS | Power | | |
| 17 | VDD | Power | | |
| 23 | PA13 (JTMS-SWDIO) | I/O | SYS_JTMS-SWDIO | SWDIO |
| 24 | PA14 (JTCK-SWCLK) | I/O | SYS_JTCK-SWCLK | SWCLK |
| 25 | PA15 (JTDI) | I/O | USART2_RX | VCP_RX |
| 32 | VSS | Power | | |

* The pin is affected with an I/O function

# 4. Clock Tree Configuration



# 5. IPs and Middleware Configuration

## 5.1. DAC1

**OUT1 mode: Connected to external pin only**

### 5.1.1. Parameter Settings:

**DAC Out1 Settings:**

| | |
|---|---|
| Output Buffer | Enable |
| Trigger | **Timer 6 Trigger Out event *** |
| Wave generation mode | Disabled |
| User Trimming | Factory trimming |
| Sample And Hold | Sampleandhold Disable |

## 5.2. RCC

**Low Speed Clock (LSE) : Crystal/Ceramic Resonator**

### 5.2.1. Parameter Settings:

**System Parameters:**

| | |
|---|---|
| VDD voltage (V) | 3.3 |
| Instruction Cache | Enabled |
| Prefetch Buffer | Disabled |
| Data Cache | Enabled |
| Flash Latency(WS) | 3 WS (4 CPU cycle) |

**RCC Parameters:**

| | |
|---|---|
| HSI Calibration Value | 16 |
| MSI Calibration Value | 0 |
| MSI Auto Calibration | Enabled |
| HSE Startup Timout Value (ms) | 100 |
| LSE Startup Timout Value (ms) | 5000 |
| LSE Drive Capability | LSE oscillator low drive capability |

**Power Parameters:**

| | |
|---|---|
| Power Regulator Voltage Scale | Power Regulator Voltage Scale 1 |

## 5.3. SYS

**Debug: Serial Wire**

**Timebase Source: SysTick**

## 5.4. TIM6

**mode: Activated**

### 5.4.1. Parameter Settings:

**Counter Settings:**

| | |
|---|---|
| Prescaler (PSC - 16 bits value) | 0 |
| Counter Mode | Up |
| Counter Period (AutoReload Register - 16 bits value ) | **3999 *** |
| auto-reload preload | **Enable *** |

**Trigger Output (TRGO) Parameters:**

| | |
|---|---|
| Trigger Event Selection | **Update Event *** |

## 5.5. USART2

**Mode: Asynchronous**

### 5.5.1. Parameter Settings:

**Basic Parameters:**

| | |
|---|---|
| Baud Rate | 115200 |
| Word Length | 8 Bits (including Parity) |
| Parity | None |
| Stop Bits | 1 |

**Advanced Parameters:**

| | |
|---|---|
| Data Direction | Receive and Transmit |
| Over Sampling | 16 Samples |
| Single Sample | Disable |

**Advanced Features:**

| | |
|---|---|
| Auto Baudrate | Disable |
| TX Pin Active Level Inversion | Disable |
| RX Pin Active Level Inversion | Disable |
| Data Inversion | Disable |
| TX and RX Pins Swapping | Disable |
| Overrun | Enable |
| DMA on RX Error | Enable |
| MSB First | Disable |

*** User modified value**

# 6. System Configuration

## 6.1. GPIO configuration

| IP | Pin | Signal | GPIO mode | GPIO pull/up pull down | Max Speed | User Label |
|---|---|---|---|---|---|---|
| DAC1 | PA4 | DAC1_OUT1 | Analog mode | No pull-up and no pull-down | n/a | |
| RCC | PC14-OSC32_IN (PC14) | RCC_OSC32_IN | n/a | n/a | n/a | |
| | PC15-OSC32_OUT (PC15) | RCC_OSC32_OUT | n/a | n/a | n/a | |
| SYS | PA13 (JTMS-SWDIO) | SYS_JTMS-SWDIO | n/a | n/a | n/a | SWDIO |
| | PA14 (JTCK-SWCLK) | SYS_JTCK-SWCLK | n/a | n/a | n/a | SWCLK |
| USART2 | PA2 | USART2_TX | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | VCP_TX |
| | PA15 (JTDI) | USART2_RX | Alternate Function Push Pull | No pull-up and no pull-down | **Very High *** | VCP_RX |
| GPIO | PA6 | GPIO_EXTI6 | **External Interrupt Mode with Falling edge trigger detection** | **Pull-up *** | n/a | BTN |
| | PA7 | GPIO_Output | Output Push Pull | No pull-up and no pull-down | Low | AMP_EN |

## 6.2. DMA configuration

| DMA request | Stream | Direction | Priority |
|---|---|---|---|
| DAC_CH1 | DMA1_Channel3 | Memory To Peripheral | Low |

*DAC_CH1: DMA1_Channel3 DMA request Settings:*

| | |
|---|---|
| Mode: | **Circular *** |
| Peripheral Increment: | Disable |
| Memory Increment: | **Enable *** |
| Peripheral Data Width: | Half Word |
| Memory Data Width: | Half Word |

## 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 |
| DMA1 channel3 global interrupt | true | 0 | 0 |
| EXTI line[9:5] interrupts | true | 0 | 0 |
| PVD/PVM1/PVM2/PVM3/PVM4 interrupts through EXTI lines 16/35/36/37/38 | unused | | |
| Flash global interrupt | unused | | |
| RCC global interrupt | unused | | |
| USART2 global interrupt | unused | | |
| TIM6 global interrupt, DAC channel1 and channel2 underrun error interrupts | unused | | |
| FPU global interrupt | unused | | |

*** User modified value**

# 7. Power Consumption Calculator report

7.1. Microcontroller Selection

| | |
|---|---|
| Series | STM32L4 |
| Line | STM32L4x2 |
| MCU | STM32L432KCUx |
| Datasheet | 028798_Rev2 |

7.2. Parameter Selection

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

# 8. Software Project

## 8.1. Project Settings

| Name | Value |
|---|---|
| Project Name | pdmtest |
| Project Folder | /home/sungjune/Projects/pdmtest |
| Toolchain / IDE | Makefile |
| Firmware Package Name and Version | STM32Cube FW_L4 V1.13.0 |

## 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 | 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 |

# 9. Software Pack Report