1. Description

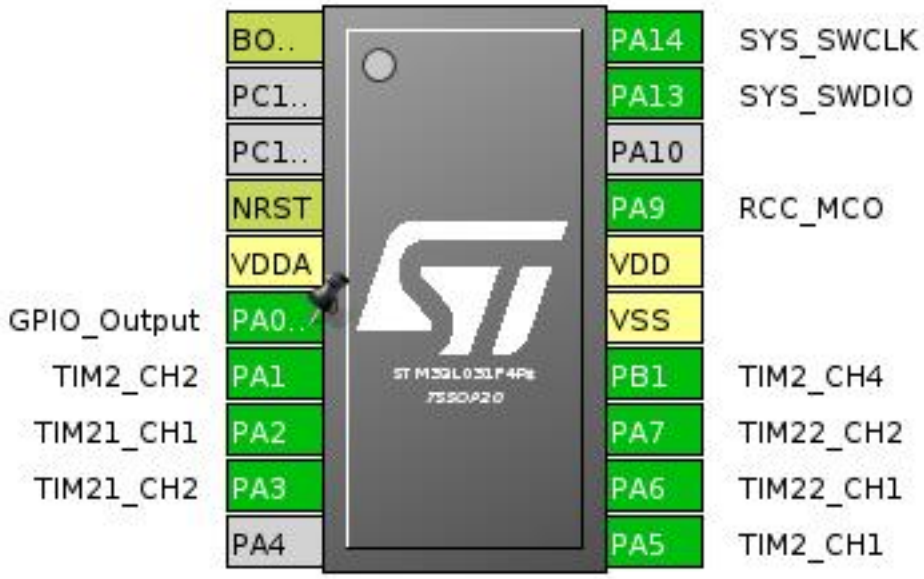
1.1. Project

Project Name	heart
Board Name	heart
Generated with:	STM32CubeMX 4.24.0
Date	03/08/2018

1.2. MCU

MCU Series	STM32L0
MCU Line	STM32L0x1
MCU name	STM32L031F4Px
MCU Package	TSSOP20
MCU Pin number	20

2. Pinout Configuration

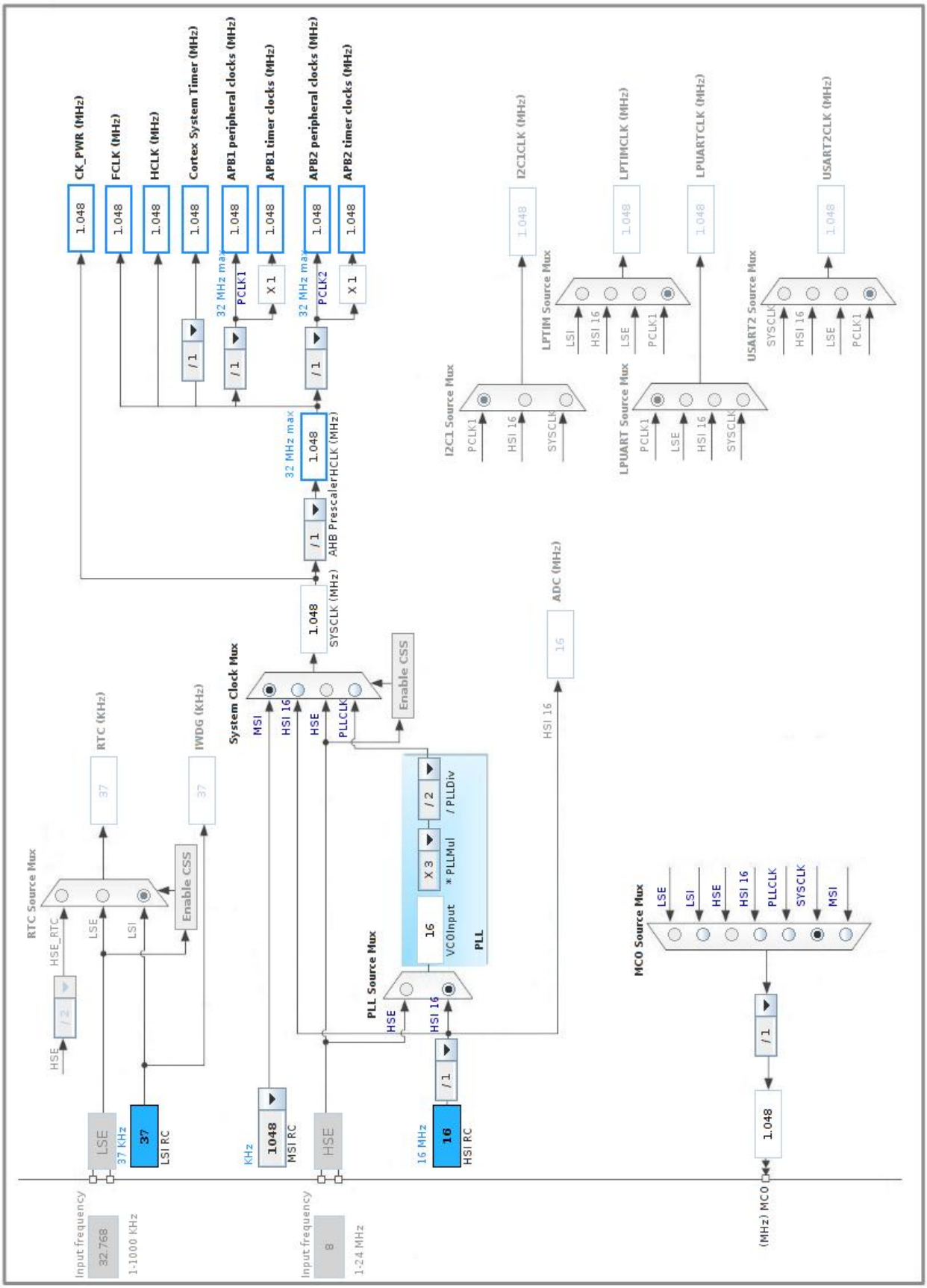


3. Pins Configuration

Pin Number TSSOP20	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	BOOT0	Boot		
4	NRST	Reset		
5	VDDA	Power		
6	PA0-CK_IN *	I/O	GPIO_Output	
7	PA1	I/O	TIM2_CH2	
8	PA2	I/O	TIM21_CH1	
9	PA3	I/O	TIM21_CH2	
11	PA5	I/O	TIM2_CH1	
12	PA6	I/O	TIM22_CH1	
13	PA7	I/O	TIM22_CH2	
14	PB1	I/O	TIM2_CH4	
15	VSS	Power		
16	VDD	Power		
17	PA9	I/O	RCC_MCO	
19	PA13	I/O	SYS_SWDIO	
20	PA14	I/O	SYS_SWCLK	

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. RCC

mode: Master Clock Output 1

5.1.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Buffer Cache	Enabled
Prefetch	Disabled
Preread	Enabled
Flash Latency(WS)	0 WS (1 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
MSI Calibration Value	0
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1

5.2. SYS

mode: Debug Serial Wire

Timebase Source: SysTick

5.3. TIM2

Channel1: PWM Generation CH1

Channel2: PWM Generation CH2

Channel4: PWM Generation CH4

5.3.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**1 ***
Counter Mode	Up

Counter Period (AutoReload Register - 16 bits value)	**255 ***
Internal Clock Division (CKD)	No Division

Trigger Output (TRGO) Parameters:

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

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (16 bits value)	**64 ***
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 2:

Mode	PWM mode 1
Pulse (16 bits value)	**64 ***
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 4:

Mode	PWM mode 1
Pulse (16 bits value)	**64 ***
Fast Mode	Disable
CH Polarity	High

5.4. TIM21

Channel1: PWM Generation CH1
Channel2: PWM Generation CH2

5.4.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**255 ***
Internal Clock Division (CKD)	No Division

Trigger Output (TRGO) Parameters:

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

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (16 bits value)	

	64 *
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 2:

Mode	PWM mode 1
Pulse (16 bits value)	**64 ***
Fast Mode	Disable
CH Polarity	High

5.5. TIM22

Channel1: PWM Generation CH1
Channel2: PWM Generation CH2

5.5.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**255 ***
Internal Clock Division (CKD)	No Division

Trigger Output (TRGO) Parameters:

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

PWM Generation Channel 1:

Mode	PWM mode 1
Pulse (16 bits value)	**64 ***
Fast Mode	Disable
CH Polarity	High

PWM Generation Channel 2:

Mode	PWM mode 1
Pulse (16 bits value)	**64 ***
Fast Mode	Disable
CH Polarity	High

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
RCC	PA9	RCC_MCO	Alternate Function Push Pull	No pull-up and no pull-down	Low	
SYS	PA13	SYS_SWDIO	n/a	n/a	n/a	
	PA14	SYS_SWCLK	n/a	n/a	n/a	
TIM2	PA1	TIM2_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA5	TIM2_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB1	TIM2_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	
TIM21	PA2	TIM21_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA3	TIM21_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
TIM22	PA6	TIM22_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA7	TIM22_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
GPIO	PA0-CK_IN	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	

6.2. DMA configuration

nothing configured in DMA service

6.3. NVIC configuration

Interrupt Table	Enable	Preenmption Priority	SubPriority
Non maskable Interrupt	true	0	0
Hard fault interrupt	true	0	0
System service call via SWI instruction	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 and EEPROM global interrupt	unused		
RCC global interrupt	unused		
TIM2 global interrupt	unused		
TIM21 global interrupt	unused		
TIM22 global interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32L0
Line	STM32L0x1
MCU	STM32L031F4Px
Datasheet	027063_Rev4

7.2. Parameter Selection

Temperature	25
Vdd	3.0

8. Software Project

8.1. Project Settings

Name	Value
Project Name	heart
Project Folder	/home/peter/repos/heart/stm32L031F4/heart
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_L0 V1.10.0

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	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)	Yes

9. Software Pack Report