

## 1. Description

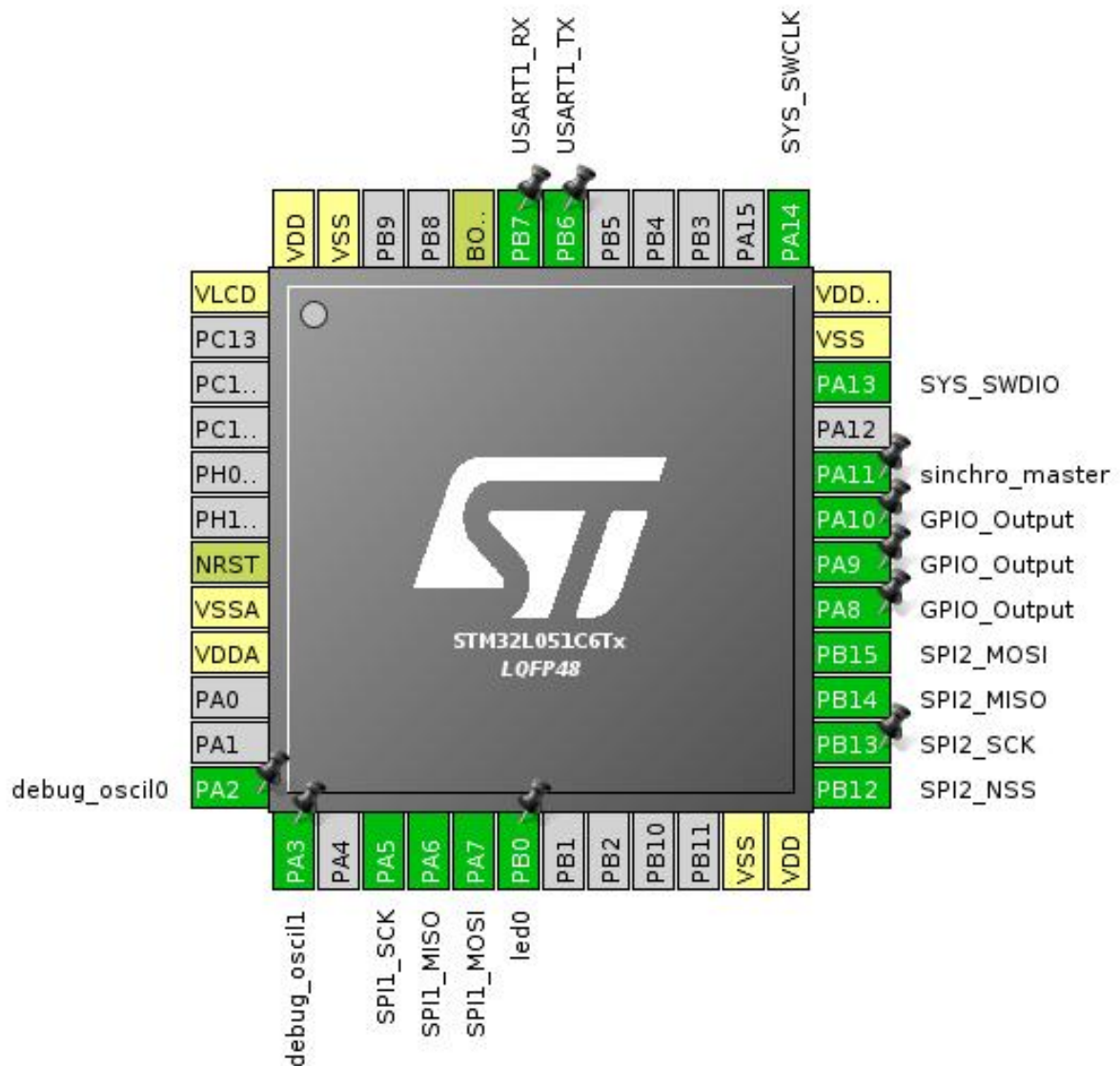
### 1.1. Project

Project Name	I051_tors_000_002
Board Name	I051_tors_000_002
Generated with:	STM32CubeMX 4.26.1
Date	03/01/2019

### 1.2. MCU

MCU Series	STM32L0
MCU Line	STM32L0x1
MCU name	STM32L051C6Tx
MCU Package	LQFP48
MCU Pin number	48

## 2. Pinout Configuration

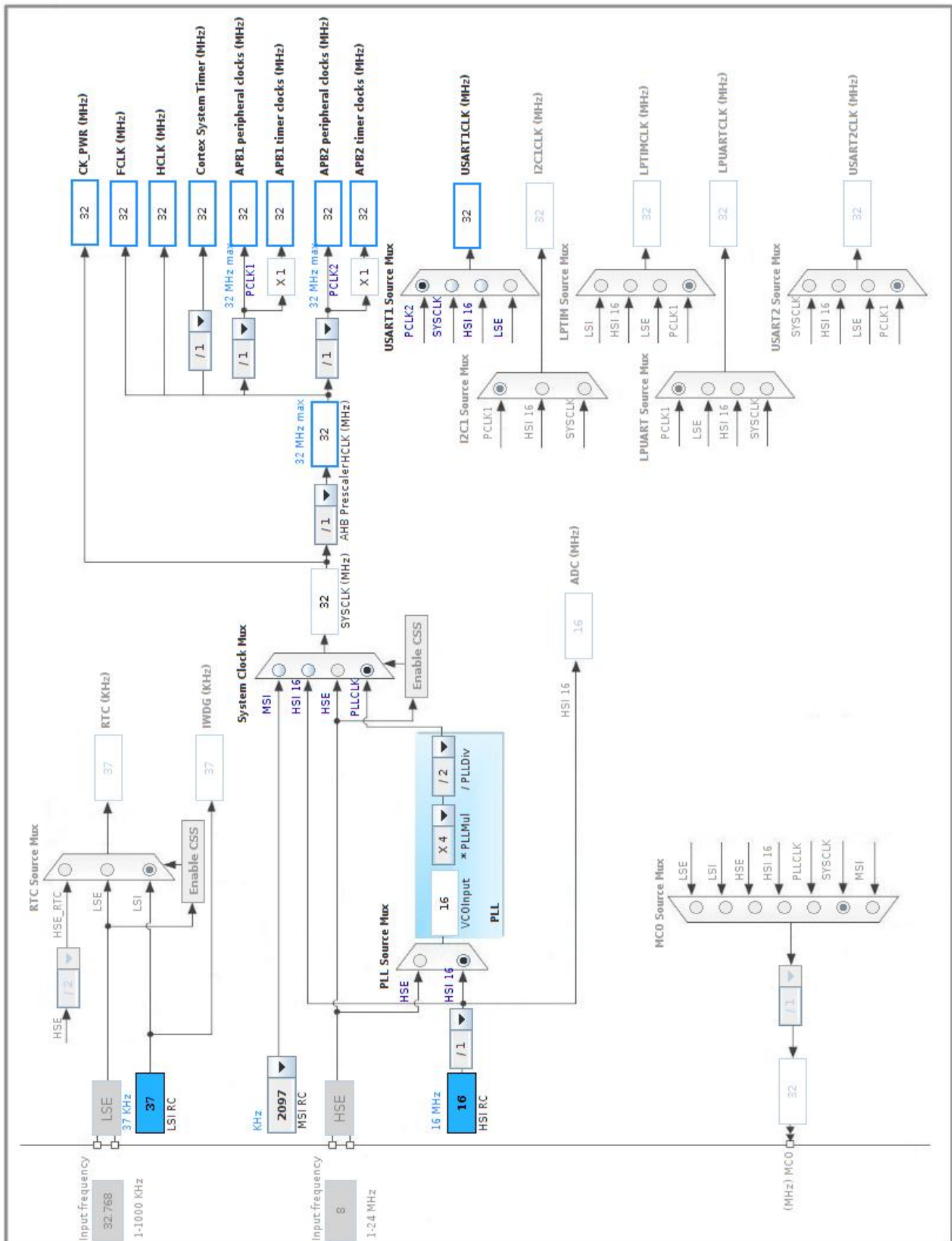


### 3. Pins Configuration

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VLCD	Power		
7	NRST	Reset		
8	VSSA	Power		
9	VDDA	Power		
12	PA2 *	I/O	GPIO_Output	debug_oscil0
13	PA3 *	I/O	GPIO_Output	debug_oscil1
15	PA5	I/O	SPI1_SCK	
16	PA6	I/O	SPI1_MISO	
17	PA7	I/O	SPI1_MOSI	
18	PB0 *	I/O	GPIO_Output	led0
23	VSS	Power		
24	VDD	Power		
25	PB12	I/O	SPI2_NSS	
26	PB13	I/O	SPI2_SCK	
27	PB14	I/O	SPI2_MISO	
28	PB15	I/O	SPI2_MOSI	
29	PA8 *	I/O	GPIO_Output	
30	PA9 *	I/O	GPIO_Output	
31	PA10 *	I/O	GPIO_Output	
32	PA11 *	I/O	GPIO_Output	sinchro_master
34	PA13	I/O	SYS_SWDIO	
35	VSS	Power		
36	VDDIO2	Power		
37	PA14	I/O	SYS_SWCLK	
42	PB6	I/O	USART1_TX	
43	PB7	I/O	USART1_RX	
44	BOOT0	Boot		
47	VSS	Power		
48	VDD	Power		

\* The pin is affected with an I/O function

## 4. Clock Tree Configuration



## 5. IPs and Middleware Configuration

### 5.1. SPI1

**Mode: Full-Duplex Master**

#### 5.1.1. Parameter Settings:

##### Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

##### Clock Parameters:

Prescaler (for Baud Rate)	<b>16 *</b>
Baud Rate	<b>2.0 MBits/s *</b>
Clock Polarity (CPOL)	<b>High *</b>
Clock Phase (CPHA)	1 Edge

##### Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

### 5.2. SPI2

**Mode: Full-Duplex Slave**

**Hardware NSS Signal: Hardware NSS Input Signal**

#### 5.2.1. Parameter Settings:

##### Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

##### Clock Parameters:

Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

##### Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Input Hardware

### 5.3. SYS

mode: Debug Serial Wire

Timebase Source: SysTick

### 5.4. TIM6

mode: Activated

#### 5.4.1. Parameter Settings:

##### Counter Settings:

Prescaler (PSC - 16 bits value)	32 *
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value )	1000 *

##### Trigger Output (TRGO) Parameters:

Trigger Event Selection	Reset (UG bit from TIMx_EGR)
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### 5.5. USART1

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
SPI1	PA5	SPI1_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PA6	SPI1_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PA7	SPI1_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
SPI2	PB12	SPI2_NSS	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PB13	SPI2_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PB14	SPI2_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PB15	SPI2_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
SYS	PA13	SYS_SWDIO	n/a	n/a	n/a	
	PA14	SYS_SWCLK	n/a	n/a	n/a	
USART1	PB6	USART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PB7	USART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
GPIO	PA2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	debug_oscil0
	PA3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	debug_oscil1
	PB0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	led0
	PA8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PA9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PA10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PA11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	sinchro_master

### 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
TIM6 global interrupt and DAC1/DAC2 underrun error interrupts	true	0	0
SPI2 global interrupt	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash and EEPROM global interrupt	unused		
RCC global interrupt	unused		
SPI1 global interrupt	unused		
USART1 global interrupt / USART1 wake-up interrupt through EXTI line 25	unused		

\* User modified value

## **7. Power Consumption Calculator report**

### 7.1. Microcontroller Selection

Series	STM32L0
Line	STM32L0x1
MCU	STM32L051C6Tx
Datasheet	025938_Rev7

### 7.2. Parameter Selection

Temperature	25
Vdd	null

## 8. Software Project

### 8.1. Project Settings

Name	Value
Project Name	I051_tors_000_002
Project Folder	/home/eugeny/workspace/tors_stm32_github
Toolchain / IDE	Makefile
Firmware Package Name and Version	STM32Cube FW_L0 V1.10.0

### 8.2. Code Generation Settings

Name	Value
STM32Cube Firmware Library Package	Copy all used libraries into the project folder
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	No
Set all free pins as analog (to optimize the power consumption)	No

## ***9. Software Pack Report***