1. Description

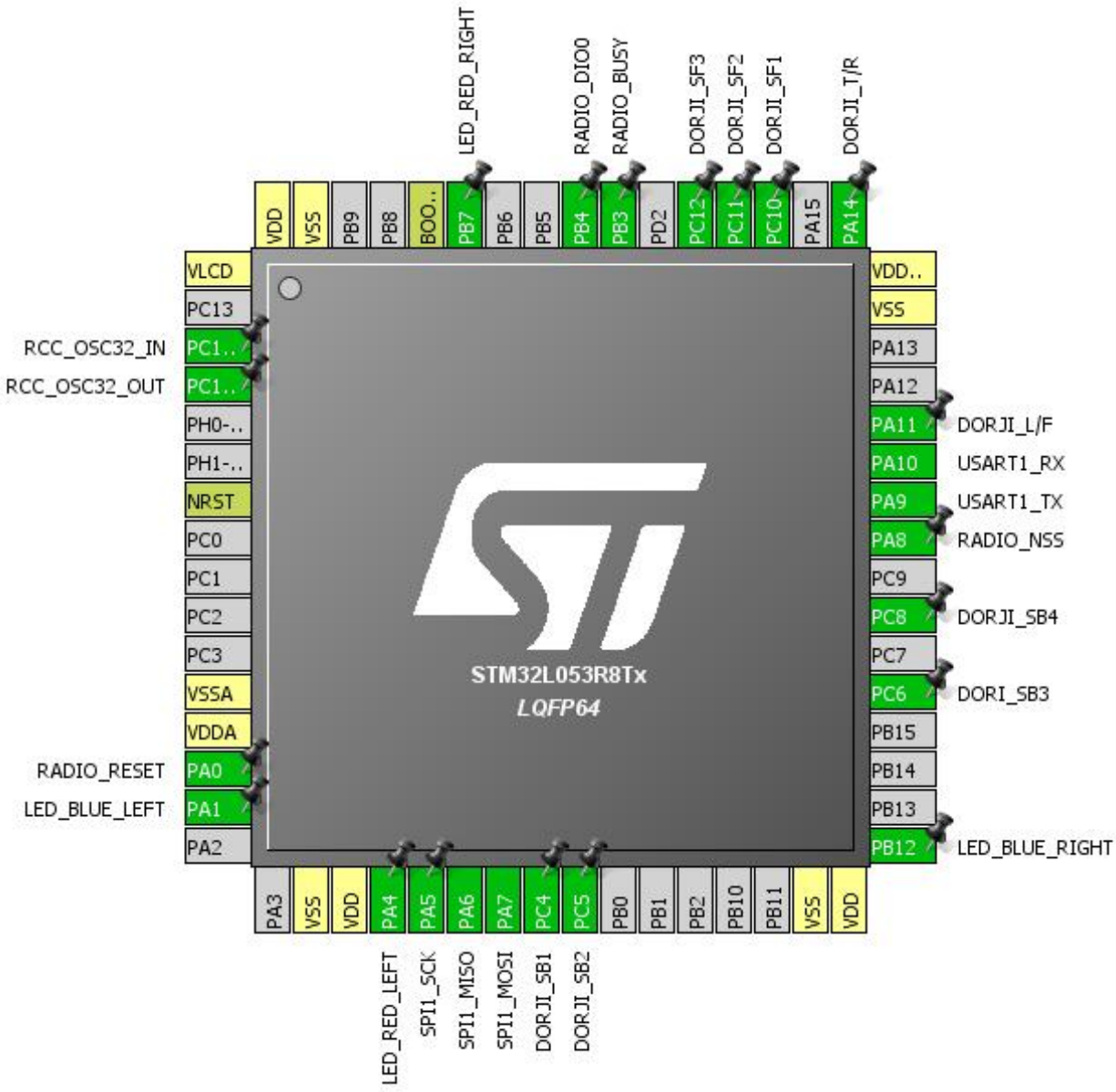
1.1. Project

Project Name	stm32l053
Board Name	NUCLEO-L053R8
Generated with:	STM32CubeMX 4.27.0
Date	10/16/2018

1.2. MCU

MCU Series	STM32L0
MCU Line	STM32L0x3
MCU name	STM32L053R8Tx
MCU Package	LQFP64
MCU Pin number	64

2. Pinout Configuration



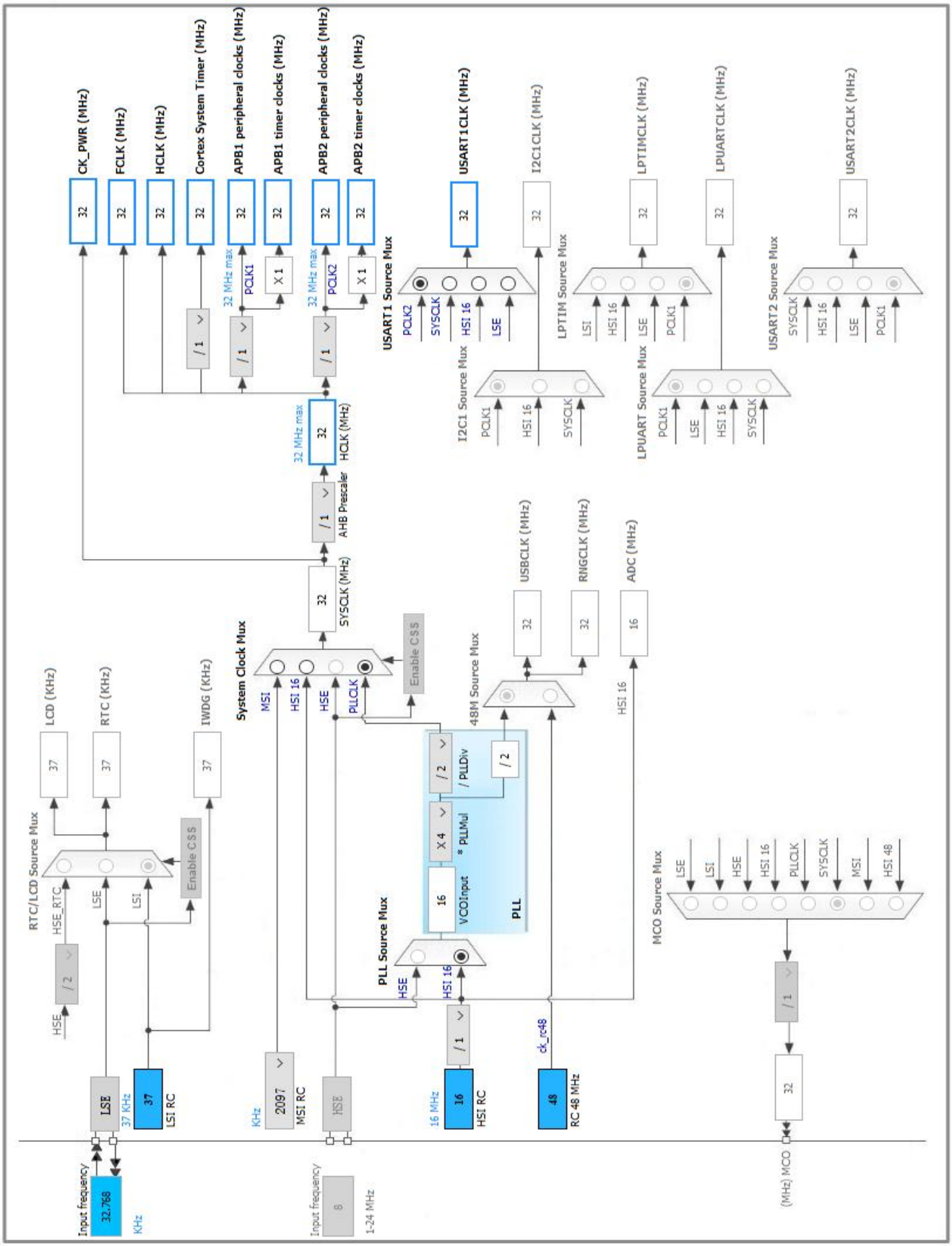
3. Pins Configuration

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VLCD	Power		
3	PC14-OSC32_IN	I/O	RCC_OSC32_IN	
4	PC15-OSC32_OUT	I/O	RCC_OSC32_OUT	
7	NRST	Reset		
12	VSSA	Power		
13	VDDA	Power		
14	PA0 *	I/O	GPIO_Output	RADIO_RESET
15	PA1 *	I/O	GPIO_Output	LED_BLUE_LEFT
18	VSS	Power		
19	VDD	Power		
20	PA4 *	I/O	GPIO_Output	LED_RED_LEFT
21	PA5	I/O	SPI1_SCK	
22	PA6	I/O	SPI1_MISO	
23	PA7	I/O	SPI1_MOSI	
24	PC4 *	I/O	GPIO_Input	DORJI_SB1
25	PC5 *	I/O	GPIO_Input	DORJI_SB2
31	VSS	Power		
32	VDD	Power		
33	PB12 *	I/O	GPIO_Output	LED_BLUE_RIGHT
37	PC6 *	I/O	GPIO_Input	DORI_SB3
39	PC8 *	I/O	GPIO_Input	DORJI_SB4
41	PA8 *	I/O	GPIO_Output	RADIO_NSS
42	PA9	I/O	USART1_TX	
43	PA10	I/O	USART1_RX	
44	PA11 *	I/O	GPIO_Input	DORJI_L/F
47	VSS	Power		
48	VDD_USB	Power		
49	PA14 *	I/O	GPIO_Input	DORJI_T/R
51	PC10 *	I/O	GPIO_Input	DORJI_SF1
52	PC11 *	I/O	GPIO_Input	DORJI_SF2
53	PC12 *	I/O	GPIO_Input	DORJI_SF3
55	PB3 *	I/O	GPIO_Input	RADIO_BUSY
56	PB4	I/O	GPIO_EXTI4	RADIO_DIO0
59	PB7 *	I/O	GPIO_Output	LED_RED_RIGHT
60	BOOT0	Boot		
63	VSS	Power		

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
64	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. RCC

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

5.1.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Buffer Cache	Enabled
Prefetch	Disabled
Preread	Enabled
Flash Latency(WS)	1 WS (2 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. SPI1

Mode: Full-Duplex Master

5.2.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	**16 ***
Baud Rate	**2.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

5.3. SYS

Timebase Source: SysTick

5.4. TIM2

Clock Source : Internal Clock

5.4.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**32-1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**1000-1 ***
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)

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
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	
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 ***	
USART1	PA9	USART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	
	PA10	USART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	**Very High ***	
GPIO	PA0	GPIO_Output	Output Push Pull	**Pull-up ***	Low	RADIO_RESET
	PA1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED_BLUE_LEFT
	PA4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED_RED_LEFT
	PC4	GPIO_Input	Input mode	**Pull-up ***	n/a	DORJI_SB1
	PC5	GPIO_Input	Input mode	**Pull-up ***	n/a	DORJI_SB2
	PB12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED_BLUE_RIGHT
	PC6	GPIO_Input	Input mode	**Pull-up ***	n/a	DORI_SB3
	PC8	GPIO_Input	Input mode	**Pull-up ***	n/a	DORJI_SB4
	PA8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	RADIO_NSS
	PA11	GPIO_Input	Input mode	**Pull-up ***	n/a	DORJI_L/F
	PA14	GPIO_Input	Input mode	**Pull-up ***	n/a	DORJI_T/R
	PC10	GPIO_Input	Input mode	**Pull-up ***	n/a	DORJI_SF1
	PC11	GPIO_Input	Input mode	**Pull-up ***	n/a	DORJI_SF2
	PC12	GPIO_Input	Input mode	**Pull-up ***	n/a	DORJI_SF3
	PB3	GPIO_Input	Input mode	**Pull-down ***	n/a	RADIO_BUSY
	PB4	GPIO_EXTI4	External Interrupt Mode with Rising edge trigger detection	**Pull-down ***	n/a	RADIO_DIO0
	PB7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED_RED_RIGHT

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
EXTI line 4 to 15 interrupts	true	0	0
TIM2 global interrupt	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash and EEPROM global interrupt	unused		
RCC and CRS 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	STM32L0x3
MCU	STM32L053R8Tx
Datasheet	025844_Rev7

7.2. Parameter Selection

Temperature	25
Vdd	null

8. Software Project

8.1. Project Settings

Name	Value
Project Name	stm32l053
Project Folder	C:\Users\HONG\Desktop\SX1262_DROJI\stm32l053
Toolchain / IDE	MDK-ARM V5
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