

1. Description

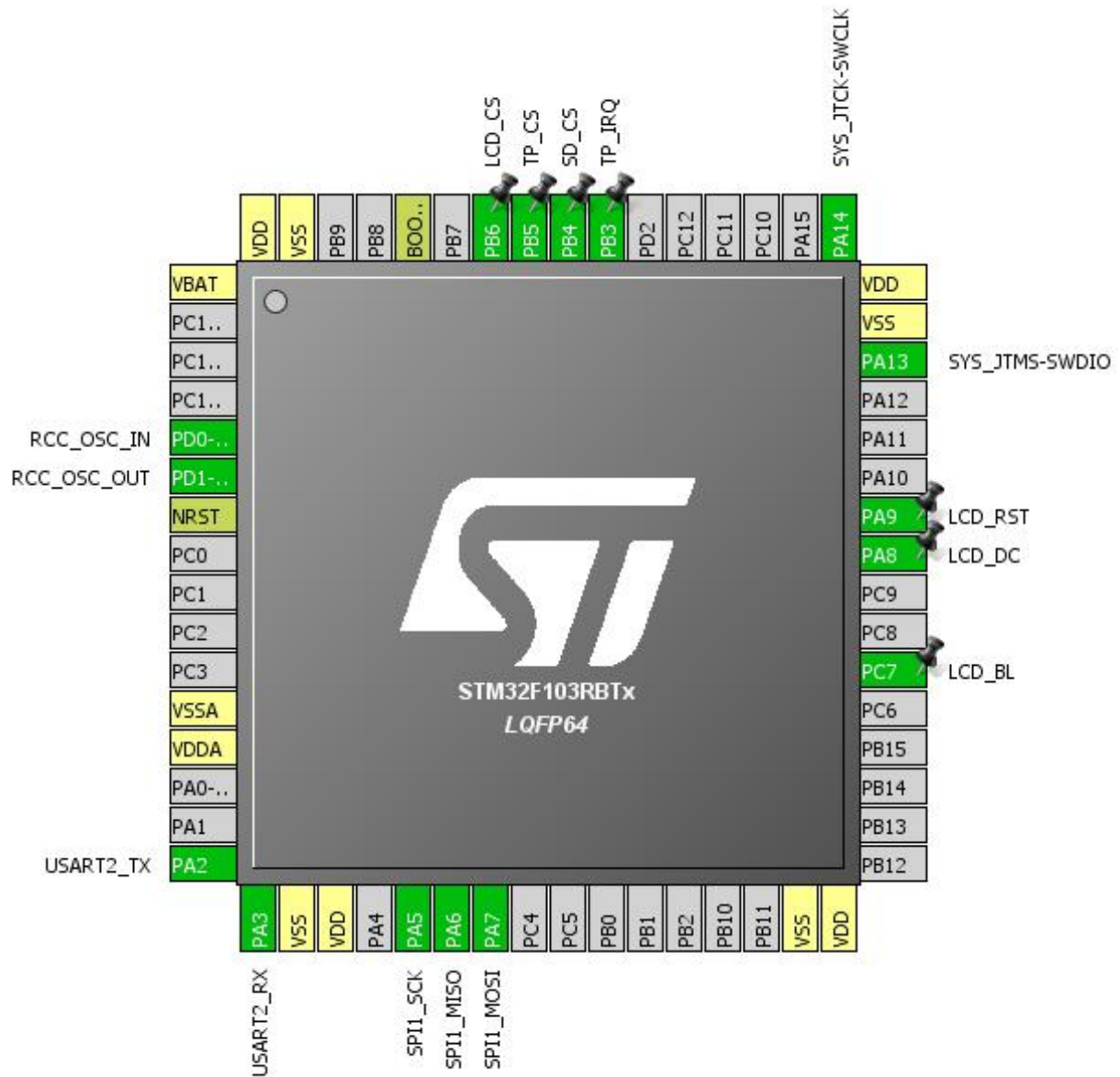
1.1. Project

Project Name	lcd4in-demo
Board Name	lcd4in-demo
Generated with:	STM32CubeMX 4.22.0
Date	01/12/2018

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F103
MCU name	STM32F103RBTx
MCU Package	LQFP64
MCU Pin number	64

2. Pinout Configuration

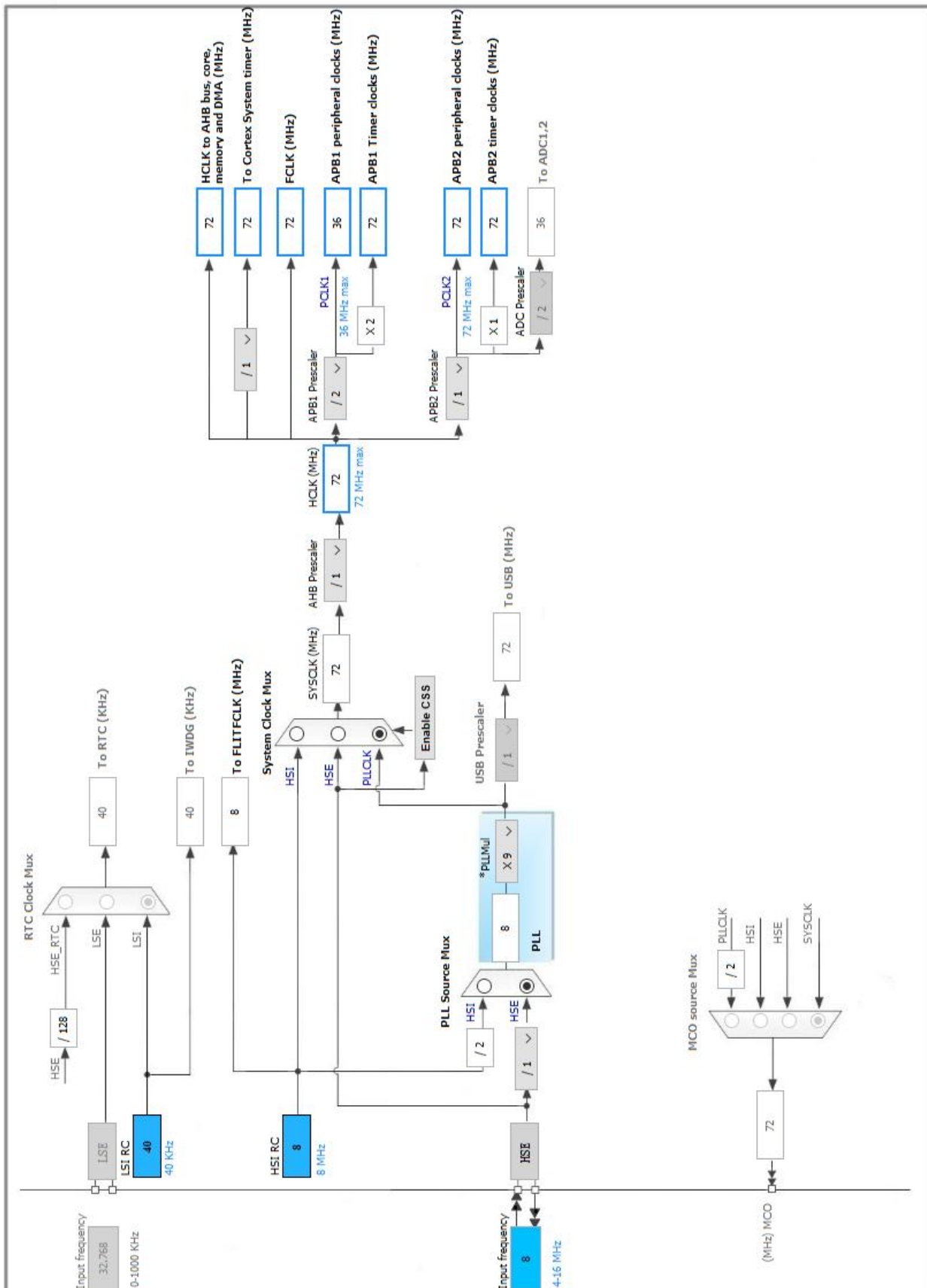


3. Pins Configuration

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
5	PD0-OSC_IN	I/O	RCC_OSC_IN	
6	PD1-OSC_OUT	I/O	RCC_OSC_OUT	
7	NRST	Reset		
12	VSSA	Power		
13	VDDA	Power		
16	PA2	I/O	USART2_TX	
17	PA3	I/O	USART2_RX	
18	VSS	Power		
19	VDD	Power		
21	PA5	I/O	SPI1_SCK	SPI1_SCK
22	PA6	I/O	SPI1_MISO	SPI1_MISO
23	PA7	I/O	SPI1_MOSI	SPI1_MOSI
31	VSS	Power		
32	VDD	Power		
38	PC7	I/O	TIM3_CH2	LCD_BL
41	PA8 *	I/O	GPIO_Output	LCD_DC
42	PA9 *	I/O	GPIO_Output	LCD_RST
46	PA13	I/O	SYS_JTMS-SWDIO	
47	VSS	Power		
48	VDD	Power		
49	PA14	I/O	SYS_JTCK-SWCLK	
55	PB3 *	I/O	GPIO_Input	TP_IRQ
56	PB4 *	I/O	GPIO_Output	SD_CS
57	PB5 *	I/O	GPIO_Output	TP_CS
58	PB6 *	I/O	GPIO_Output	LCD_CS
60	BOOT0	Boot		
63	VSS	Power		
64	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

5.1.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Prefetch Buffer	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

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)	8 *
Baud Rate	9.0 MBits/s *
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

5.3. SYS

Debug: Serial Wire

Timebase Source: SysTick

5.4. TIM3

Channel2: PWM Generation CH2

5.4.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	720-1 *
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	2000-1 *
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode	Disable (no sync between this TIM (Master) and its Slaves)
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

PWM Generation Channel 2:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High

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

*** 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	PD0-OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PD1-OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SPI1	PA5	SPI1_SCK	Alternate Function Push Pull	n/a	High *	SPI1_SCK
	PA6	SPI1_MISO	Input mode	No pull-up and no pull-down	n/a	SPI1_MISO
	PA7	SPI1_MOSI	Alternate Function Push Pull	n/a	High *	SPI1_MOSI
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
TIM3	PC7	TIM3_CH2	Alternate Function Push Pull	n/a	Low	LCD_BL
USART2	PA2	USART2_TX	Alternate Function Push Pull	n/a	High *	
	PA3	USART2_RX	Input mode	No pull-up and no pull-down	n/a	
GPIO	PA8	GPIO_Output	Output Push Pull	n/a	Low	LCD_DC
	PA9	GPIO_Output	Output Push Pull	n/a	Low	LCD_RST
	PB3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	TP_IRQ
	PB4	GPIO_Output	Output Push Pull	n/a	Low	SD_CS
	PB5	GPIO_Output	Output Push Pull	n/a	Low	TP_CS
	PB6	GPIO_Output	Output Push Pull	n/a	Low	LCD_CS

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
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
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
TIM3 global interrupt	unused		
SPI1 global interrupt	unused		
USART2 global interrupt	unused		

* User modified value

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103RBTx
Datasheet	13587_Rev17

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	lcd4in-demo
Project Folder	G:\Project\LCD+OLED\Program\4inch TFT Touch
Toolchain / IDE	MDK-ARM V5
Firmware Package Name and Version	STM32Cube FW_F1 V1.6.0

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	Yes
Set all free pins as analog (to optimize the power consumption)	No