

1. Description

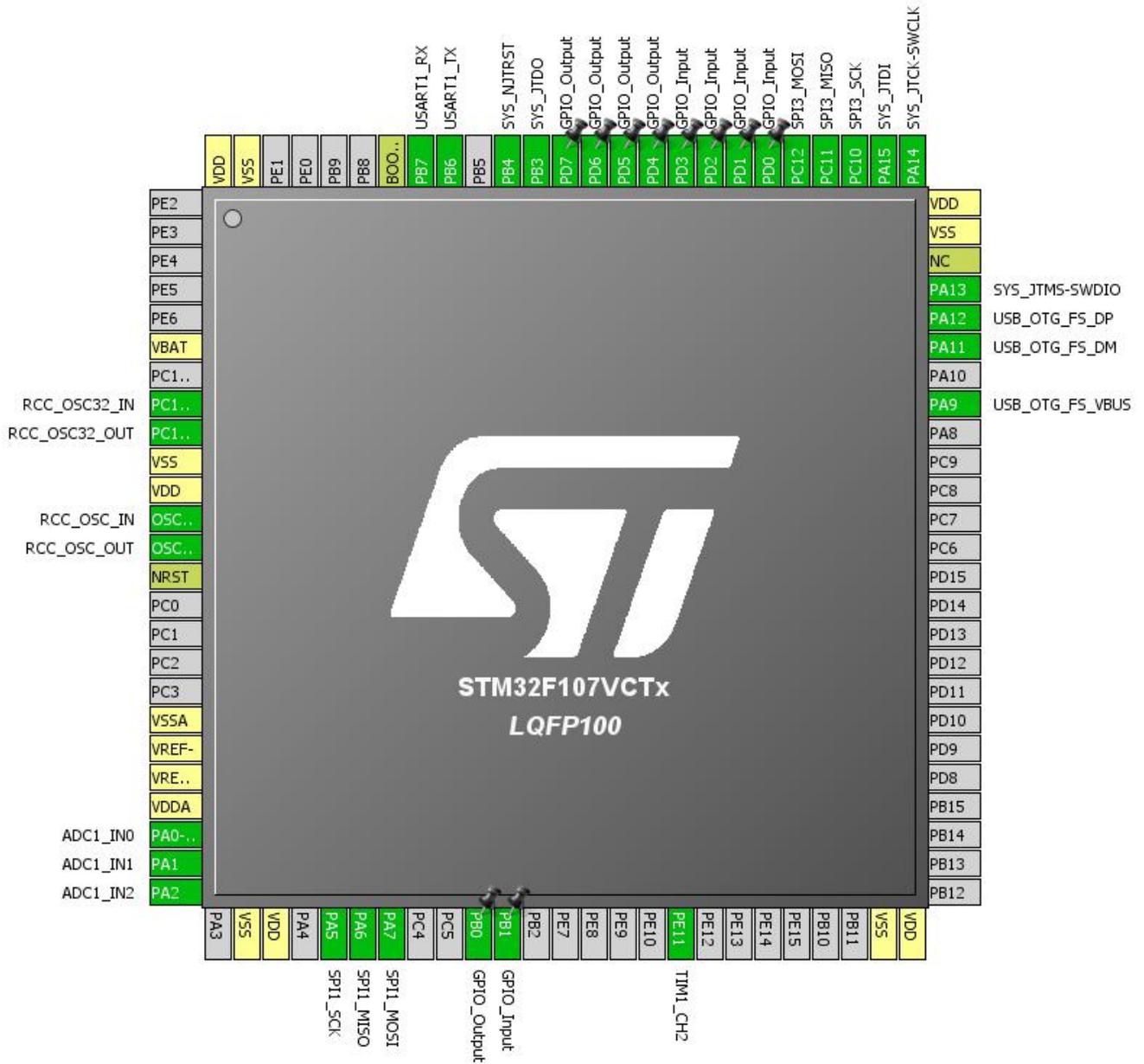
1.1. Project

Project Name	HSB-MRTS
Board Name	No information
Generated with:	STM32CubeMX 4.20.1
Date	07/14/2017

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F105/107
MCU name	STM32F107VCTx
MCU Package	LQFP100
MCU Pin number	100

2. Pinout Configuration



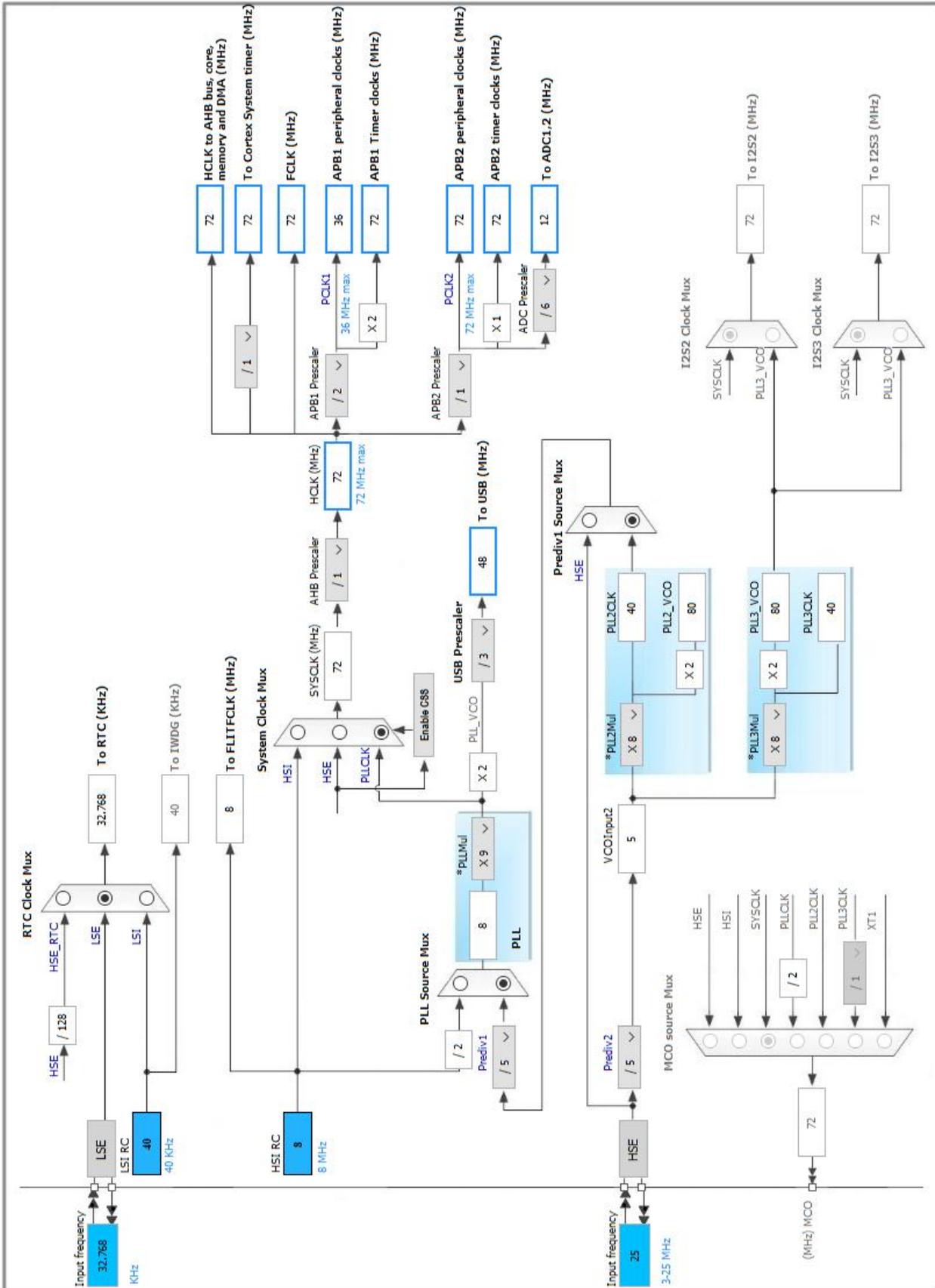
3. Pins Configuration

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
6	VBAT	Power		
8	PC14-OSC32_IN	I/O	RCC_OSC32_IN	
9	PC15-OSC32_OUT	I/O	RCC_OSC32_OUT	
10	VSS	Power		
11	VDD	Power		
12	OSC_IN	I/O	RCC_OSC_IN	
13	OSC_OUT	I/O	RCC_OSC_OUT	
14	NRST	Reset		
19	VSSA	Power		
20	VREF-	Power		
21	VREF+	Power		
22	VDDA	Power		
23	PA0-WKUP	I/O	ADC1_IN0	
24	PA1	I/O	ADC1_IN1	
25	PA2	I/O	ADC1_IN2	
27	VSS	Power		
28	VDD	Power		
30	PA5	I/O	SPI1_SCK	
31	PA6	I/O	SPI1_MISO	
32	PA7	I/O	SPI1_MOSI	
35	PB0 *	I/O	GPIO_Output	
36	PB1 *	I/O	GPIO_Input	
42	PE11	I/O	TIM1_CH2	
49	VSS	Power		
50	VDD	Power		
68	PA9	I/O	USB_OTG_FS_VBUS	
70	PA11	I/O	USB_OTG_FS_DM	
71	PA12	I/O	USB_OTG_FS_DP	
72	PA13	I/O	SYS_JTMS-SWDIO	
73	NC	NC		
74	VSS	Power		
75	VDD	Power		
76	PA14	I/O	SYS_JTCK-SWCLK	
77	PA15	I/O	SYS_JTDI	
78	PC10	I/O	SPI3_SCK	
79	PC11	I/O	SPI3_MISO	

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
80	PC12	I/O	SPI3_MOSI	
81	PD0 *	I/O	GPIO_Input	
82	PD1 *	I/O	GPIO_Input	
83	PD2 *	I/O	GPIO_Input	
84	PD3 *	I/O	GPIO_Input	
85	PD4 *	I/O	GPIO_Output	
86	PD5 *	I/O	GPIO_Output	
87	PD6 *	I/O	GPIO_Output	
88	PD7 *	I/O	GPIO_Output	
89	PB3	I/O	SYS_JTDO	
90	PB4	I/O	SYS_NJTRST	
92	PB6	I/O	USART1_TX	
93	PB7	I/O	USART1_RX	
94	BOOT0	Boot		
99	VSS	Power		
100	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. ADC1

mode: IN0

mode: IN1

mode: IN2

5.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode Independent mode

ADC_Settings:

Data Alignment Right alignment

Scan Conversion Mode Disabled

Continuous Conversion Mode Disabled

Discontinuous Conversion Mode Disabled

ADC_Regular_ConversionMode:

Enable Regular Conversions Enable

Number Of Conversion 1

External Trigger Conversion Source Regular Conversion launched by software

Rank 1

Channel Channel 0

Sampling Time 1.5 Cycles

ADC_Injected_ConversionMode:

Number Of Conversions 0

WatchDog:

Enable Analog WatchDog Mode false

5.2. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

5.2.1. Parameter Settings:

System Parameters:

VDD voltage (V) 3.3

Instruction Cache	Enabled
Prefetch Buffer	Enabled
Data Cache	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

5.3. RTC

mode: Activate Clock Source

5.3.1. Parameter Settings:

Calendar Time:

Data Format	BCD data format
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General:

Auto Predivider Calculation	Enabled
Asynchronous Predivider value	Automatic Predivider Calculation Enabled
Output	Alarm pulse signal on the TAMPER pin

5.4. SPI1

Mode: Full-Duplex Master

5.4.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	64 *
Baud Rate	1.125 MBits/s *
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

5.5. SPI3

Mode: Full-Duplex Master

5.5.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	18.0 MBits/s *
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

5.6. SYS

Debug: JTAG (5 pins)

Timebase Source: SysTick

5.7. TIM1

Channel2: PWM Generation CH2

5.7.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	0
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0

5.9.1. Parameter Settings:

Speed	Device Full Speed 12MBit/s
Endpoint 0 Max Packet size	64 Bytes
Low power	Disabled
VBUS sensing	Disabled
Signal start of frame	Disabled

* User modified value

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ADC1	PA0-WKUP	ADC1_IN0	Analog mode	n/a	n/a	
	PA1	ADC1_IN1	Analog mode	n/a	n/a	
	PA2	ADC1_IN2	Analog mode	n/a	n/a	
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	
	OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SPI1	PA5	SPI1_SCK	Alternate Function Push Pull	n/a	High *	
	PA6	SPI1_MISO	Input mode	No pull-up and no pull-down	n/a	
	PA7	SPI1_MOSI	Alternate Function Push Pull	n/a	High *	
SPI3	PC10	SPI3_SCK	Alternate Function Push Pull	n/a	High *	
	PC11	SPI3_MISO	Input mode	No pull-up and no pull-down	n/a	
	PC12	SPI3_MOSI	Alternate Function Push Pull	n/a	High *	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
	PA15	SYS_JTDI	n/a	n/a	n/a	
	PB3	SYS_JTDO	n/a	n/a	n/a	
	PB4	SYS_NJTRST	n/a	n/a	n/a	
TIM1	PE11	TIM1_CH2	Alternate Function Push Pull	n/a	Low	
USART1	PB6	USART1_TX	Alternate Function Push Pull	n/a	High *	
	PB7	USART1_RX	Input mode	No pull-up and no pull-down	n/a	
USB_OTG_FS	PA9	USB_OTG_FS_VBUS	Input mode	No pull-up and no pull-down	n/a	
	PA11	USB_OTG_FS_DM	n/a	n/a	n/a	
	PA12	USB_OTG_FS_DP	n/a	n/a	n/a	
GPIO	PB0	GPIO_Output	Output Push Pull	n/a	Low	
	PB1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PD0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PD1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PD2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PD3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PD4	GPIO_Output	Output Push Pull	n/a	Low	
	PD5	GPIO_Output	Output Push Pull	n/a	Low	
	PD6	GPIO_Output	Output Push Pull	n/a	Low	
	PD7	GPIO_Output	Output Push Pull	n/a	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
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	
RTC global interrupt		unused	
Flash global interrupt		unused	
RCC global interrupt		unused	
ADC1 and ADC2 global interrupts		unused	
TIM1 break interrupt		unused	
TIM1 update interrupt		unused	
TIM1 trigger and commutation interrupts		unused	
TIM1 capture compare interrupt		unused	
SPI1 global interrupt		unused	
USART1 global interrupt		unused	
SPI3 global interrupt		unused	
USB OTG FS global interrupt		unused	

* User modified value

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F105/107
MCU	STM32F107VCTx
Datasheet	15274_Rev9

7.2. Parameter Selection

Temperature	25
Vdd	3.3

7.3. Sequence

Step	Step1
Mode	RUN
Vdd	3.3
Voltage Source	Vbus
Range	No Scale
Fetch Type	FLASH
Clock Configuration	HSE PLL
Clock Source Frequency	8.0 MHz
CPU Frequency	48.0 MHz
Peripherals	ADC1 GPIOA GPIOB GPIOC GPIOD GPIOE PWR RTC SPI1 SPI3 TIM1 TIM2 TIM3 USART1
Additional Cons.	0 mA
Average Current	27.69 mA
Duration	1 ms
DMIPS	0.0
Ta Max	100.8
Category	In DS Table

7.4. RESULTS

Sequence Time	1 ms	Average Current	27.69 mA
Battery Life	0	Average DMIPS	60.0 DMIPS

7.5. Chart

