1. Description

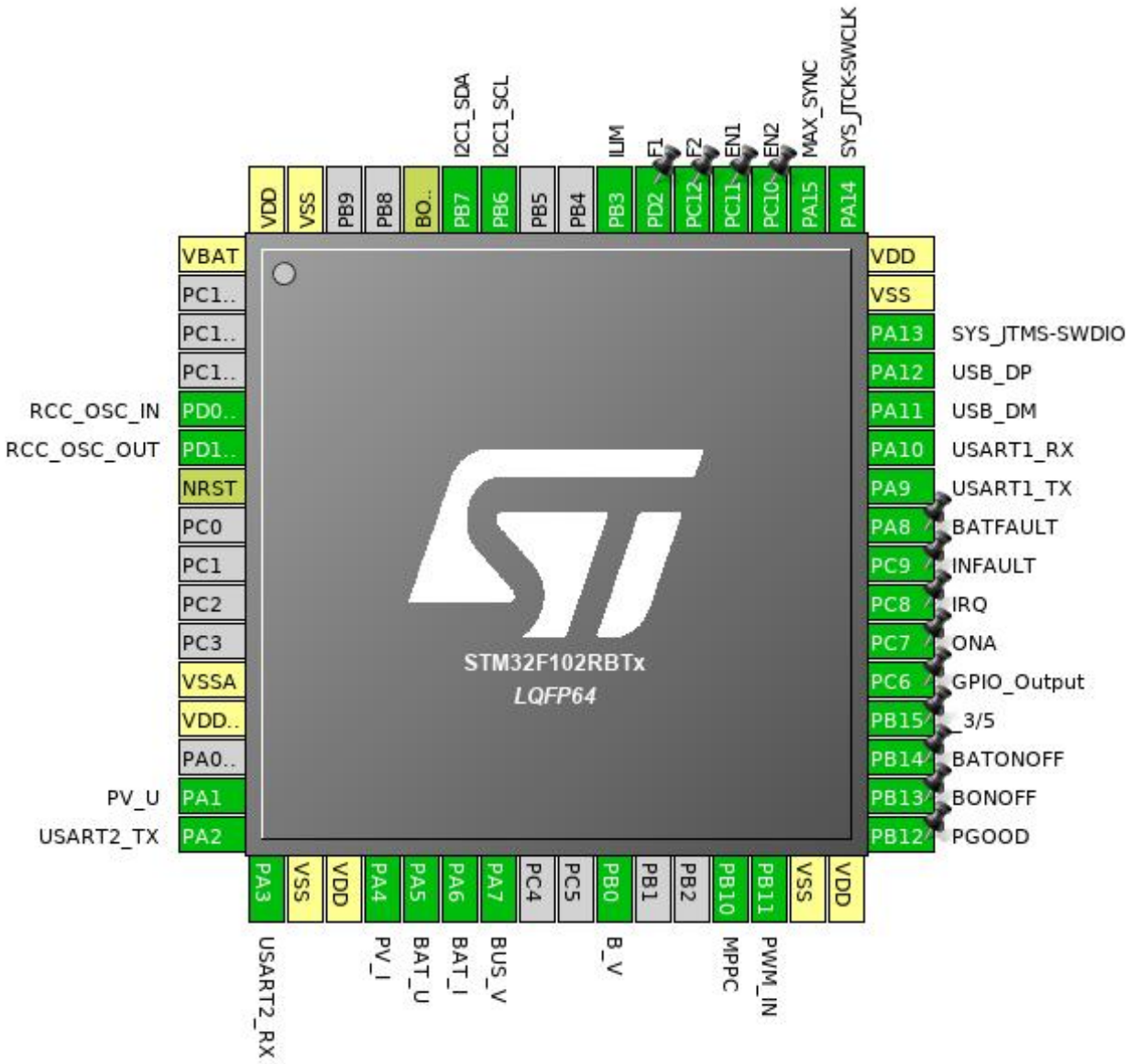
1.1. Project

Project Name	pimpmysolarcells
Board Name	No information
Generated with:	STM32CubeMX 4.20.1
Date	03/22/2018

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F102
MCU name	STM32F102RBTx
MCU Package	LQFP64
MCU Pin number	64

2. Pinout Configuration



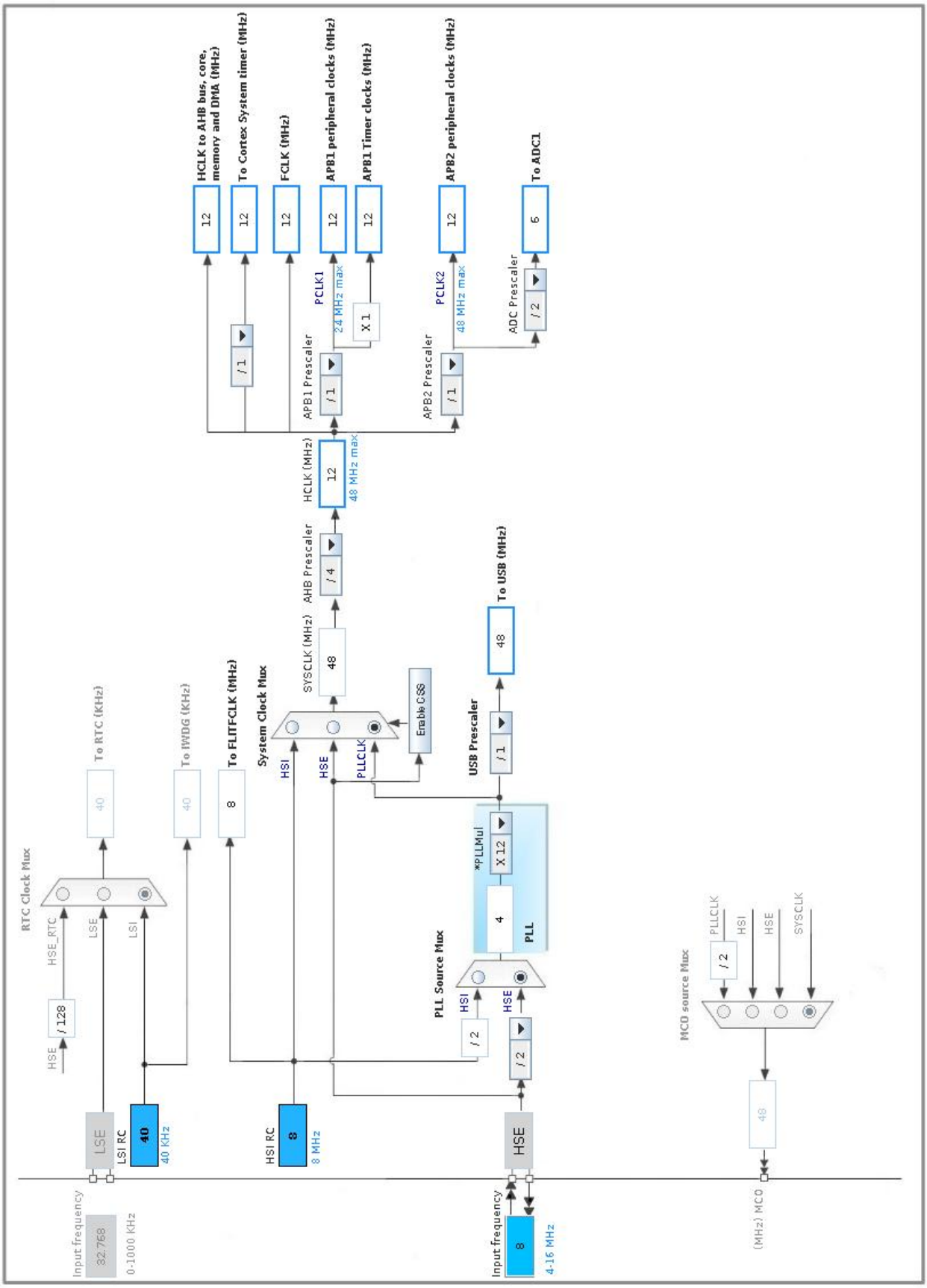
3. Pins Configuration

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		
15	PA1	I/O	ADC1_IN1	PV_U
16	PA2	I/O	USART2_TX	
17	PA3	I/O	USART2_RX	
18	VSS	Power		
19	VDD	Power		
20	PA4	I/O	ADC1_IN4	PV_I
21	PA5	I/O	ADC1_IN5	BAT_U
22	PA6	I/O	ADC1_IN6	BAT_I
23	PA7	I/O	ADC1_IN7	BUS_V
26	PB0	I/O	ADC1_IN8	B_V
29	PB10	I/O	TIM2_CH3	MPPC
30	PB11	I/O	TIM2_CH4	PWM_IN
31	VSS	Power		
32	VDD	Power		
33	PB12 *	I/O	GPIO_Input	PGOOD
34	PB13 *	I/O	GPIO_Output	BONOFF
35	PB14 *	I/O	GPIO_Output	BATONOFF
36	PB15 *	I/O	GPIO_Output	_3/5
37	PC6 *	I/O	GPIO_Output	
38	PC7 *	I/O	GPIO_Input	ONA
39	PC8 *	I/O	GPIO_Output	IRQ
40	PC9 *	I/O	GPIO_Input	INFAULT
41	PA8 *	I/O	GPIO_Input	BATFAULT
42	PA9	I/O	USART1_TX	
43	PA10	I/O	USART1_RX	
44	PA11	I/O	USB_DM	
45	PA12	I/O	USB_DP	
46	PA13	I/O	SYS_JTMS-SWDIO	
47	VSS	Power		
48	VDD	Power		

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
49	PA14	I/O	SYS_JTCK-SWCLK	
50	PA15	I/O	TIM2_CH1	MAX_SYNC
51	PC10 *	I/O	GPIO_Output	EN2
52	PC11 *	I/O	GPIO_Output	EN1
53	PC12 *	I/O	GPIO_Input	F2
54	PD2 *	I/O	GPIO_Input	F1
55	PB3	I/O	TIM2_CH2	ILIM
58	PB6	I/O	I2C1_SCL	
59	PB7	I/O	I2C1_SDA	
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. ADC1

mode: IN1

mode: IN4

mode: IN5

mode: IN6

mode: IN7

mode: IN8

mode: Temperature Sensor Channel

5.1.1. Parameter Settings:

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 1
Sampling Time	1.5 Cycles

ADC_Injected_ConversionMode:

Number Of Conversions	0

WatchDog:

Enable Analog WatchDog Mode	false

5.2. I2C1

I2C: I2C

5.2.1. Parameter Settings:

Master Features:

I2C Speed Mode	Standard Mode
I2C Clock Speed (Hz)	100000

Slave Features:

Clock No Stretch Mode	Disabled
Primary Address Length selection	7-bit
Dual Address Acknowledged	Disabled
Primary slave address	0
General Call address detection	Disabled

5.3. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

5.3.1. Parameter Settings:

System Parameters:

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

RCC Parameters:

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

5.4. SYS

Debug: Serial Wire

Timebase Source: SysTick

5.5. TIM2

Channel1: PWM Generation CH1

Channel2: PWM Generation CH2

Channel3: PWM Generation CH3

Channel4: PWM Generation CH4

5.5.1. 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

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 1:

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

PWM Generation Channel 2:

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

PWM Generation Channel 3:

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

PWM Generation Channel 4:

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

5.6. USART1

Mode: Asynchronous

5.6.1. 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

5.7. USART2

Mode: Asynchronous

5.7.1. 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

5.8. USB

mode: Device (FS)

5.8.1. Parameter Settings:

Basic Parameters:

Speed	Full Speed 12MBit/s
Endpoint 0 Max Packet size	8 Bytes

Power Parameters:

Low Power	Disabled
Link Power Management	Disabled
Battery Charging	Disabled

5.9. USB_DEVICE

Class For FS IP: Download Firmware Update Class (DFU)

5.9.1. Parameter Settings:

Basic Parameters:

USBD_MAX_NUM_INTERFACES (Maximum number of supported interfaces)	1
USBD_MAX_NUM_CONFIGURATION (Maximum number of supported configuration)	1
USBD_MAX_STR_DESC_SIZ (Maximum size for the string descriptors)	512
USBD_SUPPORT_USER_STRING (Enable user string descriptor)	Enabled
USBD_SELF_POWERED (Enabled self power)	Enabled
USBD_DEBUG_LEVEL (USBD Debug Level)	0: No debug message

Class Parameters:

USBD_DFU_MAX_ITF_NUM (DFU maximum interface numbers)	1
USBD_DFU_XFER_SIZE	1024
USBD_DFU_APP_DEFAULT_ADD (Base Address 0x)	**0x08000000 ***
USBD_DFU_MEDIA Interface	@Internal Flash /0x08000000/03*016Ka,01*016Kg,01*064Kg,07*128Kg,04*016Kg,01*064Kg,07*1

5.9.2. Device Descriptor:

Device Descriptor:

VID (Vendor IDentifier)	1155
LANGID_STRING (Language Identifier)	English(United States)
MANUFACTURER_STRING (Manufacturer Identifier)	STMicroelectronics

Device Descriptor FS:

PID (Product IDentifier)	57105
PRODUCT_STRING (Product Identifier)	STM32 DownLoad Firmware Update
SERIALNUMBER_STRING (Serial number)	00000000001A
CONFIGURATION_STRING (Configuration Identifier)	DFU Config
INTERFACE_STRING (Interface Identifier)	DFU Interface

*** 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	PA1	ADC1_IN1	Analog mode	n/a	n/a	PV_U
	PA4	ADC1_IN4	Analog mode	n/a	n/a	PV_I
	PA5	ADC1_IN5	Analog mode	n/a	n/a	BAT_U
	PA6	ADC1_IN6	Analog mode	n/a	n/a	BAT_I
	PA7	ADC1_IN7	Analog mode	n/a	n/a	BUS_V
	PB0	ADC1_IN8	Analog mode	n/a	n/a	B_V
I2C1	PB6	I2C1_SCL	Alternate Function Open Drain	n/a	**High ***	
	PB7	I2C1_SDA	Alternate Function Open Drain	n/a	**High ***	
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	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
TIM2	PB10	TIM2_CH3	Alternate Function Push Pull	n/a	Low	MPPC
	PB11	TIM2_CH4	Alternate Function Push Pull	n/a	Low	PWM_IN
	PA15	TIM2_CH1	Alternate Function Push Pull	n/a	Low	MAX_SYNC
	PB3	TIM2_CH2	Alternate Function Push Pull	n/a	Low	ILIM
USART1	PA9	USART1_TX	Alternate Function Push Pull	n/a	**High ***	
	PA10	USART1_RX	Input mode	No pull-up and no pull-down	**n/a**	
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**	
USB	PA11	USB_DM	n/a	n/a	n/a	
	PA12	USB_DP	n/a	n/a	n/a	
GPIO	PB12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	PGOOD
	PB13	GPIO_Output	Output Push Pull	n/a	Low	BONOFF
	PB14	GPIO_Output	Output Push Pull	n/a	Low	BATONOFF
	PB15	GPIO_Output	Output Push Pull	n/a	Low	_3/5
	PC6	GPIO_Output	Output Push Pull	n/a	Low	
	PC7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	ONA

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PC8	GPIO_Output	Output Push Pull	n/a	Low	IRQ
	PC9	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	INFAULT
	PA8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BATFAULT
	PC10	GPIO_Output	Output Push Pull	n/a	Low	EN2
	PC11	GPIO_Output	Output Push Pull	n/a	Low	EN1
	PC12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	F2
	PD2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	F1

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
USB low priority interrupt	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1 global interrupt	unused		
USB high priority interrupt	unused		
TIM2 global interrupt	unused		
I2C1 event interrupt	unused		
I2C1 error interrupt	unused		
USART1 global interrupt	unused		
USART2 global interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F102
MCU	STM32F102RBTx
Datasheet	15056_Rev6

7.2. Parameter Selection

Temperature	25
Vdd	3.3