1. Description

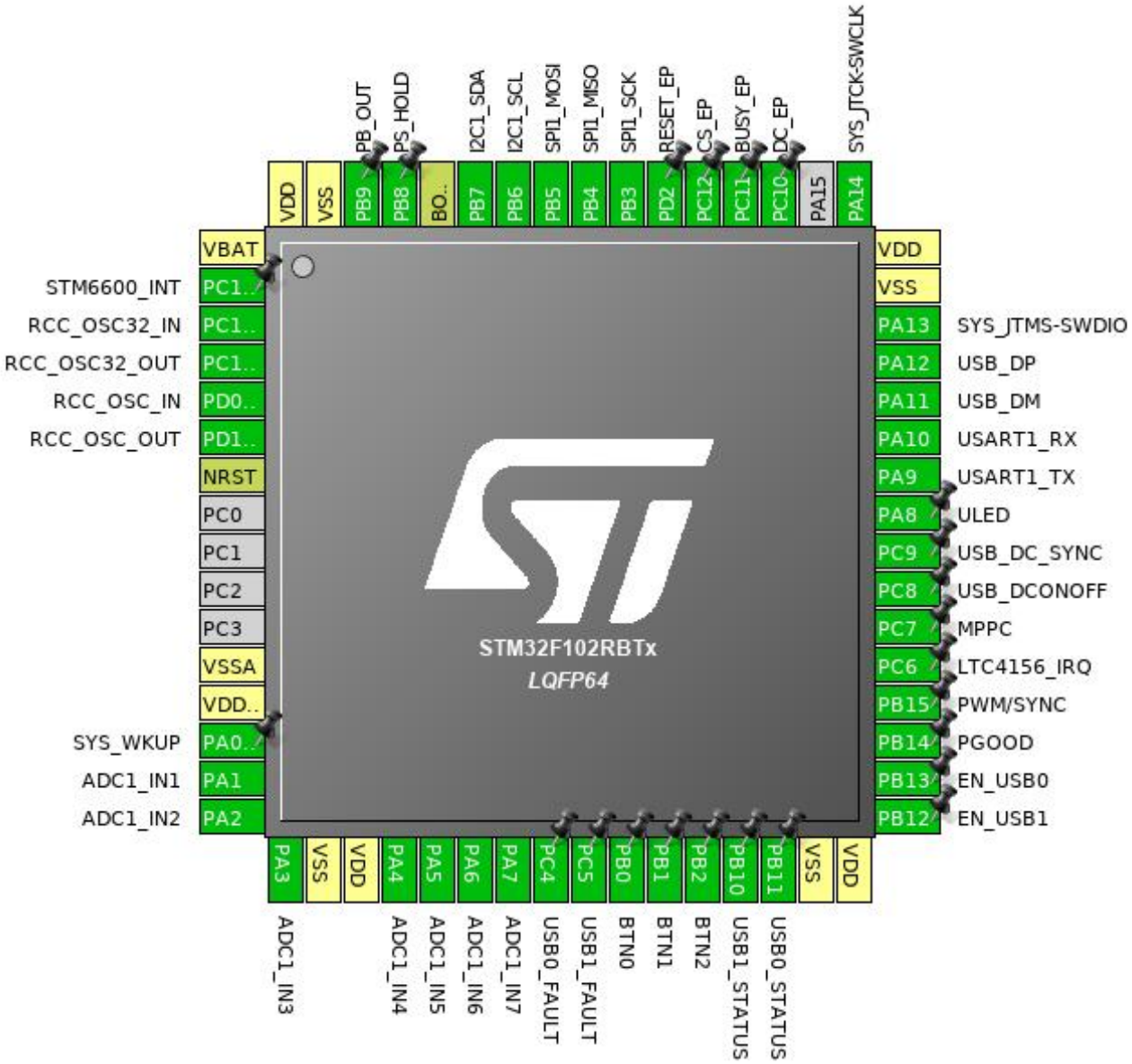
1.1. Project

Project Name	pimpmysolarcells
Board Name	pimpmysolarcells
Generated with:	STM32CubeMX 4.20.1
Date	02/09/2018

1.2. MCU

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

2. Pinout Configuration



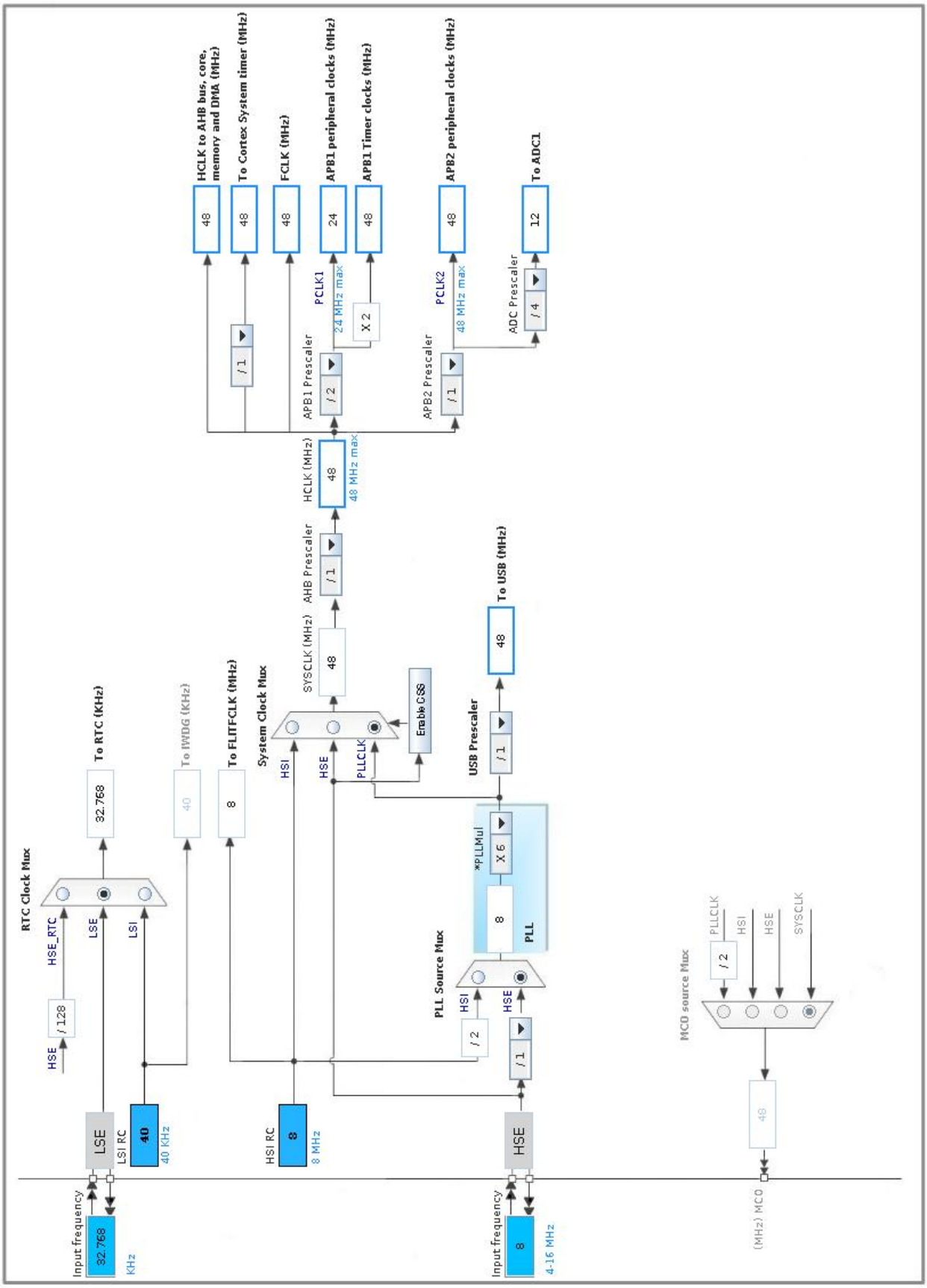
3. Pins Configuration

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
2	PC13-TAMPER-RTC	I/O	GPIO_EXTI13	STM6600_INT
3	PC14-OSC32_IN	I/O	RCC_OSC32_IN	
4	PC15-OSC32_OUT	I/O	RCC_OSC32_OUT	
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		
14	PA0-WKUP	I/O	SYS_WKUP	
15	PA1	I/O	ADC1_IN1	
16	PA2	I/O	ADC1_IN2	
17	PA3	I/O	ADC1_IN3	
18	VSS	Power		
19	VDD	Power		
20	PA4	I/O	ADC1_IN4	
21	PA5	I/O	ADC1_IN5	
22	PA6	I/O	ADC1_IN6	
23	PA7	I/O	ADC1_IN7	
24	PC4 *	I/O	GPIO_Input	USB0_FAULT
25	PC5 *	I/O	GPIO_Input	USB1_FAULT
26	PB0 *	I/O	GPIO_Input	BTN0
27	PB1 *	I/O	GPIO_Input	BTN1
28	PB2 *	I/O	GPIO_Input	BTN2
29	PB10 *	I/O	GPIO_Input	USB1_STATUS
30	PB11 *	I/O	GPIO_Input	USB0_STATUS
31	VSS	Power		
32	VDD	Power		
33	PB12 *	I/O	GPIO_Output	EN_USB1
34	PB13 *	I/O	GPIO_Output	EN_USB0
35	PB14 *	I/O	GPIO_Input	PGOOD
36	PB15 *	I/O	GPIO_Output	PWM/SYNC
37	PC6	I/O	GPIO_EXTI6	LTC4156_IRQ
38	PC7	I/O	TIM3_CH2	MPPC
39	PC8 *	I/O	GPIO_Output	USB_DCONOFF
40	PC9	I/O	TIM3_CH4	USB_DC_SYNC

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
41	PA8 *	I/O	GPIO_Output	ULED
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		
49	PA14	I/O	SYS_JTCK-SWCLK	
51	PC10 *	I/O	GPIO_Output	DC_EP
52	PC11 *	I/O	GPIO_Input	BUSY_EP
53	PC12 *	I/O	GPIO_Output	CS_EP
54	PD2 *	I/O	GPIO_Output	RESET_EP
55	PB3	I/O	SPI1_SCK	
56	PB4	I/O	SPI1_MISO	
57	PB5	I/O	SPI1_MOSI	
58	PB6	I/O	I2C1_SCL	
59	PB7	I/O	I2C1_SDA	
60	BOOT0	Boot		
61	PB8 *	I/O	GPIO_Output	PS_HOLD
62	PB9 *	I/O	GPIO_Input	PB_OUT
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: IN2

mode: IN3

mode: IN4

mode: IN5

mode: IN6

mode: IN7

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

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

5.3.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Prefetch Buffer	Enabled
Flash Latency(WS)	1 WS (2 CPU cycle)

RCC Parameters:

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

5.4. RTC

mode: Activate Clock Source

5.4.1. Parameter Settings:

Calendar Time:

Data Format	BCD data format

General:

Auto Predivider Calculation	Enabled
Asynchronous Predivider value	Automatic Predivider Calculation Enabled

Output	Alarm pulse signal on the TAMPER pin

5.5. SPI1

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)	**4 ***
Baud Rate	**12.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	**Enabled ***
CRC Polynomial	X1+X3
NSS Signal Type	Software

5.6. SYS

Debug: Serial Wire

mode: System Wake-Up

5.7. TIM3

Channel2: PWM Generation CH2

Channel4: PWM Generation CH4

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

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

PWM Generation Channel 4:

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

5.8. USART1

Mode: Asynchronous

5.8.1. 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

5.9. USB

mode: Device (FS)

5.9.1. 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

5.10. USB_DEVICE

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

5.10.1. 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

5.10.2. 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	
	PA2	ADC1_IN2	Analog mode	n/a	n/a	
	PA3	ADC1_IN3	Analog mode	n/a	n/a	
	PA4	ADC1_IN4	Analog mode	n/a	n/a	
	PA5	ADC1_IN5	Analog mode	n/a	n/a	
	PA6	ADC1_IN6	Analog mode	n/a	n/a	
	PA7	ADC1_IN7	Analog mode	n/a	n/a	
I2C1	PB6	I2C1_SCL	Alternate Function Open Drain	n/a	**High ***	
	PB7	I2C1_SDA	Alternate Function Open Drain	n/a	**High ***	
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	
	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	PB3	SPI1_SCK	Alternate Function Push Pull	n/a	**High ***	
	PB4	SPI1_MISO	Input mode	No pull-up and no pull-down	**n/a**	
	PB5	SPI1_MOSI	Alternate Function Push Pull	n/a	**High ***	
SYS	PA0-WKUP	SYS_WKUP	n/a	n/a	n/a	
	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	MPPC
	PC9	TIM3_CH4	Alternate Function Push Pull	n/a	Low	USB_DC_SYNC
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**	
USB	PA11	USB_DM	n/a	n/a	n/a	
	PA12	USB_DP	n/a	n/a	n/a	
GPIO	PC13-	GPIO_EXTI13	External Interrupt Mode with	No pull-up and no pull-down	n/a	STM6600_INT

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	TAMPER-RTC		Rising edge trigger detection			
	PC4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	USB0_FAULT
	PC5	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	USB1_FAULT
	PB0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BTN0
	PB1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BTN1
	PB2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BTN2
	PB10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	USB1_STATUS
	PB11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	USB0_STATUS
	PB12	GPIO_Output	Output Push Pull	n/a	Low	EN_USB1
	PB13	GPIO_Output	Output Push Pull	n/a	Low	EN_USB0
	PB14	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	PGOOD
	PB15	GPIO_Output	Output Push Pull	n/a	Low	PWM/SYNC
	PC6	GPIO_EXTI6	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	LTC4156_IRQ
	PC8	GPIO_Output	Output Push Pull	n/a	Low	USB_DCONOFF
	PA8	GPIO_Output	Output Push Pull	n/a	Low	ULED
	PC10	GPIO_Output	Output Push Pull	n/a	Low	DC_EP
	PC11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	BUSY_EP
	PC12	GPIO_Output	Output Push Pull	n/a	Low	CS_EP
	PD2	GPIO_Output	Output Push Pull	n/a	Low	RESET_EP
	PB8	GPIO_Output	Output Push Pull	n/a	Low	PS_HOLD
	PB9	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	PB_OUT

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		
RTC global interrupt	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1 global interrupt	unused		
USB high priority interrupt	unused		
EXTI line[9:5] interrupts	unused		
TIM3 global interrupt	unused		
I2C1 event interrupt	unused		
I2C1 error interrupt	unused		
SPI1 global interrupt	unused		
USART1 global interrupt	unused		
EXTI line[15:10] interrupts	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

8. Software Project

8.1. Project Settings

Name	Value
Project Name	pimpmysolarcells
Project Folder	/home/jk/git/pimpmysolarcells/cubemx/pimpmysolarcells
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_F1 V1.4.0

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	No
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