1. Description

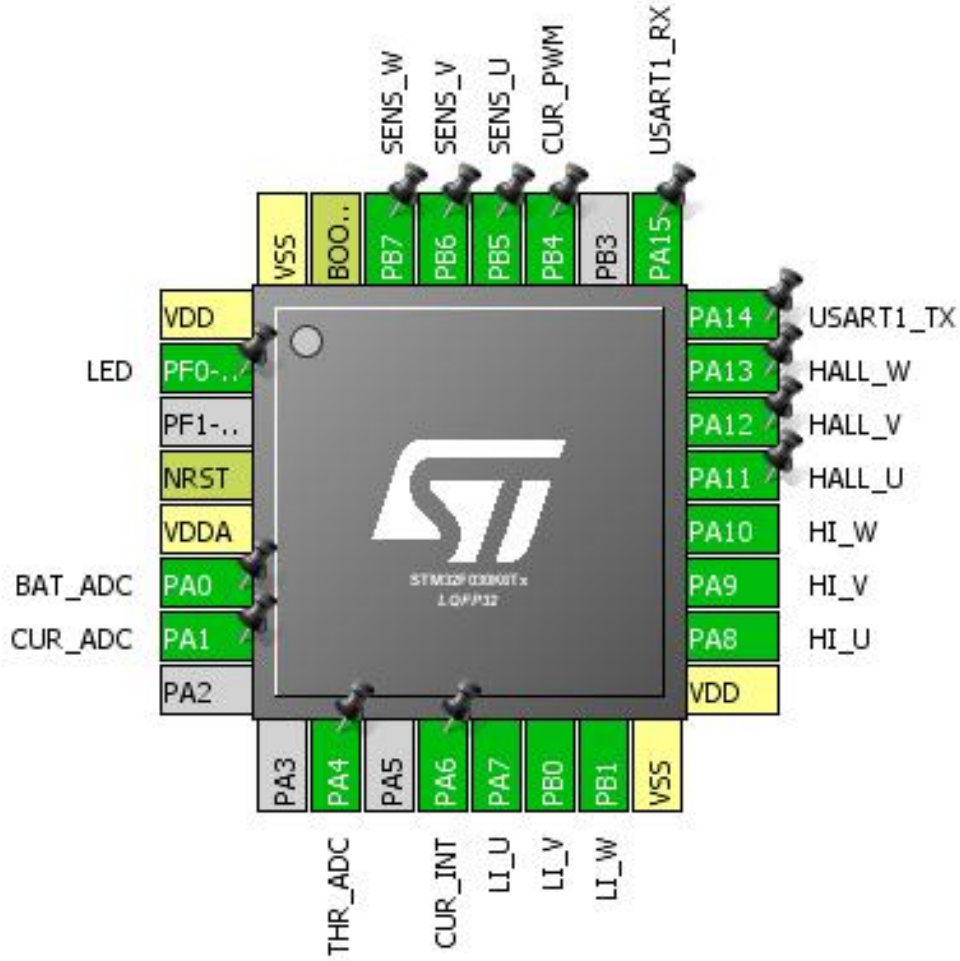
1.1. Project

Project Name	BLDC
Board Name	custom
Generated with:	STM32CubeMX 4.26.1
Date	09/10/2018

1.2. MCU

MCU Series	STM32F0
MCU Line	STM32F0x0 Value Line
MCU name	STM32F030K6Tx
MCU Package	LQFP32
MCU Pin number	32

2. Pinout Configuration

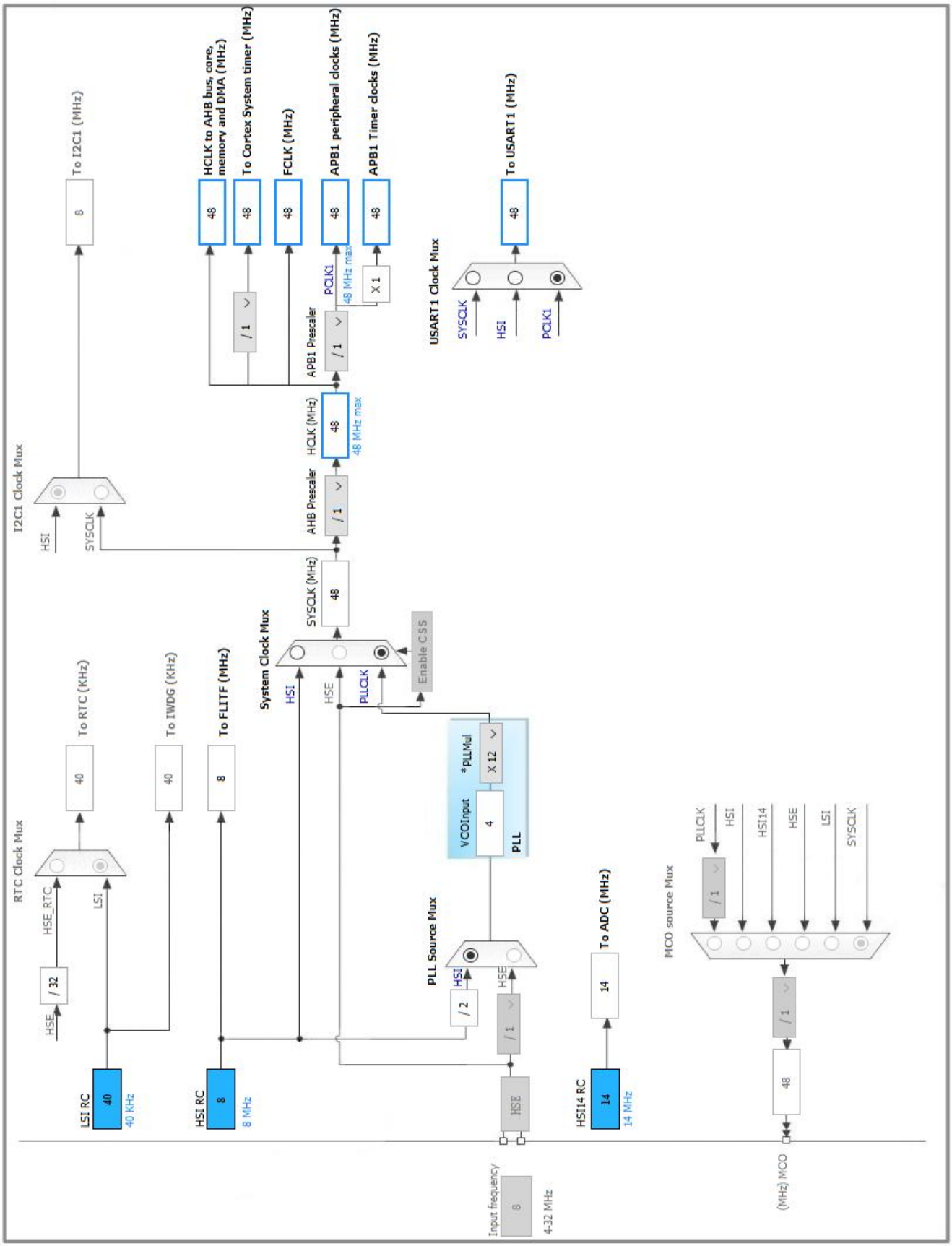


3. Pins Configuration

Pin Number LQFP32	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VDD	Power		
2	PF0-OSC_IN *	I/O	GPIO_Output	LED
4	NRST	Reset		
5	VDDA	Power		
6	PA0	I/O	ADC_IN0	BAT_ADC
7	PA1	I/O	ADC_IN1	CUR_ADC
10	PA4	I/O	ADC_IN4	THR_ADC
12	PA6	I/O	TIM1_BKIN	CUR_INT
13	PA7	I/O	TIM1_CH1N	LI_U
14	PB0	I/O	TIM1_CH2N	LI_V
15	PB1	I/O	TIM1_CH3N	LI_W
16	VSS	Power		
17	VDD	Power		
18	PA8	I/O	TIM1_CH1	HI_U
19	PA9	I/O	TIM1_CH2	HI_V
20	PA10	I/O	TIM1_CH3	HI_W
21	PA11	I/O	GPIO_EXTI11	HALL_U
22	PA12	I/O	GPIO_EXTI12	HALL_V
23	PA13	I/O	GPIO_EXTI13	HALL_W
24	PA14	I/O	USART1_TX	
25	PA15	I/O	USART1_RX	
27	PB4	I/O	TIM3_CH1	CUR_PWM
28	PB5	I/O	GPIO_EXTI5	SENS_U
29	PB6	I/O	GPIO_EXTI6	SENS_V
30	PB7	I/O	GPIO_EXTI7	SENS_W
31	BOOT0	Boot		
32	VSS	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. ADC

mode: IN0

mode: IN1

mode: IN4

mode: Temperature Sensor Channel

5.1.1. Parameter Settings:

ADC_Settings:

Clock Prescaler	Asynchronous clock mode
Resolution	ADC 12-bit resolution
Data Alignment	Right alignment
Scan Conversion Mode	Forward
Continuous Conversion Mode	Disabled
Discontinuous Conversion Mode	Disabled
DMA Continuous Requests	Disabled
End Of Conversion Selection	End of single conversion
Overrun behaviour	Overrun data preserved
Low Power Auto Wait	Disabled
Low Power Auto Power Off	Disabled

ADC_Regular_ConversionMode:

Sampling Time	1.5 Cycles
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None

WatchDog:

Enable Analog WatchDog Mode	false

5.2. SYS

Timebase Source: SysTick

5.3. TIM1

Channel1: PWM Generation CH1 CH1N

Channel2: PWM Generation CH2 CH2N

Channel3: PWM Generation CH3 CH3N

mode: Activate-Break-Input

5.3.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**8 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**256-1 ***
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 8 bits value)	0
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
Trigger Event Selection	Reset (UG bit from TIMx_EGR)

Break And Dead Time management - BRK Configuration:

BRK State	Enable
BRK Polarity	High

Break And Dead Time management - Output Configuration:

Automatic Output State	**Enable ***
Off State Selection for Run Mode (OSSR)	**Enable ***
Off State Selection for Idle Mode (OSSI)	**Enable ***
Lock Configuration	Off
Dead Time	0

PWM Generation Channel 1 and 1N:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	**Enable ***
CH Polarity	High
CHN Polarity	High
CH Idle State	Reset
CHN Idle State	Reset

PWM Generation Channel 2 and 2N:

Mode	PWM mode 1
Pulse (16 bits value)	0
Fast Mode	**Enable ***
CH Polarity	High
CHN Polarity	High
CH Idle State	Reset
CHN Idle State	Reset

PWM Generation Channel 3 and 3N:

Mode	PWM mode 1
Pulse (16 bits value)	0

Fast Mode	**Enable ***
CH Polarity	High
CHN Polarity	High
CH Idle State	Reset
CHN Idle State	Reset

5.4. TIM3

Channel1: PWM Generation CH1

5.4.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**4096-1 ***
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
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

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	**Enable ***
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
ADC	PA0	ADC_IN0	Analog mode	No pull-up and no pull-down	n/a	BAT_ADC
	PA1	ADC_IN1	Analog mode	No pull-up and no pull-down	n/a	CUR_ADC
	PA4	ADC_IN4	Analog mode	No pull-up and no pull-down	n/a	THR_ADC
TIM1	PA6	TIM1_BKIN	Alternate Function Push Pull	No pull-up and no pull-down	Low	CUR_INT
	PA7	TIM1_CH1N	Alternate Function Push Pull	No pull-up and no pull-down	Low	LI_U
	PB0	TIM1_CH2N	Alternate Function Push Pull	No pull-up and no pull-down	Low	LI_V
	PB1	TIM1_CH3N	Alternate Function Push Pull	No pull-up and no pull-down	Low	LI_W
	PA8	TIM1_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	HI_U
	PA9	TIM1_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	HI_V
	PA10	TIM1_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	HI_W
TIM3	PB4	TIM3_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	CUR_PWM
USART1	PA14	USART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PA15	USART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
GPIO	PF0-OSC_IN	GPIO_Output	Output Push Pull	**Pull-down ***	Low	LED
	PA11	GPIO_EXTI11	External Interrupt Mode with Rising edge trigger detection	**Pull-up ***	n/a	HALL_U
	PA12	GPIO_EXTI12	External Interrupt Mode with Rising edge trigger detection	**Pull-up ***	n/a	HALL_V
	PA13	GPIO_EXTI13	External Interrupt Mode with Rising edge trigger detection	**Pull-up ***	n/a	HALL_W
	PB5	GPIO_EXTI5	External Interrupt Mode with Rising edge trigger detection	**Pull-up ***	n/a	SENS_U
	PB6	GPIO_EXTI6	External Interrupt Mode with Rising edge trigger detection	**Pull-up ***	n/a	SENS_V
	PB7	GPIO_EXTI7	External Interrupt Mode with Rising edge trigger detection	**Pull-up ***	n/a	SENS_W

6.2. DMA configuration

DMA request	Stream	Direction	Priority
ADC	DMA1_Channel1	Peripheral To Memory	Low

ADC: DMA1_Channel1 DMA request Settings:

Mode:	**Circular ***
Peripheral Increment:	Disable
Memory Increment:	**Enable ***
Peripheral Data Width:	Half Word
Memory Data Width:	Half Word

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
DMA1 channel 1 interrupt	true	0	0
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC interrupt	unused		
TIM1 break, update, trigger and commutation interrupts	unused		
TIM1 capture compare interrupt	unused		
TIM3 global interrupt	unused		
USART1 global interrupt	unused		

*** User modified value**

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F0
Line	STM32F0x0 Value Line
MCU	STM32F030K6Tx
Datasheet	024849_Rev2

7.2. Parameter Selection

Temperature	25
Vdd	3.6

8. Software Project

8.1. Project Settings

Name	Value
Project Name	BLDC
Project Folder	D:\Project\Me\BLDC_v2\src\BLDC
Toolchain / IDE	MDK-ARM V5
Firmware Package Name and Version	STM32Cube FW_F0 V1.9.0

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	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

9. Software Pack Report