

1. Description

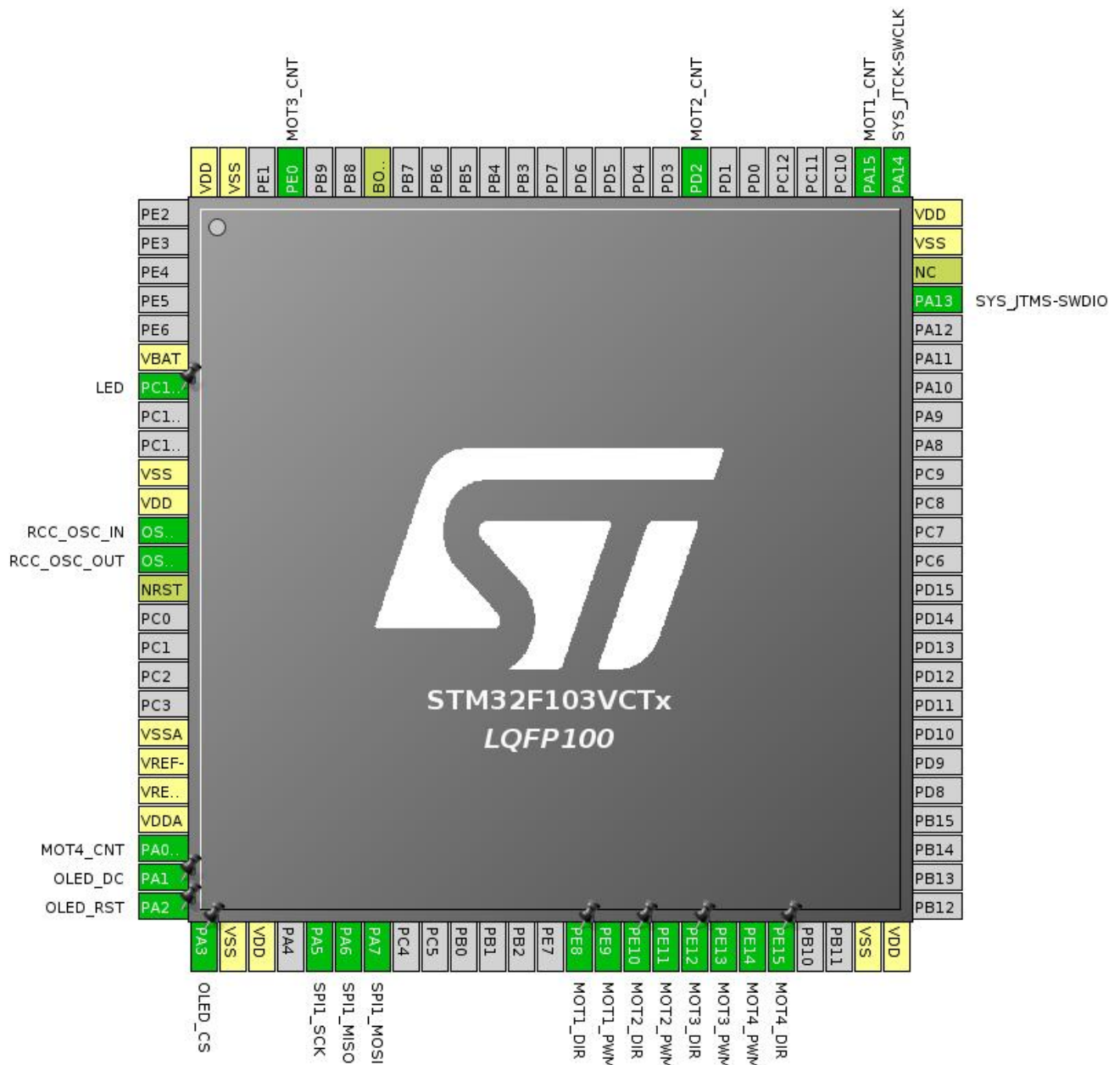
1.1. Project

Project Name	newcar
Board Name	newcar
Generated with:	STM32CubeMX 4.16.1
Date	03/31/2018

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F103
MCU name	STM32F103VCTx
MCU Package	LQFP100
MCU Pin number	100

2. Pinout Configuration



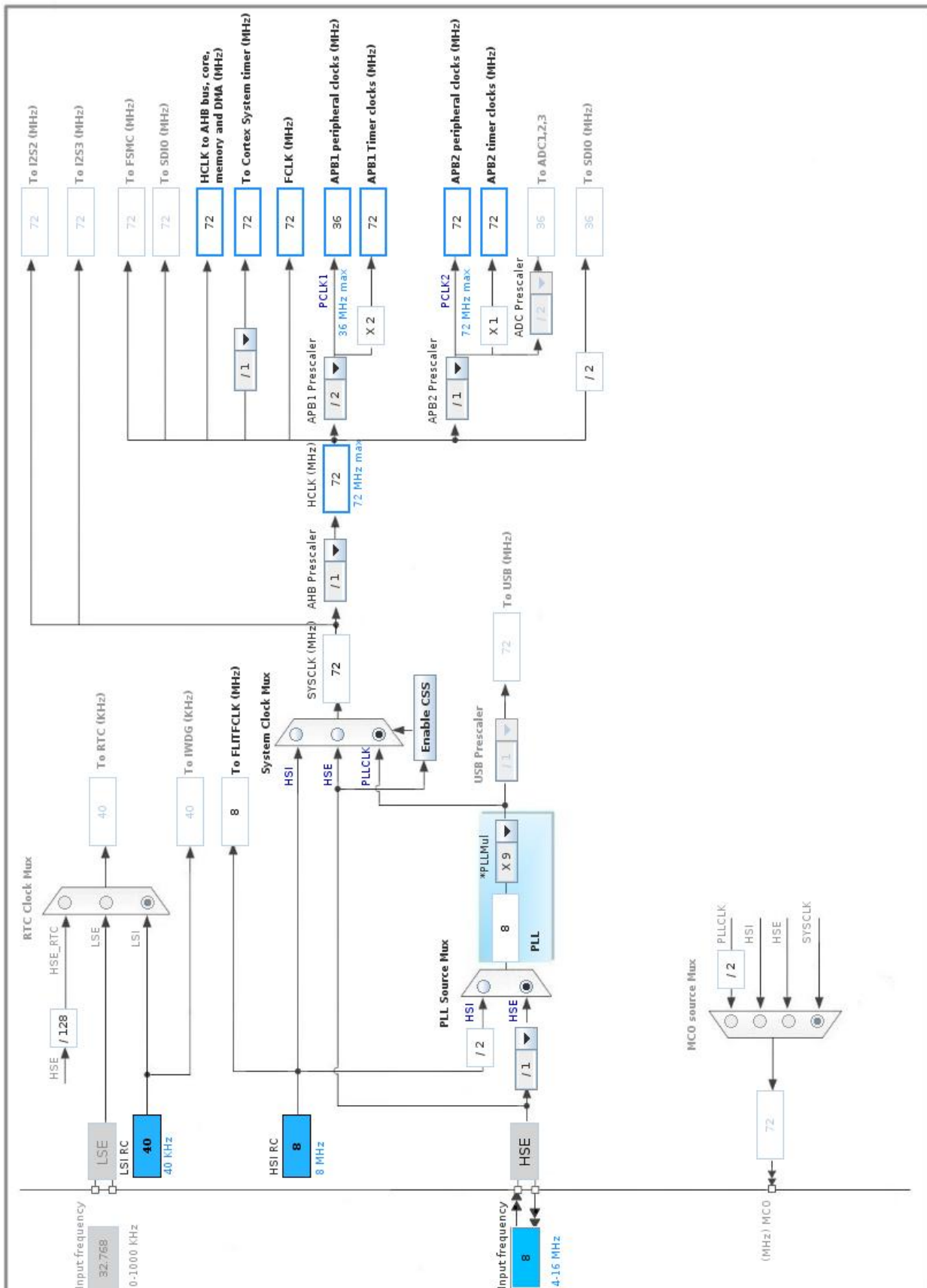
3. Pins Configuration

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
6	VBAT	Power		
7	PC13-TAMPER-RTC *	I/O	GPIO_Output	LED
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	TIM8_ETR	MOT4_CNT
24	PA1 *	I/O	GPIO_Output	OLED_DC
25	PA2 *	I/O	GPIO_Output	OLED_RST
26	PA3 *	I/O	GPIO_Output	OLED_CS
27	VSS	Power		
28	VDD	Power		
30	PA5	I/O	SPI1_SCK	
31	PA6	I/O	SPI1_MISO	
32	PA7	I/O	SPI1_MOSI	
39	PE8 *	I/O	GPIO_Output	MOT1_DIR
40	PE9	I/O	TIM1_CH1	MOT1_PWM
41	PE10 *	I/O	GPIO_Output	MOT2_DIR
42	PE11	I/O	TIM1_CH2	MOT2_PWM
43	PE12 *	I/O	GPIO_Output	MOT3_DIR
44	PE13	I/O	TIM1_CH3	MOT3_PWM
45	PE14	I/O	TIM1_CH4	MOT4_PWM
46	PE15 *	I/O	GPIO_Output	MOT4_DIR
49	VSS	Power		
50	VDD	Power		
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	TIM2_ETR	MOT1_CNT

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
83	PD2	I/O	TIM3_ETR	MOT2_CNT
94	BOOT0	Boot		
97	PE0	I/O	TIM4_ETR	MOT3_CNT
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. 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)	16 *
Baud Rate	4.5 MBits/s *
Clock Polarity (CPOL)	High *
Clock Phase (CPHA)	2 Edge *

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

5.3. SYS

Debug: Serial Wire

Timebase Source: SysTick

5.4. TIM1

Clock Source : Internal Clock

Channel1: PWM Generation CH1

Channel2: PWM Generation CH2

Channel3: PWM Generation CH3

Channel4: PWM Generation CH4

5.4.1. 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

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)

Break And Dead Time management - BRK Configuration:

BRK State	Disable
BRK Polarity	High

Break And Dead Time management - Output Configuration:

Automatic Output State	Disable
Off State Selection for Run Mode (OSSR)	Disable
Off State Selection for Idle Mode (OSSI)	Disable
Lock Configuration	Off

PWM Generation Channel 1:

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

PWM Generation Channel 2:

Mode	PWM mode 1
------	------------

Pulse (16 bits value)	0
Fast Mode	Disable
CH Polarity	High
CH Idle State	Reset

PWM Generation Channel 3:

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

PWM Generation Channel 4:

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

5.5. TIM2

Slave Mode: External Clock Mode 1

Trigger Source: ETR1

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
Slave Mode Controller	ETR mode 1

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)

Trigger:

Trigger Polarity	non inverted
Trigger Prescaler	Prescaler not used
Trigger Filter (4 bits value)	0

5.6. TIM3

Slave Mode: External Clock Mode 1

Trigger Source: ETR1

5.6.1. 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
Slave Mode Controller	ETR mode 1

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)

Trigger:

Trigger Polarity	non inverted
Trigger Prescaler	Prescaler not used
Trigger Filter (4 bits value)	0

5.7. TIM4

Slave Mode: External Clock Mode 1

Trigger Source: ETR1

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
Slave Mode Controller	ETR mode 1

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)

Trigger:

Trigger Polarity	non inverted
Trigger Prescaler	Prescaler not used

Trigger Filter (4 bits value) 0

5.8. TIM8

Slave Mode: External Clock Mode 1

Trigger Source: ETR1

5.8.1. 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
Slave Mode Controller	ETR mode 1

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)

Trigger:

Trigger Polarity	non inverted
Trigger Prescaler	Prescaler not used
Trigger Filter (4 bits value)	0

*** 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	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 *	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
TIM1	PE9	TIM1_CH1	Alternate Function Push Pull	n/a	Low	MOT1_PWM
	PE11	TIM1_CH2	Alternate Function Push Pull	n/a	Low	MOT2_PWM
	PE13	TIM1_CH3	Alternate Function Push Pull	n/a	Low	MOT3_PWM
	PE14	TIM1_CH4	Alternate Function Push Pull	n/a	Low	MOT4_PWM
TIM2	PA15	TIM2_ETR	Input mode	No pull-up and no pull-down	n/a	MOT1_CNT
TIM3	PD2	TIM3_ETR	Input mode	No pull-up and no pull-down	n/a	MOT2_CNT
TIM4	PE0	TIM4_ETR	Input mode	No pull-up and no pull-down	n/a	MOT3_CNT
TIM8	PA0-WKUP	TIM8_ETR	Input mode	No pull-up and no pull-down	n/a	MOT4_CNT
GPIO	PC13-TAMPER-RTC	GPIO_Output	Output Push Pull	n/a	Low	LED
	PA1	GPIO_Output	Output Push Pull	n/a	Low	OLED_DC
	PA2	GPIO_Output	Output Push Pull	n/a	Low	OLED_RST
	PA3	GPIO_Output	Output Push Pull	n/a	Low	OLED_CS
	PE8	GPIO_Output	Output Push Pull	n/a	Low	MOT1_DIR
	PE10	GPIO_Output	Output Push Pull	n/a	Low	MOT2_DIR
	PE12	GPIO_Output	Output Push Pull	n/a	Low	MOT3_DIR
	PE15	GPIO_Output	Output Push Pull	n/a	Low	MOT4_DIR

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		
TIM1 break interrupt	unused		
TIM1 update interrupt	unused		
TIM1 trigger and commutation interrupts	unused		
TIM1 capture compare interrupt	unused		
TIM2 global interrupt	unused		
TIM3 global interrupt	unused		
TIM4 global interrupt	unused		
SPI1 global interrupt	unused		
TIM8 break interrupt	unused		
TIM8 update interrupt	unused		
TIM8 trigger and commutation interrupts	unused		
TIM8 capture compare interrupt	unused		

* User modified value

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103VCTx
Datasheet	14611_Rev12

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	newcar
Project Folder	/home/wn/workspace-stm32/newcar/cube/newcar
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