1. Description

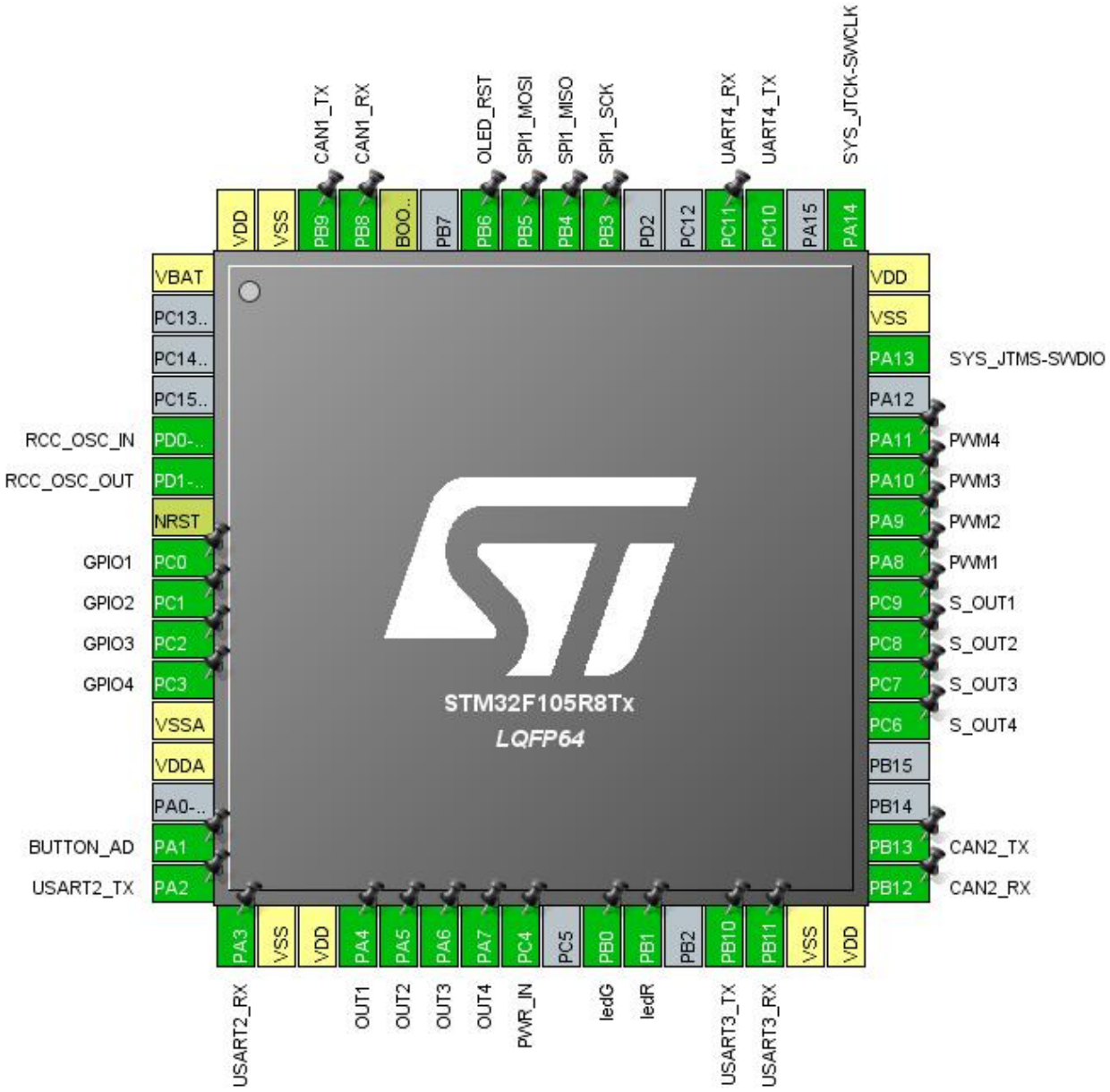
1.1. Project

Project Name	3508MotorDrive
Board Name	custom
Generated with:	STM32CubeMX 5.0.1
Date	04/22/2019

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F105/107
MCU name	STM32F105R8Tx
MCU Package	LQFP64
MCU Pin number	64

2. Pinout Configuration



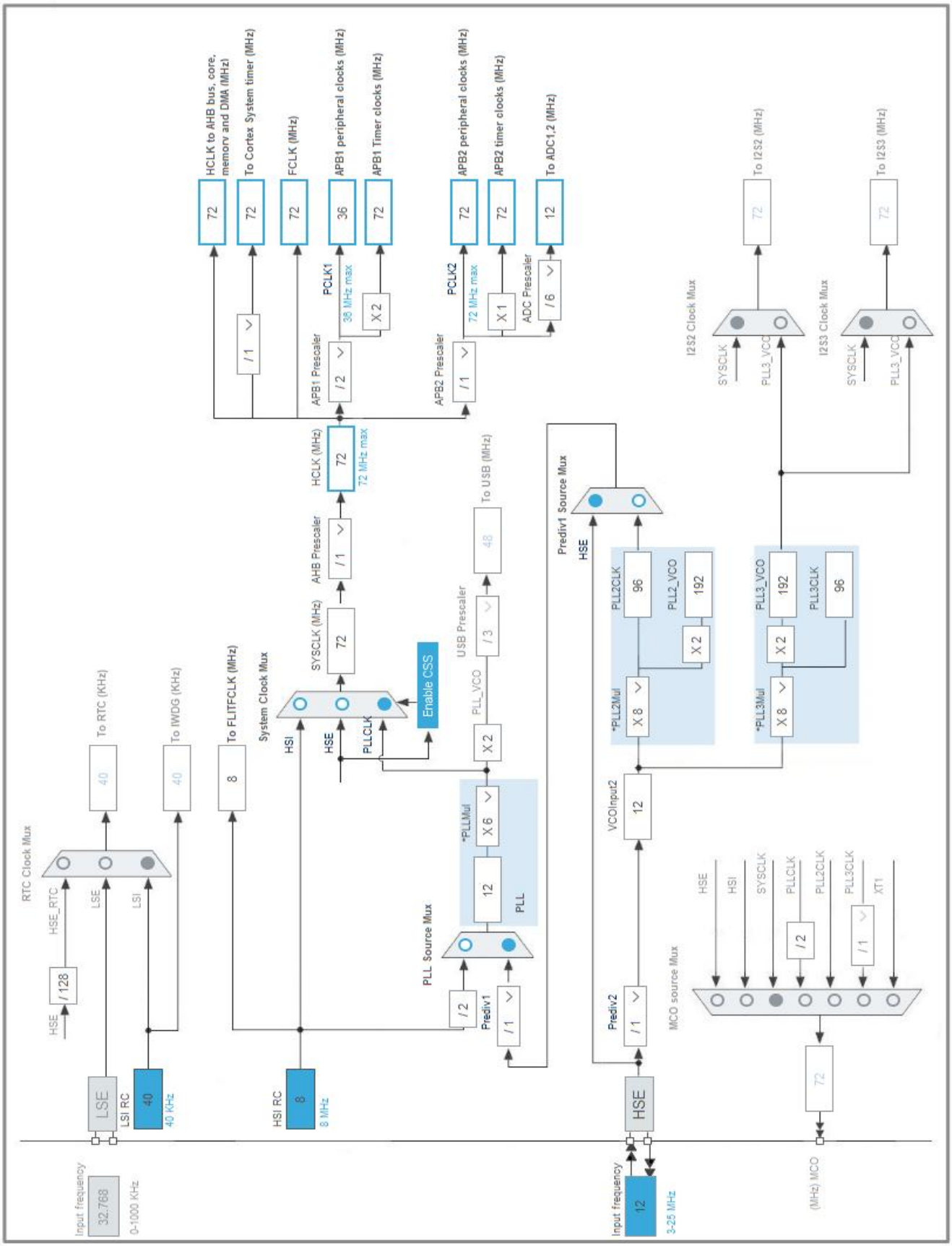
3. Pins Configuration

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		
8	PC0 *	I/O	GPIO_Output	GPIO1
9	PC1 *	I/O	GPIO_Output	GPIO2
10	PC2 *	I/O	GPIO_Output	GPIO3
11	PC3 *	I/O	GPIO_Output	GPIO4
12	VSSA	Power		
13	VDDA	Power		
15	PA1	I/O	ADC1_IN1	BUTTON_AD
16	PA2	I/O	USART2_TX	
17	PA3	I/O	USART2_RX	
18	VSS	Power		
19	VDD	Power		
20	PA4 *	I/O	GPIO_Output	OUT1
21	PA5 *	I/O	GPIO_Output	OUT2
22	PA6 *	I/O	GPIO_Output	OUT3
23	PA7 *	I/O	GPIO_Output	OUT4
24	PC4	I/O	ADC1_IN14	PWR_IN
26	PB0 *	I/O	GPIO_Output	ledG
27	PB1 *	I/O	GPIO_Output	ledR
29	PB10	I/O	USART3_TX	
30	PB11	I/O	USART3_RX	
31	VSS	Power		
32	VDD	Power		
33	PB12	I/O	CAN2_RX	
34	PB13	I/O	CAN2_TX	
37	PC6 *	I/O	GPIO_Input	S_OUT4
38	PC7 *	I/O	GPIO_Input	S_OUT3
39	PC8 *	I/O	GPIO_Input	S_OUT2
40	PC9 *	I/O	GPIO_Input	S_OUT1
41	PA8	I/O	TIM1_CH1	PWM1
42	PA9	I/O	TIM1_CH2	PWM2
43	PA10	I/O	TIM1_CH3	PWM3
44	PA11	I/O	TIM1_CH4	PWM4

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
46	PA13	I/O	SYS_JTMS-SWDIO	
47	VSS	Power		
48	VDD	Power		
49	PA14	I/O	SYS_JTCK-SWCLK	
51	PC10	I/O	UART4_TX	
52	PC11	I/O	UART4_RX	
55	PB3	I/O	SPI1_SCK	
56	PB4	I/O	SPI1_MISO	
57	PB5	I/O	SPI1_MOSI	
58	PB6 *	I/O	GPIO_Output	OLED_RST
60	BOOT0	Boot		
61	PB8	I/O	CAN1_RX	
62	PB9	I/O	CAN1_TX	
63	VSS	Power		
64	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. Software Project

5.1. Project Settings

Name	Value
Project Name	3508MotorDrive
Project Folder	E:\Robot Data\4WD-M3508-Driver\4WD
Toolchain / IDE	MDK-ARM V5
Firmware Package Name and Version	STM32Cube FW_F1 V1.7.0

5.2. 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	Yes
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

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32F1
Line	STM32F105/107
MCU	STM32F105R8Tx
Datasheet	15274_Rev10

6.2. Parameter Selection

Temperature	25
Vdd	3.3

7. IPs and Middleware Configuration

7.1. ADC1

mode: IN1

mode: IN14

7.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode	Independent mode

ADC_Settings:

Data Alignment	Right alignment
Scan Conversion Mode	Disabled
Continuous Conversion Mode	**Enabled ***
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 14 ***
Sampling Time	1.5 Cycles

ADC_Injected_ConversionMode:

Number Of Conversions	0

WatchDog:

Enable Analog WatchDog Mode	false

7.2. CAN1

mode: Mode

7.2.1. Parameter Settings:

Bit Timings Parameters:

Prescaler (for Time Quantum)	**4 ***
Time Quantum	**111.11111111111111 ***
Time Quanta in Bit Segment 1	**3 Times ***
Time Quanta in Bit Segment 2	**5 Times ***
Time for one Bit	1000
ReSynchronization Jump Width	1 Time

Basic Parameters:

Time Triggered Communication Mode	Disable
Automatic Bus-Off Management	**Enable ***
Automatic Wake-Up Mode	Disable
No-Automatic Retransmission	Disable
Receive Fifo Locked Mode	Disable
Transmit Fifo Priority	Disable

Advanced Parameters:

Operating Mode	Normal

7.3. CAN2

mode: Mode

7.3.1. Parameter Settings:

Bit Timings Parameters:

Prescaler (for Time Quantum)	**4 ***
Time Quantum	**111.11111111111111 ***
Time Quanta in Bit Segment 1	**3 Times ***
Time Quanta in Bit Segment 2	**5 Times ***
Time for one Bit	1000
ReSynchronization Jump Width	1 Time

Basic Parameters:

Time Triggered Communication Mode	Disable
Automatic Bus-Off Management	**Enable ***
Automatic Wake-Up Mode	Disable
No-Automatic Retransmission	Disable
Receive Fifo Locked Mode	Disable
Transmit Fifo Priority	Disable

Advanced Parameters:

Operating Mode	Normal

7.4. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

7.4.1. 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 Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

7.5. SPI1

Mode: Full-Duplex Master

7.5.1. 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

7.6. SYS

Debug: Serial Wire

Timebase Source: SysTick

7.7. TIM1

Channel1: PWM Generation CH1

Channel2: PWM Generation CH2

Channel3: PWM Generation CH3

Channel4: PWM Generation CH4

7.7.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**TIM_PSC_APB1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**PWM_RESOLUTION-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	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)	**PWM_DEFAULT_DUTY ***
Fast Mode	Disable
CH Polarity	High
CH Idle State	Reset

PWM Generation Channel 2:

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

PWM Generation Channel 3:

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

PWM Generation Channel 4:

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

7.8. UART4

Mode: Asynchronous

7.8.1. Parameter Settings:

Basic Parameters:

Baud Rate	**100000 ***
Word Length	8 Bits (including Parity)
Parity	**Even ***
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples

7.9. USART2

Mode: Asynchronous

7.9.1. 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

7.10. USART3

Mode: Asynchronous

7.10.1. 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

*** User modified value**

8. System Configuration

8.1. 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	BUTTON_AD
	PC4	ADC1_IN14	Analog mode	n/a	n/a	PWR_IN
CAN1	PB8	CAN1_RX	Input mode	No pull-up and no pull-down	n/a	
	PB9	CAN1_TX	Alternate Function Push Pull	n/a	**High ***	
CAN2	PB12	CAN2_RX	Input mode	No pull-up and no pull-down	n/a	
	PB13	CAN2_TX	Alternate Function Push Pull	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	
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	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
TIM1	PA8	TIM1_CH1	Alternate Function Push Pull	n/a	**High ***	PWM1
	PA9	TIM1_CH2	Alternate Function Push Pull	n/a	**High ***	PWM2
	PA10	TIM1_CH3	Alternate Function Push Pull	n/a	**High ***	PWM3
	PA11	TIM1_CH4	Alternate Function Push Pull	n/a	**High ***	PWM4
UART4	PC10	UART4_TX	Alternate Function Push Pull	n/a	**High ***	
	PC11	UART4_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**	
USART3	PB10	USART3_TX	Alternate Function Push Pull	n/a	**High ***	
	PB11	USART3_RX	Input mode	No pull-up and no pull-down	**n/a**	
GPIO	PC0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	**High ***	GPIO1
	PC1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	**High ***	GPIO2
	PC2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	**High ***	GPIO3
	PC3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	**High ***	GPIO4
	PA4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	OUT1
	PA5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	OUT2

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PA6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	OUT3
	PA7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	OUT4
	PB0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ledG
	PB1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ledR
	PC6	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	S_OUT4
	PC7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	S_OUT3
	PC8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	S_OUT2
	PC9	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	S_OUT1
	PB6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	**High ***	OLED_RST

8.2. DMA configuration

DMA request	Stream	Direction	Priority
UART4_RX	DMA2_Channel3	Peripheral To Memory	Low
USART2_RX	DMA1_Channel6	Peripheral To Memory	Low
USART2_TX	DMA1_Channel7	Memory To Peripheral	Low
USART3_RX	DMA1_Channel3	Peripheral To Memory	Low
USART3_TX	DMA1_Channel2	Memory To Peripheral	Low
ADC1	DMA1_Channel1	Peripheral To Memory	Low

UART4_RX: DMA2_Channel3 DMA request Settings:

Mode:	Normal
Peripheral Increment:	Disable
Memory Increment:	**Enable ***
Peripheral Data Width:	Byte
Memory Data Width:	Byte

USART2_RX: DMA1_Channel6 DMA request Settings:

Mode:	Normal
Peripheral Increment:	Disable
Memory Increment:	**Enable ***
Peripheral Data Width:	Byte
Memory Data Width:	Byte

USART2_TX: DMA1_Channel7 DMA request Settings:

Mode:	Normal
Peripheral Increment:	Disable
Memory Increment:	**Enable ***
Peripheral Data Width:	Byte
Memory Data Width:	Byte

USART3_RX: DMA1_Channel3 DMA request Settings:

Mode:	Normal
Peripheral Increment:	Disable
Memory Increment:	**Enable ***

Peripheral Data Width:	Byte
Memory Data Width:	Byte

USART3_TX: DMA1_Channel2 DMA request Settings:

Mode:	Normal
Peripheral Increment:	Disable
Memory Increment:	**Enable ***
Peripheral Data Width:	Byte
Memory Data Width:	Byte

ADC1: DMA1_Channel1 DMA request Settings:

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

8.3. 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
DMA1 channel1 global interrupt	true	0	0
DMA1 channel2 global interrupt	true	0	0
DMA1 channel3 global interrupt	true	0	0
DMA1 channel6 global interrupt	true	0	0
DMA1 channel7 global interrupt	true	0	0
ADC1 and ADC2 global interrupts	true	0	0
CAN1 TX interrupt	true	0	0
CAN1 RX0 interrupt	true	0	0
USART2 global interrupt	true	0	0
USART3 global interrupt	true	0	0
UART4 global interrupt	true	0	0
DMA2 channel3 global interrupt	true	0	0
CAN2 TX interrupt	true	0	0
CAN2 RX0 interrupt	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
CAN1 RX1 interrupt	unused		
CAN1 SCE interrupt	unused		
TIM1 break interrupt	unused		
TIM1 update interrupt	unused		
TIM1 trigger and commutation interrupts	unused		
TIM1 capture compare interrupt	unused		
SPI1 global interrupt	unused		
CAN2 RX1 interrupt	unused		
CAN2 SCE interrupt	unused		

*** User modified value**

9. Software Pack Report