



1. Description

1.1. Project

Project Name	CORE23
Board Name	custom
Generated with:	STM32CubeMX 6.10.0
Date	01/14/2024

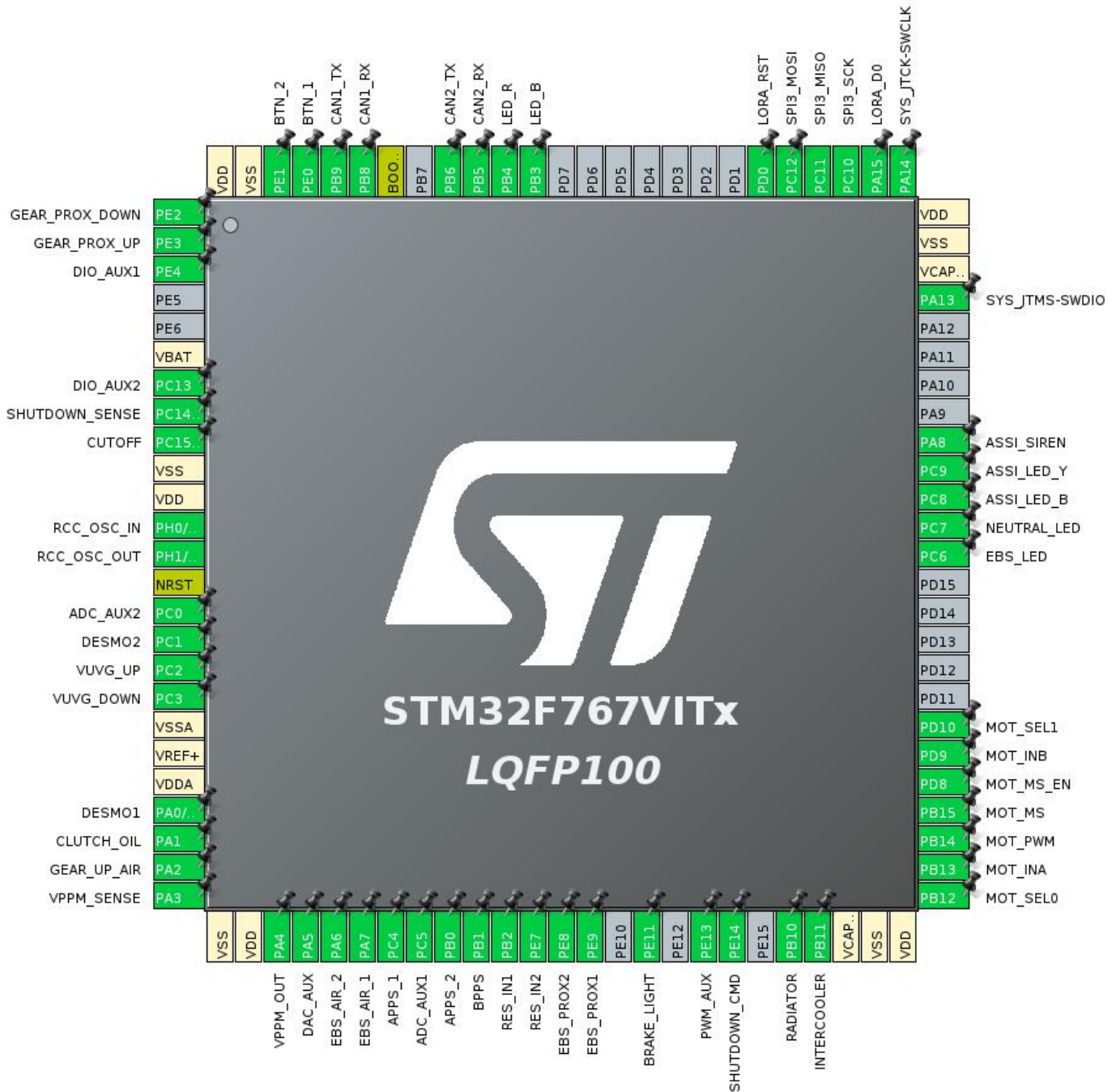
1.2. MCU

MCU Series	STM32F7
MCU Line	STM32F7x7
MCU name	STM32F767VITx
MCU Package	LQFP100
MCU Pin number	100

1.3. Core(s) information

Core(s)	Arm Cortex-M7
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2. Pinout Configuration



3. Pins Configuration

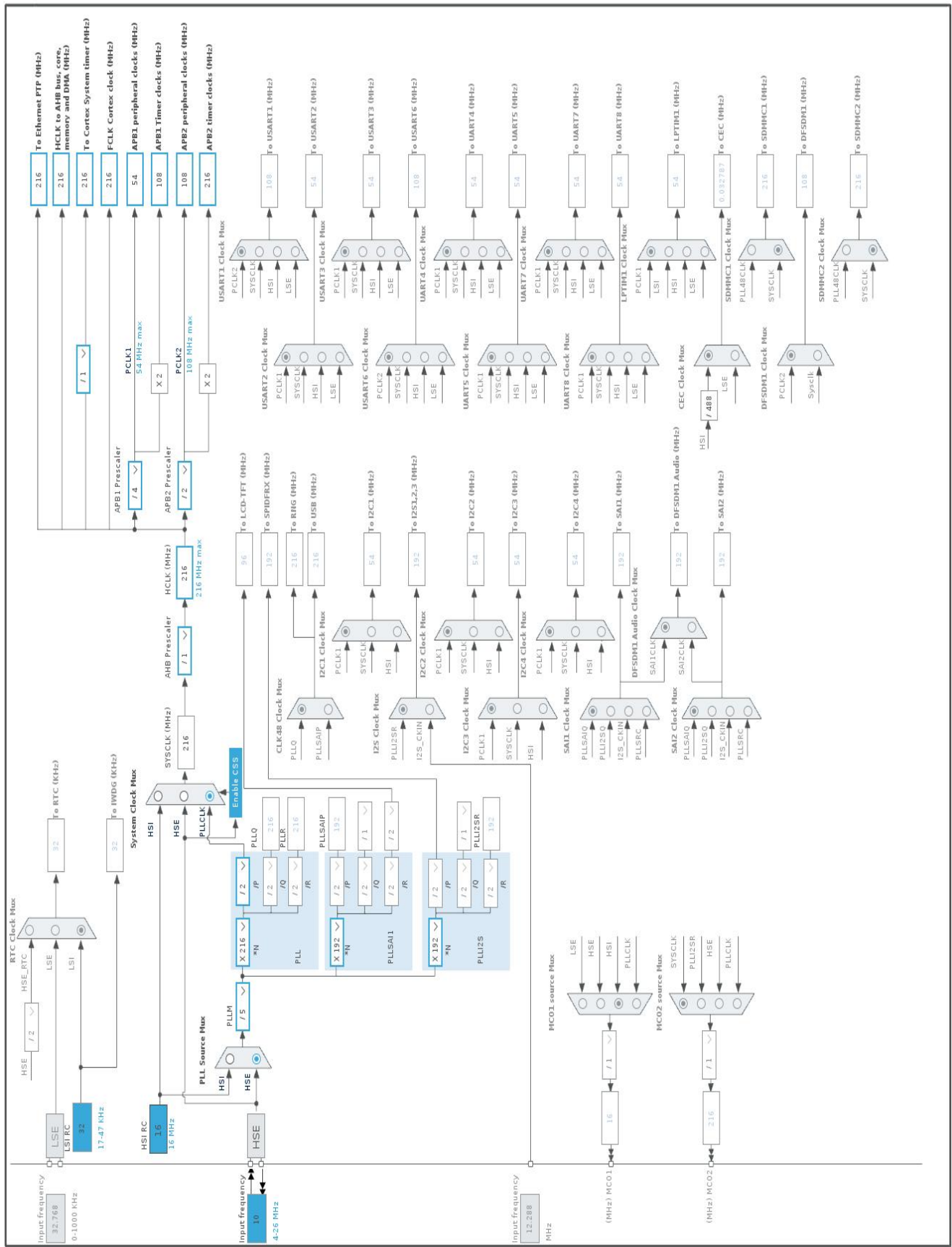
Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	PE2 *	I/O	GPIO_Input	GEAR_PROX_DOWN
2	PE3 *	I/O	GPIO_Input	GEAR_PROX_UP
3	PE4 *	I/O	GPIO_Input	DIO_AUX1
6	VBAT	Power		
7	PC13 *	I/O	GPIO_Input	DIO_AUX2
8	PC14/OSC32_IN *	I/O	GPIO_Input	SHUTDOWN_SENSE
9	PC15/OSC32_OUT *	I/O	GPIO_Output	CUTOFF
10	VSS	Power		
11	VDD	Power		
12	PH0/OSC_IN	I/O	RCC_OSC_IN	
13	PH1/OSC_OUT	I/O	RCC_OSC_OUT	
14	NRST	Reset		
15	PC0	I/O	ADC1_IN10	ADC_AUX2
16	PC1	I/O	ADC1_IN11	DESMO2
17	PC2 *	I/O	GPIO_Output	VUVG_UP
18	PC3 *	I/O	GPIO_Output	VUVG_DOWN
19	VSSA	Power		
20	VREF+	Power		
21	VDDA	Power		
22	PA0/WKUP	I/O	ADC1_IN0	DESMO1
23	PA1	I/O	ADC1_IN1	CLUTCH_OIL
24	PA2	I/O	ADC1_IN2	GEAR_UP_AIR
25	PA3	I/O	ADC1_IN3	VPPM_SENSE
26	VSS	Power		
27	VDD	Power		
28	PA4	I/O	DAC_OUT1	VPPM_OUT
29	PA5	I/O	DAC_OUT2	DAC_AUX
30	PA6	I/O	ADC1_IN6	EBS_AIR_2
31	PA7	I/O	ADC1_IN7	EBS_AIR_1
32	PC4	I/O	ADC1_IN14	APPS_1
33	PC5	I/O	ADC1_IN15	ADC_AUX1
34	PB0	I/O	ADC1_IN8	APPS_2
35	PB1	I/O	ADC1_IN9	BPPS
36	PB2 *	I/O	GPIO_Input	RES_IN1
37	PE7 *	I/O	GPIO_Input	RES_IN2
38	PE8 *	I/O	GPIO_Input	EBS_PROX2

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
39	PE9 *	I/O	GPIO_Input	EBS_PROX1
41	PE11 *	I/O	GPIO_Output	BRAKE_LIGHT
43	PE13	I/O	TIM1_CH3	PWM_AUX
44	PE14 *	I/O	GPIO_Output	SHUTDOWN_CMD
46	PB10	I/O	TIM2_CH3	RADIATOR
47	PB11	I/O	TIM2_CH4	INTERCOOLER
48	VCAP_1	Power		
49	VSS	Power		
50	VDD	Power		
51	PB12 *	I/O	GPIO_Output	MOT_SEL0
52	PB13 *	I/O	GPIO_Output	MOT_INA
53	PB14	I/O	TIM12_CH1	MOT_PWM
54	PB15 *	I/O	GPIO_Analog	MOT_MS
55	PD8 *	I/O	GPIO_Output	MOT_MS_EN
56	PD9 *	I/O	GPIO_Output	MOT_INB
57	PD10 *	I/O	GPIO_Output	MOT_SEL1
63	PC6 *	I/O	GPIO_Output	EBS_LED
64	PC7	I/O	GPIO_EXTI7	NEUTRAL_LED
65	PC8	I/O	TIM3_CH3	ASSI_LED_B
66	PC9	I/O	TIM3_CH4	ASSI_LED_Y
67	PA8 *	I/O	GPIO_Output	ASSI_SIREN
72	PA13	I/O	SYS_JTMS-SWDIO	
73	VCAP_2	Power		
74	VSS	Power		
75	VDD	Power		
76	PA14	I/O	SYS_JTCK-SWCLK	
77	PA15 *	I/O	GPIO_Output	LORA_D0
78	PC10	I/O	SPI3_SCK	
79	PC11	I/O	SPI3_MISO	
80	PC12	I/O	SPI3_MOSI	
81	PD0 *	I/O	GPIO_Output	LORA_RST
89	PB3 *	I/O	GPIO_Output	LED_B
90	PB4 *	I/O	GPIO_Output	LED_R
91	PB5	I/O	CAN2_RX	
92	PB6	I/O	CAN2_TX	
94	BOOT0	Boot		
95	PB8	I/O	CAN1_RX	
96	PB9	I/O	CAN1_TX	
97	PE0	I/O	GPIO_EXTI0	BTN_1

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
98	PE1	I/O	GPIO_EXTI1	BTN_2
99	VSS	Power		
100	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	CORE23
Project Folder	/home/lorenzo/Documents/GitHub/CORE23
Toolchain / IDE	Makefile
Firmware Package Name and Version	STM32Cube FW_F7 V1.17.1
Application Structure	Advanced
Generate Under Root	No
Do not generate the main()	No
Minimum Heap Size	0x200
Minimum Stack Size	0x400

5.2. Code Generation Settings

Name	Value
STM32Cube MCU packages and embedded software	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
Keep User Code when re-generating	Yes
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No
Enable Full Assert	No

5.3. Advanced Settings - Generated Function Calls

Rank	Function Name	Peripheral Instance Name
1	SystemClock_Config	RCC
2	MX_GPIO_Init	GPIO
3	MX_DMA_Init	DMA
4	MX_CAN1_Init	CAN1
5	MX_CAN2_Init	CAN2
6	MX_DAC_Init	DAC
7	MX_SPI3_Init	SPI3
8	MX_TIM1_Init	TIM1
9	MX_TIM2_Init	TIM2
10	MX_TIM3_Init	TIM3
11	MX_TIM12_Init	TIM12

Rank	Function Name	Peripheral Instance Name
12	MX_ADC1_Init	ADC1

1. Power Consumption Calculator report

1.1. Microcontroller Selection

Series	STM32F7
Line	STM32F7x7
MCU	STM32F767VITx
Datasheet	DS11532_Rev4

1.2. Parameter Selection

Temperature	25
Vdd	3.3

1.3. Battery Selection

Battery	Alkaline(9V)
Capacity	625.0 mAh
Self Discharge	0.3 %/month
Nominal Voltage	9.0 V
Max Cont Current	200.0 mA
Max Pulse Current	0.0 mA
Cells in series	1
Cells in parallel	1

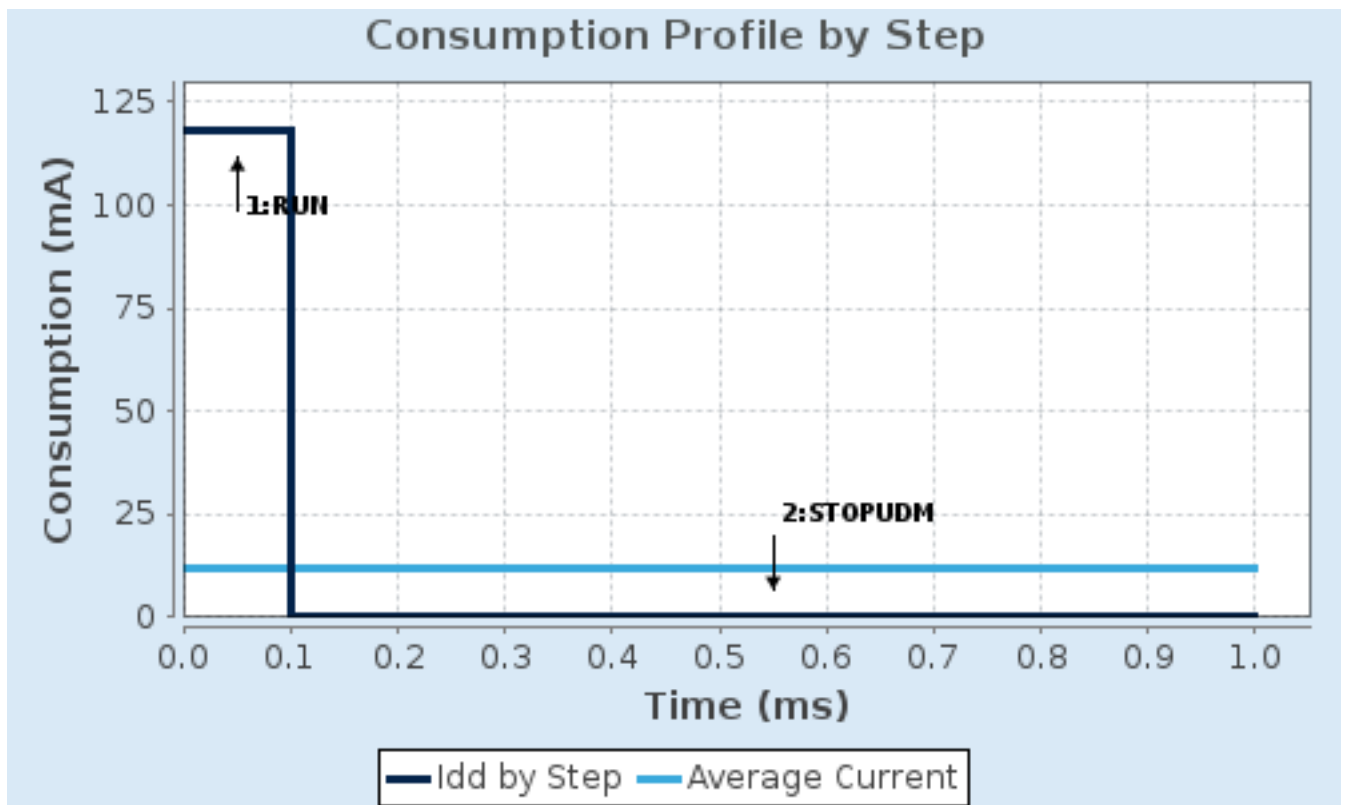
1.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP UDM (Under Drive)
Vdd	3.3	3.3
Voltage Source	Battery	Battery
Range	Scale1-High	No Scale
Fetch Type	ICTM FLASH-SingleBank REGON	n/a
CPU Frequency	216 MHz	0 Hz
Clock Configuration	HSE PLL	Regulator LP Flash-PwrDwn
Clock Source Frequency	4 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	118 mA	130 μ A
Duration	0.1 ms	0.9 ms
DMIPS	462.0	0.0
Ta Max	88.26	104.98
Category	In DS Table	In DS Table

1.5. Results

Sequence Time	1 ms	Average Current	11.92 mA
Battery Life	2 days, 4 hours	Average DMIPS	462.24005 DMIPS

1.6. Chart



2. Peripherals and Middlewares Configuration

2.1. ADC1

mode: IN0

mode: IN1

mode: IN2

mode: IN3

mode: IN6

mode: IN7

mode: IN8

mode: IN9

mode: IN10

mode: IN11

mode: IN14

mode: IN15

2.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode Independent mode

ADC_Settings:

Clock Prescaler PCLK2 divided by 4

Resolution 12 bits (15 ADC Clock cycles)

Data Alignment Right alignment

Scan Conversion Mode Enabled

Continuous Conversion Mode **Enabled ***

Discontinuous Conversion Mode Disabled

DMA Continuous Requests **Enabled ***

End Of Conversion Selection **EOC flag at the end of all conversions ***

ADC_Regular_ConversionMode:

Number Of Conversion **12 ***

External Trigger Conversion Source Regular Conversion launched by software

External Trigger Conversion Edge None

Rank 1

Channel Channel 0

Sampling Time **84 Cycles ***

Rank **2 ***

Channel **Channel 1 ***

Sampling Time **84 Cycles ***

<u>Rank</u>	3 *
Channel	Channel 2 *
Sampling Time	84 Cycles *
<u>Rank</u>	4 *
Channel	Channel 3 *
Sampling Time	84 Cycles *
<u>Rank</u>	5 *
Channel	Channel 6 *
Sampling Time	84 Cycles *
<u>Rank</u>	6 *
Channel	Channel 7 *
Sampling Time	84 Cycles *
<u>Rank</u>	7 *
Channel	Channel 8 *
Sampling Time	84 Cycles *
<u>Rank</u>	8 *
Channel	Channel 9 *
Sampling Time	84 Cycles *
<u>Rank</u>	9 *
Channel	Channel 10 *
Sampling Time	84 Cycles *
<u>Rank</u>	10 *
Channel	Channel 11 *
Sampling Time	84 Cycles *
<u>Rank</u>	11 *
Channel	Channel 14 *
Sampling Time	84 Cycles *
<u>Rank</u>	12 *
Channel	Channel 15 *
Sampling Time	84 Cycles *

ADC_Injected_ConversionMode:

Number Of Conversions	0
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WatchDog:

Enable Analog WatchDog Mode	false
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2.2. CAN1

mode: Activated

2.2.1. Parameter Settings:

Bit Timings Parameters:

Prescaler (for Time Quantum)	3 *
Time Quantum	55.55555555555556 *
Time Quanta in Bit Segment 1	15 Times *
Time Quanta in Bit Segment 2	2 Times *
Time for one Bit	1000
Baud Rate	1000000 *
ReSynchronization Jump Width	1 Time

Basic Parameters:

Time Triggered Communication Mode	Disable
Automatic Bus-Off Management	Disable
Automatic Wake-Up Mode	Disable
Automatic Retransmission	Disable
Receive Fifo Locked Mode	Disable
Transmit Fifo Priority	Disable

Advanced Parameters:

Operating Mode	Normal
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2.3. CAN2

mode: Activated

2.3.1. Parameter Settings:

Bit Timings Parameters:

Prescaler (for Time Quantum)	3 *
Time Quantum	55.55555555555556 *
Time Quanta in Bit Segment 1	15 Times *
Time Quanta in Bit Segment 2	2 Times *
Time for one Bit	1000
Baud Rate	1000000 *
ReSynchronization Jump Width	1 Time

Basic Parameters:

Time Triggered Communication Mode	Disable
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Automatic Bus-Off Management	Disable
Automatic Wake-Up Mode	Disable
Automatic Retransmission	Disable
Receive Fifo Locked Mode	Disable
Transmit Fifo Priority	Disable

Advanced Parameters:

Operating Mode	Normal
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2.4. DAC

mode: OUT1 Configuration

mode: OUT2 Configuration

2.4.1. Parameter Settings:

DAC Out1 Settings:

Output Buffer	Enable
Trigger	None

DAC Out2 Settings:

Output Buffer	Enable
Trigger	None

2.5. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

2.5.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Flash Latency(WS)	7 WS (8 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
TIM Prescaler Selection	Disabled
HSE Startup Timeout Value (ms)	100
LSE Startup Timeout Value (ms)	5000

Power Parameters:

Power Over Drive	Enabled
Power Regulator Voltage Scale	Power Regulator Voltage Scale 1

2.6. SPI3

Mode: Full-Duplex Master

2.6.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	4 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	27.0 MBits/s *
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSSP Mode	Enabled
NSS Signal Type	Software

2.7. SYS

Debug: Serial Wire

Timebase Source: TIM6

2.8. TIM1

Channel3: PWM Generation CH3

2.8.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	65535
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 16 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 TRGO	Reset (UG bit from TIMx_EGR)
Trigger Event Selection TRGO2	Reset (UG bit from TIMx_EGR)

Break And Dead Time management - BRK Configuration:

BRK State	Disable
BRK Polarity	High
BRK Filter (4 bits value)	0
BRK Sources Configuration	
- Digital Input	Disable
- DFSDM	Disable

Break And Dead Time management - BRK2 Configuration:

BRK2 State	Disable
BRK2 Polarity	High
BRK2 Filter (4 bits value)	0
BRK2 Sources Configuration	
- Digital Input	Disable
- DFSDM	Disable

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 3:

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

2.9. TIM2

Channel3: PWM Generation CH3

Channel4: PWM Generation CH4

2.9.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	10800-1 *
Counter Mode	Up
Counter Period (AutoReload Register - 32 bits value)	100-1 *
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 TRGO	Reset (UG bit from TIMx_EGR)

PWM Generation Channel 3:

Mode	PWM mode 1
Pulse (32 bits value)	15 *
Output compare preload	Enable
Fast Mode	Disable
CH Polarity	Low *

PWM Generation Channel 4:

Mode	PWM mode 1
Pulse (32 bits value)	15 *
Output compare preload	Enable
Fast Mode	Disable
CH Polarity	Low *

2.10. TIM3

Channel3: PWM Generation CH3

Channel4: PWM Generation CH4

2.10.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	65535
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 TRGO	Reset (UG bit from TIMx_EGR)

PWM Generation Channel 3:

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

PWM Generation Channel 4:

Mode	PWM mode 1
Pulse (16 bits value)	0
Output compare preload	Enable

Fast Mode	Disable
CH Polarity	High

2.11. TIM12

Channel1: PWM Generation CH1

2.11.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	65535
Internal Clock Division (CKD)	No Division
auto-reload preload	Disable

PWM Generation Channel 1:

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

2.12. FREERTOS

Interface: CMSIS_V2

2.12.1. Config parameters:

API:

FreeRTOS API	CMSIS v2
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Versions:

FreeRTOS version	10.2.1
CMSIS-RTOS version	2.00

MPU/FPU:

ENABLE_MPU	Disabled
ENABLE_FPU	Disabled

Kernel settings:

USE_PREEMPTION	Enabled
CPU_CLOCK_HZ	SystemCoreClock
TICK_RATE_HZ	1000
MAX_PRIORITIES	56

MINIMAL_STACK_SIZE	128
MAX_TASK_NAME_LEN	16
USE_16_BIT_TICKS	Disabled
IDLE_SHOULD_YIELD	Enabled
USE_MUTEXES	Enabled
USE_RECURSIVE_MUTEXES	Enabled
USE_COUNTING_SEMAPHORES	Enabled
QUEUE_REGISTRY_SIZE	8
USE_APPLICATION_TASK_TAG	Disabled
ENABLE_BACKWARD_COMPATIBILITY	Enabled
USE_PORT_OPTIMISED_TASK_SELECTION	Disabled
USE_TICKLESS_IDLE	Disabled
USE_TASK_NOTIFICATIONS	Enabled
RECORD_STACK_HIGH_ADDRESS	Disabled

Memory management settings:

Memory Allocation	Dynamic / Static
TOTAL_HEAP_SIZE	15360
Memory Management scheme	heap_4

Hook function related definitions:

USE_IDLE_HOOK	Disabled
USE_TICK_HOOK	Disabled
USE_MALLOC_FAILED_HOOK	Disabled
USE_DAEMON_TASK_STARTUP_HOOK	Disabled
CHECK_FOR_STACK_OVERFLOW	Disabled

Run time and task stats gathering related definitions:

GENERATE_RUN_TIME_STATS	Disabled
USE_TRACE_FACILITY	Enabled
USE_STATS_FORMATTING_FUNCTIONS	Disabled

Co-routine related definitions:

USE_CO_ROUTINES	Disabled
MAX_CO_ROUTINE_PRIORITIES	2

Software timer definitions:

USE_TIMERS	Enabled
TIMER_TASK_PRIORITY	2
TIMER_QUEUE_LENGTH	10
TIMER_TASK_STACK_DEPTH	256

Interrupt nesting behaviour configuration:

LIBRARY_LOWEST_INTERRUPT_PRIORITY	15
LIBRARY_MAX_SYSCALL_INTERRUPT_PRIORITY	5

Added with 10.2.1 support:

MESSAGE_BUFFER_LENGTH_TYPE	size_t
USE_POSIX_ERRNO	Disabled

2.12.2. Include parameters:

Include definitions:

vTaskPrioritySet	Enabled
uxTaskPriorityGet	Enabled
vTaskDelete	Enabled
vTaskCleanUpResources	Disabled
vTaskSuspend	Enabled
vTaskDelayUntil	Enabled
vTaskDelay	Enabled
xTaskGetSchedulerState	Enabled
xTaskResumeFromISR	Enabled
xQueueGetMutexHolder	Enabled
xSemaphoreGetMutexHolder	Disabled
pcTaskGetTaskName	Disabled
uxTaskGetStackHighWaterMark	Enabled
xTaskGetCurrentTaskHandle	Disabled
eTaskGetState	Enabled
xEventGroupSetBitFromISR	Disabled
xTimerPendFunctionCall	Enabled
xTaskAbortDelay	Disabled
xTaskGetHandle	Disabled
uxTaskGetStackHighWaterMark2	Disabled

2.12.3. Advanced settings:

Newlib settings (see parameter description first):

USE_NEWLIB_REENTRANT **Enabled ***

Project settings (see parameter description first):

Use FW pack heap file Enabled

*** User modified value**

3. System Configuration

3.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ADC1	PC0	ADC1_IN10	Analog mode	No pull-up and no pull-down	n/a	ADC_AUX2
	PC1	ADC1_IN11	Analog mode	No pull-up and no pull-down	n/a	DESMO2
	PA0/WKUP	ADC1_IN0	Analog mode	No pull-up and no pull-down	n/a	DESMO1
	PA1	ADC1_IN1	Analog mode	No pull-up and no pull-down	n/a	CLUTCH_OIL
	PA2	ADC1_IN2	Analog mode	No pull-up and no pull-down	n/a	GEAR_UP_AIR
	PA3	ADC1_IN3	Analog mode	No pull-up and no pull-down	n/a	VPPM_SENSE
	PA6	ADC1_IN6	Analog mode	No pull-up and no pull-down	n/a	EBS_AIR_2
	PA7	ADC1_IN7	Analog mode	No pull-up and no pull-down	n/a	EBS_AIR_1
	PC4	ADC1_IN14	Analog mode	No pull-up and no pull-down	n/a	APPS_1
	PC5	ADC1_IN15	Analog mode	No pull-up and no pull-down	n/a	ADC_AUX1
	PB0	ADC1_IN8	Analog mode	No pull-up and no pull-down	n/a	APPS_2
	PB1	ADC1_IN9	Analog mode	No pull-up and no pull-down	n/a	BPPS
CAN1	PB8	CAN1_RX	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PB9	CAN1_TX	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
CAN2	PB5	CAN2_RX	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PB6	CAN2_TX	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
DAC	PA4	DAC_OUT1	Analog mode	No pull-up and no pull-down	n/a	VPPM_OUT
	PA5	DAC_OUT2	Analog mode	No pull-up and no pull-down	n/a	DAC_AUX
RCC	PH0/OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PH1/OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SPI3	PC10	SPI3_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PC11	SPI3_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PC12	SPI3_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
TIM1	PE13	TIM1_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	PWM_AUX
TIM2	PB10	TIM2_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	RADIATOR
	PB11	TIM2_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	INTERCOOLER
TIM3	PC8	TIM3_CH3	Alternate Function Push Pull	No pull-up and no pull-down	Low	ASSI_LED_B
	PC9	TIM3_CH4	Alternate Function Push Pull	No pull-up and no pull-down	Low	ASSI_LED_Y
TIM12	PB14	TIM12_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	MOT_PWM
GPIO	PE2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	GEAR_PROX_DOWN
	PE3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	GEAR_PROX_UP
	PE4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIO_AUX1
	PC13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DIO_AUX2
	PC14/OSC3_2_IN	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SHUTDOWN_SENSE
	PC15/OSC3_2_OUT	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	CUTOFF
	PC2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	VUVG_UP
	PC3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	VUVG_DOWN
	PB2	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	RES_IN1
	PE7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	RES_IN2
	PE8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	EBS_PROX2
	PE9	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	EBS_PROX1
	PE11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	BRAKE_LIGHT
	PE14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SHUTDOWN_CMD
	PB12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MOT_SEL0
	PB13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MOT_INA
	PB15	GPIO_Analog	Analog mode	No pull-up and no pull-down	n/a	MOT_MS
	PD8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MOT_MS_EN
	PD9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MOT_INB
	PD10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MOT_SEL1
	PC6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	EBS_LED
	PC7	GPIO_EXTI7	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	NEUTRAL_LED
	PA8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ASSI_SIREN
	PA15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LORA_D0
	PD0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LORA_RST
	PB3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED_B
	PB4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED_R
	PE0	GPIO_EXTI0	External Interrupt Mode with Rising edge trigger detection	Pull-down *	n/a	BTN_1
	PE1	GPIO_EXTI1	External Interrupt Mode with Rising edge trigger detection	Pull-down *	n/a	BTN_2

3.2. DMA configuration

DMA request	Stream	Direction	Priority
ADC1	DMA2_Stream0	Peripheral To Memory	Low

ADC1: DMA2_Stream0 DMA request Settings:

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

3.3. NVIC configuration

3.3.1. NVIC

Interrupt Table	Enable	Preenmption Priority	SubPriority
Non maskable interrupt	true	0	0
Hard fault interrupt	true	0	0
Memory management fault	true	0	0
Pre-fetch 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	15	0
System tick timer	true	15	0
EXTI line0 interrupt	true	5	0
EXTI line1 interrupt	true	5	0
CAN1 RX0 interrupts	true	5	0
TIM6 global interrupt, DAC1 and DAC2 underrun error interrupts	true	15	0
DMA2 stream0 global interrupt	true	5	0
CAN2 RX0 interrupts	true	5	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1, ADC2 and ADC3 global interrupts	unused		
CAN1 TX interrupts	unused		
CAN1 RX1 interrupt	unused		
CAN1 SCE interrupt	unused		
EXTI line[9:5] interrupts	unused		
TIM1 break interrupt and TIM9 global interrupt	unused		
TIM1 update interrupt and TIM10 global interrupt	unused		
TIM1 trigger and commutation interrupts and TIM11 global interrupt	unused		
TIM1 capture compare interrupt	unused		
TIM2 global interrupt	unused		
TIM3 global interrupt	unused		
TIM8 break interrupt and TIM12 global interrupt	unused		
SPI3 global interrupt	unused		
CAN2 TX interrupts	unused		
CAN2 RX1 interrupt	unused		
CAN2 SCE interrupt	unused		
FPU global interrupt	unused		

3.3.2. NVIC Code generation

Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
Non maskable interrupt	false	true	false
Hard fault interrupt	false	true	false
Memory management fault	false	true	false
Pre-fetch fault, memory access fault	false	true	false
Undefined instruction or illegal state	false	true	false
System service call via SWI instruction	false	false	false
Debug monitor	false	true	false
Pendable request for system service	false	false	false
System tick timer	false	false	true
EXTI line0 interrupt	false	true	true
EXTI line1 interrupt	false	true	true
CAN1 RX0 interrupts	false	true	true
TIM6 global interrupt, DAC1 and DAC2 underrun error interrupts	false	true	true
DMA2 stream0 global interrupt	false	true	true
CAN2 RX0 interrupts	false	true	true

* User modified value

4. System Views

4.1. Category view

4.1.1. Current

Middleware

FREERTOS 

System Core

Analog

Timers

Connectivity

Multimedia

Security

Computing

CORTEX_M7 

ADC1 

TIM1 

CAN1 

DMA 

DAC 

TIM2 

CAN2 

GPIO 

TIM3 

SPI3 

NVIC 

TIM12 

RCC 

SYS 

5. Docs & Resources

Type	Link
BSDL files	https://www.st.com/resource/en/bsdl_model/stm32f7_bsd.zip
IBIS models	https://www.st.com/resource/en/ibis_model/stm32f7_ibis.zip
System View Description	https://www.st.com/resource/en/svd/stm32f7-svd.zip
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_embedded_software_solutions.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32_eval_tools_portfolio.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32_stm8_functional-safety-packages.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_software_development_tools.pdf
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers-stm32-family-overview.pdf
Brochures	https://www.st.com/resource/en/brochure/brstm32f7.pdf
Brochures	https://www.st.com/resource/en/brochure/products-and-solutions-for-plcs-and-smart-i-os.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32nucleo.pdf
Flyers	https://www.st.com/resource/en/flyer/flstmcsuite.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32trust.pdf
Application Notes	https://www.st.com/resource/en/application_note/an1181-electrostatic-discharge-sensitivity-measurement-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an1709-emc-design-guide-for-stm8-stm32-and-legacy-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2606-stm32-microcontroller-system-memory-boot-mode-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2639-soldering-recommendations-and-package-information-for-leadfree-ecopack-mcus-and-mpus-stmicroelectronics.pdf

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& Software

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for related Tools
& Software

Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5394-getting-started-with-projects-based-on-the-stm32l5-series-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5418-how-to-build-a-simple-usbp-d-sink-application-with-stm32cubemx-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5426-migrating-graphics-middleware-projects-from-stm32cubemx-540-to-stm32cubemx-550-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5564-getting-started-with-projects-based-on-dualcore-stm32wl-microcontrollers-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4865-lowpower-timer-lptim-applicative-use-cases-on-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5698-adapting-the-xcubestl-functional-safety-package-for-stm32-iec-61508-compliant-to-other-safety-standards-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5731-stm32cubemx-and-stm32cubeide-threadsafe-solution-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4502-stm32-smbus-pmbus-expansion-package-for-stm32cube-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5952-how-to-use-cmake-in-stm32cubeide-stmicroelectronics.pdf
Design Notes & Tips	https://www.st.com/resource/en/design_tip/dt0117-microphone-array-beamforming-in-the-pcm-and-pdm-domain-stmicroelectronics.pdf
Errata Sheets	https://www.st.com/resource/en/errata_sheet/es0334-stm32f76xxx-and-stm32f77xxx-device-errata-stmicroelectronics.pdf
Datasheet	https://www.st.com/resource/en/datasheet/dm00273119.pdf
Programming Manuals	https://www.st.com/resource/en/programming_manual/pm0253-stm32f7-series-and-stm32h7-series-cortexm7-processor-programming-manual-

	stmicroelectronics.pdf
Reference Manuals	https://www.st.com/resource/en/reference_manual/rm0410-stm32f76xxx-and-stm32f77xxx-advanced-armbased-32bit-mcus-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1163-description-of-wlcsp-for-microcontrollers-and-recommendations-for-its-use-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1204-tape-and-reel-shipping-media-for-stm32-microcontrollers-in-bga-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1205-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-fpn-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1206-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-qfp-packages-stmicroelectronics.pdf
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