STM32 CubeMX

1. Description

1.1. Project

Project Name	usb-ssb-exciter
Board Name	custom
Generated with:	STM32CubeMX 6.14.0
Date	03/11/2025

1.2. MCU

MCU Series	STM32H5
MCU Line	STM32H562
MCU name	STM32H562VITx
MCU Package	LQFP100
MCU Pin number	100

1.3. Core(s) information

Core(s)	ARM Cortex-M33

2. Pinout Configuration

3. Pins Configuration

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
6	VBAT	Power		
10	VSS	Power		
11	VDD	Power		
14	NRST	Reset		
19	VSSA	Power		
20	VREF-	Power		
21	VREF+	Power		
22	VDDA	Power		
24	PA1	I/O	ADC1_INP1	V12-SENSE
27	VSS	Power		
28	VDD	Power		
29	PA4	I/O	ADC1_INP18, DAC1_OUT1, ADC2_INP18	SSB-I
30	PA5	I/O	DAC1_OUT2, ADC1_INP19, ADC2_INP19	SSB-Q
31	PA6	I/O	ADC1_INP3	SWR-SENSE
33	PC4	I/O	ADC1_INP4	PRE-POWER-SENSE
36	PB1	I/O	ADC1_INP5	PA-POWER-SENSE
48	VCAP	Power		
49	VSS	Power		
50	VDD	Power		
52	PB13	I/O	UCPD1_CC1	
53	PB14	I/O	UCPD1_CC2	
54	PB15	I/O	PWR_PVD_IN	
70	PA11	I/O	USB_DM	
71	PA12	I/O	USB_DP	
72	PA13(JTMS/SWDIO)	I/O	DEBUG_JTMS-SWDIO	
73	VDDUSB	Power		
74	VSS	Power		
75	VDD	Power		
76	PA14(JTCK/SWCLK)	I/O	DEBUG_JTCK-SWCLK	
92	PB6	I/O	I2C1_SCL	
93	PB7	I/O	I2C1_SDA	
94	BOOT0	Boot		
98	VCAP	Power		
99	VSS	Power		

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
100	VDD	Power		

4. Clock Tree Configuration
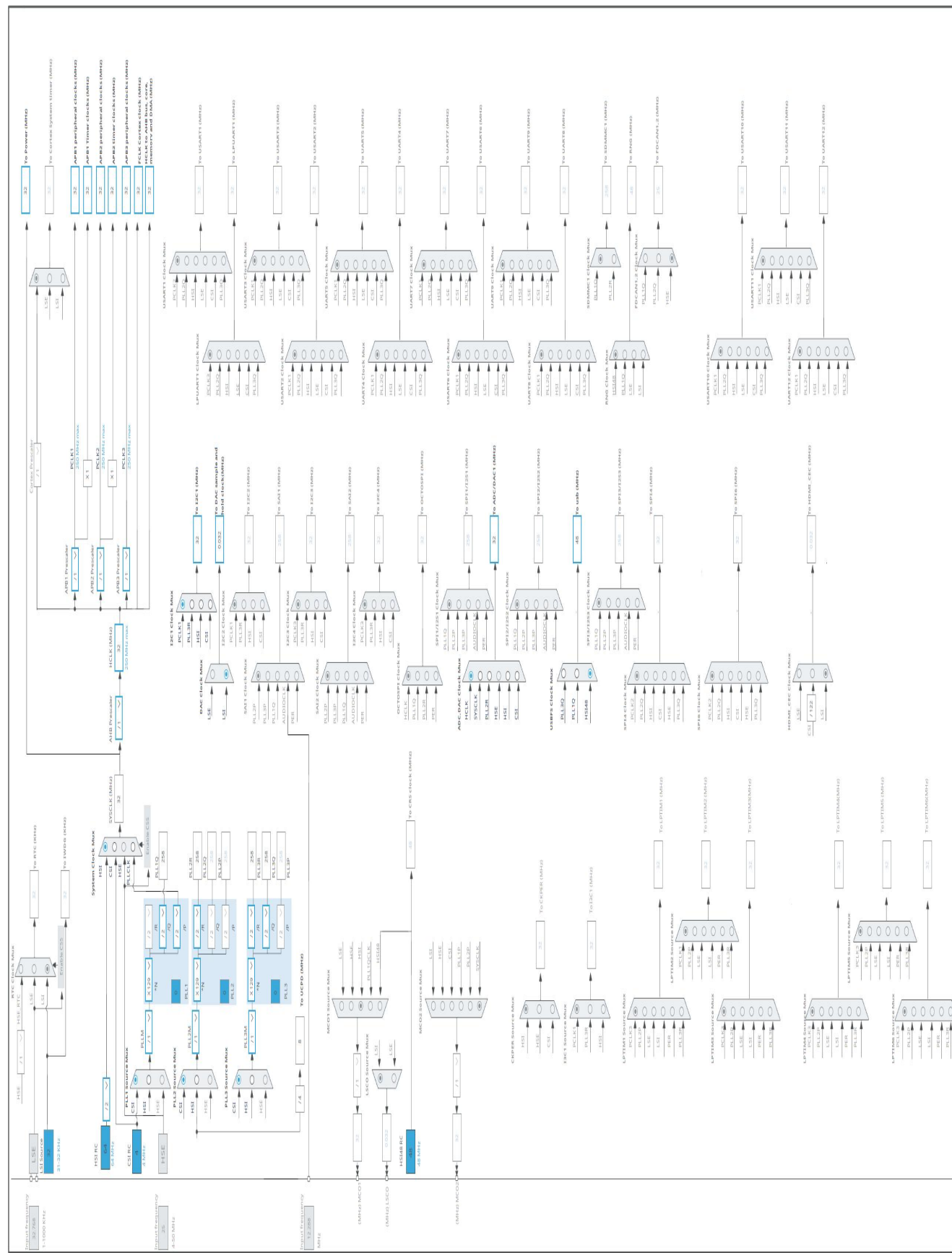
1. Power Consumption Calculator report

1.1. Microcontroller Selection

Series	STM32H5
Line	STM32H562
MCU	STM32H562VITx
Datasheet	DS00000_Rev0

1.2. Parameter Selection

Temperature	25
Vdd	3.0

1.3. Battery Selection

Battery	Li-SOCL2(A3400)
Capacity	3400.0 mAh
Self Discharge	0.08 %/month
Nominal Voltage	3.6 V
Max Cont Current	100.0 mA
Max Pulse Current	200.0 mA
Cells in series	1
Cells in parallel	1

1.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP
Vdd	3.0	3.0
Voltage Source	Battery	Battery
Range	VOS0: Scale0	SVOS5: System-Scale5/SMPS
Fetch Type	FLASH_ON/Cache2Ways_ALL_RAM_RETENTION	Flash-PwrDwn_PwrDwnStop_OFF
CPU Frequency	250 MHz	0 Hz
Clock Configuration	HSE BYP PLL	ALL_CLOCKS_OFF
Clock Source Frequency	8 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	32 mA	51.5 µA
Duration	0.1 ms	0.9 ms
DMIPS	535.0	0.0
Ta Max	120.68	124.99
Category	In DS Table	In DS Table

1.5. Results

Sequence Time	1 ms	Average Current	3.25 mA
Battery Life	1 month, 13 days, 4 hours	Average DMIPS	535.0 DMIPS

1.6. Chart

Consumption Profile by Step
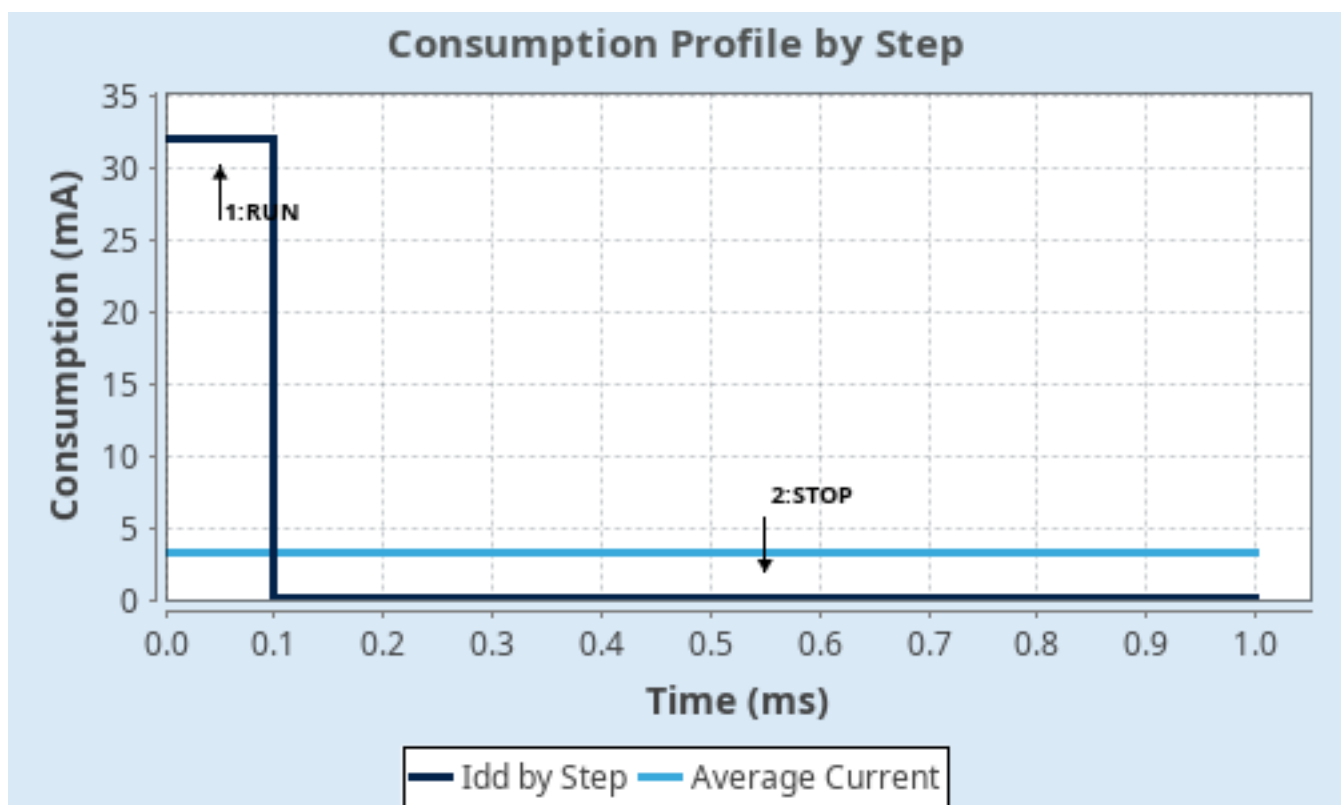
2. Software Project

2.1. Project Settings

Name	Value
Project Name	usb-ssb-exciter
Project Folder	/home/alan/softshack/usb-ssb-exciter
Toolchain / IDE	CMake
Firmware Package Name and Version	STM32Cube FW_H5 V1.5.0
Application Structure	Advanced
Generate Under Root	No
Do not generate the main()	No
Minimum Heap Size	0x200
Minimum Stack Size	0x400

2.2. 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

2.3. Advanced Settings - Generated Function Calls

Rank	Function Name	Peripheral Instance Name
1	SystemClock_Config	RCC
2	MX_GPIO_Init	GPIO
3	MX_ADC1_Init	ADC1
4	MX_ADC2_Init	ADC2
5	MX_CORDIC_Init	CORDIC
6	MX_DAC1_Init	DAC1
7	MX_DTS_Init	DTS
8	MX_FLASH_Init	FLASH
9	MX_FMAC_Init	FMAC
10	MX_I2C1_Init	I2C1
11	MX_UCPD1_Init	UCPD1

Rank	Function Name	Peripheral Instance Name
12	MX_USB_PCD_Init	USB
13	MX_GTZC_Init	GTZC

3. Peripherals and Middlewares Configuration

3.1. ADC1

IN1: IN1 Single-ended

IN3: IN3 Single-ended

IN4: IN4 Single-ended

IN5: IN5 Single-ended

mode: IN19

3.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode	Independent mode

ADC_Settings:

Clock Prescaler	Asynchronous clock mode divided by 1
Resolution	ADC 12-bit resolution
Scan Conversion Mode	Disabled
Data Alignment	Right alignment
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
Conversion Data Management Mode	Regular Conversion data stored in DR register only
Low Power Auto Wait	Disabled

ADC_Regular_ConversionMode:

Enable Regular Conversions	Enable
Enable Regular Oversampling	Disable
Number Of Conversion	1
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None
Sampling Mode	Normal
Rank	1
Channel	**Channel 19 ***
Sampling Time	2.5 Cycles
Offset Number	No offset
Monitored by	None

ADC_Injected_ConversionMode:

Enable Injected Conversions	Disable

Analog Watchdog 1:

Enable Analog WatchDog1 Mode	false

Analog Watchdog 2:

Enable Analog WatchDog2 Mode   false

Analog Watchdog 3:

Enable Analog WatchDog3 Mode   false

3.2. ADC2
mode: IN19
3.2.1. Parameter Settings:

ADCs_Common_Settings:

Mode   Independent mode

ADC_Settings:

Clock Prescaler   Asynchronous clock mode divided by 1

Resolution   ADC 12-bit resolution

Scan Conversion Mode   Disabled

Data Alignment   Right alignment

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

Conversion Data Management Mode   Regular Conversion data stored in DR register only

Low Power Auto Wait   Disabled

ADC_Regular_ConversionMode:

Enable Regular Conversions   Enable

Enable Regular Oversampling   Disable

Number Of Conversion   1

External Trigger Conversion Source   Regular Conversion launched by software

External Trigger Conversion Edge   None

Sampling Mode   Normal

Rank   1

Channel   Channel 19

Sampling Time   2.5 Cycles

Offset Number   No offset

Monitored by   None

ADC_Injected_ConversionMode:

Enable Injected Conversions   Disable

Analog Watchdog 1:

Enable Analog WatchDog1 Mode   false

Analog Watchdog 2:

Enable Analog WatchDog2 Mode   false

Analog Watchdog 3:

Enable Analog WatchDog3 Mode   false

3.3. BOOTPATH
mode: Activated

3.4. CORDIC
mode: Activated

3.5. CORTEX_M33_NS
SysTick Source Selection: HCLK
3.5.1. Parameter Settings:

Cortex Memory Protection Unit Control Settings:

MPU Control Mode	**Background Region Privileged accesses only + MPU Disabled during hard fault, NMI and FAULTMASK handlers ***

Cortex Memory Protection Unit Region 0 Settings:

Region	**Enabled ***
Region Base Address	**0x08000000 ***
Region Limit Address	**0x081FFFFF ***
Attributes Number	ATTRIBUTE 0
Access Permission	**READS Permissions ***
Instruction Access	Enable
Shareability Permission	Disable

Cortex Memory Protection Unit Region 1 Settings:

Region	**Enabled ***
Region Base Address	**0x20000000 ***
Region Limit Address	**0x2009FFFF ***
Attributes Number	**ATTRIBUTE 1 ***
Access Permission	READS\WRITES Permissions
Instruction Access	Enable
Shareability Permission	Disable

Cortex Memory Protection Unit Region 2 Settings:

Region	Disabled

Cortex Memory Protection Unit Region 3 Settings:

Region	Disabled

Cortex Memory Protection Unit Region 4 Settings:

Region	Disabled

Cortex Memory Protection Unit Region 5 Settings:

Region	Disabled

Cortex Memory Protection Unit Region 6 Settings:

Region	Disabled

Cortex Memory Protection Unit Region 7 Settings:

Region	Disabled

3.5.2. Attributes Settings:

Cortex Memory Protection Unit Attributes 0 Settings:

Attributes	**Enabled ***
Memory type	**Normal cacheable ***
Cache policy	WRITE THROUGH
Transient permission	TRANSIENT
Allocate permission	**R ALLOCATE ***

Cortex Memory Protection Unit Attributes 1 Settings:

Attributes	**Enabled ***
Memory type	**Normal cacheable ***
Cache policy	**WRITE BACK ***
Transient permission	TRANSIENT
Allocate permission	**RW ALLOCATE ***

Cortex Memory Protection Unit Attributes 2 Settings:

Attributes	Disabled

Cortex Memory Protection Unit Attributes 3 Settings:

Attributes	Disabled

Cortex Memory Protection Unit Attributes 4 Settings:

Attributes	Disabled

Cortex Memory Protection Unit Attributes 5 Settings:

Attributes	Disabled

Cortex Memory Protection Unit Attributes 6 Settings:

Attributes	Disabled

Cortex Memory Protection Unit Attributes 7 Settings:

Attributes	Disabled

3.6. DAC1

OUT1 connected to: only external pin

OUT2 connected to: only external pin

3.6.1. Parameter Settings:

Common DAC Settings:

DAC High Frequency Mode	Disable

DAC Out1 Settings:

Mode selected	Normal Mode
Output Buffer	Enable
DMA double data mode	Disable
Signed Format	Disable
Trigger	None
User Trimming	Factory trimming

DAC Out2 Settings:

Mode selected	Normal Mode
Output Buffer	Enable
DMA double data mode	Disable
Signed Format	Disable
Trigger	None
User Trimming	Factory trimming

3.7. DEBUG

Debug: Serial Wire

3.8. DTS

mode: Activated

3.8.1. Parameter Settings:

Basic parameters:

Reference Clock Selection	High speed reference clock (PCLK)
Quick Measurement	Disable the Quick Measurement (Measure with calibration)
Input Trigger Selection	No Hardware trigger detection
Sampling Time	1 cycle for the sampling time
Divider	0
High Threshold	**0x0** *

Low Threshold	**0x0 ***

3.9. FLASH

mode: Enable

3.9.1. HAL Option Bytes Settings:

Advanced settings:

Activate	false

Product State:

Activate	false

BOR Level:

Activate	false

User Configuration:

Activate	false

User Configuration 2:

Activate	false

Boot Configuration:

Activate NS BOOT LOCK	false

Write sector group Protection:

Activate Bank 1 WRP	false
Activate Bank 2 WRP	false

OTP write protection:

Activate	false

Flash data sectors:

Activate Bank1 EDATA	false
Activate Bank2 EDATA	false

Flash HDP:

Activate Bank1 HDP	false
Activate Bank2 HDP	false

3.9.2. Block-based sector protection:

AREA1:

Activate AREA 1	**true ***
Bank	FLASH BANK 1
Start page	0
End page	**127 ***

Attribute privilege	Privileged
Attribute security	Not secure

AREA2:

Activate AREA 2	**true ***
Bank	**FLASH BANK 2 ***
Start page	0
End page	**127 ***
Attribute privilege	Privileged
Attribute security	Not secure

AREA3:

Activate AREA 3	false

AREA4:

Activate AREA 4	false

AREA5:

Activate AREA 5	false

AREA6:

Activate AREA 6	false

AREA7:

Activate AREA 7	false

AREA8:

Activate AREA 8	false

3.10. FMAC
mode: Mode

3.11. GTZC
mode: Enable

3.11.1. TrustZone Security Controller - Privilegeable Peripherals:

Privilegeable Peripherals:

Configure Privilege IP	by Individual Privileging from full Not Privileged
Privilegeable Peripheral	Privilege Attribute
ADC1|2	not privileged
CORDIC	not privileged
CRC	not privileged
CRS	not privileged
DAC1	not privileged
DCACHE1	not privileged

DCMI	not privileged
DTS	not privileged
FDCAN1	not privileged
FMAC	not privileged
FMC	not privileged
HASH	not privileged
HDMI_CEC	not privileged
I2C1	not privileged
I2C2	not privileged
I2C3	not privileged
I2C4	not privileged
I3C1	not privileged
ICACHE	not privileged
IWDG	not privileged
LPTIM1	not privileged
LPTIM2	not privileged
LPTIM3	not privileged
LPTIM4	not privileged
LPTIM5	not privileged
LPTIM6	not privileged
LPUART1	not privileged
OCTOSPI1	not privileged
PKA	not privileged
RAMCFG	not privileged
RNG	not privileged
SAI1	not privileged
SAI2	not privileged
SDMMC1	not privileged
SPI1	not privileged
SPI2	not privileged
SPI3	not privileged
SPI4	not privileged
SPI6	not privileged
TIM1	not privileged
TIM2	not privileged
TIM3	not privileged
TIM4	not privileged
TIM5	not privileged
TIM6	not privileged
TIM7	not privileged
TIM8	not privileged
TIM12	not privileged
TIM13	not privileged

TIM14	not privileged
TIM15	not privileged
TIM16	not privileged
TIM17	not privileged
USART1	not privileged
USART2	not privileged
USART3	not privileged
UART4	not privileged
UART5	not privileged
USART6	not privileged
UART7	not privileged
UART8	not privileged
UART9	not privileged
USART10	not privileged
USART11	not privileged
UART12	not privileged
UCPD1	not privileged
USB	not privileged
VREFBUF	not privileged
WWDG	not privileged

3.11.2. Block-Based Memory Protection Controller:

MPCBB1 (SRAM1):

Memory Privilege Attributes Settings

Configure Memory	from full Not Privileged
Area Start Offset	**0x0 ***
Area Size	**0x00040000 ***
Area 2 Start Offset	**0x0 ***
Area 2 Size	**0x0 ***
Area Attribute	privileged

MPCBB2 (SRAM2):

Memory Privilege Attributes Settings

Configure Memory	from full Not Privileged
Area Start Offset	**0x0 ***
Area Size	**0x00010000 ***
Area 2 Start Offset	**0x0 ***
Area 2 Size	**0x0 ***
Area Attribute	privileged

MPCBB3 (SRAM3):

Memory Privilege Attributes Settings

Configure Memory	from full Not Privileged
Area Start Offset	**0x0 ***
Area Size	**0x00050000 ***
Area 2 Start offset	**0x0 ***
Area 2 Size	**0x0 ***
Area Attribute	privileged

3.12. I2C1
I2C: I2C
3.12.1. Parameter Settings:

Timing configuration:

I2C Speed Mode	Standard Mode
I2C Speed Frequency (KHz)	100
Rise Time (ns)	0
Fall Time (ns)	0
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	**0x00707CBB ***

Slave Features:

Clock No Stretch Mode	Disabled
General Call Address Detection	Disabled
Primary Address Length selection	7-bit
Dual Address Acknowledged	Disabled
Primary slave address	0

3.13. MEMORYMAP
mode: Activated

3.14. PWR
mode: Analog voltage detector
Power Voltage Detector In: Power Voltage Detector In (External input analog voltage)
mode: Power saving mode
mode: Privilege attributes

3.14.1. Parameter Settings:

Programmable_Voltage_Detector_Settings:

AVD detection Level	PWR AVD LEVEL 0 (1.7 V)
PWR AVD Mode	basic mode is used
PWR PVD Mode	basic mode is used

3.14.2. PWR Privilege :

Privilege PWR:

PWR Privilege	Disable

3.15. RCC
3.15.1. RCC Privilege :

Privilege RCC:

Privilege of RCC Non-Secure Items	Disable

3.15.2. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Flash Latency(WS)	1 WS (2 CPU cycle)
Flash Programming Delay	0

RCC Parameters:

HSI Calibration Value	64
CSI Calibration Value	32
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000
TIM Prescaler Selection	Disabled

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 3

3.16. SYS
Timebase Source: SysTick

3.17. UCPD1

UCPD Mode: Sink

3.17.1. Parameter Settings:

Version   1.0

3.18. USB

Mode: Device_Only

3.18.1. Parameter Settings:

Basic Parameters:

Speed   Full Speed 12MBit/s

Physical interface   Internal Phy

Signal start of frame   Disabled

Power Parameters:

Low Power   Disabled

Link Power Management   Disabled

Battery Charging   Disabled

EndPoint Parameters:

Bulk double buffer   Disabled

Iso single buffer   Disabled

3.19. VREFBUF

VREFBUF Mode: Internal voltage reference

3.19.1. Parameter Settings:

Voltage_Reference_Buffer_Settings:

Trimming Mode   Factory Trimming

Internal Voltage reference scale   SCALE 0: around 2.5 V

* User modified value

4. System Configuration

4.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ADC1	PA1	ADC1_INP1	Analog mode	No pull-up and no pull-down	n/a	V12-SENSE
	PA4	ADC1_INP18	Analog mode	No pull-up and no pull-down	n/a	SSB-I
	PA5	ADC1_INP19	Analog mode	No pull-up and no pull-down	n/a	SSB-Q
	PA6	ADC1_INP3	Analog mode	No pull-up and no pull-down	n/a	SWR-SENSE
	PC4	ADC1_INP4	Analog mode	No pull-up and no pull-down	n/a	PRE-POWER-SENSE
	PB1	ADC1_INP5	Analog mode	No pull-up and no pull-down	n/a	PA-POWER-SENSE
ADC2	PA4	ADC2_INP18	Analog mode	No pull-up and no pull-down	n/a	SSB-I
	PA5	ADC2_INP19	Analog mode	No pull-up and no pull-down	n/a	SSB-Q
DAC1	PA4	DAC1_OUT1	Analog mode	No pull-up and no pull-down	n/a	SSB-I
	PA5	DAC1_OUT2	Analog mode	No pull-up and no pull-down	n/a	SSB-Q
DEBUG	PA13(JTMS/SWDIO)	DEBUG_JTMS-SWDIO	n/a	n/a	n/a	
	PA14(JTCK/SWCLK)	DEBUG_JTCK-SWCLK	n/a	n/a	n/a	
I2C1	PB6	I2C1_SCL	Alternate Function Open Drain	No pull-up and no pull-down	Low	
	PB7	I2C1_SDA	Alternate Function Open Drain	No pull-up and no pull-down	Low	
PWR	PB15	PWR_PVD_IN	Analog mode	No pull-up and no pull-down	n/a	
UCPD1	PB13	UCPD1_CC1	Analog mode	No pull-up and no pull-down	n/a	
	PB14	UCPD1_CC2	Analog 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	

4.2. GPDMA1

4.3. GPDMA2

4.4. LINKEDLIST

4.5. NVIC configuration

4.5.1. 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	0	0
System tick timer	true	15	0
PVD/AVD through EXTI Line detection Interrupt	unused		
Flash non-secure global interrupt	unused		
RCC non-secure global interrupt	unused		
ADC1 global interrupt	unused		
DAC1 interrupt	unused		
I2C1 Event interrupt	unused		
I2C1 Error interrupt	unused		
ADC2 global interrupt	unused		
USB FS global interrupt	unused		
UCPD1 global interrupt	unused		
FPU global interrupt	unused		
CORDIC global interrupt	unused		
FMAC global interrupt	unused		
DTS global interrupt	unused		

4.5.2. 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	true	false
Debug monitor	false	true	false
Pendable request for system service	false	true	false
System tick timer	false	true	true

* User modified value

5. System Views

5.1. Category view

5.1.1. Current

| | | | | | Middleware | | | | | |

System Core	Analog	Timers	Connectivity	Multimedia	Security	Computing	Trace and Debug	Power and Thermal	Utilities	Other
CORTEX_M33 ✓	ADC1 ✓		I2C1 ✓		GTZC ✓	CORDIC ✓	DEBUG ✓	PWR ✓	LINKEDLIST	
FLASH ✓	ADC2 ✓		UCPD1 ✓			FMAC ✓				
GPDMA1	DAC1 ✓		USB ✓							
GPDMA2	DTS ✓									
GPIO ✓	VREFBUF ✓									
NVIC ✓										
RCC ✓										
SYS ✓										

6. Docs & Resources

Type	Link
BSDL files	https://www.st.com/resource/en/bsdl_model/stm32h5-bsdl.zip
IBIS models	https://www.st.com/resource/en/ibis_model/stm32h5-ibis.zip
System View Description	https://www.st.com/resource/en/svd/stm32h5-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_software_development_tools.pdf
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers-stm32h5-series-overview.pdf
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers-stm32-family-overview.pdf
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers-stm32-entry-level-graphics.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/flstm32h5.pdf
Security Bulletin	https://www.st.com/resource/en/security_bulletin/sb0023-eucleak-protection-statement-for-stmicroelectronics-certified-products-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/an3126-audio-and-waveform-generation-using-the-dac-in-stm32-products-

stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an3155-usart-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an3156-usb-dfu-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4221-i2c-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4286-spi-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4655-virtually-increasing-the-number-of-serial-communication-peripherals-in-stm32-applications-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4750-handling-of-soft-errors-in-stm32-applications-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4776-generalpurpose-timer-cookbook-for-stm32-microcontrollers-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4803-highspeed-si-simulations-using-ibis-and-boardlevel-simulations-using-hyperlynx-si-on-stm32-mcus-and-mpus-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4989-stm32-microcontroller-debug-toolbox-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5027-interfacing-pdm-digital-microphones-using-stm32-mcus-and-mpus-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4899-stm32-microcontroller-gpio-hardware-settings-and-lowpower-consumption-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5612-esd-protection-of-stm32-mcus-and-mpus-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4991-how-to-wake-up-an-stm32-microcontroller-from-lowpower-mode-with-the-usart-or-the-lpuart-stmicroelectronics.pdf

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microcontroller-applications-from-stm32f427437-and-stm32f429439-to-
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