

STM32 CubeMX

1. Description

1.1. Project

Project Name	ex3
Board Name	custom
Generated with:	STM32CubeMX 6.15.0
Date	09/07/2025

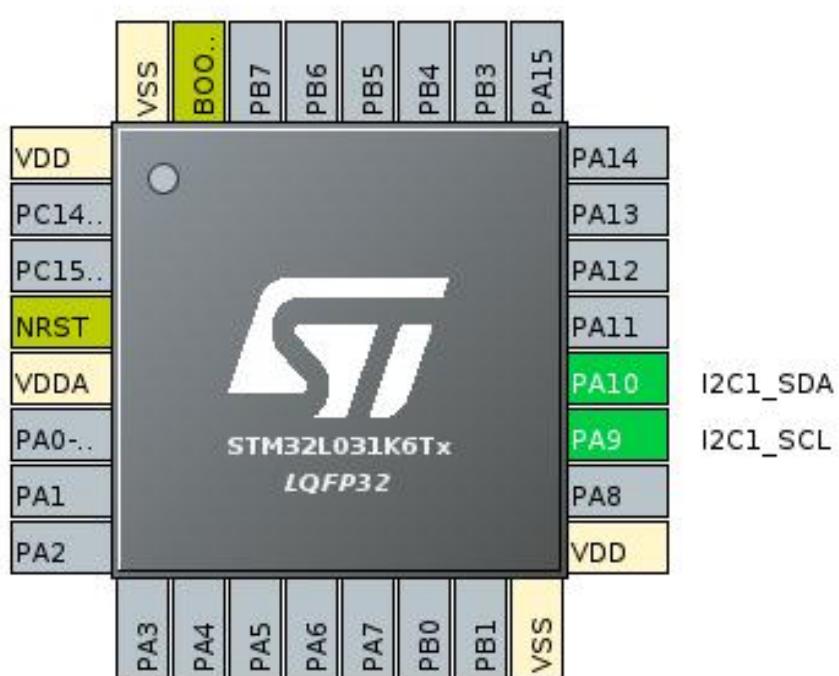
1.2. MCU

MCU Series	STM32L0
MCU Line	STM32L0x1
MCU name	STM32L031K6Tx
MCU Package	LQFP32
MCU Pin number	32

1.3. Core(s) information

Core(s)	Arm Cortex-M0+
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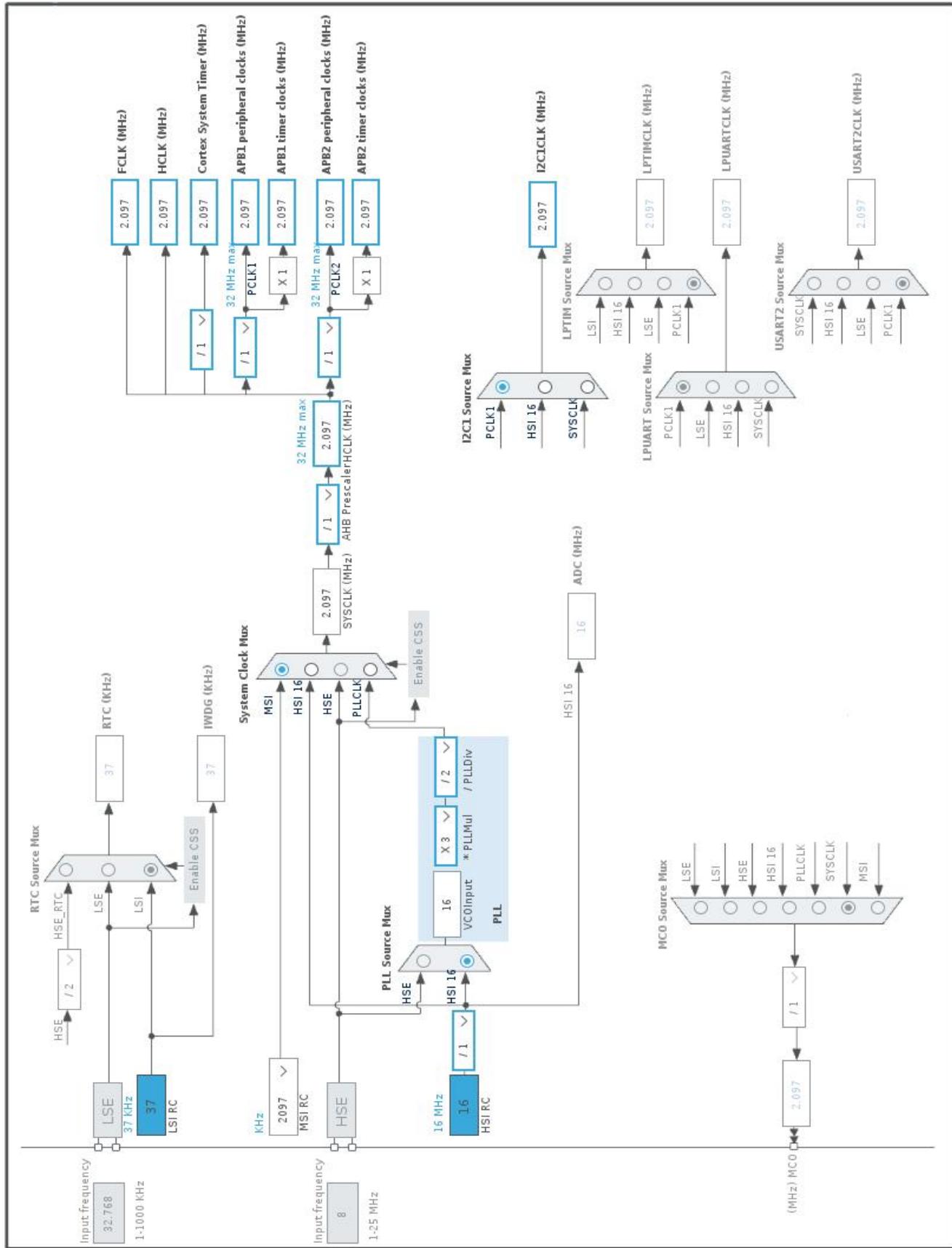
2. Pinout Configuration



3. Pins Configuration

Pin Number LQFP32	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VDD	Power		
4	NRST	Reset		
5	VDDA	Power		
16	VSS	Power		
17	VDD	Power		
19	PA9	I/O	I2C1_SCL	
20	PA10	I/O	I2C1_SDA	
31	BOOT0	Boot		
32	VSS	Power		

4. Clock Tree Configuration



1. Power Consumption Calculator report

1.1. Microcontroller Selection

Series	STM32L0
Line	STM32L0x1
MCU	STM32L031K6Tx
Datasheet	DS10668_Rev4

1.2. Parameter Selection

Temperature	25
Vdd	3.0

1.3. Battery Selection

Battery	Li-SOCL2(AAA700)
Capacity	700.0 mAh
Self Discharge	0.08 %/month
Nominal Voltage	3.6 V
Max Cont Current	10.0 mA
Max Pulse Current	30.0 mA
Cells in series	1
Cells in parallel	1

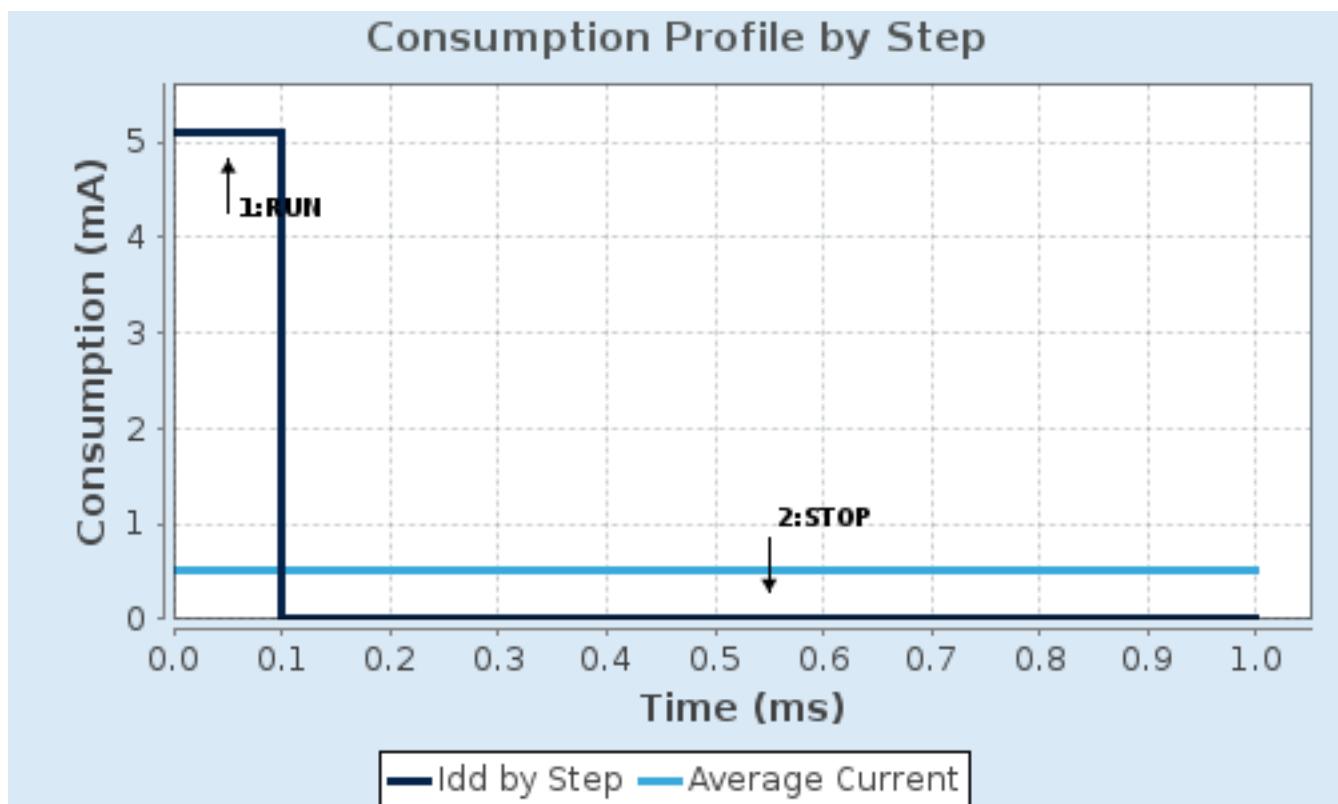
1.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP
Vdd	3.0	3.0
Voltage Source	Battery	Battery
Range	Range1-High	NoRange
Fetch Type	FLASH	n/a
CPU Frequency	32 MHz	0 Hz
Clock Configuration	HSI PLL	ALL CLOCKS OFF
Clock Source Frequency	16 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	5.1 mA	380 nA
Duration	0.1 ms	0.9 ms
DMIPS	30.0	0.0
T_a Max	104.08	105
Category	In DS Table	In DS Table

1.5. Results

Sequence Time	1 ms	Average Current	510.34 μ A
Battery Life	1 month, 26 days, 15 hours	Average DMIPS	30.4 DMIPS

1.6. Chart



2. Software Project

2.1. Project Settings

Name	Value
Project Name	ex3
Project Folder	/home/marco/STM32CubeIDE/workspace_1.19.0/ex3
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_L0 V1.12.3
Application Structure	Advanced
Generate Under Root	Yes
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 only the necessary library files
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_I2C1_Init	I2C1

3. Peripherals and Middlewares Configuration

3.1. I2C1

I2C: I2C

3.1.1. Parameter Settings:

Timing configuration:

I2C Speed Mode	Standard Mode
I2C Speed Frequency (KHz)	100
Rise Time (ns)	100
Fall Time (ns)	100
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	0x00000608 *

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

3.2. RCC

3.2.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Buffer Cache	Enabled
Prefetch	Disabled
Preread	Enabled
Flash Latency(WS)	0 WS (1 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
MSI Calibration Value	0
HSE Startup Timeout Value (ms)	100
LSE Startup Timeout Value (ms)	5000

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1
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3.3. SYS

Timebase Source: SysTick

* User modified value

4. System Configuration

4.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
I2C1	PA9	I2C1_SCL	Alternate Function Open Drain	Pull-up *	Very High *	
	PA10	I2C1_SDA	Alternate Function Open Drain	Pull-up *	Very High *	

4.2. DMA configuration

nothing configured in DMA service

4.3. NVIC configuration

4.3.1. NVIC

Interrupt Table	Enable	Preenemption 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	3	0
PVD interrupt through EXTI line 16		unused	
Flash and EEPROM global interrupt		unused	
RCC global interrupt		unused	
I2C1 event global interrupt / I2C1 wake-up interrupt through EXTI line 23		unused	

4.3.2. 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
System service call via SWI instruction	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

Computing

DMA

I2C1 

GPIO 

NVIC 

RCC 

SYS 

6. Docs & Resources

Type	Link
IBIS models	https://www.st.com/resource/en/ibis_model/stm32l0_ibis.zip
System View	https://www.st.com/resource/en/svd/stm32l0-svd.zip
Description	
Presentations	https://www.st.com/resource/en/product_presentation/gt_stm32f0-l0.pdf
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Security Bulletin	https://www.st.com/resource/en/technical_note/tn1489-security-bulletin-tn1489stpsirt-physical-attacks-on-stm32-and-stm32cube-firmware-stmicroelectronics.pdf
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Tips

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