



1. Description

1.1. Project

Project Name	test_uart_break
Board Name	NUCLEO-G031K8
Generated with:	STM32CubeMX 6.6.1
Date	07/12/2022

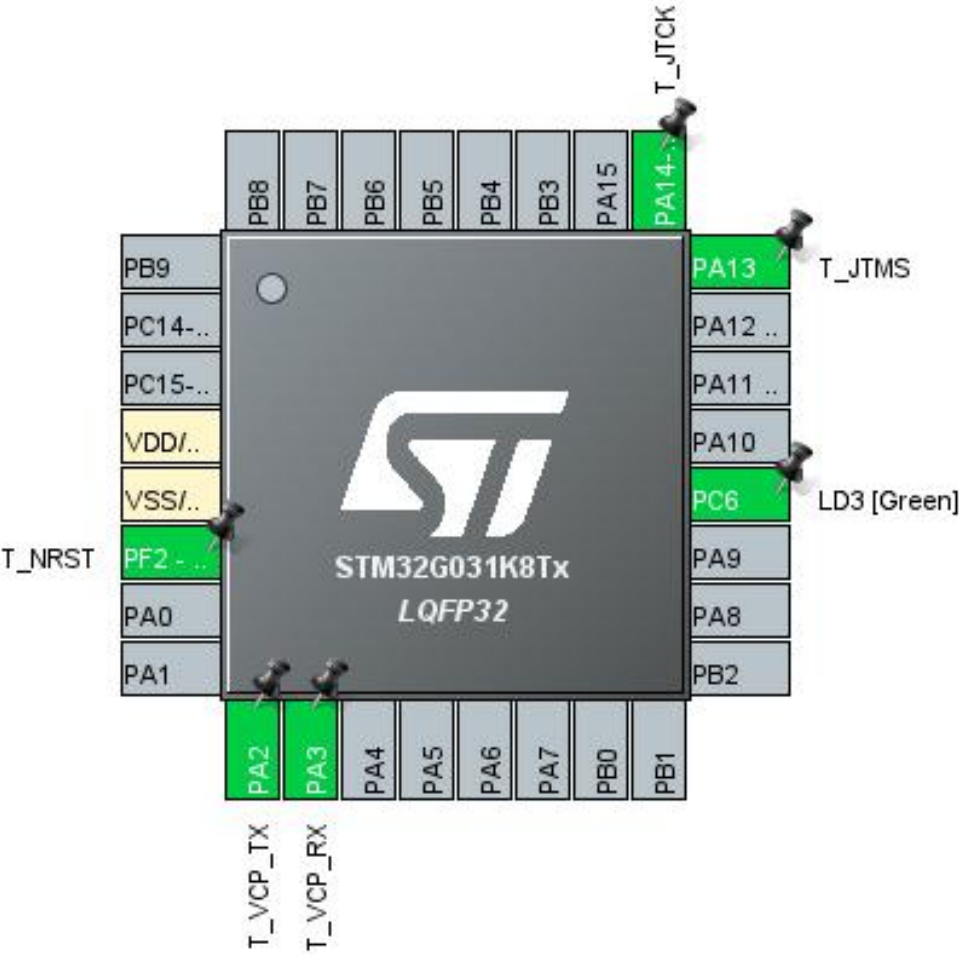
1.2. MCU

MCU Series	STM32G0
MCU Line	STM32G0x1
MCU name	STM32G031K8Tx
MCU Package	LQFP32
MCU Pin number	32

1.3. Core(s) information

Core(s)	ARM Cortex-M0+
---------	----------------

2. Pinout Configuration

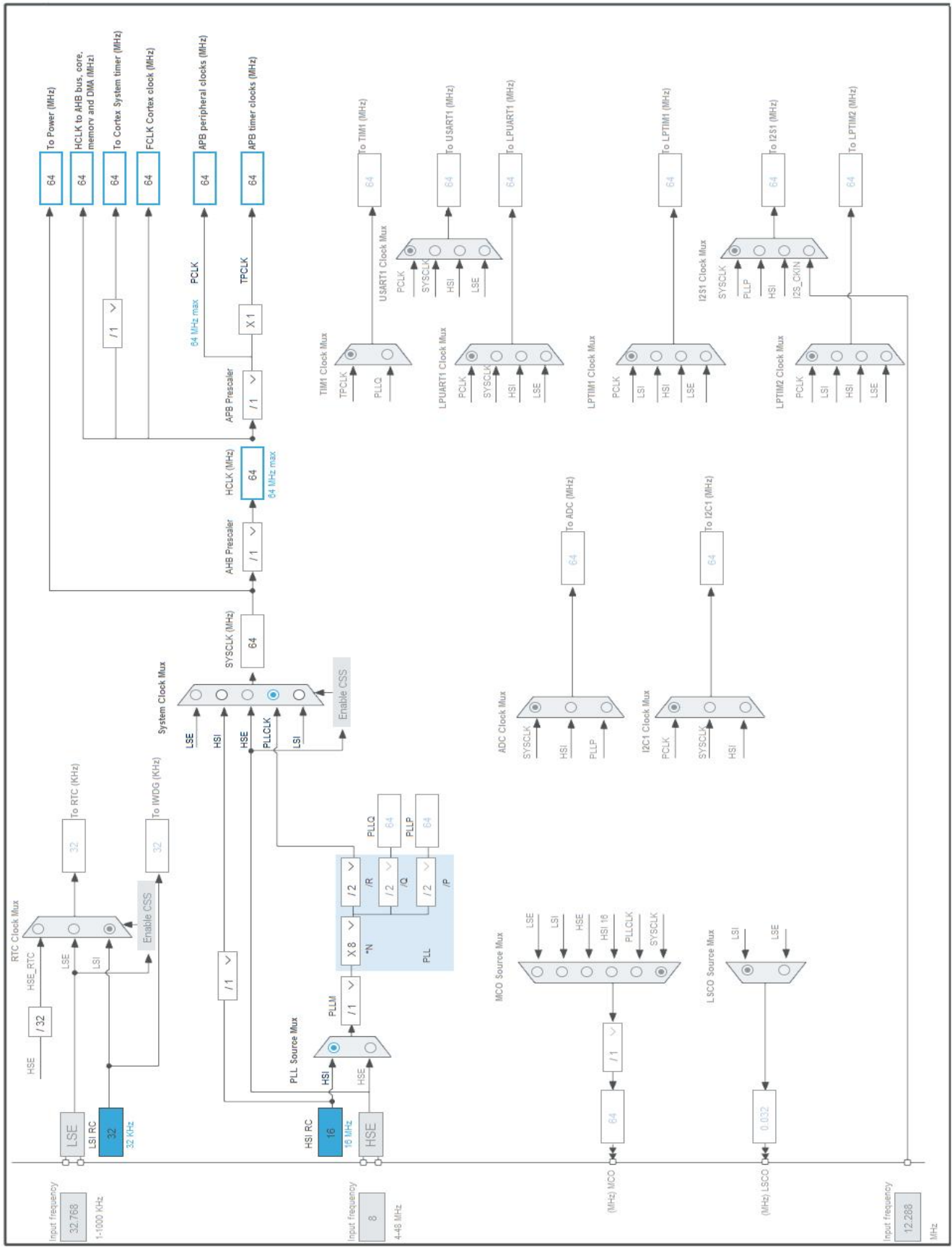


3. Pins Configuration

Pin Number LQFP32	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
4	VDD/VDDA	Power		
5	VSS/VSSA	Power		
6	PF2 - NRST	I/O	GPIO_EXTI2	T_NRST
9	PA2	I/O	USART2_TX	T_VCP_TX
10	PA3	I/O	USART2_RX	T_VCP_RX
20	PC6 *	I/O	GPIO_Output	LD3 [Green]
24	PA13	I/O	SYS_SWDIO	T_JTMS
25	PA14-BOOT0	I/O	SYS_SWCLK	T_JTCK

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. Software Project

5.1. Project Settings

Name	Value
Project Name	test_uart_break
Project Folder	C:\Users\Thomas\STM32CubeIDE\workspace3_1.9.0\test_uart_break
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_G0 V1.6.0
Application Structure	Advanced
Generate Under Root	Yes
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 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

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_USART2_UART_Init	USART2

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32G0
Line	STM32G0x1
MCU	STM32G031K8Tx
Datasheet	DS12992_Rev0

6.2. Parameter Selection

Temperature	25
Vdd	3.0

6.3. 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

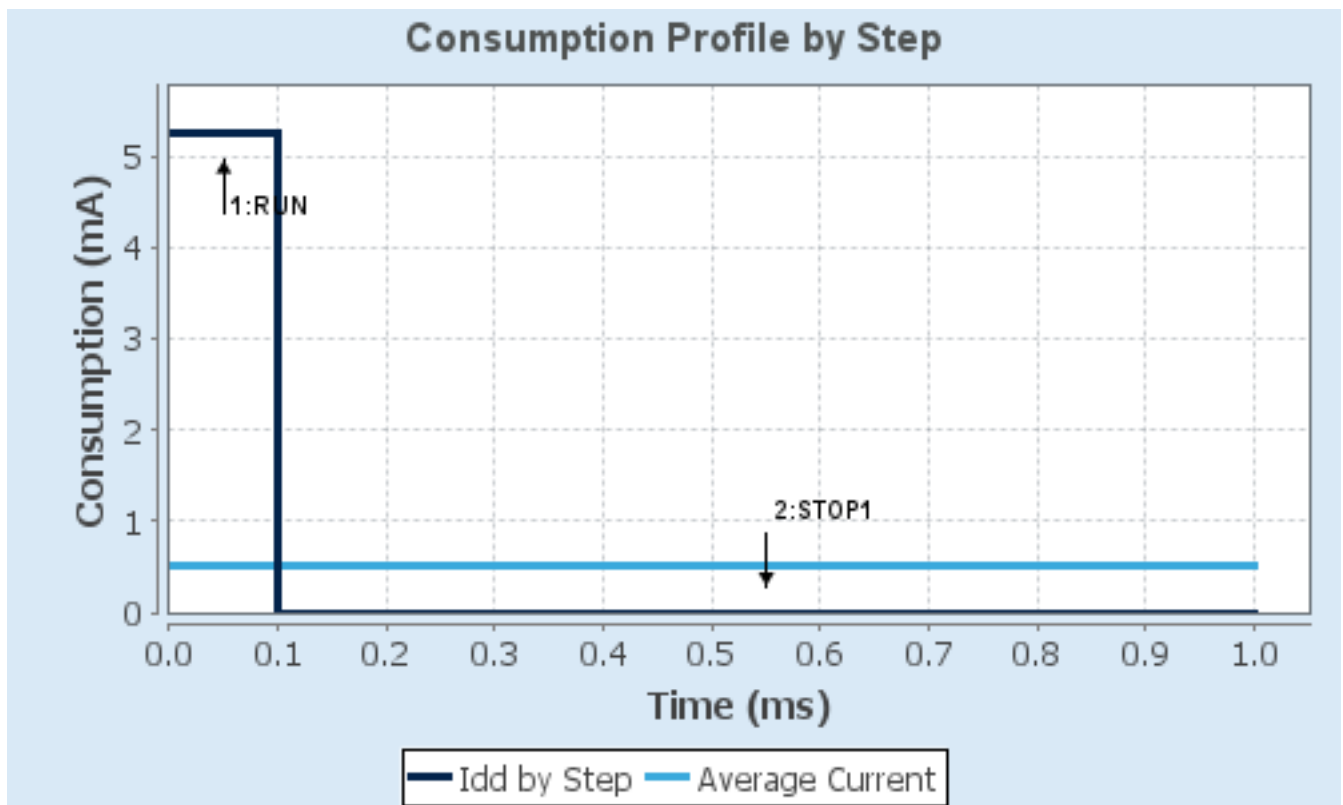
6.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP1
Vdd	3.0	3.0
Voltage Source	Battery	Battery
Range	Range1-High	Range1-High
Fetch Type	FLASH	Flash-PowerDown
CPU Frequency	64 MHz	16 MHz
Clock Configuration	HSI PLL	HSI
Clock Source Frequency	16 MHz	16 MHz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	5.25 mA	3.36 μ A
Duration	0.1 ms	0.9 ms
DMIPS	80.0	0.0
Ta Max	128.8	130
Category	In DS Table	In DS Table

6.5. Results

Sequence Time	1 ms	Average Current	528.02 μ A
Battery Life	1 month, 24 days, 17 hours	Average DMIPS	80.0 DMIPS

6.6. Chart



7. Peripherals and Middlewares Configuration

7.1. RCC

7.1.1. 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	64
HSE Startup Timeout Value (ms)	100
LSE Startup Timeout Value (ms)	5000

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1
-------------------------------	---------------------------------

Peripherals Clock Configuration:

Generate the peripherals clock configuration	TRUE
--	------

7.2. SYS

mode: Debug

Timebase Source: SysTick

7.3. USART2

Mode: Asynchronous

7.3.1. Parameter Settings:

Basic Parameters:

Baud Rate	9600 *
Word Length	8 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples
Single Sample	Disable
ClockPrescaler	1

Advanced Features:

TX Pin Active Level Inversion	Disable
RX Pin Active Level Inversion	Disable
Data Inversion	Disable
TX and RX Pins Swapping	Disable
Overrun	Enable
DMA on RX Error	Enable
MSB First	Disable

*** User modified value**

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
SYS	PA13	SYS_SWDIO	n/a	n/a	n/a	T_JTMS
	PA14-BOOT0	SYS_SWCLK	n/a	n/a	n/a	T_JTCK
USART2	PA2	USART2_TX	Alternate Function Push Pull	Pull-up *	Low	T_VCP_TX
	PA3	USART2_RX	Alternate Function Push Pull	Pull-up *	Low	T_VCP_RX
GPIO	PF2 - NRST	GPIO_EXTI2	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	T_NRST
	PC6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD3 [Green]

8.2. DMA configuration

DMA request	Stream	Direction	Priority
USART2_RX	DMA1_Channel2	Peripheral To Memory	High *
USART2_TX	DMA1_Channel1	Memory To Peripheral	Low

USART2_RX: DMA1_Channel2 DMA request Settings:

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

USART2_TX: DMA1_Channel1 DMA request Settings:

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

8.3. NVIC configuration

8.3.1. NVIC

Interrupt Table	Enable	Preenmption 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	0	0
DMA1 channel 1 interrupt	true	0	0
DMA1 channel 2 and channel 3 interrupts	true	0	0
USART2 global interrupt / USART2 wake-up interrupt through EXTI line 26	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
EXTI line 2 and line 3 interrupts	unused		

8.3.2. 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
DMA1 channel 1 interrupt	false	true	true
DMA1 channel 2 and channel 3 interrupts	false	true	true
USART2 global interrupt / USART2 wake-up interrupt through EXTI line 26	false	true	true

* User modified value

9. System Views

9.1. Category view

9.1.1. Current

Middleware					
------------	--	--	--	--	--

System Core	Analog	Timers	Connectivity	Multimedia	Computing
DMA ✓			USART2 ✓		
GPIO ✓					
IIVIC ✓					
RCC ✓					
SYS ✓					

10. Docs & Resources

Type	Link
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/stm32g0_marketing_pres.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32-usb-c-pd-solutions-presentation.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_software_development_tools.pdf
Training Material	https://www.st.com/resource/en/sales_guide/sg_sc2155.pdf
Training Material	https://www.st.com/resource/en/training_certification/faecp_stm32g0_cubemx5_edr.pdf
Training Material	https://www.st.com/resource/en/training_certification/faecp_stm32g0_overview_edr.pdf
Flyers	https://www.st.com/resource/en/flyer/flnucleolrwan.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32g0.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
Flyers	https://www.st.com/resource/en/flyer/fldpstpf11120.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/an2548-using-the-stm32f0f1f3gxl-series-dma-controller-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
- Application Notes https://www.st.com/resource/en/application_note/an2834-how-to-get-the-best-adc-accuracy-in-stm32-microcontrollers-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-uart-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/an4013-stm32-crossseries-timer-overview-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/an4229-how-to-implement-a-vocoder-solution-using-stm32-microcontrollers-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/an4566-extending-the-dac-performance-of-stm32-microcontrollers-stmicroelectronics.pdf
- Application Notes https://www.st.com/resource/en/application_note/an4635-minimization-of-power-consumption-using-lpuart-for-stm32-microcontrollers-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/an4759-using-the-hardware-realtime-clock-rtc-and-the-tamper-management-unit-tamp-with-stm32-microcontrollers-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/an4838-managing-memory-protection-unit-in-stm32-mcus-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an4894-EEPROM-emulation-techniques-and-software-for-stm32-microcontrollers-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/an4991-how-to-wake-up-an-stm32xx-series-microcontroller-from-lowpower-mode-with-the-usart-or-the-lpuart-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/an5036-thermal-management-guidelines-for-stm32-applications-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5096-getting-started-with-stm32g0-series-hardware-development-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5110-stm32cube-firmware-examples-for-stm32g0-series-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5145-migration-of-applications-from-stm32f0-series-to-stm32g0-series--stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5156-introduction-to-stm32-microcontrollers-security-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5224-stm32-dmamax-the-dma-request-router-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5225-usb-typec-power-delivery-using-stm32-mcus-and-mpus-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5348-fdcan-peripheral-on-stm32-devices-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5405-fdcan-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5543-enhanced-methods-to-handle-spi-communication-on-stm32-devices-stmicroelectronics.pdf

Application Notes https://www.st.com/resource/en/application_note/an5690-vrefbuf-peripheral-applications-and-trimming-technique-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/an1202_freertos_guide-for_related_Tools_freertos-guide-stmicroelectronics.pdf
& Software

Application Notes https://www.st.com/resource/en/application_note/an1602_semihosting_in_for_related_Tools_truestudio-how-to-do-semihosting-in-truestudio-stmicroelectronics.pdf
& Software

Application Notes https://www.st.com/resource/en/application_note/an1801_stm32cubeprog_for_related_Tools_rammer_in_truestudio-installing-stm32cubeprogrammer-in-truestudio-stmicroelectronics.pdf
& Software

Application Notes https://www.st.com/resource/en/application_note/atollic_editing_keyboard_for_related_Tools_shortcuts-atollic-editing-keyboard-shortcuts-stmicroelectronics.pdf
& Software

Application Notes https://www.st.com/resource/en/application_note/iar_to_atollic_truestudio_for_related_Tools_migration_guide-truestudio-for-arm-migration-guide-iar-embedded-workbench-to-truestudio-stmicroelectronics.pdf
& Software

Application Notes https://www.st.com/resource/en/application_note/stm32cubemx_installation_in_truestudio-stm32cubemx-installation-in-truestudio-stmicroelectronics.pdf
& Software

Application Notes https://www.st.com/resource/en/application_note/an4502-stm32-for_related_Tools_smbuspmbus-embedded-software-expansion-for-stm32cube-

& Software	stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4657-stm32-inapplication-programming-iap-using-the-usart-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4759-using-the-hardware-realtime-clock-rtc-and-the-tamper-management-unit-tamp-with-stm32-microcontrollers-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4841-digital-signal-processing-for-stm32-microcontrollers-using-cmsis-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5054-secure-programming-using-stm32cube programmer-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5056-integration-guide-for-the-xcubesbsfu-stm32cube-expansion-package-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5110-stm32cube-firmware-examples-for-stm32g0-series-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5360-getting-started-with-projects-based-on-the-stm32mp1-series-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5361-getting-started-with-projects-based-on-dualcore-stm32h7-microcontrollers-in-stm32cubeide-stmicroelectronics.pdf
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-for-related-Tools-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
Errata Sheets	https://www.st.com/resource/en/errata_sheet/es0487-stm32g031x4x6x8-device-errata-stmicroelectronics.pdf
Datasheet	https://www.st.com/resource/en/datasheet/dm00613879.pdf
Programming Manuals	https://www.st.com/resource/en/programming_manual/pm0223-cortexm0-programming-manual-for-stm32l0-stm32g0-stm32wl-and-stm32wb-series-stmicroelectronics.pdf
Reference Manuals	https://www.st.com/resource/en/reference_manual/rm0444-stm32g0x1-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
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1207-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-so-packages-stmicroelectronics.pdf

stmicroelectronics.pdf

Technical Notes & Articles https://www.st.com/resource/en/technical_note/tn1208-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-tssop-and-ssop-packages-stmicroelectronics.pdf