



1. Description

1.1. Project

Project Name	nucleo-f746zg_lwip_mbedtls
Board Name	NUCLEO-F746ZG
Generated with:	STM32CubeMX 6.6.0
Date	11/11/2022

1.2. MCU

MCU Series	STM32F7
MCU Line	STM32F7x6
MCU name	STM32F746ZGTx
MCU Package	LQFP144
MCU Pin number	144

1.3. Core(s) information

Core(s)	Arm Cortex-M7
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3. Pins Configuration

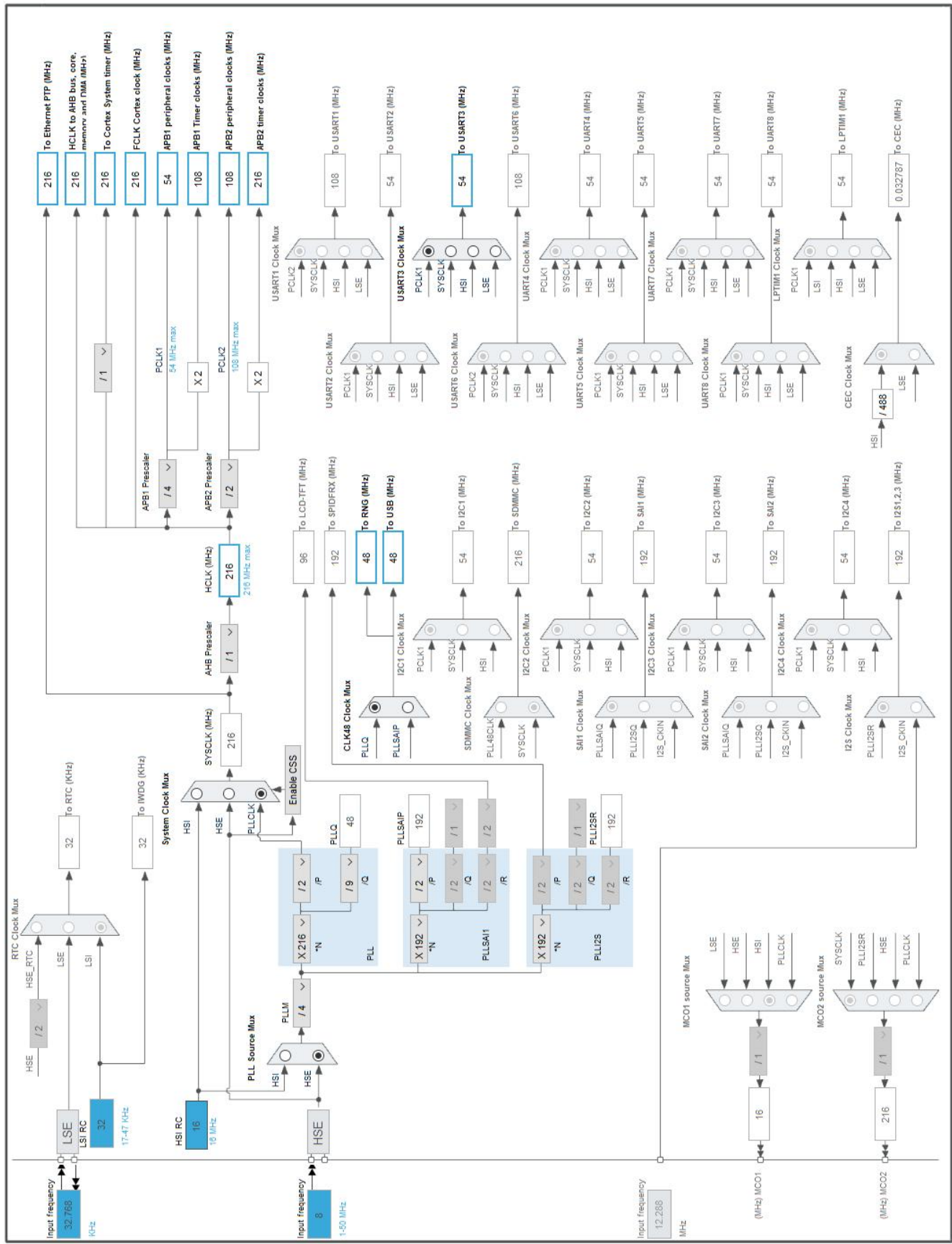
Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
6	VBAT	Power		
7	PC13	I/O	GPIO_EXTI13	USER_Btn [B1]
8	PC14/OSC32_IN	I/O	RCC_OSC32_IN	
9	PC15/OSC32_OUT	I/O	RCC_OSC32_OUT	
16	VSS	Power		
17	VDD	Power		
23	PH0/OSC_IN	I/O	RCC_OSC_IN	MCO [STM32F103CBT6_PA8]
24	PH1/OSC_OUT	I/O	RCC_OSC_OUT	
25	NRST	Reset		
27	PC1	I/O	ETH_MDC	RMII_MDC [LAN8742A-CZ- TR_MDC]
30	VDD	Power		
31	VSSA	Power		
32	VREF+	Power		
33	VDDA	Power		
35	PA1	I/O	ETH_REF_CLK	RMII_REF_CLK [LAN8742A-CZ- TR_REFCLK0]
36	PA2	I/O	ETH_MDIO	RMII_MDIO [LAN8742A-CZ- TR_MDIO]
38	VSS	Power		
39	VDD	Power		
43	PA7	I/O	ETH_CRS_DV	RMII_CRS_DV [LAN8742A- CZ-TR_CRS_DV]
44	PC4	I/O	ETH_RXD0	RMII_RXD0 [LAN8742A-CZ- TR_RXD0]
45	PC5	I/O	ETH_RXD1	RMII_RXD1 [LAN8742A-CZ- TR_RXD1]
46	PB0 *	I/O	GPIO_Output	LD1 [Green]
51	VSS	Power		
52	VDD	Power		
61	VSS	Power		
62	VDD	Power		
71	VCAP_1	Power		
72	VDD	Power		

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
74	PB13	I/O	ETH_TXD1	RMII_TXD1 [LAN8742A-CZ- TR_TXD1]
75	PB14 *	I/O	GPIO_Output	LD3 [Red]
77	PD8	I/O	USART3_TX	STLK_RX [STM32F103CBT6_PA3]
78	PD9	I/O	USART3_RX	STLK_TX [STM32F103CBT6_PA2]
83	VSS	Power		
84	VDD	Power		
91	PG6 *	I/O	GPIO_Output	USB_PowerSwitchOn [STMPS2151STR_EN]
92	PG7 *	I/O	GPIO_Input	USB_OverCurrent [STMPS2151STR_FAULT]
94	VSS	Power		
95	VDDUSB	Power		
100	PA8	I/O	USB_OTG_FS_SOF	USB_SOF [TP1]
101	PA9	I/O	USB_OTG_FS_VBUS	USB_VBUS
102	PA10 **	I/O	USB_OTG_FS_ID	USB_ID
103	PA11	I/O	USB_OTG_FS_DM	USB_DM
104	PA12	I/O	USB_OTG_FS_DP	USB_DP
105	PA13	I/O	SYS_JTMS-SWDIO	TMS
106	VCAP_2	Power		
107	VSS	Power		
108	VDD	Power		
109	PA14	I/O	SYS_JTCK-SWCLK	TCK
120	VSS	Power		
121	VDD	Power		
126	PG11	I/O	ETH_TX_EN	RMII_TX_EN [LAN8742A- CZ-TR_TXEN]
128	PG13	I/O	ETH_TXD0	RMII_TXD0 [LAN8742A-CZ- TR_TXD0]
130	VSS	Power		
131	VDD	Power		
133	PB3	I/O	SYS_JTDO-SWO	SW0
137	PB7 *	I/O	GPIO_Output	LD2 [Blue]
138	BOOT0	Boot		
143	PDR_ON	Reset		
144	VDD	Power		

* The pin is affected with an I/O function

** The pin is affected with a peripheral function but no peripheral mode is activated

4. Clock Tree Configuration



5. Software Project

5.1. Project Settings

Name	Value
Project Name	nucleo-f746zg_lwip_mbedtls
Project Folder	D:\STMicroelectronics\Projects\nucleo-f746zg_lwip_mbedtls
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_F7 V1.17.0
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	Yes
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_USART3_UART_Init	USART3
4	MX_USB_OTG_FS_PCD_Init	USB_OTG_FS
5	MX_RNG_Init	RNG
6	MX_LWIP_Init	LWIP
7	MX_MBEDTLS_Init	MBEDTLS

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32F7
Line	STM32F7x6
MCU	STM32F746ZGTx
Datasheet	DS10916_Rev4

6.2. Parameter Selection

Temperature	25
Vdd	3.3

6.3. 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

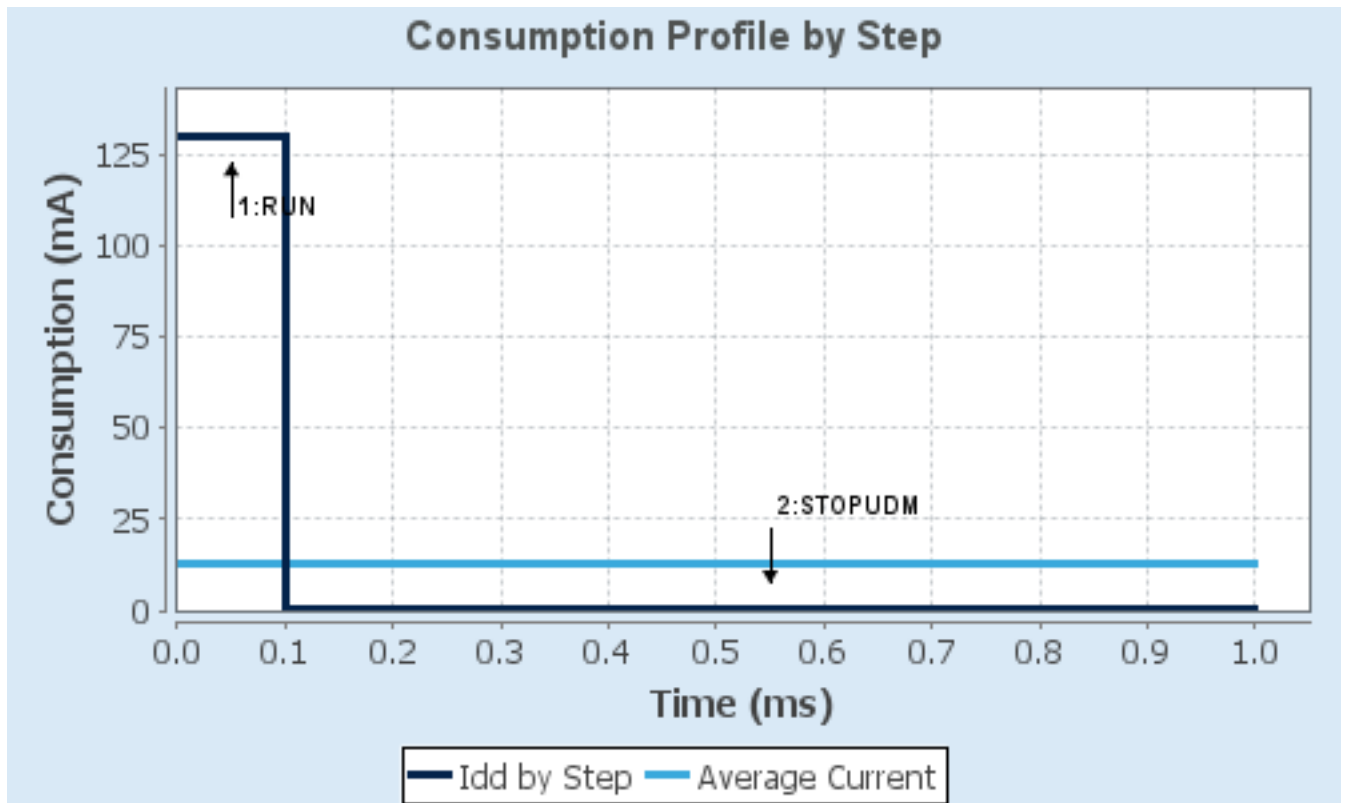
6.4. Sequence

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	ITCM/FLASH/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	130 mA	100 μ A
Duration	0.1 ms	0.9 ms
DMIPS	462.0	0.0
Ta Max	87.84	104.99
Category	In DS Table	In DS Table

6.5. Results

Sequence Time	1 ms	Average Current	13.09 mA
Battery Life	1 day, 23 hours	Average DMIPS	462.24005 DMIPS

6.6. Chart



7. Peripherals and Middlewares Configuration

7.1. ETH

Mode: RMII

7.1.1. Parameter Settings:

General : Ethernet Configuration:

Warning	The ETH can work only when RAM is pointing at 0x24000000
Note	PHY Driver must be configured from the LwIP 'Platform Settings' top right tab
Ethernet MAC Address	00:80:E1:00:00:00
Tx Descriptor Length	4
First Tx Descriptor Address	0x2004c0a0 *
Rx Descriptor Length	4
First Rx Descriptor Address	0x2004c000 *
Rx Buffers Length	1536
Rx Mode	Interrupt Mode

7.2. RCC

High Speed Clock (HSE): BYPASS Clock Source

Low Speed Clock (LSE) : Crystal/Ceramic Resonator

7.2.1. 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

7.3. RNG

mode: Activated

7.4. SYS

Debug: Trace Asynchronous Sw

Timebase Source: TIM7

7.5. USART3

Mode: Asynchronous

7.5.1. 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
Single Sample	Disable

Advanced Features:

Auto Baudrate	Disable
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

7.6. USB_OTG_FS

Mode: Device_Only

mode: Activate_VBUS

mode: Activate_SOF

7.6.1. Parameter Settings:

Speed	Full Speed 12MBit/s
Low power	Disabled
Link Power Management	Disabled
VBUS sensing	Enabled

Signal start of frame Enabled

7.7. FREERTOS

Interface: CMSIS_V2

7.7.1. Config parameters:

API:

FreeRTOS API CMSIS v2

Versions:

FreeRTOS version 10.2.1

CMSIS-RTOS version 2.00

MPU/FPU:

ENABLE_MPU Disabled

ENABLE_FPU **Enabled ***

Kernel settings:

USE_PREEMPTION Enabled

CPU_CLOCK_HZ SystemCoreClock

TICK_RATE_HZ 1000

MAX_PRIORITIES 56

MINIMAL_STACK_SIZE **512 ***

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 **32768 ***

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	Option2 *

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	1024

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

7.7.2. 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

7.7.3. Advanced settings:

Newlib settings (see parameter description first):

USE_NEWLIB_REENTRANT **Enabled ***

Project settings (see parameter description first):

Use FW pack heap file **Enabled**

7.8. LWIP

mode: Enabled

Advanced parameters are not listed except if modified by user.

7.8.1. General Settings:

LwIP Version:

LwIP Version (Version of LwIP supported by CubeMX ** CubeMX specific **) 2.1.2

IPv4 - DHCP Options:

LWIP_DHCP (DHCP Module) **Enabled**

RTOS Dependency:

WITH_RTOS (Use FREERTOS ** CubeMX specific **) **Enabled**

CMSIS_VERSION (CMSIS API Version used) CMSIS v2

RTOS_USE_NEWLIB_REENTRANT (RTOS used - 1) **Enabled**

MBEDTLS Dependency:

WITH_MBEDTLS (Use MBEDTLS ** CubeMX specific **) **Enabled**

Platform Settings:

PHY Driver Choose/LAN8742/DP83848

Protocols Options:

LWIP_ICMP (ICMP Module Activation) **Enabled**

LWIP_IGMP (IGMP Module) **Disabled**

LWIP_DNS (DNS Module) **Enabled**

LWIP_UDP (UDP Module) **Enabled**

MEMP_NUM_UDP_PCB (Number of UDP Connections) 4

LWIP_TCP (TCP Module) **Enabled**

MEMP_NUM_TCP_PCB (Number of TCP Connections) 5

7.8.2. Key Options:

Infrastructure - OS Awareness Option:

NO_SYS (OS Awareness) OS Used

Infrastructure - Timers Options:

LWIP_TIMERS (Use Support For sys_timeout) Enabled

Infrastructure - Core Locking and MPU Options:

SYS_LIGHTWEIGHT_PROT (Memory Functions Protection) Enabled

Infrastructure - Heap and Memory Pools Options:

MEM_SIZE (Heap Memory Size) 1600

Infrastructure - Internal Memory Pool Sizes:

MEMP_NUM_PBUF (Number of Memory Pool struct Pbufs) 16

MEMP_NUM_RAW_PCB (Number of Raw Protocol Control Blocks) 4

MEMP_NUM_TCP_PCB_LISTEN (Number of Listening TCP Connections) 8

MEMP_NUM_TCP_SEG (Number of TCP Segments simultaneously queued) 16

MEMP_NUM_LOCALHOSTLIST (Number of Host Entries in the Local Host List) 1

Pbuf Options:

PBUF_POOL_SIZE (Number of Buffers in the Pbuf Pool) 16

PBUF_POOL_BUFSIZE (Size of each pbuf in the pbuf pool) 592

IPv4 - ARP Options:

LWIP_ARP (ARP Functionality) Enabled

Callback - TCP Options:

TCP_TTL (Number of Time-To-Live Used by TCP Packets) 255

TCP_WND (TCP Receive Window Maximum Size) 2144

TCP_QUEUE_OOSEQ (Allow Out-Of-Order Incoming Packets) Enabled

LWIP_TCP_SACK_OUT (Allow Sending Selective Acknowledgements) Disabled

TCP_MSS (Maximum Segment Size) 536

TCP_SND_BUF (TCP Sender Buffer Space) 1072

TCP_SND_QUEUELEN (Number of Packet Buffers Allowed for TCP Sender) 9

Network Interfaces Options:

LWIP_NETIF_STATUS_CALLBACK (Callback Function on Interface Status Changes) Disabled

LWIP_NETIF_EXT_STATUS_CALLBACK (Extended Callback Function for several netif) Disabled

LWIP_NETIF_LINK_CALLBACK (Callback Function on Interface Link Changes) Enabled

NETIF - Loopback Interface Options:

LWIP_NETIF_LOOPBACK (NETIF Loopback) Disabled

Infrastructure - Threading Options:

TCPIP_THREAD_NAME (TCPIP Thread Name) "tcpip_thread"

TCPIP_THREAD_STACKSIZE (TCPIP Thread Stack Size) 1024

TCPIP_THREAD_PRIO (TCPIP Thread Priority Level) 24

TCPIP_MBOX_SIZE (TCPIP Mailbox Size)	6
DEFAULT_THREAD_NAME (Default LwIP Thread Name)	"lwIP"
DEFAULT_THREAD_STACKSIZE (Default LwIP Thread Stack Size)	1024
DEFAULT_THREAD_PRIO (Default LwIP Thread Priority Level)	3
DEFAULT_RAW_RECVMBOX_SIZE (Default Mailbox Size on a NETCONN Raw)	0
DEFAULT_TCP_RECVMBOX_SIZE (Default Mailbox Size on a NETCONN TCP)	6
DEFAULT_ACCEPTMBOX_SIZE (Default Mailbox Size for Incoming Connections)	6

Thread Safe APIs - Netconn Options:

LWIP_NETCONN (NETCONN API)	Enabled
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Thread Safe APIs - Socket Options:

LWIP_SOCKET (Socket API)	Enabled
LWIP_COMPAT_SOCKETS (BSD-style Socket Functions Names)	1
LWIP_SOCKET_OFFSET (Socket Offset Number)	0
LWIP_SOCKET_SELECT (Select for Socket)	Enabled
LWIP_SOCKET_POLL (Poll for Socket)	Enabled

7.8.3. PPP:

PPP Options:

PPP_SUPPORT (PPP Module)	Disabled
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7.8.4. IPv6:

IPv6 Options:

LWIP_IPV6 (IPv6 Protocol)	Disabled
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7.8.5. HTTPD:

HTTPD Options:

LWIP_HTTPD (LwIP HTTPD Support ** CubeMX specific **)	Disabled
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7.8.6. SNMP:

SNMP Options:

LWIP_SNMP (LwIP SNMP Agent)	Disabled
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7.8.7. Sntp/SMTP:

Sntp Options:

LWIP_SNTP (LWIP SNTP Support ** CubeMX specific **) Disabled

SMTP Options:

LWIP_SMTP (LWIP SMTP Support ** CubeMX specific **) Disabled

7.8.8. MDNS/TFTP:

MDNS Options:

LWIP_MDNS (Multicast DNS Support ** CubeMX specific **) Disabled

TFTP Options:

LWIP_TFTP (TFTP Support ** CubeMX specific **) Disabled

7.8.9. Perf/Checks:

Sanity Checks:

LWIP_DISABLE_TCP_SANITY_CHECKS (TCP Sanity Checks) Disabled

LWIP_DISABLE_MEMP_SANITY_CHECKS (MEMP Sanity Checks) Disabled

Performance Options:

LWIP_PERF (Performance Testing for LwIP) Disabled

7.8.10. Statistics:

Debug - Statistics Options:

LWIP_STATS (Statistics Collection) Disabled

7.8.11. Checksum:

Infrastructure - Checksum Options:

CHECKSUM_BY_HARDWARE (Hardware Checksum ** CubeMX specific **) Enabled

LWIP_CHECKSUM_CTRL_PER_NETIF (Generate/Check Checksum per Netif) Disabled

CHECKSUM_GEN_IP (Generate Software Checksum for Outgoing IP Packets) Disabled

CHECKSUM_GEN_UDP (Generate Software Checksum for Outgoing UDP Packets) Disabled

CHECKSUM_GEN_TCP (Generate Software Checksum for Outgoing TCP Packets) Disabled

CHECKSUM_GEN_ICMP (Generate Software Checksum for Outgoing ICMP Packets) Disabled

CHECKSUM_GEN_ICMP6 (Generate Software Checksum for Outgoing ICMP6 Packets) Disabled

CHECKSUM_CHECK_IP (Generate Software Checksum for Incoming IP Packets) Disabled

CHECKSUM_CHECK_UDP (Generate Software Checksum for Incoming UDP Packets) Disabled

CHECKSUM_CHECK_TCP (Generate Software Checksum for Incoming TCP Packets) Disabled

CHECKSUM_CHECK_ICMP (Generate Software Checksum for Incoming ICMP Packets) Disabled

CHECKSUM_CHECK_ICMP6 (Generate Software Checksum for Incoming ICMP6 Packets) Disabled

7.8.12. Debug:

LwIP Main Debugging Options:

LWIP_DBG_MIN_LEVEL (Minimum Level) All

7.8.13. Platform Settings:

Driver_PHY LAN8742

7.9. MBEDTLS

mode: Enabled

7.9.1. Version and modes:

Version:

MBEDTLS version 2.16.2

TCP/IP stack:

TCP/IP stack LWIP

RNG dependency:

RNG IP HW RNG(ST entropy)

Modes:

MBEDTLS_SSL_CLI_C Defined

MBEDTLS_SSL_SRV_C Defined

7.9.2. Feature support:

System support:

MBEDTLS_HAVE_ASM Defined

MBEDTLS_NO_UDBL_DIVISION Defined

MBEDTLS_HAVE_TIME Defined

MBEDTLS_HAVE_TIME_DATE **Not Defined ***

MBEDTLS_PLATFORM_MEMORY **Defined ***

General:

MBEDTLS_AES_ROM_TABLES **Defined ***

MBEDTLS_ECP_NIST_OPTIM Defined

MBEDTLS_ECDSA_DETERMINISTIC Defined

MBEDTLS_PK_PARSE_EC_EXTENDED Defined

MBEDTLS_ERROR_STRERROR_DUMMY	Defined
MBEDTLS_GENPRIME	Defined
MBEDTLS_NO_PLATFORM_ENTROPY	Defined
MBEDTLS_ENTROPY_FORCE_SHA256	Defined *
MBEDTLS_PK_RSA_ALT_SUPPORT	Defined
MBEDTLS_PKCS1_V15	Defined
MBEDTLS_PKCS1_V21	Defined
MBEDTLS_SELF_TEST	Defined
MBEDTLS_SHA256_SMALLER	Defined *
MBEDTLS_VERSION_FEATURES	Defined
Ciphering:	
MBEDTLS_CIPHER_MODE_CBC	Defined
MBEDTLS_CIPHER_MODE_CFB	Defined
MBEDTLS_CIPHER_MODE_CTR	Defined
MBEDTLS_CIPHER_MODE_OFB	Defined
MBEDTLS_CIPHER_MODE_XTS	Defined
MBEDTLS_CIPHER_PADDING_PKCS7	Defined
MBEDTLS_CIPHER_PADDING_ONE_AND_ZEROS	Defined
MBEDTLS_CIPHER_PADDING_ZEROS_AND_LEN	Defined
MBEDTLS_CIPHER_PADDING_ZEROS	Defined
MBEDTLS_REMOVE_ARC4_CIPHERSUITES	Defined
MBEDTLS_REMOVE_3DES_CIPHERSUITES	Defined
Elliptic curves:	
MBEDTLS_ECP_DP_SECP192R1_ENABLED	Defined
MBEDTLS_ECP_DP_SECP224R1_ENABLED	Defined
MBEDTLS_ECP_DP_SECP256R1_ENABLED	Defined
MBEDTLS_ECP_DP_SECP384R1_ENABLED	Defined
MBEDTLS_ECP_DP_SECP521R1_ENABLED	Defined
MBEDTLS_ECP_DP_SECP192K1_ENABLED	Defined
MBEDTLS_ECP_DP_SECP224K1_ENABLED	Defined
MBEDTLS_ECP_DP_SECP256K1_ENABLED	Defined
MBEDTLS_ECP_DP_BP256R1_ENABLED	Defined
MBEDTLS_ECP_DP_BP384R1_ENABLED	Defined
MBEDTLS_ECP_DP_BP512R1_ENABLED	Defined
MBEDTLS_ECP_DP_CURVE25519_ENABLED	Defined
MBEDTLS_ECP_DP_CURVE448_ENABLED	Defined
Key exchange:	
MBEDTLS_KEY_EXCHANGE_PSK_ENABLED	Defined
MBEDTLS_KEY_EXCHANGE_DHE_PSK_ENABLED	Defined
MBEDTLS_KEY_EXCHANGE_ECDHE_PSK_ENABLED	Defined
MBEDTLS_KEY_EXCHANGE_RSA_ENABLED	Defined
MBEDTLS_KEY_EXCHANGE_DHE_RSA_ENABLED	Defined

MBEDTLS_KEY_EXCHANGE_ECDHE_RSA_ENABLED	Defined
MBEDTLS_KEY_EXCHANGE_ECDH_ECDSA_ENABLED	Defined
MBEDTLS_KEY_EXCHANGE_ECDH_RSA_ENABLED	Defined
MBEDTLS_KEY_EXCHANGE_ECJPAKE_ENABLED	Defined *
SSL:	
MBEDTLS_SSL_ALL_ALERT_MESSAGES	Defined
MBEDTLS_SSL_ENCRYPT_THEN_MAC	Defined
MBEDTLS_SSL_EXTENDED_MASTER_SECRET	Defined
MBEDTLS_SSL_FALLBACK_SCSV	Defined
MBEDTLS_SSL_CBC_RECORD_SPLITTING	Defined
MBEDTLS_SSL_RENEGOTIATION	Defined
MBEDTLS_SSL_SRV_RESPECT_CLIENT_PREFERENCE	Defined *
MBEDTLS_SSL_PROTO_TLS1	Defined
MBEDTLS_SSL_PROTO_TLS1_1	Defined
MBEDTLS_SSL_PROTO_DTLS	Defined
MBEDTLS_SSL_ALPN	Defined
MBEDTLS_SSL_DTLSANTI_REPLAY	Defined
MBEDTLS_SSL_DTLS_HELLO_VERIFY	Defined
MBEDTLS_SSL_DTLS_CLIENT_PORT_REUSE	Defined
MBEDTLS_SSL_DTLS_BADMAC_LIMIT	Defined
MBEDTLS_SSL_SESSION_TICKETS	Defined
MBEDTLS_SSL_EXPORT_KEYS	Defined
MBEDTLS_SSL_SERVER_NAME_INDICATION	Defined
MBEDTLS_SSL_TRUNCATED_HMAC	Defined
X509:	
MBEDTLS_X509_CHECK_KEY_USAGE	Defined
MBEDTLS_X509_CHECK_EXTENDED_KEY_USAGE	Defined
MBEDTLS_X509_RSASSA_PSS_SUPPORT	Defined

7.9.3. Alternate implementation:

7.9.4. Modules:

General:

MBEDTLS_AESNI_C	Defined
MBEDTLS_AES_C	Defined
MBEDTLS_ARC4_C	Defined
MBEDTLS_ASN1_PARSE_C	Defined
MBEDTLS_ASN1_WRITE_C	Defined
MBEDTLS_BASE64_C	Defined

MBEDTLS_BIGNUM_C	Defined
MBEDTLS_BLOWFISH_C	Defined
MBEDTLS_CAMELLIA_C	Defined
MBEDTLS_CCM_C	Defined
MBEDTLS_CERTS_C	Defined
MBEDTLS_CIPHER_C	Defined
MBEDTLS_CHACHA20_C	Defined
MBEDTLS_CHACHAPOLY_C	Defined
MBEDTLS_CTR_DRBG_C	Defined
MBEDTLS_DEBUG_C	Defined *
MBEDTLS_DES_C	Defined
MBEDTLS_DHM_C	Defined
MBEDTLS_ECDH_C	Defined
MBEDTLS_ECDSA_C	Defined
MBEDTLS_ECJPAKE_C	Defined *
MBEDTLS_ECP_C	Defined
MBEDTLS_ENTROPY_C	Defined
MBEDTLS_ERROR_C	Defined
MBEDTLS_GCM_C	Defined
MBEDTLS_HKDF_C	Defined
MBEDTLS_HMAC_DRBG_C	Defined
MBEDTLS_MD_C	Defined
MBEDTLS_MD5_C	Defined
MBEDTLS_NET_C	Defined
MBEDTLS_NIST_KW_C	Not Defined
MBEDTLS_OID_C	Defined
MBEDTLS_PADLOCK_C	Defined
MBEDTLS_PEM_PARSE_C	Defined
MBEDTLS_PEM_WRITE_C	Defined
MBEDTLS_PK_C	Defined
MBEDTLS_PK_PARSE_C	Defined
MBEDTLS_PK_WRITE_C	Defined
MBEDTLS_PKCS5_C	Defined
MBEDTLS_PKCS12_C	Defined
MBEDTLS_PLATFORM_C	Defined
MBEDTLS_RIPEMD160_C	Defined
MBEDTLS_POLY1305_C	Defined
MBEDTLS_RSA_C	Defined
MBEDTLS_SHA1_C	Defined
MBEDTLS_SHA256_C	Defined
MBEDTLS_SHA512_C	Defined
MBEDTLS_SSL_CACHE_C	Defined
MBEDTLS_SSL_COOKIE_C	Defined

MBEDTLS_SSL_TICKET_C	Defined
MBEDTLS_SSL_TLS_C	Defined
MBEDTLS_VERSION_C	Defined
MBEDTLS_X509_USE_C	Defined
MBEDTLS_X509_CRT_PARSE_C	Defined
MBEDTLS_X509_CRL_PARSE_C	Defined
MBEDTLS_X509_CSR_PARSE_C	Defined
MBEDTLS_X509_CREATE_C	Defined
MBEDTLS_X509_CRT_WRITE_C	Defined
MBEDTLS_X509_CSR_WRITE_C	Defined
MBEDTLS_XTEA_C	Defined

7.9.5. Modules Configuration:

SSL:

MBEDTLS_SSL_MAX_CONTENT_LEN_ENABLE	Enabled *
MBEDTLS_SSL_MAX_CONTENT_LEN	4096 *
MBEDTLS_SSL_CIPHERSUITES_ENABLE	Enabled *
MBEDTLS_SSL_CIPHERSUITES	MBEDTLS_TLS_ECDHE_ECD SA_WITH_AES_256_GCM_SHA A384,MBEDTLS_TLS_ECDHE_

Platform:

MBEDTLS_PLATFORM_PRINTF_MACRO_ENABLE	Enabled *
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MPI / BIGNUM:

MBEDTLS_MPI_MAX_SIZE_ENABLE	Enabled *
MBEDTLS_MPI_MAX_SIZE	256 *

ECP:

MBEDTLS_ECP_MAX_BITS_ENABLE	Enabled *
MBEDTLS_ECP_MAX_BITS	384 *
MBEDTLS_ECP_WINDOW_SIZE_ENABLE	Enabled *
MBEDTLS_ECP_WINDOW_SIZE	2 *
MBEDTLS_ECP_FIXED_POINT_OPTIM_ENABLE	Enabled *
MBEDTLS_ECP_FIXED_POINT_OPTIM	0 *

Entropy:

MBEDTLS_ENTROPY_MAX_SOURCES_ENABLE	Enabled *
MBEDTLS_ENTROPY_MAX_SOURCES	2 *

* User modified value

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ETH	PC1	ETH_MDC	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_MDC [LAN8742A-CZ-TR_MDC]
	PA1	ETH_REF_CLK	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_REF_CLK [LAN8742A-CZ-TR_REFCLK0]
	PA2	ETH_MDIO	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_MDIO [LAN8742A-CZ-TR_MDIO]
	PA7	ETH_CRS_DV	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_CRS_DV [LAN8742A-CZ-TR_CRS_DV]
	PC4	ETH_RXD0	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_RXD0 [LAN8742A-CZ-TR_RXD0]
	PC5	ETH_RXD1	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_RXD1 [LAN8742A-CZ-TR_RXD1]
	PB13	ETH_TXD1	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_TXD1 [LAN8742A-CZ-TR_TXD1]
	PG11	ETH_TX_EN	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_TX_EN [LAN8742A-CZ-TR_TXEN]
	PG13	ETH_TXD0	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	RMII_TXD0 [LAN8742A-CZ-TR_TXD0]
RCC	PC14/OSC32_IN	RCC_OSC32_IN	n/a	n/a	n/a	
	PC15/OSC32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a	
	PH0/OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	MCO [STM32F103CBT6_PA8]
	PH1/OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	TMS
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	TCK
	PB3	SYS_JTDO-SWO	n/a	n/a	n/a	SW0
USART3	PD8	USART3_TX	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	STLK_RX [STM32F103CBT6_PA3]
	PD9	USART3_RX	Alternate Function Push Pull	No pull-up and no pull-down	Very High	STLK_TX

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
					*	[STM32F103CBT6_PA2]
USB_OTG_FS	PA8	USB_OTG_FS_SOF	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	USB_SOF [TP1]
	PA9	USB_OTG_FS_VBUS	Input mode	No pull-up and no pull-down	n/a	USB_VBUS
	PA11	USB_OTG_FS_DM	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	USB_DM
	PA12	USB_OTG_FS_DP	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	USB_DP
Single Mapped Signals	PA10	USB_OTG_FS_ID	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	USB_ID
GPIO	PC13	GPIO_EXTI13	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	USER_Btn [B1]
	PB0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD1 [Green]
	PB14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD3 [Red]
	PG6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	USB_PowerSwitchOn [STMPS2151STR_EN]
	PG7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	USB_OverCurrent [STMPS2151STR_FAULT]
	PB7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LD2 [Blue]

8.2. DMA configuration

nothing configured in DMA service

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
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
TIM7 global interrupt	true	15	0
Ethernet global interrupt	true	5	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
USART3 global interrupt	unused		
EXTI line[15:10] interrupts	unused		
Ethernet wake-up interrupt through EXTI line 19	unused		
USB On The Go FS global interrupt	unused		
HASH and RNG global interrupts	unused		
FPU global interrupt	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
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
TIM7 global interrupt	false	true	true
Ethernet global interrupt	false	true	true

* User modified value

9. System Views

9.1. Category view

9.1.1. Current

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
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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/es0290-stm32f74xxx-and-stm32f75xxx-device-limitations-stmicroelectronics.pdf
Datasheet	https://www.st.com/resource/en/datasheet/dm00166116.pdf
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Reference Manuals	https://www.st.com/resource/en/reference_manual/rm0385-stm32f75xxx-and-stm32f74xxx-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
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