MCU/MPU Selector | Board Selector | Example Selector | Cross Selector

MCU/MPU Filters

Commercial Part Number: STM32F103C8T6

🔍 [ ] ▾ ➕ ➖

PRODUCT INFO ▾

Segment >
Series >
Line >
Marketing Status >
Price >
Package >
Core >
Coprocessor >

MEMORY ▾

Flash = 64 (kBytes)

64

EEPROM = 0 (Bytes)

Features | Block Diagram | Docs & Resources | CAD Resources | 📄 Datasheet | Buy

STM32F1 Series

STM32F103C8T6	Mainstream Performance line, Arm Cortex-M3 MCU with 64 Kbytes of Flash memory, 72 MHz CPU, motor control, USB and CAN

ACTIVE Product is in mass production

Unit Price for 10kU (US$) : **2.7946**

LQFP 48 7x7x1.4 mm

The STM32F103xx medium-density performance line family incorporates the high-performance Arm$^®$ Cortex$^®$-M3 32-bit RISC core operating at a 72 MHz frequency, high-speed embedded memories (Flash memory up to 128 Kbytes and SRAM up to 20 Kbytes), and an extensive range of enhanced I/Os and peripherals connected to two APB buses. All devices offer two 12-bit ADCs, three general purpose 16-bit timers plus one PWM timer, as well as standard and

MCUs/MPUs List: 2 items   ⬆ Export

*	Commercia...	Part No	Reference	Marketing St...	Unit Price fo...	Board	Package	Flash	RAM	I/O	Frequency
☆	STM32F103C...	STM32F103C8	STM32F103C...	Active	2.7946		LQFP 48 7x7x...	64 kBytes	20 kBytes	37	72 MHz
☆	STM32F103C...		STM32F103C...	Active	2.7946		LQFP 48 7x7x...	64 kBytes	20 kBytes	37	72 MHz

❓ | < Back | Next > | Finish | Cancel

IDE

Setup STM32 project

┌─ Project ───┐
Project Name: 6_DOF_Robotic_Hand_Slave

☑ Use default location

Location: E:\STM32 Project Folder 2\6_DOF_Robotic_Hand_Bluetooth_Controlled_001   [Browse...]
└───┘

┌─ Options ───┐

┌─ Targeted Language ───┐
● C ○ C++
└───┘

┌─ Targeted Binary Type ──┐
● Executable ○ Static Library
└───┘

┌─ Targeted Project Type ───┐
● STM32Cube ○ Empty
└───┘

└───┘

❓   [< Back] [Next >] [Finish] [Cancel]

| Pinout & Configuration | Clock Configuration | Project Manager | Tools |

⌄ Software Packs   ⌄ Pinout

Q [⌄]   ⚙

Categories   A->Z

System Core ⌄

- DMA
- GPIO
- IWDG
- NVIC
- ✅ RCC
- ✔ SYS
- WWDG

Analog >

Timers >

Connectivity >

Computing >

Middleware and Software Pac... >

RCC Mode and Configuration

Mode

High Speed Clock (HSE) Crystal/Ceramic Resonator [⌄]

Low Speed Clock (LSE) Disable [⌄]

☐ Master Clock Output

Configuration

Reset Configuration

| ✅ NVIC Settings | ✅ GPIO Settings |
| ✅ Parameter Settings | ✅ User Constants |

Configure the below parameters :

Q Search (Ctrl+F) ⊘ ⊙   ⓘ

⌄ System Parameters
  VDD voltage (V)   3.3 V
  Prefetch Buffer   Enabled
  Flash Latency(WS)   0 WS (1 CPU cycle)
⌄ RCC Parameters
  HSI Calibration Value 16

🖳 Pinout view   ▦ System view

RCC_OSC_IN PD0-..

RCC_OSC_OUT PD1-..

VBAT
PC13-..
PC14-..
PC15-..
NRST
VSSA
VDDA
PA0-..
PA1
PA2

VDD VSS PB9 PB8 BOOT PB7 PB6 PB5 PB4 PB3 PA15 PA14

VDD
VSS
PA13
PA12
PA11
PA10
PA9
PA8
PB15
PB14
PB13
PB12

STM32F103C8Tx
LQFP48

PA3 PA4 PA5 PA6 PA7 PB0 PB1 PB2 PB10 PB11 VSS VDD

⊕ ⛶ ⊖ 🖺 🖺 ▯ ▭ Q [⌄]

| Pinout & Configuration | Clock Configuration | Project Manager | Tools |

∨ Software Packs   ∨ Pinout

SYS Mode and Configuration

Mode

Debug | Serial Wire | ∨

☐ System Wake-Up

Timebase Source | SysTick | ∨

Configuration

⚠ **Warning: This peripheral has no parameters to be configured.**

STM32F103C8Tx
LQFP48

6_DOF_Robotic_Hand_Slave.ioc - Pinout & Configuration

| Pinout & Configuration | Clock Configuration | Project Manager | Tools |

∨ Software Packs   ∨ Pinout

I2C1 Mode and Configuration

Mode

I2C | I2C

Configuration

Reset Configuration

- NVIC Settings
- DMA Settings
- GPIO Settings
- Parameter Settings
- User Constants

Configure the below parameters :

Search (Ctrl+F)

∨ Master Features
   I2C Speed Mode   Standard Mode
   I2C Clock Speed (Hz)   100000
∨ Slave Features
   Clock No Stretch Mode   Disabled
   Primary Address Length sele.   7-bit
   Dual Address Acknowledged   Disabled
   Primary slave address   0
   General Call address detecti..   Disabled

Categories   A->Z

- System Core
- Analog
- Timers
- Connectivity
  - CAN
  - I2C1
  - I2C2
  - SPI1
  - SPI2
  - USART1
  - USART2
  - USART3
  - USB
- Computing
- Middleware and Software Pac...

Pinout view   System view

STM32F103C8Tx
LQFP48

VBAT, PC13-, PC14-, PC15-, RCC_OSC_IN PD0-, RCC_OSC_OUT PD1-, NRST, VSSA, VDDA, PA0-, PA1, PA2

VDD, VSS, PA13 SYS_JTMS-SWDIO, PA12, PA11, PA10, PA9, PA8, PB15, PB14, PB13, PB12

VDD, VSS, PB9, PB8, BOOT.., PB7, PB6, PB5, PB4, PB3, PA15, PA14

I2C1_SDA, I2C1_SCL, SYS_JTCK-SWCLK

Pinout & Configuration	Clock Configuration	Project Manager	Tools

∨ Software Packs   ∨ Pinout

USART1 Mode and Configuration

Mode

Mode Asynchronous ∨

Hardware Flow Control (RS232) Disable ∨

Q [   ] ∨   ⚙

Categories   A->Z

System Core   >

Analog   >

Timers   >

Connectivity   ∨

        ⬆
    CAN
✔   I2C1
    I2C2
    SPI1
    SPI2
✔   USART1
    USART2
    USART3
    USB

Computing   >

Middleware and Software Pac... >

Configuration

Reset Configuration

⊘ NVIC Settings	⊘ DMA Settings	⊘ GPIO Settings

⊘ Parameter Settings	⊘ User Constants

Configure the below parameters :

Q Search (Ctrl+F)   ⟳   ⟲   ⓘ

∨ Basic Parameters
    Baud Rate   115200 Bits/s
    Word Length   8 Bits (including Parity)
    Parity   None
    Stop Bits   1
∨ Advanced Parameters
    Data Direction   Receive and Transmit
    Over Sampling   16 Samples

🖳 Pinout view   ▦ System view

STM32F103C8Tx
LQFP48

Pinout & Configuration	Clock Configuration	Project Manager	Tools

∨ Software Packs　　　∨ Pinout

USART1 Mode and Configuration

Mode

Mode Asynchronous

Hardware Flow Control (RS232) Disable

Pinout view　　　System view

Categories　A->Z

System Core ＞

Analog ＞

Timers ＞

Connectivity ∨

CAN
✔ I2C1
　I2C2
　SPI1
　SPI2
✔ USART1
　USART2
　USART3
　USB

Computing ＞

Middleware and Software Pac... ＞

Configuration

Reset Configuration

	NVIC Settings	DMA Settings	GPIO Settings
	Parameter Settings		User Constants

NVIC Interrupt Table	Enabled	Preemption Priority	Sub Priorit
USART1 global interrupt	☑	0	0

STM32F103C8Tx
LQFP48

SYS_JTCK-SW

I2C1_SDA
I2C1_SCL

VDD VSS PB9 PB8 BOOT... PB7 PB6 PB5 PB4 PB3 PA15 PA14

VBAT
PC13-...
PC14-...
PC15-...
PD0-...
PD1-...
NRST
VSSA
VDDA
PA0-...
PA1
PA2

VDD
VSS
PA13 ── SYS_JTMS-SWDIO
PA12
PA11
PA10 ── USART1_RX
PA9 ── USART1_TX
PA8
PB15
PB14
PB13
PB12

A3 A4 A5 A6 A7 B0 B1 B2 B10 B11 SS DD

MCU/MPU Selector | Board Selector | Example Selector | Cross Selector

MCU/MPU Filters

Features | Block Diagram | Docs & Resources | CAD Resources | Datasheet | Buy

Commercial Part Number   F103C8T6 ▾

STM32F1 Series

STM32F103C8T6

Mainstream Performance line, Arm Cortex-M3 MCU with 64 Kbytes of Flash memory, 72 MHz CPU, motor control, USB and CAN

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Product is in mass production

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LQFP 48 7x7x1.4 mm

PRODUCT INFO ⌄

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Marketing Status >
Price >
Package >
Core >
Coprocessor >

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MCUs/MPUs List: 2 items

Export

*	Commercia...	Part No	Reference	Marketing St...✕	Unit Price fo...✕	Board ✕	Package ✕	Flash ✕	RAM ✕	I/O ✕	Frequency ✕
☆	STM32F103C...	STM32F103C8	STM32F103C...	Active	2.7946		LQFP 48 7x7x...	64 kBytes	20 kBytes	37	72 MHz
☆	STM32F103C...		STM32F103C...	Active	2.7946		LQFP 48 7x7x...	64 kBytes	20 kBytes	37	72 MHz

MEMORY ⌄

Flash   = 64 (kBytes)

64

EEPROM

< Back | Next > | Finish | Cancel

IDE

Project

Project Name: 6_DOF_Robotic_Hand_Master

☐ Use default location

Location: E:\STM32 Project Folder 2\6_DOF_Robotic_Hand_Master   [Browse...]

Options

Targeted Language
● C ○ C++

Targeted Binary Type
● Executable ○ Static Library

Targeted Project Type
● STM32Cube ○ Empty

❷   Cancel   [< Back] [Next >] [Finish] [Cancel]

Pinout & Configuration | Clock Configuration | Project Manager | Tools

∨ Software Packs   ∨ Pinout

RCC Mode and Configuration

Mode

High Speed Clock (HSE) Crystal/Ceramic Resonator

Low Speed Clock (LSE) Disable

☐ Master Clock Output

Pinout view   System view

Configuration

Reset Configuration

✓ Parameter Settings | ✓ User Constants | ✓ NVIC Settings | ✓ GPIO Settings

Configure the below parameters :

🔍 Search (Ctrl+F)   ◀   ▶   ℹ

∨ System Parameters
   VDD voltage (V)   3.3 V
   Prefetch Buffer   Enabled
   Flash Latency(WS)   0 WS (1 CPU cycle)
∨ RCC Parameters
   HSI Calibration Value   16
   HSE Startup Timout Value (ms) 100
   LSE Startup Timout Value (ms) 5000

Categories A->Z

System Core
  DMA
  GPIO
  IWDG
  NVIC
  RCC
  SYS
  WWDG

Analog
Timers
Connectivity
Computing
Middleware and Software Pac...

RCC_OSC_IN   PD0-..
RCC_OSC_OUT   PD1-..

VBAT
PC13..
PC14..
PC15..
NRST
VSSA
VDDA
PA0-
PA1
PA2

VDD VSS PB9 PB8 BOO.. PB7 PB6 PB5 PB4 PB3 PA15 PA14

VDD
VSS
PA13
PA12
PA11
PA10
PA9
PA8
PB15
PB14
PB13
PB12

STM32F103C8Tx
LQFP48

PA3 PA4 PA5 PA6 PA7 PB0 PB1 PB2 PB10 PB11 VSS VDD

| Pinout & Configuration | Clock Configuration | Project Manager | Tools |

∨ Software Packs   ∨ Pinout

Pinout view   **System view**

USART1 Mode and Configuration

Mode

Mode | Asynchronous

Hardware Flow Control (RS232) | Disable

Categories | A->Z

- IWDG
- NVIC
- ✔ RCC
- ✔ SYS
- WWDG

Analog >

Timers >

Connectivity ∨

- CAN
- I2C1
- I2C2
- SPI1
- SPI2
- ✔ USART1
- USART2
- USART3
- USB

Computing >

Middleware and Software P... >

Configuration

Reset Configuration

| ✔ NVIC Settings | ✔ DMA Settings | ✔ GPIO Settings |
| ✔ Parameter Settings | | ✔ User Constants |

Configure the below parameters :

Q Search (Ctrl+F)   ◁   ▷   ⓘ

∨ Basic Parameters
  Baud Rate   115200 Bits/s
  Word Length   8 Bits (including Parity)
  Parity   None
  Stop Bits   1
∨ Advanced Parameters
  Data Direction   Receive and Transmit
  Over Sampling   16 Samples

STM32F103C8Tx
LQFP48

VBAT
PC13..
PC14..
PC15..
PD0-..
PD1-..
NRST
VSSA
VDDA
PA0-..
PA1
PA2

VDD
VSS
PA13   SYS_JTMS-SWDIO
PA12
PA11
PA10   USART1_RX
PA9   USART1_TX
PA8
PB15
PB14
PB13
PB12

VDD VSS PB9 PB8 BOO.. PB7 PB6 PB5 PB4 PB3 PA15 PA14

PA3 PA4 PA5 PA6 PA7 PB0 PB1 PB2 PB10 PB11 VSS VDD

SYS_JTCK-S\

6_DOF_Robotic_Hand_Master.ioc - Pinout & Configuration

| Pinout & Configuration | Clock Configuration | Project Manager | Tools |

∨ Software Packs   ∨ Pinout

Categories A->Z

- IWDG
- NVIC
- ✔ RCC
- ✔ SYS
- WWDG

Analog

Timers

Connectivity

- CAN
- I2C1
- I2C2
- SPI1
- SPI2
- ✔ USART1
- ✔ USART2
- USART3
- USB

Computing

Middleware and Software P...

USART2 Mode and Configuration

Mode

Mode `Asynchronous`

Hardware Flow Control (RS232) `Disable`

Configuration

Reset Configuration

| ○ NVIC Settings | ○ DMA Settings | ○ GPIO Settings |
| ○ Parameter Settings | | ○ User Constants |

Configure the below parameters :

Search (Ctrl+F)

∨ Basic Parameters
  - Baud Rate .... 115200 Bits/s
  - Word Length .... 8 Bits (including Parity)
  - Parity .... None
  - Stop Bits 1
∨ Advanced Parameters
  - Data Direction .... Receive and Transmit
  - Over Sampling .... 16 Samples

Pinout view   System view

STM32F103C8Tx
LQFP48

Pinout & Configuration	Clock Configuration	Project Manager	Tools

∨ Software Packs   ∨ Pinout

USART2 Mode and Configuration

Mode

Mode Asynchronous ∨

Hardware Flow Control (RS232) Disable ∨

Configuration

Reset Configuration

NVIC Settings	DMA Settings	GPIO Settings
Parameter Settings		User Constants

NVIC Interrupt Table	Enabled	Preemption Priority	Sub Priority
USART2 global interrupt	☑	0	0

Pinout view   System view

Categories   **A->Z**

IWDG
NVIC
✔ RCC
✔ SYS
WWDG

Analog >

Timers >

Connectivity ∨

CAN
I2C1
I2C2
SPI1
SPI2
✔ USART1
◉ USART2
USART3
USB

Computing >

Middleware and Software P... >

STM32F103C8Tx
LQFP48

VDD VSS PB9 PB8 BOO.. PB7 PB6 PB5 PB4 PB3 PA15 PA14

VBAT | VDD
PC13.. | VSS
PC14.. | PA13 SYS
PC15.. | PA12
RCC_OSC_IN PD0-.. | PA11
RCC_OSC_OUT PD1-.. | PA10 USA
NRST | PA9 USA
VSSA | PA8
VDDA | PB15
PA0-.. | PB14
PA1 | PB13
USART2_TX PA2 | PB12

PA3 PA4 PA5 PA6 PA7 PB0 PB1 PB2 PB10 PB11 VSS VDD

USART2_RX

Pinout & Configuration	Clock Configuration	Project Manager	Tools

Resolve Clock Issues

Input frequency
32.768

0-1000 KHz

LSE

LSI RC
40
40 KHz

HSI RC
8
8 MHz

RTC Clock Mux

HSE /128 HSE_RTC

LSE

LSI

40 To RTC (KHz)

40 To IWDG (KHz)

8 To FLITFCLK (MHz)

System Clock Mux

HSI
HSE
PLLCLK

Enable CSS

SYSCLK (MHz)
72

AHB Prescaler
/1

HCLK (MHz)
72
72 MHz max

APB1 Prescaler
/2

PCLK1
36 MHz max

X 2

APB2 Prescaler
/1

PCLK2
72 MHz max

X 1

ADC Prescaler
/2

HCLK to AHB bus, core, memory and DMA (MHz) 72

To Cortex System timer (MHz) 72

FCLK (MHz) 72

APB1 peripheral clocks (MHz) 36

APB1 Timer clocks (MHz) 72

APB2 peripheral clocks (MHz) 72

APB2 timer clocks (MHz) 72

To ADC1,2 36

PLL Source Mux

/2 HSI

HSI

8 X 9

HSE

/1

USB Prescaler
/1

72 To USB (MHz)

Input frequency
8

4-16 MHz

HSE

PLL

```c
55 /* USER CODE BEGIN PFP */
56
57 /* USER CODE END PFP */
58
59 /* Private user code ---------------------------------------------------------*/
60 /* USER CODE BEGIN 0 */
61 uint8_t message[128];
62
63 void HAL_UARTEx_RxEventCallback(UART_HandleTypeDef *huart, uint16_t Size)
64 {
65     if (huart->Instance==USART1)
66     {
67         HAL_UART_Transmit(&huart2, message, Size, 1000);
68     }
69     else if (huart->Instance==USART2)
70     {
71         HAL_UART_Transmit(&huart1, message, Size, 1000);
72     }
73     HAL_UARTEx_ReceiveToIdle_IT(huart, message,128);
74 }
75
76 /* USER CODE END 0 */
77
78 /**
79   * @brief  The application entry point.
80   * @retval int
81   */
82 int main(void)
```

```c
 97
 98    /* Configure the system clock */
 99    SystemClock_Config();
100
101    /* USER CODE BEGIN SysInit */
102
103    /* USER CODE END SysInit */
104
105    /* Initialize all configured peripherals */
106    MX_GPIO_Init();
107    MX_USART1_UART_Init();
108    MX_USART2_UART_Init();
109    /* USER CODE BEGIN 2 */
110    HAL_UARTEx_ReceiveToIdle_IT(&huart1, message, 128);
111    HAL_UARTEx_ReceiveToIdle_IT(&huart2, message, 128);
112
113
114    /* USER CODE END 2 */
115
116    /* Infinite loop */
117    /* USER CODE BEGIN WHILE */
118    while (1)
119    {
120      /* USER CODE END WHILE */
121
122      /* USER CODE BEGIN 3 */
123    }
```

Tera Term: Serial port setup and connection ✕

Port: COM5

Speed: 115200

Data: 8 bit

Parity: none

Stop bits: 1 bit

Flow control: none

New setting

Cancel

Help

Transmit delay

0 msec/char   0 msec/line

Device Friendly Name: Silicon Labs CP210x USB to UART Bridge
Device Instance ID: USB\VID_10C4&PID_EA60\0001
Device Manufacturer: Silicon Labs
Provider Name: Silicon Laboratories Inc.
Driver Date: 4-13-2023
Driver Version: 11.3.0.176

Tera Term: Terminal setup

Terminal size

236 X 80

☑ Term size = win size

☐ Auto window resize

New-line

Receive: CR+LF

Transmit: CR+LF

OK

Cancel

Help

Terminal ID: VT100

Answerback:

☑ Local echo

☐ Auto switch (VT<->TEK)

Coding (receive)

UTF-8

Coding (transmit)

UTF-8

Click to open coding tab in Additional Settings dialog