Learn about STM32

1、Initial understanding of STM32

STM32 is: Cortex-M is used as the core, and it is packaged together through some peripherals and other combinations to become a popular 32-bit embedded processor. The STM32F1 is used for development, which is the M3 core. Cortex-M3 uses ARMv7- M architecture. The ARM architecture was designed by the British ARM company.
So what is the connection between STMicroelectronics, ARM, and businesses? ARM proposed an architecture. STMicroelectronics designed the STM32 chip through the architecture provided by ARM. These merchants purchased STMicroelectronics' STM32 chip and conducted independent secondary development, and connected it with some peripherals to make We got the STM32 development board and microcontroller products.

- ST：STMicroelectronics is the name of a company.
- M：The abbreviation of Microelectronics means microcontroller.

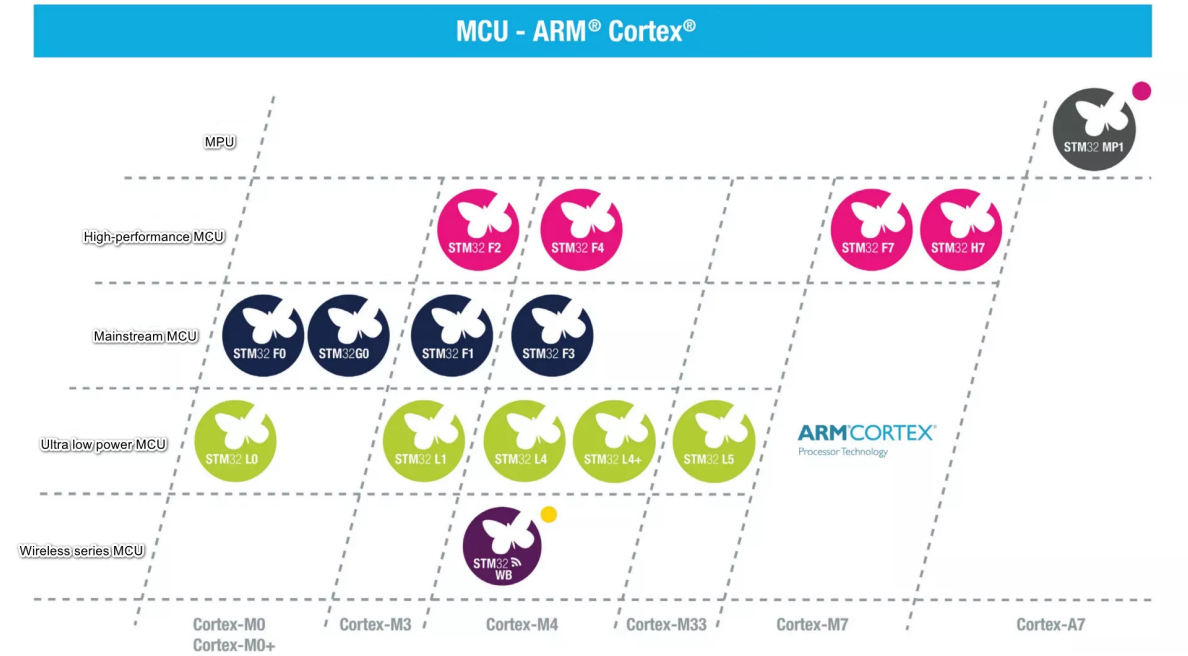
  Please pay attention to the difference between microcontroller and microprocessor.
- 32：32bit means that this is a 32bit.

2、ST official study materials

1. www.stmcu.org.cn :This website is a link to the ST Chinese community, which includes information on all MCUs of ST, such as: STM32F1 latest chip documentation (reference manual, data manual, errata manual, programming manual, etc.), software resources (firmware library, configuration tools, PC software, etc.), hardware resources (various official evaluation boards), etc.
2. https://www.st.com/content/st_com/zh.html :This URL is the official link of ST. You can get the latest and most complete information about ST on the website. For beginners, it is okay to obtain ST official information from the ST Chinese community. Because the information of the ST Chinese community is generally moved from ST's official website, but if you want to find the latest STM32 information, you still have to go to ST's official website to search.

3、STM32 series

STM32 is currently divided into 5 major categories, as shown in the figure below:



4、STM32 selection

We can choose the appropriate STM32 for design according to actual needs. If our products have high performance requirements, we can choose ST's high-performance MCU. Including: F2, F4, F7, H7 and other 4 series products; if you want to achieve ultra-low power consumption, you can choose ST's ultra-low power MCU and L series products.

The STM32 series has good compatibility. As long as we can master any one of the microcontrollers, we can easily learn and use other series of microcontrollers. For example, after learning STM32F103 well, F4/F7/H7 will be easier to learn. Since the STM32F103 series was first introduced to the market, it has the most information and tutorials, and is also the most widely used in the market. Therefore, for beginners who have not been exposed to STM32, we strongly recommend learning STM32F103 first, and then learning other STM32 series.

5、Advantages of STM32

1. Cheap price: The price of an 8-bit machine and the performance of a 32-bit machine are the biggest advantages of STM32.
2. Has many peripherals: STM32 has many peripherals and functions, including: FMC, TIMER, SPI, IIC, USB, CAN, IIS, SDIO, ADC, DAC, RTC, DMA, etc.
3. Rich models: The stm32 M3 core alone has hundreds of models in 8 series such as F100, F101, F102, F103, F105, F107, F207, F217, etc., with QFN, LQFP, BGA and other packages to choose from. At the same time, STM32 has also launched ultra-low power consumption, wireless application type M3 chips such as STM32L and STM32W. In addition, ST has also launched higher-performance chips such as STM32F4/F7/H7.
4. Excellent real-time performance: 150 interrupts, 16 levels of programmable priority, and all pins can be used as interrupt inputs.
5. Excellent power consumption control: Each STM32 peripheral has its own independent clock switch. Power consumption can be reduced by turning off the clock of the corresponding peripheral.
6. The development cost is extremely low: the program can be downloaded through the serial port, and the corresponding emulator is also very cheap and supports JTAG&SWD debugging interface. You can use 2 IO ports to implement simulation debugging.

6、STM32 naming method

We may see other stm32 chips in the future, so what rules do their commands follow?

We can refer to the following figure for specific naming rules: