

STM32 minimum system

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Minimum system composition

Main control chip

Power supply circuit

Clock circuit

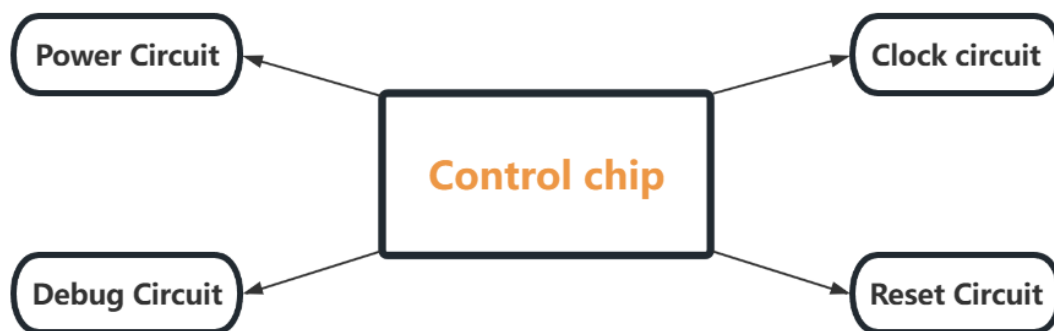
Reset circuit

Debug circuit

The tutorial mainly introduces the components of the STM32 minimum system.

Minimum system composition

The STM32 minimum system is mainly composed of power supply circuit, clock circuit, reset circuit, debug circuit (serial port download circuit) and main control chip



Power supply circuit: provides the required power supply voltage for the entire circuit system;

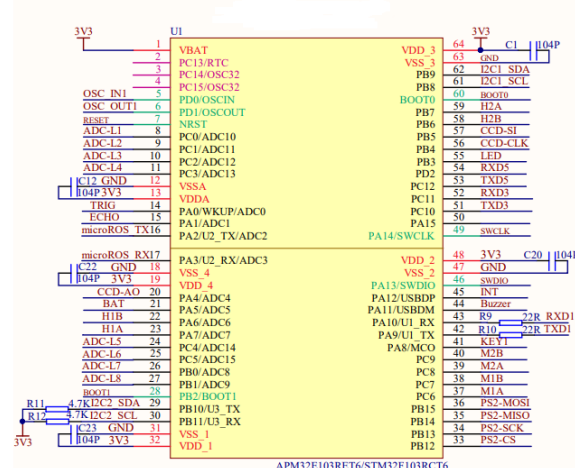
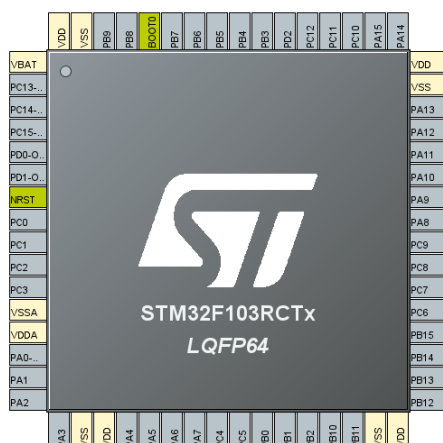
Clock circuit: provides the required clock signal for MCU;

Reset circuit: provides a unified initial state for MCU;

Debug circuit: provides an interface for program download and debugging for MCU.

Main control chip

The main control chip of the development board used for the balance car is STM32F103RCT6, which is a high-performance microcontroller based on the ARM Cortex-M3 core launched by STMicroelectronics.

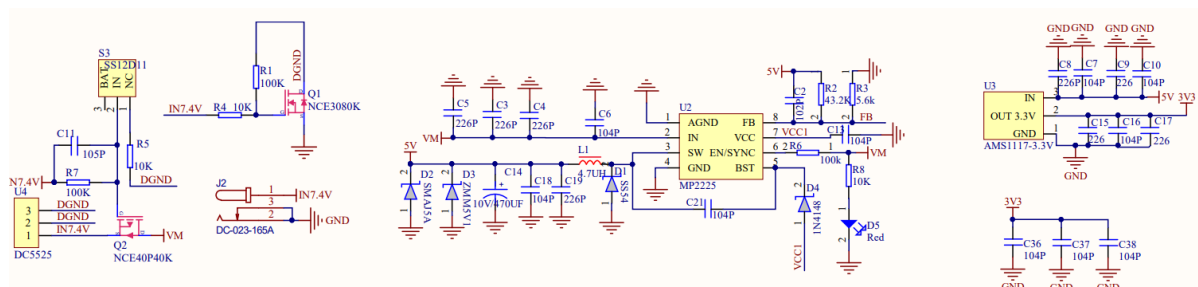


Peripherals		STM32F103Rx			STM32F103Vx			STM32F103Zx		
Flash memory in Kbytes		256	384	512	256	384	512	256	384	512
SRAM in Kbytes		48	64		48	64		48	64	
FSMC		No			Yes ⁽¹⁾			Yes		
Timers	General-purpose	4								
	Advanced-control	2								
	Basic	2								
Comm	SPI(I ² S) ⁽²⁾	3(2)								
	I ² C	2								
	USART	5								
	USB	1								
	CAN	1								
	SDIO	1								
GPIOs		51			80			112		
12-bit ADC		3			3			3		
Number of channels		16			16			21		
12-bit DAC		2								
Number of channels		2								
CPU frequency		72 MHz								
Operating voltage		2.0 to 3.6 V								
Operating temperatures		Ambient temperatures: −40 to +85 °C /−40 to +105 °C (see Table 10) Junction temperature: −40 to + 125 °C (see Table 10)								
Package		LQFP64, WLCSP64			LQFP100, BGA100			LQFP144, BGA144		

Power supply circuit

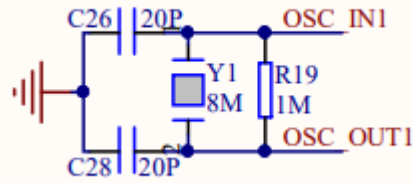
Provides the required power supply voltage for the entire circuit system.

supports external power supply (DC) and USB power supply



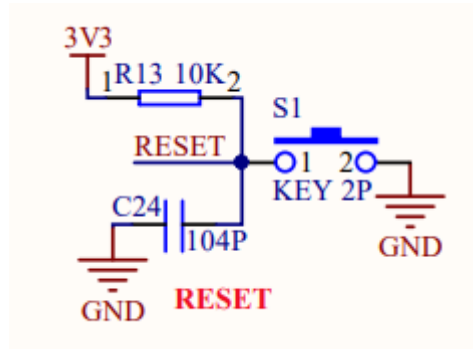
Clock circuit

Provides the required clock signal for the MCU.



Reset circuit

Provide a unified initial state for the MCU.



Debug circuit

Provide an interface for program download and debugging for the MCU.

