

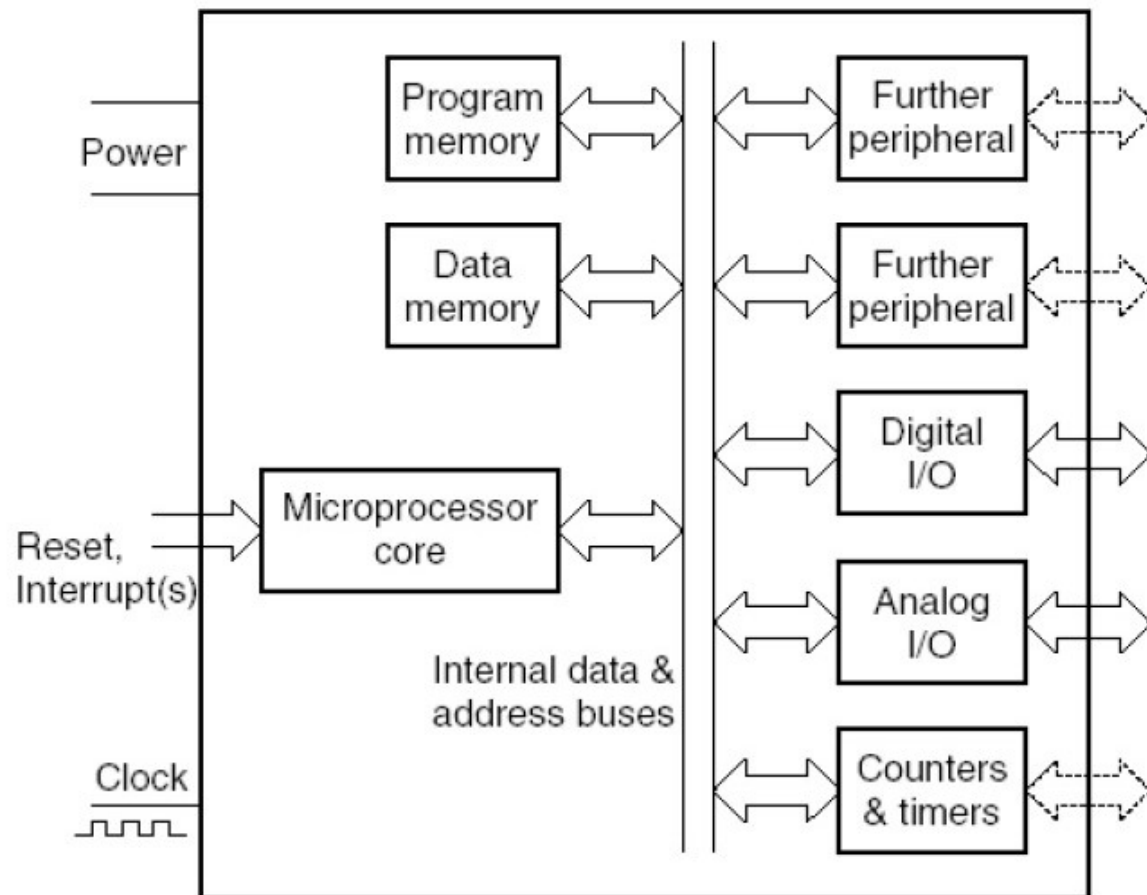
Embedded Processor

- What is an Embedded Processor?

An embedded processor is a type of microprocessor designed into a system to control electrical and mechanical functions. Embedded processors are usually simple in design, limited in computational power and I/O capabilities, and have minimal power requirements. At a basic level, embedded processors are a CPU chip placed in a system that it helps control

Microcontrollers

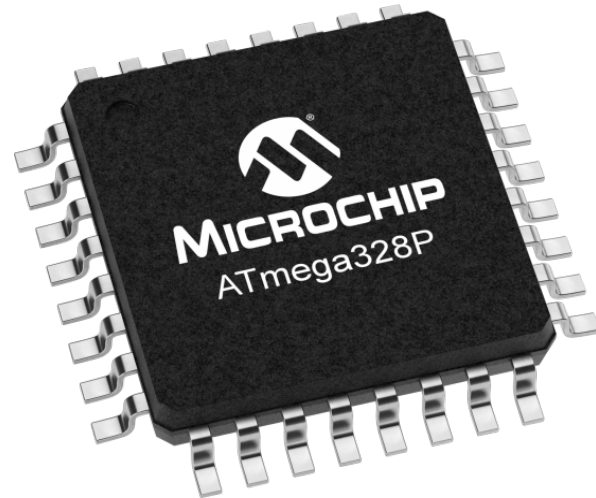
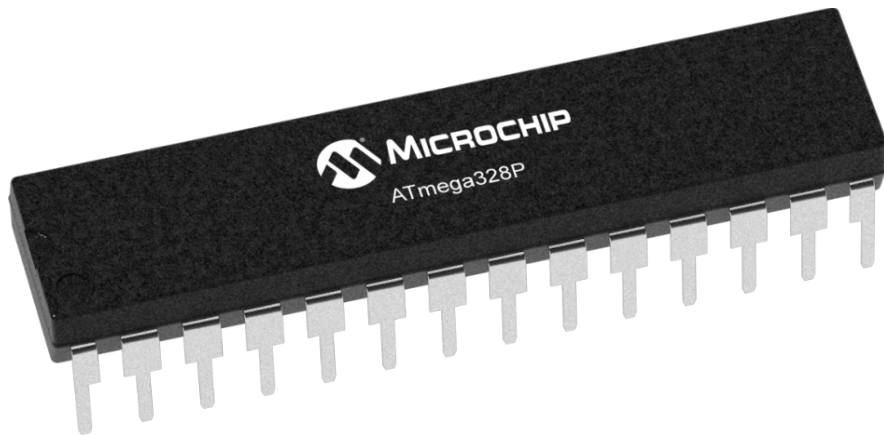
- Microcontrollers



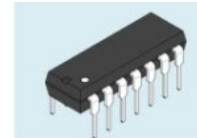
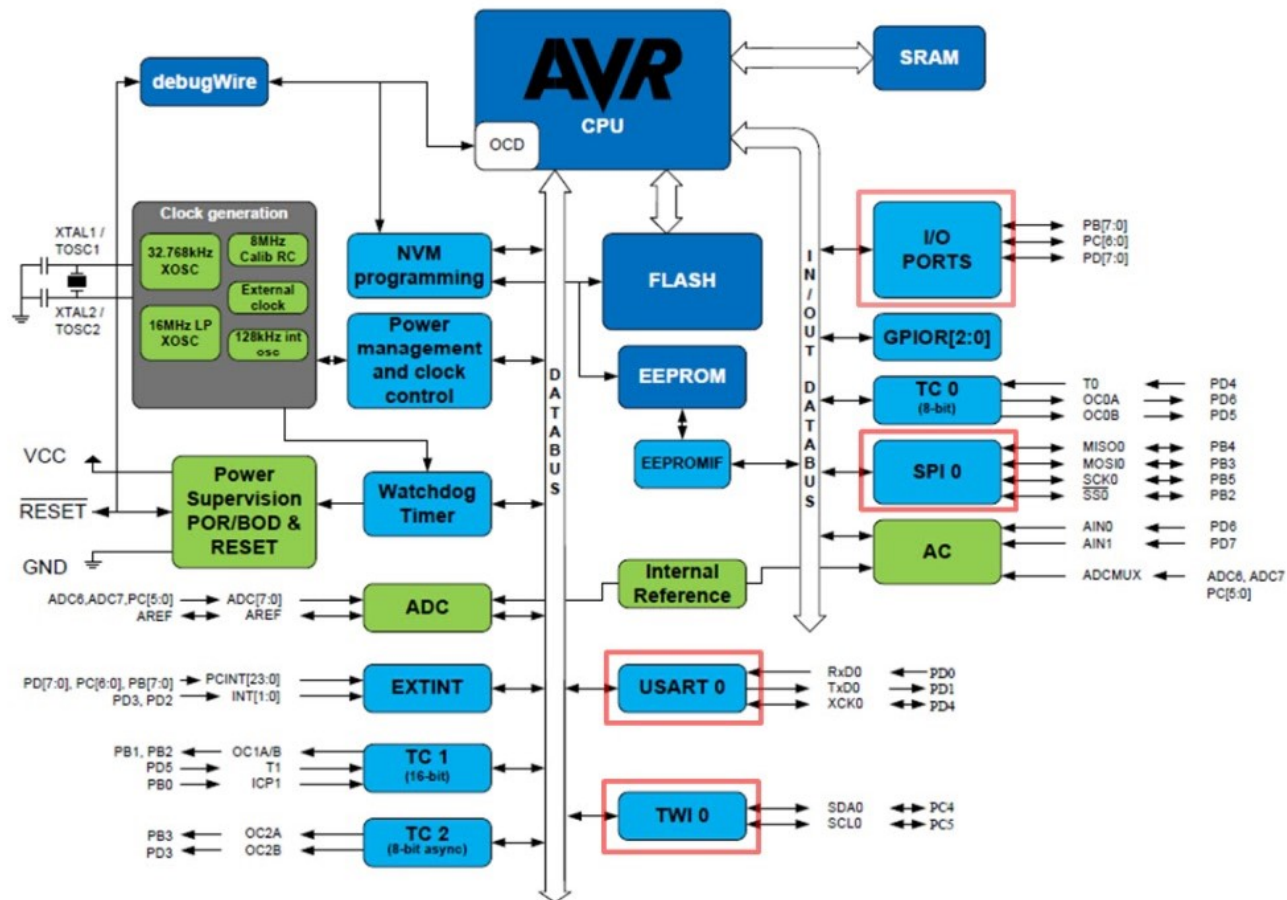
Embedded Processor

- Microcontroller being made up of three parts:
 - Core Microprocessor
 - Memory
 - Peripherals

ATmega328P



ATmega328P



ATmega328P

– Core Microprocessor

- 8-bit AVR® RISC-based microcontroller
- Speed (MIPS) 20

– Memory

- Flash Memory 32 KB
- SRAM 2 KB
- EEPROM 1 KB

– Peripherals

- Digital Communication Peripherals 1-UART, 2-SPI, 1-I2C
- Two-Wire serial interface
- 6-channel 10-bit A/D converter

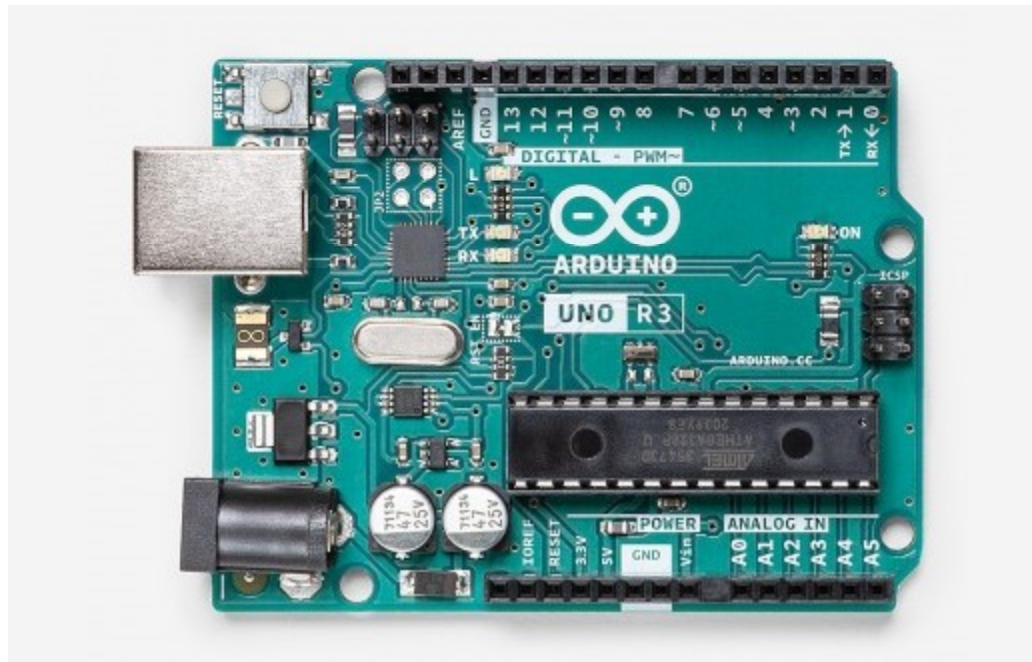
Embedded Board

- Microcontroller
- Power
- Peripherals connector

Embedded Board

- Arduino Uno R3
- Arduino Mega 2560 R3
- Arduino Nano
- Arduino Due
- Arduino Zero
- Arduino Micro
- Arduino Leonardo

Arduino Uno R3



Arduino Uno R3

| | |
|-----------------------------|---|
| Microcontroller | ATmega328P |
| Operating Voltage | 5V |
| Input Voltage (recommended) | 7-12V |
| Input Voltage (limit) | 6-20V |
| Digital I/O Pins | 14 (of which 6 provide PWM output) |
| PWM Digital I/O Pins | 6 |
| Analog Input Pins | 6 |
| DC Current per I/O Pin | 20 mA |
| DC Current for 3.3V Pin | 50 mA |
| Flash Memory | 32 KB (ATmega328P) of which 0.5 KB used by bootloader |
| SRAM | 2 KB (ATmega328P) |
| EEPROM | 1 KB (ATmega328P) |
| Clock Speed | 16 MHz |
| LED_BUILTIN | 13 |