

## Most common MCU brands and their famous families

### Altera:-

Altera's corporation is a manufacturer of programable logic devices. One of their most popular processor families is 'Nios', such as Nios V which is based on the RISC-V ISA.

### ARM:-

ARM (Advanced RISC Machines) is a British semiconductor and software design company. Its primary business is the design of CPUs, but it does not manufacture them, it only sells the designs and the license to use them to other vendors such as 'Apple'.

Its most famous CPU families are: 'Neoverse' (infrastructure processors), 'Cortex-A' (application processors), 'Cortex-R' (real-time processors), 'Cortex-M' (microcontroller processors).

### Atmel:-

Atmel is a company focused on embedded systems built around microcontrollers. Some of the microcontrollers they produce are: 8-bit AVR, 32-bit ARM based, and 8-bit Intel 8051 derivatives.

Atmel is utilized in many fields such as: communications, computer networking, industrial, automotive, and military.

## Holtek:-

Holtek is a leading company in producing 8-bit and 32-bit microcontrollers and peripherals. Holtek microcontrollers are in home appliances including brands like Siemens, Futaba , and Sony.

Some of Holtek microcontroller devices:

- HT32F51XX ARM M3 core based 32-bit series
- HT85F22XX 8051 core based 8-bit series
- HT46RXX A/D type series
- HT46FXX Flash A/D type series
- HT48RXX I/O type series
- HT48FXX Flash I/O type series
- BS8XXX Touch IC series

## Infineon:-

Infineon is the largest semiconductor manufacturer in Germany. The company separated from Siemens in 1999. Infineon provides semiconductors and systems for automotive and industrial sectors, as well as security products. In the automotive section, Infineon's products are used in powertrains (engine and transmission control), comfort electronics, as well as safety systems.

Some of its products: 8-bit XC800 family, 16-bit XE166 family and XC2000 family for automotive applications, 32-bit XMC4000, and TriCore family.

## Intel:-

Intel is the leading company in the computer industry. It designs, manufactures, and sells computer components and related products to business and consumer markets.

Some of its famous microcontrollers' families:

- MCS-48 8048 family
- MCS-51 8051 family
- MCS-96 8096 family

## Raspberry Pi:-

It's a series of small computers, Some of it's microcontrollers: 32-bit ARM Cortex-M0+ RP2040, 32-bit ARM Cortex-M33 RP2350.

## Sony:-

Sony is the largest manufacturer of image sensors, and the second largest camera manufacturer. Also involved in semiconductor manufacturing.

## Texas Instruments:-

Texas instruments Incorporated is one of the largest 10 companies in the semiconductor industry, as it's focused on developing embedded processors.

Some of its microcontroller families:

- 4-bit TMS1000
- 8-bit TMS370
- 16-bit MSP430
- 32-bit :-

- MSPM0 series (ARM Cortex-M0+)
  - TMS320 (DSP)
  - Stellaris (ARM Cortex-M3)
  - Tiva C series
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PIC16F877A

VS

TM4C123GH6PM

### PIC16F877A:-

This chip executes the instruction in the average of 200 nanosecond, is easy to program as it has only 35 single word instructions, has 40 or 44 pins, and is a CMOS FLASH-based 8-bit microcontroller.

This chip features 256 bytes of EEPROM data memory, self-programming, an ICD (in-circuit debugger), 2 8-bit timers, one 16-bit timer, 2 comparators, 8 channels of 10-bit A/D converter, 2 capture/compare/PWM functions, the synchronous serial port can be configured either as a 3-wire serial peripheral interface (SPI) or as a 2-wire Inter-integrated circuit (I2C), and a Universal Asynchronous Receiver Transmitter (USART). Its operating voltage is 2 – 5.5 V, RAM equals 368 byte, and program memory size is 14 kilobytes.

It's great for advanced level A/D applications in automotive, appliances, and consumer applications.

## TM4C123GH6PM:-

This chip is based on the ARM Cortex-M4 architecture, with a 32-bit processor with up to 80 MHz frequency, 256 bytes FLASH memory for program storage, 32 kilobytes of SRAM for data storage,

This chip features a floating-point unit, 43 GPIO (General Purpose Input Output) pins, 12 channels of 12-bit A/D converter, 2 analog comparators, 8 UARTs, 6 I2Cs, 4 SPI, PWM, USB 2.0, 6 general purpose timers, 2 watchdog timers, real-time clock, CAN (Control Area Network), and an Ethernet MAC.

Obviously, it has more features than the previous MCU, but all comes at a cost, and the decision depends on the needs of the consumer.

This chip is utilized in a lot of fields including industrial automation, consumer electronics, automotive systems, robotics, home automation systems, and IOT devices (Internet Of Things).