MICROPROCESSOR AND GRAPHIC CARDS

By

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MICROPROCESSOR

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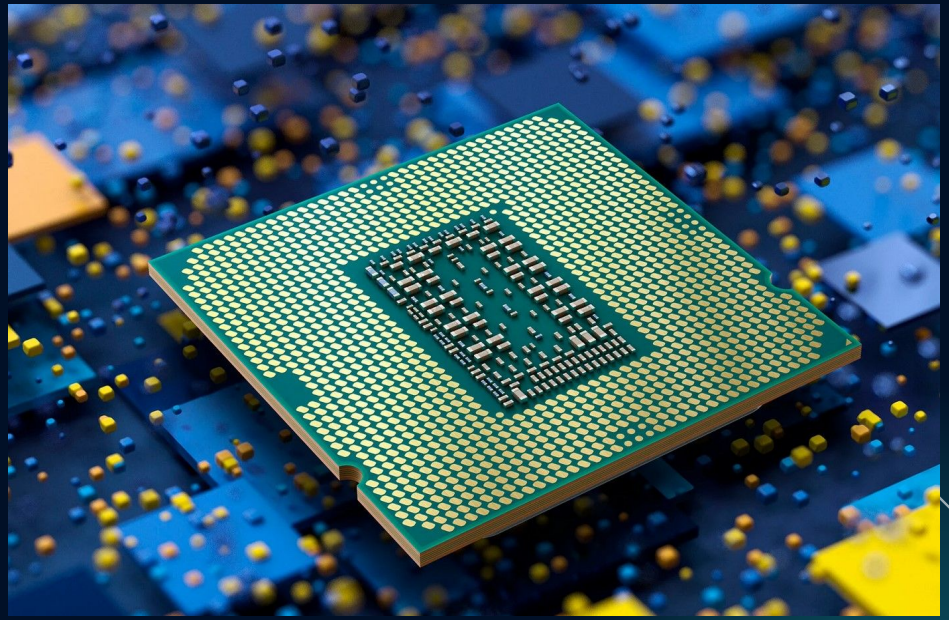
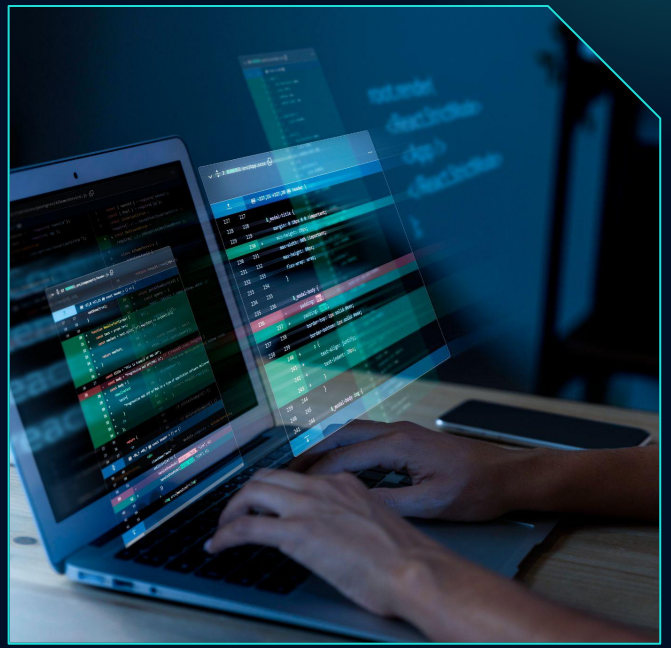
WHAT IS,FUNCTIONS AND HISTORY

- Integrated circuit
- “Brain” computer
- Operative System



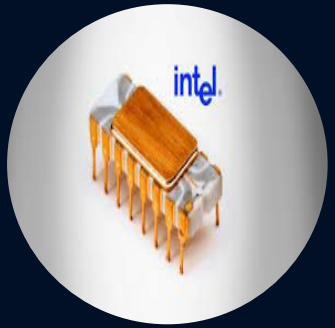
FUNCTIONS

Retrieve,retrieve, interpret, carry out instructions, and operate as a system calculator



HISTORY

"Ted" Hoff



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02

CHARACTERISTICS

UNITS

CPU

Central Unit

ALU

Logic arithmetic unit

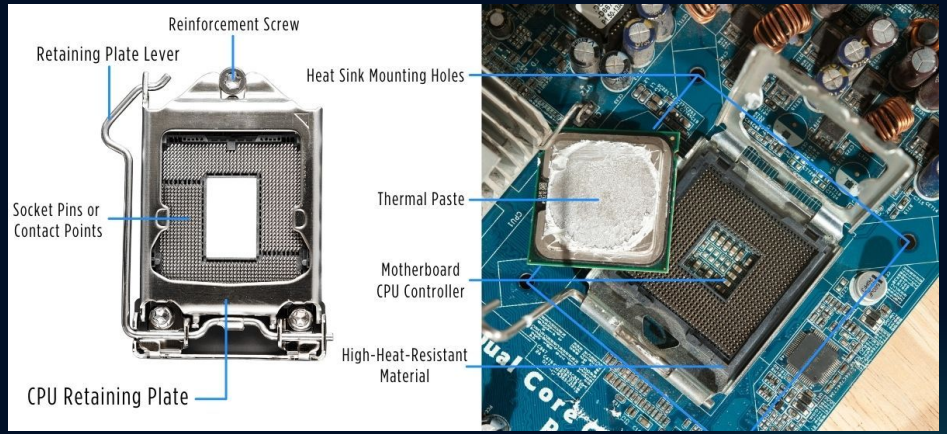
FPU

Floating point unit

SPECIFIC SOCKET

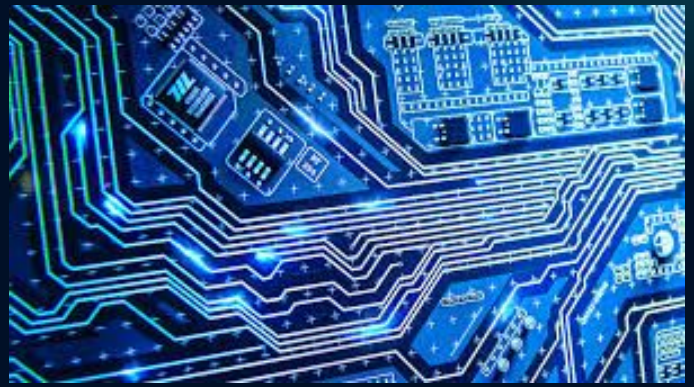
- The microprocessor is usually connected through a specific socket on the computer's motherboard

- Endpoint for sending or receiving data across a network



HEALING SYSTEM

cooling system is incorporated that consists of a heat sink



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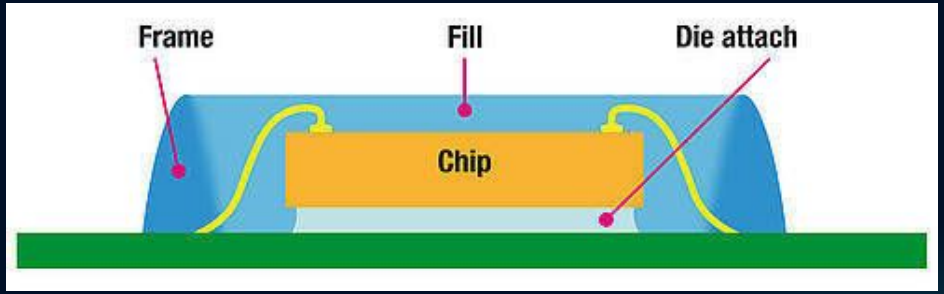
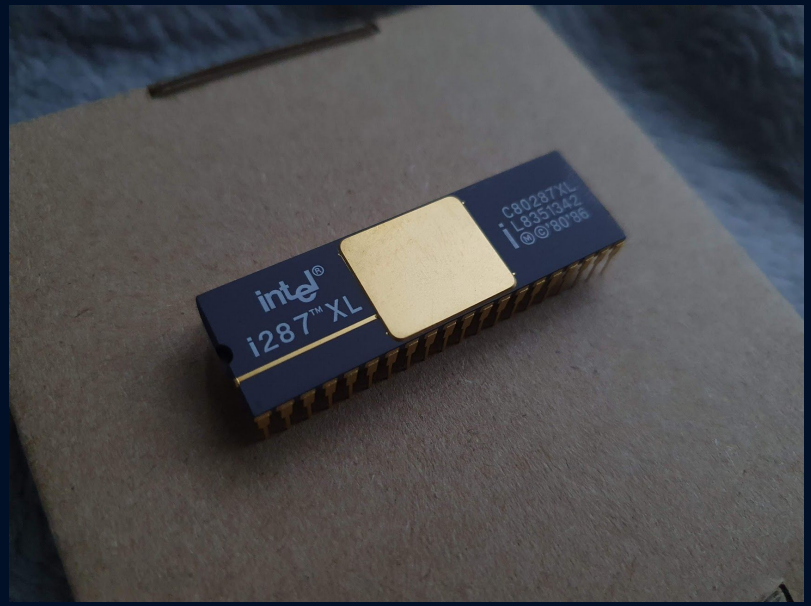
ARCHITECTURE

ENCAPSULATION

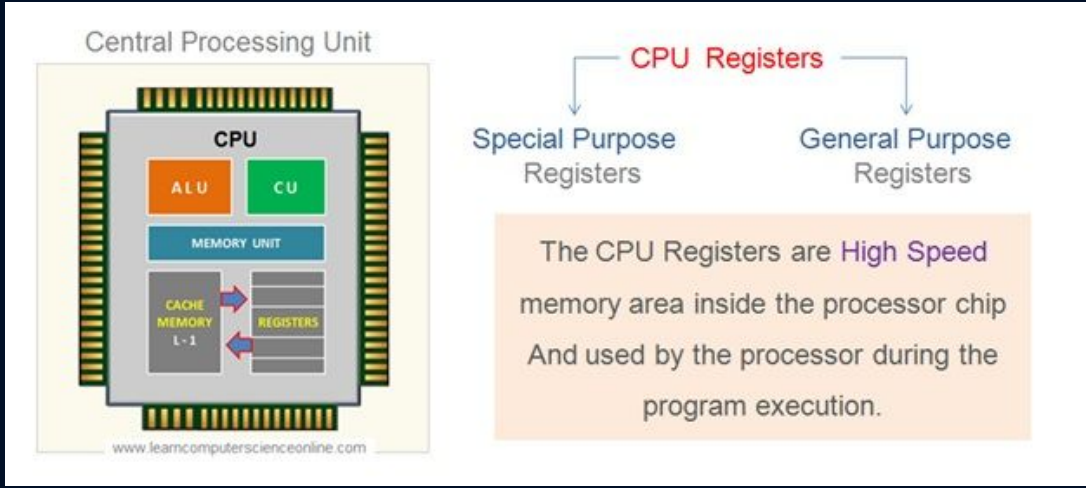
A plastic barrier surrounding the silicon of the microprocessor, preventing deterioration caused by exposure to air and elements (oxidation)



MATHEMATICAL COPROCESSOR

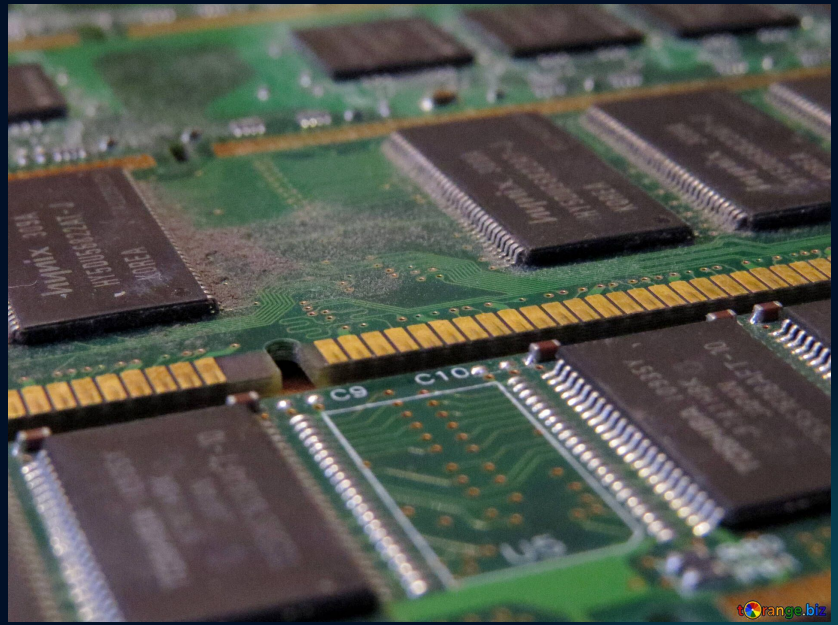


REGISTER


Central Processing Unit
CPU
ALU
CU
MEMORY UNIT
CACHE MEMORY L-1
REGISTERS
www.learncomputerscienceonline.com
CPU Registers
Special Purpose Registers
General Purpose Registers
The CPU Registers are High Speed memory area inside the processor chip And used by the processor during the program execution.

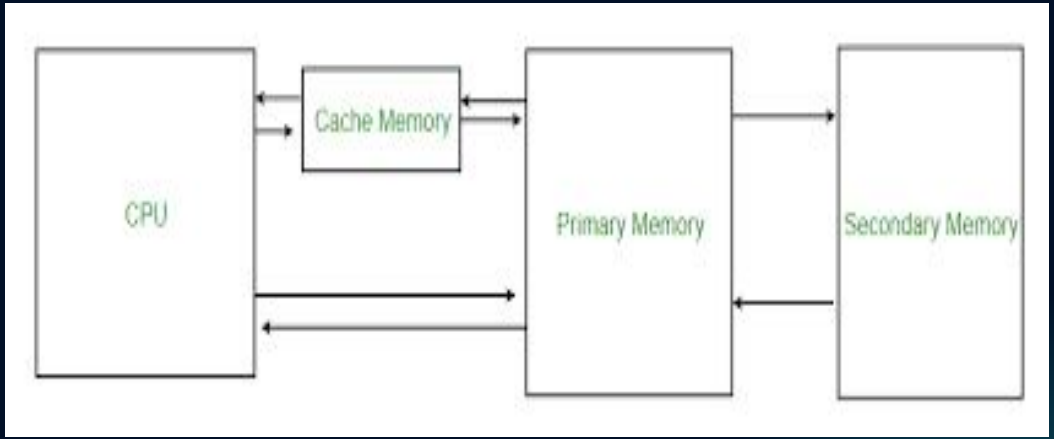
MEMORY

The location where the processor retrieves instructions to execute programs and computer data



CASH MEMORY

execute operations required for its internal functions



PORTS

Connections between the processor and the external world, functioning analogously to a telephone line.

04

TYPES OF MICROPROCESSOR

TYPES OF MICROPROCESSOR

single-core	Simple tasks, basic devices
dual-core	Light multitasking, budget devices
quad-core	General tasks, basic gaming
hexa-core	Intensive multitasking, advanced gaming
octa-core	Heavy workloads, multimedia editing
Deca-Core and above	Servers, AI, workstations

05

COMMERCIAL MODELS

Procesador Intel® Core™ Ultra 7 265K

Procesador Intel® Core™ i3-10105

01

WHAT IS A GRAPHIC CARD?

Graphics Cards essential components in modern computers.

Designed primarily for processing graphics...

Also widely used for gaming, professional work...

Rendering videos... for display.

Critical roles in tasks like AI development, video editing, and scientific simulations

FUNCTIONS OF THE GRAPHICS CARDS

FUNCTIONS

Rendering Images and Graphics

Graphics rendering is the process by which the GPU converts digital data into images that can be displayed on a screen. This includes 2D and 3D graphics.

Parallel Processing

Graphics Cards are particularly good at parallel processing, meaning they can perform many operations simultaneously.

Offloading Work from the CPU

By handling graphically intensive tasks, Graphics Cards free up the CPU to perform other general-purpose computing tasks, improving overall system performance.

FUNCTIONS

Video Decoding and Encoding

Graphics Cards also have specialized units for video decoding and encoding, which accelerates the process of compressing and decompressing video files. This is important for real-time video streaming (e.g., on platforms like YouTube or Netflix)

Ray Tracing

Ray tracing is an advanced rendering technique that realistically simulates how light interacts with objects in a 3D environment, producing effects like accurate shadows, reflections, and refractions.

Real-Time Rendering

Real-time rendering is a key function in applications like video games, simulators, and augmented/virtual reality. In these applications, the GPU must generate graphics instantly to provide an interactive and dynamic experience.

02

CHARACTERISTICS OF THE GRAPHIC CARDS

- GPU Architecture: The architecture directly impacts performance, efficiency, and support for technologies like **ray tracing** and AI-enhanced graphics.

- CUDA Cores / Stream Processors : These cores or processors are responsible for performing the graphical computations.

- Base Clock and Boost Clock: A higher clock speed usually translates into better performance, but factors like cooling also influence the ability to maintain high speeds.

GPU architecture emphasizes throughput via parallelism, while CPU architecture focuses on low-latency sequential execution and flexibility. GPUs specialize in rapid graphical and math operations and have thousands of smaller cores, while CPUs are more generalized with a few larger cores.

03

TYPES OF GRAPHICS CARDS

INTEGRATED GRAPHICS CARDS AND DEDICATED GRAPHICS CARDS

Main Components

GPU

Graphics Processing Unit

VRAM

Video Random Access Memory

PCI EXPRESS

Peripheral Component Interconnect Express

VRM

Voltage Regulator Modules

PCB

Printed Circuit Board

COOLING SYSTEM

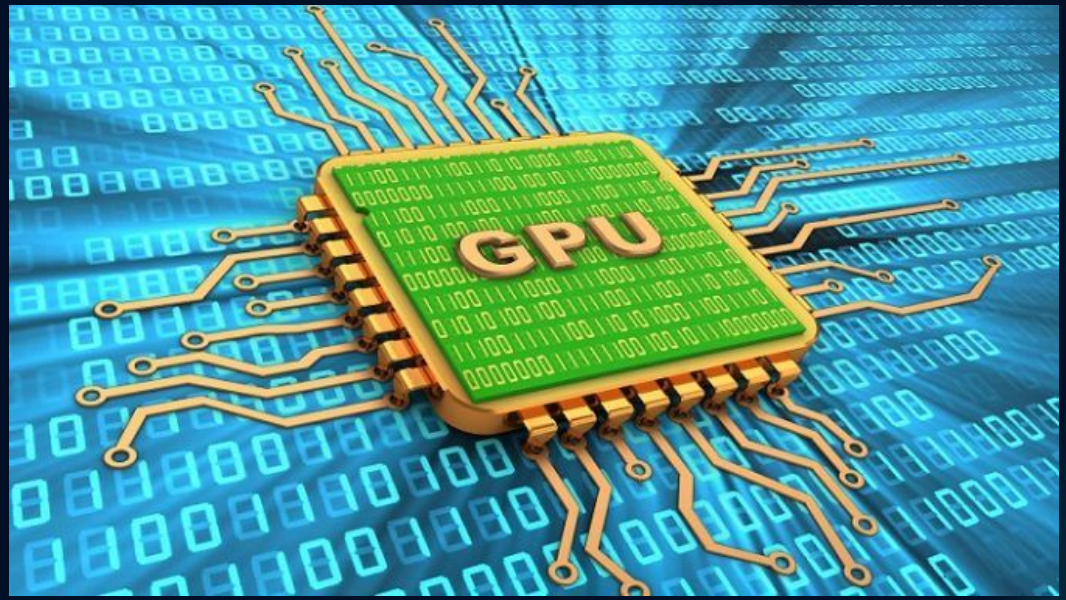
Fans, Heatsinks, Thermal paste

OUTPUT PORTS

For example: HDMI, DisplayPort, USB-C

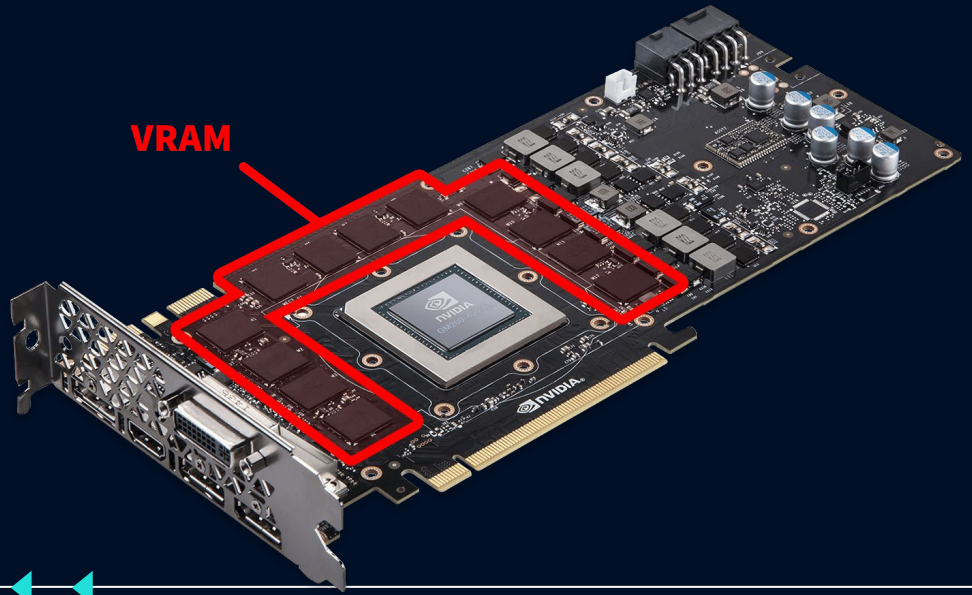
GPU

Like the “Core” of the graphic card



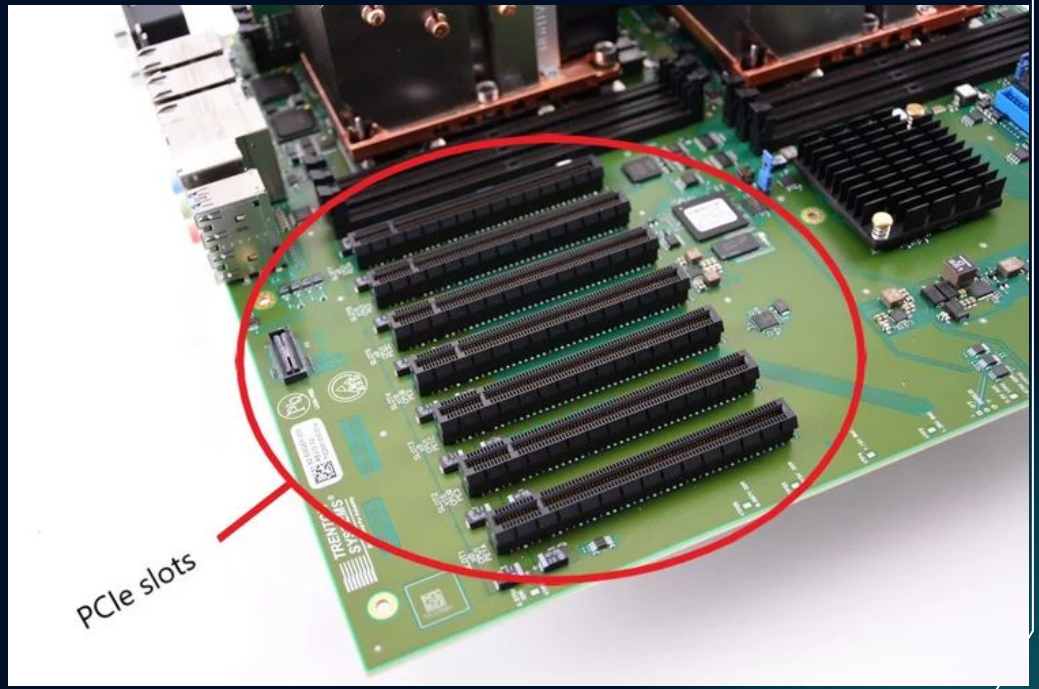
VRAM

VRAM is dedicated memory used by the GPU to store textures, frame buffers, and other graphical data.



PCI EXPRESS

PCIe Connector: A slot that connects the graphics card to the motherboard.

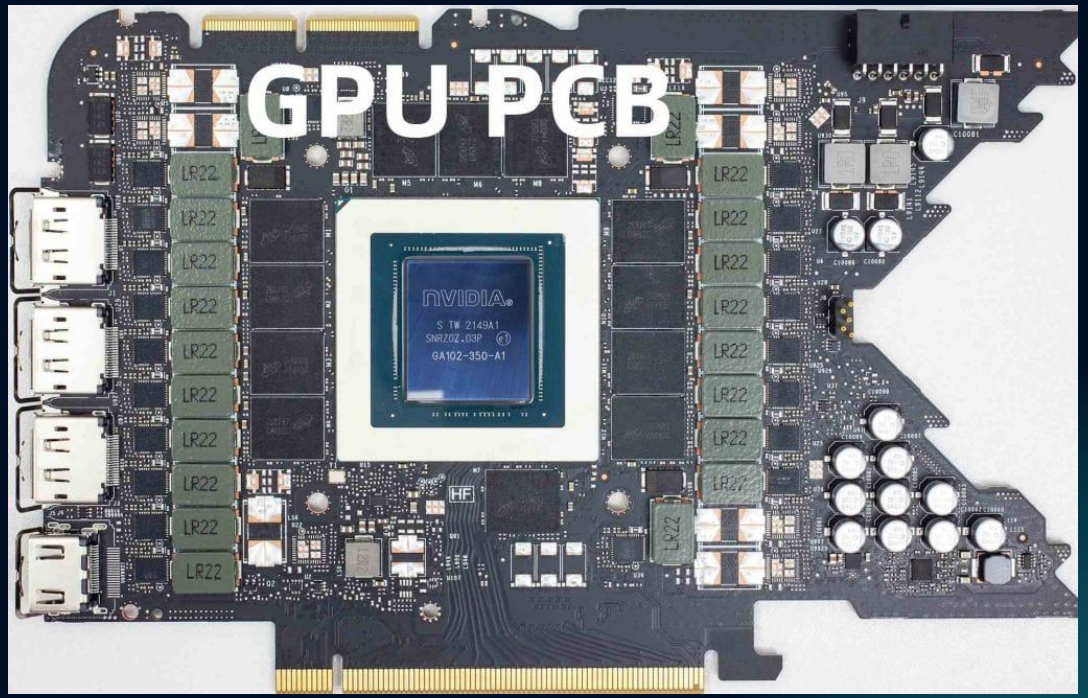


VRM

Controls the power delivered to the graphics card, ensuring stability and efficiency.

PCB

It is the base where all the electronic components are soldered. Designed to minimize electrical interference and optimize data flow.



COOLING SYSTEM

This includes fans, heat sinks, or liquid cooling systems used to dissipate the heat generated by the GPU.

OUTPUT PORTS

Ports for connecting to monitors

04

COMMERCIAL MODELS

Gigabyte NVIDIA GeForce RTX 4070

ASUS AMD Radeon RX 7900

MSI NVIDIA GeForce RTX 4080