



Икономически университет - Варна

Катедра „Информатика“

КОМПЮТЪРНИ АРХИТЕКТУРИ

ДЪННА ПЛАТКА



Ключови характеристики

- **Форм фактор**
- **Сокет на процесора**
- **Чипсет**
- **Слотове за оперативна памет**
- **Слотове за допълнителни карти**
- **Портове за запомнящи и оптични устройства**
- **Конектори за външни устройства**
- **Конектори за захранване**
- **Firmware**

Форм фактор

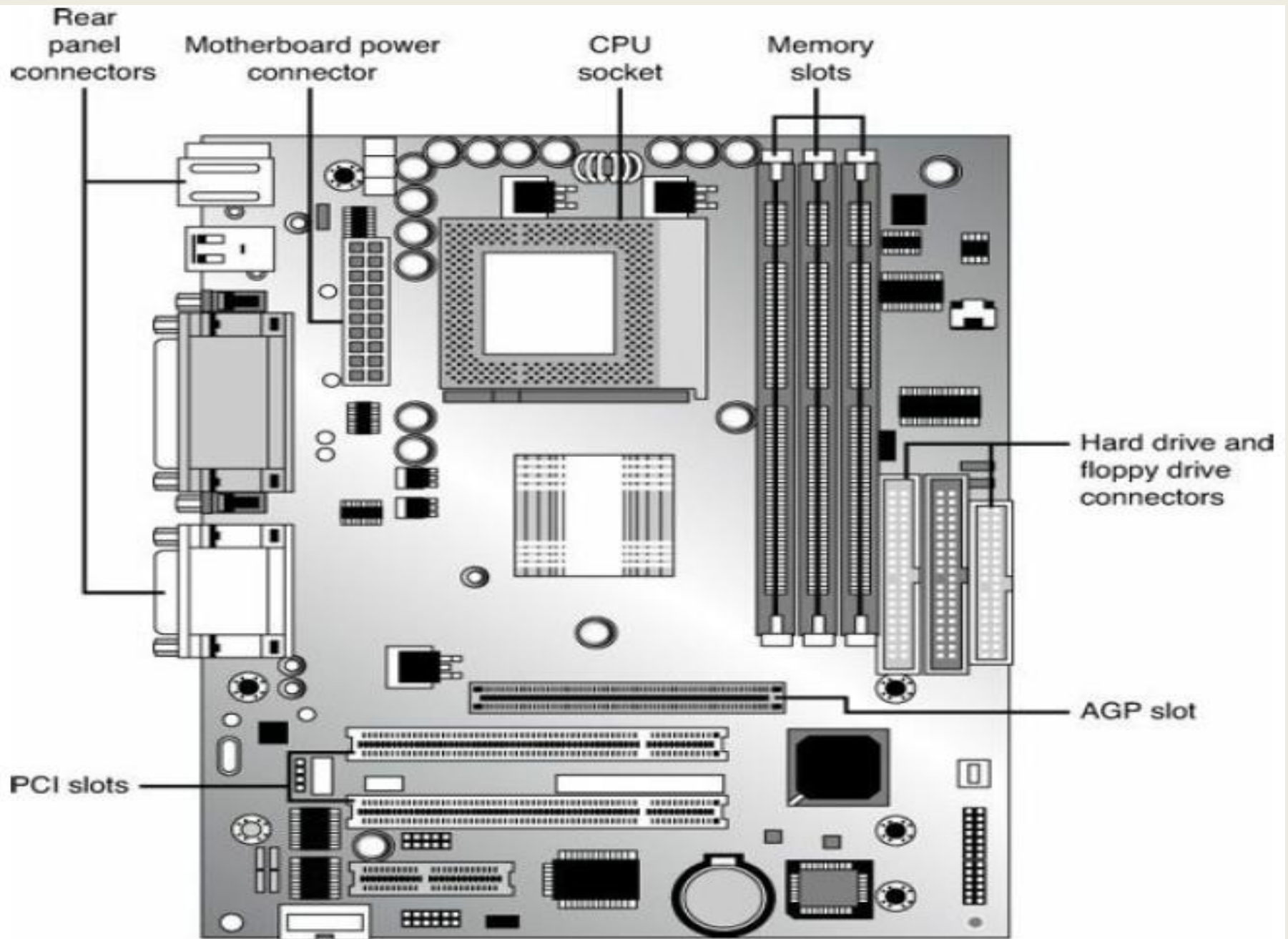
- Форма и размер на дънната платка
- Разположение на компонентите
- Съвместимост с кутия и захранване
- Най-подходящи (ATX и Micro ATX)

Form Factor	Max. Width	Max. Depth	Max. Area	Size Comparison
ATX	12.0 in. (305mm)	9.6 in. (244mm)	115 sq. in. (743 sq. cm)	—
Mini-ATX	11.2 in. (284mm)	8.2 in. (208mm)	92 sq. in. (593 sq. cm)	20% smaller
microATX	9.6 in. (244mm)	9.6 in. (244mm)	92 sq. in. (595 sq. cm)	20%
FlexATX	9.0 in. (229mm)	7.5 in. (191mm)	68 sq. in. (435 sq. cm)	41% smaller

Форм фактор

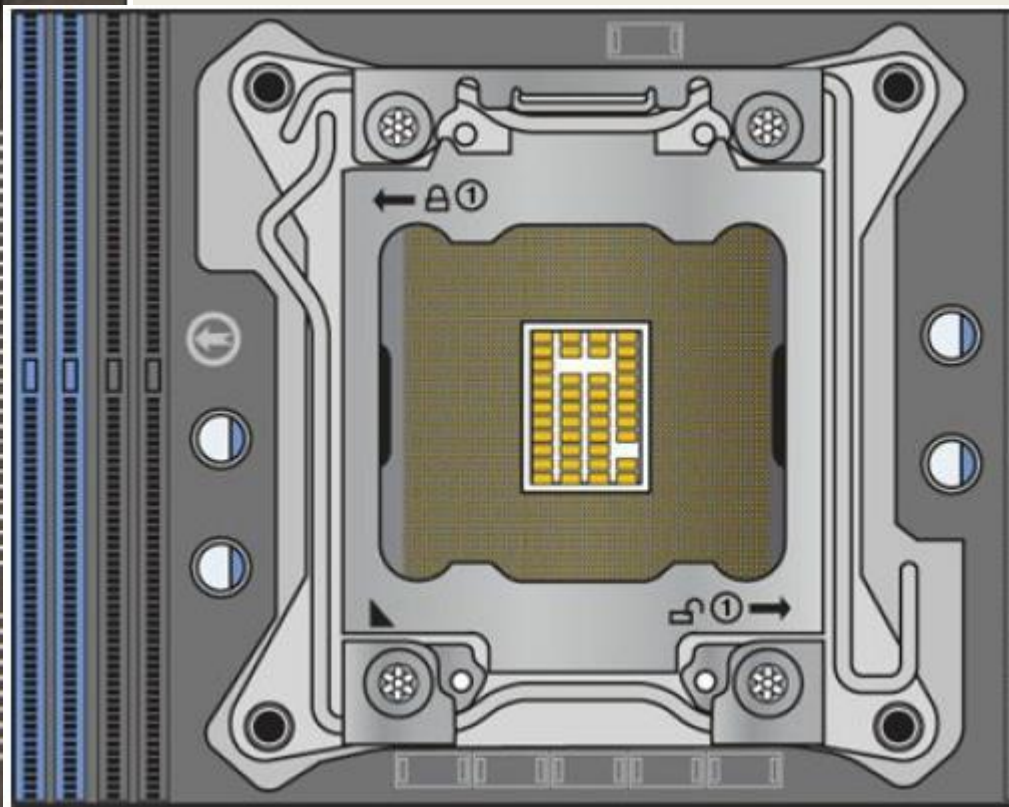
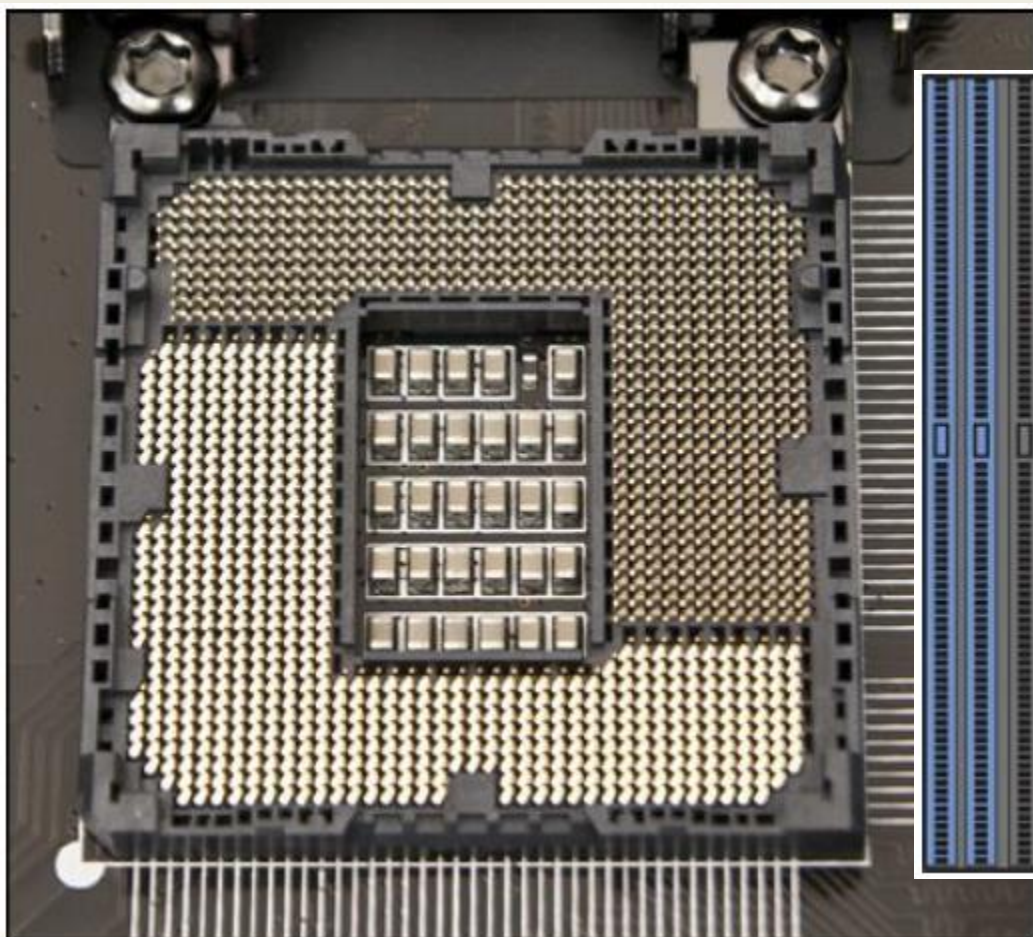
- Други съвременни форм фактори - FlexATX, DTX/Mini-DTX и ITX/Mini-ITX

Form Factor	Max. Width	Max. Depth	Max. Area	Size Comparison to FlexATX
DTX	8.0 in. (203mm)	9.6 in. (244mm)	77 sq. in. (495 sq. cm)	14% larger
FlexATX	9.0 in. (229mm)	7.5 in. (191mm)	68 sq. in. (435 sq. cm)	—
ITX	8.5 in. (215mm)	7.5 in. (191mm)	64 sq. in. (411 sq. cm)	6% smaller
Mini-DTX	8.0 in. (203mm)	6.7 in. (170mm)	54 sq. in. (346 sq. cm)	21% smaller
Mini-ITX	6.7 in. (170mm)	6.7 in. (170mm)	45 sq. in. (290 sq. cm)	34% smaller
Nano-ITX	4.7 in. (120mm)	4.7 in. (120mm)	22 sq. in. (144 sq. cm)	67% smaller
Pico-ITX	3.9 in. (100mm)	2.8 in. (72mm)	11 sq. in. (72 sq. cm)	83% smaller



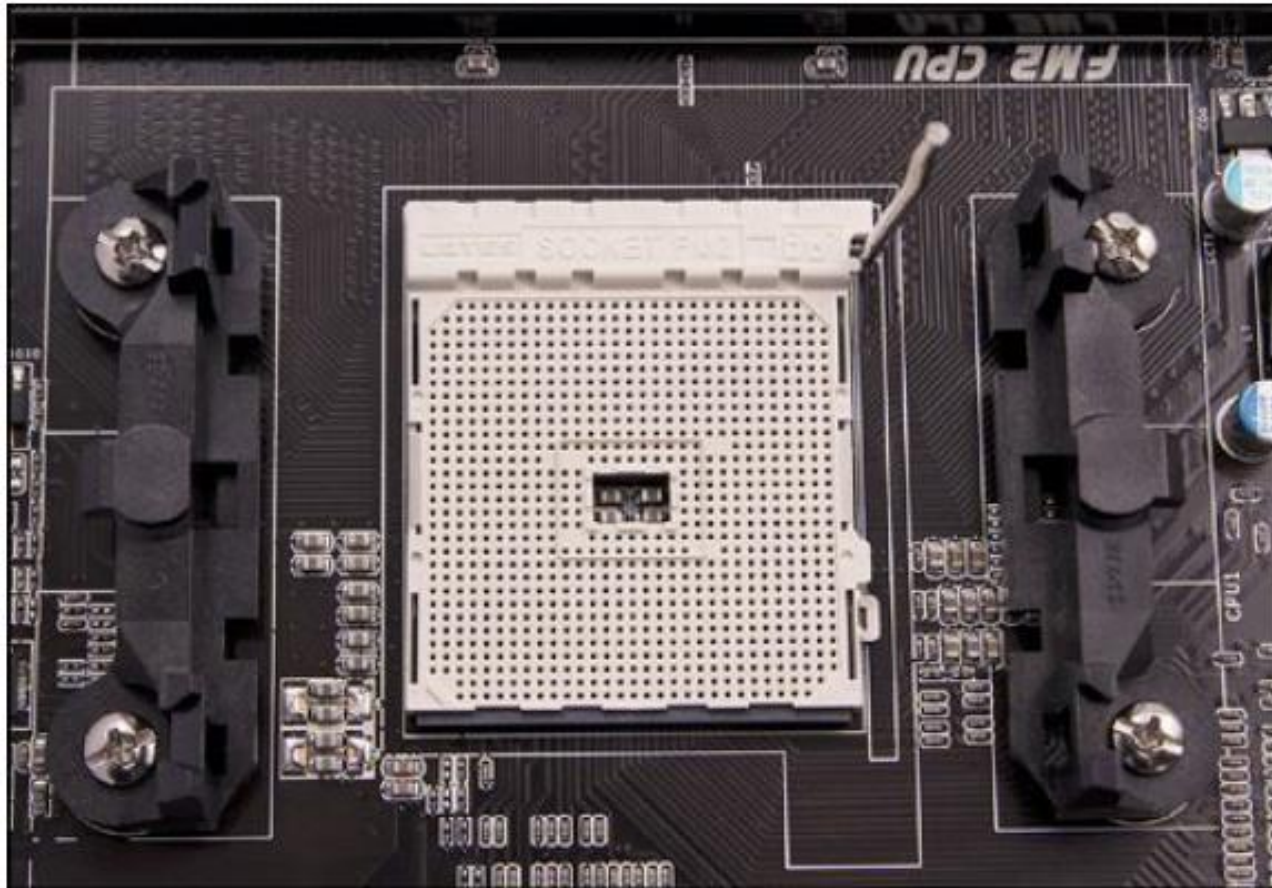
Сокет на процесора

- INTEL - LGA1155, LGA 2011



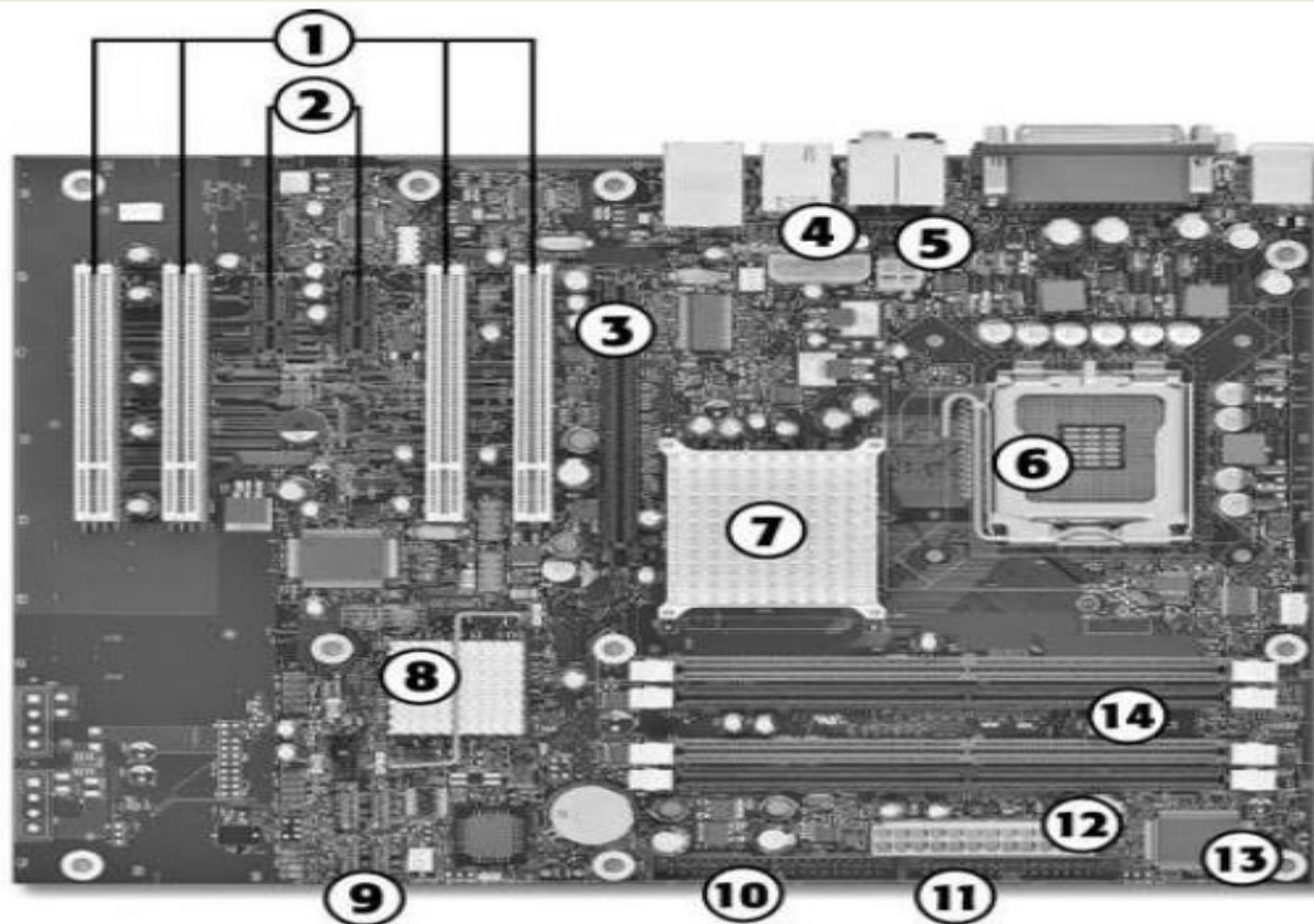
Сокет на процесора

- **AMD - AM3+, FM1, FM2**



Чипсет

- Набор от чипове, отговарящ за комуникацията.
- Производител и модел
- Най-подходящ е изборът на дънна платка с чипсет, поддържащ най-актуалните процесори
- Две различни платки с един и същ чипсет имат ли еднаква производителност?

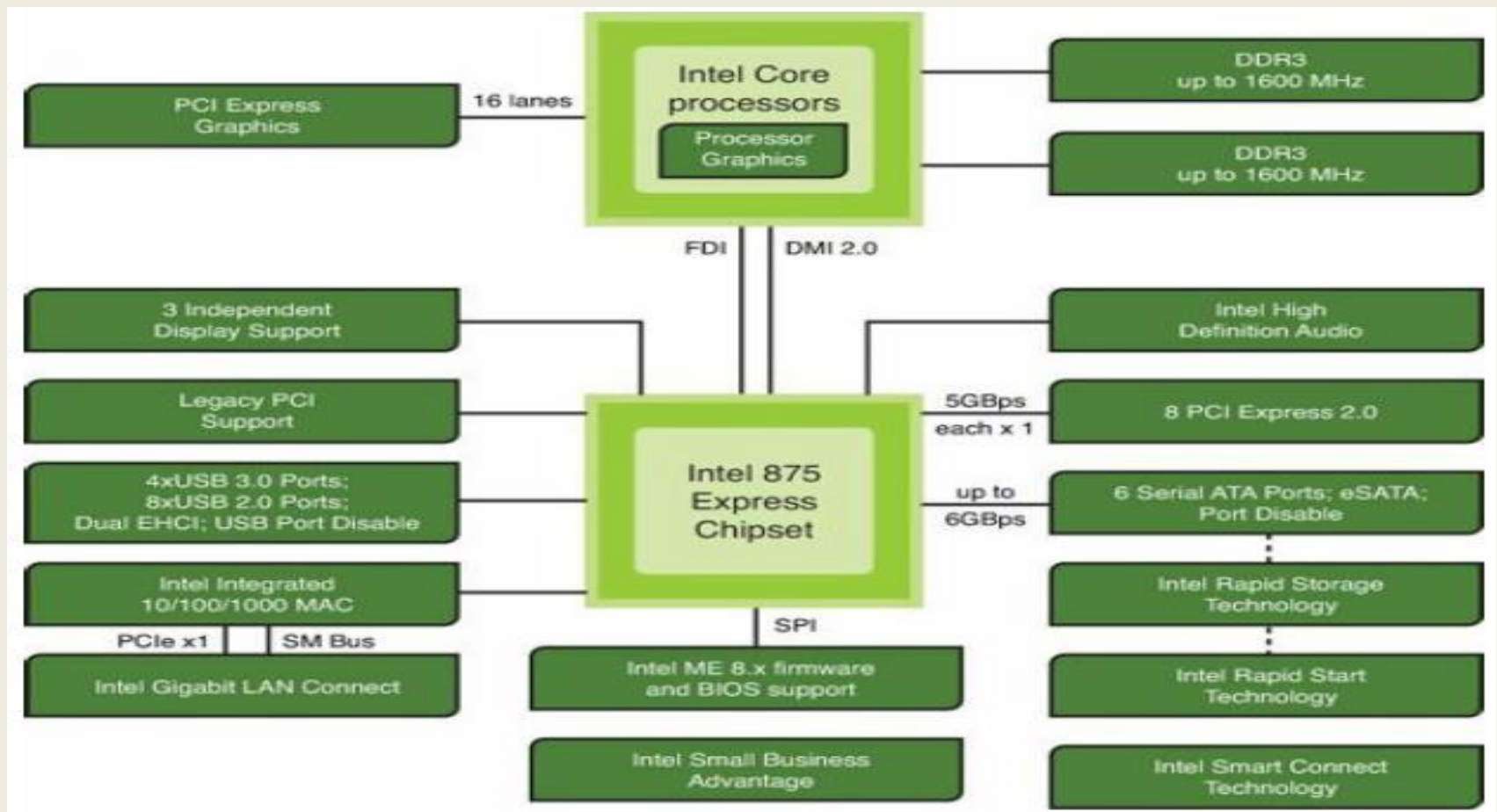


1. PCI expansion slots (4)
2. PCI Express x1 slots (2)
3. PCI Express x16 slot
4. Alternate power connector
5. ATX12V power supply connector
6. Socket LGA775
7. MCH (Memory Controller Hub) aka North Bridge

8. ICH (I/O Controller Hub) aka South Bridge
9. SATA/RAID host adapter connectors
10. ATA/IDE host adapter connector
11. Floppy controller connector
12. 24-pin ATX power supply connector
13. Super I/O chip
14. DDR2 DIMM sockets

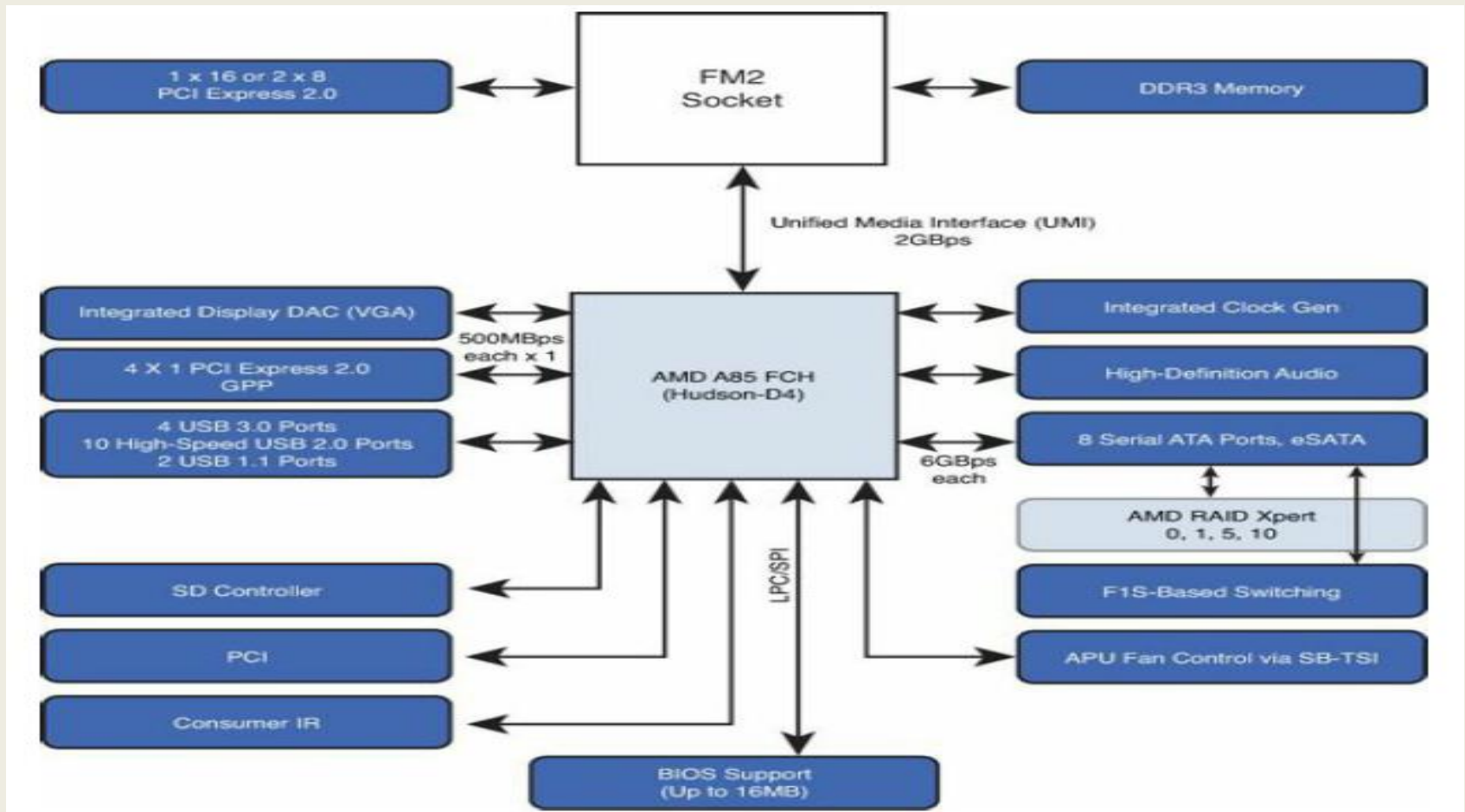
Чипсет

- Блок диаграма – Intel чипсет от 7х серия



Чипсет

- Блок диаграма - AMD чипсет от А сериите

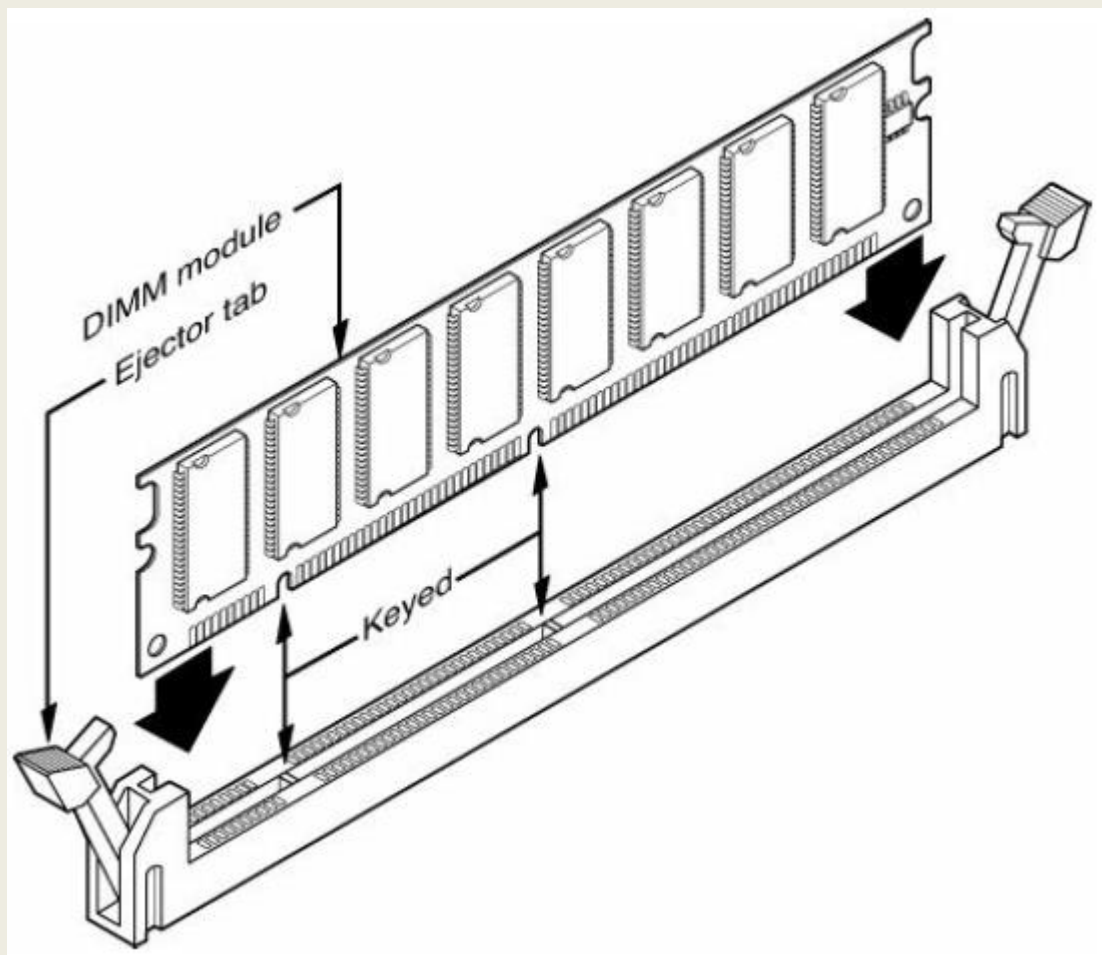


Слотове за оперативна памет

- Брой
- Скорост – MHz
- Капацитет – GB
- Тип памет - DDR3, DDR4
- Тип модул - DIMM, SODIMM
- Режим на работа - single-, dual-, triple- или quad-channel

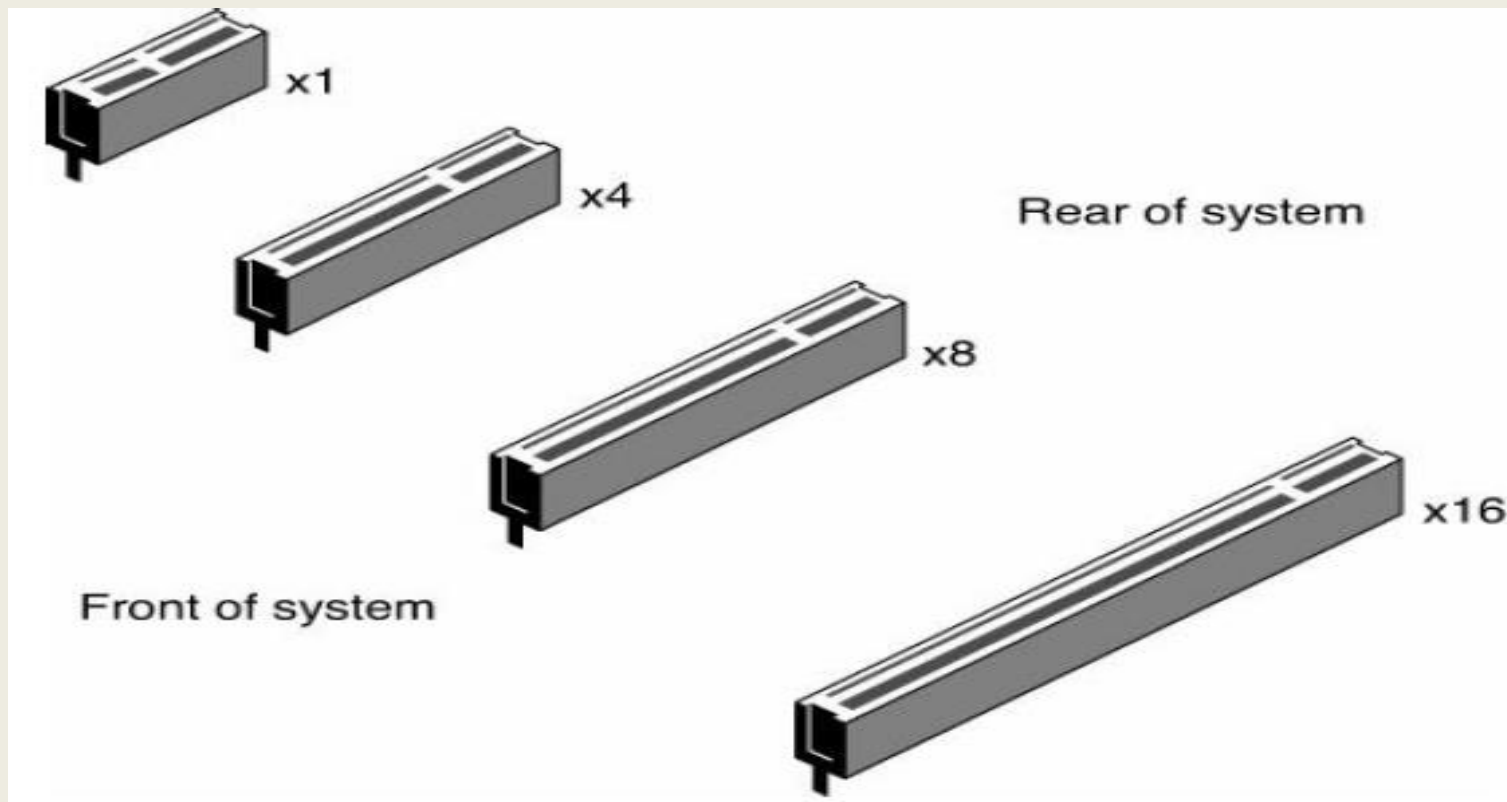
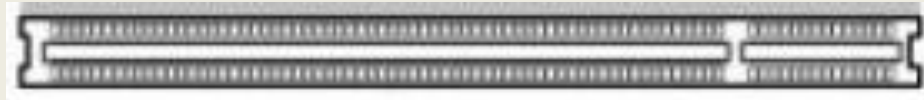


Слотове за оперативна памет



Слотове за допълнителни карти

- Брой
- Тип – PCI, PCIe(x1, x4, x8, x16, x32)

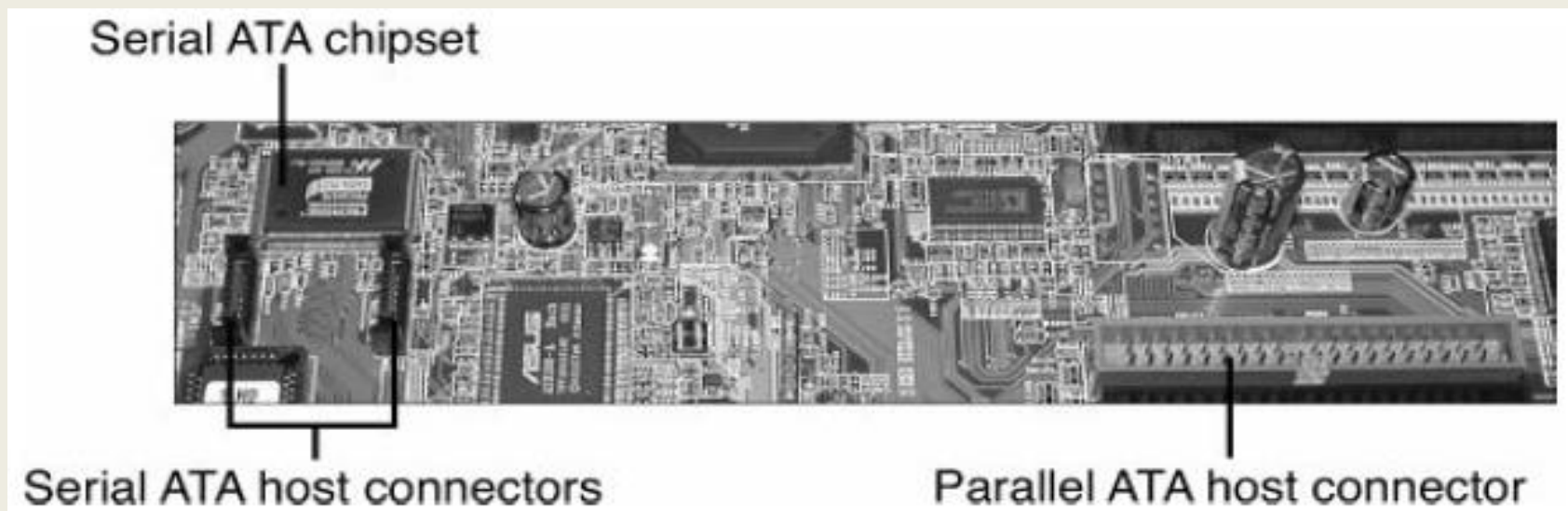


Слотове за допълнителни карти

PCI Bus Type	Bus Width (Bits)	Bus Speed (MHz)	Data Cycles per Clock	Bandwidth (MBps)
PCI	32	33	1	133
PCI 66MHz	32	66	1	266
PCI 64-bit	64	33	1	266
PCI 66MHz/64-bit	64	66	1	533
PCI-X 64	64	66	1	533
PCI-X 133	64	133	1	1,066
PCI-X 266	64	133	2	2,132
PCI-X 533	64	133	4	4,266
PCI Express 1.x	1	2,500	0.8	250
PCI Express 1.x	16	2,500	0.8	4,000
PCI Express 1.x	32	2,500	0.8	8,000
PCI Express 2.x	1	5,000	0.8	500
PCI Express 2.x	16	5,000	0.8	8,000
PCI Express 2.x	32	5,000	0.8	16,000
PCI Express 3.x	1	8,000	~0.98	1,000
PCI Express 3.x	16	8,000	~0.98	16,000
PCI Express 3.x	32	8,000	~0.98	32,000

Портове за запомнящи и оптични устройства

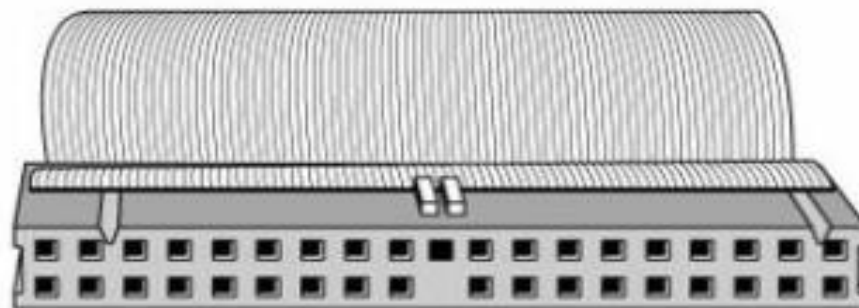
- Тип - ATA, SATA
- Скорост – SATA 1.5Gbps (150MBps), SATA 3Gbps (300MBps) и SATA 6Gbps (600MBps), обратна съвместимост



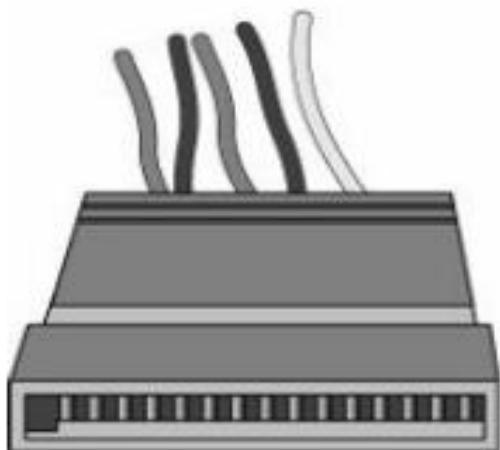
Кабели за запомнящи и оптични устройства



PATA power cable



PATA data cable



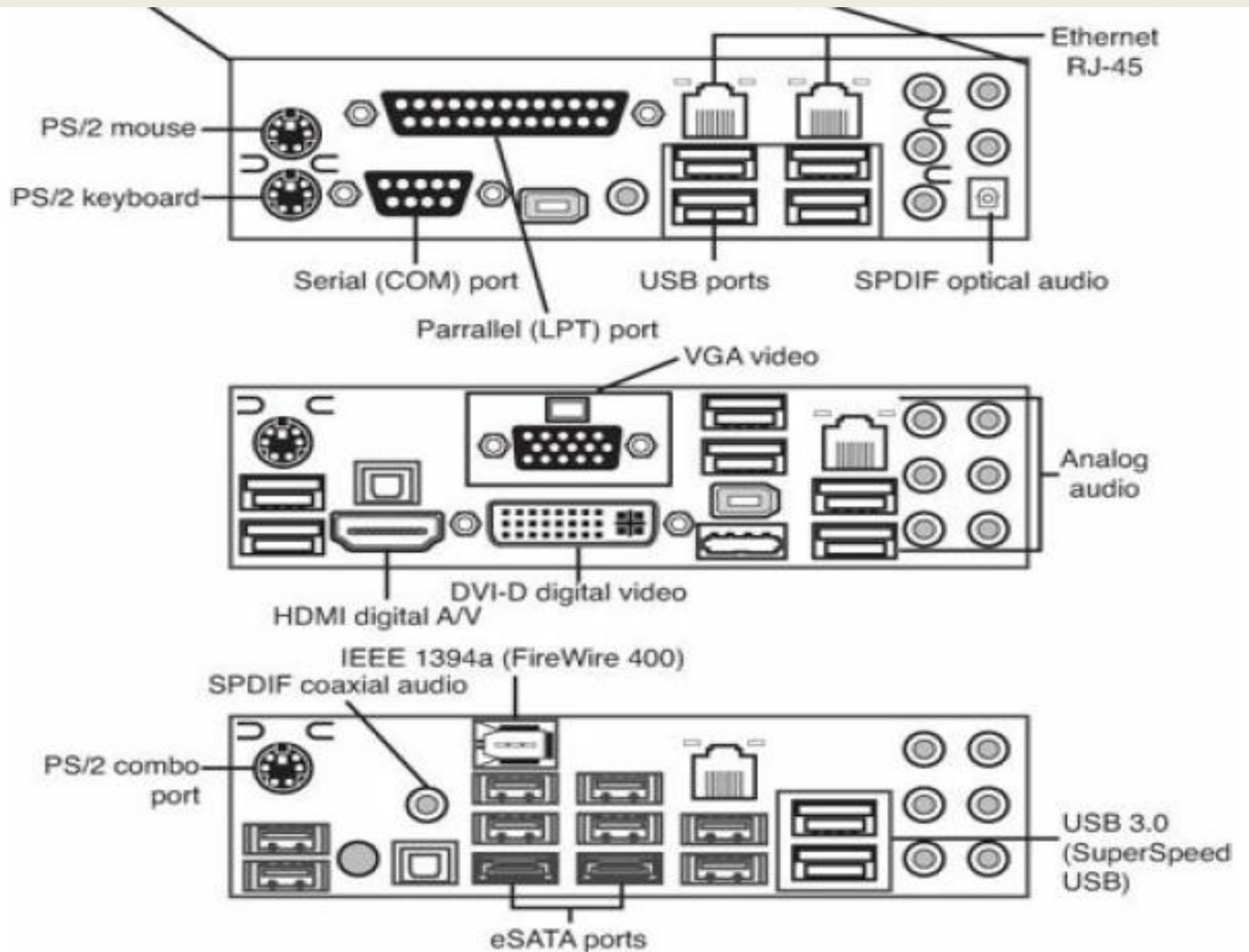
SATA power cable



SATA data cable

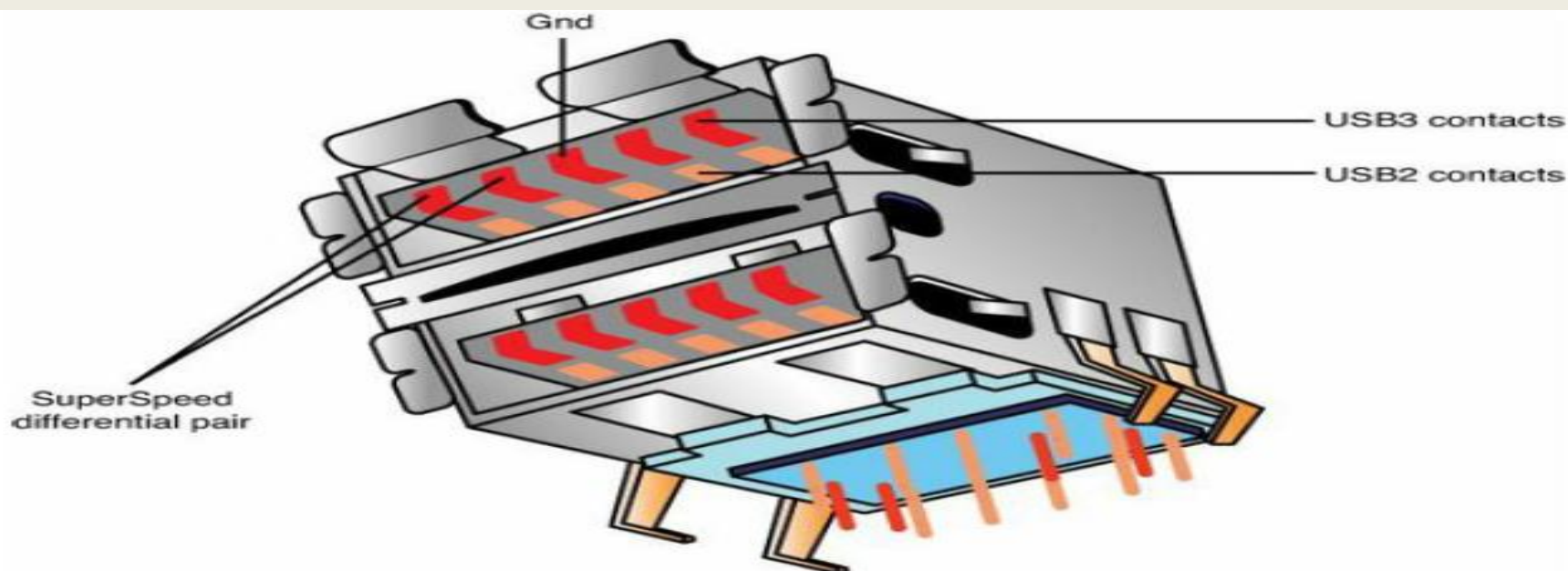
Конектори за външни устройства

Port Description	Connector Type	Connector Color
PS/2 mouse port	6-pin Mini-DIN	Green
PS/2 keyboard port	6-pin Mini-DIN	Purple
USB 2.0 ports	Dual Stack USB	Black
USB 3.0 ports	Dual Stack USB	Blue
Parallel port	25-pin D-Submini	Burgundy
Serial port	9-pin D-Submini	Teal
VGA analog video port	15-pin HD D-Submini	Dark blue
MIDI/Game port	15-pin D-Submini	Gold
Audio ports: L/R in, front L/R out, rear L/R out, center/LFE out, Microphone L/R in	1/8 in. (3.5mm) Mini-Phone	Light blue, lime green, black, orange, pink
S-Video TV out (not shown)	4-pin Mini-DIN	Black
IEEE 1394/FireWire port	6-pin IEEE 1394	Gray
10/100/1000 Ethernet LAN	8-pin RJ-45	Black
Optical S/PDIF audio out	TOSLINK	Black
DVI digital video out	DDWG-DVI	White
Digital S/PDIF audio out	RCA Jack	Orange
SCSI (not shown)	50/68-pin HD	Black
Dial-up modem Modem (not shown)	4-pin RJ-11	Black
Composite video out (not shown)	RCA Jack	Yellow
eSATA port	eSATA	Black

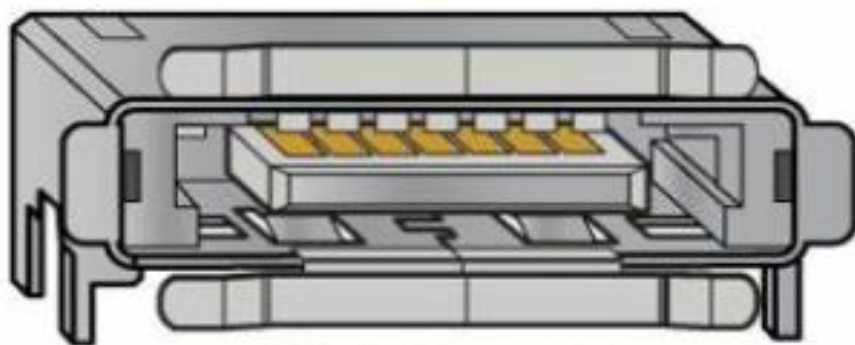
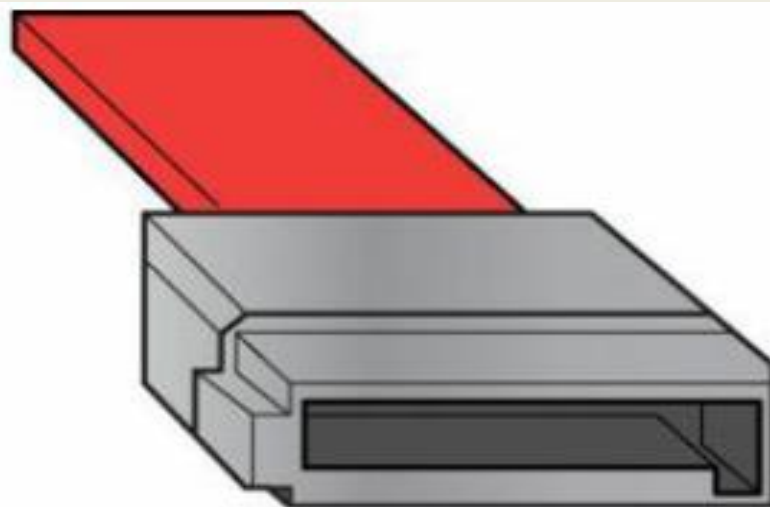
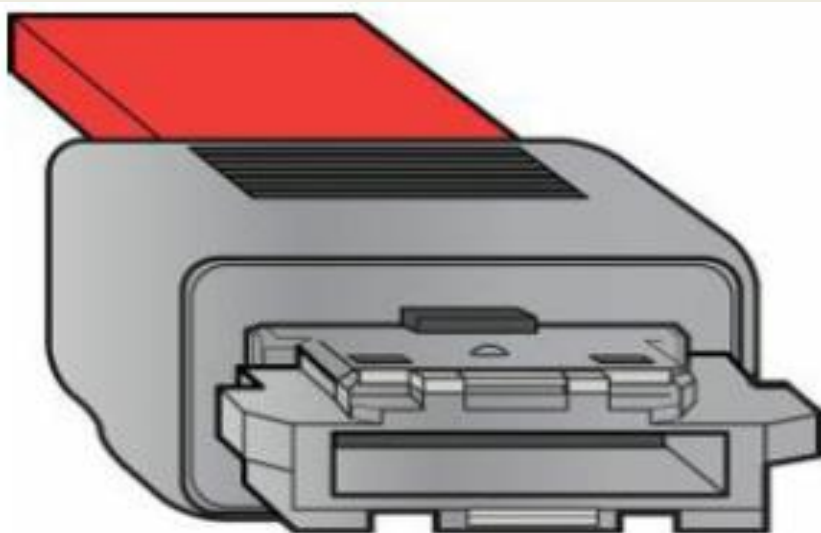


Конектори за външни устройства

Interface	Speed Terminology	Bits per Second	Bytes per Second
USB 1.1	Low-Speed	1.5Mbps	0.1875MBps
USB 1.1	Full-Speed	12Mbps	1.5MBps
USB 2.0	Hi-Speed	480Mbps	60MBps
USB 3.0	SuperSpeed	5Gbps	500MBps



Конектори за външни устройства



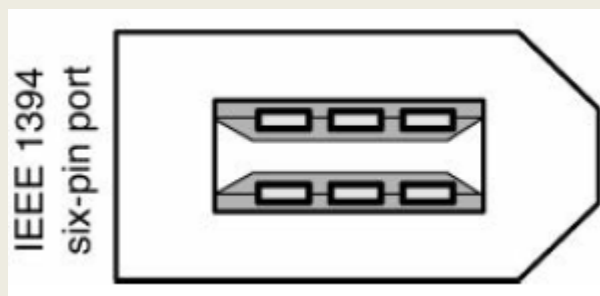
eSATA Connectors



Internal
SATA Connectors

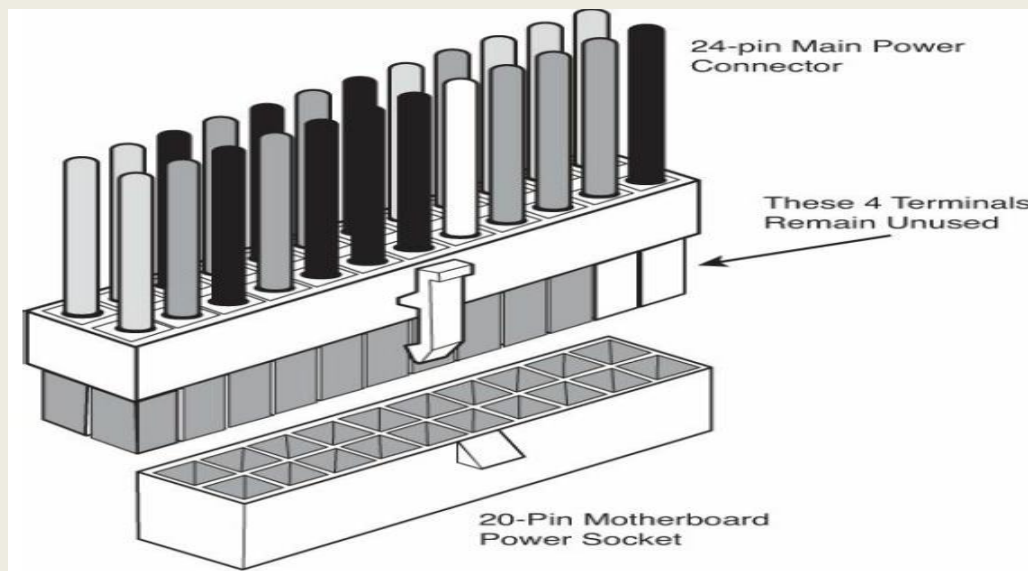
Конектори за външни устройства

	IEEE 1394a (FireWire 400)	IEEE 1394b S800 (FireWire 800)	IEEE 1394b S3200 (FireWire 3200)	USB 1.1	USB 2.0	USB 3.0
PC host required	No	No	No	Yes	Yes ¹	Yes ¹
Maximum number of devices	63	63	63	127	127	127
Hot-swappable	Yes	Yes	Yes	Yes	Yes	Yes
Maximum cable length (between devices)	4.5 meters	4.5 meters	4.5 meters	5 meters	5 meters	3 meters
Power available to devices	7W ²	7W	7W	2.5W	2.5W	4.5W
Transfer rate	400Mbps (50MBps)	800Mbps (80MBps)	3.2Gbps (320MBps)	12Mbps (1.5MBps)	480Mbps (60MBps)	5Gbps (500MBps)

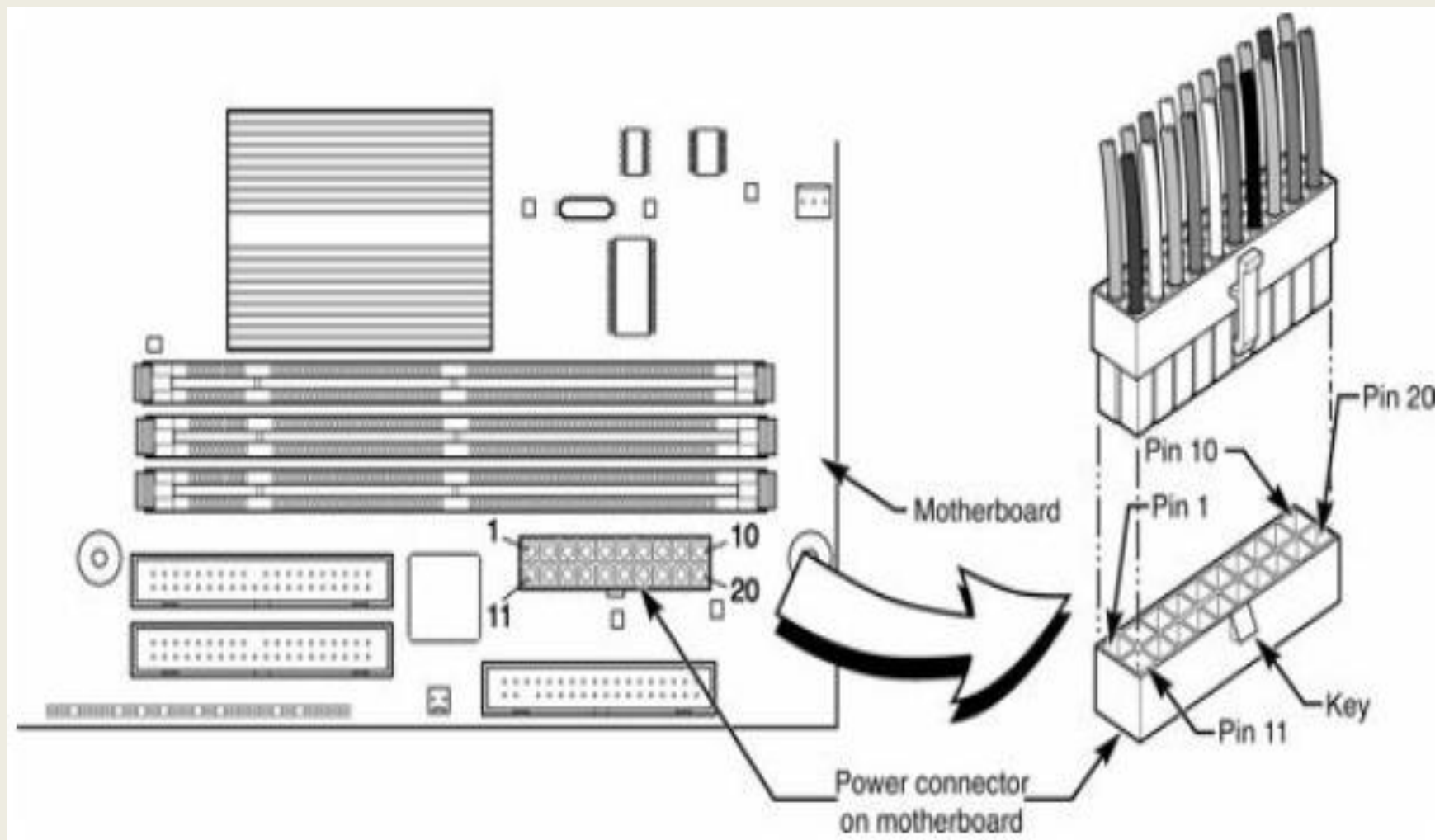


Конектори за захранване

- Тип – ATX 20-pin connector, 4-Pin +12V CPU Power Adapters



Конектори за захранване



Firmware

- **BIOS**
 - POST
 - Overclocking
 - Virtualization (Intel VT-x, AMD-V)
 - 3TB drive – UEFI BIOS
- **CMOS**
 - Дата и час
 - CPU и RAM настройки