



# Introduce to PC

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LOGO

# a PC . .

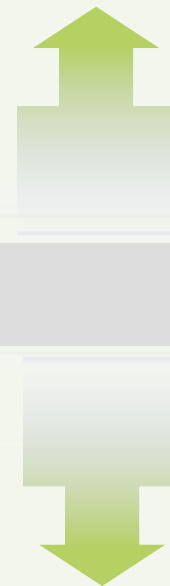
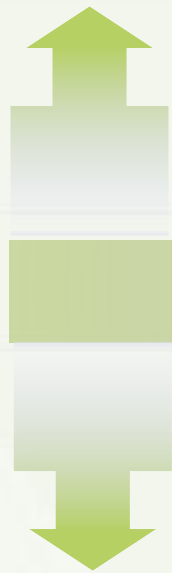


**Processor**

**Mainboard**

**Hardisk**

**RAM**



**PC**

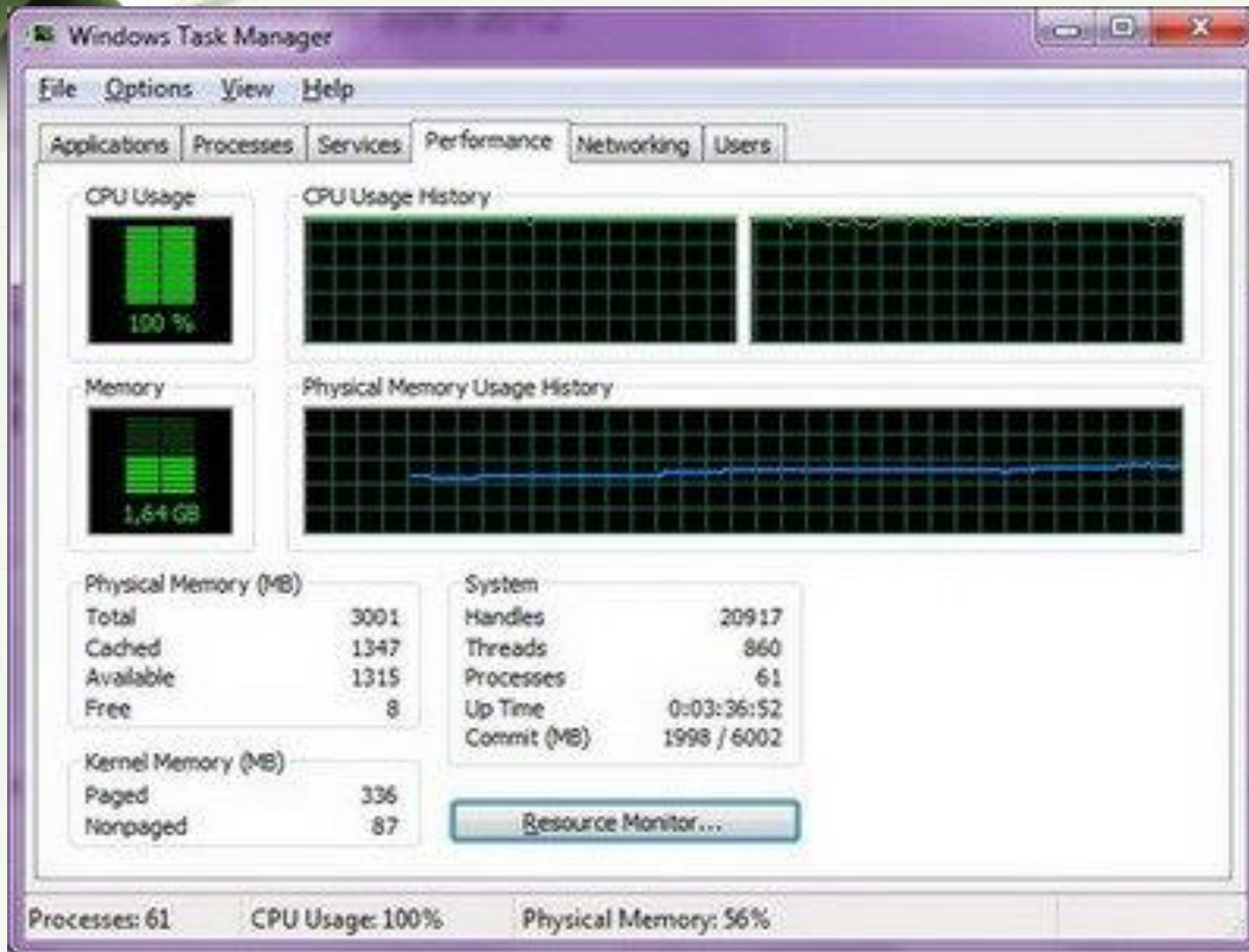
**Optical Drive**

**Power Supply**

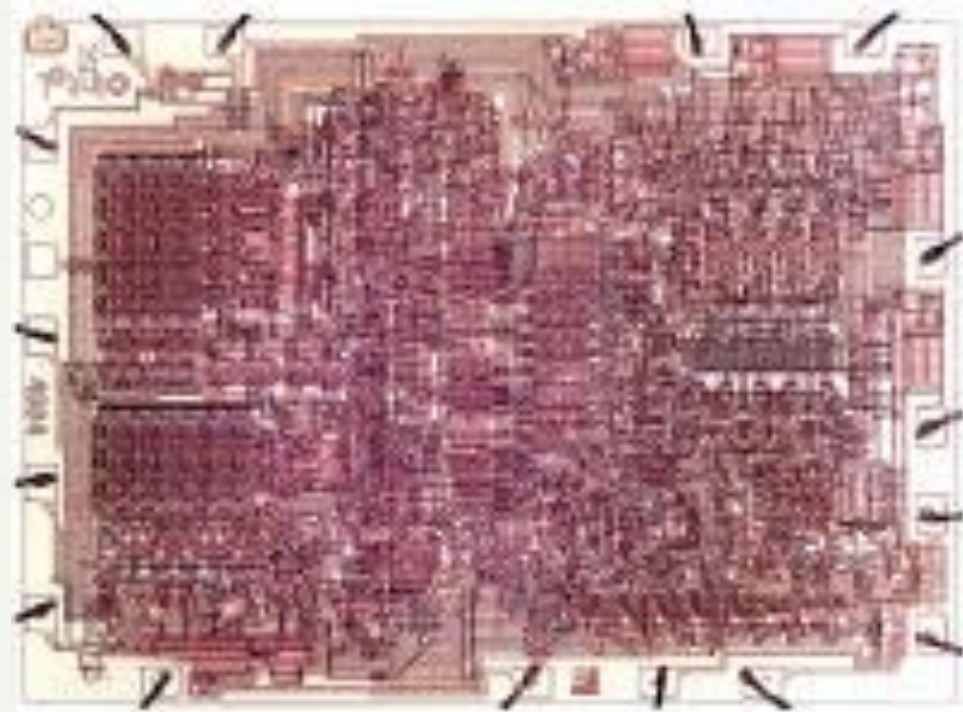
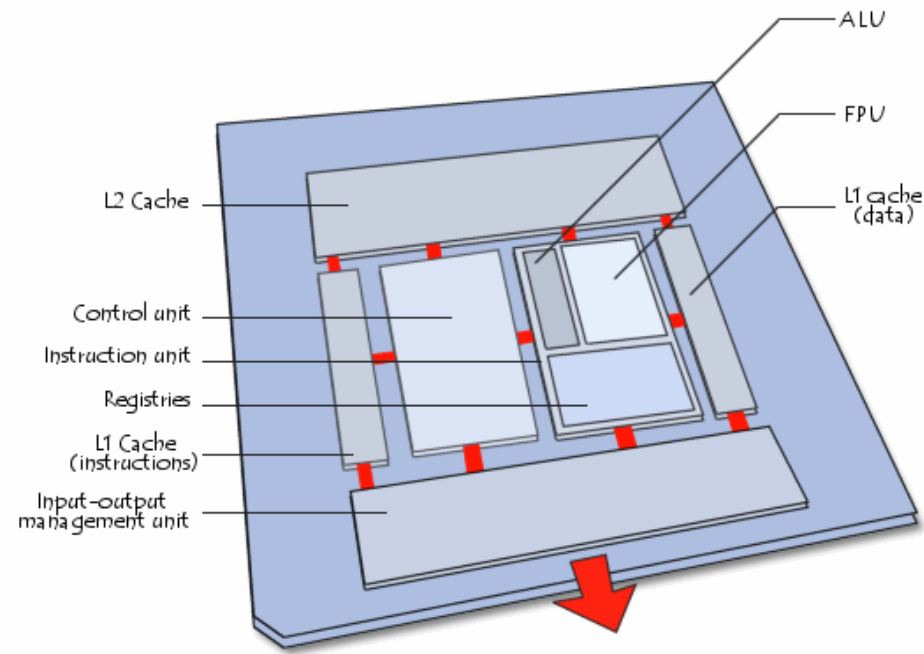
**Card Add On**

**Casing & etc**

# Processor VS RAM



# Processor..



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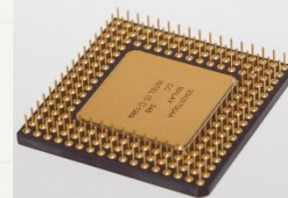
# Processor..



**December 1974**  
**2 MHz**  
**6.000 Transistor**



**8080**



**80486**

**Juni 1991**  
**50 MHz**  
**1,2 Juta Transistor**

**September 1978**  
**10 MHz**  
**29.000 Transistor**



**80286**



**Pentium**

**Maret 1993 – Juni 1996**  
**60 MHz – 200 Mhz**  
**1,2 – 3,3 Juta Transistor**

**Oktober 1985**  
**16 MHz**  
**275.000 Transistor**



**80386**



**Pentium II**

**Mei 1997 – August 1998**  
**233 MHz – 450 Mhz**  
**3,3 – 9 Juta Transistor**

# .. Processor



**April 1998**  
**600 Mhz - ..**  
**Cache 512 KB**



**Celeron**

**Juli 2006 - ...**  
**L2 Cache : 4**  
**583 Juta Transistor**



**Core 2**  
**Duo/Quad**

**Agust 1999 – Mar 2000**  
**600 Mhz - 1 GHz**  
**9.5 – 28 Juta Transistor**



**Pentium III**

**L2 Cache : 8 MB**  
**624 Juta Transistor**



**Intel i3/5/7**

**Nov 2000 – Feb 2004**  
**1.5 – 3.4 GHz**  
**42 – 55 Juta Transistor**



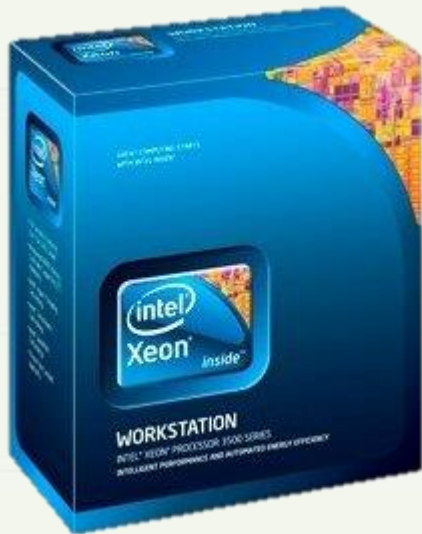
**Pentium IV**

**L2 Cache : 16 MB**  
**2,6 M Transistor**



**Xeon**

# .. Processor



**Vs**



**Rp. 25 jt**

**Rp. ?? jt**

# .. Processor



INTEL Xeon E5-2687W series Processor

INTEL Xeon E5-2687W series

**Rp25.276.400**

[Detail](#)

[Beli](#)



INTEL Xeon E5-2690 series Processor

2.9GHz, QPI 8.0GT/s, Cache 20MB, 8-Core, Socket LGA2011 (No HSF)

**Rp27.503.600**

[Detail](#)

[Beli](#)



INTEL Xeon E5-2680 series Processor

2.7GHz, QPI 8.0GT/s, Cache 20MB, 8-Core, Socket LGA2011 (No HSF)

**Rp23.165.200**

[Detail](#)

[Beli](#)



INTEL Xeon E5-2670 series Processor

2.6GHz, QPI 8.0GT/s, Cache 20MB, 8-Core, Socket LGA2011 (No HSF)

**Rp20.938.000**

[Detail](#)

[Beli](#)



INTEL Xeon E5-2665 series Processor

2.4GHz, QPI 8.0GT/s, Cache 20MB, 8-Core, Socket LGA2011 (No HSF)

**Rp19.488.000**

[Detail](#)

[Beli](#)



INTEL Xeon E5-2660 series Processor

2.2GHz, QPI 8.0GT/s, Cache 20MB, 8-Core, Socket LGA1366 (No HSF)

**Rp18.038.000**

[Detail](#)

[Beli](#)



INTEL Xeon E5-2650 series Processor

2.0GHz, QPI 8.0GT/s, Cache 20MB, 8-Core, Socket LGA1366 (No HSF)

**Rp15.161.200**

[Detail](#)

[Beli](#)



INTEL Xeon E5-2640 series Processor

2.5GHz, QPI 7.2GT/s, Cache 15MB, Six-Core, Socket LGA2011 (No HSF)

**Rp12.261.200**

[Detail](#)

[Beli](#)



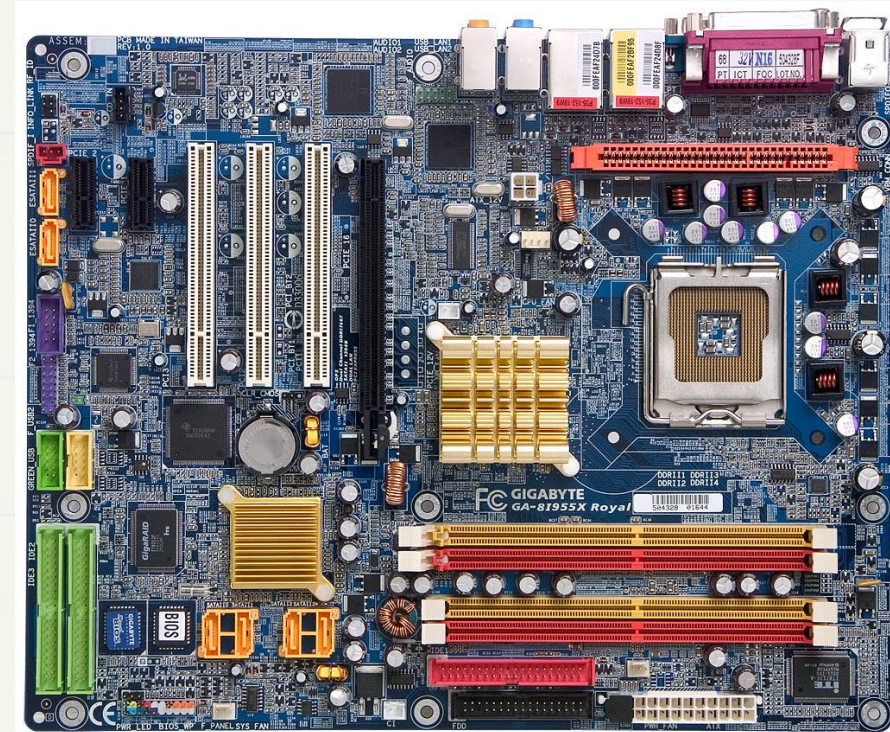
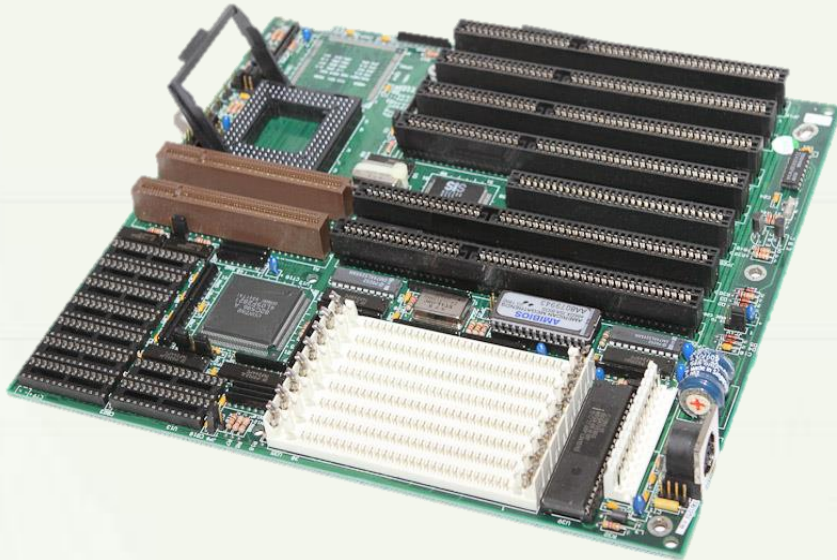
# How a Processor been made



# Mainboard ..



**Mainboard for  
i386/i486**

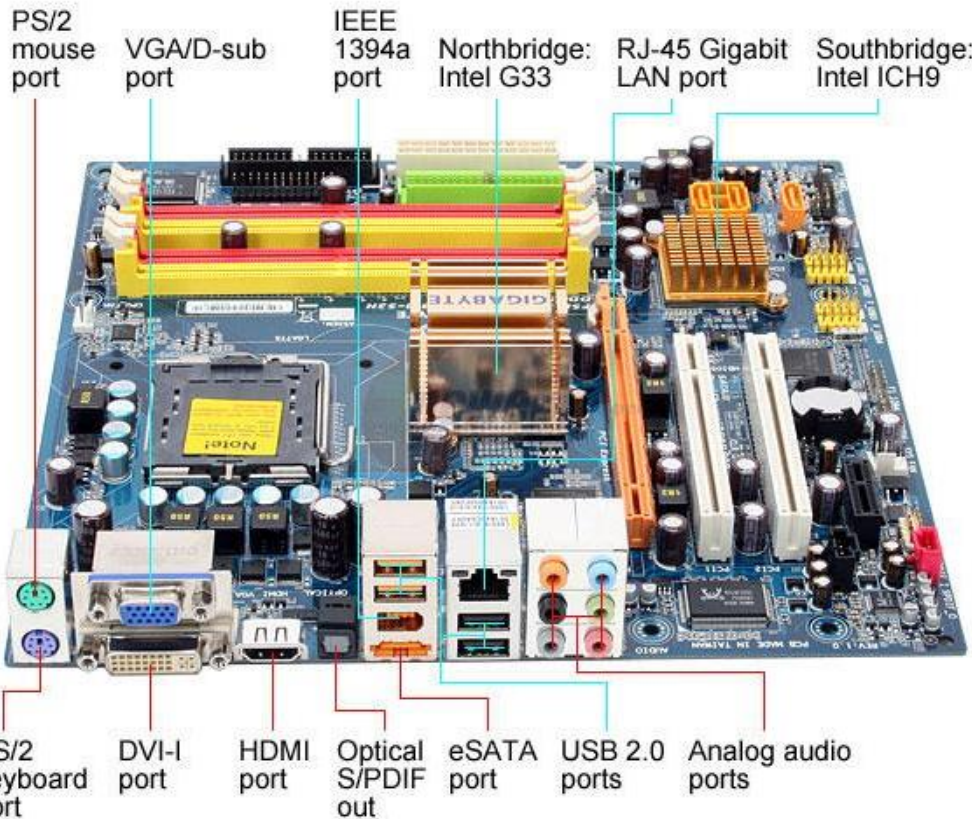


**Mainboard for now**

# .. Mainboard



## Part of Mainboard (Desktop)



### Main Logic

1. CPU socket
2. Chipset Northbridge
3. Chipset Southbridge

### Power Connectors

12. 24-pin ATX Power
13. 8-pin ATX12v Power
14. Supplemental Graphics Power

### Memory

4. DRAM Channel 1
5. DRAM Channel 2

### Onboard Features

15. CPU Power Regulators
16. IEEE1384 FireWire Controller
17. Audio Codec
18. Network Controller PHY

### Drive Interfaces

6. Floppy Drive
7. ATA100/ATA133
8. Serial ATA

### BIOS

19. BIOS ROM (CMOS)
20. BIOS Clock Battery

### Expansion Slots

9. PCI (32-bit, 33MHz)
10. PCI-Express x16
11. PCI-Express x1

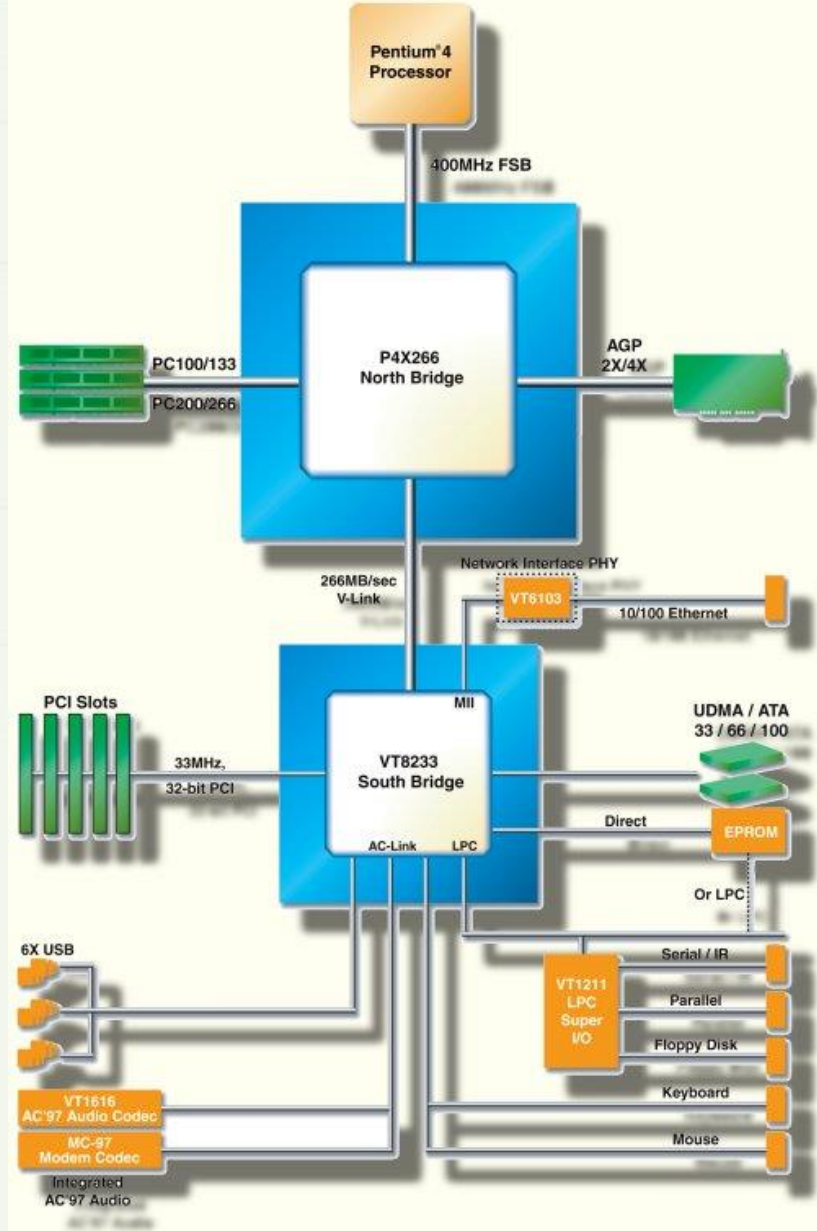
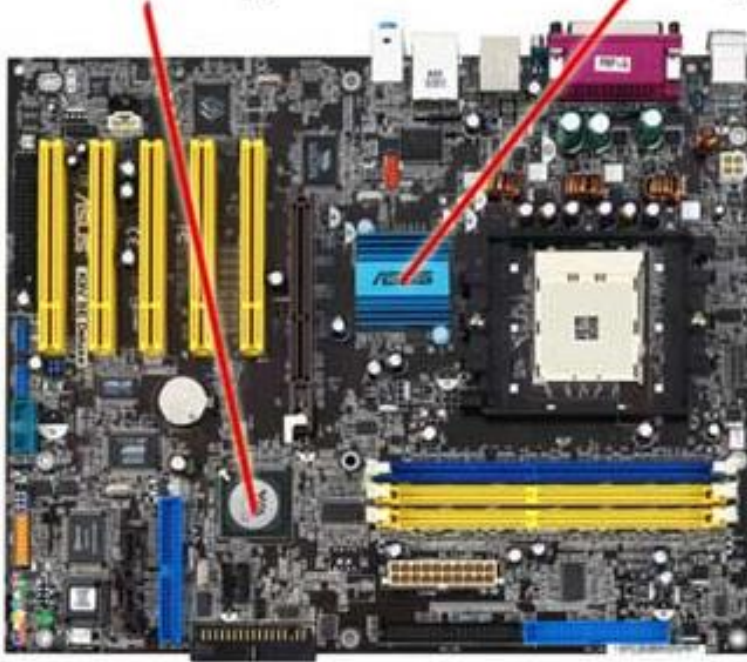
.. i/o



# Chipset Mainboard



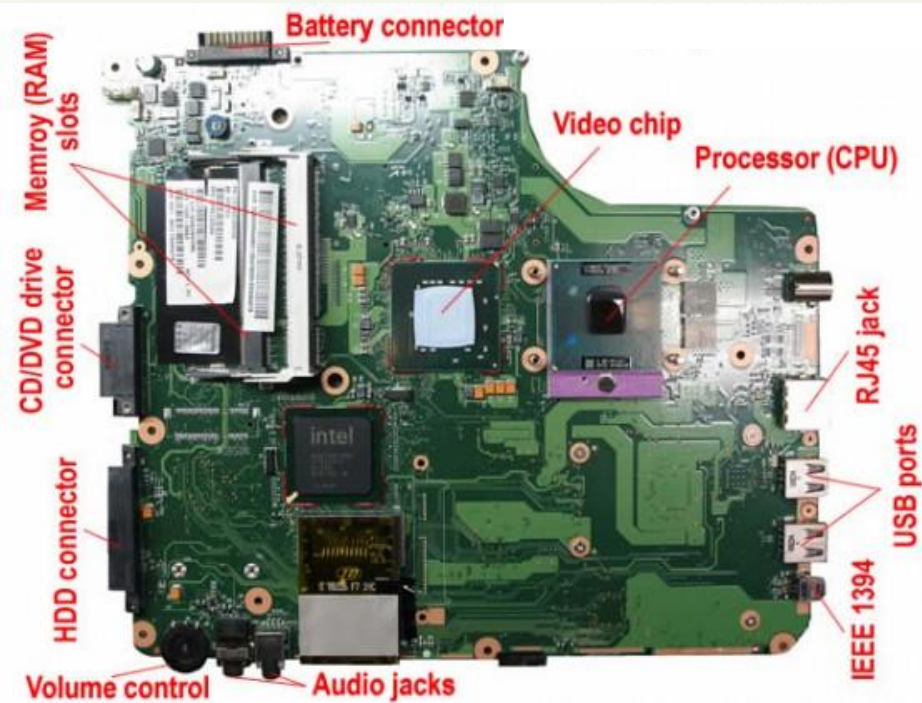
South Bridge North Bridge



# .. Mainboard



## Part of Mainboard (Notebook)



# Slot Expansion



**ISA /e-ISA**

- **1981 - 1993**
- **33 MB/s**
- **8,33 Mhz**
- **SoundCard, LANCard**



**PCI**

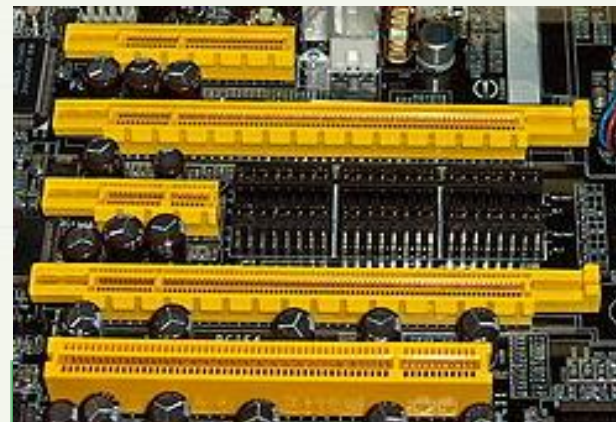
- **1993 - ..**
- **533 MB/s**
- **33/66 Mhz**
- **for SoundCard, LAN Card, Modem, etc.**

# Slot Expansion



## AGP

- 1996 - 2000
- 533 Mhz
- 2311 MB/s
- VGA Card Only



## PCI-Express

**x1**

### BANDWIDTH

Single direction: 2.5 Gbps/200 MBps  
Dual Directions: 5 Gbps/400 MBps



**x4**

### BANDWIDTH

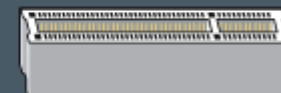
Single direction: 10 Gbps/800 MBps  
Dual Directions: 20 Gbps/1.6 GBps



**x8**

### BANDWIDTH

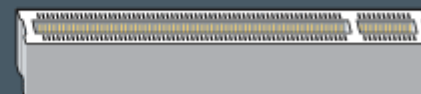
Single direction: 20 Gbps/1.6 GBps  
Dual Directions: 40 Gbps/3.2 GBps



**x16**

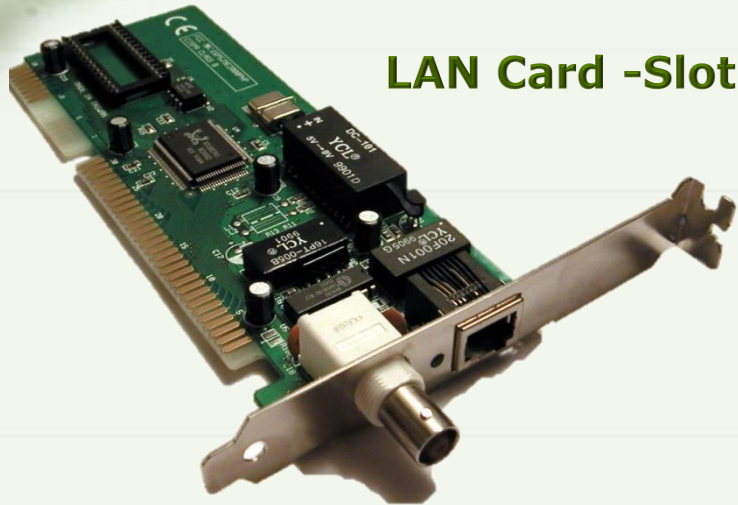
### BANDWIDTH

Single direction: 40 Gbps/3.2 GBps  
Dual Directions: 80 Gbps/6.4 GBps



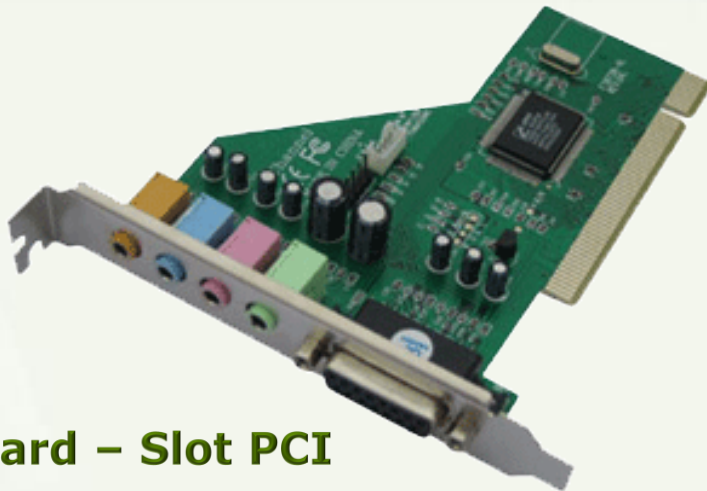


# Card AddOn



**LAN Card -Slot ISA**

**VGA Card – Slot AGP**

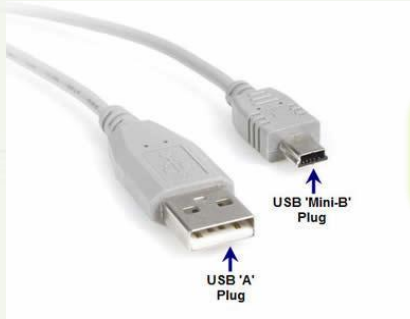


**Sound Card – Slot PCI**



**VGA Card  
– Slot PCI Express**

# USB (universal serial bus)



## USB 1.0

- Januari 1996
- 12 Mbit/s
- 1,5 MB/s



## USB 2.0

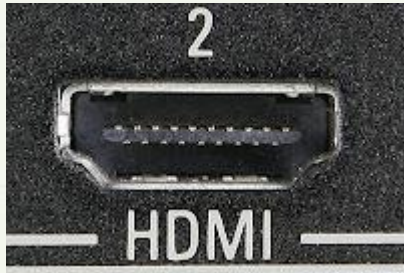
- April 2000
- 480 Mbit/s
- 60 MB/s



## USB 3.0

- November 2008
- 5 Gbit/s
- 625 MB/s

# HDMI (high definition multimedia interface)



- Video
- Audio
- Data
- 10,2 Gbit/s



# SPDIF (Sony Philips Digital Interconnect Format)



- Transfer Digital Audio
- Komputer to Home Theatre

# Firewire (IEEE 1394)



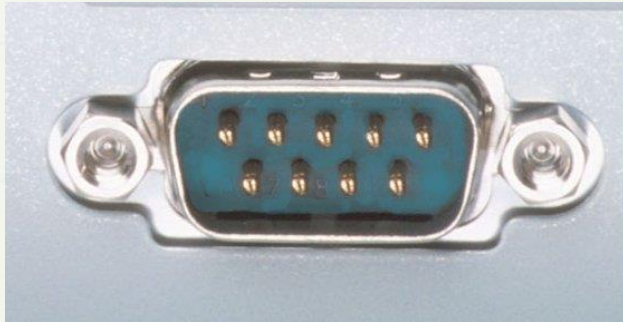
- **Transfer data audio visual**
- **1394a = 400 Mbit/s**
- **1394b = 800 Mbit/s**
- **Hot swapp**
- **Mengenali 63 alat firewire bersamaan**
- **Noise Free**
- **Tanpa harus tersambung dengan komputer**



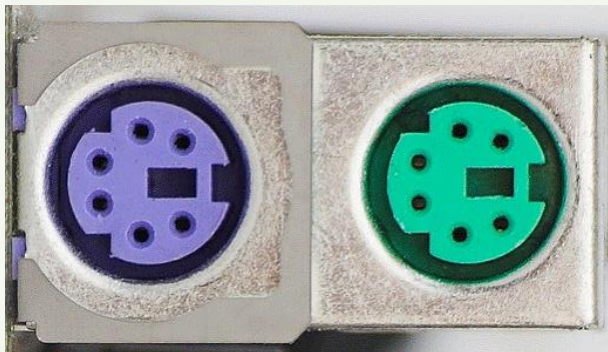
# Port I/O



- Port Paralel
- Line Print Terminal
- Komputer ke Printer Dot Matrik
- Transport beberapa bit dalam satu waktu



- Port Serial
- Komputer ke Mouse
- Transport 1 bit dalam satu waktu



- Port PS/2
- Ungu → Keyboard
- Hijau → Mouse








# Printer Dot Matrix



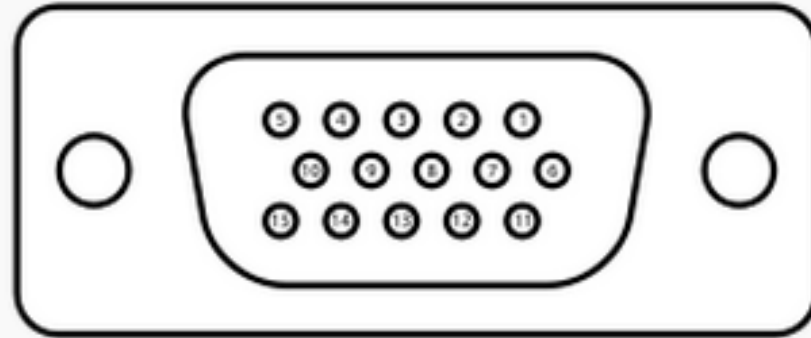
Compare

Sort By

Page: 1 / 1

<input type="checkbox"/>	 <b>OKI Microline ML-1120</b> <b>Printer Dot Matrix</b> 80 columns, 9 pin impact dot matrix, 375 cps, 1 original + 3 copies, USB ★★★★★	Rp 1,968,000 <u>Shipping Cost</u> <b>FREE SHIPPING*</b>	<input type="button" value="BELI"/>
<input type="checkbox"/>	 <b>EPSON Printer [LX-310]</b> <b>Cicilan</b> \$#1 #1 <b>Printer Dot Matrix</b> 80 columns, 9 pin impact dot matrix, 390 cps, USB	Rp 2,060,500 <u>Shipping Cost</u> <b>FREE SHIPPING*</b>	<input type="button" value="BELI"/>
<input type="checkbox"/>	 <b>OKI Microline ML-184 Turbo+</b> <b>Printer Dot Matrix</b> 80 columns, 9 pin impact dot matrix, 375 cps, 1 original + 3 copies, USB/Parallel	Rp 2,854,000 <u>Shipping Cost</u> <b>FREE SHIPPING*</b>	<input type="button" value="BELI"/>
<input type="checkbox"/>	 <b>TALLY DASCOM Printer [1125]</b> <b>Cicilan</b> \$#3 <b>Printer Dot Matrix</b> 80 columns, 24 pins continuous dot matrix, 375cps (max at 10 cpi), parallel, USB 2.0	Rp 2,946,900 <u>Shipping Cost</u> <b>FREE SHIPPING*</b>	<input type="button" value="BELI"/>
<input type="checkbox"/>	 <b>OKI Microline ML-320 Turbo</b> <b>Printer Dot Matrix</b> 80 columns, 9 pin impact dot matrix, 435 cps, 1 original + 4 copies, USB/Parallel	Rp 3,378,000 <u>Shipping Cost</u> <b>FREE SHIPPING*</b>	<input type="button" value="BELI"/>
<input type="checkbox"/>	 <b>TALLY DASCOM Printer [1225]</b> <b>Cicilan</b> <b>Printer Dot Matrix</b> 136 columns, 24 pins continuous dot matrix, 375cps (max at 10 cpi), parallel, USB 2.0	Rp 5,766,200 <u>Shipping Cost</u> <b>FREE SHIPPING*</b>	<input type="button" value="BELI"/>
<input type="checkbox"/>	 <b>TALLY GENICOM 2348</b> <b>Cicilan</b> <b>Printer Dot Matrix</b> 136 columns, 24 pin impact dot matrix, 448 cps, Parallel	Rp 5,920,200 <u>Shipping Cost</u> <b>FREE SHIPPING*</b>	<input type="button" value="BELI"/>

# VGA Port



A female DE15 socket (videocard side).

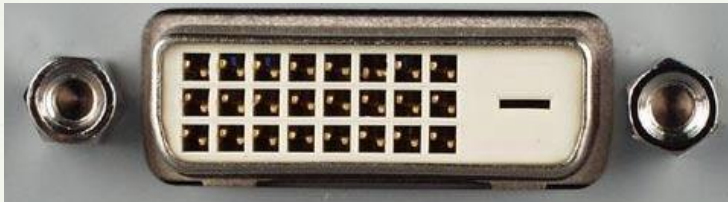
Pin 1	RED	Red video
Pin 2	GREEN	Green video
Pin 3	BLUE	Blue video
Pin 4	ID2/RES	formerly Monitor ID bit 2, reserved since E-DDC
Pin 5	GND	Ground (HSync)
Pin 6	RED_RTN	Red return
Pin 7	GREEN_RTN	Green return
Pin 8	BLUE_RTN	Blue return

- **VGA Port**

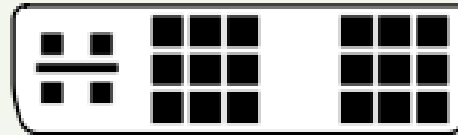
- **Komputer to Monitor Analog**
- **Low Transmission for Low Resolution**



# DVI (Digital Visual Interface)



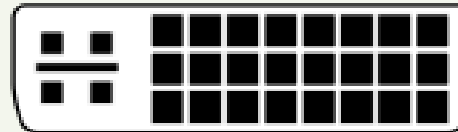
- VGA Port
- Komputer to Monitor Digital
- High Resolution Monitor



DVI-I (Single Link)

- Monitor Analog dan Digital

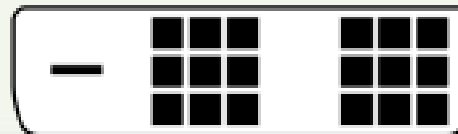
- maks 1600 x 1200



DVI-I (Dual Link)

- Monitor Analog dan Digital

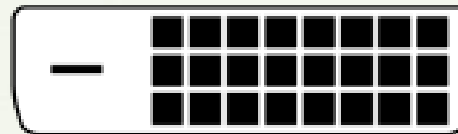
- > 1600 x 1200



DVI-D (Single Link)

- Monitor Digital

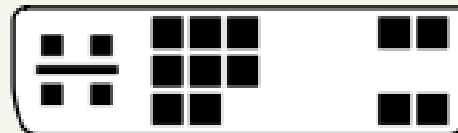
- maks 1600 x 1200



DVI-D (Dual Link)

- Monitor Digital

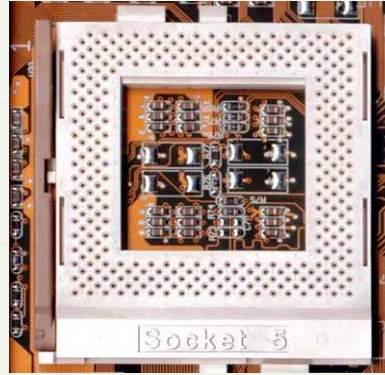
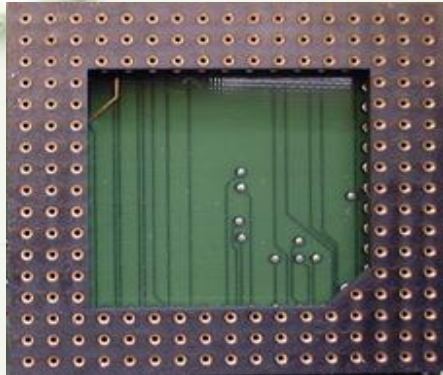
- > 1600 x 1200



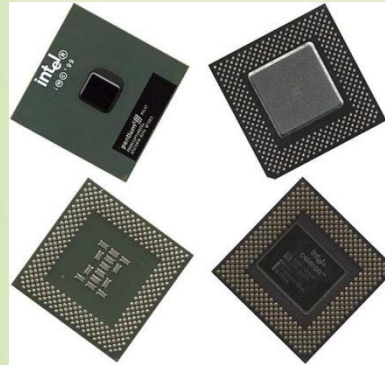
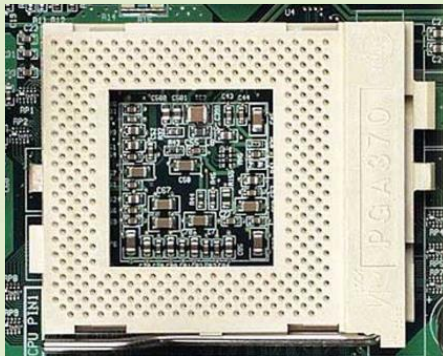
DVI-A

- Monitor Analog

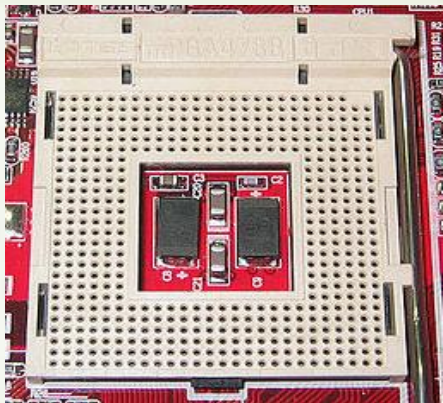
# Soket Processor



**Soket 1 dan 5  
for 386 dan Pentium**

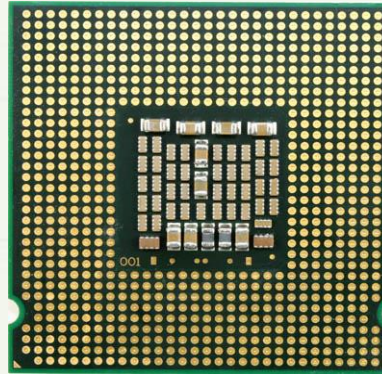
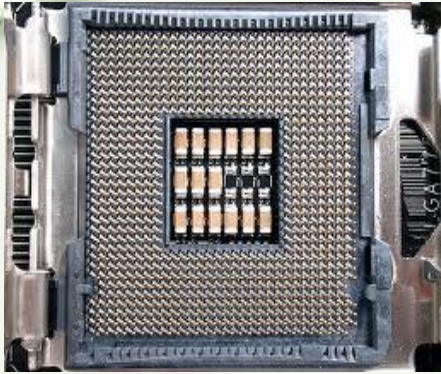


**Soket 370  
for Intel Pentium III & Celeron**



**Soket 478  
for Intel Pentium IV**

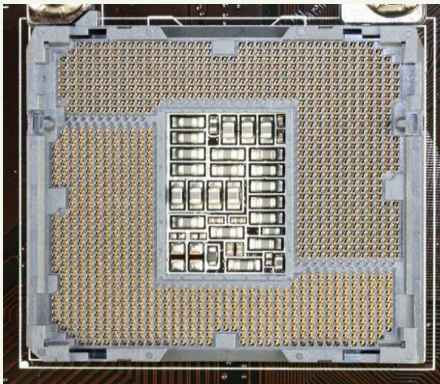
# Socket Processor



## Socket LGA 775

for

- Core Duo
- Core 2 Duo
- Core 2 Quad



## Socket LGA 1156

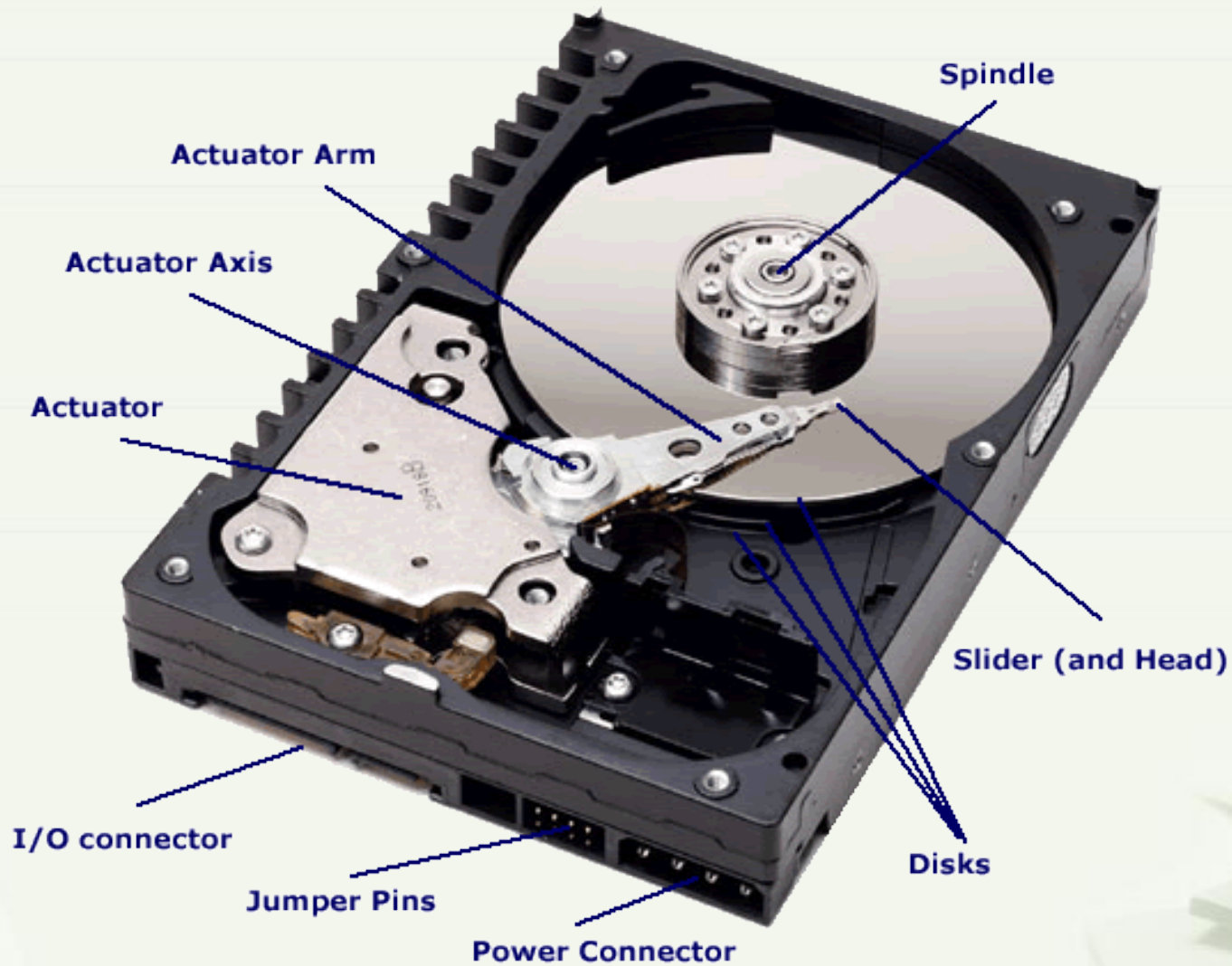
for

- i3
- i5
- i7



## Socket LGA 1356 for Xeon Family

# Hardisk



# Magnetik Disk



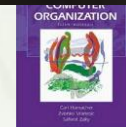
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# Magnetik Disk



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# Solid State Drive (SSD)



# Solid State Drive (SSD)



















2.5" SATA-II SSD		2.5" SATA-II HDD
Solid NAND flash based	<b>Mechanism type</b>	Magnetic rotating platters
64GB	<b>Density</b>	80GB
73g	<b>Weight</b>	365g
Read: 100MB/s, Write :80MB/s	<b>Performance</b>	Read: 59MB/s, Write: 60MB/s
1W	<b>Active Power consumption</b>	3.86W
20G (10~2000Hz)	<b>Operating Vibration</b>	0.5G (22~350Hz)
1500G/0.5ms	<b>Shock resistance</b>	300G/2.0ms, 160G/10ms
-25°C to 85°C	<b>Operating temperature</b>	5°C to 55°C
0 dB	<b>Acoustic Noise</b>	0.3 dB
MTBF >2M hours	<b>Endurance</b>	MTBF < 0.7M hours





# Solid State Drive (SSD)

<input type="checkbox"/>		<b>SANDISK Extreme II Desktop [SDSSDXP-480G-G26] NEW! Ciclan</b> SSD SATA 2.5 inch 480GB, Solid State, SATA III, 2.5"	Rp 5,699,100 Special Rp [Shipping Cost] You Save Rp FREE SHIPPING*	<input type="checkbox"/>	BELI
<input type="checkbox"/>		<b>SANDISK Extreme II Desktop [SDSSDXP-240G-G26] NEW! Ciclan</b> SSD SATA 2.5 inch 240GB, Solid State, SATA III, 2.5"	Rp 3,050,300 Special Rp 3,020,000 You Save Rp 30,300 [Shipping Cost] FREE SHIPPING*	<input type="checkbox"/>	BELI
<input type="checkbox"/>		<b>SANDISK Solid State Drive [SDSSDP-256G-G25] Ciclan</b> SSD SATA 2.5 inch 256GB, Solid State, SATA III, 2.5"	Rp 2,631,200 [Shipping Cost] FREE SHIPPING*	<input type="checkbox"/>	BELI
<input type="checkbox"/>		<b>SANDISK Ultra Plus Notebook [SDSSDHP-256G-G25] HOT Ciclan</b> SSD SATA 2.5 inch 256GB, Solid State, SATA III, 2.5"	Rp 2,640,000 Special Rp 2,610,000 You Save Rp 30,000 [Shipping Cost] FREE SHIPPING*	<input type="checkbox"/>	BELI
<input type="checkbox"/>		<b>SANDISK Extreme II Desktop [SDSSDXP-120G-G26] NEW! Ciclan</b> SSD SATA 2.5 inch 120GB, Solid State, SATA III, 2.5"	Rp 4,848,300 Special Rp 1,769,000 You Save Rp 49,300 [Shipping Cost] FREE SHIPPING*	<input type="checkbox"/>	BELI
<input type="checkbox"/>		<b>SANDISK Ultra Plus Notebook [SDSSDHP-128G-G25] HOT Ciclan \$#1</b> SSD SATA 2.5 inch 128GB, Solid State, SATA III, 2.5"	Rp 4,430,000 Special Rp 1,399,000 You Save Rp 31,000 [Shipping Cost] FREE SHIPPING*	<input type="checkbox"/>	BELI
<input type="checkbox"/>		<b>SANDISK Solid State Drive [SDSSDP-128G-G25] HOT Ciclan \$#2 \$#1</b> SSD SATA 2.5 inch 128GB, Solid State, SATA III, 2.5" ★★★★★	Rp 4,364,000 Special Rp 1,329,000 You Save Rp 35,000 [Shipping Cost] FREE SHIPPING*	<input type="checkbox"/>	BELI
<input type="checkbox"/>		<b>SANDISK Solid State Drive [SDSSDP-064G-G25] Ciclan</b> SSD SATA 2.5 inch 64GB, Solid State, SATA III, 2.5"	Rp 986,700 [Shipping Cost] FREE SHIPPING*	<input type="checkbox"/>	BELI

<input type="checkbox"/>		<b>WESTERN DIGITAL Black 4TB [WD4001FAEX] NEW! Ciclan</b> HDD Internal SATA 3.5 inch 4TB, 7200RPM, SATA III, 64MB Cache	Rp 3,767,640 Special Rp 3,719,000 You Save Rp 48,610 [Shipping Cost] FREE SHIPPING*	<input type="checkbox"/>	BELI
<input type="checkbox"/>		<b>WESTERN DIGITAL Black 2TB [WD2002FAEX] HOT Ciclan</b> HDD Internal SATA 3.5 inch 2TB, 7200RPM, SATA III, 64MB Cache ★★★★★	Rp 2,082,438 Special Rp 2,039,000 You Save Rp 43,438 [Shipping Cost] FREE SHIPPING*	<input type="checkbox"/>	BELI
<input type="checkbox"/>		<b>WESTERN DIGITAL Red 3TB [WD30EFRX] Ciclan</b> HDD Internal SATA 3.5 inch 3TB, 7200RPM, SATA III, 64MB Cache, 3.5"	Rp 4,986,325 Special Rp 1,929,000 You Save Rp 57,325 [Shipping Cost] FREE SHIPPING*	<input type="checkbox"/>	BELI
<input type="checkbox"/>		<b>WESTERN DIGITAL Green 3TB [WD30EZRX] Ciclan</b> HDD Internal SATA 3.5 inch 3TB, 7200RPM, SATA III, 64MB Cache, 3.5" ★★★★☆	Rp 4,704,395 Special Rp 1,659,000 You Save Rp 45,395 [Shipping Cost] FREE SHIPPING*	<input type="checkbox"/>	BELI
<input type="checkbox"/>		<b>WESTERN DIGITAL Red 2TB [WD20EFRX] Ciclan</b> HDD Internal SATA 3.5 inch 2TB, 7200RPM, SATA III, 64MB Cache, 3.5"	Rp 4,473,725 Special Rp 1,409,000 You Save Rp 64,725 [Shipping Cost] FREE SHIPPING*	<input type="checkbox"/>	BELI
<input type="checkbox"/>		<b>WESTERN DIGITAL Green 2TB [WD20EZRX] Ciclan</b> HDD Internal SATA 3.5 inch 2TB, 7200RPM, SATA III, 64MB Cache, 3.5"	Rp 1,268,300 [Shipping Cost] FREE SHIPPING*	<input type="checkbox"/>	BELI
<input type="checkbox"/>		<b>SEAGATE Barracuda 2TB Ciclan</b> HDD Internal SATA 3.5 inch 2TB, 7200RPM, SATA III, 64MB Cache, 3.5"	Rp 1,227,600 [Shipping Cost] FREE SHIPPING*	<input type="checkbox"/>	BELI
<input type="checkbox"/>		<b>TOSHIBA Storage Device Internal 2TB Ciclan</b> HDD Internal SATA 3.5 inch 2TB, 7200 RPM, SATA III, 64MB Cache, 3.5"	Rp 1,204,500 [Shipping Cost] FREE SHIPPING*	<input type="checkbox"/>	BELI

# Hardisk



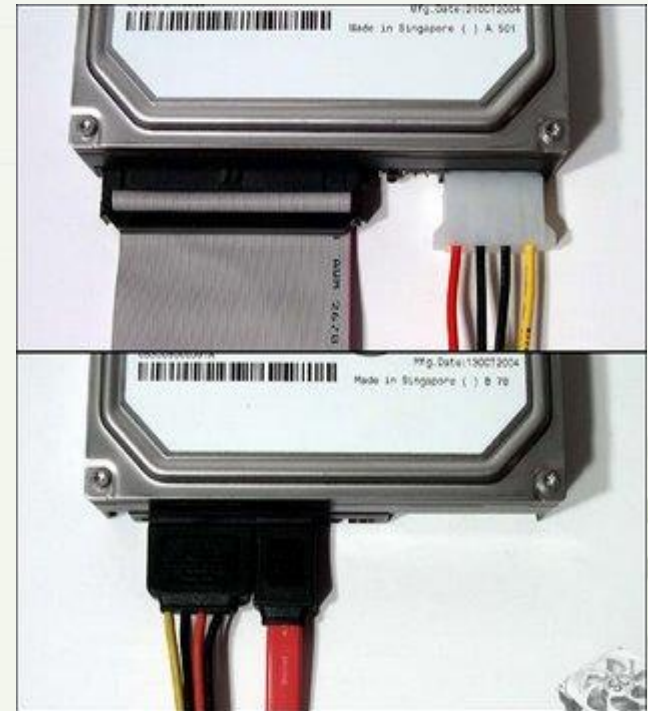
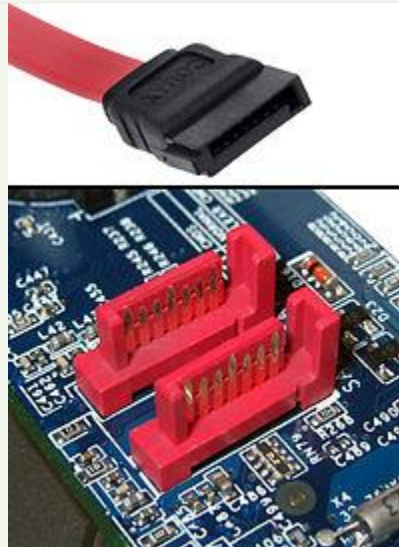
## Hardisk 2.5" for Notebook



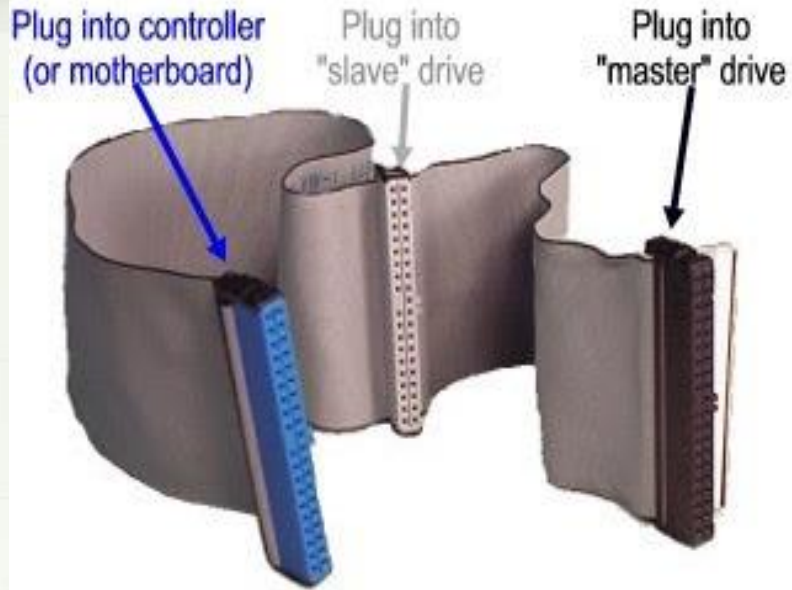
## ATA Conector



## SATA Conector



# Hardisk



**VERSUS**



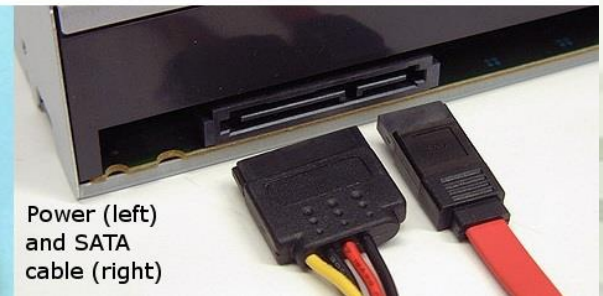
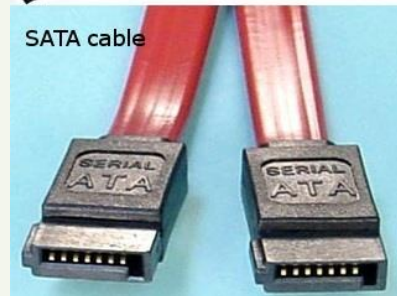
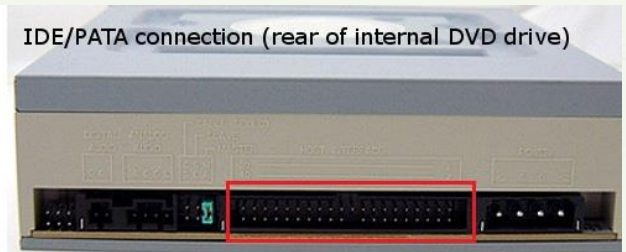
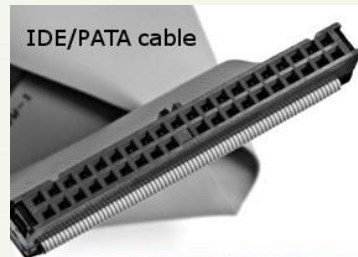
**ATA**  
**133 MB/s**

**SATA**  
**600 MB/s**

# Optical Drive



Setting Jumper



# RAM (Random Access Memory)



30 pin SIMM



72 pin SIMM



MicroDIMM  
(rare)



184 pin RAMbus RDRAM RIMM



100 pin DIMM  
printer RAM



72 pin SODIMM  
(rare)



144 pin SDRAM  
SODIMM



200 pin DDR  
SODIMM



200 pin DDR-2  
SODIMM



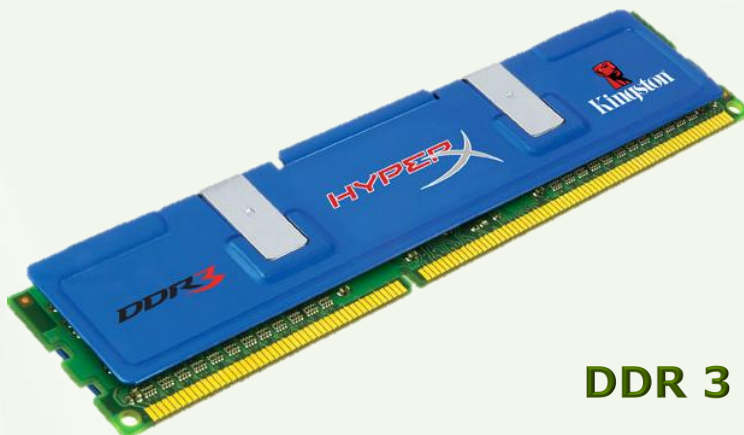
168 pin SDRAM DIMM



184 pin DDR DIMM

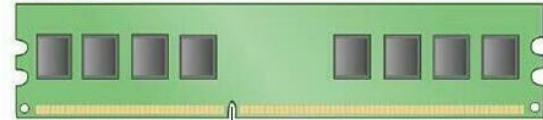


240 pin DDR-2 DIMM

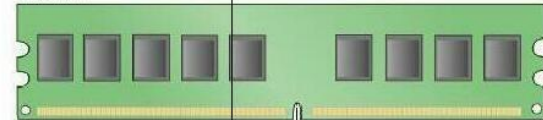


**DDR 3**

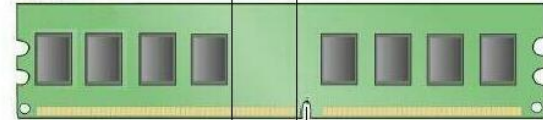
DDR3



DDR2



DDR

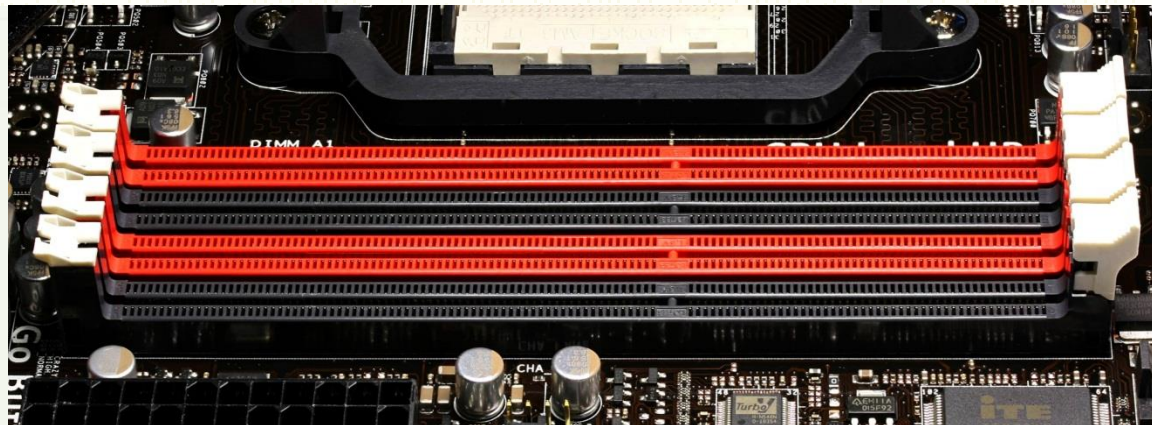


# Dual Channel RAM

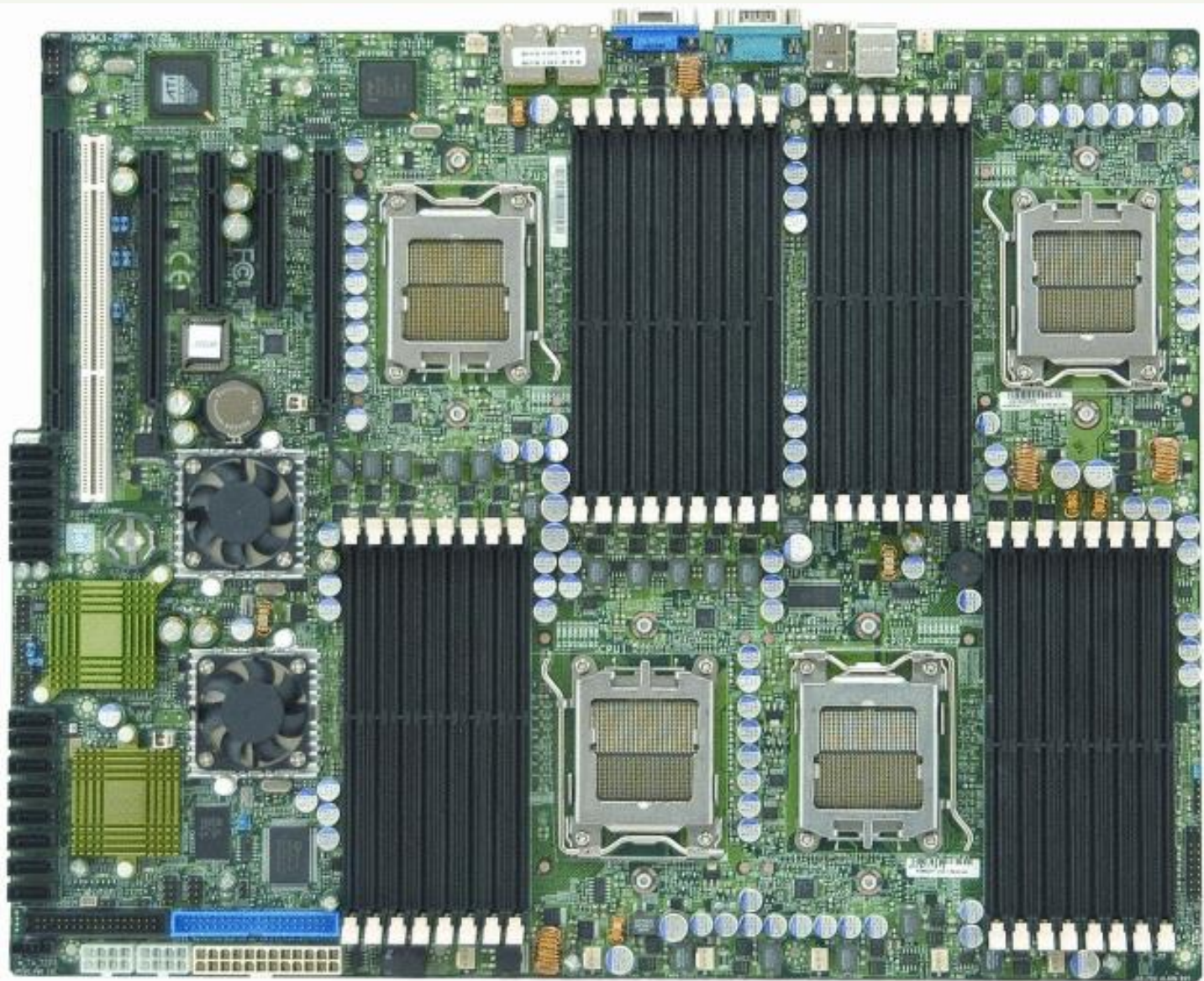
(Random Access Memory)



Memory Type	Clock Speed	Name	Bandwidth Single-Channel	Bandwidth Dual-Channel
DDR266	133 MHz DDR	PC2100	2,100 MB/s	4,200 MB/s
DDR333	166 MHz DDR	PC2700	2,700 MB/s	5,400 MB/s
DDR400	200 MHz DDR	PC3200	3,200 MB/s	6,400 MB/s
DDR2-400	200 MHz DDR	PC2-3200*	3,200 MB/s	6,400 MB/s
DDR2-533	266 MHz DDR	PC2-4300*	4,266 MB/s	8,533 MB/s
DDR2-667	333 MHz DDR	PC2-5300**	5,333 MB/s	10,666 MB/s
DDR2-800	400 MHz DDR	PC2-6400*	6,400 MB/s	12,800 MB/s



# Mainbord for Server



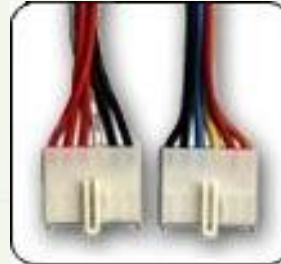
# Power Supply



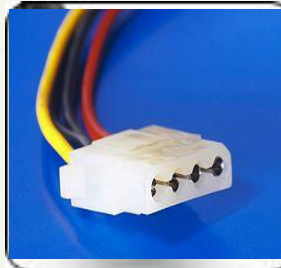
Convert from AC to DC



- **ATX Power Connector**
- **20/24 Pin**



- **AT Power Connector**
- **12 Pin**
- **Mainboard  $\leq$  Pentium 3**



- **Molex Connector**
- **for Hardisk / Drive**



- **ATX 12 V - 4 Pin**
- **Menyediakan tambahan daya 12 V untuk Processor**



# Power Supply



Convert from AC to DC



- PCIE – 6 Pin
- Menambah daya VGA Card



- Berg Connector
- for Floppy Drive

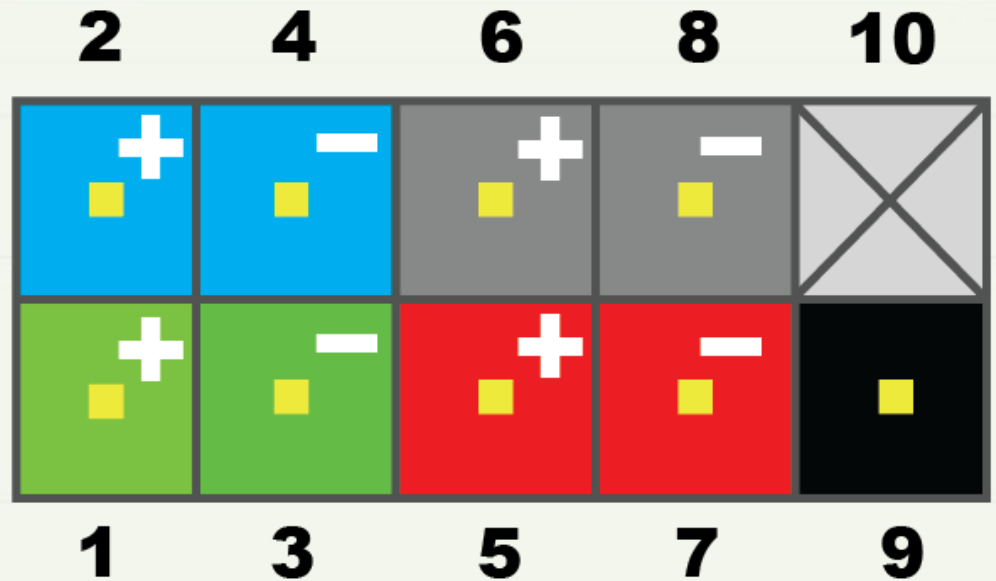
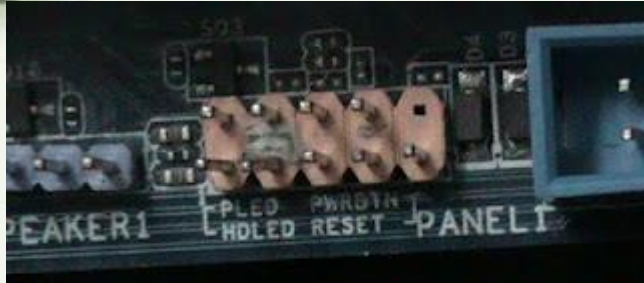


- SATA Power

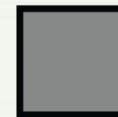
**Power Supply = 1000 Watt**  
**Daya Listrik PLN di Rumah = 1200 VA**



# Pin Group Connector



**POWER LED**



**POWER SW**



**HDD LED**



**RESET SW**

