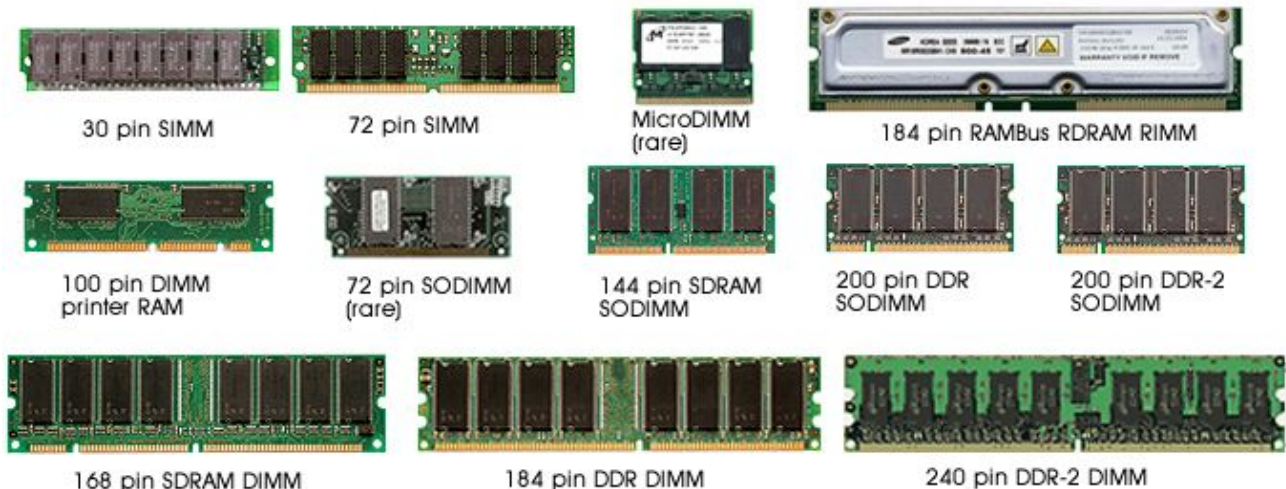


Vocabulary and Definitions

- **RAM** - Random Access Memory
 - Byte size chunks are sent to the CPU
- **DRAM** - Dynamic Random Access Memory
 - Need power to hold data
- **SDRAM** - Synchronous Dynamic RAM
 - Synchronized with system clock
 - Comes in sticks called DIMMs (*dual inline memory module*)
- **DDR - SDRAM** - Double Data Rate - SDRAM
 - Transfers data twice in each cycle
 - 184-pin DIMM (desktop)
 - 200-pin SODIMM (laptop)
 - Base clock is 100mhz to 300mhz, with the DDR speed rating double the clock speed
 - To determine the PC speed rating (bytes per second), multiply de DDR speed (in MHZ) by 8
 - Can make use of dual-channel technology
- **DDR2** :
 - Double the clock to increase performance
 - Uses 240-pin DIMM
 - To determine the PC speed rating, multiply the DDR2 speed rating by 8 and add a "2" after the "PC"
- **DDR3** :
 - Quadruples the clock to increase performance
 - Uses 240-pin DIMM
 - To determine the PC speed rating, multiply the DDR3 speed rating by 8 and add a "3" after the "PC"
 - Supports Dual channel, but some chipsets (not many) support triple-channel
- **SIMM** - Single Inline Memory Module
 - Had to be at least 2, worked in pairs

Note, as well as the different number of pins, the different spacing of the slots in the connector-edge



- **SODIMM** - Small Outline Dual Inline Memory Module
 - Smaller version of DIMM for laptops
- **RDRAM** -
 - AKA Rambus
 - Supported speeds
 - Commonly called RIMM
 - 184 pin sticks in desktop
 - 160 pin sticks in laptop (SO-RIMM)
 - All slots have to be populated, to fill spots, CRIMM (terminators)
 - Intel's proprietary
- **Double sided DIMMs**
 - Many sticks come in single-sided versions and double-sided.
 - Watch out for space!
 - **Latency** : Refers to how quick the ram responds
 - **ECC**: Error correction code, allows for error check and correction
 - **Parity** : Checks for errors, but **does not** fix them
 - **Page file**: Windows feature that allows to use a portion of the hard drive as an extension of system RAM (slow)
 - **SPD** : Serial Presence Detect, chip that stores information about the device is integrated into

DDR3 SDRAM	240 pin
DDR2 SDRAM	240 pin
DDR SDRAM	184 pin
SDRAM	168 pin
SIMM	72 pin
SIMM	30 pin

OS Ram requirements

OS	Minimum	Reasonable Minimum	Solid	Power User
Windows XP	64 MB	256 MB	1 GB	2 GB
Windows Vista	1 GB (32-bit) 2 GB (64-bit)	2 GB	4 GB	8 GB
Windows 7	1 GB (32-bit) 2 GB (64-bit)	2 GB	4 GB	8 GB

DDR Speed Examples by Type

DDR Type	Clock Speed (Mhz)	DDR I/O speed (MHz)	DDR speed rating	DDR2 speed rating	DDR3 Speed rating	PC speed rating
DDR	100	-	DDR 200	-	-	PC-1600
DDR2	100	200	-	DDR2 - 400	-	PC2-3200
DDR3	100	400	-	-	DDR3 - 800	PC3-6400

*DDR I/O speed changes with DDR2 (dual pumped) and DDR3 (quad pumped)

References :

- Mike Meyers Comptia A+ All-in-one Exam Guide 8th Edition
- Images :
 - RAM pin diagram :
http://www.rigacci.org/wiki/lib/exe/fetch.php/doc/appunti/hardware/ram_types.jpg