



THE RAM GUY MEMORY GLOSSARY

Backward Compatibility - The ability of a current product to communicate with a device of an earlier technology.

Bit - An abbreviation for Binary Digit, the smallest unit of computerized data, which assumes the value of either a 1 or a 0. There are 8 bits in 1 byte.

Bus - A collection of wires through which data is transmitted from one part of a computer to another.

Byte - A unit of storage capable of holding a single character. A byte is equal to 8 bits. "Byte" is used in conjunction with a scientific prefix letter indicating the quantity of bytes. For example, 1 KB (one kilo byte) = 1,024 bytes, because K represents 103.

Cache - A storage location for information that is generally temporary and which needs to be accessed quickly. Generally a small block of fast memory that sits between either a smaller, faster chunk of memory and a bigger, slower chunk of memory, or a processor and a bigger, slower block of memory. This is to provide a bridge from something that's comparatively very fast to something that's comparatively slow. Most computers have cache memory that holds some of the information from main memory. When the processor needs the information it takes it from the faster cache instead of the slower main memory. Cache memory greatly increases the speed of a computer by storing data that is most often accessed.

CAS - Column Address Strobe: a signal that indicates to the DRAM that it should accept a particular address as a column address, as opposed to a row address.

CAS Latency - The number of clock cycles after which the data is available on bus once CAS has been asserted. There are two important types of latency; turnaround and initial. The options are CL2 and CL3, CL2.5, and CL4. Many manufacturers are building their SDRAM modules with CL2 memory but programming the SPD with either a latency of 2 or 3 clock cycles.

DDR - Double Data Rate: a feature of some SDRAM that allows the memory chips to send and receive data twice as often as other memory. It does this by sending data on both the rising edge and the falling edge of the clock cycle.

DDR2 - The JEDEC specification for the second generation DDR memory which includes higher speeds, greater bandwidth, and other new features such as On-Chip Termination (OCT)

DIMM - Dual In-Line Memory Module: a circuit board on which RAM memory chips are mounted. A DIMM is capable of transferring 64 bits of data, where the older SIMMs (Single In-Line Memory Modules) could only transfer 32 bits. These DIMMS fit snugly into the memory slots on PC motherboards.

DRAM - Dynamic random access memory: memory cells that require constant refreshing because they utilize both transistors and capacitors. The capacitors need to be constantly refreshed so they do not use their stored value.

Dual-Channel - This term describes a motherboard with two 64-bit wide channels. In order to utilize this feature fully, one should use do memory DIMMs of equal densities.**ECC** - Error Checking and Correction: a feature of some memory modules that will both detect and correct single-bit errors. It will also detect two-bit and some multiple bit errors, but is unable to correct them.

FBGA Fine Pitch Ball Grid Array: An IC package type that has a grid of balls arranged on the underside of a package. This allows for better thermal characteristics, less heat dissipation, and a smaller package compared to TSOP and others.

Gigabyte - 1 gigabyte = 1,073,741,824 bytes (approximately one thousand million bytes).

JEDEC - Joint Electron Device Engineering Council: a consortium of manufacturers who have organized and formed a standards committee to standardize size, form factor and connector issues for chips, mostly for RAM.

Latency - The time delay between a request to read memory and the actual output of the data. It is typically measured in clock cycles (CL2 or CL3).

Low Profile - A module that is suitable for a 1U rack-mount server. 1U = 1.75 inches and a low-profile module is 1.2 inches in height.

Megabyte - The prefix M, stands for a power of ten, specifically 10⁶. 10⁶=1,000,000 or 1 million. The "B" is the abbreviation for Byte. Therefore, Megabyte = MB = 1 million bytes.

Overclocking - Running a computer bus or component at a speed faster than it is rated.

Parity - A computer data checking method using an extra bit in which the total number of binary 1s (or 0s) in a byte are always odd or even. In an odd parity scheme, every byte has eight bits of data and one parity bit. If using odd parity and the number of 1 bits comprising the byte of data is not odd, the ninth or parity bit is set to 1 to create the odd parity. In this way, a byte of data can be checked for accurate transmission by simply counting the bits for an odd parity indication. If the count is ever even, an error is indicated.

PCB - Printed Circuit Board: fiberglass boards with electrical traces to connect chips such as memory.

PLL - Phase Lock Loop: a timing mechanism that controls the frequency of data transfer.

Pro Series - Corsair product line of extremely high performance memory modules with a high-efficiency aluminum XMS heatsink and activity LED's showing the level of memory activity.

RAM - Random Access Memory: volatile memory used as the main memory in a computer that temporarily stores data and processes information.

RAS - Row Address Strobe: a signal that indicates to the DRAM that it should accept a particular address as a row address, as opposed to a column address.

RDRAM - Rambus dynamic random access memory: memory cells that are mounted on smaller circuit boards called RIMMS (Rambus in-line memory modules). The pin configuration is similar to that of DIMMs, but the data bus is much faster, operating at a data rate of 800 MHz.

Registered Memory - Memory that contains registers that hold the data for one clock cycle before it is moved on to the motherboard. This increases the reliability of high-speed data access. Registered memory modules are typically used only in servers and other mission-critical systems where it is extremely important that the data is properly handled.**SDRAM** - Synchronous dynamic random access memory: reads data sequentially, greatly improving performance over DRAM.

SO-DIMM - Small Outline Dual Inline Memory Module: a memory form factor that is smaller than both DIMMs, SIMMs, and RIMMs. It is typically used in notebook computers and has 144 pins.

SPD - Serial Presence Detect: When a computer is booted, serial presence detect (SPD) is information stored in an electrically erasable programmable read-only memory (EEPROM) chip on a synchronous dynamic random access memory (SDRAM) memory module that tells the basic input/output system (BIOS) the module's size, data width, speed, and voltage.

SRAM - Static random access memory: memory cells using several transistors on each cell, but no capacitors and is used primarily for cache.

Stacked Module - A memory module that utilized the area of the module most efficiently by using "stacks" of RAMs instead of single modules. These "stacks" are composed of two RAMs stacked on top of one another and connected with a lead frame, and then mounted to one side of a PCB that creates the module. Stacks of RAMs are affixed to both sides of the module. This stacking process allows for greater density modules.

TSOP - Thin Small Outline Package: package type that is thin and rectangular with leads sticking out of the sides of the package. It mounts directly on the surface of the printed circuit board.

XMS - Corsair product line of high performance memory modules specifically designed for gamers and enthusiasts.