Tidbits

Compiled by Tracy Baker
Graphics & Design by Lori Garris

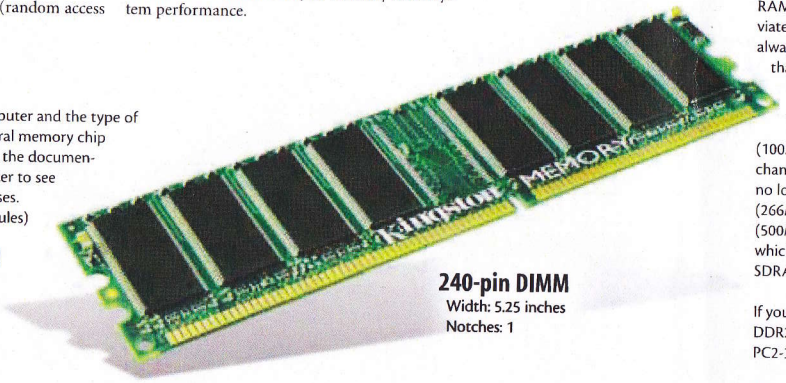
Thanks For The Memory

Know Your RAM Options

Many computer manufacturers cram their products full of fancy DVD burners, blazing-fast processors, and cavernous hard drives but skimp on the precious RAM (random access memory). Knowing the type and quantity of memory that will make your system fly is the most cost-effective way to seriously boost system performance.

Memory Types

Depending on the age of your computer and the type of motherboard it uses, there are several memory chip types from which to choose. Check the documentation that came with your computer to see what type of memory modules it uses. SIMMs (single in-line memory modules) and DIMMs (dual in-line memory modules) are very common, so we'll cover those here, but some computers sold in the late 1990s may use less-common Direct Rambus RIMM modules, which are difficult to find upgrades for and no longer used in desktop PCs.

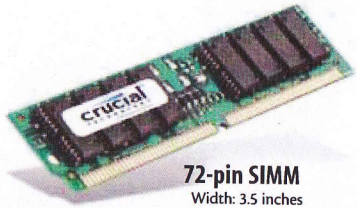


240-pin DIMM
Width: 5.25 inches
Notches: 1

SIMMs

Older computers—those manufactured in the late 1980s through the 1990s—generally use SIMMs. All memory chips have metal contacts called pins that let them interface with the motherboard, and SIMMs come in short 3.5-inch 30-pin designs or more common and longer 4.25-inch 72-pin designs. The 72-pin units have a notch in the middle of the pins that must line up with a key on the motherboard's memory slot to prevent the RAM from being installed backward.

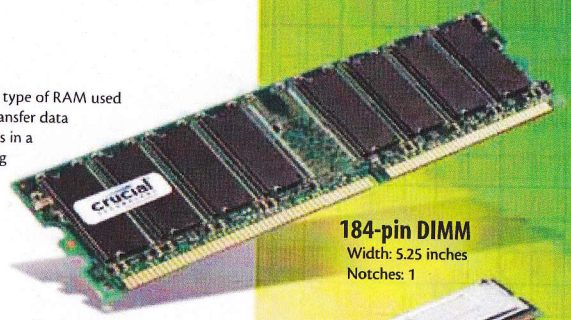
SIMMs are available in either FPM (fast page mode) or EDO (extended data output) speeds, with EDO being the faster of the two. SIMMs are more expensive than modern memory modules because they are no longer in demand, which also makes them difficult to obtain.



72-pin SIMM
Width: 3.5 inches
Notches: 1

DIMMs

DIMMs are the most popular and common type of RAM used today and have two banks of contacts to transfer data much faster than the single bank of contacts in a SIMM can. Most DIMMs are 5.25 inches long and have either one or two notches cut into the bottom to prevent reverse installations. The number of pins varies depending on the type and speed of the DIMM, and there are 100-pin, 168-pin, 184-pin, and 240-pin models.



184-pin DIMM
Width: 5.25 inches
Notches: 1

RAMBUS RIMM 4200
Width: 5.25 inches
Notches: 2

SDRAM & DDR. Most computers sold today (and in the past 15 years) use DIMMs that have SDRAM (synchronous dynamic RAM) of some sort. SDRAM speeds are measured in **megahertz** (abbreviated **MHz**, or thousands of cycles per second), with faster speeds always being better, but be sure to purchase RAM with a MHz rating that matches that of your motherboard's memory interface. (Purchasing memory that's faster than your PC can use will not improve—and could even degrade—performance.) Older SDRAM-equipped computers use PC66 (66MHz), PC100 (100MHz) or PC133 (133MHz) modules. The naming conventions changed after the introduction of PC133 SDRAM so that the numbers no longer match the speeds. For example, there are PC2100 modules (266MHz), PC2700 (333MHz), PC3200 (400MHz), and PC4000 (500MHz). These modules support DDR (double-data-rate) technology, which lets DDR SDRAM modules operate much faster than their SDRAM predecessors.

168-pin DIMM
Width: 5.25 inches
Notches: 2

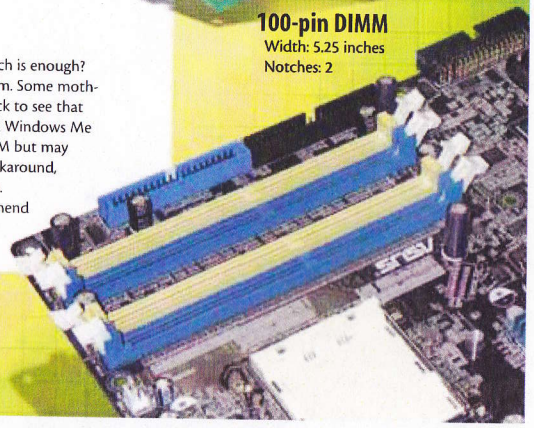
If your motherboard has 240-pin slots, it supports second-generation DDR2 technology, which is even faster than DDR. Options here include PC2-3200 (400MHz), PC2-4200 (533MHz), and PC2-5300 (667MHz).

If your motherboard supports DualDDR technology, install memory modules in matched pairs. Two matched 512MB memory sticks are always better than purchasing a single 1GB memory stick in a DualDDR configuration.

100-pin DIMM
Width: 5.25 inches
Notches: 2

How Much Is Too Much?

Now you have a better idea of what to buy, but how much is enough? That depends on your motherboard and operating system. Some motherboards support only a certain amount of RAM, so check to see that the upgrade won't exceed that number. Windows 98 and Windows Me support up to 2**GB** (**gigabytes**, equal to 2,000MBs) of RAM but may have problems if more than 512MB is installed. For a workaround, visit support.microsoft.com and search for article 253912. Windows XP handles up to 4GB of RAM, and we recommend installing at least 1GB for optimal performance.



The blue and yellow slots on the motherboard at left are where memory will be inserted.