FIGURE 2

5.0V DIMM   3.3V DIMM
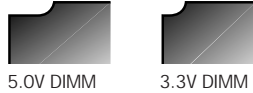
Synchronous DRAM (SDRAM) is also an option when choosing chip types to make your DIMM. Traditionally, DRAM has been considered Asynchronous because it sets timers for reading and writing data, and if the computer finishes before the timer goes off, it must wait for the cycle to finish before moving on. SDRAM sets itself to the computer's internal clock and only uses the time required to read the data, therefore speeding up data transfer rates by eliminating non-productive waiting periods.

How do I choose the correct voltage?
When choosing the voltage of a memory module for your DIMM, you need to make sure it matches the system you're installing it in. The voltage refers to the amount of power being drawn by the memory modules, and most computers are designed to run at 5V or 3.3V. The modules are notched differently depending on their voltage because putting the wrong module into a computer will result in a damaged system or module. For example, the notches of a 5V DIMM are deeper than those of a 3.3V DIMM and the placement of the notches on a DIMM module will also indicate the voltage of the module (see figure 2).

Buffered vs. unbuffered DIMMs.
Bufferage is also a menu consideration when selecting your DIMM because there are buffers built onto the modules (buffered DIMMs) and buffers built onto the logic board (unbuffered DIMMs). The system board can handle more buffered DIMMs because they are able to buffer themselves, saving the system board work. Currently, most unbuffered DIMMs are in the SoDIMM family and are used in notebook computers, which don't have much memory to begin with.

Error checking and correcting.
The last thing to consider when selecting your DIMM is the ability to check and correct errors. Parity memory checks for errors in the data stream and stops and corrects operations to prevent data corruption. Taking this idea a step further, ECC memory can detect and fix small single-bit errors in the data stream without stopping operations. ECC's corrections prevent system crashes and are invisible to the user, but only systems specifically designed for ECC memory can take advantage of its benefits.