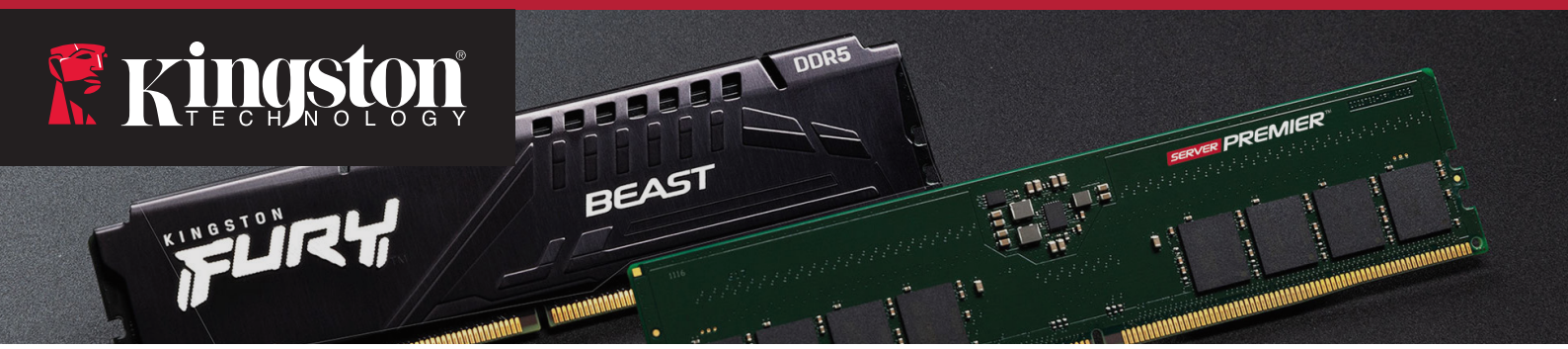


MHz to MT/s Transition Explained

We will be transitioning from MHz to MT/s on Kingston.com and all marketing assets. This cheat sheet is designed to give you an understanding of what both terms mean and the difference between them.

What is MHz?

MHz is short for megahertz and means a million of cycles per second, or one million hertz (10^6Hz). This unit of frequency measurement comes from the International System of Units, and in computing is used to denote the speed at which data moves within and between components.

When SDRAM (Synchronous Dynamic Random Access Memory) was introduced in the late 1990s, data transfer speed was measured in sync with the motherboard clock, with data transfers happening on the rising edge of the clock cycle. When measuring performance for SDRAM memory, 100MHz indicated 100 x 10^6 data transfers per clock cycle.

In the early 2000s, DDR (Double Data Rate) SDRAM memory was introduced. This memory technology doubled the number of data transfers per clock cycle, with transfers happening on the rising and falling edges of the cycle. The unit of measurement however did not change. With a clock rate of 100MHz, DDR doubled the effective data rate at 200 million data transfers with each clock cycle.

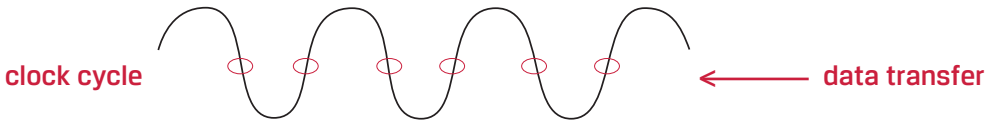
What is MT/s?

MT/s is short for mega (or million) transfers per second and is a more accurate measurement for the effective data rate (speed) of DDR SDRAM memory in computing.

The Double Data Rate means that there are two data transfer for one cycle, one when it is down like in Single Data Rate (see first graph) and one when it is up (see second graph).

SDRAM
Clock: 100MHz
Transfer Rate: 100MT/s
Bandwidth: 800MB/s

DDR SDRAM
Clock: 100MHz
Transfer Rate: 200MT/s
Bandwidth: 1600MB/s



What does that mean?

This means that a 3200MT/s DDR4 Memory module actually operates at a base speed or frequency of 1600MHz because it performs 2 transfers per clock cycle.

DIMM Type	MHz	MT/s
DDR4-2666	2666MHz (1333 x 2 clock cycles)	2666MT/s
DDR4-3200 DDR4-3200	3200MHz (1600 x 2 clock cycles)	3200MT/s

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Visit our 'Ask an Expert' page for more information: **www.kingston.com/askanexpert/memory**
Alternatively, our Configurator tool can help you select the right DRAM for your customers: **www.kingston.com/memory**

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