

FAQs

>> **Where does DDR3 come from?**

DDR3 is the third generation of Double Data Rate Synchronous DRAM and it is the direct evolution of the earlier standards in memory technology.

>> **Who defines DDR3?**

The feature set of DDR3 is defined by the Joint Electronic Device Engineering Council or JEDEC in a process where all major players in the industry, such as Intel, AMD, Qimonda, Samsung, Micron, and OCZ have equal right to provide input and feedback. This process ensures fairness and a balance between the needs of each of the contributors.

>> **Is DDR3 supported by all brand name suppliers in the computer industry?**

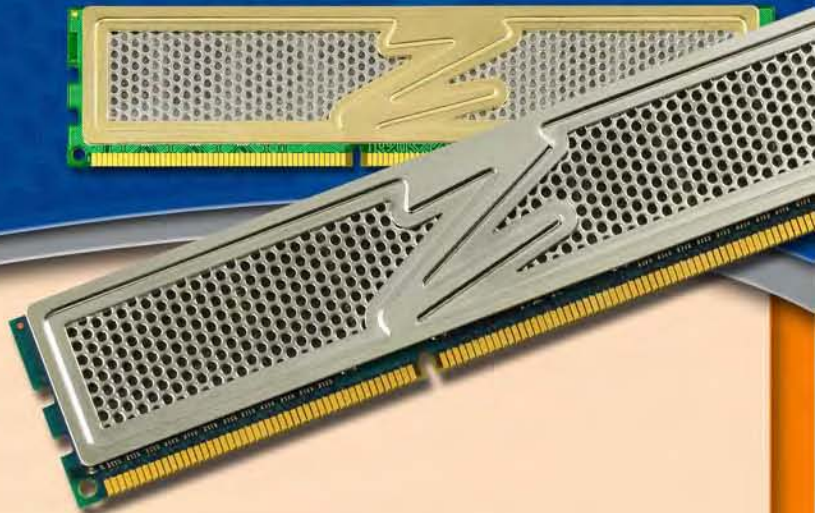
All major memory foundries support and develop DDR3, and all major platform enablers have or are in the process of adopting the new technology.

>> **Why was DDR2 so short-lived compared to DDR and what will happen to DDR3 in that respect?**

The life span of the first generation of DDR was unusually long, primarily because of some fragmentation amongst the different chipset and CPU manufacturers that will be remembered as "the Rambus War". Because of this, DDR was pushed to more than twice its originally intended speed, and DDR2 had to follow in the same path. As a result, we saw DDR scaling up over 5 years to 500MHz and now we see DDR2 1066 where originally DDR2-533 was meant to be the ceiling in merely 3 years, which is the usual life cycle of a memory architecture. However, the current speed is approximately where the DDR2 architecture hits its built-in limitations with respect to core speed and bus topology and it is a time for another changing of the guards. DDR3 will most likely maintain the same life cycle of approximately 3 years until the industry moves on to DDR4.

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>> **Is DDR3 faster than DDR2?**

DDR3 prefetches 8 bits per core clock cycle, this allows to run the I/Os at 8 x the core clock frequency. In other words, DDR3 is eight times faster than an SDRAM part running at the same core frequency. As a consequence, DDR3 modules will start at 800 MHz and will scale well beyond 1600 MHz.

>> **What are the new features of DDR3 that make it faster?**

First of all, as mentioned, the core outputs 8 bits per cycle and I/O pin, and that effectively allows increasing of the data frequency to 8x that of the core clock. Second, there are novel Dynamic On-Die Termination schemes that are calibrated during the initialization of the memory to assure optimal interaction between the memory and the rest of the system. Third, where DDR2 was only partially terminated, DDR3 is fully terminated including addresses and commands

>> **Is there a physical difference between DDR2 and DDR3 modules?**

Yes, DDR3 modules have their key in a different location, making it impossible to insert them into a DDR2 motherboard. There is a reason for that in that DDR3 runs at lower voltage and further uses slightly different signals. Also, the power and ground planes are physically separated and grouped in central and peripheral planes to help insulating them from each other.

>> **Does DDR3 use more or less power than DDR2?**

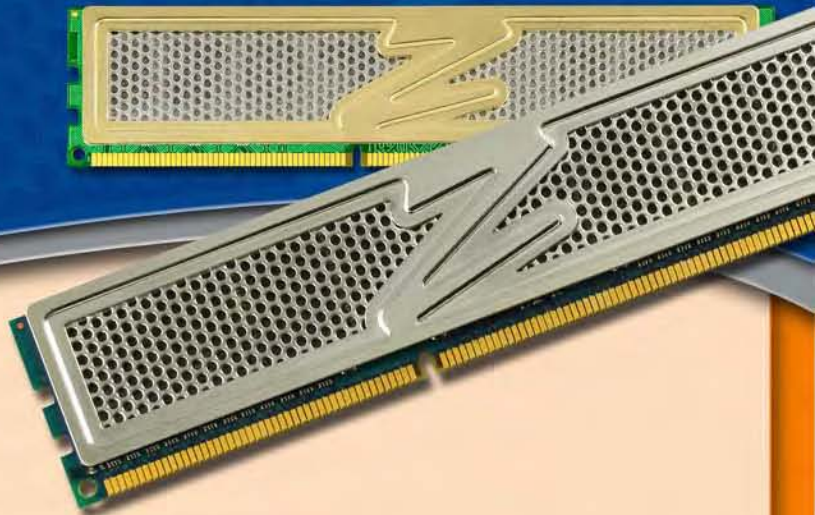
The nominal supply voltage of DDR3 is lower than that of DDR2, that is 1.5V compared to 1.8V, respectively and that results in lower power per clock cycle. However, since DDR3 will run twice as fast as DDR2, the average power consumption will be 38% higher. This means that there will be 38% more heat as well that needs to be managed and, coincidentally, DDR3 will use SPD entries to define the presence or absence of heatspreaders.

>> **Does OCZ have plans for more efficient cooling solutions?**

Our memory cooling solutions are the best in the industry already, but we are just starting. For DDR3 we have already planned some radical solutions but it is still too early to go into specific details.

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>> **Will there be registered DDR3 modules for servers?**

It is very likely that the entire scenario of broadcasting addresses and commands to every chip will become the limiting factor for the DDR3 performance if performance is defined as frequency. It is a simple equation in which the power that is used to drive addresses and commands across the bus will cause some serious drains and bounces above 1600 MHz and the only way to avoid this is to use registers as intermediate chips between the controller and the chips on the modules.

>> **How many DIMMs are supported in a DDR3 system?**

The original idea was that with increasing the chip density to 1 Gbit or 2 Gbit, two memory slots would suffice to have enough system memory. This is essentially still true, especially in 32-bit operating systems, but people like to upgrade without being forced to discard their original hardware – in this case memory. Therefore, most motherboards will feature four DDR3 DIMM slots and that will give the end-user the flexibility to configure their systems any way they want.

About OCZ Technology Group, Inc.

OCZ Technology Group, a member of JEDEC, designs, develops and manufactures innovative, high-performance memory and components that set industry standards. OCZ memory is the first choice for users needing high-reliability, ultra-high performance memory solutions. All of OCZ Technology Group's products are available through its worldwide network of distributors, online resellers and retail stores. For more information visit our website at

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