What is DDR3?

DDR3 is the next generation of Double Data Rate (DDR) Synchronous Dynamic Random Access Memory (SDRAM). It is an evolution of DDR and DDR2 memory technology that delivers higher speeds (at launch up to 1066MHz for ValueRAM® memory, beyond 1333MHz for HyperX® memory), lower power consumption and heat dissipation.

When will DDR3 memory launch?

DDR3 memory launched in June 2007. Kingston® ValueRAM modules are available in 1066 speeds at launch and will continue to 1333 and 1600 over time.

Kingston HyperX modules will begin at 1375 and continue to 2GHz in the future.

What platforms is DDR3 memory supported on?

Intel chipset-based desktops in the first half of 2007 and then notebook and server platforms to follow in 2008 and 2009.

Kingston engineers are working closely with Intel to ensure the most compatible Valueram memory for all desktop, notebook, workstation, and server platforms.

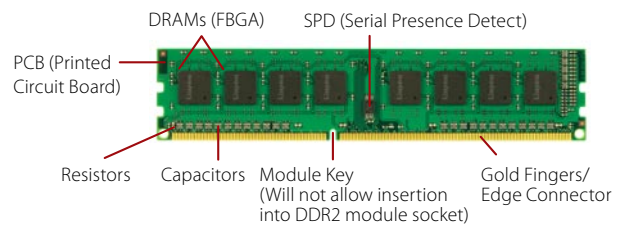## What are DDR3 memory speeds and naming conventions?

Memory Speed	Memory Chip Classification	Module Classification	Module Bandwidth	Dual-Channel DDR3 System Bandwidth
1066MHz	DDR3-1066	PC3-8500	8.5GB/sec.	17GB/sec
1333MHz	DDR3-1333	PC3-10660	10.6GB/sec.	21.2GB/sec
1600MHz	DDR3-1600	PC3-12800	12.8GB/sec.	25.6GB/sec

Is DDR3 backward compatible with DDR2?

No. DDR3 memory chips and modules are very different from DDR2. For example, DDR3 runs at a lower voltage (1.5V) than DDR2 (1.8V).

## Can DDR3 DIMMs be plugged into DDR2 sockets or vice versa?

No. Memory modules (Unbuffered, Registered, Small Outline DIMMs) have a special "key" or notch in their edge connector. These keys must align with a key in the memory socket to allow the module to be inserted. All DDR3 and DDR2 module types are keyed differently.

DRAMs (FBGA)   SPD (Serial Presence Detect)

PCB (Printed Circuit Board)

Resistors   Capacitors   Module Key (Will not allow insertion into DDR2 module socket)   Gold Fingers/ Edge Connector

How can you tell the difference between a DDR3 socket and a DDR2 socket?

It is difficult to distinguish a DDR3 motherboard from a DDR2 motherboard just by looking at it. Inserting a DDR3 DIMM into a DDR2 motherboard could damage the module, the motherboard, or both. To prevent such damage, the simplest process is to align the memory module and the socket, and visually check that the module "key" aligns perfectly with the socket key. You may have to turn over the memory module as the module orientation may misalign even compatible socket and module keys.

The picture below illustrates the incorrect alignment of a DDR3 memory module key and a DDR2 socket key:
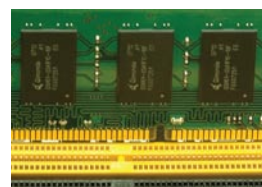
Caution: When the DIMM key and socket key do not align, do not force the module in.

◄— DDR3 DIMM

◄— DDR2 Sockets

DDR3 DIMM key (top) is not aligned with DDR2 socket key (bottom)

What are the different DDR2 and DDR3 module types?

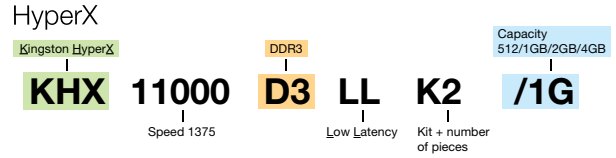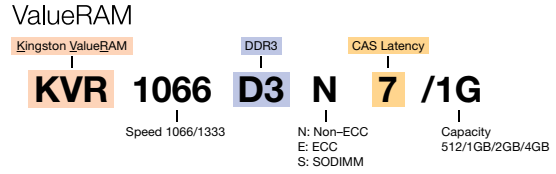|	DDR2	DDR3
Unbuffered DIMMs	240-pin 1.8V	240-pin 1.5V
Registered DIMMs	240-pin 1.8V	240-pin 1.5V
SO-DIMMs	200-pin 1.8V	204-pin 1.5V

Notes: While DDR2 and DDR3 unbuffered and registered DIMMs have the same pin count, they have a different module key to prevent their insertion into incompatible sockets.

What latencies will standard DDR3 DIMMs support?

JEDEC DDR3 specifications define standard DDR3 CAS Latencies of 7, 9, and 10:

– 1066MHz DDR3: CAS 7 (7-7-7)

– 1333MHz DDR3: CAS 9 (9-9-9)

– 1600MHz DDR3: CAS 10 (10-10-10)

What is Kingston ValueRAM's DDR3 module naming convention?

ValueRAM

Kingston ValueRAM		DDR3		CAS Latency	
KVR	**1066**	**D3**	**N**	**7**	**/1G**
	Speed 1066/1333		N: Non–ECC E: ECC S: SODIMM		Capacity 512/1GB/2GB/4GB

HyperX

Kingston HyperX		DDR3			Capacity 512/1GB/2GB/4GB
KHX	**11000**	**D3**	**LL**	**K2**	**/1G**
	Speed 1375		Low Latency	Kit + number of pieces	

For the latest part number decoder and other information, visit **valueram.com**.