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Home > News > Blog > 2012 > May > 14

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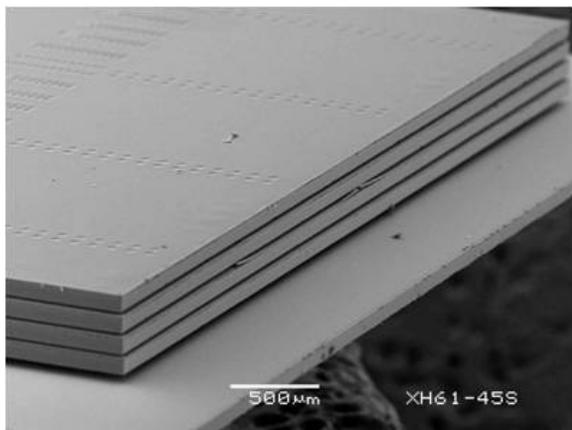
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Previous   Next

The Hybrid Memory Cube Consortium gang and the future of memory

Posted by Cabe Atwell on May 14, 2012 12:52:33 PM

The Hybrid Memory Cube Consortium (HMCC) has recently announced that Microsoft has joined the conglomerate in an effort to integrate HMC technology into next generation systems. The HMCC are a group of electronic equipment manufacturers that include industry giants such as Samsung, IBM and Micron that are looking to develop and implement advancement in DRAM memory technology called Hybrid Memory Cube (HMC).

The HMC features 15x the performance of DDR3 memory by utilizing a memory die that's stacked using Through-silicon-VIA (Vertical Interconnect Access used to create 3D circuits-hence the 'cube'). HMC technology has increased density that enables more memory to be packed into a space that's 90% less over today's DDR3 modules while utilizing 70% less energy per-bit.

The connections between the efficient stacked chips are shorter, which is why it takes up less of a foot-print over traditional DDR modules and is also significantly faster. This means that memory bandwidth and clock speeds can remain constant with each new iteration of CPU's and GPU's which isn't limited to networks and PC's but will also provide a performance boost for mobile devices such as smartphones and tablets as well. Microsoft has recently join the Consortium, hoping its resources will get the technology developed quicker. If the Consortium is successful in their developments, the future will indeed be 'cubed'!

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Actual image of a HMC (via HMCC)

Cabe
http://twitter.com/Cabe_e14

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DAB May 14, 2012 3:29 PM

It's amazing. When I started in computers, we used ferrite donuts with six wires to get one bit. Now you can put megabytes inside the donut hole. Some of you would be overwhelmed if you saw the first logic circuit I built using tubes. One bit used enough power to run a smart phone today. From what I see in the research papers, its only going to get smaller and more useful.

Wow.

DAB

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Eavesdropper May 17, 2012 4:28 PM (in response to DAB)

Moore's Law holds up every time.

DAB,

It would be interesting to see your first circuit. Could you dig it up and post on element14 somewhere?

E

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DAB May 17, 2012 8:39 PM (in response to Eavesdropper)

Hi E,

Sorry, but I built that circuit 40 years ago in tech school. It was a free running astable oscillator using two triodes that triggered a third triode to turn on a light.

PS: I anyone who does not know what a triode is, think about a transister with emitter, base, and collector. The triode had a cathode, gate, and anode. From there, you wire them with resisters and capaciters just like you would with semiconductors. Except the voltages are much higher, like about 290 volts verses 5 volts.

Now if you are interested, I do have a ferrite core memory board that I framed. It has 8K of 16 bit memory. Probably costs about 16, 000 USD when new. I think it makes a cool piece of technoart.

Thanks,
DAB

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