

On Building An AMD VIA KT266A Chipset Computer



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I. Introduction

Important Note: The following is intended for those interested in putting together an AMD VIA KT266A chipset computer. For those interested in putting together an Intel based system, some of the following might make sense, some of it might not.

The previous system was PI based. Yes, over the years I had upgraded the Video Card, added a CD-RW drive, and upgraded the Hard Disk, but the guts of the system were still PI based. In short, not happy with the performance of W2K and some Web Development applications, and wanting to do more, it was high time for a system upgrade.

Some time ago I decided that my next system would be AMD based. Compared to Intel, the AMD performance to cost ratio is just too compelling.

Unless one is spending someone else's money, or one has a specific need, it is ridiculous to buy a computer with everything state of the art. Period. Instead, one can put together a very fast machine, at a substantial cost reduction, using some components a bit removed from the current state of the art. For example, why pay \$300 for a 9000 series processor when an 8000 series processor costs \$100, while giving virtually the same performance for all common tasks? And applying the same to other components...

And does one really need an entire new system? In my case the 20GB Hard Disk is fine, the Sony 100SX monitor is fine, the CD-RW drive is fine, the floppy drive is fine, and my little speaker system is fine. In short, all that was really needed was a new motherboard, processor, memory, video card, and some other, smaller stuff.

Following prices, in Dec 2001 it became apparent that prices had just about hit rock bottom. Sizing up the situation, and realizing that I should be able to put together a new system for under \$500 if I didn't spend over \$100 for any single component, I decided to buy.

II. Choosing The Components

The processor (CPU) one wants to use dictates the choice of motherboard/memory. The memory one wants to use dictates the choice of motherboard/CPU. And looking at it from the motherboard's perspective, the motherboard one wants to use dictates the choice of processor/memory. As such, one should think of the processor, motherboard, and memory as a tightly woven single piece of equipment. This single entity, by the way, along with the video card, is most important in determining overall system performance.

Although not interested in having the fastest computer possible, I was interested in putting together a system that offers solid performance which can easily be upgraded in the future.

For performance reasons there was no question of going with the AMD Athlon class of processors over the AMD Duron class of processors. Concerning memory, and also for performance reasons, there was no question of going with DDR-SDRAM over SDRAM. Lastly, as the prices are not all that different, there was no question of going with an Athlon processor with front side bus of 266MHz rather than 200MHz, and of going with DDR-SDRAM with clock speed of 266MHz (PC2100) rather than 200MHz (PC1600).

There are a number of chipsets which support the AMD Athlon and DDR-SDRAM:

1. The AMD 760 chipset.
2. The AMD 761 chipset.

3. The VIA KT266 chipset.
4. The VIA KT266A chipset.

The AMD 761 chipset is an improvement over the AMD 760, and the VIA KT266A chipset is an improvement over the KT266. As such, there are only two real choices: the AMD 761 and the VIA KT266A.

Note: Yes, there are other chipsets which support the AMD Athlon and DDR-SDRAM, but from the reviews I saw there wasn't much point in checking them out.

For more on this I suggest the following:

- [AMD Athlon Processor System Configuration Information \(AMD\)](#).
- [KT266A \(VIA Technologies\)](#).
- [Accelerating Athlon - VIA Releases KT266A Chipset \(THG\)](#).
- [Mega Test: 14 Boards with KT266A and nForce 420D \(THG\)](#).
- [DDR For AMD: 16 Boards With VIA KT266 \(THG\)](#).
- [Only the Best: 9 Athlon Motherboards With The AMD 760 Chipset \(THG\)](#).

Motherboard

In short, I took the Tom's Hardware Guide's (THG) recommendations to heart, and from what I read I decided to go with the VIA KT266A chipset. Not interested in RAID, and unable to find some of the more highly rated motherboards at a reasonable price, I went with the [EPoX 8KHA+](#) for \$99.

Note: Can upgrade processor to any Socket A AMD Athlon processor, including the AMD Athlon XP class of processors. Can also upgrade to 1.5GB of DDR-SDRAM.

Processor

[AMD Athlon 1000MHz 266 FSB](#) for \$71. Can upgrade in future. Bought AMD recommended fan, [CoolerMaster DP5-6I31C](#) for \$16 more.

Memory

I looked around for PC2100 memory, but for a name brand couldn't find a better deal than that offered via the Crucial web site. Single [Crucial 256MB PC2100 DIMM](#) for \$57 (A couple weeks earlier it was only \$44!) Can add more in future.

Video Card

There was no question of taking advantage of the motherboard AGP video card slot. Here, I wanted 32MB of DDR memory and got a [ATI Radeon VE \(32MB DDR memory\)](#) for \$49.

Note: One wants ATI products "Built by ATI," not "Powered by ATI." Built by ATI or Powered by ATI is indicated on the box.

Sound Card and LAN Card

The KT266A chipset has integrated sound, and a game port. Therefore, there is no need for a sound card. For the LAN card I went with a [GigaFast EtherEngine 100-AE](#) for \$10.

Case

The motherboard form factor (aka, design/shape) also dictates the case that one can use. As the EPoX 8KHA+ is ATX, an ATX case is required. A full tower is a bit too large, and they are generally more expensive. A mini-tower is a bit too small and can be a bit difficult to work inside of. So I wanted a mid-tower for cheap with an AMD recommended 300W power supply. After searching Pricewatch for one whole evening, I found the [Codegen 6016L-P4](#) for \$35.

With shipping the total cost was \$388. Everything except memory and the LAN card was purchased via [Pricewatch](#). The hard disk, floppy drive, monitor, and speakers were pulled from the old machine.

III. Putting It All Together

Before starting, one should read the entire motherboard manual. Flag the items that need attention.

Also before starting, for each component bought, one should go to the manufacture's Web site and download the latest driver. This includes the motherboard, video card, LAN card, everything. Then copy the drivers to a floppy disk or CD. If the drivers are zipped, unzip them before copying to floppy or CD. And if one copies the files to CD, it is a good idea to close the session so the CD can be read by standard CD-ROM drives.

All connections should be keyed; meaning, the connections are designed to work in one orientation only, with there being a physical limitation preventing the reverse orientation. So, if a connection isn't seating properly, don't force it. Instead,

rotate the connection 180 degrees and try again.

Also, properly ground yourself before handling any component. To do so, turn off your current computer, but leave it plugged in. Remove the computer's cover and touch a metal portion of the computer case's framing. Repeat touching the frame every so often, and after each time one moves around a lot.

Note: Before continuing, one might want to see Additional Reading at the bottom of this page.

Motherboard, CPU, CPU Fan and Memory

One might be tempted to first install the motherboard inside the case. But one might consider installing the CPU, CPU fan, and memory before installing the motherboard. Here, the CPU fan and memory require a bit of force to install, and if the motherboard is already in the case it might flex a bit too much for one's liking. So place the motherboard on an appropriate surface (meaning; a surface which is soft enough so that the molding of the back-side of the motherboard will not be injured, but which is non-static and fairly rigid - such as the anti-static styrofoam sheet the back-side of the motherboard may have come packaged in) and install the CPU, and then the CPU fan and memory.

The CPU goes in the socket in one direction only. Look at the CPU's pins. There are two places where corner pins are missing. These align with the same as seen on the motherboard's socket. To install the CPU, release and lift the socket's actuation lever. Place the CPU in the socket (zero insertion force is required), make sure all four sides are flush, and then relock the socket's actuation lever.

The connection between the CPU and the CPU fan's heatsink is critical! Some CPU fans come with a little patch of thermal putty on the surface of the heatsink that contacts the CPU. If the thermal putty is covered with cellophane, remove the cellophane. If one's heatsink does not come with this putty, one will have to buy thermal compound. For more on this check the CPU fan's manufacture's web site.

The CPU fan goes on in one direction only. The slightly recessed section of the heatsink goes in the direction of the slightly elevated portion of the CPU socket.

The clip for the CPU fan can be quite difficult to get into place. In my case it required much force and bending of the clip. If the one end of the clip is designed to allow the use of a tool such as a small screw-driver to generate better leverage, go ahead and use such a tool.

After installing the CPU and CPU fan, connect the CPU fan's wiring to the CPU fan power source, which is located on the motherboard itself somewhere close to the CPU socket.

Important Note: Make sure one understands what one is doing before powering up the system. If the CPU fan is not properly installed, it's fried CPU for dinner.

For the memory, use DIMM slots 1-3 in that order. For example, if one has a single DIMM, place it in DIMM 1. Installing the memory can take quite a bit of force as well. In fact, the DIMM slots have clips, and one should apply as much force (20-30 pounds) as required to get the clips to automatically close.

Then install the motherboard inside the case. Here one might have to remove some metal/plastic blanks from the back of the case so that the motherboard's connectors (such as printer, mouse, USB, etc.) are exposed. But leave in place all blanks that do not correspond with any motherboard connectors.

The motherboard does not lie directly on the surface of the side of the case. It rests slightly elevated from the surface. For this, some cases might have built-in risers, others might not. Some may provide only a couple built-in risers with the user having to plug-in, or screw in, additional ones. The point here is that one should use everything provided to help secure the motherboard to the case. In my instance, when finished, at nine points the motherboard was connected to the case.

AGP/PCI Cards, Hard Disk, Floppy Drive, and CD Drive

After the motherboard is installed inside the case, install any AGP/PCI cards that one has. Here one might have to remove metal blanks from the back of the case to expose the expansion card's connector. Again, leave in place all blanks that do not correspond with the need to expose an expansion card's connector. My AGP slot has clips like those found on the memory slots. As before, one should apply as much force as required to get the clips to automatically close. If it doesn't make installing the motherboard difficult, one might consider installing the AGP card before installing the motherboard.

Install the floppy drive, hard disk, and any CD drives in the appropriate bays. Secure each with at least two screws, one on each side. The floppy drive connects to a motherboard connector sometimes called FDD. The hard disk and CD drive connect to the motherboard's IDE connectors, of which there should be at least two. IDE 1 should be used for the hard disk. IDE 2 should be used for the CD drive. Go ahead and connect the floppy drive, hard disk, and any CD drives to the motherboard using the appropriate floppy drive and IDE ribbon cables.

Note: Each IDE connector can support up to two devices; meaning, one can connect up to four devices through the motherboard's two IDE connectors. But this is best left for a separate post. For now all I'll say is that if one wants to connect two devices via a single motherboard IDE connector the following is required: 1.) one of the devices must be made the Master and the other device must be made the Slave. A device is made master or slave via a jumper located on the device. 2.) the two devices are then attached to the single motherboard IDE connector via an IDE ribbon cable having two connections at one end. Here is a representation of such an IDE ribbon cable: MB-----SL--MA. The end buy itself, MB, plugs into the motherboard's IDE connector. At the end of the cable with the two connectors, use the connector at the SL position for the Slave device, and the connector at the MA position for the Master device.

Power

If not already done, connect the CPU fan to the CPU fan power source, which is located on the motherboard itself somewhere close to the CPU socket.

Coming out of the power supply itself is a big goofy looking connector that plugs directly into the motherboard. Go ahead and make this connection.

The floppy drive, hard disk, and any CD drives receive power from the power supply. The floppy drive uses the smaller type of power supply connector, the Berg connector, of which there is usually only one. The hard disk and CD drives use the larger type of power supply connector, the Molex connector, of which there are usually 3-4. Locate the power supply wiring providing both a Berg and a Molex connector and use this wiring to power the floppy drive and the hard disk. Use any of the remaining Molex connectors to power any CD drives.

For the Power and Reset buttons on the front of the case, and for the Power and hard disk activity light also on the front of the case, cross reference the case's instructions with those of the motherboard. If there is any confusion as to which wires are for what, follow the wires to their source, be it the Power or Reset buttons, or to the Power or hard disk activity lights.

Jumpers and BIOS

Depending upon the motherboard, one might have to make some jumper or BIOS setting. This topic is too large and too variable to discuss here. Read the motherboard manual carefully and flag the items that need attention. For now all I'll say is that one should set the system (jumpers/BIOS) to recognize the clock speed of your CPU/Memory, one should set the system (BIOS) to warn one of attempted writes to the boot sector or partition table, and one should make sure to set the CPU temperature sensor (BIOS) so that warnings will be displayed and/or the system will automatically shut off if the CPU gets too hot.

IV. Turning The System On

Connect the mouse, keyboard, monitor, printer, speakers, and etc. If the hard disk is new, one will have to partition it, format it, and then install an operating system. If the Hard Disk is from one's old computer, when one powers up Windows will detect all sorts of new hardware. I usually cancel out of all the Hardware Detection Wizards prompts and install the hardware drivers manually.

I strongly suggest turning the computer on the first time with the case open so one can see if the CPU fan is functioning. If the CPU fan is not functioning, immediately turn the power off and determine the cause of the problem. If the CPU fan is functioning properly, turn the computer off, close the case, and reboot.

I would first install the drivers for the motherboard. After that it doesn't make much difference. Working with new drivers can be tricky, especially when prompted for a file and the location provided is not correct. Here, use the Browse button to point to the location of the drivers. Double click the folder containing the driver and double click any subfolders until the OK button is activated. Then click OK and carry on. If the appropriate file was found one will be prompted that an appropriate driver was found, and that "Device XYZ" is about to be installed. Here, click Next to continue. If the appropriate file is not found, repeat and select different driver subfolders.

After installing all the drivers, one should be set to go.

V. Additional Reading

- [Build Your Own PC](#) (PC Mechanic) (thanks VOR).
- [Building Your Own PC, Part 1: Know-How for Do-It-Yourselfers](#) (Tom's Hardware Guide - Sep02).
- [Building Your Own PC, Part 2: Assembly Step by Step](#) (Tom's Hardware Guide - Sep02).
- [How to Build a Computer](#) (The Screen Savers - A Video).
- [How To Select The Right Case](#) (Tom's Hardware Guide - May02).
- [Tips For Buying A New PC Case](#) (The Screen Savers - May01).
- [Inadequate and Deceptive Product Labeling: Comparison of 21 Power Supplies](#) (Tom's Hardware Guide - Oct02).
- [Case Cooling Guide](#) (SysOpt.com - Aug01).

- [Builders Guide For Desktop/Tower Systems \(AMD - May02\)](#).

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