

## Build Your Own PC in 30 Minutes

# Chapter 5 GIGABYTE Exclusive Technologies

## 5.1 Motherboard Design

Products from various manufacturers with the built-in Intel® 3 series high-speed chipset provide similar functionality and support. However, GIGABYTE motherboards boast special design features including GIGABYTE Ultra Durable2 technology (the 2nd generation of GIGABYTE Ultra Durable motherboard design), DualBIOS™ and 6-Quad, which have greatly reinforced the stability and reliability of GIGABYTE motherboards.

### Ultra Durable2 (2nd generation of ultra durable motherboard of GIGABYTE)

In 2006, GIGABYTE was the first motherboard manufacturer to use all solid electric capacitors in its motherboard products and received great response from the market. This year, continuing its policy of putting quality as a priority, GIGABYTE implemented the 2nd generation Ultra Durable design, using high-end, high-quality materials in the new-generation P35 series motherboards. In addition to using Solid Capacitors from leading Japanese manufacturers to provide extended durability and long-life products, GIGABYTE Ultra Durable 2 uses high quality passive components including Ferrite Core Chokes and Lower R<sub>ds(on)</sub> MOSFETs to ensure a constant and stable supply of power to the CPU in order to maximize system power consumption efficiency and reduce operating temperatures, thereby significantly improving the execution performance and over-clock stability of the motherboard.



↑ This logo can be seen on products that support GIGABYTE Ultra Durable 2 technology.



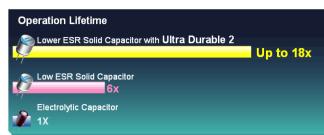
### Ultra Cooling—Lower R<sub>ds(on)</sub> MOSFET

Lower R<sub>ds(on)</sub> MOSFETs are specially designed to produce lower switching resistance for faster electric current charging and discharging.



### Low Power Loss—Ferrite Core Choke Design

Ferrite Core Chokes are comprised of a compound of iron-oxide and other metal elements whose properties hold energy much longer than common iron-core chokes at high frequency.



### Longer Life—Lower ESR Solid Capacitor Design

Solid Capacitors contain a solid organic polymer, while electrolytic capacitors use a common liquid electrolyte.

### DualBIOS™

BIOS control the settings of the hardware parts, such as the processor, memory and graphics accelerator. If the BIOS is damaged because of a virus attack or an update failure, the system may become unbootable. For this reason, previous motherboards from GIGABYTE have begun using the Dual BIOS™ solution, namely two BIOS EPROM on the motherboard. One of them is used as a backup and will automatically replace the main BIOS if the BIOS function is unavailable. This way, data can be saved and the computer will continue its operations when the main BIOS is infected with a virus or damaged due to improper operation.

### Key Features of GIGABYTE 6-Quad Series Motherboard

The 6-Quad Series Motherboard supports several innovative designs and special performance adjustment functions. It also implements exclusive technologies for BIOS protection, cooling function, power supply and transfer interface.



#### Quad BIOS

This is the multiple protection measure for BIOS. With the DualBIOS™ and Express BIOS Rescue technologies, four BIOSes can be found on the motherboard, driver CD and hard disk drives in order to provide a complete BIOS security design for improved system stability.



#### Quad Cooling

The thermal radiation design that integrates the Crazy Cool and Silent-Pipe™ technologies can quickly release the heat energy generated by the system as quietly as possible, and also help maintain the optimal cooling efficiency for the power module, PCB, North Bridge chip and South Bridge chip near the processor.



#### Quad Triple Phase

A 12-phase power design is utilized to maintain the high stability of the power source and to provide instant and stable power for the processor during high workloads or when overclocking. It can also help to decrease the temperature for the power supply module so that users can enjoy optimal stability during the system's operation.



#### Quad e-SATA 2

The motherboard has four external Serial ATA (SATA) interfaces supporting 3GB/s transfer rate, allowing users to easily share digital entertainment video and audio. The external SATA2 interface provides twice the data bandwidth of the SATA interface, greatly increasing system performance and data processing speed.



#### Quad Core Optimized

In addition to support for the powerful Core™ 2 Duo dual-core processor, the motherboard also supports the latest Intel Core™ 2 Quad quad-core processor, allowing users to quickly process a large amount of data utilizing multi-core processor technology.



#### Quad DDR2 Slots

Four dual-channel DDR2 1066 modules can improve the memory transfer performance considerably with ultra-high bandwidth. Users can experience the best memory performance via high bandwidth data transfer.

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### Key Features of GIGABYTE S Series Motherboard

The GIGABYTE S series motherboard focuses on the Safe, Smart, Speed and Silent-Pipe™ features, and implements several practical designs such as the system protection, utility configuration, cooling technology and overclock tuning.



#### Safe

Motherboards supporting the Safe feature include BIOS security technologies such as Virtual Dual BIOS and BIOS setting Recovery. GIGABYTE also provides tools for hardware diagnosis and system recovery, such as Xpress Recovery 2, PC Health Monitor, HDD S.M.A.R.T. and C.O.M., to help maintain the optimal security and stability of the PC.



#### Smart

S series motherboards with this function provide several intelligent tools, including the following:

1. Download Center that identifies and downloads drivers automatically.
2. @BIOS/ Q-Flash that helps upgrade BIOS easily via the network or BIOS's built-in flash.
3. Smart LAN that is used to for BIOS's built-in network detection.
4. Xpress Install that allows the installation of all supported drivers by pressing only one key.
5. Boot Menu that allows users to select the boot device instantly without having to enter the BIOS settings.
6. Smart Fan that adjusts the fan speed automatically to create quieter operating environments.



#### Speed (Over-clock)

GIGABYTE S series motherboards feature a wide range of tools for system over-clock tuning. The proprietary Easy Tune™ 5 and M.I.T. over-clock and over-voltage adjustment tools support frequency and voltage adjustment for components including the processor, memory module, PCI Express and PCI bus. With the additional BIOS acceleration configuration program for the R.G.B. graphics accelerator, the motherboard can be fully optimized for users interested in hardware and software overclocking.



#### Silent-Pipe™

The GIGABYTE Silent-Pipe™ cooling technology, as well as the proprietary Crazy Cool fin for the processor's rear panel, provides ultra cooling thermal performance combined with silence, durability and low power consumption. The feature has also provides exceptional cooling conduction performance for the chipset and processor power module.

#### S Series Model Name Suffix & Features Set

Intel® platform

	Durability Enhanced	Safe	Smart	Speed	Silent-Pipe
DS4	●	●	●	●	●
DS3	●	●	●	●	
S3		●	●	●	
S2		●	●		

↑ The naming of the S series products is the indication of the functions and features for each product. For instance, GA-P35-DS4 and GA-P35-DS3R are motherboards with full functions of the S series.

## 5.2 BIOS Update

After a period of time, you may need to update the BIOS to increase the motherboard's support and compatibility with components like the processor, memory and hard disk drive. In the past, updating BIOS had to be in DOS mode and, in addition to using DOS commands, you also needed to create a bootable CD or disk on your own, which was complicated and inconvenient. GIGABYTE motherboards use DualBIOS to avoid BIOS update mistakes. In addition, beginners can also use either Q-flash or @BIOS to update BIOS easily.

### Update with Q-flash...Step 1



Simply put, with Q-Flash, users only have to stay in the BIOS menu when they want to update BIOS. No more downloading or searching update programs. As shown in the figure, before updating, first check the model and version of your motherboard, then obtain the latest BIOS from GIGABYTE website via the Internet. Useful tips and instructions are also provided on the web page for your reference.

### Update with Q-flash...Step 2



Take the GA-P35-DQ6 motherboard for example. Download the "motherboard\_bios\_ga-p35dq6-F2.exe" file. Run the executable file and then copy the "p35dq6-F2" to a 1.44MB floppy disk.

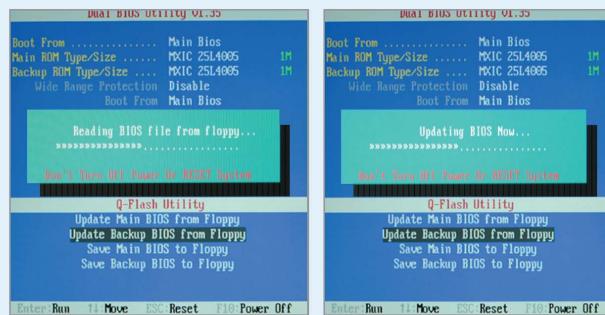
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## Update with Q-flash...Step 3



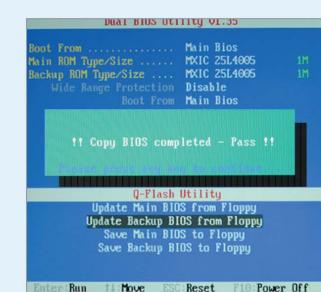
Reboot the computer and enter BIOS. Press the F8 key to activate the Q-flash mode and select "Update Main BIOS from Floppy". The computer will locate the "p35dq6-F2" file in the floppy disk automatically. Press the Enter key to start update.

## Update with Q-flash...Step 4



When the computer is reading BIOS files, do not turn off the power or perform any improper operations. This also applies to the writing process next.

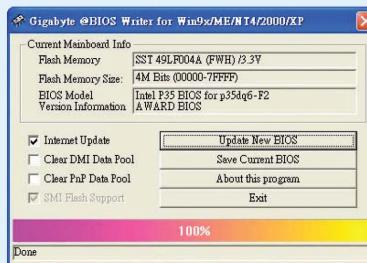
## Update with Q-flash...Step 5



After the writing process, the "Copy BIOS Completed Pass" message will appear on the screen. Reboot the computer and make sure that the BIOS information screen has been applied to the computer. Please note that after many BIOS updates, it is necessary to go back to the BIOS main menu and select "Load Optimized Defaults" to refresh menu contents.

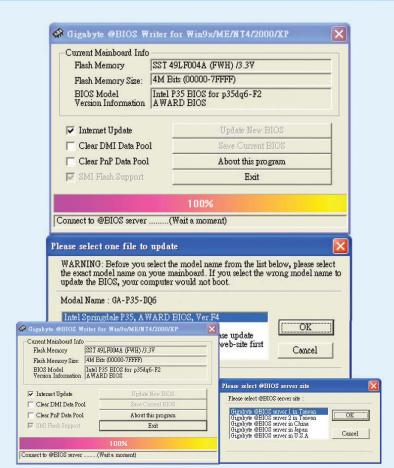
## Update New BIOS ...Step 1

Actually, users do not always have to enter the DOS mode to update BIOS nowadays. For instance, GIGABYTE @BIOS utility can be operated in Windows. @BIOS is available on the disc supplied with the motherboard. As @BIOS accesses the new BIOS version via the Internet, users have to connect to the Internet for the BIOS update operation.



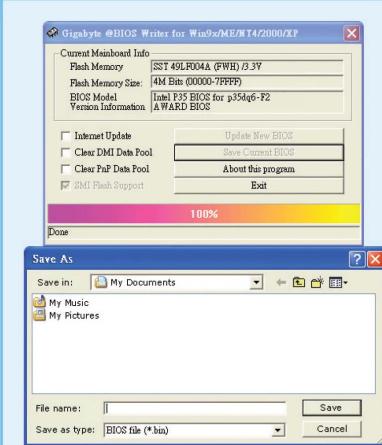
On the @BIOS main screen, select "Internet Update" and click "Update New BIOS."

## Update with @BIOS ...Step 2



@BIOS will then make validation via the Internet and automatically list the chipset name and BIOS version number. After selection, choose a server for download according to the user's location. For example, select "Taiwan."

## Update with @BIOS ...Step 3



In addition to update, @BIOS can also be used to backup BIOS. In the previous step, select "Save Current BIOS," specify the storage location, and then customize the filename.

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### 5.3 Installing Drivers with Ease

Besides the functions provided by the chipset, current motherboards also come with many chips to provide additional functionality, such as dual LAN, IEEE 1394 and RAID. With increased functionality comes the need for additional installation of drivers, resulting in more complicated installation procedures. However, with GIGABYTE Xpress Install, you can automatically install all drivers simply with one click.

The original drivers that came with your motherboard may become outdated with time and can cause problems if not updated. To solve this, GIGABYTE has created a "Download Center" to allow you to maintain the most updated drivers via the Internet.

#### One click for driver installation...



Insert the driver disc supplied with the motherboard into the optical drive. Xpress Install will automatically detect and scan the system.

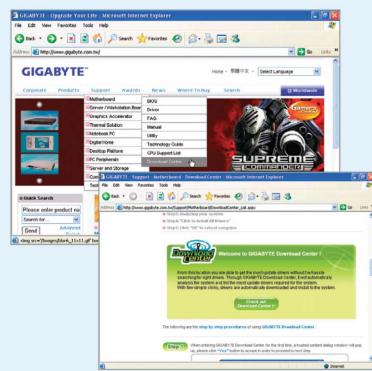
The screen will then show the list of drivers that need to be installed. Users can select the items to install, or use Xpress

Install to install all items. Clicking the "Xpress Install" button will start the automatic installation. During installation, do not move the keyboard or mouse, otherwise the installation can become interrupted.

#### Notes on using Download Center:

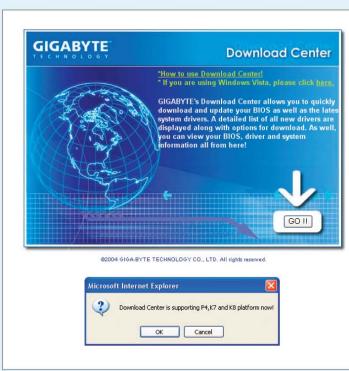
1. If using Windows® Vista™, right-click on the IE browser icon and select "Run as administrator" to start the IE browser in the administrator mode. The update procedure can then be performed normally.
2. A compatibility issue exists between the auto-update function in Download Center and Microsoft update 912945. Remove Microsoft® update 912945 before using the auto-update function.

### A Useful Tool for Drivers Update>>>Step 1



Go to GIGABYTE website ([www.gigabyte.com.tw](http://www.gigabyte.com.tw)) and select the tab, "Support", on the top of the web site, and "Motherboard" and then "Download Center".

### A Useful Tool for Drivers Update>>>Step 3



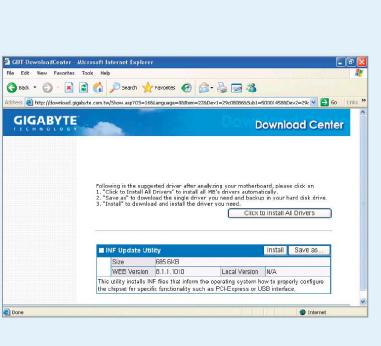
A prompt appears explaining that Download Center supports P4, K7 and K8 motherboards only, not earlier motherboards! Click "Yes".

### A Useful Tool for Drivers Update>>>Step 2



If you use Windows® XP™ Service Pack2, make sure to enable the ActiveX installation via the tool bar. Then Internet Explorer will pop up a warning message. Click "Yes" to install the software.

### A Useful Tool for Drivers Update>>>Step 4



The driver information, such as version and size, will be displayed in the list. You can either select to install one driver or select "Click To Install All Drivers" to update all drivers.

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### 5.4 Tools for Advanced Users

Overclocking not only squeezes out every bit of the computer's capacity, it also brings out the best performance within a limited budget. At the earlier stages of the PC, users needed to know basic information about the processor clock, voltage and motherboard BIOS. Moreover, overclocking was mostly performed by configuring the jumper settings as well as removing the system case, which made overclocking very inconvenient.

To allow users to have a better overclocking experience without worrying about causing system instability, GIGABYTE offers the "EasyTune" and "V-Tuner" tools for its motherboards and graphics accelerators. With these tools, there's no need to configure jumper settings, and the tools can be used under Windows®. Its user-friendly graphics interface makes it easier than ever to operate.

#### EasyTune™ 5 Pro

EasyTune™ is usually included in the driver disc supplied with the motherboard. This tool allows both beginners and advanced users to easily adjust the system configuration.

The new EasyTune™ 5 Pro version was introduced to the market with the Intel® X38 chipset. Included in the new Pro version is the ability to overclock your graphics card. The tool provides three modes for selection:

Easy Mode, Advanced Mode and Graphics Mode. The Easy Mode is designed for beginners, and can automatically detect the over-clock range acceptable for the processor and then automatically make performance adjustment for users.

The Advanced Mode supports fine-tuning of the clock and voltage of the processor, memory module and PCI-Express®. To help reduce cooling fan noise, the Smart Fan function of EasyTune™ 5 Pro can obtain a balance between the speed and cooling effect of the cooling fan.



↑ The figure shows the EasyTune™ 5 main screen. The easy-to-understand graphical user interface helps users to easily adjust the system performance simply by clicking.

## Features of EasyTune™ 5 Pro



### Detailed System Fine Tune Function

In Advanced Mode, you can adjust the clock and voltage of processor, memory, PCI Express® and PCI.



### Overclock function of the graphics accelerator

Overclock options for NVIDIA® or ATI® graphics accelerators are provided. Users can set the speed of the graphics chip and display memory respectively, regardless of the brand of graphics accelerator.



### Adjustment by System Environment

EasyTune™ 5 also features C.I.A. 2 (CPU Intelligent Accelerator 2). CIA2 can dynamically adjust the processor clock according to the level of workload. Under different workload levels, CIA2 will adjust the CPU efficiency to achieve the system optimization.



### Flexible setting for fan monitoring

The Memory Intelligent Booster II (M.I.B II) technology is used to increase the memory performance. When the function is enabled, the program will list the memory brands that are tested by GIGABYTE. The brands of memory chips and limitation for over-clock are also listed.

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When overclocking causes the system to be unable to boot, EasyTune™ 5 provides System Overclock Saver (S.O.S) function to automatically reboot the computer and clear the CMOS data to restore the motherboard BIOS factory settings. With this feature, users do not need to set the jumper, remove the battery or remove the chassis when overclocking fails. This is good news for users who love to challenge the boundaries of the system performance.



### V-Tuner 3

For 3D gamers, the computer has to offer a certain level of performance with the graphics accelerator playing the most important role. GIGABYTE graphics accelerators provide the "V-Tuner 3" tool for overclocking. Using the Windows interface, V-Tuner 3 allows you to set the speed of the graphics chip and display memory. The speed information is displayed in both figures as well as speed meter for clear viewing, which can come in handy for ordinary users and professional players alike.

i-Cool is a balance technology developed to increase the processor performance and reduce noise from the cooling fan. It adjusts the fan operation based on the working status of the processor. This technology is has been supported since GIGABYTE motherboards using the Intel® 945 chipset (including the current Intel® X38 chipset).

i-Cool supports 5 setting levels of processor power consumption. When users select a level, i-Cool will detect the processor status such as estimated power consumption, fan noises and performance. The smart auto-selection mode automatically adjusts the performance and cooling environment based on the user settings, so as to create a perfect cooling and muting environment in all conditions. Users can download i-Cool free of charge and a complete list of supported motherboards from GIGABYTE website.



← The Auto-Optimized button automatically sets the optimal GPU and memory clocks. If the program hangs, simply reboot the computer and enter the Auto-Optimized mode. Use the scroll to set the clocks of the graphics accelerator and display memory. The intuitive interface is easy for your adjustment.

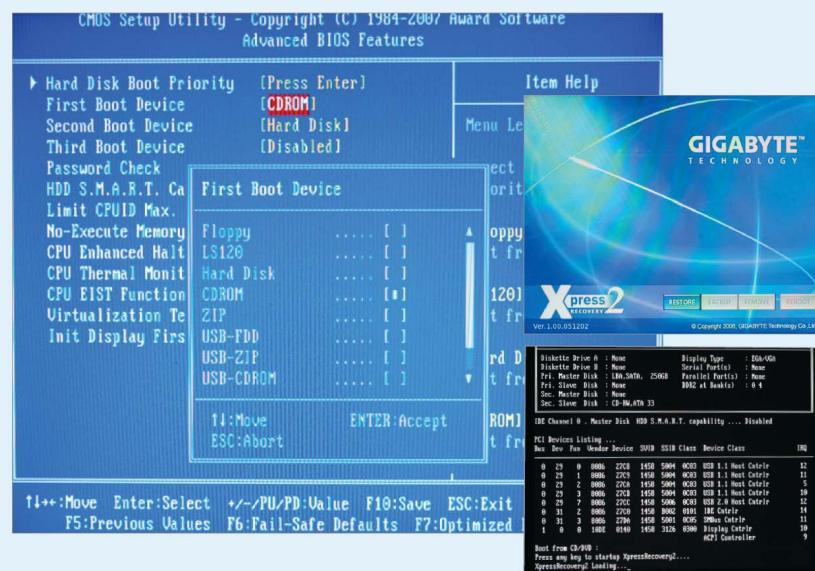


← For common word processing, users can select the lowest-performance mode for a quieter environment. To play 3D games, the highest-performance mode is advised for the optimal performance.

## 5.5 Be Reassured During System Freezes

Windows® may freeze because of hacker intrusion, virus attack or improper operation. To reinstall the operating system is very time-consuming process, not to mention restoring all of your customized settings. GIGABYTE motherboards provide the "Xpress Recovery2" technology to back up your data on the hard disk drive in case of operating system failures.

### Step 1



Enter BIOS Setup, go to "Advanced BIOS Feature" and set Boot from CD-ROM. Save the settings and exit the BIOS Setup. Insert the supplied driver disc into the optical drive. When the screen displays the "Boot from CD/DVD:" message, press any key to start the Xpress Recovery2 program. After starting Xpress Recovery2 by booting the computer from a CD-ROM disc, users can press the F9 key to run Xpress Recovery2 during the boot-up process.

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## » Step 2



The "Backup" item on the Xpress Recovery2 menu is data backup. During the backup, the screen will show the total capacity of the backup files and the current progress.

## » Step 4



To delete a backup file, select "Remove", press "Enter" and then select "Yes". (This button will not appear if there is no backup file)

## » Step 3



To restore your system, select "Restore" in the main menu. A message appears warning that the new data will overwrite the original one. Press "Yes" to continue (This button will not appear if there is no backup file).

## Note



Refer to the manual before starting to use. Backup copies, for instance, are not available if there's no hard disk space reserved or there's no operating system in the hard disk drive. Please pay close attention to environment settings.