Primer for ASUS Graphics Cards

Firmly affixed at the top of the motherboard charts is ASUS, who has also built quite a reputation for itself in the graphics card business. Owing to its first rate R&D competence, as well as a never-ending quest for product perfection, ASUS has, from very humble beginnings (circa PCI era), become one of the world's largest graphics card manufacturers today. Last year (2004), ASUS recorded graphics card shipments totaling 8 million units, which equates into a worldwide graphics card market share of 9%.

Asus Graphics Card Series

Every graphics card manufacturer categorizes its products according to product features and user purchasing power. ASUS is no exception to the practice, and currently has in its arsenal the TOP, Game Edition, standard cards, and X series graphics card lineups.

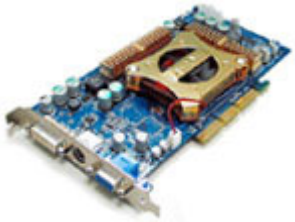
TOP stands for Top Overclocking Performance. This series represents the pinnacle of the ASUS graphics card lineup. All models in this series are factory overclocked for core and memory speeds exceeding their respective reference cards.

Inaugural TOP series member the Extreme N6600 GT TOP adopts the GeForce 6600 GT GPU just like the Extreme N660 GT graphics card, but its core and memory speeds are both advanced by 50MHz (effective memory speed is therefore boosted by 100MHz) to make full use of the GeForce 6600 GT's potential.

ASUS Extreme N6600 GT TOP

The **Game Edition** series graphics cards are engineered especially for gamers, and are generally considered very good buys as they sometimes come slightly overclocked from the factory. Let's take for example the GeForce 6800 powered V9999E card, which has core/memory speeds of 350MHz/1GHz, or 25MHz/300MHz above the reference card.

At other times they have featured improvements such as widened memory interfaces (e.g. 64-bit in the ATI RADEON 9550 vs. 128-bit in the A9550E). Finally, one other approach that ASUS has been known to take is to reduce clock speeds to provide greater overclocking potential, while simultaneously reducing the price of the product. The GeForce FX 5900 V9950GE is an example; its memory speed reduced to 700MHz from the reference card speed of 850MHz. Pricing for the card compared to same-cored V9950 graphics cards was lower.

		
ASUS V9999GE	ASUS V9950GE	ASUS A9950GE

The **standard edition** graphics cards are 100% faithful to the reference cards, so the features and specifications are only as special as the reference cards themselves.

ASUS has prepared the **X series** graphics cards as the entry-level option, but they usually still feature a rather complete set of common feature functions. The V9520-X below is a fine example – built on low profile PCBs, it provides mainstream connectivity in the form of a full set of DVI, VGA, and TV out ports

ASUS V9520-X

While these 4 graphics card series basically make up the ASUS graphics card lineup, sometimes customers are also treated to Deluxe edition graphics cards that are bundled with very special accessories such as 3D spectacles (previously) or webcams (currently). The Magic, SE, and Video Suite series graphics cards have been officially retired.

Naming Convention for ASUS Graphics Cards

ASUS' graphics card business began early in the PCI era. PCI graphics cards of that era, however, exited stage right by the middle of the 90's, and were replaced completely by AGP graphics cards. To make things simple, we'll discuss the conventions ASUS uses when assigning model numbers starting with AGP graphics cards, which adhere to the following format:

1	2	3		4		5		6
X	X X X X	X X X	/	X X X	/	X X X	/	X

Looking at the above, it is obvious that an ASUS model number is made up of 6 portions. Portion 1 is the code used for the maker of the graphics processor. Portion 2 relates directly to the graphics processor adopted. Portion 3 represents the graphics card series, while portion 4 concerns the I/O interfaces. Portion 5 is generally used for graphic memory capacity, and portion 6 the TV output format supported.

Portion 1

The letter/code most often seen in position/portion 1 used to be "V", which stood for Video, and was meant to define the item as an ASUS graphics card product. This letter ***was*** used for products incorporating graphics processors from Intel, S3, 3dfx, NVIDIA (all series) and ATI (Rage series only).

At the beginning of the AGP era we witnessed the starting of a solid partnership between ASUS and NVIDIA. Most ASUS products were powered by NVIDIA GPUs, which is the reason why ASUS graphics card products, having model numbers starting with the letter V still available in the market today, mainly adopt NVIDIA chips.

In the meantime, ATI was growing in market share and influence, and had finally reached a point at which it could be considered equal to NVIDIA. To increase the competitiveness of its product lineup, ASUS set up a working relationship with ATI and started the manufacture of products powered by ATI VPUs. These products were given model numbers starting with the letter "A".

In the present, ASUS' lineup is an uncomplicated one consisting of only NVIDIA and ATI graphics processors. ASUS has also given up the letter V, which previously referred to both NVIDIA and ATI products. ASUS now uses "A" for ATI based products and "N" for NVIDIA products.

Portion 2

The graphics processor model number is inserted here. While this is usually a 4-digit number, it also takes into account the name of graphics chip, so there might be an added suffix (e.g. the "Ultra" in the GeForce 6800 Ultra).

For models starting with "V", the rule of thumb here is the higher the number, the higher the performance. Being the 4 digit figure that it is, 9999 is the highest number that can be assigned to a graphics card. Currently, this has already been given to the GeForce 6800 series GPU products (V9999), so this method can no longer be applied to later products, which might deliver stronger performance. ASUS has now adopted a new method, which is to use the name of the graphics chips directly. This has been put into effect with the launch GeForce 6600 GT AGP

With ATI products ASUS has always applied the VPU model number directly (ATI 3D graphics chips are called VPUs, while NVIDIA's are called GPUs), with examples being the RADEON 9800 XT-powered A9800XT and the RADEON X800 XT-powered AX800 XT graphics cards.

Portion 3

The 3rd part of an ASUS model number is used to identify membership in an ASUS product series. TOP, GE and X series graphics cards all make use of this, while standard edition cards do not.

Portion 4

This is used to describe the I/O interface, and is separated from the previous 3 portions using a "/". Codes used here are H, T, V, D, and 2, with H standing for HDTV support, T for TV-Out support, V for Video in, and D for DVI interface. 2 is a bit more special, as it is used in conjunction with one of the previous codes as a means of conveying that there are two such I/O interfaces on the card. For example, 2D simply means that there are 2 DVI out ports.

Portion 5

The 2nd to last portion is used to convey memory capacity and is also separated from the previous portion using "/". 64M, 128M and 256M are used to communicate 64MB, 128MB, and 256MB capacities respectively.

Portion 6

This model number portion conveys the video format supported, and is used only for cards that support video in and/or video out. This is necessary as the video format for television varies country to country. In most cases you will either see P (for PAL) or N (for NTSC).

PCI Express Era

Currently, PCI Express graphics cards are gradually replacing AGP graphics cards. While ASUS' new PCI Express cards adopt the same basic convention as AGP cards, an "E" (for Extreme) is assigned to the front of portion 1. The portions behind follow the same principles explained above.

Code Legend

	Code	Explanation	Remarks
Portion 1	V	Video	For graphics processors from NVIDIA, S3, SiS, and Intel
	A	ATI	
	N	NVIDIA	
	E(Extreme)	PCI Express	
Portion 2	1326	SiS 6326	Portion 1 code "V", all are AGP graphics cards.
	2740	Intel i740	
	264GT3	ATI Rage Pro	
	3000	NVIDIA Riva128	
	3000ZX	NVIDIA Riva128ZX	
	3005	SiS 305	
	3100	S3 Savage 3D	
	3200	3dfx Voodoo Banshee	
	3400	NVIDIA RivaTNT	
	3500	S3 Savage4	
	3800	NVIDIA RivaTNT 2	
	385GX2	S3 Virge/GX2	
	6600	NVIDIA GeForce256	
	6800	NVIDIA GeForce256 DDR	
	7000	NVIDIA GeForce MX4000	
	7100	NVIDIA GeForce 2 MX	
	7700	NVIDIA GeForce 2 GTS	
	7700Ti	NVIDIA GeForce 2 Ti	
	8170	NVIDIA GeForce 4 MX	
	8200	NVIDIA GeForce 3	
	8200T2	NVIDIA GeForce 3 Ti200	
	8200T5	NVIDIA GeForce 3 Ti500	
	8420	NVIDIA GeForce 4 Ti4200	
	8440	NVIDIA GeForce 4 Ti4400	
	8460	NVIDIA GeForce 4 Ti4600	
	9180	NVIDIA GeForce 4 MX440-8X	
	9280	NVIDIA GeForce 4 Ti4200-8X	
	9520	NVIDIA GeForce FX 5200	
	9560	NVIDIA GeForce FX 5600	

	9570	NVIDIA GeForce FX 5700	
	9570LE	NVIDIA GeForce FX 5700 LE	
	9900	NVIDIA GeForce FX 5800	
	9900Ultra	NVIDIA GeForce FX 5900 Ultra	
	9950	NVIDIA GeForce FX 5900	
	9950Ultra	NVIDIA GeForce FX 5900 Ultra	
	9980Ultra	NVIDIA GeForce FX 5950 Ultra	
	9999	NVIDIA GeForce 6800	
	9999LE	NVIDIA GeForce 6800 LE	
	9999GT	NVIDIA GeForce 6800 GT	
	9999Ultra	NVIDIA GeForce 6800 Ultra	
	5750	NVIDIA GeForce PCX 5750	Portion 1 code is “N”. If “E” affixed at the very front, product is a PCI Express graphics card.
	5900	NVIDIA GeForce PCX 5900	
	6200	NVIDIA GeForce 6200	
	6200TC	NVIDIA GeForce 6200 Turbo Cache	
	6600GT	NVIDIA GeForce 6600 GT	
	6600	NVIDIA GeForce 6600	
	6800	NVIDIA GeForce 6800	
	9200	ATI RADEON 9200	Portion 1 code is “A”. If “E” affixed at the very front, product is a PCI Express graphics card
	9250	ATI RADEON 9250	
	9550	ATI RADEON 9550	
	9600SE	ATI RADEON 9600 SE	
	9600Pro	ATI RADEON 9600 Pro	
	9600XT	ATI RADEON 9600 XT	
	9800Pro	ATI RADEON 9800 Pro	
	9800XT	ATI RADEON 9800 XT	
	X300	ATI RADEON X300	
	X300SE	ATI RADEON X300 SE	
	X600Pro	ATI RADEON X600 Pro	
	X600XT	ATI RADEON X600 XT	
	X700	ATI RADEON X700 LE	
	X700Pro	ATI RADEON X700 Pro	
	X700XT	ATI RADEON X700 XT	
	X800Pro	ATI RADEON X800 Pro	
	X800XT	ATI RADEON X800 XT	
	X800XT PE	ATI RADEON X800 XT Platinum Edition	
	X850XT	ATI RADEON X850 XT Platinum Edition	
	X850XT PE	ATI RADEON X850 XT Platinum Edition	
Portion 3	TOP	TOP series	Current mainstream ASUS graphics card series.
	GE	Game Edition	

	-X	X series	Products with model numbers not featuring these codes are standard edition (100% reference-based) graphics cards.
	Deluxe	Luxury package (usually supports video input and may bundle special products such as 3D spectacles, webcam)	
	Magic	Magic series	Basically no longer in use
	SE	SE series	
	Video Suite	Video Suite series (usually supports video input)	
Portion 4	H	HDTV	
	D	DVI	
	V	Video in	
	T	TV out	
	2D	2 DVI	
Portion 5	64M	64MB	
	128M	128MB	
	256M	256MB	
Portion 6	P	PAL	
	N	NTSC	

Model Number Summary

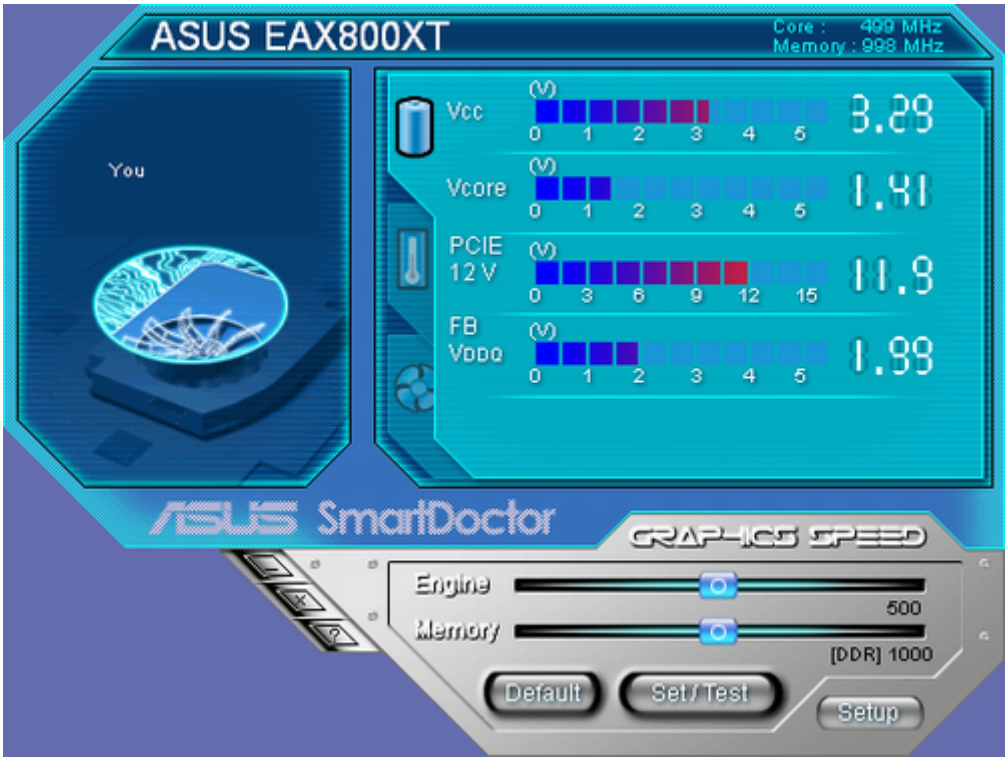
ASUS graphics card model numbers are broken down into 6 portions. While each portion provides us with important information, it is the first three that are the most important as they communicate the adopted graphics processor and the corresponding performance level. Understanding these codes means a rudimentary understanding of the major specifications

Special Features and Functions

The technological tour de force that is ASUS allows graphics card products to incorporate many exciting and unique features and functions. Some of the latest features are TV tuning capabilities as well as 3D display, the others we are quite familiar with, such as the SmartDoctor graphics card status monitor, VideoSecurity Online surveillance system and GameFace Live “voice and video chatting feature”.

ASUS SmartDoctor

This graphics card monitoring system is an ASUS classic that has benefited from continuous development over the last 3-4 years. Currently it is at V2.X. Major functions include direct graphics card frequency adjustments, as well as voltage, core temperature and fan speed monitoring.



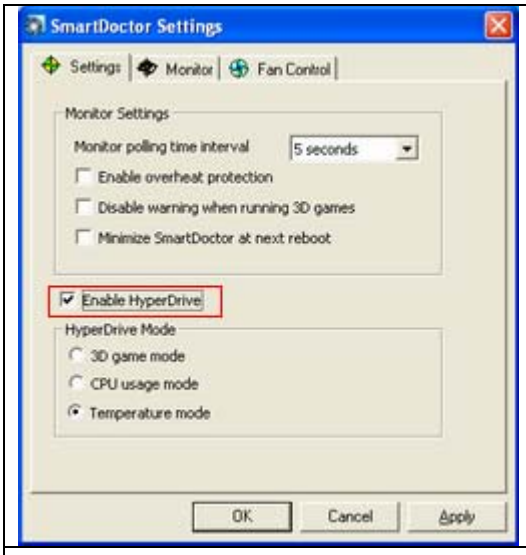
SmartDoctor setting panel, displays voltages and graphics card frequency adjustment slider

Core/memory temperature readings

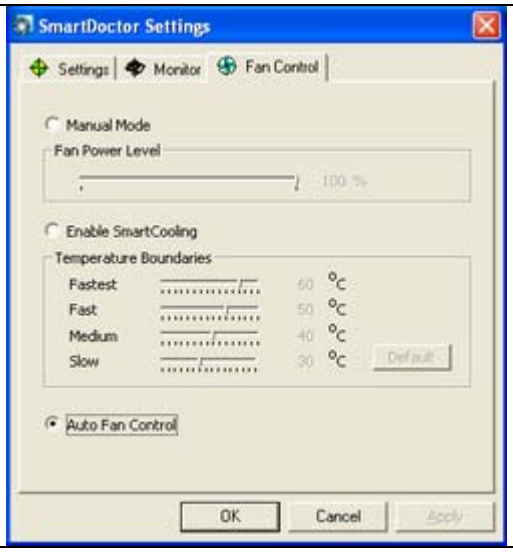
Fan speed reading

ASUS has also used the SmartDoctor program to fortify its graphics card-supported functions such as the HyperDrive function supported by the RADEON X800 XT. In addition, the SmartDoctor setting panel offers the 3D game, CPU Usage and Temperature modules that will, according to 3D game and CPU loads or graphics card temperature, perform dynamic overclocking. This system is slightly more flexible than ATI's HyperDrive, which adjusts only on the basis of temperature.

In addition, ASUS' SmartCooling feature is controlled by SmartDoctor. Users can choose to have SmartDoctor automatically adjust fan RPMS to pre-defined temperature–speed settings as a method of minimizing noise.



HyperDrive options



Fan Control

The ASUS VideoSecurity Online program is a mini surveillance system that works by fixing the focus of a webcam on a certain area the user wants to keep dibs on. Anything that enters the webcam's window of sight is immediately captured – the image preserved as proof of intrusion. The system can email or telephone the user automatically to relay a warning.

In the example below, we setup the Video Security Online system and test using a pen. The "intruder" enters the webcam's view and is "captured" instantly. Video Security Online will produce two images: one for normal conditions (upper) and a second as proof of an intrusion (lower).

Video Security Online configuration panel

Our "intruder" is captured instantly

The ASUS GameFace Live is an ASUS exclusive feature that was launched not long after the company started producing ATI products last year. Currently at version 2.X, the program can be used to conduct video chatting and TV reception during gameplay without negatively impacting the game. Previous versions provided only one-on-one video chatting capabilities, whereas now it is capable of one-to-multiple.

Game Face configuration panels

Chat with multiple users during gameplay

Note: To allow the above functions to work properly, please make sure you have the ASUS Enhanced Driver installed.

Conclusion

ASUS is a premium graphics card brand. The only downside to the graphics cards ASUS

produces is the relatively high prices compared to the competition, but this is to be expected from a brand of its stature.

We hope the information we have presented in this document can be of help to you when choosing an ASUS graphics card!