Why You Need the EVGA e-GeForce 6800 GS

GeForce 6800 GS Profile

NVIDIA's announcement of a new GPU product hailing from the now legendary GeForce 6 series adds new fire to the lineup in the form of the GeForce 6800 GS. This powerful cast now reads as GeForce 6800 Ultra, GeForce 6800 GT, GeForce 6800, GeForce 6800 LE AND *GeForce 6800 GS*.

As we know, the GeForce 6 series takes a step back to the more powerful and newer GeForce 7 series released recently. So why did NVIDIA release a new GPU for an older product line? Is it simply a holiday season marketing push, or does the answer have something to do with rival ATI?

ATI expanded the RADEON X800 series product line with two new VPU   products – the RADEON X800 GT and RADEON X800 GTO - just prior to their announcement of the new RADEON X1000 series. The former is an 8 pixel pipe product, while the latter is built with 12 pipes. Both are targeted for the mid-range market.

These new "GT" VPUs place a lot of pressure to NVIDIA's GeForce 6600 GT (8 pixel pipes) and GeForce 6800 (12 pixel pipes) and forces the company to respond with a new product to meet the challenge head-on. Many of NVIDIA fans might prefer new GeForce 7 products for the mid-range market, but NVIDIA still needs time to prepare them. In fact, NVIDIA's older but more mature GeForce 6600 or GeForce 6800 series products can be improved to provide enough power to compete with the RADEON X800 GT and GTO. That in itself is a viable and efficient solution for the meantime. That is the impetus behind the GeForce 6800 GS, which will take the fight to the RADEON X800 GTO in a fair fight – both brandishing a powerful dozen of pixel pipelines.

SPEC & Feature about GeForce 6800 GS

Though "GS" is a new designation in GeForce 6800 series product naming convention, its 12 pixel pipelines means it is closely related to the GeForce 6800. In fact, the internal pipeline architecture of the GeForce 6800 and GeForce 6800 GS is the same. Based on the award-winning GeForce 6 architecture, the GeForce 6800 GS GPU features advanced gaming technologies including Shader Model 3.0, high-dynamic range (HDR) lighting, and NVIDIA Scalable Link Interface (SLI) multi-GPU technology. The GeForce 6800 GS GPU also has a 256-bit memory interface and a dedicated video processing engine that delivers virtually unmatched high-definition video playback.

The GeForce 6800 GS is a native PCI-E GPU product sporting the NV42 core. It is known that the native PCI-E GeForce 6800 features either the NV41 or NV42 core; the NV41 fabbed on IBM's 130nm process while the NV42 uses TSMC's 110nm

process. The shrink process means lower costs, less power consumption, and rather importantly, higher clock speeds become more accessible.

Core frequency for the GeForce 6800 GS is 425MHz - almost a 30% increase over the GeForce 6800's 325MHz core speed. Video RAM is also clocked higher at 1000MHz over the GeFore 6800's 600/700MHz speeds. For this reason, the, GeForce 6800 GS is equipped with GDDR3 memory.

The following table lists the GeForce 6800 product specifications (PCI-E):

	GeForce 6800 Ultra	GeForce 6800 GT	GeForce 6800 GS	GeForce 6800	GeForce 6800 LE
Code name	NV45	NV45	NV42	NV41/NV42	NV41/NV42
Process	130nm	130nm	110nm	130/110nm	130/110nm
Core clock	400MHz	350MHz	425MHz	325MHz	325MHz
Memory data rate	1100MHz	1000MHz	1000MHz	600/700MHz	600/700MHz
Memory interface	256-bit	256-bit	256-bit	256-bit	256-bit
Memory Type	GDDR3	GDDR3	GDDR3	DDR	DDR
Pixel Pipes	16	16	12	12	8
Vertex Pipes	6	6	5	5	4

From the table, we see that though GeForce 6800 GS has 4 fewer pixel pipelines in comparison to the GeForce 6800 GT, it has a much higher core speed, which results in the GeForce 6800 GS performing at a level that is close to the GeForce 6800 GT.

Introduction to the EVGA e-GeForce 6800 GS
EVGA's e-GeForce 6800 GS card looks just like the GeForce 6800 GT, because their installed coolers are in fact one and the same. With the higher core clock and RAM data rate, the card should run hotter than GeForce 6800, so the extra cooling power on the GeForce 6800 GS is a natural choice.

As the GeForce 6800 GS supports SLI gaming, EVGA has located the SLI connector at the top of the card. What doesn't appear on the GeForce 6800 card but has been included on the GeForce 6800 GS is the molex power connector as the higher clock speeds require additional power for stable operation and performance.

The EVGA e-GeForce 6800 GS follows NVIDIA's prescribed reference frequencies. As already mentioned above, the core clock is 425MHz and the Video RAM data rate is 1000MHz. Furthermore, the card has 256MB Video RAM, which is definitely sufficient for a card occupying the mid-range market.
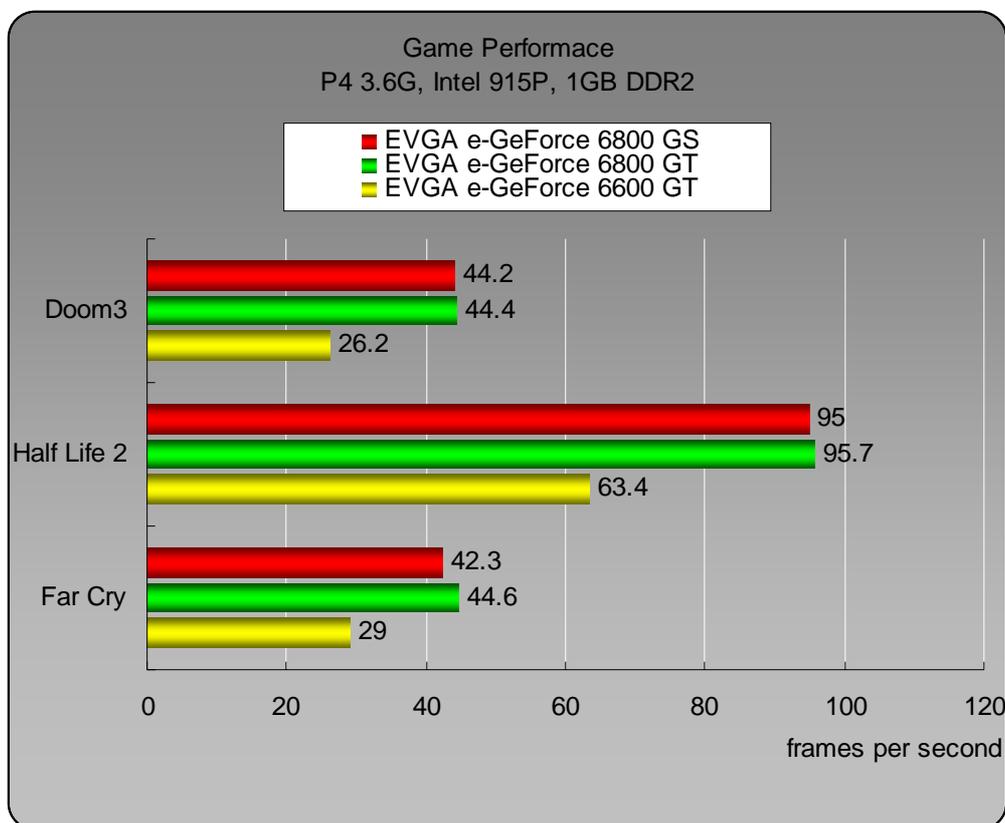

Like most VGA cards, there is a mainstream combination of S-Video, DVI-I and VGA ports on the rear bracket of the EVGA e-GeForce 6800 GS. A dual DVI-I combination would look more advanced than the common DVI-I + VGA setup, but the latter solution is a better fit for the card's target audience. Besides, the S-Video out port supports high resolution HDTV output, and serves as a future-proofing feature as HDTV is growing in popularity and is slated to one day replace traditional TV.

Gaming Performance

Test Platform Setup

CPU	Intel Pentium 4 560 (3.6GHz)
Motherboard	Gigabyte GA-8I915P Duo Pro-A
Memory	ADATA DDR2 533 512MB x2
HDD	Maxtor DiamondMax plus 9 120GB
OS	Windows XP Professional + SP2
Display Driver	NVIDIA Forceware 81.87
Game Setup	
FarCry	Custom Demo 1280x1024, 4xAA,8xAF
Half Life 2	Custom Demo 1280x1024, 4xAA,8xAF
Doom3	Demo1 1280x1024, High Quality, 4xAA

Game Performace
P4 3.6G, Intel 915P, 1GB DDR2

■ EVGA e-GeForce 6800 GS
■ EVGA e-GeForce 6800 GT
■ EVGA e-GeForce 6600 GT

Doom3: 44.2 / 44.4 / 26.2
Half Life 2: 95 / 95.7 / 63.4
Far Cry: 42.3 / 44.6 / 29

frames per second

The results are all average frame rate figures

● Below 20 fps - very poor gaming performance
● 20~30fps - skipping will be apparent, but the game is still playable
● 30~40fps - basically smooth gaming, occasional skipping may still occur
● 40~60fps - smooth sailing all the way
● 60fps and - very smooth, gameplay is very good

Note: If you experience skipping at a certain resolution and image quality setting, reducing these settings may be helpful towards a smoother gaming experience

According to our benchmarking results, the GeForce 6800 GS is more than able to provide a nice answer to contemporary 3D games. At the resolution of 1280x1024 – currently the most popular resolution on 17″ and 19″ LCD monitors - you can play games at the very high Quality settings. Moreover, the performance of GeForce 6800 GS is really close to that of the GeForce 6800 GT.

Thanks to the higher frequencies, the GeForce 6800 GS has sufficient power to compete with the RADEON X800 GTO. In NVIDIA's press release for the GeForce 6800 GS, we know the recommended retail price is set at $249 USD, while the actual price is just $200 approx on Newegg.com. This is an unexpectedly nice surprise to as that price point was previously reserved for the GeForce 6600 GT! Generally speaking, the GeForce 6800 GS is a good choice for its target market and provides ATI's products with a stiff new challenge once more.

Why You Need the EVGA e-GeForce 6800 GS
If you're looking to use a VGA card to play 3D games at the optimum resolution on your 17″ or 19″ LCD monitor (1280x1024, in other words) , the EVGA e-GeForce 6800 GS is a very suitable choice. However, the card does have its limits and may experience difficulty in running highly demanding 3D games at resolutions of 1600x1200 or above, where a higher-end card may be required.

As far as output is concerned, the card supports both traditional TV and HDTV through the S-video port, and with the DVI-I + VGA port combination, you can build a dual monitor system using both output ports in either a digital + analog configuration or or dual analog monitor configuration (using an adapter as DVI-I is still compatible with analog).

Playing video on the PC with the help of the GeForce 6800 GS is not a problem as long as your CPU meets the requirement for certain the format you wish to use. This card will play WMV HD, MPEG-2, H.264 and even HDTV quality. And with NVIDIA Pure Video support, image quality is just about guaranteed.

Finally, the GeForce 6800 GS is designed especially for home and office use, and is not very suitable for use in the professional or industrial markets.