



Winner  
ET6000™

# ET6100™

ET6100 Graphics and Multimedia Engine  
Data Sheet



## ET6100™ Features

- NEW!** Improved ET6000™ family state-of-the-art 128-bit GUI accelerator.
- NEW!** Integrated 175MHz VGA-compatible 24-bit LUT-DAC and dual frequency clock generator.
- NEW!** Increased display bandwidth enables new modes and improved performance.
- NEW!** Displays resolutions up to 1600x1200.

- Support for Microsoft Direct3D™.
- ET6000 pin and register compatible 208-pin SVGA controller and graphics accelerator.
- Color depths up to 16.8 million.
- Greater than 100Hz vertical refresh.
- Full control of power-down for internal clocks and palette RAM.
- PCI 2.1 Compatible I/O bus interface.
- VESA DDC1 and DDC2b monitor detection.

### • Full functioned graphics acceleration engine supporting:

Aligned and non aligned operations.  
Transparent BLT.  
Rectangular BitBLT.  
Trapezoidal BitBLT.  
Stretch BLT/Compress BLT.  
Area fill.  
Color/text (Font) expansion.  
All 256 raster operations (ROP's).  
Vector line drawing.  
Hardware assisted clipping.  
Hardware cursor with 64 possible foreground/background colors.

- Accelerator architecture optimized for 8/15-16/24/32 -bit packed pixel RGB modes.
- Accelerator queuing allows parallel processing by ET6100 and host CPU.
- 32-bit linear addressing and data bus interface.
- Integrated 8-Bit high speed feature connector.

### • Multimedia Video Features:

Internal pixel interpolation engine for horizontal and vertical expansion of video.

High quality live video and MPEG -2 de-interlacing.

Internal YUV 4:2:2 to RGB 8/15/16/24 converter. Display controller may display either YUV or RGB data stored in the graphics memory buffer.

*n* Hardware graphics and video windows may be simultaneously displayed, allowing numerous mixed YUV and RGB windows.

DirectDraw™ clipping support for video windows.

Color keying.

Gamma boost/correction to enhance video luminance.

IMA and Express Bus™ interface to multimedia devices.

IMA devices add no additional loading to the PCI bus.

Enhanced pciMA bus offers bi-directional access to graphics frame buffer.

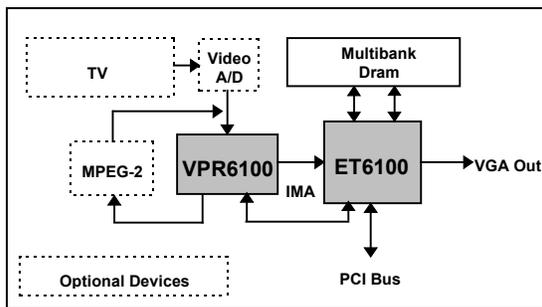
## The 128-bit Advantage

The ET6100 delivers 25% greater instantaneous bandwidth to the display than the ET6000, and with an integrated 175MHz DAC offers numerous modes previously unavailable. With the ET6100 Tseng Labs has also enhanced its proven Multibank DRAM (MDRAM) memory interface for increased performance. A sophisticated memory controller allows the ET6100 to perform different memory functions (pre-charge, row access, column access) simultaneously to different MDRAM banks. As a result, very low memory latency is achieved, producing extremely high *net* available bandwidth. MDRAM can also run at very high frequencies, delivering much higher peak bandwidth than other memory alternatives. It is this peak bandwidth, together with low latency, that enables ET6100 solutions to deliver higher available bandwidth to today's demanding 3D games and multimedia applications. In addition, finer memory granularity allows MDRAM frame buffer sizes to be tailored to the requirements of individual designs. Since available bandwidth is not tied to memory size, this granularity benefit offers considerable cost savings without impacting performance. Together with Multibank DRAM, the ET6100 provides the professional performance and critical bandwidth necessary for game, multimedia, and 3-D applications of today and tomorrow.



## Multimedia Video Today: Integration and IMA

The ET6100 integrates the most popular features needed to deliver high quality video to the user. The internal scaling engine can be used to enhance DirectDraw™ enabled applications and DCI compliant video like Intel Indeo™, Cinepak™, Xing MPEGPlayer™, TrueMotion™ from Horizons Technology and other Windows compatible video codecs. The internal video scaling engine provides high quality display similar to Tseng Labs' VIPeR™ video processor.



**Multimedia System Block Diagram with MPEG-2 and Broadcast TV Tuner.**

For solutions that require high quality capture and display of live video from a TV tuner or external video source, or playback of compressed video such as DVD - the ET6100 provides the IMA multimedia bus. IMA is a low pin-count, high-performance media bus that allows separate multimedia devices to receive data from the PCI bus, and pass the result to the graphics memory. The ET6100 can display either scaled YUV or RGB directly to the monitor, and delivers unsurpassed de-interlacing of live and MPEG-2 video sources.

Resolution	interlace	60 Hz	65 Hz	70Hz	72 Hz	75 Hz	85 Hz	90Hz
1600x1200 16 bpp	✓							
1600x1200 8 bpp	✓		✓					
1280x1024 24 bpp	✓							
1280x1024 16 bpp	✓	✓		✓		✓		
1280x1024 8 bpp	✓	✓		✓		✓		
1152x864 24 bpp		✓		✓				
1152x864 16 bpp		✓		✓				
1152x864 8 bpp		✓		✓				
1024x768 24 bpp		✓		✓		✓	✓	
1024x768 16 bpp		✓		✓		✓	✓	
1024x768 8 bpp		✓		✓		✓	✓	
800x600 24 bpp		✓			✓	✓		✓
800x600 16 bpp		✓			✓	✓		✓
800x600 8 bpp		✓			✓	✓		✓
640x480 24 bpp		✓			✓	✓		✓
640x480 16 bpp		✓			✓	✓		✓
640x480 8 bpp		✓			✓	✓		✓

## Game Performance

The ET6100 has been optimized for next generation Windows® 95 games and entertainment titles. The ET6100 offers robust support for Microsoft's DirectDraw™ API, including interpolated X and Y stretching, transparent BLTer and efficient page flipping using Tseng Labs' patented Display List technology. Paired with Intel's new MMX™ enhanced Pentium® CPUs, the ET6100 graphics and multimedia accelerator enables higher Direct3D performance than first generation 3D accelerators in many rendering modes.

The ET6100 with MDRAM is significantly faster than conventional DRAM, EDO DRAM, and VRAM GUI accelerators. The ET6100 also provides more memory to screen bandwidth (commonly referred to as DOS performance) than previous Tseng Labs controllers, which have dominated this field. This allows the ET6100 to deliver unbeatable performance to DOS-based games and other applications.

## Design Support Services

ET6100 support includes BIOS, drivers, mode switch software, manuals, diagnostics and sample circuit board layouts for OEMs. Device drivers for numerous popular software packages are available to OEMs, including:

- Microsoft Windows® 95 and DirectX™
- Microsoft Windows® and Windows® for Workgroups
- Microsoft Windows NT 3.x and 4.x
- IBM OS/2® 2.x and WARP
- Autodesk AutoCAD and Autoshade
- Autodesk 3-D Studio and Animator
- Bentley Systems Microstation PC
- VESA VBE compatible software

### ET6100 - Resolution and Color Depth

Shaded areas represent new modes in addition to those available with the ET6000. Please consult the ET6000 data book for more information on supported memory configurations.



