S3 Incorporated

High-Performance VRAM-based 2D/3D Graphics and Video Accelerator

- High-performance 64-bit 2D/3D graphics engine
- Integrated 220 MHz RAMDAC and clock synthesizer
- S3 Streams Processor for accelerated video
- S3 Scenic Highway for direct interface to live video and MPEG-1 peripherals

S3d Graphics Engine Features

- High performance 2D Windows acceleration
- Flat and Gouraud shading for 3D
- High quality/performance 3D texture mapping
  - Perspective correction
  - Bi-linear and tri-linear texture filtering
  - MIP-Mapping
  - Depth cueing and fogging
  - Alpha blending
  - Video texture mapping
  - Z-buffering

S3 Streams Processor Features

- Supports on-the-fly stretching and blending of primary RGB stream and RGB or YUV (video) secondary stream
- Each stream can have a different color depth
- High-quality hardware-assisted video playback
- Horizontal and vertical interpolation
- Support for Indeo™, Cinepak™, and software and hardware-accelerated MPEG-1 video

S3 Scenic Highway Interface

- Philips SAA7110/SAA7111 video digitizers
- S3 Scenic/MX2 MPEG-1 audio/video decoder

High Resolution Support Up to 1600x1200x24

High-Performance Memory Support

- 64-bit VRAM memory interface with block write support
- Two independent 64-bit pixel data busses
- 2-, 4 or 8-MBytes of video memory
- Single-cycle EDO operation

Non-x86 CPU Support

- Big endian/little endian byte ordering
- Relocatable addressing
- Packed 24 bits/pixel memory addressing with alpha pitching

Industry-Standard Local Bus Support

- Glueless PCI 2.1 bus interface

PCI Bus Mastering for Display List Processing and Video Capture Support

Multimedia Support Hooks

- S3 Scenic Highway
- 8- and 16-bit bi-directional feature connector

Full Software Support

- Drivers for major operating systems and APIs: [Windows© 95, Windows© 3.11, Windows© NT, OS/2© 2.1 and 3.0 (Warp), ADI 4.2]. Direct 3D™, BRender™, RenderWare™ and OpenGL™

Green PC/Monitor Plug and Play Support

- Full hardware and BIOS support for VESA Display Power Management Signaling (DPMS) monitor power savings modes
- DDC monitor communications

Extensive Static/Dynamic Power Management

388-pin BGA package

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The S3© ViRGE/VX™ integrated 3D video/graphics accelerator (hereinafter referred to as ViRGE/VX) enables development of compelling interactive entertainment, education, and presentation applications for the mainstream personal computing world. It also provides the highest performance for high-end desktop applications.

64-bit S3d Engine

The ViRGE/VX S3d™ Engine provides 2D acceleration for excellent Windows performance and a full-featured high-performance 3D rendering engine for games and other 3D applications.

The S3d Engine incorporates the key Windows accelerator functions of BitBLT, line draw and polygon fill. 3D features include flat and Gouraud shading and texture mapping. Advanced texture mapping features include perspective correction, bi-linear and tri-linear filtering, MIP-Mapping, and Z-buffering. The S3d Engine also includes direct support for utilizing a video as a texture map. These features provide the most realistic user experience for interactive 3D applications.

Other advanced features of the S3d Engine include S3 proprietary compressed texture formats for improved performance and reduced memory requirements, as well as support for S3's MUX buffering (pat. pend.), which allows for Z-buffering support with no additional memory requirement.

Streams Processor

The S3 Streams Processor™ provides the stretching and YUV color space conversion features required for full screen video playback with both software CODECs and hardware MPEG-1 sources. The Streams Processor allows simultaneous display of graphics and video of different color depths.

S3 Scenic Highway

The S3 Scenic Highway™ allows lowest cost direct connection to S3's Scenic/MX2 MPEG-1 audio and video decoder as well as video digitizers such as the Philips© SAA7110/SAA7111.

Resolution	2 MB	4 MB	6 MB	Maximum Vertical Refresh (Hz)	
				220 MHz Part (Int/Ext DAC)	Streams Processor Active (135 MHz Max)
640X480X4	✔	✔	✔	508	312
640X480X8	✔	✔	✔	508	312
640X480X16	✔	✔	✔	508	312
640X480X24	✔	✔	✔	508	312
800X600X4	✔	✔	✔	325	200
800X600X8	✔	✔	✔	325	200
800X600X16	✔	✔	✔	325	200
800X600X24	✔	✔	✔	325	200
1024X768X4	✔	✔	✔	199	122
1024X768X8	✔	✔	✔	199	122
1024X768X16	✔	✔	✔	199	122
1024X768X24		✔	✔	199	122
1280X1024X4	✔	✔	✔	119	73
1280X1024X8	✔	✔	✔	119	73
1280X1024X16		✔	✔	119	73
1280X1024X24		✔	✔	119	73
1600X1200X4	✔	✔	✔	81	50
1600X1200X8	✔	✔	✔	81	50
1600X1200X16		✔	✔	81	50
1600X1200X24*			✔	81	-

* This mode requires an external 220 MHz RAMDAC and 8 MBytes