VLSI Technology, Inc.

VL82C976 Desktop RISC Graphics Accelerator

Overview

The VL82C976 is the third in a family of RISC Graphics accelerators based on the VLSI GraphiCore™ architecture. The VL82C976 is an innovative accelerator designed from the ground up for maximum price/performance. At the core of the RISC Graphics engine is a variable-width accelerator designed by VLSI engineers to achieve high display resolutions with single-state execution. The VL82C976 incorporates full RISC graphics acceleration with support for EDO DRAM in addition to supporting advance memory technology (SDRAM/SGRAM) to bridge the memory bandwidth gap.

Innovative Acceleration

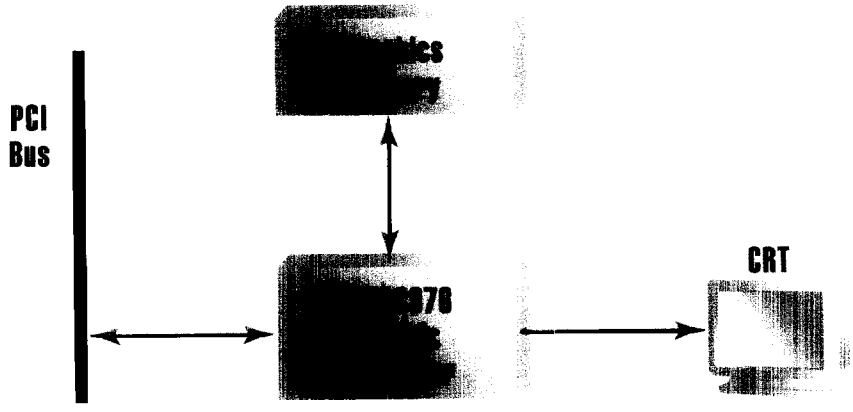
The GraphiCore architecture was designed with total system graphics performance in mind. A configurable geometry pipeline provides accelerated functions such as BitBLT, Line Draw, rectangle fill, Window ROPs, and clipping. In addition, the VL82C976 offers color compression which utilizes spatial dithering patterns to display true color images with as little as one-third the normal storage requirement. An enhanced graphics text accelerator has also been designed for maximized text performance in graphics modes.

Designed for Speed

The GraphiCore RISC Graphics accelerator has been designed for single-state execution. By matching the VL82C976 with the single-state access of synchronous DRAM, exceptional levels of performance are achieved. All this is possible without sacrificing features supported by the VL82C976.

Features

- Full PCI 2.0 Local Bus Compliance (5V/33MHz)
- Improved Windows Acceleration
  - 64+ accelerator
  - BitBLT, StretchBLT, & Pattern BLT
  - Line Draw, Rectangle Fill, & Clipping
  - Color Depth Conversion
  - Accelerated Graphics Text
  - 256 Window ROPs
- Advanced Memory Support
  - SDRAM
  - SGRAM
  - EDO DRAM
  - 1 to 4 MB frame buffer
- Configurable hardware cursor
- Multi-level power management
- Integrated dual clock synthesizer
  - Memory clock programmable to 80MHz
  - Pixel Clock programmable to 135MHz
- 1600 x 1200 x 256 color CRT support (non-IL)
- Integrated DAC
- VFC support
- 100% VGA/VESA compatible
- DDC support
- Separate Configurable Power Rails (3.3V/5V)



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computing
communications
entertainment

- Software
  - VGA BIOS with VESA VBE functions
  - Full Microsoft Windows 95 compliance
  - Windows NT, Windows 3.1, AutoCAD, Unix, and OS/2 drivers
  - Mode and configuration utilities
- 208-pin MQFP package

With System in Mind

The VL82C976 supports full PCI compliance as a target device. Special attention was given to fully utilize PCI memory burst cycle capabilities for improved data flow through the GraphiCore accelerator to and from the frame buffer.

Multimedia Support

The VL82C976 provides support for an 8-bit VGA Feature Connector (VFC) configuration for support of external multimedia devices for overlay of video data.

The VL82C976 includes an integrated DAC which reduces both board space requirements and the overall cost of the graphics subsystem.

Progressive Power Management

Full hardware and BIOS support is provided for minimizing power consumption levels. Not only can the VL82C976 completely power-down the graphics subsystem, it can also perform a unique multi-level shutdown of the system based on graphics activity. Multi-level shutdown includes features such as DPMS, clock management, RAM self-refresh, and a dynamic power management unit which can power- down all or partial sections of the VL82C976.

Software Support

VLSI provides complete customer support using dedicated applications engineers, a BBS for on-line help, and an Internet ftp node for file exchange of the latest drivers: Microsoft Windows, IBM OS/2, Unix, and AutoCAD. In addition, complete VGA/VESA compatible BIOS support is provided in house for quick and reliable answers to customer questions.

VLSI Synergy

VLSI is committed to graphics and has structured itself in the unique position of having all the necessary technology for system integration under a single corporate organization. An experienced team of VLSI graphics designers has brought together a diverse collection of hardware and software strengths from PC and workstation technology to create the GraphiCore architecture. VLSI's ASIC and Standard Cell expertise provides a leadership position for future system integration and process development. By having total system expertise within the same corporate unit, VLSI will supply the market with the right level of integration at the right time.

VL82C976 Mode Table

Extended CRT Modes: Colors and Maximum Refresh (Non-interlaced)

Pixels	*Lines*	*16*	*256*	*64K**	*16M***
1600	1200		60Hz		
1280	1024		75Hz		75Hz
1024	768	85Hz	85Hz	75Hz	75Hz
800	600	85Hz	85Hz	75Hz	75Hz
640	480	85Hz	85Hz	75Hz	75Hz
1056	350***	70Hz			

* *32K TARGA mode emulated using 64K modes*

** *24-bit true color*

*** *132 x 43 text mode*

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