IIT AGX

**XGA-BASED PC GRAPHICS ACCELERATORS**

OVERVIEW

IIT's AGX PC graphics accelerators are the first to integrate XGA architecture with a SuperVGA core into single-chip graphics processing solutions. The XGA-based design provides significant performance and functional advantages which enable IIT's AGX products to dramatically outperform other Windows accelerators in GUIs such as Windows and graphics-intensive applications such as CAD, paint, spreadsheets, and desktop publishing. The SVGA core provides complete backward compatibility with existing VGA, CGA, EGA and Hercules graphics standards.

FEATURES

- IIT AGX014, a 16-bit engine for ISA bus designs, runs 2x faster than standard Windows accelerators in graphics-intensive applications

- IIT AGX015, a 32-bit engine, provides direct interface to VL Bus for even faster throughput and performance

- XGA-based processing engine

- Fully compatible with VGA, CGA, EGA and Hercules

- Achieves workstation-levels of performance for complex graphics operations

- Maintains efficiency of traditional Windows accelerators for basic GUI and drawing functions

- 1 MByte VRAM supports up to 1280 x 1024 resolution and up to 24-bit, 16 million true-color display

- 2 MBytes VRAM supported without external logic

- Up to 6 MBytes VRAM supported for 1280 x 1024 resolution with 24-bit, 16 million color display.

- Basic Windows accelerator instructions plus complex extensions support functions such as:
  - color dithering
  - object shading
  - surface mapping
  - image stretching and scaling
  - complex polygon pattern fills
  - polygon clipping and window mask
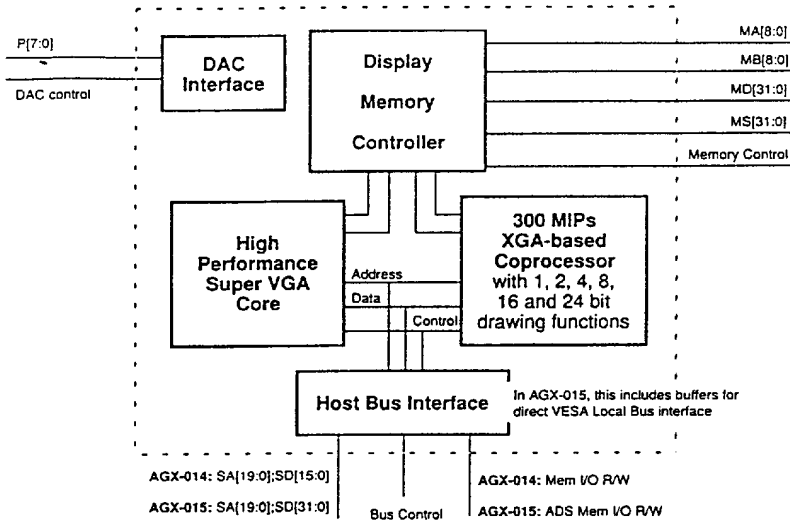
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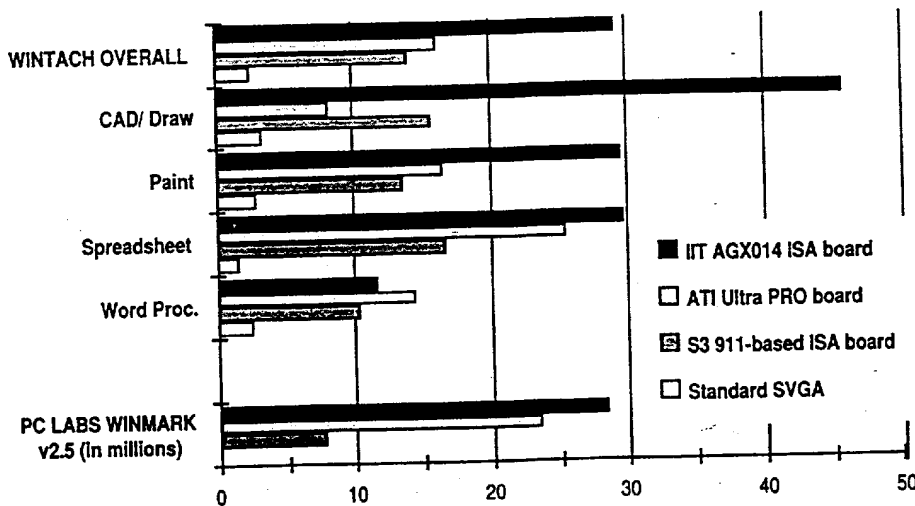
All tests were performed on the same 486DX-33 Micronics system with 256K cache using 1024 x 768, 256-color mode at 75 MHz refresh.

IIT AGX014 performance was tested using an IIT VRAM demonstration board. The ATI Ultra Pro is a VRAM board that uses the ATI mach32 controller. S3 911 performance was tested on the Diamond Stealth VRAM board. All three Windows accelerator boards were configured with 1 MByte VRAM. Standard SVGA performance was tested using a Trident DRAM board.

The WinTach applications benchmark is produced by Texas Instruments. Winmark v2.5 is a benchmark of basic graphics instruction execution from Ziff/Davis PC Labs.

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AGX Chip Diagram

THE IIT AGX014 is a high performance 16-bit graphics accelerator designed for ISA bus implementations. It's unique XGA processing core extends the basic Windows accelerator instructions, enabling the AGX014 to support coprocessing of complex graphics functions such as dithering for color processing, hardware assisted object shading and surface mapping. In Windows, CAD, and other graphics-intensive applications this results in 2x or faster performance over other Windows accelerators.

THE IIT AGX015 features the same XGA-based graphics engine in a 32-bit device with on-chip buffers for direct VESA Local Bus (VL Bus) support. VL Bus operation offers up to 10x greater bandwidth than ISA bus, resulting in applications-level performance improvements of as much as 200%. The highly integrated design and on-chip bus interface enables an entire VL Bus graphics subsystem to be implemented with only the AGX015 and five additional chips, plus memory..

Both the AGX014 and the AGX015 support up to 1280 x 1024 resolution and up to 24-bit, 64 million true color display with a minimum configuration of 1 MByte VRAM. The devices directly support up to 2 MBytes of VRAM, and with some external logic, can use 6 MBytes to offer 16-million color display in 1280 x 1024 resolution. The current AGX products are fully code-compatible with XGA, and offer a pin- and software-compatible upgrade path to fully XGA-compatible products that will be offered by IIT.

Complete VESA Local Bus System Design
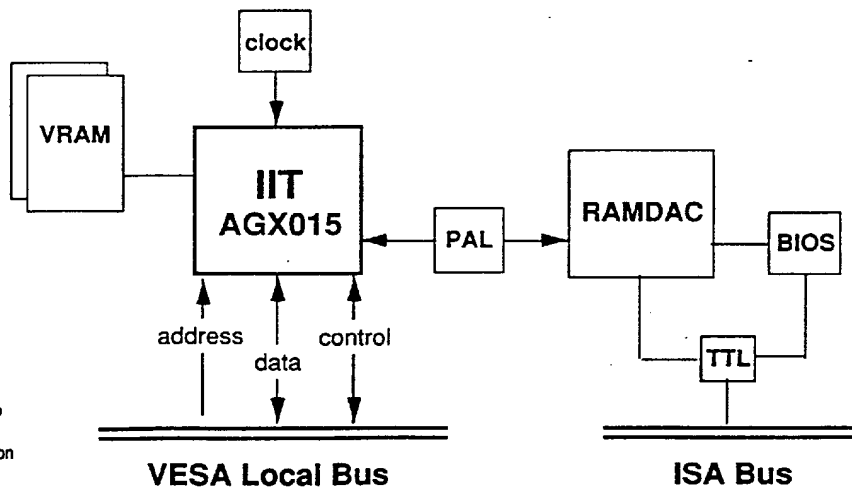
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