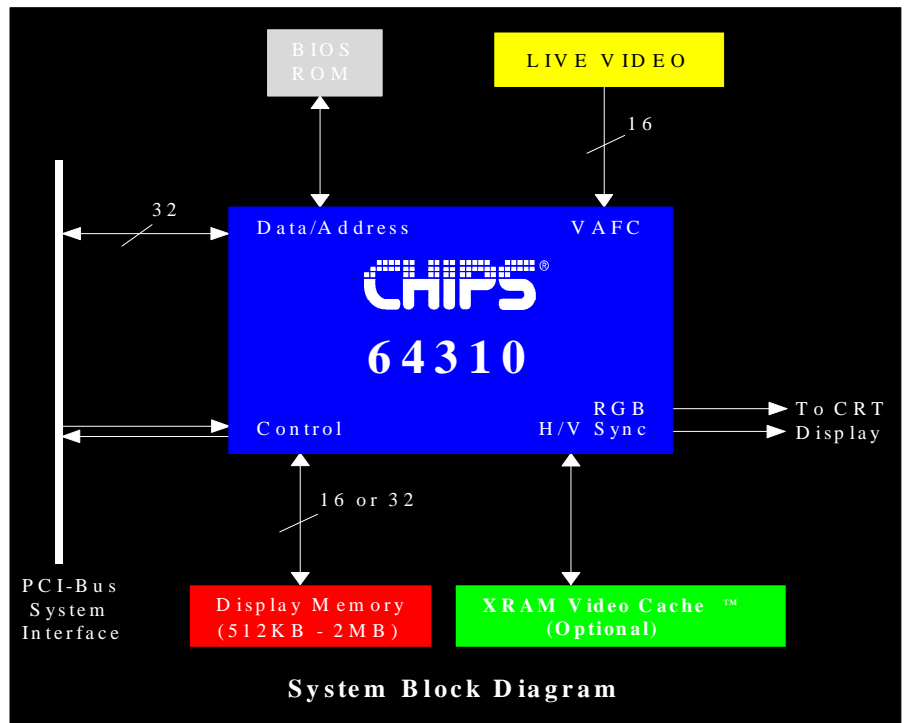


64310

Wingine® DGX DRAM Graphics Accelerator

- High performance accelerator for computer graphic intensive applications, such as graphical user interface, word processor, spreadsheet and CAD/CAM programs.
- XRAM Video Cache™ Technology (Patent Pending)
- Optimized interface for PCI Bus implementations:
 - Support PCI burst mode
 - Support both big and little endian data
- 32-bit VL-Compatible Local Bus does not require external TTL
- VESA Advanced Feature Connector (VAFC) support for color keyed video overlay with external video data input
- Three Operand BitBLT supports all 256 logical combinations of source, destination and pattern
- Hardware Assisted Line Draw
- 64x64x2 Hardware Cursor
- 32-bit Color Expansion
- Direct linear mapping to system memory
- Memory Mapped Registers for high performance
- A complete high performance local bus graphics system requires only the addition of DRAM and BIOS
- Integrated RAMDAC
 - Up to 16.7 million colors
 - (24 bits per pixel)
 - 256x18 LUT
- Supports the VESA Display Power Management Signaling (DPMS)
- Protocol for desktop computer power management
- RAMDAC power-down and programmable clock provide additional power management capability
- Supports a wide variety of monitor resolutions and color depths (bits per pixel):
 - 640x480, 4bpp to 24bpp
 - 800x600, 4bpp to 16bpp
 - 1024x768, 4bpp to 16bpp
 - 1280x1024, 4bpp to 8bpp
- Full VGA compatibility
 - Integrated Clock Synthesizer
 - Programmable MCLK up to 85MHz
 - Programmable PLCK up to 85MHz
- Flexible display memory configurations supporting 512KB to 2MB:
 - Four, eight or sixteen 256x4 DRAMS
 - One, two or four 246Kx16 DRAMS
- 208-pin PFP pinouts optimized for PCB layout



Product Overview

The 64310 Wingine® DGX combines three powerful elements aimed at addressing mainstream desktop PC design requirements: 1) state of the art techniques for optimizing performance in computer graphic intensive applications, graphical user interfaces (GUIs) and operating systems, such as Windows™; 2) cost saving features such as integrated palette DAC and clock synthesizer, integrated support for the PCI bus interface and flexible DRAM-based display memory configurations; and 3) differentiating factors such as optional XRAM Video Cache™, desktop computer power management, linearly mapped display memory, and VAFC-compatible multimedia support for color key and video overlays.

XRAM Video Cache™

The XRAM Video Cache (patent pending) is a breakthrough in performance technology. By using one standard 256Kx4 Fast Page DRAM, a proprietary algorithm implemented in the 64310 significantly increases graphics system performance. The result is performance never before achieved in standard DRAM-based graphics architectures. For added flexibility, the XRAM Video Cache is optional.

Acceleration Features

Several functions traditionally performed by software have been implemented in hardware to further improve performance. Three-Operand BitBLT logic supports all 256 logical combinations of Source, Destination and Pattern. Line drawing is accelerated with hardware assistance. A programmable-size 64x64x2 hardware cursor allows flexible cursor size and flicker free cursor display. The presence of the hardware cursor frees software from continuously generating the cursor image on the display. A 32-bit Color Expansion engine allows the host CPU to transfer monochrome "maps" of color images over

the system bus at high speeds to the 64310, which decodes the monochrome images into their color form.

Local Bus

To address the requirement of high performance (particularly in GUI environments) while maintaining a cost effective bill of materials for the graphics system, the 64310 offers the industry's most optimized price/performance/feature mix. The integrated PCI local bus supports burst mode transfers to increase performance. Also supported is a 32-bit VL-compatible local bus interface that realizes the full local bus performance potential with no external TTL devices for multiplexing or demultiplexing bus signals.

High Integration

The 64310 integrates a Graphics Accelerator Engine together with a True Color palette DAC and clock synthesizer. The integrated palette DAC supports 24-bit direct color and features a 256x18 LUT. The integrated dual clock synthesizer allows full programmability of MCLK (memory clock) and PCLK (pixel clock). The integrated clock synthesizers support frequencies from 390KHz to 85MHz.

DRAM Display Memory

The 64310 supports from 512KB to 2MB of DRAM display memory. Both 256Kx4 and 256x16 Fast Page Mode DRAM organizations are supported. Display memory is linearly mapped up to 2MB, simplifying development of device drivers and optimizing driver performance.

Green PC Support

The 64310 supports the VESA DPMS (Display Power Management Signaling) interface standard. This includes the ability to independently stop HSYNC or VSYNC and hold them to a static level.

The internal clocks may be slowed or shut down entirely and the internal RAMDAC may also be placed in a power-down mode.

DDC (Plug and Play)

The 'Plug and Play' initiative is driving requirements for hardware functionality. The VESA Display Data Channel standard is one facet of this initiative which addresses optimum use of display monitors through communication between host system and general purpose I/O pins to implement a fully compliant monitor, providing for automatic and optimum setup for 64310-base graphics subsystems.

Minimum Chip Count/Board Space

The 64310 was designed to integrate as many functions as economically possible to minimize chip count and board space. The 64310 integrates a VGA core, True-Color palette DAC, and dual programmable clock synthesizer and requires no external buffers or other glue logic for bus, memory, or display interface.

Using the 64310, a complete 32-bit, VGA-compatible, local bus GUI accelerator design for motherboard applications can be built with just 2 ICs, including display memory, as shown in the following bill of materials table:

<u>QTY</u>	<u>Chip Type</u>
1	64310 Wingine DGX
1	256Kx16 Fast Page Mode
	<u>DRAM</u>
2	Total

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