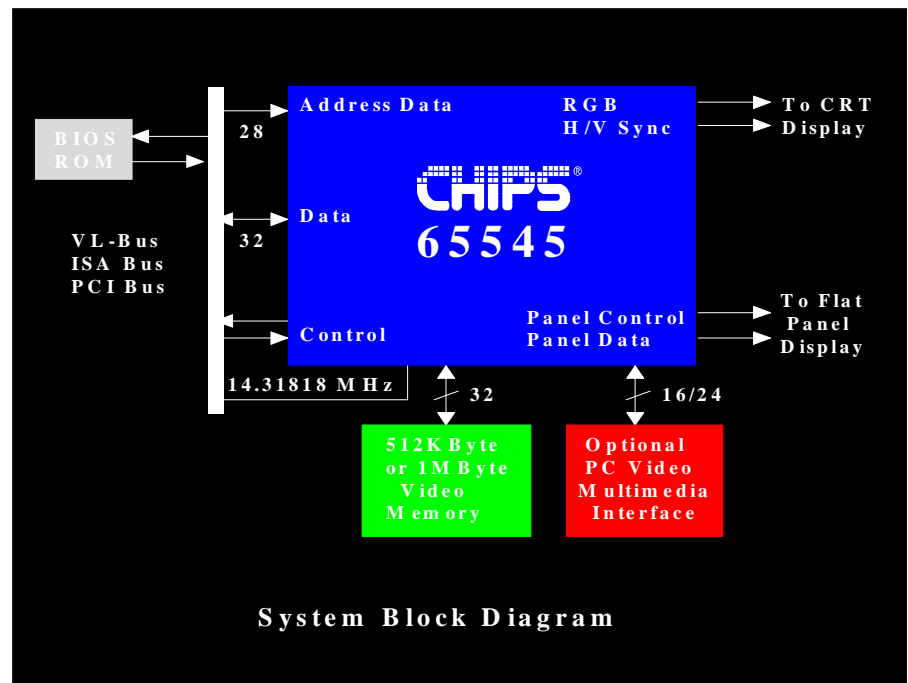


# 65545

## High Performance Flat Panel/CRT GUI Accelerator

- Highly Integrated Design (Flat Panel /CRT VGA Controller, RAMDAC, clock synthesizer)
- Multiple Bus Architecture for direct interface to:
  - 32-bit PCI Bus
  - 32-bit VL-Bus
  - 16-bit ISA (PC/A) Bus
- Flexible Display Memory Configurations:
  - One 256Kx16 DRAM (512K)
  - Two 256Kx16 DRAMs (1MB)
  - Four 256Kx4 DRAMs (512K)
- Advanced Frame Buffer Architecture. Uses available display memory, maximizing integration and minimizing chip count
- Integrated programmable linear address feature accelerates GUI performance
- Hardware windows acceleration
  - 32-bit Graphics Engine
    - System-to-Screen and Screen-to-Screen BitBLT
    - 3 Operant Raster-Op's
    - Color Expansion
    - Optimized for Windows™ BitBLT Format
  - Hardware Line Drawing
  - 64x64x2 Hardware Cursor
- Hardware Pop-up Icon
  - 64x64 pixels by 4 colors
  - 128x128 pixels by 2 colors
- Hardware performance resulting from write buffer and internal Asynchronous FIFO design
- Mixed 3.3V/5.0V +/-10% Operation
- Fully compatible with IBM® VGA
- Interface to CHIPS' PC Video to display "Live" video on flat panel displays
- Supports panel resolutions up to 1280x1024 resolutions including 800x600 and 1024x768
- Supports non-interlaced CRT monitors with resolutions up to 1024x768/256 colors
- True-color and Hi-color display capability with flat panels and CRT monitors up to 640x480 resolutions
- Direct interface to color and monochrome Dual Drive (DD) and Single Drive (SS) STN and TFT panels (supports 8, 9, 12, 15, 16, 18 and 24-bit data interfaces)
- Flexible on-chip activity timer facilitates ordered shutdown of the display system
- Advanced Power Management features minimize power consumption during:
  - Normal Operation
  - Standby (Sleep) Modes
  - Panel-Off Power-Saving-Mode
- Power Sequencing control outputs regulate application of Bias Voltage, +5V to panel and +12V to the inverter for Backlight Operation
- SMARTMAP™ Intelligent Color-to-Gray Scale Conversion enhances text legibility
- Text Enhancement feature improves white text contrast on flat panel displays
- Pin compatible non-accelerated versions (65540) also available
- EIAJ-Standard 208-pin plastic flat pack



# Product Overview

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The 65545 High Performance Flat Panel/CRT GUI Accelerator is part of a family of pin-compatible 208-pin, high performance solutions for full-featured notebooks/sub-notebook and other portable applications that require the highest graphics performance available. The 65545 is pin-to-pin compatible with the 65540 and adds a sophisticated graphics hardware engine for Bit Block Transfer (BitBLT), line drawing, hardware cursor, and other functions intensively used in Graphical User Interfaces (GUIs) such as Microsoft Windows™. The 65540 and 65545 also use the same video BIOS, offering the system manufacturer a wide range of price/performance points while minimizing overhead for system integration improving time-to-market.

The 65540/545 family achieve superior performance through direct connection to system processor buses up to 32-bits in width. When combined with CHIPS' advanced linear acceleration software driver technology, these devices exhibit exceptional performance compared with devices of similar architecture. The 65540/545 architecture provides a fast throughput to video memory, maximizing the capability to today's powerful microprocessors to manipulate graphics operations. Based on the architecture of the 65540, the 65545 adds a powerful 32-bit graphics engine to off-load graphics processing from the microprocessor for maximum performance.

Minimum chip-count, low-power graphics subsystem implementations are enabled through the high integration level of the 65540/545 family. These devices integrate the VGA-compatible graphics controller, true color RAMDAC, and dual PLL clock synthesizers. The entire graphics subsystem can be implemented with a single 256Kx16 DRAM. The 32-

bit local bus interface of the 65540/545 family eliminates external buffers.

For maximum performance, the 65540/545 supports an additional 256Kx16 DRAM, which provides a 32-bit video memory bus and additional display memory to support resolutions up to 1024x768 with 256 colors, 800x600 with 256 colors and 640x480 with 16M colors. In addition, the 65540/545 family can support PC Video multimedia features while interfacing to a 32-bit local bus and one MByte of video memory.

The 65540/545 family supports a wide variety of monochrome and color Single-Panel, Single-Drive (SS) and Dual-Panel, Dual-Drive (DD) passive STN and active matrix TFT/MIM LCD, EL and Plasma panels. The 65540/545 family supports panel resolutions of 800x600, 1024x768, and 1280x1024. For monochrome panels, up to 64 gray scales are supported. Up to 226,981 different colors can be displayed on passive STN LCDs and up to 16M colors on 24-bit active matrix LCDs using the 65540/545 controllers.

The 65540/545 family offers a variety of programmable features to optimize display quality. For text modes which do not fill all 480 lines of a standard VGA panel, the 65540/545 provides tall font stretching in the hardware. Fast vertical stretching in graphics modes offer more options for handling modes with less than 480 lines. Three selectable color-to-gray scale reduction techniques and SMARTMAP™ are available for improving the viewability of color applications on monochrome panels. CHIPS' polynomial FRC algorithm reduces panel flicker on a wider range of panel types with a single setting for a particular panel type.

The 65540/545 employs a variety of advanced power management features to reduce power consumption of the display

subsystem and extend battery life. The 65540/545's internal logic, memory interface, bus interface and flat panel interfaces can be independently configured to operate at either 3.3V or 5.0V.

The 65540/545 is optimized for minimum power consumption during normal operation and provides two power-saving modes - Panel-Off and Standby. During Panel-Off mode, the 65540/545 turns off the flat panel while the VGA subsystem remains active. The palette may also be automatically shut off during Panel-Off mode to further reduce power consumption. During Standby mode, the 65540/545 places the DRAM in self-refresh mode and the 65540/545 reference input clock can be turned off. The 65540/545 also provides a programmable activity timer which monitors VGA activity. After all display activity ceases, the times will automatically shut down the panel by either disabling the backlight or putting the 65540/545 in Panel-Off mode.

The 65540/545 is fully compatible with the VGA graphics standard at the register, gate and BIOS levels. The 65540/545 provides full backwards compatibility with the EGA and CGA graphics standards without using NMIs. CHIPS and third-party vendors supply fully VGA-compatible BIOS, end-user utilities and drivers for common application programs (e.g., Microsoft Windows™, OS/2, WordPerfect, Lotus, etc.) CHIPS' drivers for Windows include a Big Cursor (to increase the cursor's legibility on monochrome flat panels) and panning/scrolling capability (to increase performance).

For more information contact your local sales representative.

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