

# SPITFIRE OTI-64111

## Multimedia GUI Accelerator

### FEATURES

#### SYSTEM

- ◆ 32-bit PCI & 16-bit ISA
- ◆ Integrated PCI Bridge supports multiple auxiliary devices on a single PCI slot
- ◆ Multiple interrupts for PCI sub-system
- ◆ VESA DDC1 & DDC2B monitor support
- ◆ Supports VESA DPMS power saving
- ◆ I<sup>2</sup>C support for video devices
- ◆ E<sup>2</sup>PROM supports plug and play

#### VIDEO ACCELERATION

- ◆ YUV to RGB color space conversion
- ◆ Up to four simultaneous windows (live video and /or video playback)
- ◆ 16-bit Media Bus
- ◆ Single shared-framebuffer architecture for graphics and video
- ◆ True color video in both RGB & YUV color formats (CCIR601)
- ◆ Continuous arbitrary scaling with x-y interpolation filters
- ◆ Imaging mask
- ◆ Color-keying overlay

#### PCI BUS MASTERING

- ◆ Supports software MPEG Codecs
- ◆ Optimized video capture performance
- ◆ Enhances MPEG playback by reducing CPU processing overhead

#### INTEGRATION

- ◆ Dual programmable clock synthesizers
- ◆ 135MHz true color, triple 8-bit RAMDAC

#### MEMORY

- ◆ 64-bit DRAM datapath
- ◆ Programmable memory timing
- ◆ Supports Hyper-page and Fast-page, DRAM, EDO DRAM, and single-cycle EDO DRAM in x4, x8 or x16 configurations
- ◆ Supports 1, 2, or 4 Mbyte memory configurations

### DESCRIPTION

The OTI-64111 is a 64-bit high-performance GUI/video accelerator. The device integrates a complete multimedia sub-system, including advanced GUI acceleration with exceptional video playback/capture in a single-chip solution.

#### Product Highlights

- ◆ Full-motion Live Video Port
- ◆ PCI Bridge and Bus Mastering
- ◆ Video Acceleration (multiple video windows)
- ◆ Full-featured GUI acceleration

#### PCI Bridge and Bus Mastering

The OTI-64111 interfaces directly to industry-standard PCI or ISA buses. On the PCI bus, the device acts as a master or slave, optimizing not only video and GUI performance, but also increasing system efficiency. In master mode, the PCI bridge allows bi-directional DMA transfers for simple I/O mapped components, such as MPEG decoders, without requiring additional CPU resources. This allows a complete multimedia sub-system to be integrated into a single PCI bus slot.

#### Video Acceleration (multiple video windows)

The OTI-64111 provides full hardware video acceleration with a dedicated 16-bit Media Bus and single framebuffer architecture. A total of four hardware video windows (two color-key and two imaging mask) may be displayed simultaneously. The input video data stream, in either RGB or YUV color format, is scaled down by a binary factor [0-8] using decimation filtering. The data may be displayed directly by using an internal Imaging Mask, or stored in the off-screen memory and displayed later by color-keying. Fast video capturing to system memory or hard disk is supported by a direct path, with *master* capability from the Media Bus to the PCI bus.

With the color-key overlay approach, the video image may be scaled-up to full screen using linear interpolation in both X & Y directions. When video data is input as YUV color, pixels must first be converted to RGB color before viewing on the display. Since the video data is stored off-screen, the color depth and color space of video data is not required to match that of the graphics data. Video images may be displayed at higher color depth for optimum visual quality, while the graphics data may be displayed at a lower color depth. By doing so, performance is maximized while memory costs are minimized - the best of both worlds.

## FEATURES

(continued)

### GRAPHICS ACCELERATION

- ◆ 64-bit drawing engine for 8, 16, 24, & 32 bits-per-pixel modes
- ◆ Supports three independent bitmaps, ternary ROPs and StretchBit
- ◆ Hardware linedraw, short stroke vectors and polygon fills
- ◆ Command FIFO

### RESOLUTION

- ◆ 1280 x 1024 @ 75Hz - 8bpp  
1024 x 768 @ 75Hz - 16bpp  
800 x 600 @ 75Hz - 24bpp  
800 x 600 @ 75Hz - 32bpp
- ◆ True color video resolution  
1024 x 768 @ 30fps (max.)

### TECHNOLOGY

- ◆ 0.6m triple metal layer CMOS process
- ◆ 208 PQFP

### SOFTWARE DRIVERS

- ◆ Windows 95™
- ◆ Windows 3.1™
- ◆ Windows NT™
- ◆ OS/2®
- ◆ AutoCAD®
- ◆ Microstation PC®
- ◆ Video for Windows™
- ◆ MCI
- ◆ DCI
- ◆ Direct Draw

## DESCRIPTION

(continued)

### Architectural Flexibility

In addition to a 16-bit dedicated Media Bus, the OTI-64111 provides architectural flexibility by enabling the video datastream to transfer over the system bus.

### Excellent GUI Acceleration

The OTI-64111 provides excellent GUI acceleration featuring a full 64-bit drawing engine, three independent bitmaps and ternary ROPs, stretchBit, line draw, short stroke vectors, area fill, and accelerated text output. A command FIFO maximizes parallel processing between the graphics processor and the CPU. The drawing engine supports 8bpp, 16bpp, 24bpp, and 32bpp color depths.

**MAXIMUM RESOLUTION  
(1 MB CONFIGURATION)**

Bpp	GRAPHICS	VIDEO (YUV)
8	1024x768 75Hz	1024x768 30fps
16	640x480 75Hz	640x480 30fps
24	-	-
32	-	-

**MAXIMUM RESOLUTION  
(2 MB CONFIGURATION)**

Bpp	GRAPHICS	VIDEO (YUV)
8	1280x1024 75Hz	*
8	1024x768 75Hz	1024x768 30fps
16	1024x768 75Hz	1024x768 30fps
24	800x600 75Hz	800x600 30fps
32	800x600 75Hz	800x600 30fps

### Additional System Features

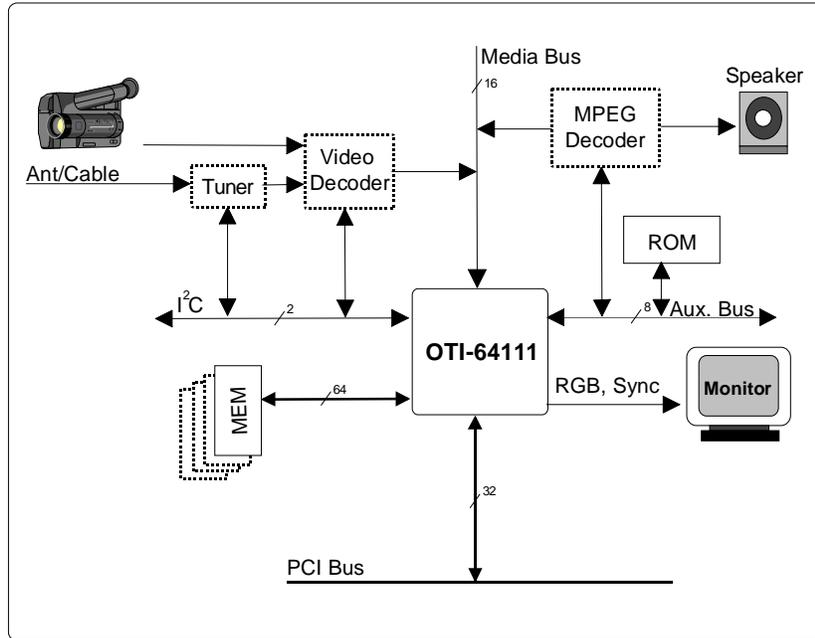
A fully programmable memory controller provides interface support to Hyper-page DRAM, Fast Page DRAM, and EDO DRAM. Memory devices can be x4, x8, or x16-bits wide with multiple write enables [WE<sub>n</sub>] or multiple column address strobes [CAS<sub>n</sub>].

Monitor support is extensive with an internal analog comparator to auto detect traditional monitors. VESA DDC1 and DDC2B interfaces support newer monitors with automatic type and capability detection. VESA DPMS support reduces power consumption and extends monitor life.

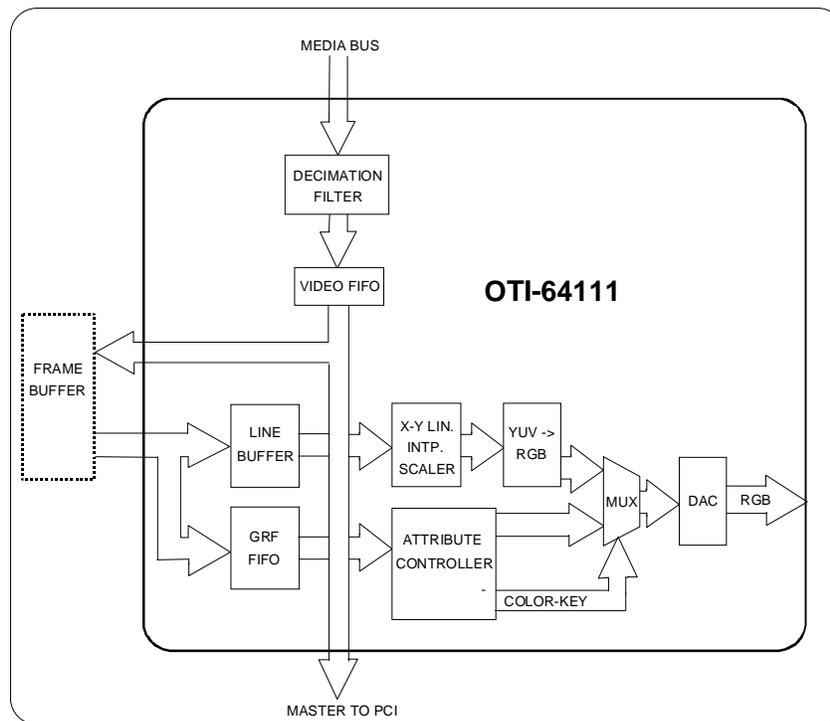
Additional system features include an I<sup>2</sup>C bus, which allows a glueless interface to video devices such as TV Tuner modules and video decoders. An E<sup>2</sup>PROM interface allows auto-configuration, supports plug and play, and eliminates the need for dip-switches.

# SPITFIRE OTI-64111

(continued)



*OTI-64111 System Block Diagram*



*Video Data Path*