General Features

- MPEG-1 video and audio decompression (30 frames per second)
- Simultaneous video decompression and audio decompression
- Complete audio and video synchronization support

Video Features

- Decompression of "Constrained Parameter" MPEG-1 bit streams
- MPEG-1 video slow playback, fast search, fast forward, freeze frame, audio mute, single step, and random access
- MPEG-1 video error detection and resynchronization
- 4:2:2 video data format output

Audio Features

- Decompression of any MPEG-1 level 1 or 2 compressed audio bit stream
- 32, 44.1 and 48 KHz sampling rates
- 32 to 448 kbits/sec compressed bit rates

- Single-channel, dual-channel, stereo, and joint-stereo stream decompression
- Audio mute and de-emphasis supported

System Interfaces

- 8-bit Scenic Highway interface to an S3 multimedia accelerator
- 16-bit page mode DRAM interface
- Serial audio interface to an audio DAC
- Digitized Video Port (DVP) Interface for NTSC/PAL input

Miscellaneous

- Available in a 128 pin plastic quad flat pack (PQFP) package.

Software Driver Support

- CD- I movies ("Green Book")
- Video CD movies ("White Book")
- Microsoft Windows® 3.1/Windows® 95 MCI MPEG API
- Open MPEG (OM/1) DOS API

Introduction

The S3® Scenic/MX2™ MPEG-1 audio/video decoder (hereinafter referred to as the Scenic/MX2) is a cost-effective decoder optimized for the PC platform. It can be used in conjunction with any S3 multimedia accelerator that provides the S3 Scenic Highway interface (such as the Trio64V+). The video features supported by these multimedia accelerators, including video scaling, can be used to enhance the display of the MPEG-1 video decompressed by the Scenic/MX2.

The Scenic/MX2 integrates into a single device the following functions:

- MPEG-1 30 frames/second video decoding
- MPEG-1 CD-quality audio decoding
- A timer to facilitate synchronization of decoded audio and video
- A serial output port for direct connection of a low cost stereo audio D/A converter such as the S3 Sonic/AD™ audio DAC
- A Scenic Highway interface to enable the Host (via the S3 multimedia accelerator) to access Scenic/MX2 registers and private memory and to burst write compressed video and audio data to the Scenic/MX2. The Scenic/MX2 uses the Scenic Highway to transmit decompressed video to the S3 multimedia accelerator for display in synchronization with the decompressed audio

The Scenic/MX2 works in tandem with the host CPU and multimedia accelerator to decode and display MPEG-1 video and audio as follows:

- The host CPU is responsible for demultiplexing the MPEG-1 system stream into separate compressed video and audio data streams and for preprocessing the compressed audio data.

- The Scenic/MX2 is responsible for decompressing the MPEG-1 video stream into a sequence of YUV video images and for decompressing the preprocessed audio

stream into 16-bit stereo audio samples for playback. The on-chip timer enables the software driver to control the synchronization of audio and video during playback.

- The multimedia accelerator is responsible for receiving the sequence of decompressed video images over the Scenic Highway, converting the YUV images into RGB format for display on a computer monitor, and for any additional video processing (video scaling, dithering, video effects, etc.).
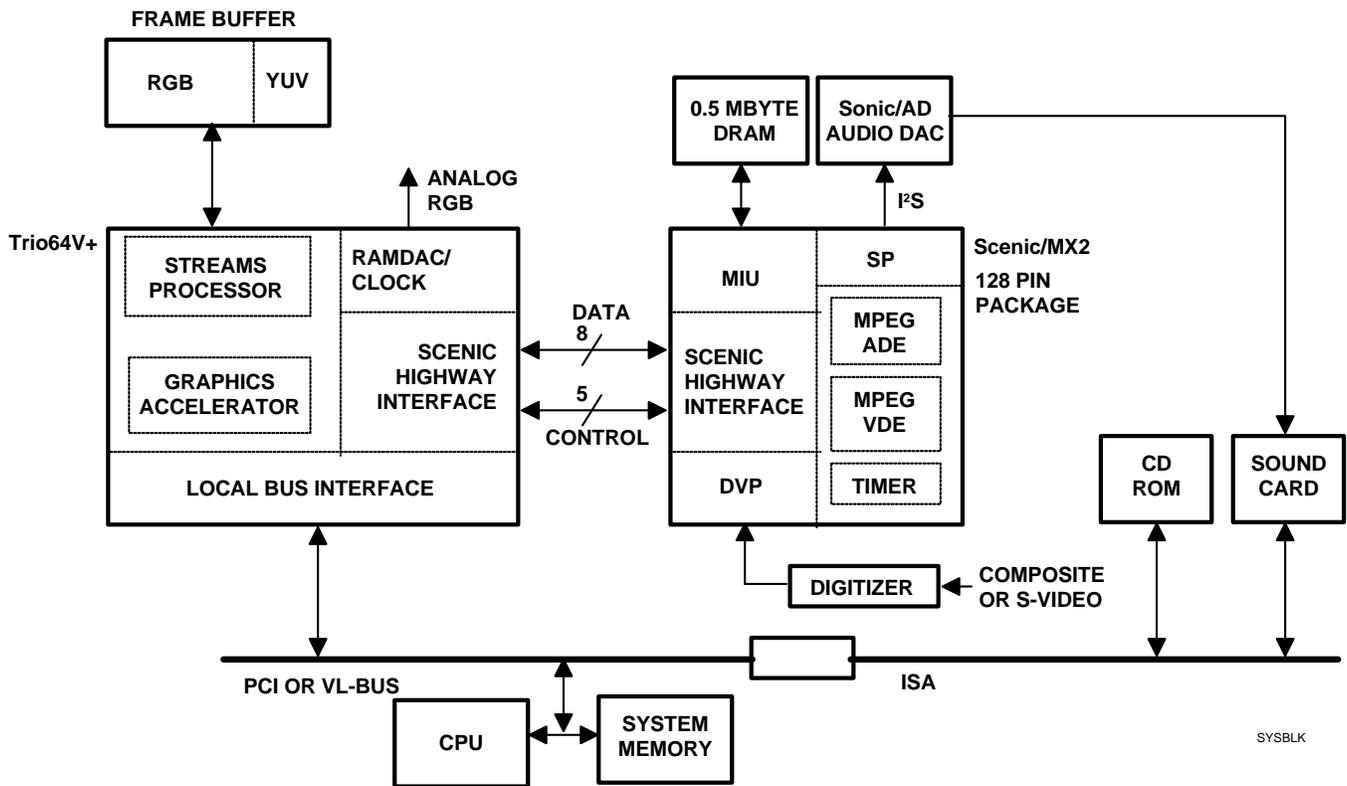
Figure 1. System Architecture