VADDIS® III
INTEGRATED DVD DECODER

Solutions on a Chip

ZR36710
Product Brief

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ZORAN®

Benefits Overview

The Vaddis III (ZR36710) DVD decoder is targeted for third generation DVD products. The highly integrated Vaddis III is ideal for developing a high-quality DVD player. The product is based on Zoran®'s strong history in the DVD marketplace. Through the StandardsPlus™ design methodology, functions such as reverse trickplays and zoom capability are provided. The Vaddis III, through its extensive SiliconSoftware® library, has the capability to integrate key functions such as 3D audio and Karaoke.

Highest Quality Audio

The internal architecture of the Vaddis III, which is based on Zoran's field-proven audio DSP, enables the development of a DVD system which meets the highest quality audio standards. The Vaddis III DVD decoder includes an embedded 20-bit high-performance audio DSP which enables the Vaddis architecture to perform at audiophile quality for its audio output signals. Other solutions, which use 16-bit audio technology, cannot attain this status. The high performance capability of the embedded audio DSPenables the implementation of additional audio processing algorithms such as Karaoke and 3D audio.

DVD Support

The Vaddis III handles all aspects of DVD decoding according to the DVD Specification. The single-chip device performs DVD authentication/decryption, demux and parsing, MPEG-2 or MPEG-1 video decode, subpicture decode, highlight processing, audio/video syn-chronization, Dolby Digital decoding, Pro-Logic decoding, and 3D audio. In addition, an on-screen display unit offers overlayed graphics and a closed caption modulator provides support for line 21 data.

At the heart of the Vaddis III are two powerful processing units: the Demux/Video Processor (DVP) and the Audio Decode Processor (ADP), a user programmable, 40 MIPS, DSPengine. The DVPunit operates from downloadable microcode to parse the bitstream and route data to the appropriate units. The Picture Reconstruction Unit completes the MPEG-2 or MPEG-1 video decode and passes the image to the Video Postprocessing (VPU). The VPU unit performs vertical/horizontal scaling, decodes and blends subpicture data, inserts Line 21 (close caption) text, and overlays On Screen Display data.

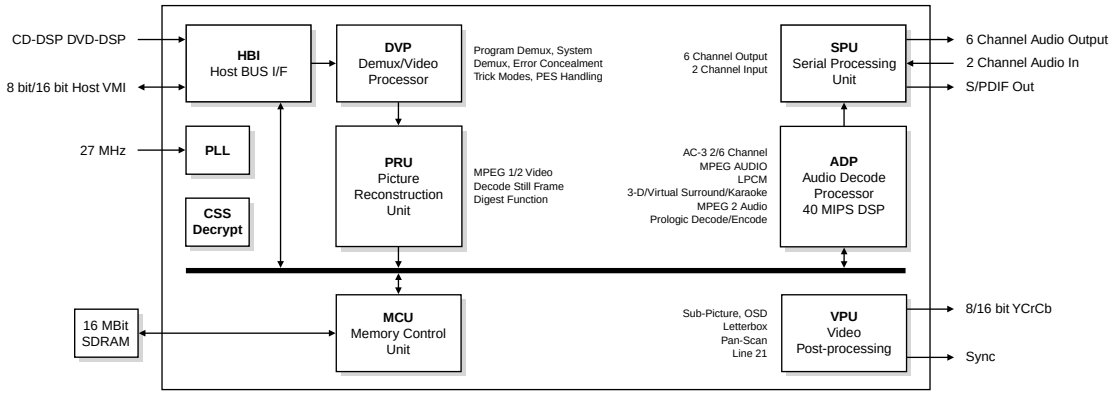

Figure 1. Vaddis III Block Diagram

Features

- Single-chip DVD decoder solution for DVD player designs
- Highest certification for Dolby Digital Audio
- DTS and MPEG5.1 passthrough via S/PDIF output
- Patented single 16Mbit SDRAM for full operation
- Picture Zoom functionality
- Embedded Karaoke capability
- 3D Audio Post-processing capability
- Reverse trickplays Including Smooth Reverse
- Dolby Digital, Pro-Logic, MPEG Audio capability
- VCD/CD compatible
- Embedded 40 MIPS DSP
- 160-pin TQFPPackage
- Less than 1W power consumption
- Integrated OSD processor

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Key Features

DTS and MPEG Multichannel Passthrough
The Vaddis III incorporates the capability to provide a digital output of DTS or MPEG 5.1 through the S/PDIF output. This digital data is transmitted for use by an audio receiver for multichannel decoding.

Karaoke
Karaoke is a popular feature for the Asian market. Karaoke features can be implemented in the Vaddis III, thus eliminating the need for an external karaoke processor. Voice Canceling eliminates the singer's voice on a CD by comparing left and right channels and filtering out the vocal content, allowing you to sing along. The echo function provides the effect of singing in a large auditorium and slightly modifies the singer's voice to enhance the sound. Key Control adjusts the pitch of the music by quarter tones to allow the pitch of the music to be shifted to match the pitch of the singer's voice.

Reverse Trickplay
Further adding to the video capability of the Vaddis, the Vaddis III incorporates reverse trickplay functionality to provide seamless reverse functions in addition to the standard trickplay functions common to DVD players. The reverse trickplay provides smooth transitions for a viewer to single step or fast reverse through scenes.

Patented SDRAM Memory Usage
The Vaddis III uses a patented and proprietary implementation for full DVD decoding with a single 16Mbit SDRAM. This dramatically reduces the number of chips and the size of the required memory, thereby lowering the power consumption and the overall cost of a DVD system.

A Solution for the Consumer DVD Player Market
The Vaddis III can be used in a DVD player design. High-quality audio is a key feature of DVD and the Vaddis supports the highest quality Dolby Digital decoding possible for a DVD player design. In addition, the functions of reverse trickplay and zoom capability enhance the video playback. Support for DTS passthrough enables the playback of video titles that are encoded with DTS audio tracks. Support for MPEG 5.1 provides the same capability. In summary, the Vaddis III is for ideally suited developing a high-quality, feature-rich, third generation DVD player design.

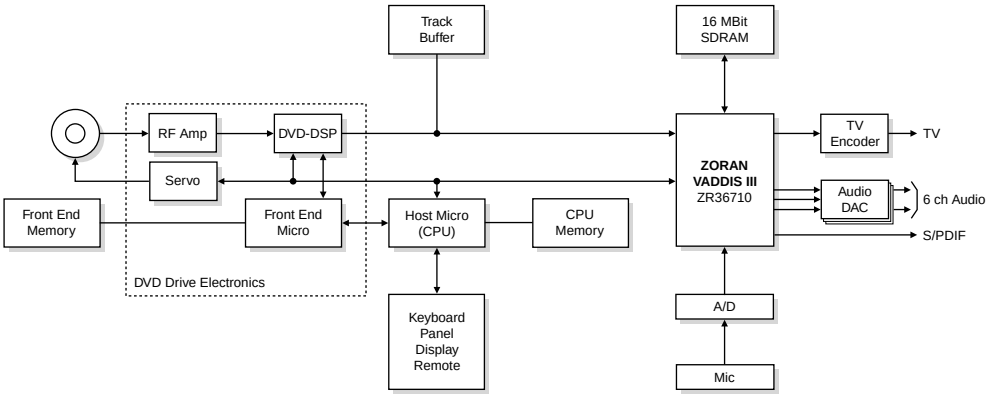

Figure 2. DVD Player Application Using the Vaddis III-2 ZR36712

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