ZR36730

PRODUCT BRIEF

Vaddis IV™ INTEGRATED DVD DECODER

FEATURES

- Single Chip DVD Decoder Solution
- Multiple Standard Support: CVD, SuperVCD, VideoCD, DVCD
- DVD-Audio Support
- Integrated 54 MIPS Audio DSP
- Embedded NTSC/PAL Encoder w/ 10-bit Video DACs
- DTS™, Dolby Digital™, Pro Logic™, and MPEG 5.1 Audio Decoding
- Virtual Surround Sound, 3D Headphones, Music Modes
- Enhanced Karaoke
- Simultaneous 2 Channel, 6 Channel, and S/PDIF Audio Outputs
- Image Enhancement Filtering: Progressive Interpolation, Sharpening, and Brightness Equalization
- Advanced Trick Play Features including Zoom, Smooth Scan
- Enhanced On-Screen-Display with 32 Colors and 8 Blending Levels
- Functionally Compatible with Vaddis Family Decoders
- 176-pin TQFP Package
- 1.1 W Power Consumption in full operation
- 0.25 Micron Technology

DESCRIPTION

The ZR36730 Vaddis IV DVD decoder is targeted at fourth generation DVD and convergence products. With its high level of integration and flexibility, the ZR36730 is a versatile digital video and audio processor. This new generation part builds upon Zoran's success in the DVD market, incorporating enhanced audio and video functionality. Leading audio algorithms, such as HDCD, MP3, DTS, Dolby Digital, Pro Logic, and MPEG 5.1 decoding are supported in this single chip solution. In addition, the video feature set has been expanded to include image quality enhancements and augmented On-Screen-Display (OSD) functionality. Through the StandardPlus™ design methodology, Zoran is building upon the standard to provide leading-edge capabilities for advanced DVD players and convergence devices, such as WebDVD players.

DVD Decoding

The ZR36730 handles all aspects of DVD decoding according to the specification. This single chip solution performs DVD authentication/decryption, demux and parsing, MPEG-2 or MPEG-1 video decode, sub-picture decode, highlight processing, and audio/video synchronization. The integrated OSD unit provides 32 colors and 8 blending levels which are necessary for sophisticated on-screen user interfaces. In addition, DVD-Audio is supported by the ZR36730's integrated digital audio processor.

Highest Quality Audio

With its integrated 54 MIPS Audio Decode Processor (ADP unit), the ZR36730 is capable of supporting a host of advanced audio algorithms. Based on Zoran's field proven audio DSP technology, the ADP unit enables the development of a DVD system which meets the highest quality audio output standards, such as for Dolby certification. In addition, algorithms from our *SiliconSoftware*™ library are supported, including 3D Headphones and enhanced Karaoke. The embedded ADP unit is a 20-bit audio DSP enabling Vaddis solutions to deliver audiophile quality output.

KEY FEATURES

Image Enhancement Filters

The ZR36730 incorporates several filtering functions for enhancing the image quality during normal and trick play operations. Progressive interpolation, sharpness and brightness equalization are implemented with these output filters. When using pause, fast forward, or fast reverse, the progressive interpolation filter provides a high quality image output, without displaying annoying artifacts. The ZR36730 supports video edge enhancement and brightness control via programmable filter coefficients, giving it the flexibility to control the sharpness, intensity, and dynamic range of the image.

On-chip Video Encoder and Video DACs

The ZR36730 includes an advanced video encoder core capable of outputting YCrCb, RGB, CV, or S-video via high quality 10-bit video DACs. The video encoder supports programmable chroma and notch filters to optimize the picture quality, even when displaying on lower quality TV's.

Multiple Standards

The ZR36730 supports all of the key digital video and audio standards. Support for DVD, CVD, SuperVCD, VideoCD, DVCD

and Audio CD is provided. SuperVCD is a new digital video standard for the Asia market and is rapidly replacing the VideoCD market. Enhancements to the Audio CD is provided through HDCD, 3D audio and Music Modes that expand the sound experience for the listener.

DTS Passthrough and MPEG 5.1 Decoding

The ZR36730 provides DTS passthrough and MPEG5.1 audio stream decoding capability. An audio receiver can decode the DTS data which is sent digitally through the S/PDIF port. MPEG 5.1 output can be either through the S/PDIF or analog audio ports.

DVD-Audio Support

The following DVD-Audio formats are supported by the 54 MIPS ADP in the ZR36730:

- Linear PCM 5.1 Multichannel (24-bit, 96 kHz sampling)
- Linear PCM 2-channel (24-bit, 192 kHz sampling)
- MLP 2-channel (24-bit, 192 kHz sampling)

Compressed Audio

The recent explosion of applications for compressed audio has caused the popularization of standards such as MP3. With the ability to play MP3 disks with a DVD hardware platform, new convergence applications are enabled.

HDCD

HDCD is a technology that provides 20-bit resolution from standard Audio CDs. Widely available on many CDs today, HDCD expands the existing 16-bit data on an Audio CD to 20-bits, providing a higher quality audio output compared with typical Audio CDs.

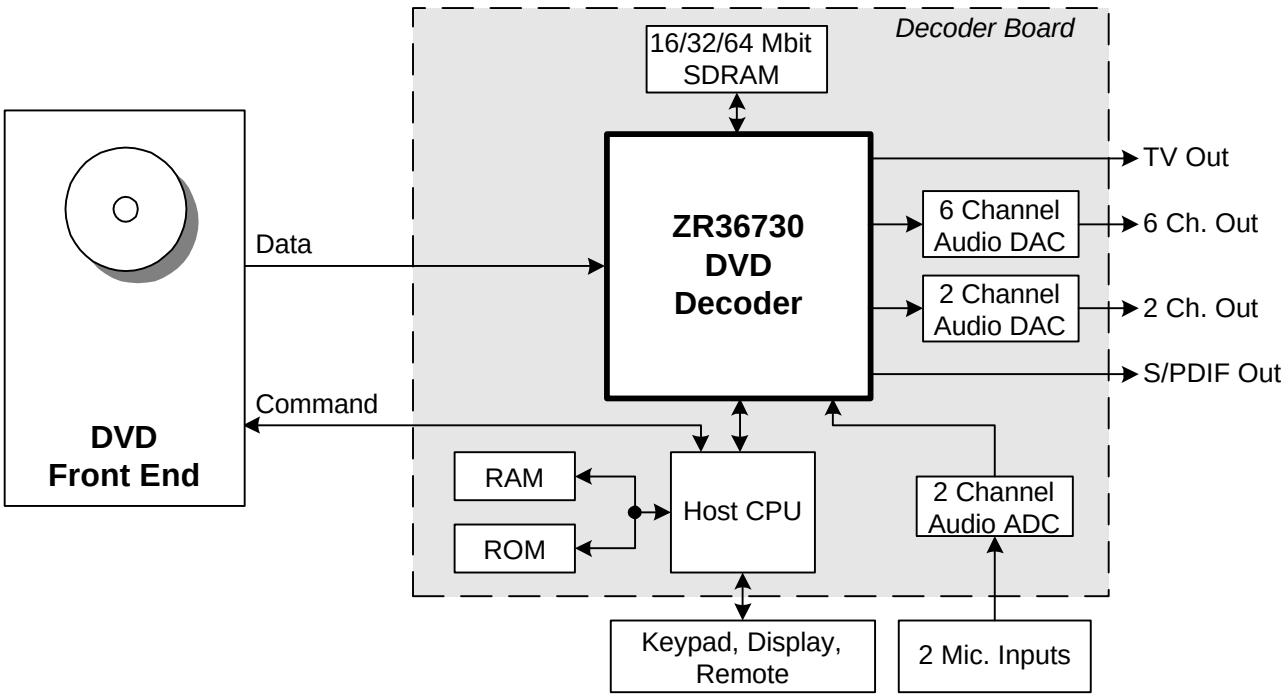
Audio Enhancement Algorithms

Beyond the decoding of DVD or compressed audio, post-decoding algorithms such as Virtual Surround Sound, 3D Headphones, and Music Modes enhance the listening experience. Virtual Surround Sound gives the listener a multichannel effect through only two speakers. Likewise, 3D Headphones gives the sensation that the listener is surrounded by a theatre speaker system, when the audio is actually delivered via the two speakers on the headphones. Music modes expand the sound of the room by simulating a theatre or concert hall listening environment.

The Solution for the Consumer Market

The ZR36730 is the leading solution for the consumer DVD market today. With its high level of integration and rich feature set, the Vaddis IV is a cost effective IC which delivers the versatility and performance demanded. As Zoran's fourth generation integrated DVD decoder, it has a mature, field-proven architecture. Enabling emerging applications such as WebDVD, Set Top Box (STB), and Digital VCRs, the ZR36730 is *the* versatile digital video and audio decoder for consumer electronics products.

DVD Player Application using the Vaddis ZR36730



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