Activa® 100

Driving the Digital Lifestyle

MPEG AV Encoder for DVD Recorders

	DVD	Digital Camera	Digital TV	Imaging	IP Core

Product Brief

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ZORAN®

Description

BENEFITS OVERVIEW

The Activa 100 MPEG A/V Encoder is optimized to deliver a high quality, cost-effective A/V encoding solution. The Activa 100 integrates DV25 decoding, MPEG A/V encoding, and analog video decoding onto one chip. Coupled with the Activa 150, the Activa 100 enables a powerful class of DVD recorders, with optional hard disk drive. This chipset is also the basis for Zoran's home media center and enables a new category of emerging applications and connectivity for the networked digital home. Coupled with the SupraAV® 100, the Activa 100 offers a flexible solution of STB/DTV+HDD/PVR products for the cable and satellite markets.

MPEG VIDEO ENCODER

The MPEG Video encoder supports real-time encoding into MPEG-1 and MPEG-2 formats. With programmable spatial and temporal pre-processing filters, the user can shape the incoming video to optimize the MPEG encoding. The horizontal decimator allows for a wide range of horizontal encoding resolutions: 352, 360, 480, 544, 704, and 720. Programmable horizontal resolution, along with the bitrate, gives the best flexibility in optimizing the encoded video quality versus storage time.

During encoding, features such as automatic scene change detection and variable/constant bit rate processing, consistently deliver optimal video quality over a variety of input video.

When used in tandem with Activa 150, the Activa 100 enables the watch and record class of applications, where the user can watch one program while recording another. In addition, Zoran has enabled PVR (timeshifting and pausing live TV) not only on HDD, but also on DVD-RAM, DVD-RW, and DVD+RW media.

PROGRAMMABLE AUDIO DSP

The programmable audio DSP encodes in real-time Dolby Digital Consumer Encoder (DDCE), MPEG1-L2, MP3, and WMA formats.

DV25 A/V DECODER

The DV25 decoder decompresses the 1394/DV camcorder input from the 1394phy/link. The decoded data can be transcoded real-time to MPEG-2. This chipset provides convenient, direct control of 1394/DV camcorders using the DVD recorder remote control. This feature facilitates an integrated environment for simple editing and archiving of home movies.

ANALOG VIDEO DECODER WITH 3D Y/C, TBC

The proven embedded analog video decoder supports decoding of NTSC, PAL, and SECAM TV signals. Inputs of composite and S-Video signals are supported. For composite signal input, a high quality, programmable 3D Y/C separation circuit partitions the luma and chroma signals. To compensate for video artifacts from unstable sources such as a VCR, a robust time-base correction circuit re-synchronizes the video signal prior to the MPEG encoding process.

VBI BIT SLICING AND DECODING

The Activa 100 offers a programmable circuit for hardware Vertical Blanking Interval (VBI) bit slicing. Hardware VBI bit slicing is important for extracting closed captioning, electronic program guide (EPG), Teletext, widescreen signaling, and other VBI standards efficiently, without burdening the CPU.

DVD AUTHORING

Using the Activa 150 DVD authoring software, the Activa 100 allows real-time archiving of home movies from DV tape onto DVD disc or hard disk. Formatting to DVD-R/-RW/-RAM/+R/+RW is supported. All logical formats for DVD recording, DVD+VR, DVD-VR, and DVD-Video are supported.

INTERFACES

The Activa 100 has a glueless interface to Activa 150. A number of 1394 link+phy chips can gluelessly interface to Activa 100. To enable digital transrating (re-encode video to a lower bit rate), 8-bit ITU-656 digital inputs can be fed back from Activa 150 digital outputs.

APPLICATION PROGRAMMING INTERFACE

For quick time to market, the Activa 100 is accessed via a simple but powerful application programming interface. Parameterized commands such as start encode and stop encode enable OEMs to develop a rich feature set for digital recorder products.

Features

- **General**
  - Embedded 135Mhz, 32-bit RISC Processor
  - Output: MPEG PS/TS Serial Stream
- **Video**
  - Formats: MPEG-1, MPEG-2
  - TV Systems: NTSC, PAL, SECAM
  - Horizontal Resolutions: 720, 704, 544, 480, 360, 352
  - Bitrates: 1.4-10 Mbps VBR/CBR
  - DV25 Decode, Real-time Transcode to MPEG
  - Embedded NTSC/PAL Video Decoder with Time Base Correction (TBC) and 3D Y/C Separation
  - Input video noise filtering (horizontal, vertical, temporal)
  - Closed Captioning/Teletext/EPG VBI Bitslicing/Decoding
  - Input analog video: CVBS or Y/C

- **Audio**
  - Dolby Digital Consumer Encoder, MPEG Audio Encoding with Programmable Audio DSP
  - Input Digital Audio: I2S, 16-bit, 32/44.1/48kHZ
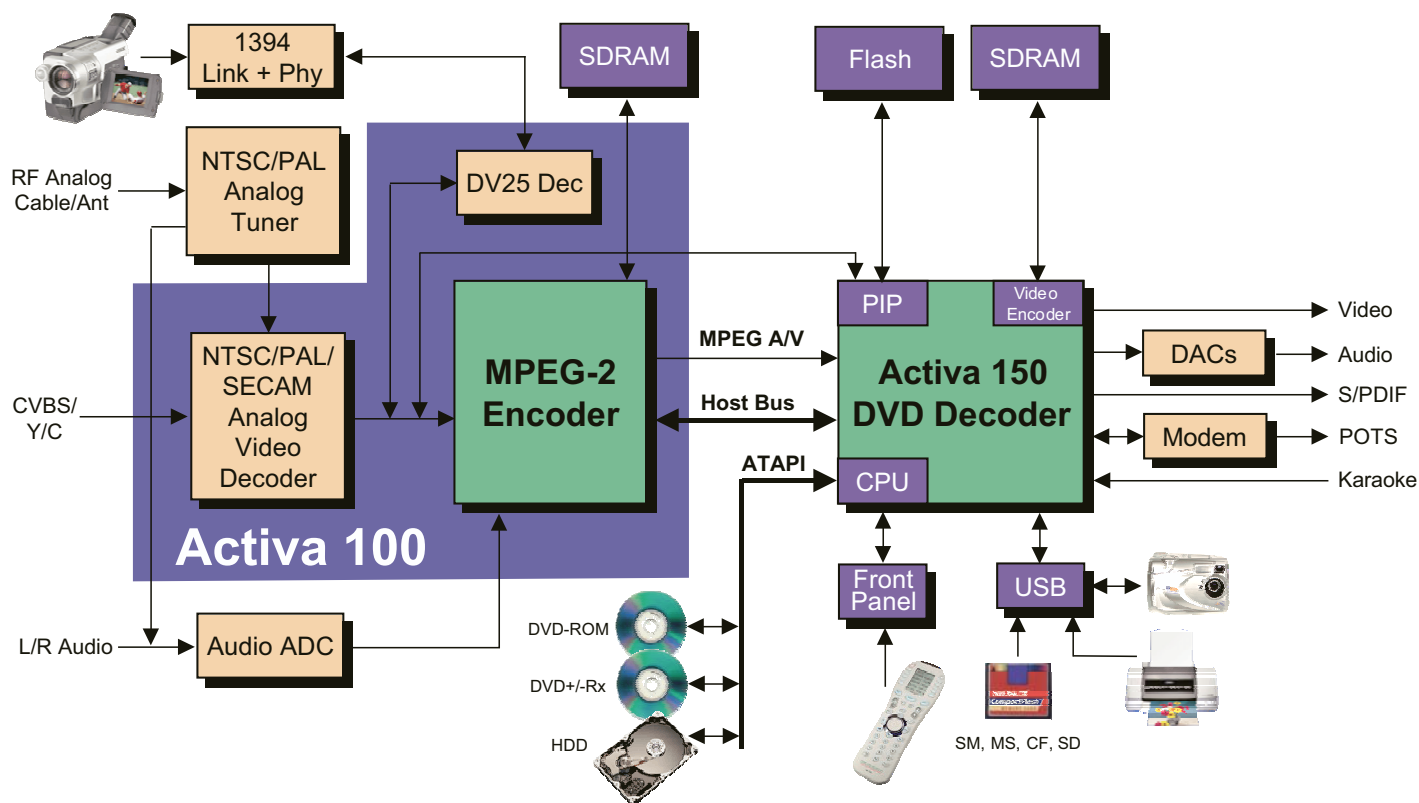- **Other**
  - Generic host bus interface
  - UART, GPIO Interfaces
  - Supports 32-bit wide, up to 64MB SDRAM
  - EJTAG Support
  - 208-pin PQFP Package
  - 1.5 W Power Consumption
  - Green packaging (Pb, Br, Cl, Sb not added in manufacturing process)
  - Part number: ZR35100PQCG

Activa 100 DVD Recorder Reference Design

RF Analog
Cable/Ant → NTSC/PAL Analog Tuner

1394 Link + Phy

SDRAM

Flash

SDRAM

NTSC/PAL/SECAM Analog Video Decoder

DV25 Dec

CVBS/ Y/C

MPEG-2 Encoder

MPEG A/V

Host Bus

ATAPI

PIP

Video Encoder

Activa 150 DVD Decoder

CPU

DACs

Modem

Video
Audio
S/PDIF
POTS
Karaoke

Activa 100

L/R Audio → Audio ADC

DVD-ROM

DVD+/-Rx

HDD

Front Panel

USB

SM, MS, CF, SD

Product Order Code: ZR35100PQCG

For more information, contact Zoran's Sunnyvale office or the office nearest you: