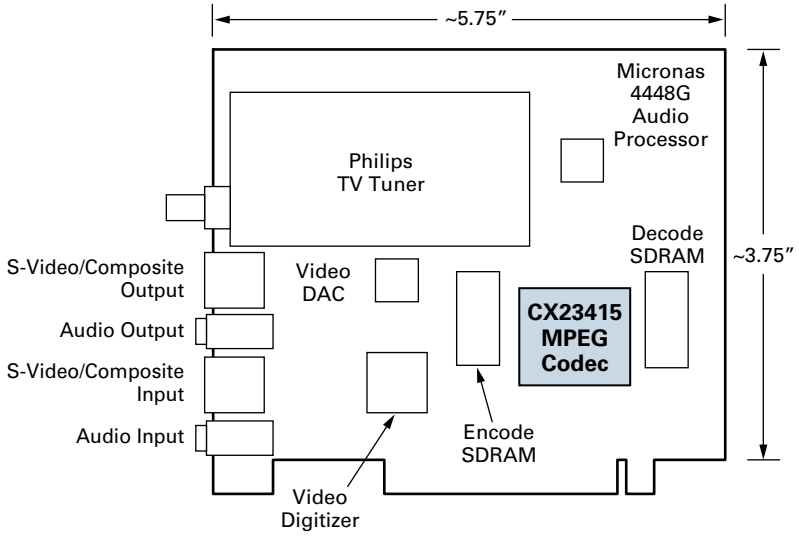
CONEXANT

PCI Reference Design

Featuring the CX23415 MPEG Codec

The CX23415 PCI Reference Design allows manufacturers to accelerate the process of product design and shorten time-to-market

Conexant's broadband communications portfolio includes a comprehensive suite of semiconductor solutions that enable the digital home and information network. This highly engineered reference design allows manufacturers to evaluate the performance and feature set of Conexant's CX23415, the most advanced MPEG-2 codec currently on the market. A wide variety of applications can be evaluated, from videoconferencing and video e-mail to security/surveillance and time-shifted television recording. The design clearly demonstrates how the CX23415 incorporates the functionality of up to five ICs, and how the CX23415 will enable the development of products such as digital video recorders at price points that have mass-market appeal. Using this reference design as a base point, manufacturers can accelerate their product's time-to-market and concentrate on features that will differentiate their products in the market. Conexant supports the Windows and Linux operating systems for this reference design.



Key Components of the CX23415 Evaluation Board

Reference Design Features

- Includes the following input/output
  - Audio C-R
  - S-video
  - Composite
  - Antenna
- Includes 85V–240V AC wide input range power supply
- Reference design includes proprietary Conexant firmware API, middleware, and time-shifting application with GUI
- All design kits come complete with bill of materials, schematics, gerber files, ORCAD files, binary code, source code, and application support

Part Number 030-0047
Description CX23415 PCI Reference Kit

CX23415 Features

Video Encoding

- High-quality real-time encoding (I-, B-, and P-frames)
- Supports MPEG-2 (MP@ML, SP@ML) and MPEG-1
  - 525/60 (NTSC) up to 720x480 @ 30 fps
  - 625/50 (PAL) up to 720x576 @ 25 fps
- Variable and constant bit rate up to 15 Mbit/sec
- Programmable GOP lengths
- Adaptive field/frame (motion compensation type 8 DCT)
- Field/frame motion estimation
  - B-frame: ±296(H) x ±184(V)
  - P-frame: ±326(H) x ±202(V)
  - Half-pel accuracy
- 4:2:2 to 4:2:0 conversion
- Speckle noise reduction
- Sharpness control
- Recursive noise reduction
- Inverse telecine (3:2 pulldown)
- Scene change detection
- Adaptive quantization
- Supports program and transport streams
- VBI extraction

Video Decoding

- Supports MPEG-2 and MPEG-1
  - 525/60 (NTSC) up to 720x480 @ 30 fps
  - 625/50 (PAL) up to 720x576 @ 25 fps
- 144-tap horizontal up and down filter
- 64-tap vertical up and down filter
- Letterbox conversion from 16:9 to 4:3, 3:2 pulldown
- Supports Program and Transport streams
- Picture-in-graphics display
- Closed captioning

Audio Encoding and Decoding

- MPEG-1 Layer II
- Sampling rates of 32 kHz, 44.1 kHz, and 48 kHz
- Compressed bit rates up to 448 kbit/sec
- Supports 16-bit samples

On-screen Display (OSD)

- Supports a variety of pixel formats
  - 8-bit color index
  - 32-bit ARGB 8:8:8:8
- Full screen or windowed
- Per-pixel alpha blend between OSD and video display
- Deflicker filter
- Hardware BITBLT acceleration

Interfaces

- Video input: 4:2:2 YUV CCIR-656
- Video output: 4:2:2 YUV CCIR-656
- Audio input/output: Stereo Sony I^2S
- MPEG input and output supports one of the following
  - PCI DMA master or PCI slave
  - 8-bit parallel program data
  - 8-bit parallel SPI transport data
- Two 64 Mbit SDRAMs — one for encode and one for decode
- Host interface supports 32-bit, 33 MHz PCI
- General-purpose input/output with 16 programmable pins

Package

- 452-ball PBGA

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