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PCI Audio/Video Broadcast Decoder

CX23880/1/2/3

Single-Chip Solution Allows TV, Radio, Digital TV, MPEG, and Broadband Data Capture Over the PCI Bus

Conexant's highly flexible audio and video broadcast decoders support all analog broadcast video and audio formats in use worldwide. These singlechip solutions enable the host PC to perform audio/video capture, video display, audio playback, or record and playback at a later time through software or hardware audio/video codecs.

The CX2388x integrates a 10-bit NTSC/PAL/SECAM composite and S-Video decoder, image resizer/scaler, Direct Memory Access (DMA) controller, and Peripheral Component Interface (PCI) bus master on a single device. As a PCI initiator, the CX2388x can take control of the PCI bus to stream data as soon as the bus is available. Analog video signals are input to the CX2388x via a four-input multiplexer. The CX2388x family captures and decodes all major terrestrial broadcast audio standards.

The CX2388x series is fully compatible with Conexant's family of digital channel demodulators for capture of High Definition Television (HDTV) and Standard Definition Television (SDTV) streams, as well as broadband data over terrestrial, satellite, or cable links. A variety of third-party peripheral connectivity options are supported by the CX2388x series. Its General Purpose Input/ Output (GPIO) pins and CPU host port interface enable vendor-specific board functionality and marketplace differentiation.

The CX2388x family offers a software solution for use with Windows XP Media Center Edition. It supports DirectX compliant device drivers for the following functions: Hardware MPEG encoding, Host-based MPEG encoding, Digital tuning, HDTV capture, Vertical Blanking Interval (VBI) data casting, Remote control receiving, and GPIO custom properties programming.

The CX2388x video and broadcast audio capture chips are mixed-signal monolithic ICs that enable a new platform for video, audio, and data communications in the PC. The CX2388x family enables a board vendor to build a wide variety of analog and digital TV capture products from a common code base. Each has its own specific functions to support different applications.



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Distinguishing Features

- 10-bit video decoder
- Adaptive comb filter
- · Global broadcast audio decoder
- Stereo DACs
- I²S input and output
- Digital Television (DTV) and broadband support
- MPEG encoder and decoder interfaces

Video Subsystem Features

- 10-bit video ADCs
- Global video standards support (NTSC [M, J, 4.43], PAL [B, D, G, H, I, M, N, N-combination], SECAM [K, L])
- Capture resolution up to 768 x 576 (square pixel PAL/SECAM)
- NTSC and PAL adaptive comb filter for 2-D Y/C luminance and chrominance separation
- Multiple YCrCb and RGB pixel formats and YUV planar formats supported on output
- Selectable pixel density: 8, 16, 24, and 32 bits per pixel
- High-quality multi-tap horizontal and vertical image scaler for decoded video or 4:2:2 sources
- Flexible VBI data capture for closed captioning, teletext, and other analog broadcast data types
- Hue, brightness, contrast, and saturation control for video decoder
- Input via four-input multiplexer for four composite source inputs or three composite and an S-Video input
- UltraLock[™] technique, enabling the CX2388x to lock onto video signals quickly and accurately, regardless of their source
- Macrovision ${}^{\textcircled{R}}$ Detector, for detection of Macrovision pulses and signals

Audio Subsystem

- Low Intermediate Frequency (IF) sampling direct from tuner
- Global broadcast audio support (NICAM, A2, EIAJ, FM; BTSC-DBX on CX23880 and CX23883 only)

Feature Comparison Chart

 Decoded 48 kHz audio 	stream to	PCI bus	for real-time encoding
to MP3			

- Integrated 90 dB SNR stereo audio DACs to drive sound card or headphones
- I²S input port for external source connectivity to on-board stereo DACs
- I²S output port to drive coaxial/optical digital audio interface

PCI Subsystem

- Five independent functions, each with target/master and local register space (video, audio, MPEG port, VIP 2.0 host port, GP host port)
- On-chip execution of all RISC/control programs
- On-chip Static Random Access Memory (SRAM) for PCI data buffering up/down
- PCI revision 2.2 compliant

Miscellaneous

- Advanced Configuration and Power Interface (ACPI) and power-down support
- One crystal for all video and audio decoding
- 400 kHz serial bus master
- Compact 176-pin TQFP
- · Low-power mode

		881	883	882	880
onexant PCI Decoder	4-Input CVBS ADC	х	X	X	X
Standard Features Chroma ADC (S-Video) NTSC/PAL/SECAM NTSC/PAL/SECAM	Chroma ADC (S-Video)	х	X	X	Х
	х	X	X	Х	
	Multiple YCrCb and RGB Formats	Х	X	X	Х
Notch and CombY/C Separation		Х	X	X	X
	Serial MPEG Port	Х	X	X	X
	I ² S Input Port	х	X	Х	Х
	24-Bit GPIO	х	X	X	Х
	Direct Memory Access (DMA) Channels	х	X	X	Х
	Windows Hardware Quality Lab (WHQL)	Х	Х	Х	Х
CX2388x Family	10-Bit Video ADCs	x	x	x	x
Standard Features	Multi-Line 2D-Adaptive Comb Filter	X X	X	X	X
	High-Speed Parallel MPEG Port	X X	X	X	X
	I ² S Output Port	X	X	X	X
	Stereo Line Out DACs	X	X	X	X
	EIAJ/NICAM/A2/FM Stereo Decode	Х	Х	Х	х
CX2388x Family	Signaling Controller (SC) with dBx Stereo Decode		x		x
Specialty Features ITU-R 656 Output Port ITU-R 656 Input Port ITU-R 656 Input Port Intel/Motorola Host Port (I/O				х	X
				X	X
				X	X
	Video Interface Port (VIP) 2.0 Host Master Port (I/O)				х

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