

CX23102 Broadcast USB Decoder

SmartVideo Product Brief



Single-Chip USB Video and Broadcast Decoder with IF Demod

Product Overview

The CX23102 brings Conexant's long heritage of audio and video capture solutions to systems that enable USB architectures. The CX23102 integrates all the functions required to perform television and external A/V capture on personal computers or consumer electronic devices.



The CX23102 decoder enables the capture of analog and digital broadcast streams on personal computers through an integrated USB interface. The device can capture a single analog stream, two simultaneous digital television TSs, or a combination of analog and digital programming. In addition, analog, hybrid, and combo configurations may be used in conjunction with hardware MPEG encoders.

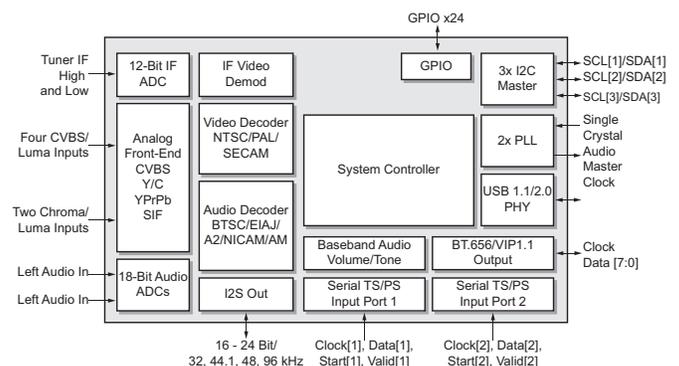
The CX23102 integrates anti-aliasing, noise rejection filters, and AGC, and also includes an integrated analog IF demodulator that is compatible with low IF tuners. Quality video is accomplished by using 10-bit video ADCs, a full 10-bit video data path, and a horizontal and five-tap vertical scaling, hue, brightness, saturation, and contrast controls.

For high-quality audio, the CX23102 has analog-to-digital converters for stereo audio capture and a minimum of 16-bit audio resolution through the entire audio data path to ensure high fidelity audio, whether it comes from the integrated broadcast audio decoder or the ADCs. The audio path includes an automatic volume control function and two assignable stereo processing units for control of volume, three-band equalization, and balance. The level of audio and video integration provided by the CX23102 removes the need for additional broadcast audio decoding and processing chips or external sound demodulation chips. The CX23102 also reduces the overall BOM for the system developer, without compromising audio and video performance.

Key Features

- USB 1.1/2.0 compliant bus
- Support for the following audio formats:
 - Stereo
 - Mono
 - Dual language (mono)
 - Tri language (trivox)
- Support for the following video formats:
 - Composite
 - S-Video
 - 480i YPrPb
 - RBG packed
 - YCrCb packed
 - 10-bit packed
 - YCrCb/YUY2 format
- Three I²C master ports (two ports are provided for a two-tuner design to isolate I²C transactions to reduce noise)
- Macrovision 1.0 detection compliant
- Advanced consumer IR functionality enables systems to receive, learn, and blast IR signals
- High-quality multi-tap horizontal and vertical image scaler for decoded video or 4:2:2 sources
- I²S out
- Auxiliary PLL clock for general use

System Block Diagram



Additional Features

- Integrated analog demodulator that is compatible with direct IF tuners
- Worldwide audio and video decoding
- Automatic video and broadcast audio standards detection and configuration
- Flexible video input MUX that supports composite, S-Video, and component inputs with integrated anti-alias filtering
- Integrated sigma-delta stereo audio ADCs with 4:2 MUX
- Audio sample rate converters on all inputs and outputs
- Programmable VBI data slicer for data services such as:
 - Closed caption
 - WSS
 - Program guides, such as GEmstar 1x and 2x
- ITU-R BT.656 output port
- Demodulator low or high IF for direct IF tuners
- Two MPEG TS ports—Parallel and serial
- Two program stream inputs that accommodates serial or parallel interfaces

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