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CONEXANT®

8-Channel Audio/Video Decoder with Integrated PCIe Interface
CX25858

Conexant's portfolio includes a comprehensive suite of semiconductor solutions for communications and consumer applications.

High Quality Audio and Video Decoders for Surveillance Applications

The CX25858 8-Channel Audio/Video Decoder with Integrated PCIe Interface was designed for surveillance applications. The CX25858 contains eight high quality NTSC/PAL video decoders with 10-bit A/Ds and 5-line comb filtering, to generate the highest quality digital video output with the lowest possible noise. This creates not only the best image quality for viewing, but enables lower bitrates for compression devices using the output of the CX25858.

The video decoders within the CX25858 are optimized to lock to inputs with low signal levels as well as line-locked cameras, both of which are common in surveillance systems. Each video decoder may be scaled independently and the CX25858 supports BT.656 as well as a variety of other interleaved digital video output formats.

The CX25858 also contains eight high-quality mono audio A/Ds with I^2S outputs.

PCIe Bridging

The CX25858 contains a PCIe 1.1 compliant x1 interface. It is ideal for "capture card" applications in systems where eight channels of high-quality, uncompressed video must be digitized and transmitted via PCIe for viewing, compression, and/or analytics. The CX25858 can downscale digital video from 4:2:2 format to 4:1:1, reducing bandwidth requirements from 16 bits per pixel to 12.

Additionally, the CX25858 supports the bridging of up to four channels of digital video and audio from PCIe, and can output these streams over pins in BT.656 or I^2S-style interfaces, respectively.

Direct-Connection to Multi-Channel H.264 CODECs

The CX25858 supports byte, line, or frame-interleaved digital video outputs at 27, 54, or 108 MHz. Byte and line interleaved outputs are supported entirely within the CX25858. Frame-interleaved outputs require that the CX25858 interface with external DDR2 memory. The CX25858 supports I^2S and multiplexed I^2S audio outputs.

The CX25858 contains an interface for Maxim H.264 CODECs that permit the CX25858 to bridge compressed data from Maxim devices to the PCIe bus. This simplifies the Bill of Materials (BOM) and reduces costs in PCIe systems.

Distinguishing Features

- Eight High-Quality NTSC/PAL video decoders:
  - Anti-alias filters
  - 10-bit A/Ds
  - 5-line comb filtering
  - Independent scaling
- Eight Mono audio A/Ds
  - Variable sample rates
  - I^2S outputs
- Flexible digital video output formats at 27, 54, and 108 MHz
  - Byte-interleaved
  - Line-interleaved
  - Frame-interleaved (requires external DDR2 memory)
- PCIe 1.1 x1 interface
- Interface to Maxim CODECs for bridging of compressed data to PCIe
- Tiling and cascading functions (requires external DDR2 memory)
- Programmable Motion Detection
- 48 GPIO pins

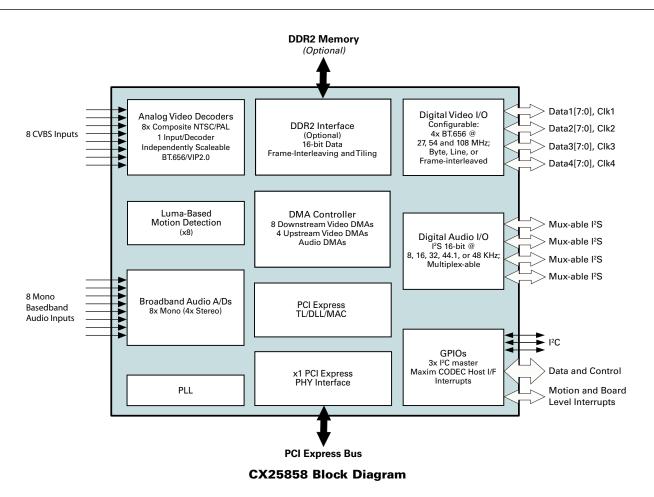| Part Number	CX25858
Description	8-Channel Audio/Video Decoder with Integrated PCIe Interface

Additional Features

There are two variants of the CX25858 offered — one with the external DDR2 interface, and one without the interface. When equipped with DDR2, the CX25858 supports frame-interleaved video outputs, as well as a 2x2 CIF tiling mode, in which four CIF images are tiled into a single D1 stream.

The CX25858 may be cascaded with the CX25838 to create a 16-channel system for sending video and audio data over PCIe.

The CX25858 includes programmable motion detection logic, which can trigger flags or PCIe interrupts when motion is detected on incoming analog video streams.

The CX25858 contains 48 GPIO pins, which maximize flexibility and allow customization to a variety of applications and designs. I^2C interfaces and the Maxim interface are supported via GPIOs.

DDR2 Memory
(Optional)

8 CVBS Inputs

Analog Video Decoders
8x Composite NTSC/PAL
1 Input/Decoder
Independently Scaleable
BT.656/VIP2.0

DDR2 Interface
(Optional)
16-bit Data
Frame-Interleaving and Tiling

Digital Video I/O
Configurable:
4x BT.656 @
27, 54 and 108 MHz;
Byte, Line, or
Frame-interleaved

Data1[7:0], Clk1
Data2[7:0], Clk2
Data3[7:0], Clk3
Data4[7:0], Clk4

Luma-Based
Motion Detection
(x8)

DMA Controller
8 Downstream Video DMAs
4 Upstream Video DMAs
Audio DMAs

Digital Audio I/O
I^2S 16-bit @
8, 16, 32, 44.1, or 48 KHz;
Multiplex-able

Mux-able I^2S
Mux-able I^2S
Mux-able I^2S
Mux-able I^2S

8 Mono Basedband Audio Inputs

Broadband Audio A/Ds
8x Mono (4x Stereo)

PCI Express
TL/DLL/MAC

GPIOs
3x I^2C master
Maxim CODEC Host I/F
Interrupts

I^2C

Data and Control

Motion and Board
Level Interrupts

PLL

x1 PCI Express
PHY Interface

PCI Express Bus

CX25858 Block Diagram

The CX25858-1x (contains DDR2 interface) is offered in a 23mm x 23mm, 288 pin fpBGA package.
The CX25858-2x (no DDR2 interface) is offered in a 14mm X 14mm, 233 pin fpBGA package.

Conexant Product Portfolio

Conexant's comprehensive product portfolio includes solutions for imaging, audio, video, and embedded-modem applications.

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