

A Cost-Effective Dolby and DTS Headphone Decoder DSP

Product Overview

The CX20833 device is a high-performance digital audio processor that provides a turnkey DTS or Dolby headphone solution. The CX20833 allows users to simulate a highly realistic 5.1/7.1 surround sound listening environment from stereo transducer headphones. Conexant provides optimized implementation from Dolby for the Dolby Digital decoder, Dolby Headphone, and Dolby Pro Logic IIx, as well as the technology from DTS for the DTS Headphone:X algorithm (royalties applicable).

The device features S/PDIF input from a host device, including gaming consoles such as Microsoft Xbox and Sony PlayStation, to receive a compressed multi-channel audio data. This feature makes the CX20833 an ideal solution for premium gaming headsets and headphones by decoding compressed multi-channel digital audio data, and enabling Dolby or DTS headphone technology running on the CX20833 DSP core. The CX20833 also features a suite of innovative Conexant proprietary turnkey audio and voice processing algorithms designed for convergence of audio entertainment and voice communication applications, such as a gaming console headset, USB headsets, a USB docking station, and a soundbar.

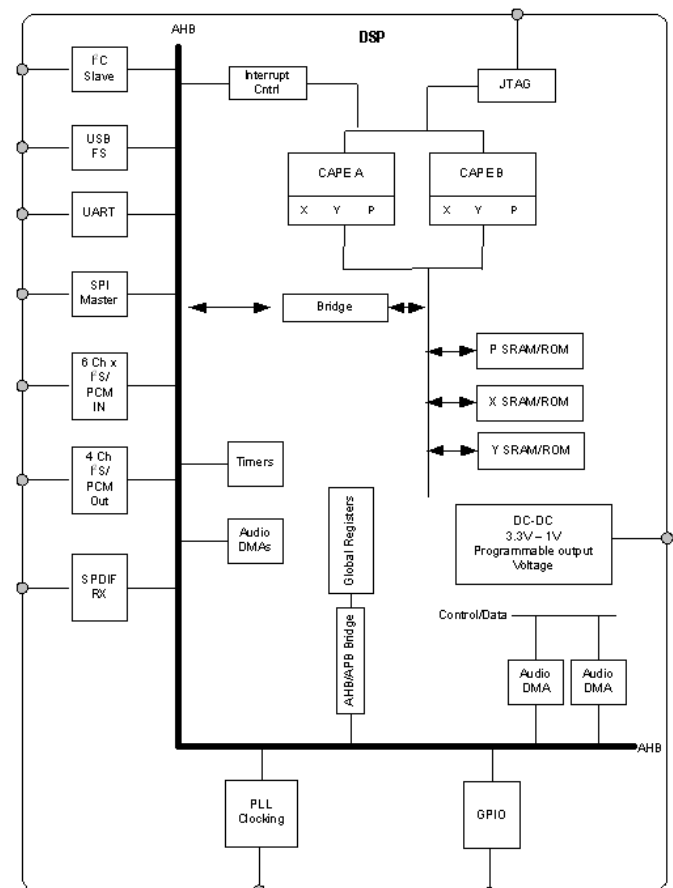
The device supports an S/PDIF-in interface, up to six-channel I²S/PCM inputs, four-channel I²S/PCM outputs, and USB 2.0 Full Speed for receiving and transmitting up to eight channels of audio data. The control interfaces include one I²C slave, two SPI masters, one USB, one UART, and up to two GPIOs.

The CX20833 device has an integrated DC-DC converter that supports DVS and frequency scaling mechanisms to reduce power consumption.

Key Features

- S/PDIF RX (muxed pin) supports sample rates from 44.1kHz up to 192kHz
- USB 2.0 Full Speed UAC
 - Supports up to five endpoints
 - Fully configurable endpoints
- SPI master
 - Five-wire interface with two slave chip select output
 - Second slave chip select is optional through pin muxing
 - Maximum clock frequency up to 50MHz

System Block Diagram



Additional Features

- I²S/PCM output
 - Four-channel out I²S out is available through pin muxing
 - Three-wire or six-wire digital audio interface
 - Master and slave configuration
 - Sample rates of 8kHz up to 192kHz
 - Sample widths of 8-bit, 16-bit, and 24-bit
 - Left-justified and right-justified mode
- I²S/PCM input
 - Six-channel I²S out is available through pin muxing
 - Four-wire or five-wire digital audio interface
 - Master and slave configuration
 - Sample rates of 8kHz up to 192kHz
 - Sample widths of 8-bit, 16-bit, and 24-bit
 - Left-justified and right-justified mode
- I²C slave
 - Maximum clock frequency 1MHz
 - For control and boot
- One dedicated GPIO and one multiplexed with I2S_TX_CLK_2
- One UART interface—Maximum baud rate up to 1.5625Mbps

Ordering Information

Ordering Part Number	Part Number	Description	Package
DSAC-L833-11CH	CX20833-11Z	Dolby and DTS Headphone Decoder DSP	7x7mm 60 QFN

Note: All devices are lead-free (Pb-free) and RoHS compliant.

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