A Cost-Effective Dolby Headphone Decoder IC

Product Overview

Conexant's CX2087x device family provides a turnkey Dolby headphone and headset solution. Conexant provides optimized implementation of Dolby's Digital decoder, Headphone, and Pro Logic IIx algorithms (royalties applicable).

Dolby's headphone technology allows users to simulate a highly realistic 5.1/7.1 surround sound listening environment from stereo transducer headphones. The CX20873 device features an S/PDIF receiver from a host device, including gaming consoles such as Microsoft® Xbox and Sony® PlayStation as well as a USB interface from a PC or MAC. Dolby's headphone technology makes the CX20873 an ideal solution for premium gaming headsets and headphones by receiving multi-channel digital audio input, and enables Dolby technologies to run on the CX20873 DSP core. The CX20873 also features a suite of innovative Conexant proprietary turnkey audio and voice processing algorithms designed for the convergence of audio entertainment and voice communication applications, such as a gaming console headset, USB headset, USB docking station, and soundbar.

The device supports multiple digital audio interfaces such as a full-duplex I^{2}S/PCM, S/PDIF transmit and receive, and USB2.0 High Speed for receiving and transmitting up to eight channels of audio data. There are two on-chip, tri-color PWM LEDs as well as a set of flexible I/Os that are configurable by an integrated PIC.
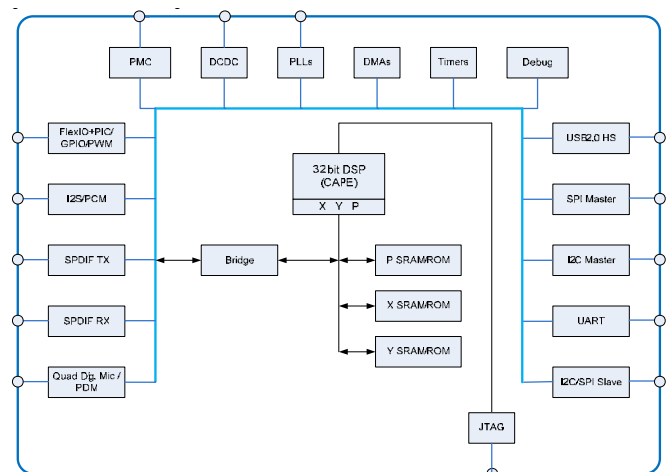
Applications

- USB headset and headphones
- Docks and soundbar

Key Features

- High-speed USB 2.0 device that supports up to eight endpoints
- Quad digital microphone PDM interface
- S/PDIF transmitter and receiver
- Full-duplex stereo I^{2}S/PCM
- Six 32-bit timers/counters
- SPI master and slave
- I^{2}C master and slave
- One UART interface
- Dedicated peripheral and memory-to-memory DMAs
- Interrupt controller
- 13 FlexIOs that are fully programmable through a PIC processor
- Two sets of tri-color PWM LED drivers
- Six dedicated GPIOs
- Debug/JTAG interface and on-chip logic analyzer
- On-chip programmable PLLs
- Advanced power management that allows the USB suspend mode to meet 2.3mA using an off-chip converter 5V/3.3V
- Package 116p dual-row QFN
- Conexant-proprietary algorithms available for voice and audio processing
- Support for integration of third-party algorithms (e.g., Dolby's Digital decoder, Headphone, Pro Logic, speech recognition, and synthesis)

System Block Diagram

Electrical Characteristics

Parameter	Minimum	Nominal	Maximum	Unit	Comments
1.0 V Supply Voltage	–0.4	-	1.02	V	VDD, PSUP_1V0, VDD_SW
1.8 V Supply Voltage	–0.4	-	1.98	V	VDDO_1, VDDO_3, VDDO_4, VDDO_5, VDDO_6, and VDDO_7
3.3 Supply Voltage	–0.4	-	3.60	V	VDDA3V3, VDDO_1, VDDO_3, VDDO_4,VDDO_5, VDDO_6, VDDO_7, and PSUP3V3
Storage Temperature Range	–40	-	150	^{o}C	Non-operating temperature
Operating Temperature Range	–40	-	85	^{o}C	-
Temperature	–40	27	125	^{o}C	Junction temperature

Ordering Information

Ordering Number	Part Number	Description	Package
DSAC-L873-11CH	CX20873-11Z	Dolby Headset Decoder IC	9x9 mm^2 DRQFN

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