

High Performance, Ultra Low-Power HD Audio CODECs

Product Overview

Conexant's CX20722 and CX20724 are ultra low-power, high performance HD audio CODECs that support ECR HDA048A mobile extensions, and are primarily targeted at the mobile PC market, including notebooks, ultrabooks, AIOs, and tablets. The CODECs are fully compliant with all industry specifications, including UAA and the latest WHCK. Host interface signaling levels of 1.5V, 1.8V, and 3.3V are selectable.

The products include two 24-bit stereo DACs operating at sampling frequencies up to 192kHz, and two 24-bit stereo ADCs operating up to 96kHz with integrated global headset, Class-D speaker amplifiers, re-taskable input/output ports, and digital microphone array. By combining these hardware features with Conexant's AudioSmart™ playback, voice, and speech pre-processing algorithms, these CODECs are the ideal solutions for platforms needing VoIP calls, voice messaging, audio/video recording, and gaming/multi-media playback.

An integrated stereo AudioSmart Class-D provides intelligent power delivery and dynamic loudness optimization to achieve 2x loudness, even from small, thin speakers. SpeakerShield provides industry-leading, load-based protection in real-time that includes DC detection, short-circuit, near-short, high temperature, and over-temperature. Integrated 14-band hardware EQ and DRC optimize speaker frequency response and loudness without distortion. The EQ can be applied to the headphone and line-out paths. A four-band hardware EQ is available on the microphone. Unlimited bands of EQ/DRC are available in software.

The CODECs include stereo capless headphone output and a global headset with integrated detect and switch. A universal jack supports all audio peripherals on one jack. Array digital microphones can be connected. Multiple GPIOs are available, as well as a bi-directional EAPD. The CODECs also include an S/PDIF output.

The CX20724 provides additional features including a mono output with a tunable EQ for subwoofers and an additional line-in/line-out/microphone re-taskable port, and supports up to four digital microphones.

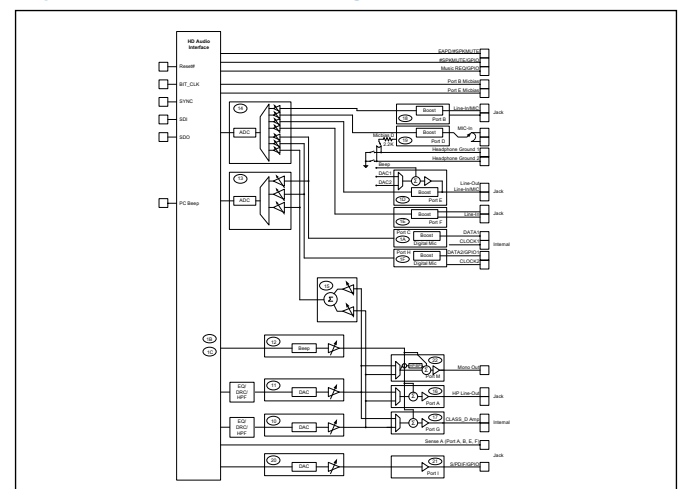
Applications

- Notebook and ultrabooks
- AIO PCs
- Windows, Android, and Linux
- Tablets

Key Features

- Host interface supports 1.5V, 1.8V, or 3.3V signaling levels
- Two pairs of DACs and ADCs have independent sampling rates up to:
 - 192kHz for DACs
 - 96kHz for ADCs
- 2.8W_{RMS} per channel AudioSmart Class-D with intelligent power delivery and dynamic signal loudness optimization to achieve 2x loudness
- Integrated seven bands per channel EQ and DRC
- Industry-leading, advanced speaker protection (SpeakerShield)
- Universal audio jack with fully-integrated headset support and automatic CTIA/OMTP detect and switch
- Up to four digital microphones for array applications
- Hardware input EQ for microphone response tuning
- Mono subwoofer output with a tunable EQ
- Input/output re-taskable port for docking applications
- Line-in available for scalar board and docking
- S/PDIF output supports rates up to 96kHz
- D3 Live mode allows external device playback through internal speakers with AudioSmart Class-D optimization and protection while the system is asleep
- Bi-directional EAPD and multiple GPIOs
- Supports analog and digital PC Beep

System Block Diagram



Device Performance Specifications


Device Type	Requirement	Minimum	Typical	Maximum	Frequency Range at 48kHz and Above
Analog Line Output Jack	THD+N @ -3dBFS	-	90dBFS	-	[20Hz, 20kHz]
	Dynamic Range	-	104dBFS Awt	-	[20Hz, 20kHz]
	Crosstalk	-	83dB	-	[20Hz, 15kHz]
	Full-scale Output Voltage	-	1V _{RMS}	-	-
	Noise Level During System Activity	95dBFS Awt	-	-	-
Class-D Speaker Amplifier	THD+N @ -3dBFS (1W 4Ω)	-	78dB	-	[20Hz, 20kHz]
	Dynamic Range	-	98dBFS Awt	-	[20Hz, 20kHz]
	Crosstalk	-	86dB	-	[20Hz, 15kHz]
	Noise Level During System Activity	90dBFS Awt	-	-	-
Analog Headphone Out Jack	THD+N @ -3dBFS/32Ω	-	91dBFS	-	[100Hz, 20kHz]
	Dynamic Range	-	103dBFS Awt	-	[100Hz, 20kHz]
	Crosstalk	-	89dB	-	[100Hz, 15kHz]
	Full-scale Output Voltage, 10kΩ Load	-	1V _{RMS}	-	91
	Full-scale Output Voltage, 32Ω Load	-	820mV _{RMS}	-	-
	Noise Level During System Activity 300Ω	95dBFS Awt	-	-	-
Analog Line/ Microphone-in	THD+N @ -3dBFS	-	91dBFS	-	[20Hz, 20kHz]
	Dynamic Range	-	99dBFS Awt	-	[20Hz, 20kHz]
	Full-scale Input Voltage	0.707V _{RMS}	-	-	-

Power Consumption

Mode	Power
Low power	300μW
Headphone Playback into 32Ω Load (1mW)	27mW

Ordering Information

Model/Order/Part Numbers				AudioSmart Class-D	Operating Temperature
Order Number	Part Number	Revision	Package		
CX20722-11Z	CX20722	-11Z	42-pin QFN, 5x5	Yes	0 to 70°C
CX21722-11Z	CX21722	-11Z	42-pin QFN, 5x5	No	0 to 70°C
CX20724-11Z	CX20724	-11Z	50-pin QFN, 6x6	Yes	0 to 70°C
CX21724-11Z	CX21724	-11Z	50-pin QFN, 6x6	No	0 to 70°C

Note: All devices are lead-free (Pb-free) and China RoHS compliant , and are compatible with leaded re-flow processes. Contact the local Conexant sales office for advanced software options.

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