

PC/Tablet/Mobile Ultra Low-Power I²S/I²C Audio CODECs with 2x Playback Loudness

Product Overview

Conexant's CX20721 and CX20723 are ultra low-power, high performance audio CODECs for PCs, tablets, and mobile applications that support I²S/I²C host interfaces. The I²S interface includes TDM support for simultaneous multi-channel operation, and AEC reference channels. 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 high-end 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 CX20723 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.

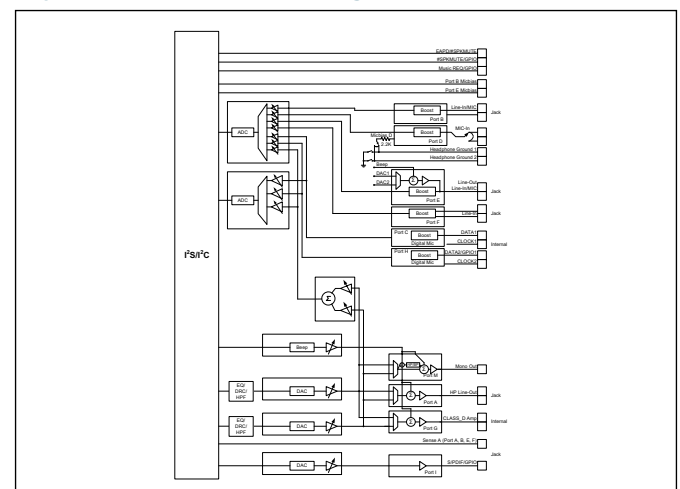
Applications

- Notebook PCs
- Windows
- Tablets
- Android

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		
CX20721-11Z	CX20721	-11Z	42-pin QFN, 5x5	Yes	0 to 70°C
CX21721-11Z	CX21721	-11Z	42-pin QFN, 5x5	No	0 to 70°C
CX20723-11Z	CX20723	-11Z	50-pin QFN, 6x6	Yes	0 to 70°C
CX21723-11Z	CX21723	-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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