

# CX20632 5.1 HD Audio Codec with 2W Class-D, Dual Capless HP, Jack Retasking, and SPDIF In and Out

#### **Features**

- 3 pairs of independent DACs and 3 pairs of independent ADCs Sampling rates include 16-bit, 44.1
- kHz to 24-bit, 192 kHz for DACs, and from 16-bit, 44.1 kHz to 24-bit, 96 kHz for ADCs.
- Integrated mono 2 WRMS class-D amplifier
- Two capless headphone ports eliminate BOM
- Multiple Line Outputs for 5.1 audio
- Hardware digital crossover for subwoofer
- Multiple input/output retaskable ports
- Stereo Digital Microphone interface
- Integrated boost for all microphones Independent SPDIF input and output
- Integrated regulators maximize performance
- Microphone Security Control
- Integrated headphone limiter (GS
- D-Flex Power Management minimizes power consumption
- Wake on PC BEEP
- PopShield eliminates pops and clicks
- Fidelity exceeds Microsoft WHCK requirements
- Jack sense detects up to 8 jacks
- Digital Mixer
- Compliant with all Intel High Definition Audio Specifications
- Selectable 1.5V/3.3 V link signaling
- Available in 48-QFN package

#### Software

- SmartAudio GUI
- Voice Processing Algorithms include end-to-end Noise Reduction, multiband AEC, and Beam Forming 10 band Speaker EQ and DRC
- 3D Expander
- Third-party software support includes Andrea, Creative Labs, Dolby, Fortemedia, Waves MaxxAudio, SRS,
- Supports 32-bit/64-bit Windows/Linux

#### **Applications**

- Desktop PCs
- Multi-channel Notebooks
- All In One PCs
- **Embedded Audio**
- Sound Bars

#### **Overview**

Conexant's CX20632 is a low-power, 102 dB SNR HD Audio codec with integrated mono 2-WRMS filterless Class D speaker amplifier using Spread Spectrum dispersion technology to prevent EMI. Three independent pairs of DACs and three independent pairs of ADCs support multi-Streaming and Real Time Communications applications and enable 5.1 multi-channel audio. The audio fidelity of the device exceeds Microsoft Premium Logo requirements.

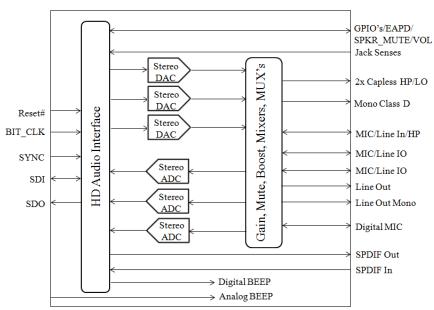
Two ProCoustic capless headphone drivers deliver 31 mW per channel into 32  $\Omega$  loads and eliminate external DC blocking capacitors. Built-in support for 4-conductor-type headset combo jacks saves space and system BOM cost.

Multiple Line Outputs are available for driving external powered speakers for 5.1 audio on 3 or 5 jacks or higher powered integrated speaker amplifiers. Multiple retaskable ports are available, including Microphone/Line in, Microphone/Line In/Line Out, and Line In/ Line Out retasking. All output ports feature PopShield technology that eliminates pops and clicks.

The codec features a stereo digital microphone interface that includes a hardware DClevel filter to remove DC offset and provides the clock output. It also includes one SPDIF output and one SPDIF Input both supporting sample rates up to 192 kHz, 16-24-bit resolution. Multiple GPIO's are provided, including speaker mute and EAPD functions. Hardware volume control support push button and rotary volume knobs.

Integrated 5 V to 3.3 V and 3.3 V to 1.8 V Low Dropout (LDO) regulators guarantee high performance analog audio and clean power to internal digital blocks. Conexant's D-Flex power management allows the system to exceed the power savings specified in the Intel ECR 15B. The internal Wake-on-BEEP logic resumes the analog paths for the PC BEEP to the output ports. Analog and Digital power rails can be dropped in S3/S4/S5 to maximize power savings and EuP compliance.

# **Block Diagram**



Part Number CX20632

**Description** 5.1 HD Audio Codec

### **Analog Performance Characteristics**

Parameter	Minimum	Typical	Maximum	Units
Line Outputs	<b>.</b>		<u>'</u>	
Full Scale Output Voltage		1.0		Vrms
Dynamic Range (measured with -60 dBFS signal present)		100		dBFS
Total Harmonic Distortion + Noise (THD + N)		-85		dB
Channel Crosstalk		-84		dBFS
Analog Frequency Response (+/- 3 dB at 20 Hz, +/- 1 dB at 20000 Hz)	20		20000	Hz
Headphone Outpu	t			
Full Scale Output Voltage		1.2		Vrms
Dynamic Range (measured with -60 dBFS signal present)		99		dBFS
Total Harmonic Distortion + Noise (THD + N)		-87		dB
Channel Crosstalk		-75		dBFS
Analog Frequency Response (+/- 3 dB at 20 Hz, +/- 1 dB at 20000 Hz)	20		20000	Hz
Class-D Speaker Amplifier	Outputs		·	I.
Full Scale Output Voltage (into 4 $\Omega$ )	3.96	4.0	4.2	Vp
	2.83	2.90	3	Vrms
Dynamic Range (measured with -60 dBFS signal present)		94		dBFS
Total Harmonic Distortion + Noise (THD + N, measured at -3 dBFS)		-71		dBFS
Analog Frequency Response (+/- 3 dB at 20 Hz, +/- 1 dB at 20000 Hz)	20		20000	Hz
Efficiency (Measured at 1 W/Ch)		85		%
Microphone/Line Inp	uts	•	•	•
Full Scale Input Voltage (With 20 dB boost)	0.1			Vrms
Full Scale Input Voltage (With boost off)	1.0			
Dynamic Range (measured with -60 dBFS signal present)		91		dBFS
Total Harmonic Distortion + Noise (THD + N)		-87		dBFS
Channel Crosstalk (measured at 1 kHz, 0 dB gain)		-84		dBFS
Analog Frequency Response (+/- 3 dB at 200 Hz, +/- 1 dB at 20000 Hz)	200		20000	Hz
Input Resistance				
0 dB		15.8		kΩ
10-40 dB		5.0		
Input Capacitance		5		pF

## **Ordering Information**

	Model/Order/Part Numbers				Supported Functions		
Device Order Number	Audio Codec Part Number	Revision	Audio Codec Package Type	Integrated Mono Class-D Amplifier	Number of DACs/ADCs	Digital Mic	Operating Temperature
CX20632-11Z	CX20632-11Z	-11Z	48-QFN	Υ	6/6	Y	0 to 70 °C

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