



# USB Speakers-on-a-Chip with Hardware Acoustic Echo Cancellation DSP

## CX20562

Conexant's portfolio includes a comprehensive suite of semiconductor solutions for communications and consumer applications.

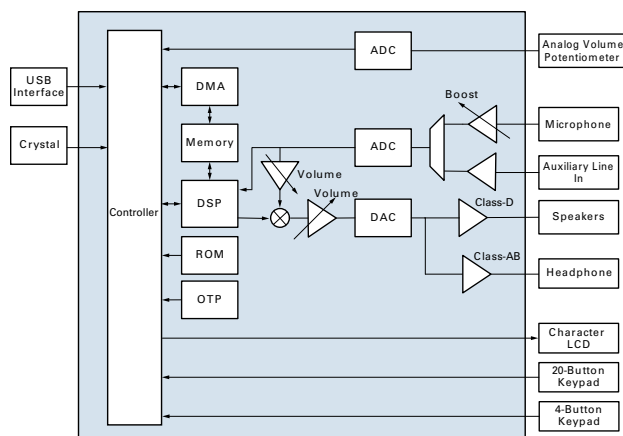
Conexant's CX20562 is the world's first family of "Speakers-on-a-Chip" (SPoC) solutions that integrates the functionality of a digital audio/voice processor, audio codec, and Class-D amplifier in one cost-effective 48-pin Quad Flat-No Lead (QFN) package. This solution is optimized with stereo, high fidelity 24-bit DAC for music rendering. It also features a built-in echo-free speakerphone with wideband Acoustic Echo Cancellation (AEC) and a noise-reduction hardware Digital Signal Processor (DSP). The high-quality music speaker and voice speakerphone combination is made possible with the latest advances in all-CMOS mixed-signal and DSP integration. The turnkey solution enables manufacturers to quickly design cost-effective convergence products for high definition audio and voice applications.

Key innovations include BrightSound™, a Conexant proprietary sound processing algorithm that dramatically improves audio quality and reduces speaker clipping. In Night Mode, the background sound signal quality is maintained, while allowing the user to clearly hear the vocal audio when watching a movie or playing a video game without increasing the volume.

The CX20562 also supports many consumer-oriented features such as Music on-hold, Aux fade-in/ fade-out, DSP Array Microphones, Global System for Mobile Communications (GSM) noise immunity, and Instant Messaging (IM) "hotkey" launch button.

The CX20562 has one USB interface that allows manufacturers to develop plug-and-play products that are PC and Mac compatible and one auxiliary analog input for connection with other audio peripherals. The device supports both digital and analog volume control, microphone mute, and speaker mute. The CX20562 features additional interface to 20 keys programmable keypad and LCD display interface. The built-in Class-D amplifier is capable of driving 1.2 W on 4 ohm load via USB host power, it can also be used as the pre-amp for larger powered speakers output. The efficiency of Class-D amplifier makes it ideal for portable audio application.

Conexant's SPoC solution provides the technology platform to make the convergence of audio entertainment and voice communication a reality.



**CX20562 Interface Diagram**



### Distinguishing Features

- Wideband Acoustic Echo Cancellation DSP engine exceeding TIA 920 requirement
- Integrated 1.2 W Class-D amplifier, higher output reference design available
- 24-bit DAC/ 16-bit ADC
- USB 2.0 full speed compliant
- Auxiliary line in input with jack sense
- Music-On-Hold
- Aux Fade-in/ Fade-out
- DSP Array Microphone
- BrightSound
- USB bus powered or external powered option

A complete evaluation kit including the reference board and all necessary technical documents and software is available

**Part Number** CX20562

**Description** USB Speakers-on-a-Chip with Hardware Acoustic Echo Cancellation DSP

## Features

- ## Features
- Wideband Acoustic Echo Cancellation DSP engine exceeding TIA 920 requirement
  - Integrated 1.2 W Class-D amplifier featuring non-clipping, filter-less output with selectable gains
  - High fidelity 24-bit, stereo DAC  
-44.1, 48 kHz sampling rate
  - Wideband 16-bit, stereo ADC  
-44.1, 48 kHz sampling rate
  - USB 2.0 full speed compliant
  - Auxiliary line in input with jack sense
  - Music-On-Hold
  - Aux Fade-in/ Fade-out
  - DSP Array Microphone (VM Central PC host software required)
  - BrightSound (VM Central PC host software required)
  - IM launch (VM Central PC host software required)
  - Integrated stereo headphones driver with jack sense
  - Stereo Mic input with Bias
  - On-chip one-time programmable memory for storing 20 characters of product description and DSP tuning parameters
  - Analog volume control
  - Digital volume up/down control
  - Mic Mute
  - Speaker Mute
  - On hook/ off hook control
  - Key pad interface, up to 24 keys
  - Interface to controller LCD display
  - Mic Boost 10, 20, 30, 40 dB
  - USB bus powered 5V, 500 mA or external powered option
  - 48-pin QFN

## CX20562 Feature Comparison

Feature	Standard CX20562-14Z	Multimedia CX20562-15Z	Professional CX20562-16Z
Class-D Speaker Output	Yes	Yes	Yes
Microphone Input	Yes	Yes	Yes
Volume Control	Yes	Yes	Yes
IM Launch Button and LED	Yes	Yes	Yes
Auxiliary Line In Input	Yes	Yes	Yes
Headphone Output		Yes	Yes
Mic Mute Button and LED		Yes	Yes
Additional 20 Keypad Buttons			Yes
LCD Interface			Yes

## Applications

- All-in-One PC speakers, MP3 player dock, speakerphone
- USB VoIP speakerphone
- LCD monitor with built-in speakers and speakerphone
- Notebook PC docking station
- Embedded USB audio applications

## Ordering Information

Description	Part Number	Package	Order Number
Standard	CX20562-14Z	48-pin QFN	DSAC-L562-141
Multimedia	CX20562-15Z	48-pin QFN	DSAC-L562-151
Professional	CX20562-16Z	48-pin QFN	DSAC-L562-161
Evaluation Kit			CX20562-EVK

## Conexant Product Portfolio

The company's broad portfolio of semiconductor products also includes client-side DSL, cable, and dial-up modem solutions; fiber optic system-on-chips; broadcast video encoders and decoders; and digital set-top box components and systems solutions. Additional products include a complete line of asymmetric and symmetric DSL central office solutions, which are used by service providers worldwide to deliver broadband data, voice, and video over copper telephone lines.