

Standalone Far Field Input Subsystem with Integrated Low-Power Wake-on-Voice and Voice Trigger

Product Overview

The CX20921 is a high-performance Far Field Voice Input Processor SoC. The CX20921 is the first product in this category with an integrated voice trigger engine that also supports the low system power WoV function. The device includes two 24-bit microphone ADCs, a programmable dual core 32-bit hardware DSP, and integrated power management. Combined with Conexant's AudioSmart Far Field Voice Processing Algorithms, the CX20921 is the ideal turnkey solution for adding far field voice control, voice search, and VoIP functionalities to SmartTV, STB, gaming consoles, and other Smart appliances.

The CX20921 supports a microphone array with two high performance ADCs and programmable pre-amplifiers. Each pre-amplifier is paired with a dedicated bias supply to eliminate crosstalk. The entire input path guarantees a 106dB dynamic range that achieves a high speech-to-noise ratio with low boost, which enables a robust pickup of far field voices while preventing saturation from louder near field signals.

Conexant's proprietary Far Field Voice Processing Algorithms deliver a superior voice interactive experience in the most challenging room environments. The voice processing chain also supports multi-thread processing streams, which are independently optimized for voice communication and automatic speech recognition.

The CX20921 device has an integrated DC-DC converter that supports dynamic voltage scaling and frequency scaling mechanisms to reduce the power consumption. When the ADC and DSP are active in the low-power WoV mode, the device consumes less than 70mW, which is well below the 0.5W EC 1275/2008 requirement for standby power.

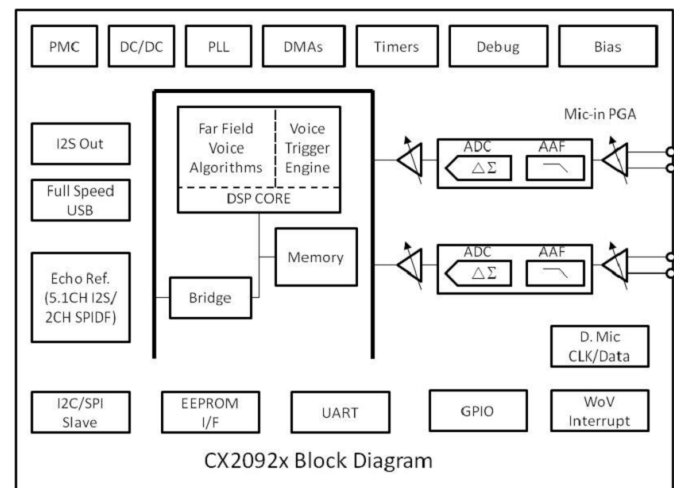
Key Features

- Speech recognition optimization for all leading ASR engines
- SkypeTV certified with Watch Live and Talk®
- Smart Source Pickup (SSP) noise rejection technology
- Multi-channel AEC
- Integrated wake-up and voice trigger engine
- <70mW low power, WoV mode with buffering and keyword detection
- Programmable 32-bit digital audio processor
- Two 24-bit microphone ADCs with 106dB full path dynamic range

Applications

- Voice interactive SmartTV/STB
- Voice controlled Smart appliances
- Telepresence
- Game console

System Block Diagram



Additional Features

- Raw audio sample rates from 8kHz ~ 96kHz
- 0.125dB analog front-end gain resolution
- Dedicated microphone bias for low crosstalk
- Dual serial data interface—I²S/PCM
- USB full-speed, 2.0 UAC compliant, asynchronous data transfer
- Asynchronous SRC and sync buffers
- I²C and UART control interface
- SPI EEPROM interface
- Integrated DC-DC converter for power management
- 7x7mm 60 QFN package, RoHS compliant

Ordering Information

Ordering Part Number	Part Number	Description	Package
CX20921-21Z	CX20921	Far Field Voice Input Processor SoC	7x7mm 60 QFN

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