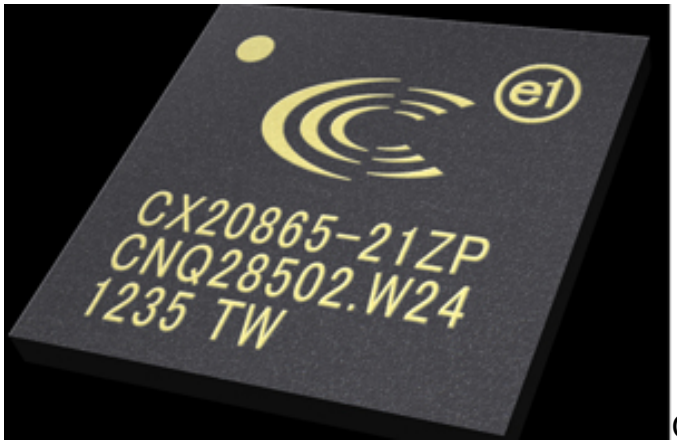
Far-field Voice Input Processor SoC Targets Smart TVs



Conexant Systems announced the CX20865, its new high-performance Far-Field Voice input processor system-on-chip (SoC) designed specifically for Smart TVs. The CX20865 is asserted to be the first dedicated Far-Field Voice solution with integrated Automatic Speech Recognition (ASR) engine, optimized for telepresence and voice control applications. The company has integrated a third party ASR with the new low-power DSP to support stand-alone Wake-on-Voice functionality during Smart TV power-off state. Combined with proprietary Far-Field Voice pre-processing algorithms and integrated high-performance 24bit ADCs, the CX20865 is presented as adding a differentiated Watch Live and Talk experience with popular VoIP applications, such as Skype TV, and delivers accurate voice control performance while the TV is blasting in high volume. The new Selective Source Pickup technology maintains speech recognition in the presence of random ambient interference, enabling live demos in the retail environment and tradeshows. The new CX20865 hardware features dual cores, high-performance 32bit DSP, processing multi-thread voice streams and a third party ASR. The integrated DC/DC provides advanced power management functions. The device has full-speed USB and I2S I/Os for voice data, and I2C and UART interface for control. The quad microphone input paths have been upgraded with high-performance pre-amp and 24 bit ADCs, delivering 106dB dynamic range full path. Further, each microphone path has dedicated microphone bias to prevent cross-talk.

The voice pre-processing performance delivers >97 percent ASR hit-rate when the TV is playing sound at high volume. The new echo-cancellation supports stereo, 2.1CH, and 2+2CH internal speaker configurations. The improved de-reverberation and true wideband processing has radically enhanced the perceptual voice clarity. To this end, the company is also working with leading regional ASR vendors to optimize hit-rates and reduce false detection with their local and Cloud-based ASR engines.

The featured Watch Live and Talk seamlessly blends voice conversation and TV entertainment into a single experience, allowing two parties to “share the moment”

watching the same or different TV programs while carrying on a conversation. The experience also applies to voice-chat during multi-party game play on TV, without tethering to a headset.

Selective Source Pickup (SSP) is a breakthrough for Far-Field noise suppression in time-varying noisy environments. SSP distinguishes the targeted audience from random speech/noise interference by means of multi-source separation. The technology is optimized for ASR applications which go beyond traditional emulation of human auditory systems that are limited to human hearing intelligence.
The CX20865 supports the following three major voice user modes:

• Conversation – for clear and natural voice clarity in a large room; proven Skype TV certification experience.
• Command and Control – for Local-based ASR hit rate optimization; wake-on voice; noise and echo rejection
• Voice Dictation – for Cloud-based natural language ASR hit-rate optimization; room/scene adaptation

Other key features include:

• Watch Live and Talk
• Selective Source Pickup
• Multi-vendor hit-rate optimization
• Pre-tuned “hidden” microphone module for industrial design esthetics and performance
• Far-Field Voice processing with AEC supporting Stereo, 2.1CH and 2+2 (tweeters and woofers) configurations
• 32bit dual-core DSP with integrated data and program memory
• Integrated DC/DC for power management
• Quad 24 bit ADC and microphone preamp with independent microphone bias supply

The CX20865 is available in 9x9 BGA package. EVKs are currently available to qualified customers and partners for $500. Pricing starts at $5.50 each in 100K quantities.

Conexant Systems, Inc.
www.conexant.com [1]

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[1] http://www.conexant.com