CX20865 Far Field Voice Input Processor SoC

Turnkey Solution Enabling Far Field Voice Control and Telepresence Applications

Features

- Multi-vendors Speech Recognition Hit Rate Optimization
- Skype™ TV certified Far Field Voice Processing with Watch Live and Talk®
- Selective Source Pickup™ Noise Rejection Technology
- Stereo Acoustic Echo Canceller supporting 2.1 or 2.2 CH System
- Speech Detection and Buffer during System Stand-by
- Voice Trigger and Wake on Voice, optional
- On-chip 32-bit Digital Audio Processor
- 18-bit Microphone ADC with 106 dB full path Dynamic Range
- Raw Audio Sample Rates: 8 ~96 kHz
- 0.125 dB Analog Front End Gain Resolution
- Independent Microphone Bias for low cross talk
- Serial data interface (I^2S/PCM)
- USB Full Speed, 2.0 UAC compliant, Asynchronous Data Transfer
- Asynchronous SRC and Sync Buffers
- I^2C and UART control interface
- Serial EEPROM interface
- Integrated DC/DC for Power Management
- 9x9mm 169 BGA Package, ROHS compliant

Applications

- Voice Interactive SmartTV/STB
- Voice Controlled Appliance
- Telepresence
- Far Field Audio Capturing
- Game Console
- Automotive

Description

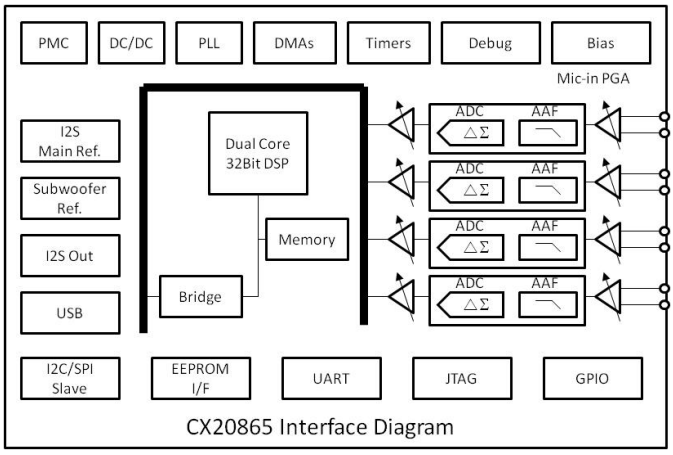
The CX20865 is the industry leading Far Field Voice Input Processor SoC, designed for Voice Interactive applications. The device includes high-performance Microphone ADCs, powerful dual core 32-bit hardware DSP, and integrated Power Management. Combined with our advanced Far Field Voice Processing Algorithms, it is the ideal turnkey solution for adding Voice Control, Voice Search, Telepresence functionalities to SmartTV, Set-Top-Box, and Game Console appliances.

The CX20865 supports a microphone array with up to four synchronized ADCs and programmable preamplifiers. Each preamplifier is paired with a dedicated bias supply to eliminate crosstalk. The entire input path guarantees 106 dB Dynamic Range, which maximizes Speech to Noise ratio with low boost and prevents microphone saturation.

Conexant's proprietary Far Field Voice Processing Algorithms take advantage of the high-performance processing core and ADCs to deliver superior voice interactive experiences in the most challenging room environments. The full-featured Selective Source Pickup (SSP) algorithm significantly improves the Voice Control accuracy in noisy situations, such as retail showrooms, living and family rooms, and other gathering places. The voice processing chain also supports Multithread Processing Streams, independently optimized for Voice Communication and Automatic Speech Recognition.

The CX20865 device has an integrated DCDC converter, supporting Dynamic Voltage Scaling (DVS), and Frequency scaling mechanisms to reduce power consumption. When the ADC and DSP are active in Voice-on-Wake mode, the device consumes less than 110 mW, well below the 0.5 Watt EC 1275/2008 requirement for Standby Power.

Simplified Block Diagram



CX20865 Interface Diagram

Part Number CX20865

Description Far Field Voice Input Processor SoC

Electrical Characteristics

Parameters	Comment	Minimum	Nominal	Maximum	Unit
Power Supplies					
Supply Voltage		0.9	1.0	1.05	V
Supply Voltage		1.72	1.8	1.98	V
Supply Voltage		2.97	3.3	3.63	V
Microphone Input TA = 25°C, input supply = 3.3 V, 1 kHz signal, fs = 48 kHz, PGA gain = 0 dB					
Input Signal Level	1x AVDD		3.3		V
SNR			106		dB
THD			-85		dB
Power Supply Rejection Ratio			80		dB
Mute Attenuation		80			dB
Input Resistance			500		kΩ
Bias Voltage		1.5		4	V
Bias Current				10	mA

Ordering Information

Ordering Number	Part Number	Description	Package
TBD	CX20865	Far Field Voice Input Processor SoC	9x9 mm 169 BGA

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