

CX2077x USB Audio CODEC IC with Integrated DSP and Tri-Color PWM LED Driver

AudioSmart™ Product Brief



An Innovative USB DSP CODEC SoC with Integrated PWM LED Drivers

Product Overview

Conexant's CX2077x is the first USB audio CODEC IC product family that incorporates the functionality of a digital audio/voice processor, USB audio CODEC, tri-color PWM driver, and digital audio interfaces in one cost-effective, single-chip package. The award-winning DSP runs a suite of turnkey audio and voice algorithms that greatly enhance the voice and audio experience. The devices are part of Conexant's embedded audio solutions and are specifically designed for USB audio peripherals, including headsets, headphones, and microphones. The CX2077x product family includes the CX20773, and CX20774.



The on-chip DSP runs a suite of innovative Conexant proprietary voice processing algorithms and audio post processing effects that dramatically improve sound quality and free-up processing power for other applications, without compromising on cost and future firmware scalability. Key audio innovations include sub-band AEC, dynamic range control, in-band microphone noise reduction, 3D, and microphone AGC.

Conexant's innovative CX2077x product family contains an industry first internal tri-color RGB PWM driver and controller. Each LED output contains an 8-bit resolution PWM controller for brightness and dimming control, which enables designers to create differentiated user-friendly products. The on-chip RGB PWM significantly reduces the BOM costs.

The audio performance is optimized with stereo high fidelity, 24-bit DAC. All internal analog circuitry uses differential signaling to guard against noise coupling from interfering RF. The external BOM cost is minimized with an internal PLL and a headset in-rush circuit.

The CX2077x turnkey solutions eliminate the need for a multiple-chip reference design, making it easy and economical for manufacturers to design high-quality audio products. A complete evaluation kit with reference board and all the necessary technical documents and software is available.

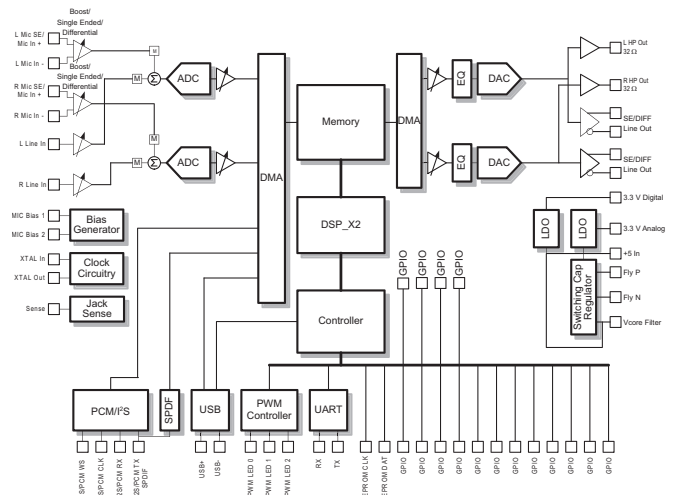
Applications

- Unified communication USB headset
- Skype super-wideband headset
- Entertainment USB headset/headphones
- Gaming USB headset
- USB microphone

Key Features

- USB audio CODEC with integrated DSP
- Tri-color PWM LED driver
- Advanced voice and audio DSP algorithms
- Digital audio interfaces
- Microphone input
- Line output
- HP output
- Dual stereo DMA endpoints
- PCM/I²S, S/PDIF digital audio I/F(s)

System Block Diagram



Additional Features

- UART, I²C
- On-chip voice/audio DSP
 - DSP support for 3D, EQ, NR, AEC, BF,CNG, ST, AGC, and DRC
 - USB codex, 2.0 full speed
- Stereo:
 - Input, differential, and single-ended
 - Input, single-ended for line-in
 - Output, differential and single-ended
 - DAC/ADC
 - Headphone driver, single-ended
- 8kHz, 16kHz, 24kHz, 32kHz, 44.1kHz, and 48kHz sampling rate—<100mA operation for headset/headphone terminal type

Benefits

- Audio enhancement and optimization for speakers and microphones
- Configurable features for product differentiation
- Improves audio and voice experience
- Independent gaming audio and voice audio control
- Connect to third-party digital audio processor
- Tri-color (RGB) PWM LED driver and controller
- 8-bit, 256-step independent and group brightness, and dimming control
- 9kb controller RAM for firmware extension and plug-in
- Up to 11 GPIOs
- Volume, mute, hook, and LED
- Infinity rotary wheel control
- Press and hold button support
- Four-wire external co-processor interface (I²S/SPDIF-Out)
- In-rush circuit elimination circuit for headset/headphone applications
- Stereo microphone input with hardware boost and bias
- 35mW stereo headphone driver
- Jack sense
- 48-pin QFN package

CX2077x Product Comparison

Feature	Part Number	
	CX20773	CX20774
USB Audio	USB 2.0 Full Speed	
Converter/Sampling Rate	Two DACs/Two ADCs Supporting 8kHz, 16kHz, 24kHz, 32kHz, 44.1kHz, and 48kHz	
Tri-color PWM LED Driver	No	Yes
Microphone In	Stereo	
Headphone	Stereo	
Differential Line Out	No	
Text LCD Display Controller	No	
Keypad/Buttons	Eight Keys	
Four Position Toggle Switch	Yes	
I ² S	Yes	
S/PDIF Out	Yes	
DSP	Yes	
Auxiliary Input	Yes	
Package	48 QFN	

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