

USB-C DSP CODEC with True-Ground Capless Headphone

Product Overview

Conexant's CX20893/CX20894 devices are highly-integrated solutions optimized for USB headset and USB docking solutions. The CX20893/CX20894 is fully compliant with the new USB-C standard. The device family features Conexant's award winning digital signal processing that enhances the audio and voice experience. The DSP algorithms include AEC, NR, programmable EQ, DRC, microphone AGC, volume control, and microphone boost. The CODEC family is fully compliant with industry specifications, including USB 2.0 full-speed, WHCK 2.1, as well as enterprise requirements for Lync and Skype.

The CX20893/CX20894 features a 24-bit stereo playback path that supports sampling rates up to 96kHz, and a 24-bit stereo record path that supports sampling rates up to 48kHz. The digital interfaces include USB 2.0, one five-wire digital interface that can be configured to support bi-directional I²S, PCM, and S/PDIF. The CX20894 integrates an internal 3-bit, tri-color RGB PWM LED driver. Each LED output has its own 8-bit resolution PWM controller that is fully configurable for brightness, dimming, and blinking control.

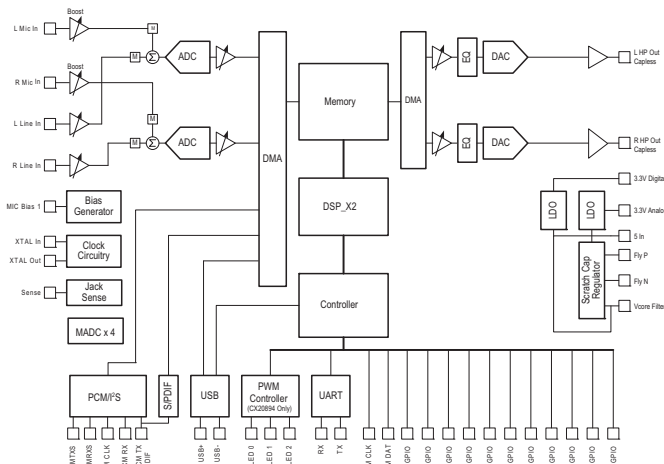
Both devices have minimized external BOM costs by integrating a capless headphone driver that produces a full-range frequency response and eliminates AC coupling capacitors. The devices integrate headset support with auto-detect and auto-switch between CTIA and OMTP style headsets to eliminate all external BOM. The integrated LDOs provide clean analog voltage sources that ensure maximum performance. All internal analog circuitry uses differential signaling to guard against noise coupling from the GSM/TDMA RF. The external BOM cost is minimized with an internal PLL and headset in-rush circuit. A total of 11 GPIO pins are provided for peripheral connectivity. The CX20893/CX20894 feature an eight-button programmable keypad.

The CX20893/CX20894 devices are available in 60-pin QFN packages.

Key Features

- **USB Type C compliant stereo audio CODEC**
- **USB 2.0 full-speed compliant**
- 1.8mA suspend current
- On-chip voice/audio DSP algorithms include AEC, NR, EQ, DRC, microphone AGC, CNG, ST, and function generator
- PCM/I²S, S/PDIF digital audio interfaces
- UART, I²C control interfaces
- Stereo record path supports a single-ended microphone input or single-ended line-input that supports 8kHz, 16kHz, 24kHz, 32kHz, 44.1kHz, and 48kHz sampling rates
- Stereo playback path with a capless headphone driver that eliminates the external BOM cost and PCB space of AC coupling capacitors, and supports 8kHz, 16kHz, 24kHz, 32kHz, 44.1kHz, 48kHz, 88.2kHz, and 96kHz sampling rates
- Built-in four-conductor headset jack supports headphone/headset auto-detection, as well as auto-switching between CTIA and OMTP style headsets without any external components

System Block Diagram



Additional Features

- Tri-colors (RGB) PWM LED driver and controller (CX20894 only)
 - 15 predefined colors
 - Independent control with 256 steps for each color
 - Group control of brightness
 - Group blink with variable blink rate
- Jack sense
- Eight-button keypad support
- 60-pin QFN package

Electrical Characteristics

Parameter	Minimum	Nominal	Maximum	Standby	Unit	Comments
5V_USB	4.35	-	5.25	-	V	-
-5V_USB, Standby Current	-	1.8	-	-	mA	Actual current is application-dependent.
Temperature	-40	27	85		°C	Operating temperature.

Ordering Information

Part Number	Package	Description
CX20893-10Z	60-pin QFN	Audio DSP CODEC with Capless Headphone.
CX20894-10Z	60-pin QFN	Audio DSP CODEC with Capless Headphone and PWM LED.

Note: All devices are lead-free (Pb-free) and RoHS-compliant.

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