

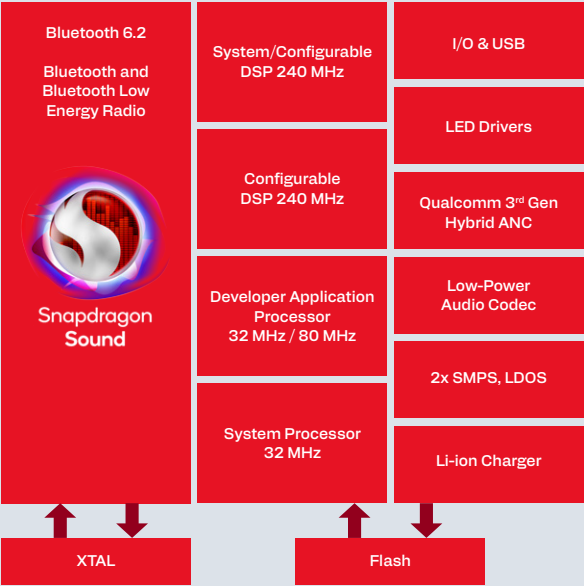


Snapdragon® S3 Gen 1 Sound Platform

The Snapdragon S3 Gen 1 Sound Platform has been designed to deliver rich and immersive experiences for mid-tier earbuds, speakers, and headsets.

The Snapdragon S3 Gen 1 Sound Platform offers a unique way for audio OEMs to differentiate their products and accelerate time to market with access and support for innovative features via the Qualcomm® Voice and Music Extension Program, including AI, hearing enhancement, echo cancellation and noise suppression, and spatial audio.

Block Diagram



Ordering Information

Product	Part Number
QCC3091	QCC-3091-0-WLNSP99
QCC3095	QCC-3095-0-CSP134A

Related Products

Experience Qualcomm Technologies' line of Sound Platforms with their exceptional quality and power efficiency: [Snapdragon S5 Gen 1 Sound Platform](#)

Highlights

Richly Featured Solutions with a Fast Time to Market

The Snapdragon S3 Gen 1 Sound Platform offers support for a wide range of innovative 3rd-party solutions via our Voice and Music Extension Program, which offers audio technologies to complement and enhance our sound platforms. This is intended to help our customers differentiate by expanding the feature sets of their mid-tier products with technologies like hearing enhancement, spatial audio, speech recognition, and more. These solutions are designed to help developers design with confidence, knowing they can reduce time to market while also delivering the richly featured devices they know consumers want.

Audiophile Sound Quality

The platform is designed to deliver audiophile sound quality for mid-tier earbuds and headsets. It supports Snapdragon Sound with Qualcomm® aptX™ Lossless streaming at 24-bit 48kHz so listeners hear every detail of their music in stunning lossless quality, as well as experience superior audio even in busy RF environments and lag-free gaming with low latency. The audio DAC performance has also been improved to deliver enhanced SNR and reduce noise floor.

Powerful Compute for Rich Sound Experiences

The Snapdragon S3 Gen 1 Sound Platform is our most powerful ever Snapdragon S3 platform, with up to twice the compute power and significantly more processing capability than previous-generation platforms. The increased compute power and processing capabilities is designed to help deliver vastly improved mid-tier audio experiences by providing the flexibility to implement more powerful features and deliver enhanced performance for multiple use cases, including enhanced echo cancellation and noise suppression.

New User Experiences with Bluetooth LE Audio

This dual-mode platform with Bluetooth® 6.2 technology combines the strengths of Bluetooth LE Audio and Classic Bluetooth to support the transition to next-generation wireless audio. It enables Bluetooth LE Audio features like Auracast™ broadcast audio, Unicast Voice, Unicast Music, and immersive gaming experiences. For earbuds, headsets, and speakers, Auracast™ broadcast audio opens up new ways to share and enjoy audio. Beyond personal devices, Auracast™ can enhance visitor experiences in public venues such as airports, bars, gyms, and other shared spaces by enabling users to easily tune in to audio broadcasts from TVs and other audio sources.

Snapdragon S3 Gen 1 Sound Platform

	Applications	Snapdragon Sound	Qualcomm TrueWireless™	aptX Audio	Qualcomm ANC	cVc	Voice Assistant Activation	LE Audio/Auracast	DSPs	Package
QCC3091	TrueWireless™ Earbuds	Yes	Mirroring	Lossless	FF/FB/Hybrid/Adaptive	3-mic	Button/wakeword	Yes	2x 240 MHz	WLCSP 4.93 x 3.936 x 0.57 mm
QCC3095	Stereo Headsets and Speakers	Yes	N/A	Lossless	FF/FB/Hybrid/Adaptive	2-mic	Button/wakeword	Yes	2x 240 MHz	BGA 6.7 x 7.4 x 1.0 mm

Features

- Bluetooth LE Audio experiences
- Bluetooth 6.2 radio
- Ultra-small form factor
- Powerful quad-core processor architecture to support complex use cases
 - Dual-core 32-bit processor application subsystem (up to 80 MHz)
 - Dual-core 240 MHz configurable DSP audio subsystem (runs from ROM)
 - Dedicated support for Qualcomm® AI engine
- Qualcomm TrueWireless™ Mirroring technology
- Support for wake-word and/or button-activated digital assistants, including Amazon Alexa Voice Service and Google Assistant
- Support for Google Fast Pair
- Embedded ROM + RAM and external Q-SPI Flash
- On-chip memory for audio buffering
- Support for aptX Audio, including aptX Adaptive
- 3-microphone Qualcomm® cVc™ Echo Cancelling and Noise Suppression (ECNS)
- Support for Qualcomm® Adaptive Active Noise Cancellation (ANC)—feedforward, feedback, hybrid, and adaptive
- High-performance audio combined with low power consumption and designed for Snapdragon Sound:
 - aptX Voice technology for superior call quality on uplink and downlink
 - 24-bit/96kHz high-resolution audio
 - Voice back-channel for in-game chat
 - Stereo recording
 - Lossless audio quality at up to 48kHz with Snapdragon Sound

Target Applications

- TrueWireless Earbuds
- Bluetooth Wireless Speakers
- Bluetooth Wireless Headphones

Specifications

CPU	Architecture: 32-bit Clock Speed: Up to 80 MHz Features: Programmable CPU
DSP	Architecture: 2x Qualcomm® Kalimba™ cores Clock Speed: 240 MHz RAM: 1.8 MB flexible program/data memory Features: Configurable DSP (with support for our Voice and Music Extension Program)
Flash	Location: External
Bluetooth	Specification Version: Bluetooth 6.2 Qualified Connection Technology: Bluetooth® Classic, Dual-Mode Bluetooth®, Bluetooth® Low Energy Topologies: Qualcomm TrueWireless™ Mirroring technology Classic Data Rate: 3 Mbps, 2 Mbps, 1 Mbps
Audio	Qualcomm aptX Audio Technology Support: aptX Adaptive, aptX Voice, aptX Lossless, aptX Audio Qualcomm ANC Technology Support: Feedforward, feedback, hybrid, adaptive cVc (ECNS) Technology Support: 3-mic earbuds, 2-mic earbuds, 1-mic earbuds, 2-mic headset, 1-mic headset, 1-mic speaker
Power Consumption	Music Streaming (A2DP): ~4 mA
Interfaces	Supported Interfaces: 4x analog microphone in
Audio Characteristics	Resolution: 24-bit
Audio Playback Interfaces	Modes: Mono, stereo*
Analog-To-Digital Converter (ADC)	Number of Channels: 4
Digital-To-Analog Converter (DAC)	Number of Interfaces: 1, 2 Amplifier Class: Class-AB, Class-D
Package	Type: VFBGA, WLCSP Pins: 134x pins, 99x pins Size: 6.7 x 7.4 x 1.0 mm, 4.93 x 3.94 x 0.57 mm Pitch: 0.5 mm, 0.4 mm
Voice Services	Ecosystems: Google Assistant, Amazon Voice Services Digital Assistant Activation: Button press, Qualcomm® Voice Activation

* 3091 is mono / 1 DAC and 3095 is stereo / 2 DACs

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