



Qualcomm® QCC30xx Series Bluetooth Audio SoCs for True Wireless Earbuds

Low-power Bluetooth® audio SoCs optimized for feature-rich truly wireless earbuds.

The Qualcomm® QCC30xx SoC series is a family of flash-programmable Bluetooth audio System-on-Chips (SoCs) based on an ultra-low power architecture. They are designed to meet listener demand for robust and richly featured true wireless earbuds that can support all-day wear for music, calls, and gaming. The QCC30xx series includes options that support Bluetooth® LE Audio, Auracast Broadcast Audio, and Snapdragon Sound™ Technology Suite for lossless music streaming, lag-free gaming, and robust connectivity.

With our highly integrated Bluetooth technologies, these SoCs are engineered to deliver rich and immersive sound experiences. Qualcomm TrueWireless™ Mirroring is designed to maximize robustness and offers dynamic bud-to-bud role-swapping with Bluetooth address handover. QCC307x, QCC308x, and QCC309x bring LE Audio use cases supported alongside classic Bluetooth for superior listening experiences.

The QCC30xx SoCs offer powerful multi-core processing, designed to support flexible innovation without extended development cycles. The SoC architecture includes two dedicated, programmable 32-bit application processor subsystems and a configurable Qualcomm® Kalimba™ DSP. A feature-rich audio development kit (ADK) and enhanced development tools are available to help reduce the time needed for commercialization.

The QCC30xx series is packed with audio technologies including Qualcomm® Adaptive Active Noise Cancellation (ANC), digital assistants, Qualcomm® cVc™ Echo Cancelling and Noise Suppression (ECNS), and Qualcomm® aptX™ Audio.

Related Products

[Qualcomm® QCC30xx Series Bluetooth Earbud and Headset Chipsets](#)

Highlights

Ultra-low power

The QCC30xx series is designed for ultra-high efficiency in power consumption. These SoCs support the development of small-form-factor, richly-featured earbuds with extended battery life. The QCC307x, QCC308x, and QCC309x platforms achieve advanced computation at no compromise to our ultra-low power performance.



Bluetooth® LE Audio

QCC308x and QCC309x are designed to support a range of LE Audio-enabled use cases for earbuds, including audio sharing, Auracast™ broadcast audio, unicast, and gaming mode. These dual-mode platforms integrate the best of LE Audio and classic Bluetooth technology.



Lossless and high-resolution audio

With aptX and high-performance DACs, these platforms are designed to deliver high-resolution (24-bit 96kHz) and low-latency audio through the Bluetooth audio processing chain. QCC3071, QCC3081, and QCC309x support lossless audio with Snapdragon Sound technologies.



Integrated noise cancellation

The QCC30xx series SoCs support integrated, ultra-low power, digital ANC technology. QCC307x, QCC308x, and QCC309x are designed to support our 3rd-generation Qualcomm® Adaptive Active Noise Cancellation (ANC), with full-band ambient mode for strong, effective noise cancellation and a natural feeling of spatial awareness in relation to the listener's surrounding environment.



Qualcomm Voice and Music Extension Program support

The QCC309x platform supports a broad range of innovative technologies including those available from the Qualcomm® Voice and Music Extension Program. This vibrant ecosystem of 3rd-party technologies includes solutions for ECNS, noise cancellation, hearing assistance, and spatial audio. This provides a unique way for manufacturers to differentiate their mid-tier devices with rich features, and the solutions are validated in advance to help reduce time to market.





QCC30xx Bluetooth Audio SoCs

This series of audio SoCs is based on an extremely low-power architecture and designed for superior audio quality in compact, feature-optimized, and affordable truly wireless earbuds.

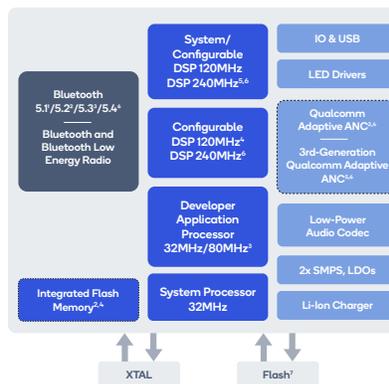
Features Comparison

	Snapdragon Sound	Qualcomm TrueWireless	aptX Audio	Qualcomm ANC	cVc	Voice Assistant Activation	LE Audio/Auracast	Integrated Flash	DSPs	Package
Qualcomm* QCC3026		Stereo	Classic		2-mic	Button			1x 120MHz	WLCSP 3.98 x 4.02 x 0.54 mm
Qualcomm* QCC3020		Stereo	Classic		2-mic	Button			1x 120MHz	BGA 5.5 x 5.5 x 1.0 mm
Qualcomm* QCC3040		Mirroring	Adaptive	FF/Hybrid	2-mic	Button		32Mbit	1x 120MHz	BGA 5.6 x 5.9 x 1.0 mm
Qualcomm* QCC3046		Mirroring	Adaptive	FF/Hybrid	2-mic	Button			1x 120MHz	WLCSP 4.38 x 4.26 x 0.57 mm
Qualcomm* QCC3056	✓	Mirroring	Adaptive	FF/Adaptive Hybrid	2-mic	Button/ wake-word			2x 120MHz	WLCSP 4.38 x 4.26 x 0.57 mm
Qualcomm* QCC3050	✓	Mirroring	Adaptive	FF/Adaptive Hybrid	2-mic	Button/ wake-word		64Mbit	2x 120MHz	BGA 5.6 x 5.9 x 1.0 mm
Qualcomm* QCC3071	✓	Mirroring	Lossless ⁹	FF/Adaptive Hybrid ⁸	3-mic	Button/ wake-word	✓		1x 240MHz	WLCSP 4.93 x 3.936 x 0.57 mm
Qualcomm* QCC3072	✓	Mirroring	Adaptive	FF/Hybrid	2-mic	Button	✓		1x 180MHz	WLCSP 4.93 x 3.936 x 0.57 mm
Qualcomm* QCC3081	✓	Mirroring	Lossless ¹⁰	FF/Adaptive Hybrid ⁸	3-mic	Button/ wake-word	✓		2x 240MHz	WLCSP 4.93 x 3.936 x 0.57 mm
Qualcomm* QCC3091	✓	Mirroring	Lossless ⁹	FF/Adaptive Hybrid ⁸	3-mic	Button/ wake-word	✓		2x 240MHz	WLCSP 4.93 x 3.936 x 0.57 mm

Features

- Highly integrated SoC with extremely low-power design
- Qualcomm TrueWireless™ Stereo / Qualcomm TrueWireless Mirroring support
- Support for aptX, aptX Adaptive audio, and aptX Lossless with Snapdragon Sound
- Programmable Qualcomm ANC
- Support for Qualcomm cVc ECNS
- QCC302x qualified to Bluetooth 5.1, QCC304x qualified to Bluetooth 5.2, QCC305x/QCC307x qualified to Bluetooth 5.3, QCC308x/QCC309x qualified to Bluetooth 5.4
- QCC307x/QCC308x/QCC309x designed to integrate LE Audio use cases
- Variety of form factors, down to ultra-small 4 x 4 mm
- Dual-core 32-bit application processor and configurable Kalimba DSP Audio subsystem
- Embedded ROM + RAM and integrated Flash (with QCC3040 and QCC3050)
- High-quality, low-power audio codec including 1-ch Class D and Class AB analog outputs
- Up to 4-ch, high-quality, single-ended line inputs and 192kHz 24-bit I2S input
- Flexible software platform with powerful IDE support
- Support for digital assistants with minimal integration effort

Block Diagram



- 1 QCC302x only
- 2 QCC304x only
- 3 QCC305x and QCC307x
- 4 QCC305x only
- 5 QCC3071 only
- 6 QCC3081 and QCC3091
- 7 QCC302x, QCC3046, QCC3056, QCC3071, QCC3081, and QCC3091
- 8 3rd-generation Qualcomm Adaptive ANC
- 9 Lossless audio available with Snapdragon Sound/classic Bluetooth
- 10 Lossless audio available with Snapdragon Sound/classic Bluetooth and LE Audio

Ordering Information

Product	Part Number	Product	Part Number
QCC3020	QCC-3020-0-CSP90	QCC3026	QCC-3026-0-81WLNSP
QCC3040	QCC-3040-0-CSP90B	QCC3046	QCC-3046-0-WLNSP94B
QCC3050	QCC-3050-0-CSP90B	QCC3056	QCC-3056-0-WLNSP94B
QCC3071	QCC-3071-0-WLNSP99	QCC3072	QCC-3072-0-WLNSP99
QCC3081	QCC-3081-0-WLNSP99	QCC3091	QCC-3091-0-WLNSP99

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