



Qualcomm® QCC30xx Series Bluetooth Audio SoCs

Extremely low-power Bluetooth audio SoCs optimized for compact, feature-rich wireless earbuds, hearables and speakers.

The QCC302x/QCC303x/QCC304x SoC series is a family of flash programmable Bluetooth® audio System-on-Chips (SoCs) based on an ultra-low power architecture. This series is designed to meet consumer demand for robust, high quality, wireless listening experiences in smaller devices with low power consumption for longer audio playback.

These SoCs are engineered for low power performance. With the latest QCC304x SoCs power consumption can be reduced by up to 70% compared to the earlier Qualcomm® QCC300x and Qualcomm® CSRA63xxx. Power consumption is optimised for demanding use cases so as to support longer battery life in virtually all operating modes.

The flexibility provided by the flash programmable applications processor and configurable audio digital signal processors (DSPs), helps manufacturers to differentiate products without extended development cycles.

The QCC304x features ultra-low-power digital active noise cancelling (ANC) technology integrated in the SoC, designed to eliminate the need for an external ANC solution. This feature can help reduce the complexity, cost and PCB space needed for adding ANC to earbuds, hearables, and other portable audio devices.

With Qualcomm TrueWireless™ Stereo technology, these SoCs are engineered to deliver robustness and a sophisticated user experience. The QCC304x features our Qualcomm TrueWireless Mirroring which improves robustness even further offering dynamic bud-to-bud role-swapping with Bluetooth address handover and also evens out power distribution between both earbuds.

Highlights

Powerful tri-core processing designed to support flexible innovation

Tri-core processing is delivered by two dedicated configurable 32-bit application processor subsystems and a Qualcomm™ Kalimba™ DSP audio subsystem. A new feature-rich audio development kit (ADK) and enhanced development tools are designed to help reduce time needed for integration and commercialization.



Ultra-low power

The QCC302x/QCC303x/QCC304x series is designed for unprecedented efficiency in power consumption compared to our previous technology. These SoCs support the development of very small form factor, richly-featured earbuds that can be used for up to 10 hours with a 65mHA battery.¹



High quality wireless audio

Qualcomm® aptX™ Audio and aptX HD audio technologies are designed to deliver consistent, high quality audio streaming over Bluetooth. The internal 24-bit end-to-end audio pipeline and high-performance DACs are designed to deliver high resolution audio through the audio processing chain.



Qualcomm TrueWireless Mirroring

The QCC304x devices feature Qualcomm TrueWireless Mirroring, a new topology that combines the best of our eavesdropping and relay solutions to deliver robustness while also supporting role-swapping and bud-to-bud Bluetooth address handover, dynamically and with virtually no interruption to the audio.



Digital Assistant ready

Support for voice services is available via button-press activation. This feature is designed to relay the audio stream and voice control capabilities to a handset to process and execute commands.



This material is subject to change without notice.
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¹ Battery life varies significantly with settings, usage, and other factors.

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Qualcomm

QCC30xx

Bluetooth Audio Applications

- Truly Wireless Earbuds
- Bluetooth Stereo Headphones or Headsets
- Bluetooth Stereo Portable Speakers



QCC302x/QCC303x/QCC304x Features Comparison

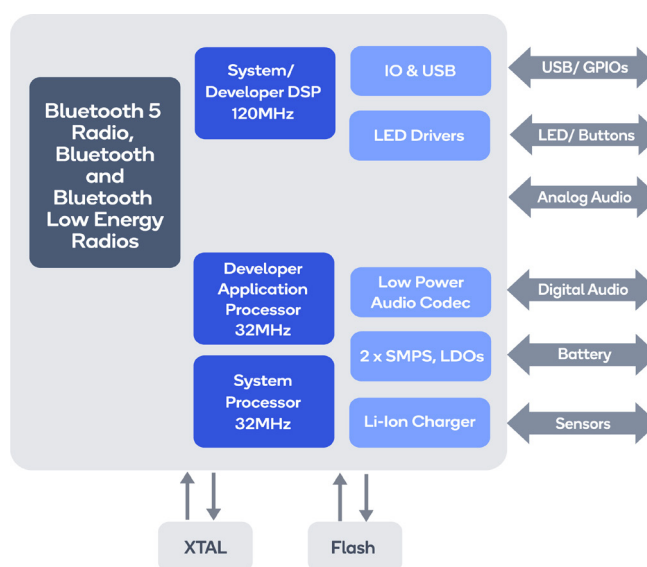
	Stereo Headset	Qualcomm TrueWireless Stereo	Qualcomm TrueWireless Mirroring	Stereo Speaker	aptX Audio	aptX HD	Qualcomm Active Noise Cancellation	Qualcomm cVc (1-mic)	cVc (2-mic)	Qualcomm Broadcast Audio	Package
QCC3026		✓			✓			✓	✓		WLCSP 3.98x4.02x0.54mm
QCC3020		✓			✓			✓	✓		BGA 5.5x5.5x0.1mm
QCC3024	✓							✓	✓		BGA 5.5x5.5x0.1mm
QCC3034	✓					✓		✓	✓		BGA 5.5x5.5x0.1mm
QCC3040			✓		✓		✓	✓	✓		BGA 5.5x5.5x0.1mm
QCC3046			✓		✓		✓	✓	✓		WLCSP 4.38x4.26x0.57mm
QCC3021		✓		✓	✓					✓	QFN 8x8x0.85mm
QCC3031		✓		✓	✓	✓				✓	QFN 8x8x0.85mm

Features

- Highly integrated SoC with extremely low-power design*
- Support for digital assistants with minimal integration effort
- Fully programmable digital ANC
- Qualcomm TrueWireless Stereo / Qualcomm TrueWireless Mirroring support
- Support for aptX and aptX HD audio
- QCC302x/QCC303x qualified to Bluetooth 5.1 and QCC304xx qualified to Bluetooth 5.2 (LE Audio ready)
- 2Mbps Bluetooth low energy (LE) support
- 4mm x 4mm ultra-small form factor
- Dual core 32-bit processor application and Kalimba DSP Audio subsystem
- Embedded ROM + RAM and external Q-SPI Flash
- High-performance low power audio codec
- 2-ch 98dBA headset class D
- 2-ch 99dBA line inputs (single-ended) 192kHz 24-bit I2S & SPDIF interfaces
- Flexible software platform with powerful new IDE support
- Integrated battery charger supporting

* up to 73% improved compared with our CSR867x series

QCC302x/QCC303x/QCC304x Block Diagram



Ordering Information

Product	Part Number	Product	Part Number
QCC3020	QCC3020-0-CSP90	QCC3026	QCC3026-0-81WLN5P
QCC3021	QCC3021-0-80PQFN	QCC3031	QCC3031-0-80PQFN
QCC3024	QCC3024-0-CSP90	QCC3034	QCC3034-0-CSP90
QCC3040	QCC-3040-0-CSP90B	QCC3046	QCC-3046-0-WLN5P94B

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