

# Qualcomm® QCC30xx Series Bluetooth Audio SoCs for Stereo Headphones or Portable Speakers

**Extremely low-power Bluetooth® audio SoCs optimized for compact, feature-rich stereo headphones, headsets or speakers.**

The Qualcomm® QCC302x/Qualcomm® QCC303x/Qualcomm® QCC304x/Qualcomm® QCC308x SoC series is a family of flash programmable Bluetooth® audio SoCs based on an ultra-low power architecture. They are designed specifically for the future of Bluetooth audio and to meet listener demand for robust and rich-featured stereo headsets and speakers that can support all-day use.

This series includes options that support the Bluetooth® LE Audio standard and benefit from Snapdragon Sound™ Technology Suite – our optimized chain of superior audio, connectivity, and mobile innovations.

Qualcomm® QCC3083 and Qualcomm® QCC3084 bring LE Audio use cases supported alongside traditional Bluetooth technology for superior listening experiences in a range of environments.

Qualcomm® aptX™ Audio is designed to deliver high-quality audio over the Bluetooth connection. aptX HD is available on QCC303x and is designed to deliver “better than CD” resolution audio. aptX Adaptive is available on the Qualcomm® QCC3044 adding further advances in robustness and latency and aptX Lossless is available on QCC3083 and QCC3084 to deliver 16-bit 44.1kHz lossless audio.

QCC30xx SoCs offer up to quad-core processing and are designed to support flexible innovation without extended development cycles. The SoC architecture includes two dedicated, configurable 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 time needed for commercialization.

Qualcomm® Active Noise Cancellation (ANC) from our premium tier SoCs is now available in QCC3044 and QCC3084, designed to deliver immersive listening and to help protect user hearing.

## Highlights

### Ultra-low power

The QCC30xx 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 devices with long playback time capabilities.



### Bluetooth® LE Audio

QCC3083 and QCC3084 are designed to support a range of LE Audio-enabled use cases for stereo headsets and speakers including audio sharing, broadcast and Auracast™, unicast and gaming mode. These dual-mode platforms integrate the best of LE Audio and the best of traditional Bluetooth technology to enable smooth feature adoption for real-world listening scenarios.



### Lossless and high resolution audio

With aptX Adaptive Audio 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. The QCC3083 and QCC3084 feature Lossless audio with Snapdragon Sound technologies, designed to dynamically scale the wireless connection to deliver up to 16-bit 48kHz lossless audio.



### Integrated noise cancellation

The QCC3044 and QCC3084 support integrated ultra-low-power digital active noise cancelling (ANC) technology, including Qualcomm ANC, 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 truly wireless devices.



### Digital Assistant ready

Support for voice services is available via button-press activation or wake-word activation (QCC3084). This feature is designed to relay the audio stream and voice control capabilities to a handset to process and execute commands.



# QCC30xx Bluetooth Audio Applications

- Bluetooth Stereo Headphones or Headsets
- Bluetooth Stereo Portable Speakers



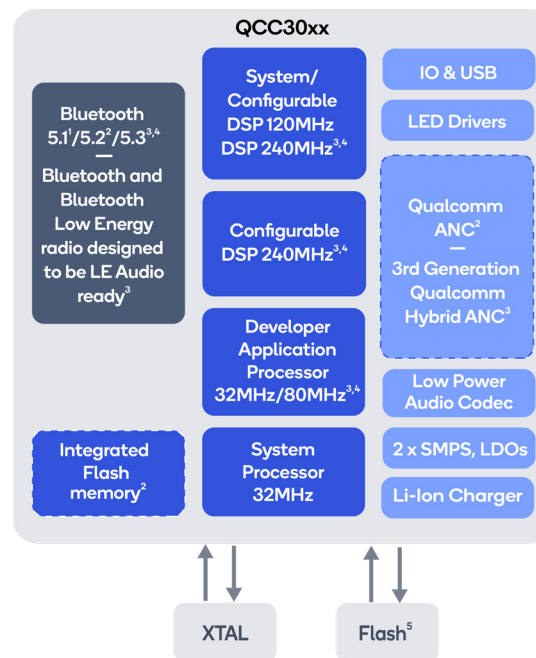
## QCC302x/QCC303x/QCC304x/QCC308x Features Comparison

	Stereo Headset	Stereo Speaker	LE Audio	aptX Audio	aptX HD	aptX Adaptive	Snapdragon Sound	Qualcomm ANC	cVc	Voice Assistant button activation	Qualcomm Broadcast Audio	Package
Qualcomm <sup>®</sup> QCC3024	✓								2-mic	✓		BGA 5.5x5.5x1.0mm
Qualcomm <sup>®</sup> QCC3034	✓			✓	✓				2-mic	✓		BGA 5.5x5.5x1.0mm
Qualcomm <sup>®</sup> QCC3044	✓			✓	✓	✓		✓	2-mic	✓		BGA 5.5x5.5x1.0mm
Qualcomm <sup>®</sup> QCC3084	✓		✓	✓	✓	✓	✓ <sup>6</sup>	✓	2-mic	✓		BGA 6.7x7.4x1.0mm
Qualcomm <sup>®</sup> QCC3021		✓							1-mic		✓	QFN 8.0x8.0x0.85mm
Qualcomm <sup>®</sup> QCC3031		✓		✓	✓				1-mic		✓	QFN 8.0x8.0x0.85mm
Qualcomm <sup>®</sup> QCC3083		✓	✓	✓	✓	✓	✓ <sup>6</sup>		1-mic	✓		BGA 6.7x7.4x1.0mm

## Features

- Highly integrated SoC with extremely low-power design
- Support for digital assistants with minimal integration effort
- Fully programmable digital ANC<sup>2,3</sup>
- Support for aptX, aptX HD and aptX Adaptive<sup>2,3,4</sup>
- Lossless audio with Snapdragon Sound<sup>3</sup>
- Support for Qualcomm<sup>®</sup> cVc™ Echo Cancelling and Noise Suppression (ECNS)
- QCC302x/QCC303x qualified to Bluetooth 5.1, QCC3044 qualified to Bluetooth 5.2 and QCC308x qualified to Bluetooth 5.3
- QCC308x designed to integrate LE Audio use cases
- 2Mbps Bluetooth low energy (LE) support
- Variety of form factors, down to ultra-small 5.5mm x 5.5mm
- Dual core 32-bit processor application and Kalimba DSP Audio subsystem
- Embedded ROM + RAM (and integrated Flash with QCC3044)
- High-performance low power audio codec including stereo Class D and Class AB analog outputs
- 192kHz 24-bit I2S & SPDIF interfaces
- Flexible software platform with powerful new IDE support
- Integrated battery charger supporting internal mode (up to 200 mA) and external mode (up to 1.8 A)

## QCC30xx Block Diagram



<sup>1</sup> QCC302x and QCC303x  
<sup>2</sup> QCC3044  
<sup>3</sup> QCC3084  
<sup>4</sup> QCC3083  
<sup>5</sup> QCC302x, QCC303x, QCC3083 and QCC3084  
<sup>6</sup> Lossless audio available with Snapdragon Sound

## Ordering Information

Product	Part Number	Product	Part Number
QCC3024	QCC3024-0-CSP90	QCC3021	QCC3021-0-80PQFN
QCC3034	QCC-3034-0-CSP90	QCC3031	QCC-3031-0-80PQFN
QCC3044	QCC-3044-0-CSP90B	QCC3083	QCC-3083-0-CSP134A
QCC3084	QCC-3084-0-CSP134A		

Qualcomm QCC3021, Qualcomm QCC3024, Qualcomm QCC3031, Qualcomm QCC3034, Qualcomm QCC3083, Qualcomm QCC3084, Qualcomm QCC3044, Qualcomm cVc, Qualcomm Hybrid ANC and Qualcomm Broadcast Audio are products of Qualcomm Technologies, Inc. and/or its subsidiaries.