Highlights

Ultra-low power

The QCC5100 series is designed for unprecedented efficiency in power consumption and supports the development of very small form factor, richly-featured earbuds that can be used for up to 16 hours with a 65mAh battery. QCC517x and QCC518x SoCs are optimized for AI and deliver double the compute power compared to the previous generation devices, at no compromise to our industry leading ultra-low power performance.

Bluetooth® LE Audio

QCC517x and QCC518x are designed to support a range of LE Audio-enabled use cases for earbuds, including audio sharing, broadcast, low latency gaming, and stereo recording and Auracast. This dual-mode platform integrates the best of LE Audio and traditional Bluetooth technology to enable smooth feature adoption for new real-world listening scenarios.

Lossless and high resolution audio

With Qualcomm® aptX™ Adaptive Audio and high-performance DACs, these platforms are designed to deliver high resolution (24-bit 96kHz) and end-to-end low latency audio. Designed to dynamically scale the Bluetooth connection to deliver audio up to lossless quality, the QCC517x and QCC518x feature 44.1kHz lossless audio with Snapdragon Sound technologies over Classic Bluetooth technology, whilst the QCC518x further leverages Snapdragon Sound to support lossless audio over LE Audio, increasing the resolution to 48kHz sample rate.

Integrated noise cancellation

Qualcomm Adaptive ANC enables support for great noise management without compromising on battery life, even in ultra-small form factors. QCC517x and QCC518x are designed to support our Third-Gen Qualcomm Adaptive ANC, with full-band transparency mode for strong, effective noise cancellation and a natural-feeling spatial accurate awareness of the listener’s surrounding environment, while adaptation algorithms respond quickly to window noise and mitigate for changes in fit.

Innovative, customizable platform

The QCC5100 series is designed specifically to help our customers to innovate with two comprehensively programmable DSPs, and with our Audio Development Kit (ADK), developers can create unique and differentiated products. The QCC5100 series is designed to support both button-press and wake word activated voice assistants.
QCC5100 Target Applications

- Bluetooth Earbuds
- Bluetooth Headphones
- Bluetooth Headsets
- Bluetooth Hearables
- Bluetooth Portable Speakers

Features

- Qualcomm® QCC51xx is qualified to Bluetooth specification 5.2, and Qualcomm® QCC5151/QCC5171 are qualified to Bluetooth specification 5.3 and QCC5181 is qualified to Bluetooth specification 5.4.
- In earbuds, QCC5171 and QCC5181 support LE Audio Gaming Mode, Unicast Voice, Unicast Music, Broadcast receive, and Auracast.
- In stereo headset, QCC5171 supports LE Audio Gaming mode and QCC5181 supports Gaming Mode, Unicast Voice, Unicast Music, Broadcast receive and Auracast.
- Designed to support Snapdragon Sound for optimised audio quality, robustness and latency.
- 2Mbps Bluetooth Low Energy (LE) support.
- From 4.2mm x 4.3mm ultra-small form factor.
- Designed to support Qualcomm® TrueWireless Mirroring.
- Fully programmable Qualcomm Adaptive ANC – no PCB size penalty and ultra low-power.
- Natural sounding transparency mode with real time adaptation for fit variation and howling detection.
- Designed to support pre-certified button press or wake word activated digital assistants.
- Designed to help reduce eBoM through highly integrated SoC design.
- Flexible software platform with new IDE support.
- Designed to support aptX Adaptive up to 96KHz, backward compatible with aptX and aptX HD.
- Designed for lossless audio up to 44.1kHz and 48kHz with Snapdragon Sound.
- Designed to support Qualcomm TrueWireless Mirroring.
- Designed to support Qualcomm® cVc™ Echo Cancellation (ECNS) and Noise Suppression.

QCC51xx Specifications

- Bluetooth 5.2/5.3/5.4 including 2 Mbps Bluetooth LE single ended antenna connection with on-chip balun and Tx/Rx switch.
- Dual 120MHz (240MHz) Kalimba audio DSP cores flexible clock speed from 2MHz up to 120MHz (240MHz).
- Flexible firmware processor 32bit 32/80MHz developer processor.
- 384KB program RAM, 1408KB data RAM (QCC517x/QCC518x).
- 112KB program RAM, 448KB data RAM (QCC515x/QCC5151).
- Interfaces: UART, USB 2.0, SDIO, QSPI, 2x bit serializers (QCC515x), 3x bit serializers (QCC517x) (12C/QSPI), NOR flash, up to 55x P1O.
- Integrated power management unit (PMU).
- Dual switch-mode power supply (SMPS).

Battery Support

- Integrated battery charger supporting internal mode (up to 200 mA) & external mode (up to 1.8 A).

QCC51xx Block Diagram

Support for Snapdragon Sound (Classic Bluetooth)
Dual switch-mode power supply (SMPS)

QCC51xx Specifications

Bluetooth

- Bluetooth 5.2/5.3/5.4
- 2 Mbps Bluetooth LE
- Single ended antenna connection with on-chip balun and Tx/Rx switch.

Audio DSP

- Dual 120MHz (240MHz) Kalimba audio DSP cores
- Flexible clock speed from 2MHz up to 120MHz (240MHz)

Application Subsystem

- 32-bit firmware processor
- 32-bit 32/80MHz developer processor

Memory

- 112KB program RAM, 448KB data RAM (QCC515x/QCC5151)
- 384KB program RAM, 1408KB data RAM (QCC517x/QCC518x)

Interfaces

- UART, USB 2.0, SDIO, QSPI, 2x bit serializers (QCC515x), 3x bit serializers (QCC517x) (12C/QSPI), NOR flash, up to 55x P1O

Power Management

- Integrated power management unit (PMU)
- Dual switch-mode power supply (SMPS)

Battery Support

- Integrated battery charger supporting internal mode (up to 200 mA) & external mode (up to 1.8 A)

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