Solution Highlights

Ideal for entry-level to mid-range wireless audio products

The CSR8640 SoC has a reduced feature set supporting the essential features expected from Bluetooth audio products while providing cost efficiency for entry-level products.

Integrated single-chip solution for smaller designs

Application processor, Bluetooth and Bluetooth low energy radios, DSP and memory integrated into a single SoC helps reduce system complexity and eBOM while supporting small form factor designs.

No software development required

Pre-loaded Bluetooth and audio applications allow manufacturers to develop end-products without writing code, while customization tools support quick modification of device behaviour and user interface.

cVc 6th generation 2-mic audio technology

cVc technology is a suite of algorithms designed to work on the transmit and receive path of voice calls to deliver optimum voice quality on Bluetooth headsets, handsets, hands-free devices, and automotive.
Features

- Bluetooth 4.0 specification compliant
- Flexible ROM-based platform with fully configurable MMI and tool chain
- Support for various profiles including: HFP 1.6, A2DP 1.2 AVRCP 1.4
- 80MHz Qualcomm® Kalimba™ DSP with integrated multipoint A2DP and HFP audio applications
- 2-mic cVc 6th Generation voice processing technology with wideband speech
- Audio tuning suite with audio enhancements and 5-band EQs
- Internal ROM, serial flash memory and EEPROM interfaces
- MP3, AAC and SBC audio codecs
- GAIA V1 and associated Android and iOS apps for connectivity with mobile devices
- Reference speaker and headset applications pre-loaded on the ROM
- Fast charging support up to 200mA with no external components
- Pin compatible with CSR8645

CSR8640 Block Diagram

CSR8640 Specifications

Bluetooth
Integrated dual-mode radio and balun (50 Ω)
-92dBm (typical) receiver sensitivity; +9dBm transmitter power
Bluetooth v4.0 firmware

MCU
80MHz non-programmable RISC processor for application code and user interface

Audio
Integrated non-programmable 24-bit fixed-point
80MHz Kalimba DSP

Battery Support & Power Management
Li-Ion battery charger with support up to 200mA
2x high-efficiency switch-mode regulators with 1.8V & 1.35V outputs from battery supply

Audio Interfaces
Stereo 16-bit ADC; up to 48kHz sampling frequency
Stereo 16-bit DAC; up to 96kHz sampling frequency
Microphone inputs: up to 2x analog or digital (MEMS)

Physical Interfaces
I²S and PCM interfaces
Up to 22x GPIOs, USB2.0, FC, SPI, UART
3x hardware LED controllers

Memory
Integrated ROM memory
56kB system MCU RAM
64k x 24-bit data & 12k x 32-bit program memory dedicated to DSP

Packaging
5.5 x 5.5 x 1mm, 0.5mm pitch 68-ball VFBGA

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