DA7217

DA7217 is a high-performance, low-power audio codec optimized for use in headsets or wearable devices. It has differential headphone outputs for use inside headset devices, offering excellent left to right channel separation and common mode noise rejection. DA7217 also has a stereo DAC to headphone output path and ultra-low power operating modes to support always-on audio detect applications.

32 ball WLCSP package, 0.5 mm pitch

DA7217 contains two analog microphone input paths, or up to four digital microphone input paths, or a combination of both. The other chip in this family, the DA7218, has single-ended headphone outputs, and has been designed with headphone detect for use in accessories.

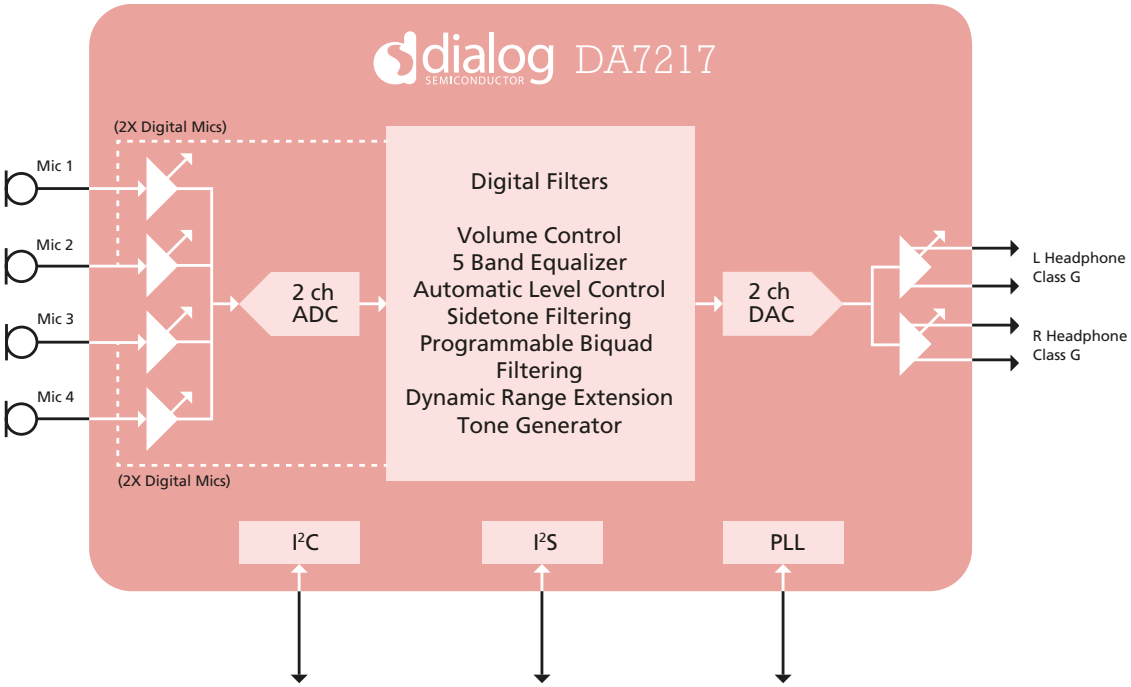
Features

- High performance stereo DAC to headphone playback path with 110 dB dynamic range
- 4 mW stereo playback power consumption
- DAC digital filters with audio and voice mode options, five-band equalizer and five programmable biquad stages
- Dedicated low-latency digital sideband filter with three programmable biquad stages
- High performance microphone to ADC record path with 105 dB dynamic range
- 2.5 mW stereo record power consumption
- ADC digital filters with audio and voice mode options
- 500 µW always-on record mode with automatic level detection
- Hybrid analog / digital automatic level control to dynamically control the record level
- Shutdown mode offering current consumption during standby of 2.5 µA
- Two low-noise microphone bias regulators with programmable output voltage and ultralow power mode
- A high efficiency two-level, true-ground charge pump for generating class-G headphone supplies
- Voice mode filtering up to 32 kHz
- Flexible digital mixing from all seven inputs to all six outputs with independent gain on each mixer path
- Ability to run the ADCs at a different sample rate to the DACs on a single I²S interface
- Digital tone generator with built-in support for DTMF
- System controller for simplified, pop-free startup and shutdown
- Phase-locked loop with sample rate tracking supporting MCLK frequencies from 2 MHz to 54 MHz
- Automatic tuning of on-chip reference oscillator for clock-free operation in low-power modes
- 4-wire digital audio interface with support for I²S, four-channel I²S, TDM and other audio formats
- 2-wire I²C compatible control interface with support for High Speed mode up to 3.4 MHz
- 24-bit data at up to 96 kHz sample rate
- The headphone amplifier can be run directly from the supply, thus eliminating the need for charge pump capacitors

Applications

- Hearables
- Wireless and wired headphones
- Wireless and wired headsets

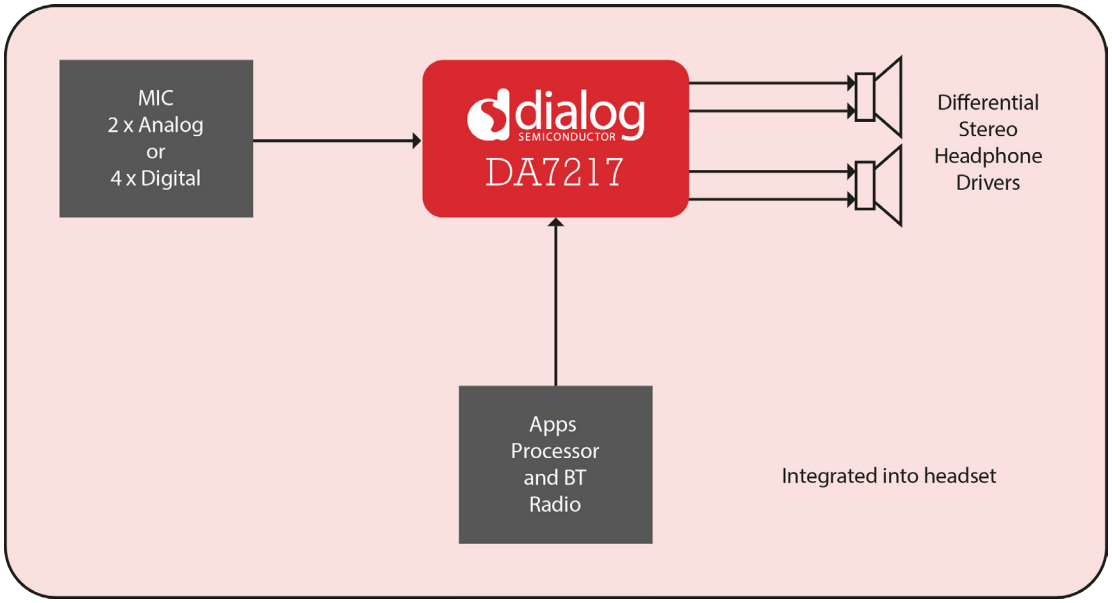
Block Diagram



Feature highlights

- Superior hi-fidelity audio performance for immersive record and playback
- Sub 500 µW always-on power extends battery life for audio activity detection
- Flexible programming filtering (sideband, voice) enhances voice and audio playback
- Mixed sample rate support for wideband applications
- Supports the latest generation of low power analog and digital microphones
- Small package footprint with an optimized ball-out conducive to low cost PCB manufacturing

Audio System diagram



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