DA7218

DA7218 is a high-performance, low-power audio codec optimized for use in portable applications or wearable devices. It has single-ended headphone outputs with headphone detect for use in accessories, offering excellent left to right channel separation and common mode noise rejection. DA7218 also has a stereo DAC to headphone output path and ultra-low power operating modes to support always-on audio detect applications. DA7218 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 DA7217 has differential headphone outputs without headphone detect, and has been designed for use inside headset devices.

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 a 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
- Ability to differentiate between stereo and mono headsets
- Automatic detection of headset removal and confirmation of headset insertion
- 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
- A high efficiency two-level, true-ground charge pump for generating class-G headphone supplies
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

Applications

- Wired Headsets
- Wired Headphones
- Gaming Console Controller
- Audio Accessories
- Portable Media Player
- Tablet & ebooks

Block Diagram
Audio System diagram

- MIC: 1 x Analog or 2 x Digital
- Apps Processor
- Integrated into device
  - Headset
  - Headphone