

DA7210

Ultra low power stereo audio codec with True-GND headphone driver

The DA7210 is a high definition audio codec with integrated true-ground capless headphone driver suitable for a variety of low power, digital portable audio products.

Featuring a high efficiency headphone amplifier and minimum supply voltage of 1.8V to simplify interfacing to digital processors, the ultra-low 2.5mW power consumption extends music playback time for battery operated equipment.

The integrated PLL uses a FRACT-N PLL architecture that supports a large range of input and output frequencies. This is in addition to standard mobile phone/USB system clock frequencies - enabling audio data synchronization when no master clock is readily available.



Available in 49 bump WLCSP package

Eight analogue input pins allow multiple audio sources to be internally mixed, eliminating the need for external switches. Both single-ended and fully differential line and microphone inputs are supported with built-in variable gain amplifiers to optimize dynamic range prior to digitisation. This allows a diverse variety of analogue audio sources such as baseband voice, mobile TV, WiFi and FM radio to be managed. Input and output mixers with stereo-to-mono conversion also support mono configurations such as headset/baseband line outputs. Beside the fully differential mono RX channel, DA7210 provides two volume controlled differential/single-ended stereo line out drivers and ground centered stereo amplifiers to directly drive standard 3-wire 16ohm headphones. For example the dc-coupled, dedicated pop-free drivers may be connected to stereo headphones, stereo speaker and mono line out, all simultaneously and without external switches.

All filtering and sidetone functions are performed digitally including 5-band EQ and a digital input AGC with programmable attack and decay parameters. A configurable signal processing engine allows various audio enhancements and effects i.e. acoustic filtering, wind noise suppression and 3D sound.

The multi-slot I2S/PCM interface supports all common sample rates between 8-96kHz in master or slave modes.



Features

- ▶ High performance audio codec with integrated PLL
- ▶ True-GND capless Class G 40mW headphone driver with integrated charge pump
- ▶ Flexible clocking capability to minimise master clock circuit board routing
- ▶ Fully differential mono voice channel
- ▶ Pop & Click suppression circuitry
- ▶ Multi mode audio routers and mixers & volume control

Functions

- ▶ Stereo Playback/Record: 2.5mW & 3.5mW @ 1.8V
- ▶ Audio performance@ 2.5V
 - DAC: 100dB/-85db THD
 - ADC: 96db SNR/-89dB THD
- ▶ Sample rates up to 96kHz supported via multi-slot I2S/PCM interface
- ▶ Stereo fully-differential microphone amplifiers with 5uV input noise and bias
- ▶ DSP 5 Band EQ, Input ALC, programmable noise and acoustic enhancement filters

Power Saving Highlights

- ▶ Low power Multi-bit DAC/ADC
- ▶ Stereo Playback/Record: 2.5mW & 3.5mW @ 1.8V
- ▶ Class G Headphone driver
- ▶ 1.8V operation from external DC/DC

Audio Performance highlights

- ▶ 24bit/96kHz Max Sample rate
- ▶ Stereo 5uV balanced Microphone amplifiers and low noise bias
- ▶ Low distortion differential outputs
- ▶ 40mW 16Ω headphone driver

Target Applications

- ▶ Smart phones
- ▶ Personal Media Players
- ▶ Multimedia Handsets
- ▶ Personal Navigation Devices



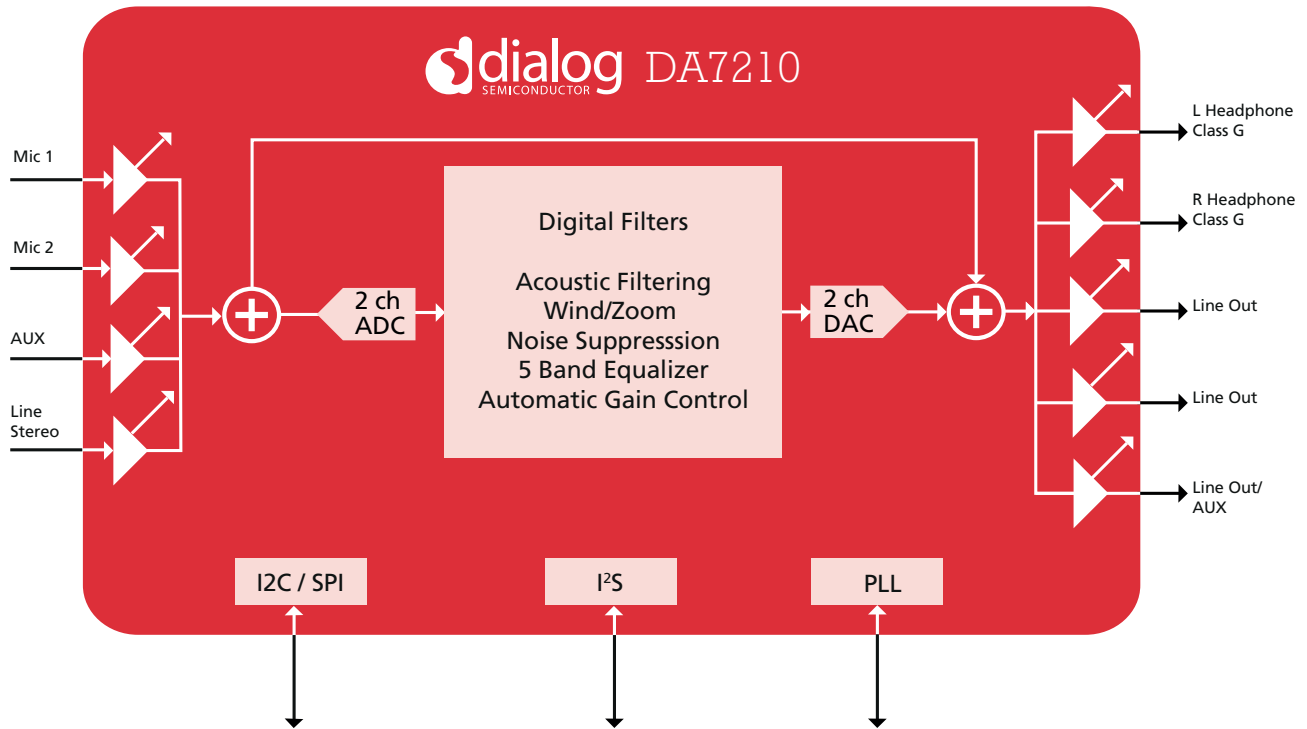
Digital Processing highlights

- ▶ 5-band EQ
- ▶ Independent volume control
- ▶ Fully digital ALC
- ▶ Programmable acoustic filters for audio enhancements and effects
- ▶ Wind Noise Suppression

Board Area highlights

- ▶ Capless headphone driver eliminates large AC coupling capacitors

Block Diagram



Dialog Semiconductor Worldwide Sales Offices - www.dialog-semiconductor.com

email: info@diasemi.com

United Kingdom
Phone: +44 1793 757700

The Netherlands
Phone: +31 73 640 88 22

Japan
Phone: +81 3 5425 4567

Singapore
Phone: +65 648 499 29

Korea
Phone: +82 2 3469 8200

Germany
Phone: +49 7021 805-0

North America
Phone: +1 408 845 8500

Taiwan
Phone: +886 281 786 222

Hong Kong
Phone: +852 3769 5200

China (Shenzhen)
Phone: +86 755 2981 3669
China (Shanghai)
Phone: +86 21 5424 9058

This publication provides outline information only, which unless agreed by Dialog Semiconductor may not be used, applied or reproduced for any purpose, or be regarded as a representation relating to products. Please refer to Dialog standard supply terms on the company website (www.dialog-semiconductor.com).

© Dialog Semiconductor 2015. All rights reserved. 0415XXX