

CONEXANT

AD1989B SoundMAX HD Audio Codec With 10 DACs, 6 ADCs, and SPDIF I/O

Features

- Ten 192 kHz, 101 dB DACs
 - 7.1 surround sound plus independent headphone
 - All independent sample rates, 8 kHz through 192 kHz
 - Selectable stereo mixer on outputs
- 16-, 20-, and 24-bit resolution
 Six 192 kHz, 92 dB ADCs
- Simultaneous record of up to 3 stereo channels
- All independent sample rates, 8 kHz through 192 kHz
- 16-, 20-, and 24-bit resolution
 S/PDIF output
- - 2 independent transmitters, second S/PDIF can support external HDMI interface
 - Supports 44.1 kHz through 192 kHz sample rates 16-, 20-, and 24-bit data; PCM, and
- Digital PCM gain control
 S/PDIF input
- - Supports 44.1 kHz through 192 kHz sample rates
 - 16-, 20-, and 24-bit data; PCM, and AC3 formats
 - Digital PCM gain control
 - Auto synchronizes to source sample rate
 - Dedicated auxiliary pins Stereo CD/auxiliary I/O port w/GND sense
 - MONO_OUT pin for internal speaker with EAPD support
- Presence detection up to 9 jacks
- Impedance and presence detection; retasking
- 5 adjustable microphone bias pins
- Digital and analog PCBeep 3 digital General-purpose I/O (GPIO) ٠
- pins Multiple EAPD pins for external circuit •
- control
- 3.3 V analog and digital supply voltages 1.5 V and 3.3 V HD Audio link signaling
- Advanced power management modes
- Available in 48-QFN package

Software

- Voice input enhancements
- Output enhancements

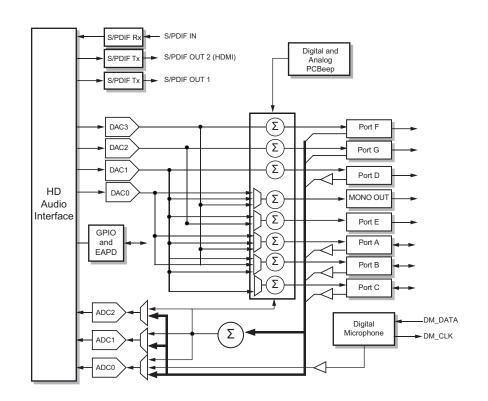
Applications

Embedded Audio

Overview

The AD1989B audio codec and software provide superior HD audio high guality and performance. The AD1989B has ten 101 dB DACs and six 92 dB ADCs, three stereo headphone ports, C/LFE swapping, digital and analog PCBeep, two independent S/PDIF outputs, and an S/PDIF input. The jack retasking feature on this product supports various configurations including 7.1 on 5 jacks, 5.1 on 3 jacks, and front panel jack retasking. The AD1989B is available in a 48-lead RoHS compliant lead frame chip scale package in both reels and trays.

Block Diagram



Part Number AD1989B

Description SoundMAX HD Audio Codec

Table 1. Performance Characteristics

Parameter	Min	Тур	Max	Unit
Line-Out Drive (10 kΩ loads—DAC to Pin) Total Harmonic Distortion (THD + N) Dynamic Range (–60 dB in ref to f _S A-Weighted) Signal-to-Noise Ratio		86 101 101		dB dB dB
Headphone Drive (32Ω loads—DAC to Pin) Total Harmonic Distortion (THD + N) Dynamic Range (–60 dB in ref to f _S A-Weighted) Signal-to-Noise Ratio		84 101 101		dB dB dB
Input Ports (Mic Boost = 0 dB) Total Harmonic Distortion (THD + N) Dynamic Range (–60 dB in ref to f _S A-Weighted) Signal-to-Noise Ratio		80 92 92		dB dB dB

Table 2. Specifications

Parameter	Min	Тур	Max	Unit			
Analog-to-Digital Converters							
Resolution		24		Bits			
Gain Error (Full-Scale Span Relative to Nominal Input Voltage)			±10	%			
Interchannel Gain Mismatch (Difference of Gain Errors)		±0.2	±0.5	dB			
ADC Offset Error			±5	mV			
ADC Crosstalk							
Line Inputs (Input L, Ground R, Read R; Input R, Ground L, Read L)		-94		dB			
Line Inputs to Other		-100	-80	dB			
Digital-to-Analog Converters	;	•					
Resolution		24		Bits			
Gain Error (Full-Scale Span Relative to Nominal Input Voltage)			±10	%			
Interchannel Gain Mismatch (Difference of Gain Errors)			±0.5	dB			
DAC Crosstalk (Input L, Zero R, Measure R_OUT; Input R, Zero L, Measure L_OUT)		-104		dB			
Analog Mixer							
Signal-to-Noise Reduction (SNR) Input to Output		95		dB			
Step Size: All Mixer Inputs		-1.5		dB			
Input Gain/Attenuation Range: All Mixer Inputs	-34.5		+12.0	dB			

Ordering Information

Device Set Order ID	Package Type	Package	Operating Temperature			
AD1989BJCPZ*	QFN	48-Lead QFN, 7x7 mm	0°C to 70°C			
*Lead-free (Pb Free) and RoHS compliant						

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