CONEXANT AD1989B Audio Codec Manual

http://www.manuallib.com/conexant/ad1989b-audio-codec-manual.html

The AD1989B audio codec and software provide superior high definition audio quality and performance. The AD1989B has two 192 kHz DAC pairs, two 192 kHz ADC pairs,an S/PDIF output, and digital and analog PCBeep. These features make the AD1989B the right choice for embedded systems where performance is key. The AD1884A is available in a 48-lead, RoHS compliant lead frame chip scale package in both reels and trays.

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 AC3 formats
  - 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) 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

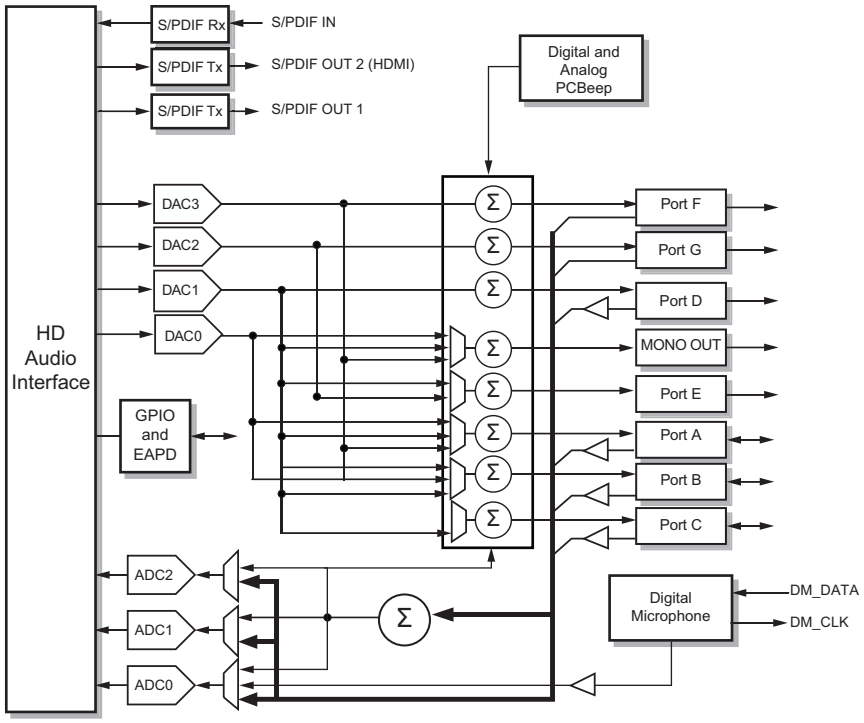
Applications

- Embedded Audio

Overview

The AD1989B audio codec and software provide superior HD audio high quality 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	Typ	Max	Unit
Line-Out Drive (10 kΩ loads—DAC to Pin)				
Total Harmonic Distortion (THD + N)		–86		dB
Dynamic Range (–60 dB in ref to f_S A-Weighted)		101		dB
Signal-to-Noise Ratio		101		dB
Headphone Drive (32 Ω loads—DAC to Pin)				
Total Harmonic Distortion (THD + N)		–84		dB
Dynamic Range (–60 dB in ref to f_S A-Weighted)		101		dB
Signal-to-Noise Ratio		101		dB
Input Ports (Mic Boost = 0 dB)				
Total Harmonic Distortion (THD + N)		–80		dB
Dynamic Range (–60 dB in ref to f_S A-Weighted)		92		dB
Signal-to-Noise Ratio		92		dB

Table 2. Specifications

Parameter	Min	Typ	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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