CONEXANT AD1984A Audio Codec Manual

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The AD1984A audio codec and software provide superior high definition audio quality and performance. The AD1984A has two 192 kHz DAC pairs, two 192 kHz ADC pairs, an S/PDIF output, and digital and analog PCBeep. These features make the AD1984A 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.

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AD1984A SoundMAX HD Audio Codec With 4 DACs, 4 ADCs, SPDIF Out

Features

- 2 stereo headphone amplifiers
- Line outputs and inputs
- Analog microphone inputs
- Retaskable ports 192 kHz DACs/ADCs
 - 2 independent stereo DAC/ADC
 - pairs . Simultaneous record of 2 stereo channels
 - Simultaneous playback of 2 stereo channels
 - All independent sample rates, 8 kHz through 192 kHz
 - 16-, 20-, and 24-bit resolution
 - Selectable stereo mixer on outputs
- Stereo Digital Microphone Interface
 - Two 192 kHz digital microphone channels
 - Supports 1 or 2 microphones per
 - Selectable bit clock rates of 1.5 MHz, 2.0 MHz, and 3.0 MHz
 - Mono and stereo array support
 - All sample rates, 8 kHz through 192 kHż
 - 16-, 20-, and 24-bit resolution
 - Digital PCM gain control
 S/PDIF Output
- Supports 44.1 Hz through 192 kHz sample rates
- 16-, 20-, and 24-bit data; PCM and AC3 formats
- Digital PCM gain control Auxiliary Pins
- Impedance and presence detection on all jacks
- Full analog mixer with DAC inputs
- 3 independent microphone bias pins
- Digital and analog PCBeep
- 3 general-purpose digital I/O (GPIO) pins
- 3.3 V analog supply voltage 1.7 V to 1.9 V or 3.3 V digital supply voltages
- 1.5 V or 3.3 V HD Audio link signaling
- Advanced power management modes
- Security feature prevents unauthorized recording
- 48-lead, RoHS compliant QFN package

Software

- Voice input enhancements
- Output enhancements

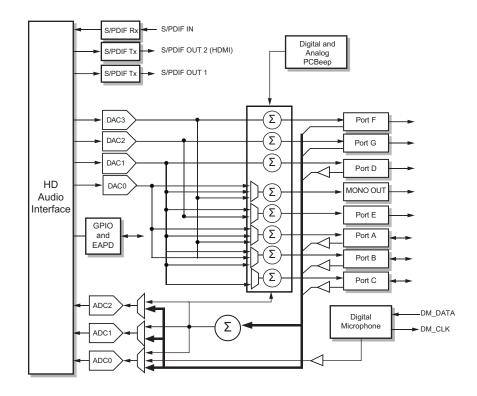
Applications

- **Embedded Audio**
- Point Of Sale Systems

Overview

The AD1984A audio codec and software provide superior high definition audio quality and performance. The AD1984A has two 192 kHz DAC pairs, two 192 kHz ADC pairs, an S/PDIF output, a 2-channel digital microphone interface, and digital and analog PCBeep. These features make the AD1984A the right choice for embedded systems where performance is key. The AD1984A is available in a 48-lead, RoHS compliant lead frame chip scale package in both reels and trays.

Block Diagram



Part Number AD1984A

Description SoundMAX HD Audio Codec

Table 1. Performance Characteristics

Parameter	Min	Тур	Max	Unit
Line-Out Drive (10 k Ω 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 (32 Ω 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 Converte	rs	•	1			
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		
AD1984AJCPZ*	QFN	48-Lead QFN, 7x7 mm	0°C to 70°C		
*Lead-free (Pb Free) and RoHS compliant					

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