

Stereo Digital Audio Amplifier with Headphone Driver

Features

- 16/18/20/24-bit input with I²S data format
- PSNR & DR (A-weighting)
Loudspeaker: 98dB (PSNR), 106dB (DR)
Headphone: 87dB (PSNR), 96dB (DR)
- Multiple sampling frequencies (Fs)
8kHz, 12kHz, 16kHz, 22.05kHz, 24kHz
32kHz, 44.1kHz, 48kHz,
64kHz, 88.2kHz and 96kHz
- System clock = 256Fs
- 8Fs switching for loudspeakers and headphones
- Single or dual supply
Single supply: 3.0~3.3V for the whole chip
Dual supply: 3.0~5V for loudspeaker drivers
3.0~3.3V for others
- Loudspeaker power
3.5W into 4Ω load @ 0dB 1kHz sinewave input
2.0W into 8Ω load @ 0dB 1kHz sinewave input
- Loudspeaker power efficiency (η)
86% for 4Ω @ 0dB 1kHz sinewave input
91% for 8Ω @ 0dB 1kHz sinewave input
- Headphone power
35mW into 32Ω @ 1kHz and 1% THD+N
65mW into 16Ω @ 1kHz and 1% THD+N
113mW into 8Ω @ 1kHz and 1% THD+N
- Volume control for loudspeakers
53steps: +6~-34dB(1dB/step)-36~-58dB(2dB/step)
- Mute function
- Power down function
- Anti-pop design
- Over-temperature protection
- Under-voltage shutdown
- Short-circuit detection

- CD and DVD
- TV audio
- Internet audio
- USB speaker
- MP3
- Headphone Amplifier
- PDA
- Portable / Handheld
- Mobile phone
- Car audio

Description

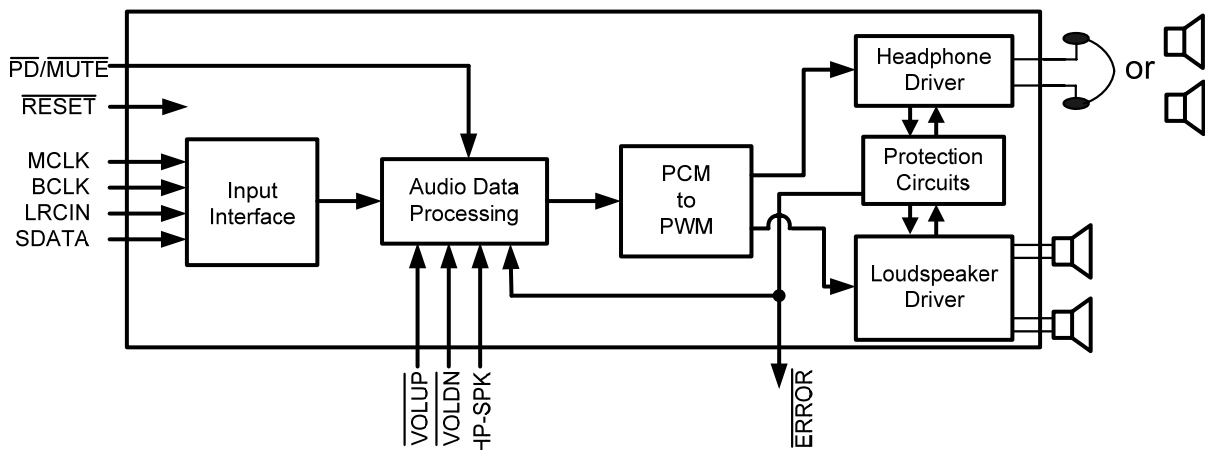
This is a stereo digital audio amplifier with high power efficiency, which leads to longer battery life, less heat sink requirement, smaller board size and lower system cost. AD82550A can detect headphone connection and choose to drive either stereo loudspeakers or stereo headphones. Operating with 3.0/3.3/5V loudspeaker driver supply, each loudspeaker channel can typically deliver 0.8/1.0/2.3W to a 4Ω loudspeaker, respectively, with less than 1% THD+N. Operating with 3.0/3.3V headphone driver supply, each headphone channel can typically deliver 29/35mW to 32Ω, 54/65mW to 16Ω and 94/113mW to 8Ω, respectively, with less than 1% THD+N.

ORDERING INFORMATION

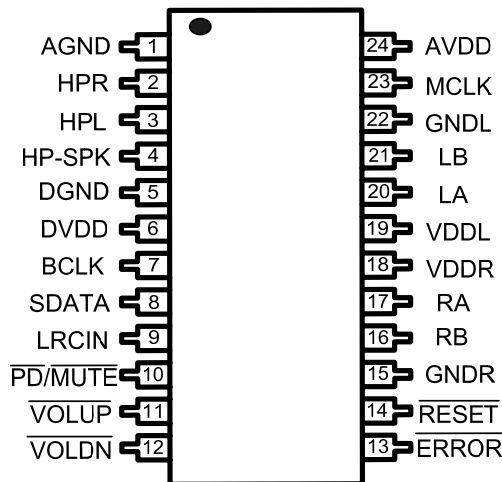
Product Number	Package	Comments
AD82550A-CG	24L SSOP 209mil	Pb-free

Applications

Functional Block Diagram



Pin Assignment



Pin Description

Pin	Name	Type	Description	Characteristics
1	AGND	P	Analog ground	
2	HPR	O	Headphone right channel output	
3	HPL	O	Headphone left channel output	
4	HP-SPK	I	Headphone/loudspeaker switch	Schmitt trigger input with a 380kΩ pull-up resistor (Note 1)
5	DGND	P	Digital ground	
6	DVDD	P	Digital supply	
7	BCLK	I	Bit clock (64Fs) input	Schmitt trigger TTL input buffer
8	SDATA	I	Serial audio data input	Schmitt trigger TTL input buffer
9	LRCIN	I	Left/right sampling clock (Fs) input	Schmitt trigger TTL input buffer
10	$\overline{\text{PD/MUTE}}$	I	Power-down and mute, low active	Schmitt trigger TTL input buffer
11	$\overline{\text{VOLUP}}$	I	Volume up, low active	Schmitt trigger TTL input buffer (Note1)
12	$\overline{\text{VOLDN}}$	I	Volume down, low active	Schmitt trigger TTL input buffer (Note1)
13	$\overline{\text{ERROR}}$	O	Error output	Open-drain output
14	$\overline{\text{RESET}}$	I	Reset, low active	Schmitt trigger TTL input buffer
15	GNDR	P	Ground for loudspeaker right channel	
16	RB	O	Loudspeaker right channel output (-)	
17	RA	O	Loudspeaker right channel output (+)	
18	VDDR	P	Supply for loudspeaker right channel	
19	VDDL	P	Supply for loudspeaker left channel	
20	LA	O	Loudspeaker left channel output (+)	
21	LB	O	Loudspeaker left channel output (-)	
22	GNDL	P	Ground for loudspeaker left channel	
23	MCLK	I	Master clock (256Fs) input	Schmitt trigger TTL input buffer
24	AVDD	P	Analog supply	

Note1: May become bi-directional with less than 30μA output current when “ $\overline{\text{RESET}}$ ” pin is low.