2x20W Stereo / 1x 40W Mono Digital Audio Amplifier With 20 bands EQ Functions, DRC and 2.1CH Mode

Features

- 16/18/20/24-bits input with I^2S, Left-alignment and Right-alignment data format
- PSNR & DR(A-weighting)
  Loudspeaker: 96dB (PSNR), 108dB (DR) @24V
- Multiple sampling frequencies (Fs)
  32kHz / 44.1kHz / 48kHz and
  64kHz / 88.2kHz / 96kHz and
  128kHz / 176.4kHz / 192kHz
- System clock = 64x, 128x, 192x, 256x, 384x, 512x, 576x, 768x, 1024x Fs
  64x~1024x Fs for 32kHz / 44.1kHz / 48kHz
  64x~512x Fs for 64kHz / 88.2kHz / 96kHz
  64x~256x Fs for 128kHz / 176.4kHz / 192kHz
- Supply voltage
  3.3V for digital circuit
  10V~26V for loudspeaker driver
- Supports 2.0CH/2.1CH/Mono configuration
- Loudspeaker output power@24V for stereo
  10W x 2CH into 8Ω @0.24% THD+N
  15W x 2CH into 8Ω @0.3% THD+N
  20W x 2CH into 8Ω @0.38% THD+N
- Sound processing including：
  20 bands parametric speaker EQ
  Volume control (+24dB~-103dB, 0.125dB/step)
  Dynamic range control
  Dual Band Dynamic range control
  Power Clipping
  3D surround sound
  Channel mixing
  Noise gate with hysteresis window
  Bass/Treble tone control
  Bass management crossover filter
  DC-blocking high-pass filter
- Anti-pop design
- Short circuit and over-temperature protection
- I^2C control interface with selectable device address
- Support hardware and software reset
- Internal PLL
- LV Under-voltage shutdown and HV Under-voltage detection
- Power saving mode

Applications

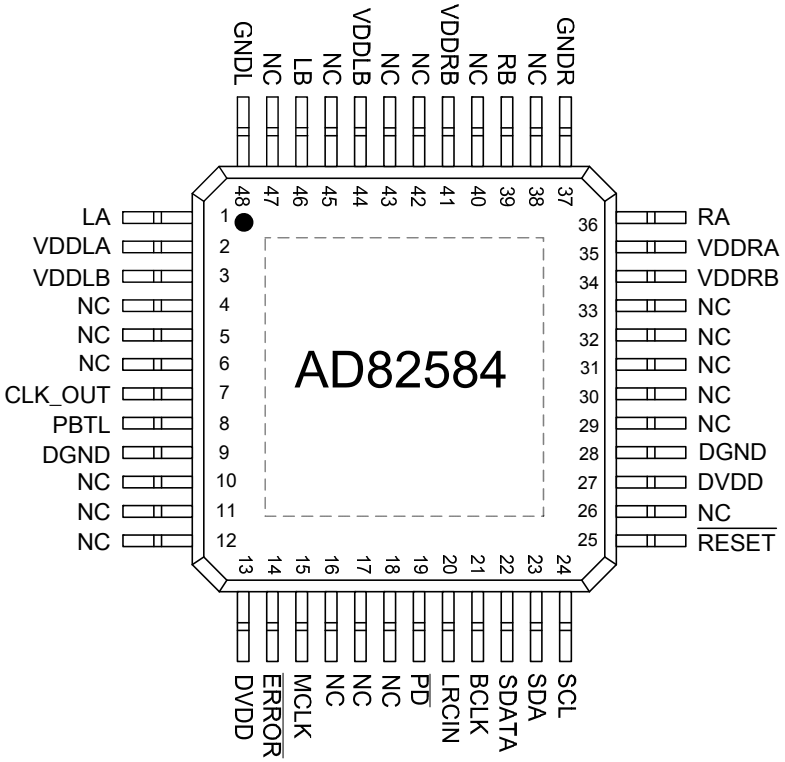
- TV audio
- Boom-box, CD and DVD receiver, docking system
- Powered speaker
- Wireless audio

Description

AD82584 is a digital audio amplifier capable of driving 15W (BTL) each to a pair of 8Ω load speaker and 30W (PBTL) to a 4Ω load speaker operating at 24V supply without external heat-sink or fan requirement with play music. AD82584 is also capable of driving 4Ω, 10W (SE)x2 + 8Ω, 20W (BTL)x1 at 24V supply for 2.1CH application.

AD82584 can provide advanced audio processing functions, such as volume control, 20 EQ bands, audio mixing, 3D surround sound and Dynamic Range Control (DRC). These are fully programmable via a simple I^2C control interface. Robust protection circuits are provided to protect AD82584 from damage due to accidental erroneous operating condition. The full digital circuit design of AD82584 is more tolerant to noise and PVT (Process, Voltage, and Temperature) variation than the analog class-AB or class-D audio amplifier counterpart implemented by analog circuit design. AD82584 is pop free during instantaneous power on/off or mute/shut down switching because of its robust built-in anti-pop circuit.

Pin Assignment



Pin Description

PIN	NAME	TYPE	DESCRIPTION	CHARACTERISTICS
1	LA	O	Left channel output A	
2	VDDLA	P	Left channel supply A	
3	VDDLB	P	Left channel supply B	
4	NC		Not connected	
5	NC		Not connected	
6	NC		Not connected	
7	CLK_OUT	O	Clock output from PLL	TTL output buffer
8	PBTL	I	Stereo/Mono configuration pin (0:Stereo ; 1:Mono)	Schmitt trigger TTL input buffer, internal pull low with a 80Kohm resistor
9	DGND	P	Digital Ground	
10	NC		Not connected	
11	NC		Not connected	
12	NC		Not connected	
13	DVDD	P	Digital Power	
14	$\overline{\text{ERROR}}$	O	Error status, low active	Open-drain output
15	MCLK	I	Master clock input	Schmitt trigger TTL input buffer
16	NC		Not connected	

17	NC		Not connected	
18	NC		Not connected	
19	$\overline{PD}$	I	Power down, low active	Schmitt trigger TTL input buffer
20	LRCIN	I	Left/Right clock input (Fs)	Schmitt trigger TTL input buffer
21	BCLK	I	Bit clock input (64Fs)	Schmitt trigger TTL input buffer
22	SDATA	I	Serial audio data input	Schmitt trigger TTL input buffer
23	SDA	I/O	I^2C bi-directional serial data	Schmitt trigger TTL input buffer
24	SCL	I	I^2C serial clock input	Schmitt trigger TTL input buffer
25	$\overline{RESET}$	I	Reset, low active	Schmitt trigger TTL input buffer
26	NC		Not connected	
27	DVDD	P	Digital Power	
28	DGND	P	Digital Ground	
29	NC		Not connected	
30	NC		Not connected	
31	NC		Not connected	
32	NC		Not connected	
33	NC		Not connected	
34	VDDRB	P	Right channel supply B	
35	VDDRA	P	Right channel supply A	
36	RA	O	Right channel output A	
37	GNDR	P	Right channel ground	
38	NC		Not connected	
39	RB	O	Right channel output B	
40	NC		Not connected	
41	VDDRB	P	Right channel supply B	
42	NC		Not connected	
43	NC		Not connected	
44	VDDLB	P	Left channel supply B	
45	NC		Not connected	
46	LB	O	Left channel output B	
47	NC		Not connected	
48	GNDL	P	Left channel ground	