

Class-D Audio Power Amplifier with USB/I²S Interface

Features

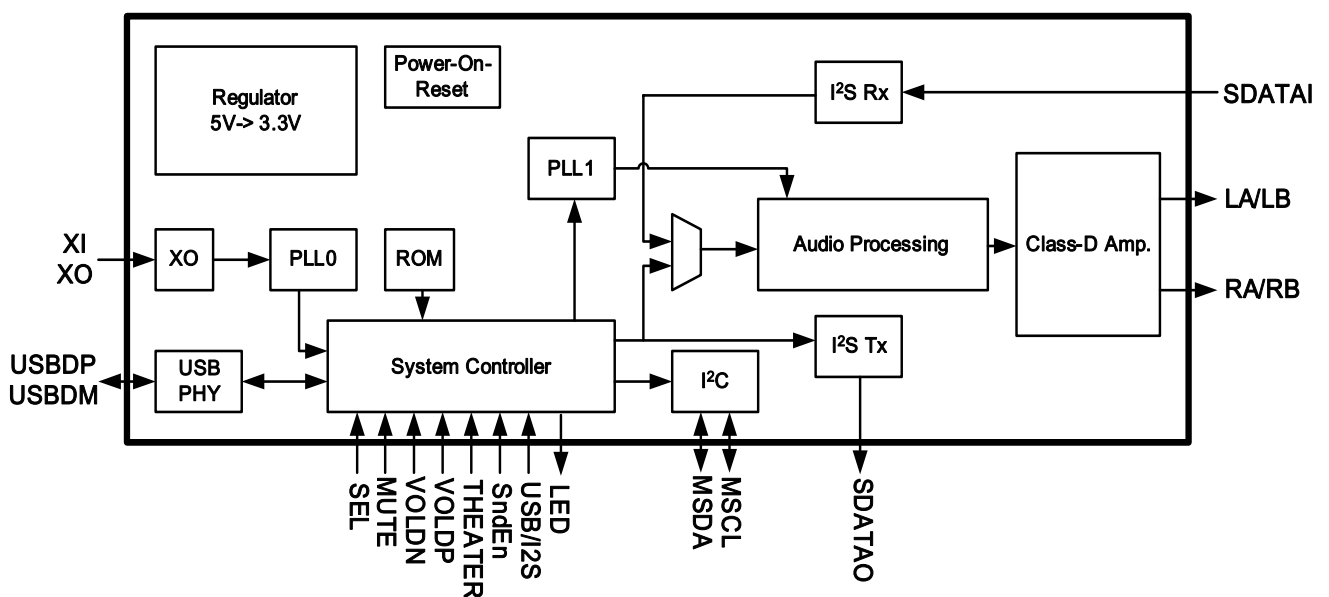
- True plug-and-play application, no driver is required for basic USB speaker application
- Supports Windows Me/2000/XP/Vista/7 and Mac OS
- Integration circuit quality meet **Windows 7 and Vista Hardware Logo** requirement
- Compliant with USB Specification v1.1, and USB 2.0 full speed
- Can work directly with a USB3.0 port
- Embedded high efficiency, high performance Class-D stereo amplifier
- Support both bus-powered and self-powered operation
- Support I²S input and I²S output interface of master mode
- +6dB Gain enhancement (Theater function)
- Sampling frequency 44.1/48KHz
- Support volume/mute control with external button
- LED indicator function
- Support 3D surround sound
- Built-in 5V to 3.3V regulator for internal device operation
- Loudspeaker PSNR & DR (A-weighting) 91dB (PSNR), 92dB (DR) with Bead filter

- Anti-pop design
- Over-temperature protection
- Under-voltage shutdown
- Short-circuit detection
- External EEPROM interface for vendor specific and hardware configuration
- Embedded Power-On-Reset circuit
- The I²S output port allows other high performance audio device (i.e. AD8356/AD82581B)
- 12 MHz crystal input
- 3.3V operation with 5V tolerate I/O
- 32-pin LQFP Pb-free package

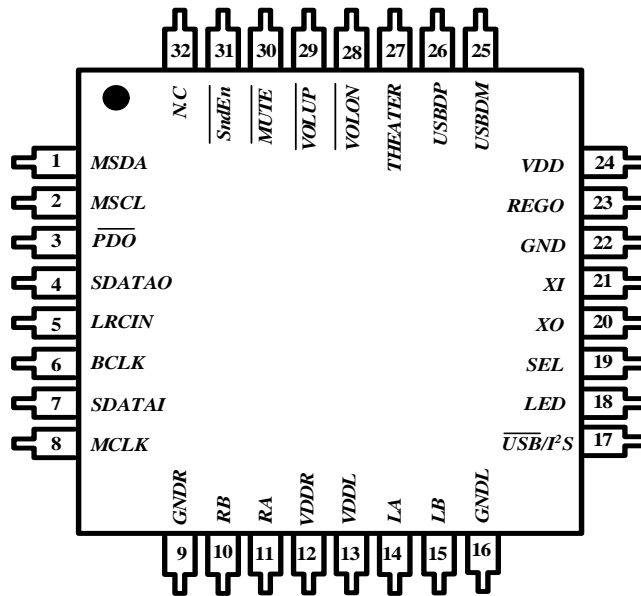
Description

AD62550 is a single chip of Class-D audio amplifier with USB/I²S interface. When using the power supplied from the USB port, AD62550 can drive a pair of up to 1W speakers due to the built-in, high efficiency and high performance Class-D amplifiers. The device also has an I²S input port and I²S output port. The I²S input port allows other external audio sources to use the Class-D amplifier to share the speakers. The I²S output port allows other high performance audio device (i.e. AD8356/AD82581B).

Functional Block Diagram



Pin Assignment



Pin Description

Pin	Name	Type	Description	Characteristics
1	MSDA	I/O	I ² C's SDA of master mode	5V tolerant Schmitt trigger TTL input buffer
2	MSCL	O	I ² C's SCL of master mode	
3	\overline{PDO}	O	Power-down output	
4	SDATAO	O	Serial audio output	
5	LRCIN	O	L/R clock output	
6	BCLK	O	BCLK output	
7	SDATAI	I	Serial audio data input	5V tolerant Schmitt trigger TTL input buffer
8	MCLK	O	Master clock(256xFs)	
9	GNDR	P	Ground for right channel	
10	RB	O	Right channel output-	
11	RA	O	Right channel output+	
12	VDDR	P	Supply for right channel	
13	VDDL	P	Supply for left channel	
14	LA	O	Left channel output+	
15	LB	O	Left channel output-	
16	GNDL	P	Ground for left channel	
17	$\overline{USB/I^2S}$	I	Signal input mode selection 0: USB mode; 1: I ² S mode	5V tolerant Schmitt trigger TTL input buffer
18	LED	O	LED indicator	
19	SEL	I	The external amplifier adopted 0: AD8356; 1: AD82581B	5V tolerant Schmitt trigger TTL input buffer With internal pull-up resistor

20	XO	O	Crystal output	
21	XI	I	Crystal input	
22	GND	P	Ground	
23	REGO	P	3.3V Regulator output	
24	VDD	P	5V supply voltage	
25	USBDM	I/O	USB data D-	
26	USBDP	I/O	USB data D+	With internal pull-up resistor
27	THEATER	I	Theater mode, high active	5V tolerant Schmitt trigger TTL input buffer
28	$\overline{\text{VOLDN}}$	I	Volume down, low active	With internal pull-up resistor
29	$\overline{\text{VOLUP}}$	I	Volume up, low active	With internal pull-up resistor
30	$\overline{\text{MUTE}}$	I	Power-down and mute of Class-D, Low active	With internal pull-up resistor
31	$\overline{\text{SndEn}}$	I	Surround enable, high active	With internal pull-up resistor
32	N.C.			

Ordering Information

Product ID	Package	Packing	Comments
AD62550-LA32NAY	LQFP-32L 7 x7 mm	Tray	Green

Available Package

Package Type	Device No.	$\theta_{ja} (^{\circ}\text{C}/\text{W})$	$\theta_{jc} (^{\circ}\text{C}/\text{W})$
LQFP-32	AD62550	59.9	17

Note 1: θ_{ja} is measured on a room temperature ($T_A=25^{\circ}\text{C}$), natural convection environment test board, which is constructed with a thermally efficient, 2-layers PCB. The measurement is tested using the JEDEC51-3 thermal measurement standard.

Note 2: θ_{jc} represents the heat resistance for the heat flow between the chip and the package's top surface.

Marking Information

AD62550

Line 1 : LOGO

Line 2 : Product no.

Line 3 : Tracking Code

Line 4 : Date Code

