

## **USB Audio Controller with Class-D Power Amplifier & with Microphone/Line-in Interface**

### **Features**

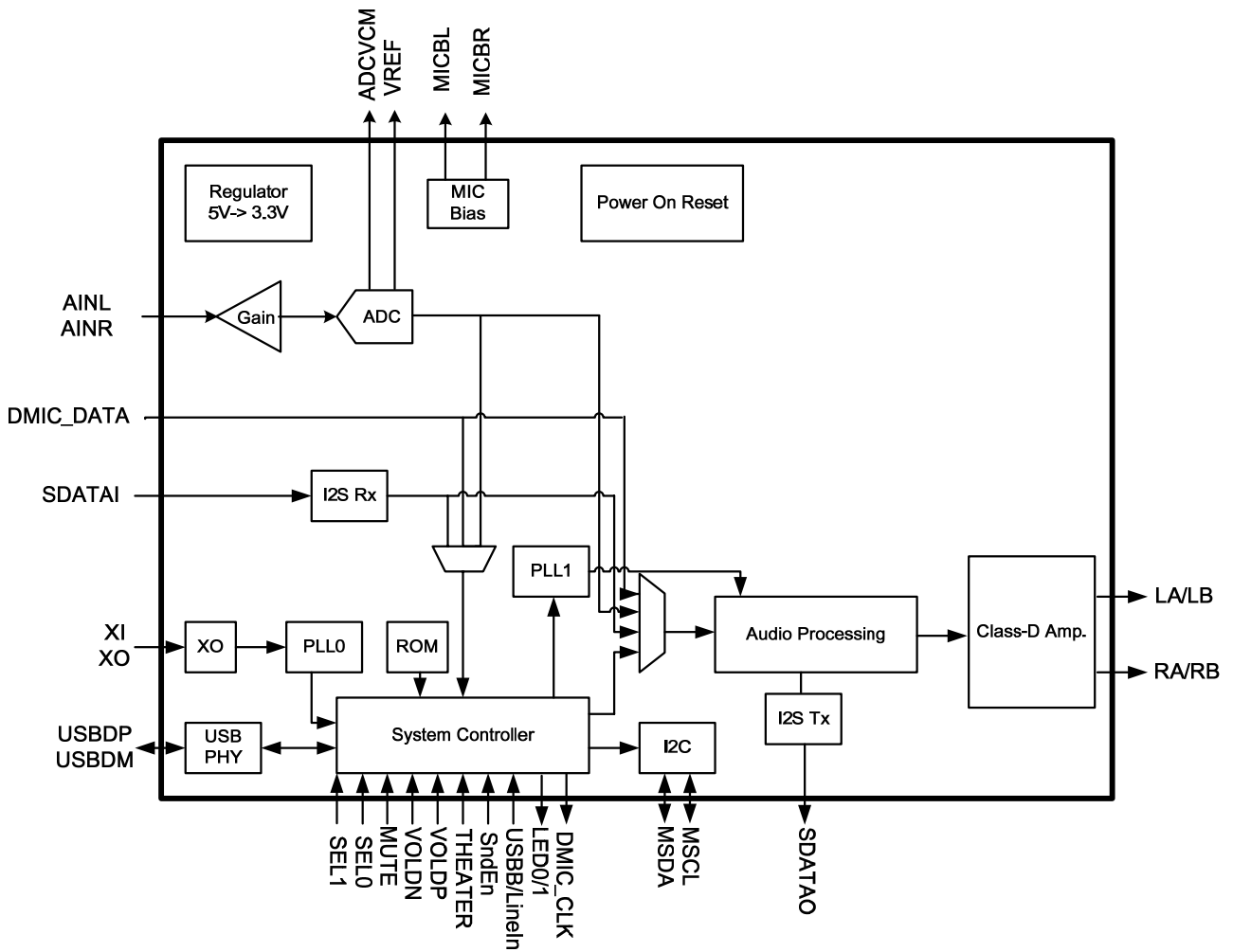
- Compliant with USB Specification v1.1, and USB 2.0 full speed
- Compliant with USB 3.0 super speed operation
- Embedded stereo ADC with Microphone Boost
- Embedded Power-On-Reset circuit
- Embedded high efficiency, high performance Class-D stereo amplifier
- Support I<sup>2</sup>S input (master and slave mode) and I<sup>2</sup>S output interface (master mode)
- Support sampling frequency 44.1/48KHz for playback and recording
- Pin to set recording source from internal ADC or external ADC
- Pin to set speaker mode or I<sup>2</sup>S output mode
- Support Microphone and line-in function switching
- Support volume/mute control with external button
- LED indicator function for playback, mute and recording mute
- Support 3D surround sound
- Support Microphone bias
- Support Digital microphone interface for recording
- Power Clipping function for speaker protection
- External EEPROM interface for vendor specific and hardware configuration via I<sup>2</sup>C
- I<sup>2</sup>S input port allows AD62557 to receive ESMT's high performance ADC (i.e. AD12250)
- I<sup>2</sup>S output port allows AD62557 to control ESMT's high performance audio devices (i.e. AD82586/AD82581)
- PWM output port to drive PWM Class-D audio device (i.e. AD9258)
- Loudspeaker PSNR & DR (A-weighting, I<sup>2</sup>S input) 86dB (PSNR), 88dB (DR) with bead filter
- Loudspeaker output power with external power  
2.1W x2CH into 4Ω@10% THD+N  
1.4W x2CH into 8Ω@10% THD+N
- Efficiency with bead filter  
75% for 8Ω load @ Po = 1.4W x 2CH  
70% for 4Ω load @ Po = 2.1W x 2CH

- Built-in 5V to 3.3V regulator for internal device operation
- Anti-pop design
- Over-temperature protection
- Under-voltage shutdown
- Short-circuit detection
- Single 12 MHz Crystal Input
- 3.3V operation I/O
- Supports Windows Me/2000/XP/Vista/7/8, Linux and MacOS
- Integration circuit quality meet Win7 and Win8 *Hardware Logo* requirement
- 48-pin E-LQFP Pb-free package

### **Description**

AD62557 is a highly integrated USB single chip for Stereo/Mono speaker. Many useful features are programmable with pins or I<sup>2</sup>C control. When using the power supplied from the USB port (USB 3.0), AD62557 can drive a pair of up to 2.1W into 4ohm speakers due to the built-in, high efficiency and high performance Class-D amplifiers. The device also has an I<sup>2</sup>S input port and I<sup>2</sup>S output port. The I<sup>2</sup>S input port allows other external audio sources to use the Class-D amplifier to share the speakers. The I<sup>2</sup>S output port allows other high performance audio device (i.e. AD82586/AD82581).

**Functional Block Diagram**



## Order Informaton

Product ID	Package	Packing / MPQ	Comments
AD62557-LG48NAY	E-LQFP-48L (7x7 mm)	2.5K Units / Small Box (250 Units / Tray, 10 Trays / Small Box	Green

## Available Package

Package Type	Device No.	$\theta_{ja}$ (°C/W)	$\Psi_{jt}$ (°C/W)	$\theta_{jt}$ (°C/W)	Exposed Thermal Pad
E-LQFP-48L	AD62557	27.4	1.33	6.0	Yes (Note1)

Note 1.1: The thermal pad is located at the bottom of the package. To optimize thermal performance, soldering the thermal pad to the PCB's ground plane is suggested.

Note 1.2:  $\theta_{ja}$  is measured on a room temperature ( $T_A=25^\circ\text{C}$ ), natural convection environment test board, which is constructed with a thermally efficient, 4-layers PCB (2S2P). The measurement is tested using the JEDEC51-5 thermal measurement standard.

Note 1.3:  $\theta_{jt}$  represents the heat resistance for the heat flow between the chip and the package's top surface.

Note 1.4:  $\Psi_{jt}$  represents the heat resistance for the heat flow between the chip and the package's top surface center.

## Marking Information

AD62557

Line 1 : LOGO

Line 2 : Product no.

Line 3 : Tracking Code

Line 4 : Date Code

