USB Audio Controller with Headphone Driver & with Microphone/Line-in Interface

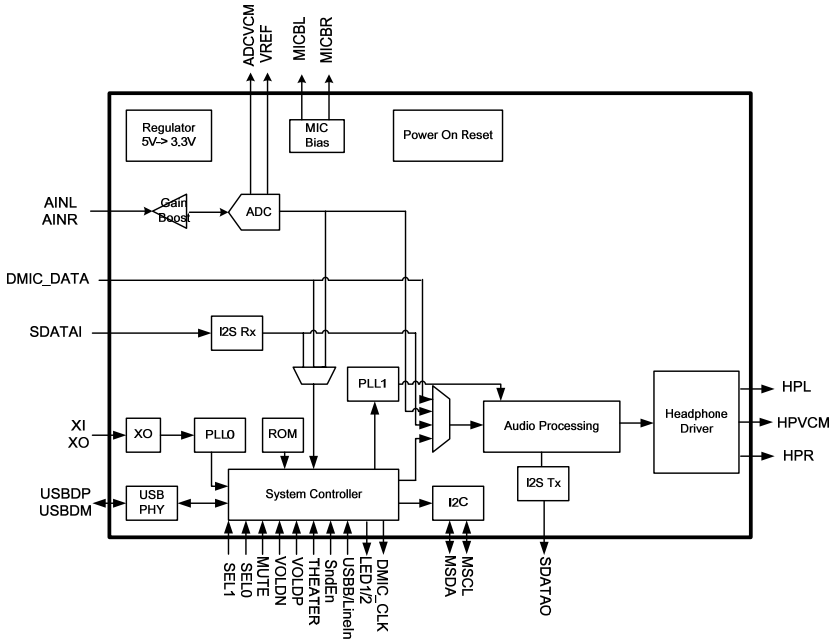
Features

- 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 Headphone driver
- Support I2S input (master and slave mode) and I2S 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 Headphone mode or I2S 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 I2C
- I2S input port allows AD62556 to receive ESMT's high performance ADC(i.e. AD12250)
- I2S output port allows AD62556 to control ESMT's high performance audio devices (i.e. AD82586/AD82581)
- 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

Description

AD62556 is a highly integrated USB single chip for headphone. Many useful features are programmable with pins or I2C control. The device also has an I^2S input port and I^2S output port. The I^2S input port allows other external audio sources to use the class D amplifier to share the headphone. The I^2S output port allows other high performance audio device (i.e. AD82586/AD82581B).

Functional Block Diagram



Order Informaton

Product ID	Package	Packing / MPQ	Comments
AD62556-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.	θ_{ja}(℃/W)	Ψ_{jt}(℃/W)	θ_{jt}(℃/W)	Exposed Thermal Pad
E-LQFP-48L	AD62556	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: θ_{ja} is simulated on a room temperature (T_A=25℃), natural convection environment test board, which is constructed with a thermally efficient, 4-layers PCB (2S2P). The simulation is tested using the JEDEC51-5 thermal measurement standard.

Note 1.3: Ψ_{jt} represents the heat resistance for the heat flow between the chip and the package's top surface. It is extracted from the simulation data to obtain θ_{ja}.

Note 1.3: θ_{jt} represents the heat resistance for the heat flow between the chip and the package's top surface. It is simulated a cold plate on the top of the package.

Marking Information

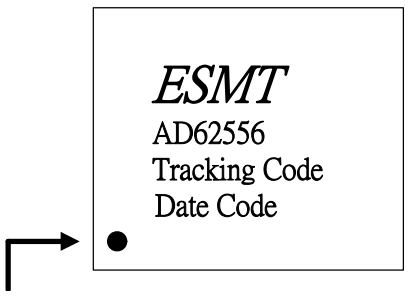
AD62556

Line 1 : LOGO

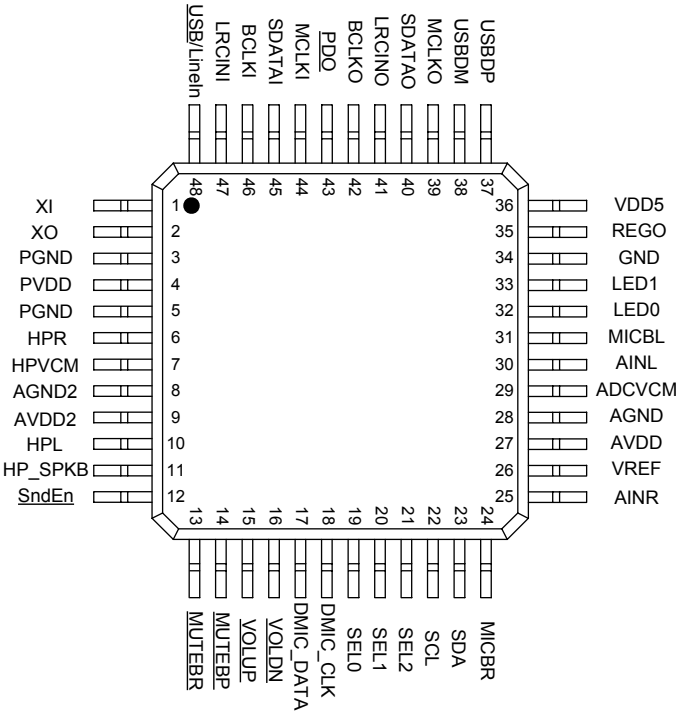
Line 2 : Product no.

Line 3 : Tracking Code

Line 4 : Date Code



Pin Assignment



Pin Description

Pin	Name	Type	Description	Characteristics
1	XI	I	Crystal input	With internal 1Mohm resistor connected to the pin of XO
2	XO	O	Crystal output	
3	PGND	P	Ground	
4	PVDD	P	Supply 5V	
5	PGND	P	Ground	
6	HPR	O	Headphone right channel output	
7	HPVCM	O	Headphone common-mode voltage decoupling pin	
8	AGND2	P	Headphone ground	
9	AVDD2	P	Headphone 5V supply	
10	HPL	O	Headphone left channel output	
11	HP_SPKB	I	0:I2S output mode 1:headphoone mode	3.3V Schmitt trigger TTL input buffer
12	$\overline{\text{SndEn}}$	I	Surround enable	With internal 100kohm pull-up resistor
13	$\overline{\text{MUTEBR}}$	I	Recording Mute	With internal 100kohm pull-up resistor
14	$\overline{\text{MUTEBP}}$	I	Power-down and mute of headphone	With internal 100kohm pull-up resistor