ESS Technology, Inc.

ES1921
AC '97 Rev 2.1 Audio CODEC
Data Sheet

DESCRIPTION

The ES1921 audio codec is a combination codec and audio mixer device that is fully compliant with Rev. 2.1 of Intel's Audio Codec' 97 (AC'97) Component Specification. When used with the ESS Maestro™ family of PCI-based digital audio accelerators, the ES1921 helps complete a superior high-performance PCI audio subsystem solution for both desktop and notebook computers.

The ES1921 audio codec supports full-duplex stereo operation for simultaneous record and playback. Voice, sound, and music are regularly sampled for record and playback at 48 kHz. The playback mixer has four stereo inputs and two mono inputs. The record multiplexer has five stereo inputs and three mono inputs, while the mixer includes three outputs. Line Out can be used for stereo output to multimedia speakers while Mono Out can be used to output to a telephony subsystem or down-line phone.

The major functions of the ES1921 include stereo 18-bit ADC and DAC audio signal conversion while also providing the interface and control logic to transfer audio data between its serial I/O terminals and the digital audio accelerator. The ES1921 uses its six line-level inputs, its three outputs and the TDM-based serial AC-Link to transfer data between itself and a digital audio accelerator, such as the ESS Maestro™ family of PCI-based digital audio accelerators.

The ES1921 may be used as a primary or secondary CODEC in multiple codec configurations conforming to the AC'97 Rev. 2.1 specification. The ES1921's conformance to AC'97 in multiple codec configurations allows it to be used both in 2- and 4-speaker audio-only solutions and in audio-modem solutions for motherboards, add-on cards, or PCMCIA cards. The ES1921 is available in an industry-standard 48-pin Thin Quad Flat Pack (TQFP).

FEATURES

- Meets or exceeds Audio CODEC '97 Rev. 2.1 performance specifications
- Supports dual-codec architecture for configuration with one ES1921 in notebook and one in docking station
- Supports AC-Link digital serial interface
- 4 stereo inputs for line-in, CD, video, and auxiliary line-in
- 2 selectable mono inputs for microphone sharing a single mixer input and 1 mono input for phone
- PC speaker input
- 2 stereo outputs for line-out such as multimedia speakers and DVD Pure Audio
- Usable in desktop, motherboard, notebook and sound card applications, 3D audio applications and in audio-modem applications

Record and Playback Features

- Full-duplex stereo operation for simultaneous record and playback
- 18-bit stereo ADC and DAC; 3rd 18-bit ADC for mic input
- 48 kHz playback and record sample rate

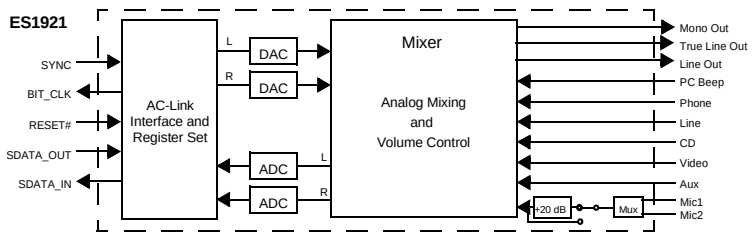
Power

- Advanced Configuration and Power Interface (ACPI) support using an external amplifier power down control
- 3.3 V or 5.0 V digital and 5.0 V analog power supply (AV_{DD} >= DV_{DD})

Compatibility

- Meets Microsoft PC99 specifications for Baseline and Advanced Audio with FAQ updates and with Rev. 2.1 of Intel's Audio CODEC '97 specification

BLOCK DIAGRAM



PINOUT

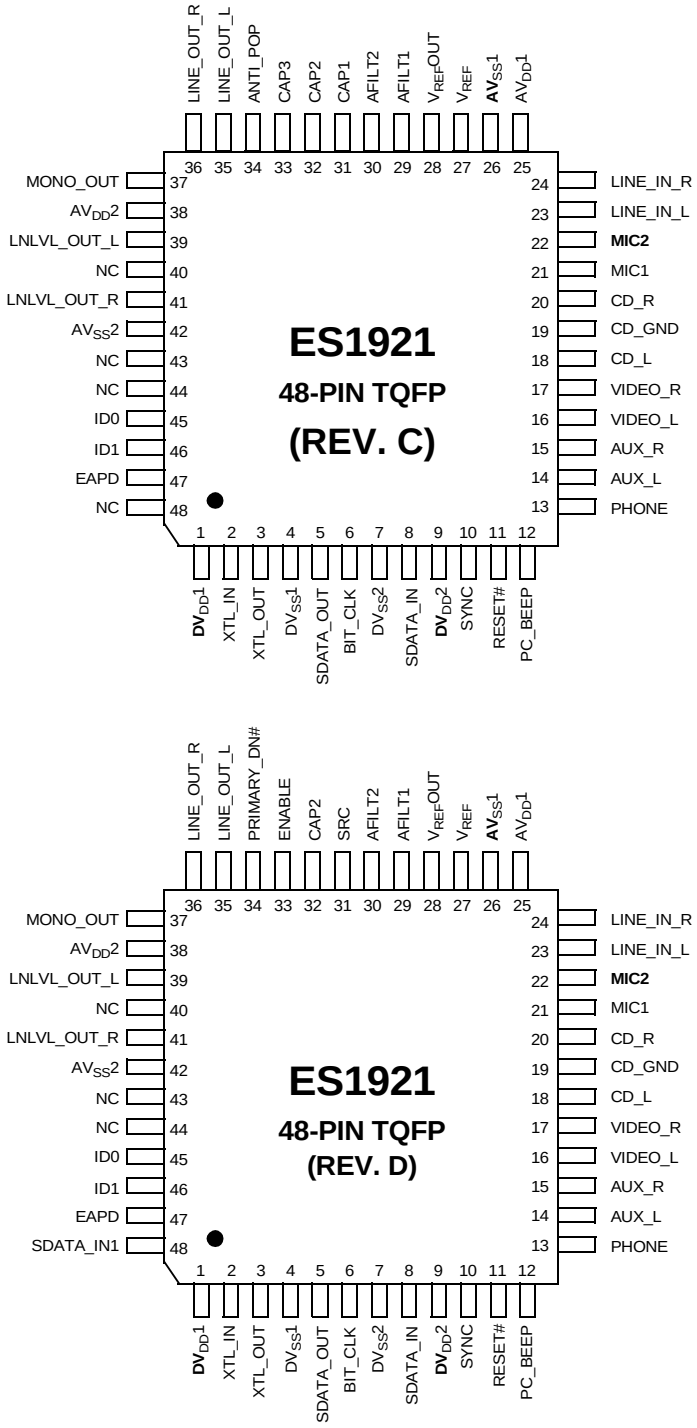
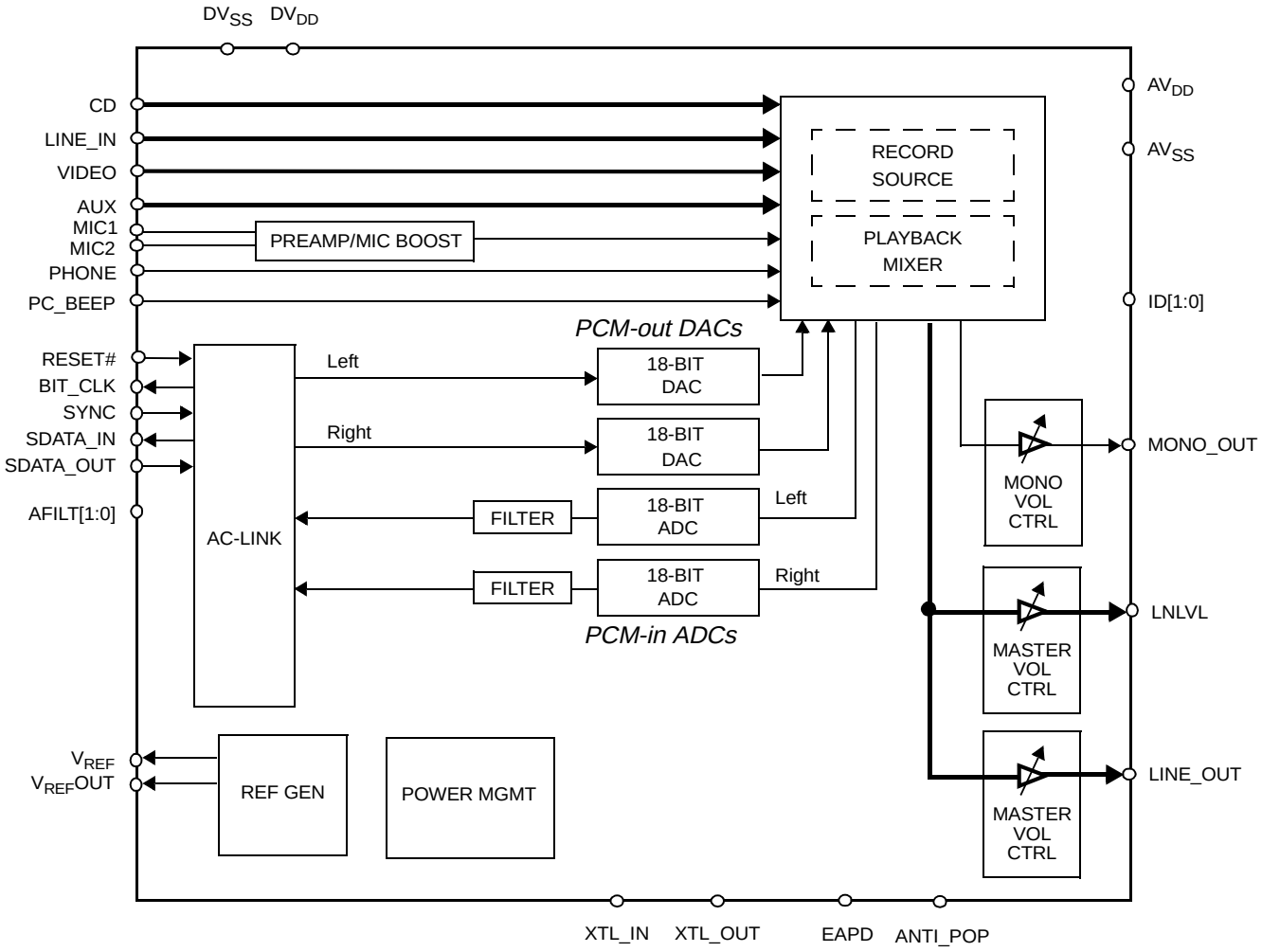
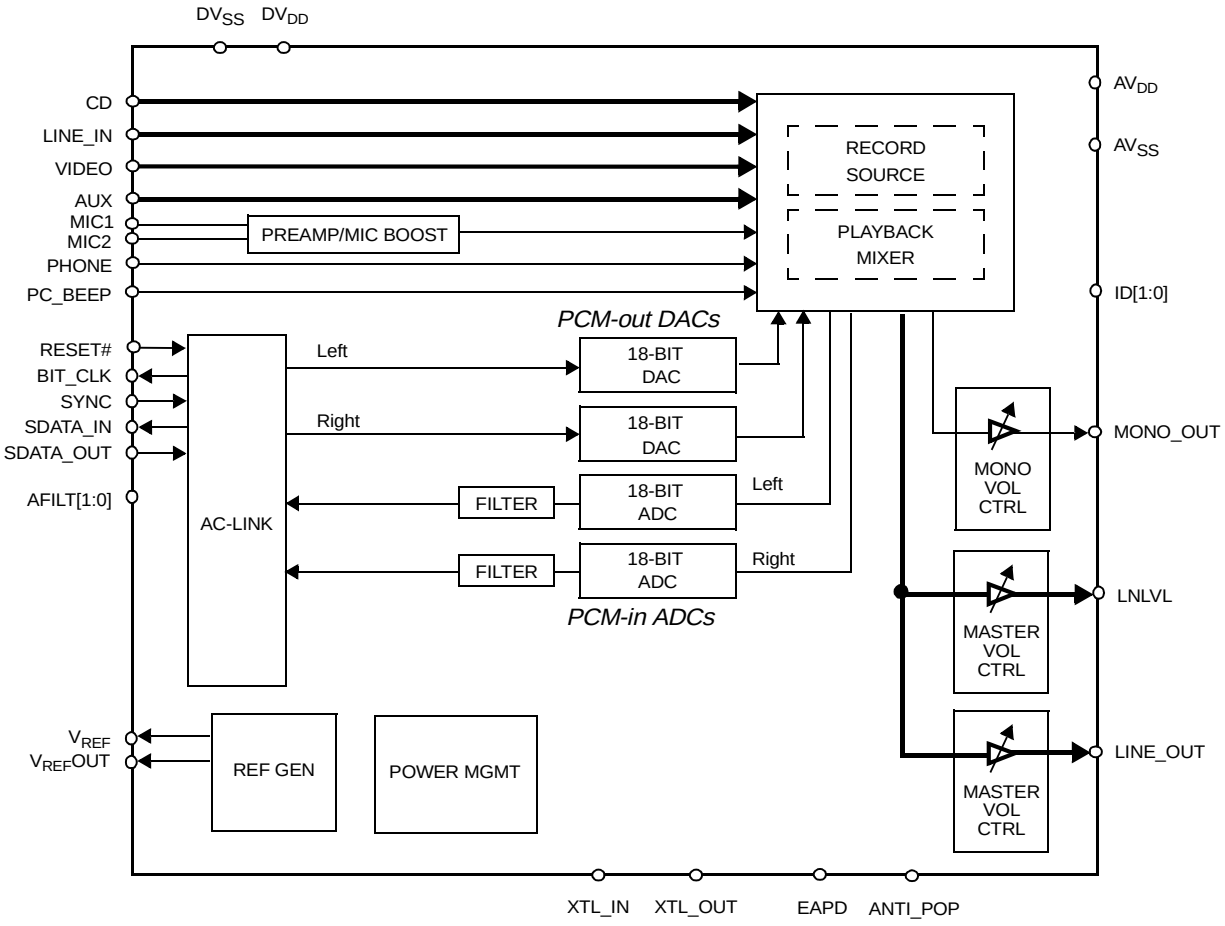


Figure 1 ES1921 Revision C and Revision D Pinouts

REV. C BLOCK DIAGRAM



REV. D BLOCK DIAGRAM



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