Integrating Mixed-Signal Solutions

PRODUCT BRIEF

STAC9756/57

Two Channel AC'97 Codecs with I²S Digital I/O and SPDIF Output

OVERVIEW

Stereo AC'97 codecs with I²S inputs as well as I²S and SPDIF outputs.

FEATURES

- **High performance ΣΔ technology**
- **18-bit full duplex stereo ADC, DACs**
- **Independent sample rates for ADC & DACs**
- **5-Wire AC-Link protocol compliance**
- **ZV-Port I²S digital input**
- **I²S digital I/O and SPDIF output**
- **Digital-ready status**
- **20 dB microphone boost capability**
- **+3.3V (STAC9757) and +5V (STAC9756) analog power supply options**
- **Pin compatible with the STAC9700/21/44**
- **SigmaTel Surround (SS3D) Stereo Enhancement**
- **Energy saving dynamic power modes**
- **Multi-Codec option (Intel AC'97 rev 2.1)**
- **Six analog line-level inputs**
- **98 dB SNR LINE-LINE**
- **SNR > 95 dB through Mixer and DAC**

DESCRIPTION

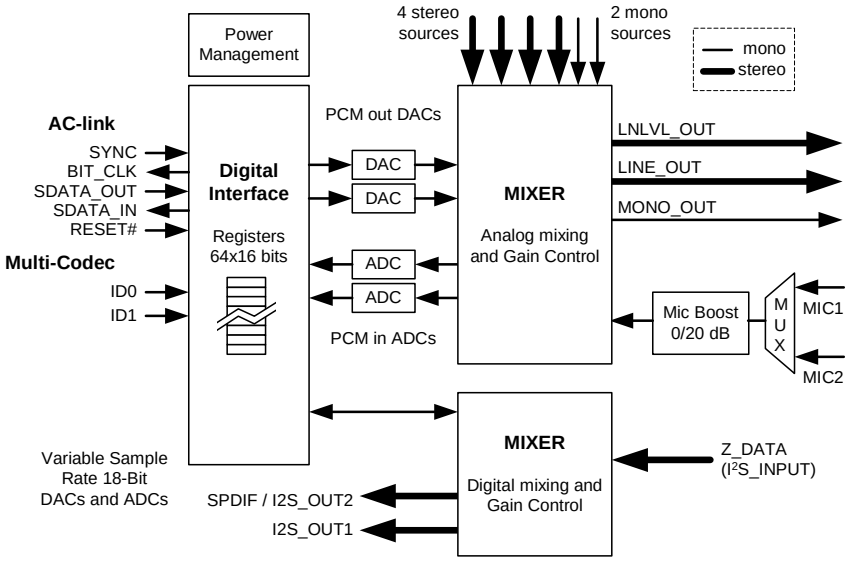
SigmaTel's STAC9756/57 are general purpose 18-bit, full duplex, audio codecs conforming to the analog component specification of AC'97. The STAC9756/57 incorporate SigmaTel's proprietary ΣΔ technology to achieve a DAC SNR in excess of 95 dB. The DACs, ADCs, and mixer are integrated with analog I/Os, which include four analog line-level stereo inputs, two analog line-level mono inputs, two stereo outputs, and one mono output channel. The STAC9756/57 include digital input output capability for support of modern PC systems. There is an I²S input for ZV-Port audio, a dedicated I²S output and an output that supports either I²S or the SPDIF format. The STAC9756/57 is a standard 2-channel stereo codec. With SigmaTel's 3D stereo enhancement (SS3D) on LINE OUT, the user gains a richer and livelier listening experience. The STAC9756/57 may be used as a secondary codec, with the STAC9700/21/44/56/08 as the primary, in a multiple codec configuration conforming to the AC'97 Rev. 2.1 specification. This configuration can provide true six-channel playback with support for DVD applications. The STAC9756/57 communicates via the five-wire AC-Link to any digital component of AC'97 providing flexibility in the audio system design. The microphone input and mono mixer output can be recorded simultaneously, thus allowing for an all-digital output in support of the digital-ready initiative. Packaged in an AC'97 compliant 48-pin TQFP, the STAC9756/57 can be placed on the motherboard, daughter boards, PCI, AMR, CNR, or ACR cards.

ORDERING INFORMATION

Part Number	Package	Temp Range	Supply Range
STAC9756T	48-pin TQFP 7mm x 7mm x 1.4mm	0° C to +70° C	DVdd = 3.3V, AVdd = 5.0V
STAC9757T	48-pin TQFP 7mm x 7mm x 1.4mm	0° C to +70° C	DVdd = 3.3V, AVdd = 3.3V

2-9756-P1-3.0-0201

STAC9756/57
BLOCK DIAGRAM



KEY SPECIFICATIONS

- **Analog LINE_OUT SNR: 103 dB**
- **Digital DAC SNR: 98 dB**
- **Digital ADC SNR: 87 dB**
- **Full-scale Total Harmonic Distortion: 0.02%**
- **Crosstalk between Input Channels: -70 dB**
- **Spurious Tone Rejection: 100 dB**

RELATED MATERIALS

- **Data Sheet**
- **Reference Designs for MB, CNR, ACR and PCI applications**
- **Audio Precision Performance Plots**

ADDITIONAL SUPPORT

Additional product and company information can be obtained by going to the SigmaTel website at:
www.sigmatel.com