A DIVISION OF CIRRUS LOGIC®

CS5394

117 dB, 48 kHz Audio A/D Converter

The following information is based on technical datasheet:

CS5394 DS258PP3 NOV '96

Please contact Cirrus Logic:
Crystal Semiconductor Products Division
for further product information.

CRYSTAL SEMICONDUCTOR PRODUCTS DIVISION PRODUCT INFORMATION

PI258PP1 JAN '98

117 dB, 48 kHz Audio A/D Converter

Features

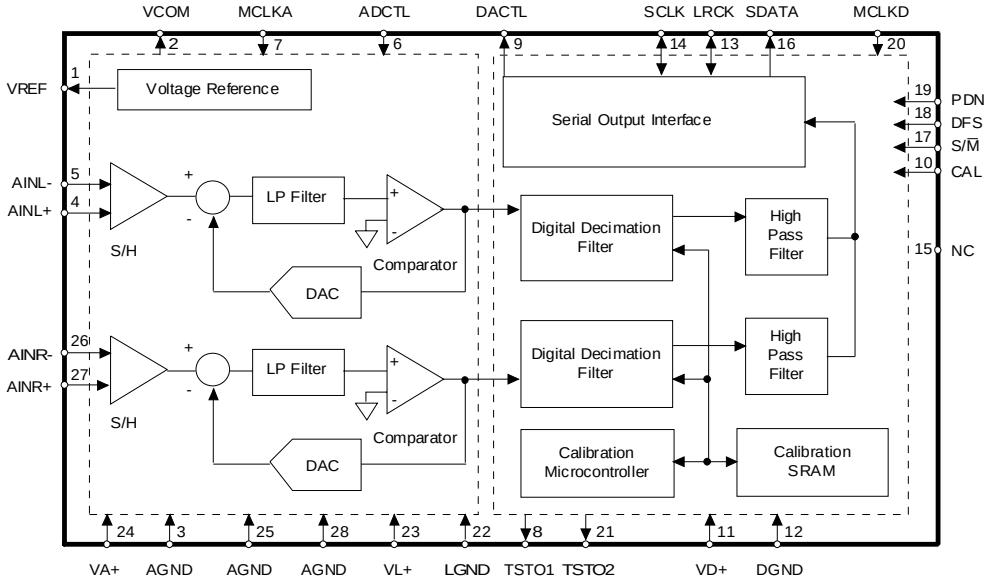
- 24-Bit Resolution
- Complete CMOS Stereo A/D System
  - Delta-Sigma A/D Converters
  - Digital Anti-Alias Filtering
  - S/H Circuitry and Voltage Reference
- Adjustable System Sampling Rates including 32 kHz, 44.1 kHz and 48 kHz
- 117 dB Dynamic Range (A-Weighted)
- Low Noise and Distortion >103 dB THD + N
- Differential Analog Circuitry
- Internal 64x Oversampling
- Linear Phase Digital Anti-Alias Filtering with >117 dB Stopband Attenuation
- Single +5 V Power Supply
- Power Down Mode

Description

The CS5394 is a complete analog-to-digital converter for stereo digital audio systems. It performs sampling, analog-to-digital conversion and anti-alias filtering, generating 24-bit values for both left and right inputs in serial form. The output sample rate can be up to 50 kHz per channel.

The CS5394 uses 7th-order, delta-sigma modulation with 64x oversampling followed by digital filtering and decimation, which removes the need for an external anti-alias filter. The ADC uses a differential architecture which provides excellent noise rejection.

The CS5394 has a linear phase filter with passband of dc to 22.1 kHz, 0.005 dB passband ripple and >117 dB stopband rejection. The CS5394 is targeted for the highest performance professional audio systems requiring wide dynamic range, negligible distortion and low noise.



Overview

The CS5394 is a 24-bit, stereo A/D converter designed for stereo digital audio applications. The device uses a patented, 7th-order tri-level delta-sigma modulator to sample the analog input signals at 64 times the output sample rate (Fs) of the device. Sample rates of up to 50 kHz are supported. The analog input channels are simultaneously sampled by separate delta-sigma modulators. The resulting serial bit streams are digitally filtered, yielding pairs of 24-bit values. This technique yields nearly ideal conversion performance independent of input frequency and amplitude. The converter does not require difficult-to-design or expensive anti-alias filters and it does not require external sample-and-hold amplifiers or voltage references.

An on-chip voltage reference provides for a differential input signal range of 4.0 Vpp. The device also contains a high pass filter, implemented digitally after the decimation filter, to eliminate any internal offsets in the converter or any offsets present at the input circuitry to the device. Output data is available in serial form, coded as 2's complement 24-bit numbers. The typical power consumption of 740 mW can be reduced by use of the power-down mode.

Ordering Information

CS5394-KS	-10° to 70°C	28-pin SOIC

For further information on Crystal products, please visit our website "www.crystal.com" or call our literature department (800) 888-5016 ext. 3594 or (512) 912-3594 for data sheets and application notes.

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