

## High Performance Low-Latency Quad ADC

The AK5388 is a 24-bit, 216kHz sampling rate 4-channel A/D converter for high-end audio systems. The AK5388 achieves 120dB dynamic range and -110dB THD+N, and an optional dual-mono mode extends dynamic range to 123dB for stereo operation. The AK5388's digital filter features a modified FIR architecture that minimizes group delay while maintaining excellent linear phase response. The modulator in the AK5388 uses AKM's Enhanced Dual Bit architecture, enabling the AK5388 to realize high accuracy and low cost. The device is ideal for professional audio applications including digital recording, sound reinforcement, effects processing, sound cards, and high-end A/V receivers. The low-latency feature is ideal for live sound applications. The AK5388 is available in a 44-pin LQFP package.

### FEATURES

- High performance 24-bit 216kHz quad ADC
- Wide dynamic range
  - ♦ 120dB (quad mode); 123dB (dual mono mode)
- Low distortion (THD+N)
  - ♦ -110dB
- Low-latency digital filter
  - ♦ 12.6/fs group delay
  - ♦ Low phase distortion:  $\pm 0.01\mu\text{s}$  @ 48kHz fs
- TDM interface
  - ♦ 8-channels at 48kHz fs
  - ♦ 4-channels at 96kHz fs
  - ♦ 4-channels at 192kHz fs
- Differential inputs
- Master and slave mode
- Power supply
  - ♦ +5V (analog); +3.3V (digital)
- 44-pin LQFP package

### APPLICATIONS

- Digital mixing consoles
- Live sound mixers
- Musical instruments
- Firewire / USB audio interface gear
- Sound cards
- Outboard audio converters
- A/V receivers
- DSP-based sound reinforcement

### BENEFITS

- Superior multi-channel audio performance
  - ♦ Ideal for high-end multi-channel applications
- Low-latency filter ideal for live sound
  - ♦ Low latency FIR filter delivers best sound quality
- Excellent cost / performance / channel count ratio

#### About **Audio4pro™**

**Audio4pro™** identifies the products with the highest performance to meet demanding pro applications such as recording and live sound. Performance and sound quality are among the highest in the industry for this select group of products.



### VALUE PROPOSITION

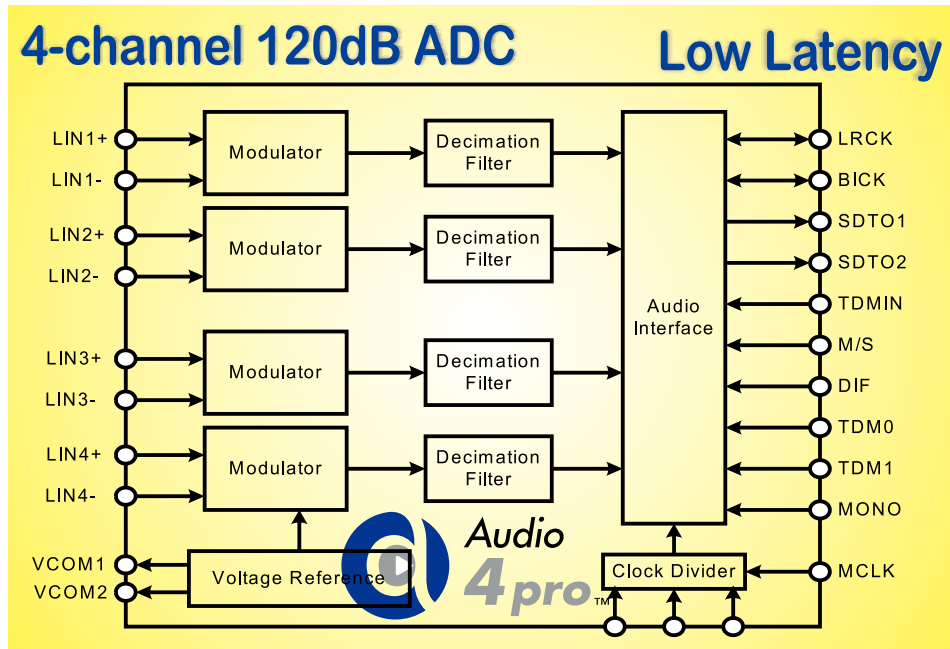
The AK5388 is a revolutionary pro-audio ADC. It is the only 4-channel ADC that includes a high-performance stereo mode (dual-mono mode), as well as a low-latency FIR digital filter. The choice between 120dB quad mode and 123dB dual-mono mode provides flexibility for the designer. The AK5388 is a major upgrade from competing 4-channel parts, and it provides a superior cost:performance ratio.

#### Audio Performance

The AK5388 provides 120dB dynamic range in its nominal 4-channel mode. In mono mode, where the input signal is applied to both left and right channels, dynamic range is boosted to 123dB. Since the AK5388 is a 4-channel ADC, the mono mode provides two channels. In either mode, THD+N performance is -110dB, which is a -10dB improvement over the quad AK5384 from AKM, and a -5dB improvement over the quad PCM4204 from TI.

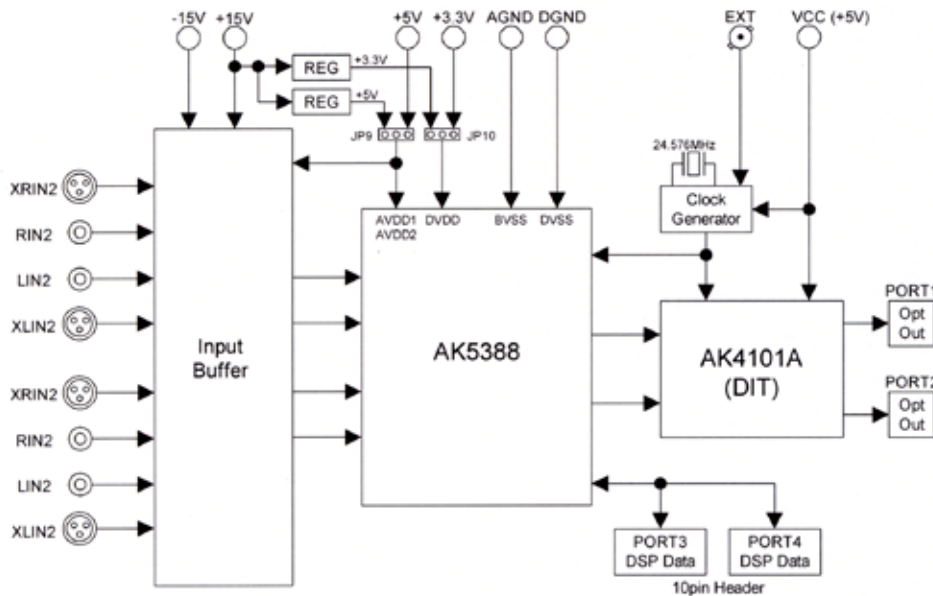
#### Low Latency

This has become an issue for applications, and it can make a difference in live sound and musical instrument applications. Low-latency solutions have employed short-delay IIR filters, but that filter architecture is not phase-linear - certain frequencies are delayed by the filter, called phase distortion. The AK5388 uses a modified FIR architecture, which provides a very short delay of 12.6/fs for any sampling frequency. The AK5388 digital filter oversamples at 64-times for all sampling frequencies, so latency is consistent for any sampling frequency.



Production samples of the AK5388 are available immediately, and mass production quantities will be available in CQ2 2009.

An evaluation board, the AKD5388, is currently available.



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