1. General Description

The AK9255A/56A are 16/14-bit 0.54MSPS ZDS-NS (*1) A/D converters. They have noise suppression function and are capable of improving the system accuracy. The AK9255A/56A are available in a small package, saving space on the printed circuit board.

Notes:
* 1. ZDS-NS: Zero latency Delta Sigma with Noise Suppression Function

A ZDS-NS A/D converter realizes ultrafast response of SAR while maintaining high accuracy conversion like a delta-sigma converter, based on AKM’s accumulated experience and know-how in analog-digital LSI technology. A ZDS-NS A/D converter has smaller input capacitance than SARs, reducing the buffer load of the input stage of the IC. Furthermore, the oversampling process is executed inside of the IC, and the averaging process is carried out with a built-in digital filter. Therefore, analog input signal noise can be suppressed, contributing to improving noise characteristics of the system. It also contributes to high-speed processing of a system that needs a noise averaging.

Application
- Motor Control: Position Measurement Using SinCos Encoders
- Three-Phase Power Controls
- Programmable Logic Controllers
- Power Quality Measurement
- Industrial Automation

2. Features

- 2ch Simultaneous Sampling ZDS-NS A/D Converter
- Resolution, Sampling Rate: 16-bit, 0.54 MSPS AK9255A
  - 14-bit, 0.62 MSPS AK9256A
- Differential Input / Pseudo Differential Input
- Noise Suppression Function
- 16bit No Missing Code INL: ±3.0 LSB(Typ.) AK9255A
  - 14bit No Missing Code INL: ±1.0 LSB(Typ.) AK9256A
- S/N
  - 86 dBFS(Typ.) AK9255A (NS Setting1)
  - 90 dBFS(Typ.) AK9255A (NS Setting4)
  - 82 dBFS(Typ.) AK9256A (NS Setting1)
  - 85 dBFS(Typ.) AK9256A (NS Setting4)
- Power Dissipation:
  - VDD: 26 mA (Typ.)
  - DRVDD: 0.3 mA (Typ.)
  - (fs= 0.54MSPS, VDD= 3.3 V, DRVDD= 3.3 V, NS Setting1)
- Power Supply:
  - VDD: 3.0 ~ 3.6 V
  - DRVDD: 3.0 ~ 3.6 V
- Operating Temperature Range: -40 ~ 105 °C
- Package: Small 16-pin QFN (3mm x 3mm, 0.5mm pitch)
3. Block Diagram

Figure 1. Block Diagram
4. Pin Configurations

- Pin Configurations

![Diagram showing pin configurations for AK9255A and AK9256A]

- VREF1P, VREF1N, VREF0N, VREF0P
- AIN1N, AIN1P, VDD, VSS
- SDO0, SDO1, SCLK, CSN

Top View
5. Package

■ Outline Dimensions

Note:
* 2. The exposed pad on the bottom surface of the package must be open or connected to the ground. In the case that the PCB wiring density is more than 200%, AKM recommends connecting the exposed pad to the ground.
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