

1. General Description

The AK5705 is a high-performance four-channel 32-bit analog-to-digital converter (ADC) suitable for audio, voice recognition, voice control, and teleconferencing applications. The AK5705's low-noise, low-power microphone amplifier is suitable for high S/N microphone applications and offers a dynamic range of 109 dB. The built-in transimpedance amplifier for current-to-voltage conversion allows the output current of a sensor or photodiode to be converted to digital data. The AK5705 supports sampling frequencies up to 384 kHz and can support up to 16-channel microphone arrays by connecting multiple AK5705s.

2. Features

1. **Recording Function**
 - **4-Channel Low Power 32-bit ADC**
 - 2-types Digital Filter (Low-latency [5/fs] Sharp Roll-off and Voice)
 - **Single-ended Inputs or Full-differential Inputs**
 - Integrated AC coupling capacitor
 - **MIC Amplifier Gain: +24 dB to 0 dB, 3 dB step**
 - **Transimpedance Amplifier**
 - **ADC Characteristics:**
 - S/N, DR: 109 dB, THD+N: -87 dB (Gain = 0 dB)
 - S/N, DR: 100 dB, THD+N: -86 dB (Gain = +18 dB)
 - **Power Supply Noise Reduction**
 - PSRR: 58 dB
 - **4-Channel Digital MIC Interface**
 - **Microphone Sensitivity Adjustment**
2. **Digital Audio interface**
 - **Master/Slave Mode**
 - **Sampling Frequency:**
 - 8 k, 11.025 k, 12 k, 16 k, 22.05 k, 24 k, 32 k, 44.1 k, 48 k, 88.2 k, 96 k, 176.4 k, 192 k, 352.8 k, 384 kHz
 - **Interface Format**
 - 32/24/16-bit I²S/MSB justified
 - 4-ch TDM
 - 8/12/16-ch Cascade TDM
3. **Built-in PLL**
4. **Control I/F: I²C-bus (Fast-mode, Max. 400 kHz)**
5. **Operating Temperature Range: Ta = -40 to 85 °C**
6. **Power Supply:**
 - **AVDD (ADC, MIC, PLL, LDO):** 1.7 V to 1.9 V or 3.0 V to 3.6 V
 - **TVDD (Host & Audio I/F):** 1.65 V to 3.6 V
7. **Package: 25-pin CSP (2.1275 x 2.2085 mm, 0.4 mm pitch)**

3. Block Diagram

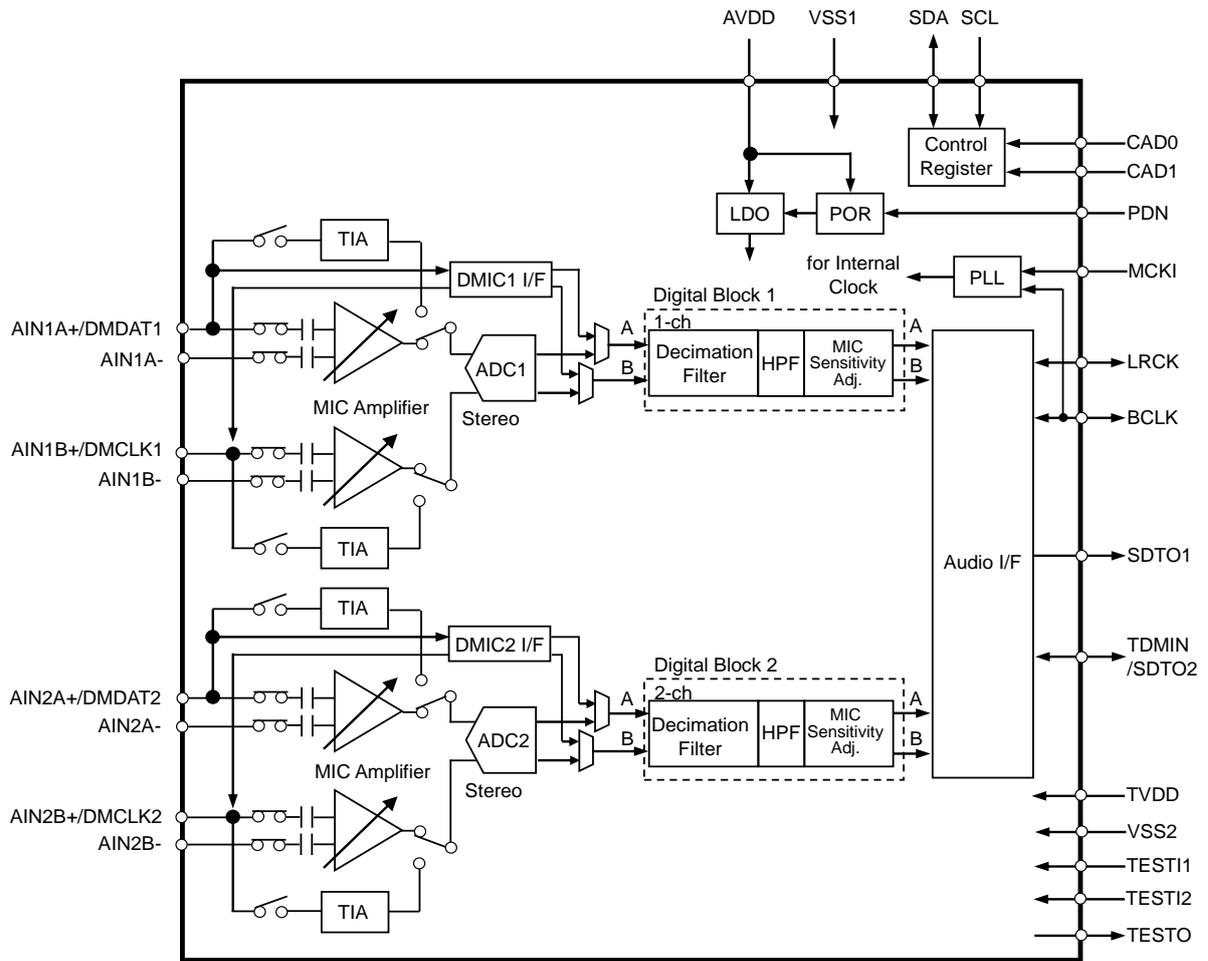
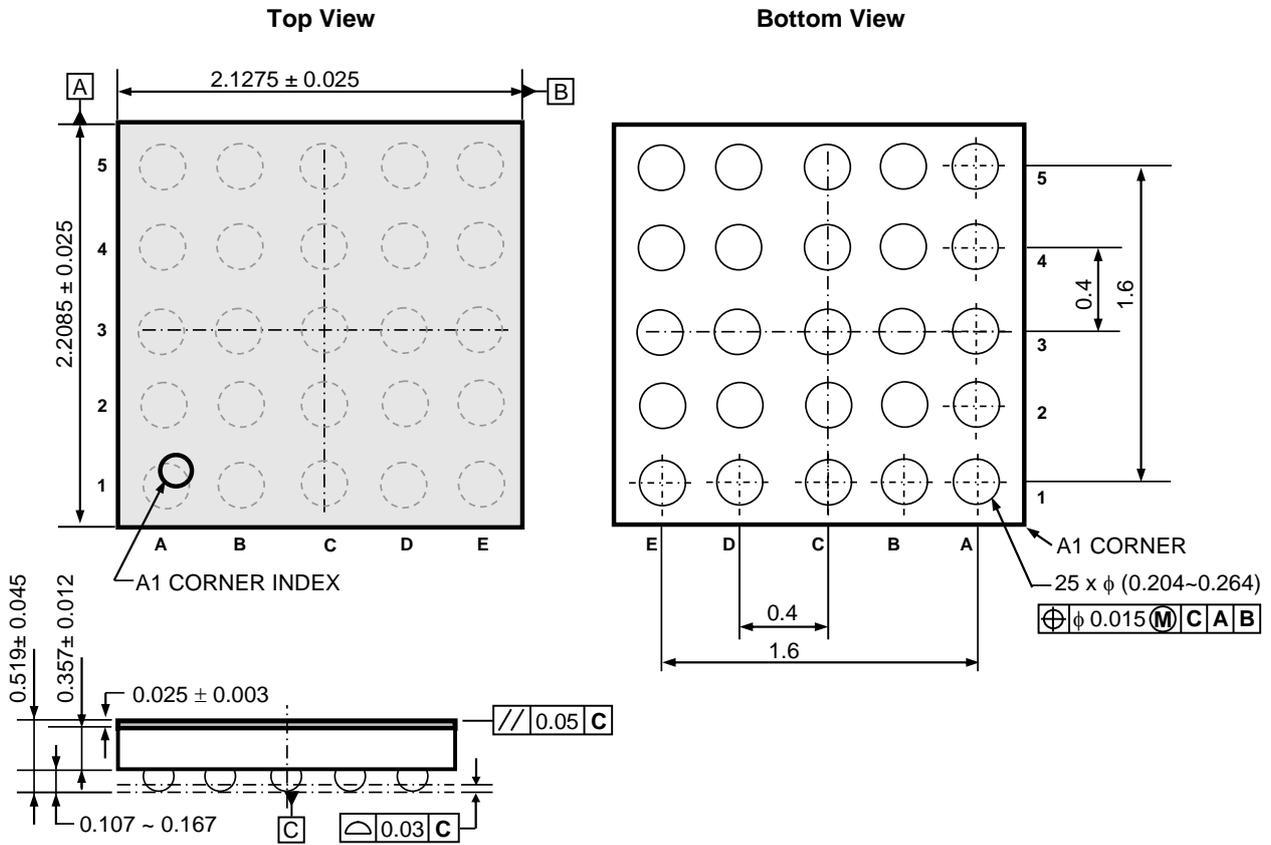


Figure 1. AK5705 Block Diagram

4. Package

4.1. Outline Dimensions

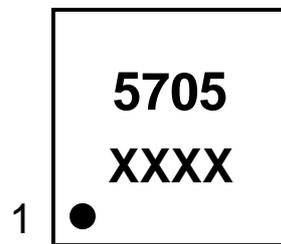
25-pin CSP (2.1275 x 2.2085 mm, 0.4 mm pitch)



4.2. Material & Lead finish

Package molding compound: Epoxy, Halogen (Br and Cl) free
 Solder ball material: SnAgCu

4.3. Marking



A
 XXXX: Date code (4 digits)
 Pin #A1 indication

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