AsahiKASEI MICRODEVICES

= Product Brief =

AK4619

192 kHz 4-ch Audio CODEC

1. General Description

The AK4619 is a 192 kHz audio codec. Its 4-channel, 24-bit ADC supports an analog gain amplifier. On the output side, the AK4619's 4-channel, 32-bit DAC supports single-ended analog output.
Pairing the AK4619 with one of AKM's automotive multi-core DSPs enables processing of both audio and voice, as required for modern car audio systems.
The AK4619 supports ambient temperatures from −40° C to 105° C and is available in a space-saving 32-pin QFN package, making it a perfect fit for automotive head units and amplifiers.

2. Features

4ch ADC: 24-bit ADC with MIC Gain Amplifiers
- Sampling Frequency: fs = 8 kHz to 192 kHz
- Channel-Independent MIC Gain Amplifiers: −6 to +27 dB, 3 dB Step
- Supports differential, single-ended, or pseudo-differential inputs
- ADC Characteristics S/N: 106 dB (fs = 48 kHz, Differential-Input, Gain = 0 dB,)
- Channel-Independent Digital Volume Control (+24 to −103 dB, 0.5 dB step, Mute)
- Digital HPF for DC Offset Cancellation
- 5 types of Digital Filter for Sound Color and Voice Selection

4ch DAC: Advanced 32-bit DAC
- Sampling Frequency: fs = 8 to 192 kHz
- Single-ended Output
- DAC Characteristics S/N: 108 dB (fs = 48 kHz)
- Channel Independent Digital Volume Control (+12 to −115 dB, 0.5 dB Step, Mute)
- 4 types of Digital Filter for Sound Color Selection

Digital Audio Interface:
- Slave operation
- Interface Data Format
  32 / 24 /20 / 16-bit I^2S/MSB justified, PCM Short/Long Frame
- 4-ch TDM Format Supported

Digital loop back path:
- Two 4:1 multiplexers (MUX)

Control Interface: SPI (7 MHz max), I^2C-bus (max 400 kHz, Fast Mode)
Power Supply:
- AVDD (Analog): 3.0 to 3.6 V (typ. 3.3 V)
- TVDD (Digital I/F, LDO): 1.7 to 3.6 V (typ. 3.3 V)

Operating Temperature Range: Ta = −40 to 105°C
Package: 32-pin QFN (5mm × 5mm, 0.5mm pitch)

3. Block Diagram and Functions

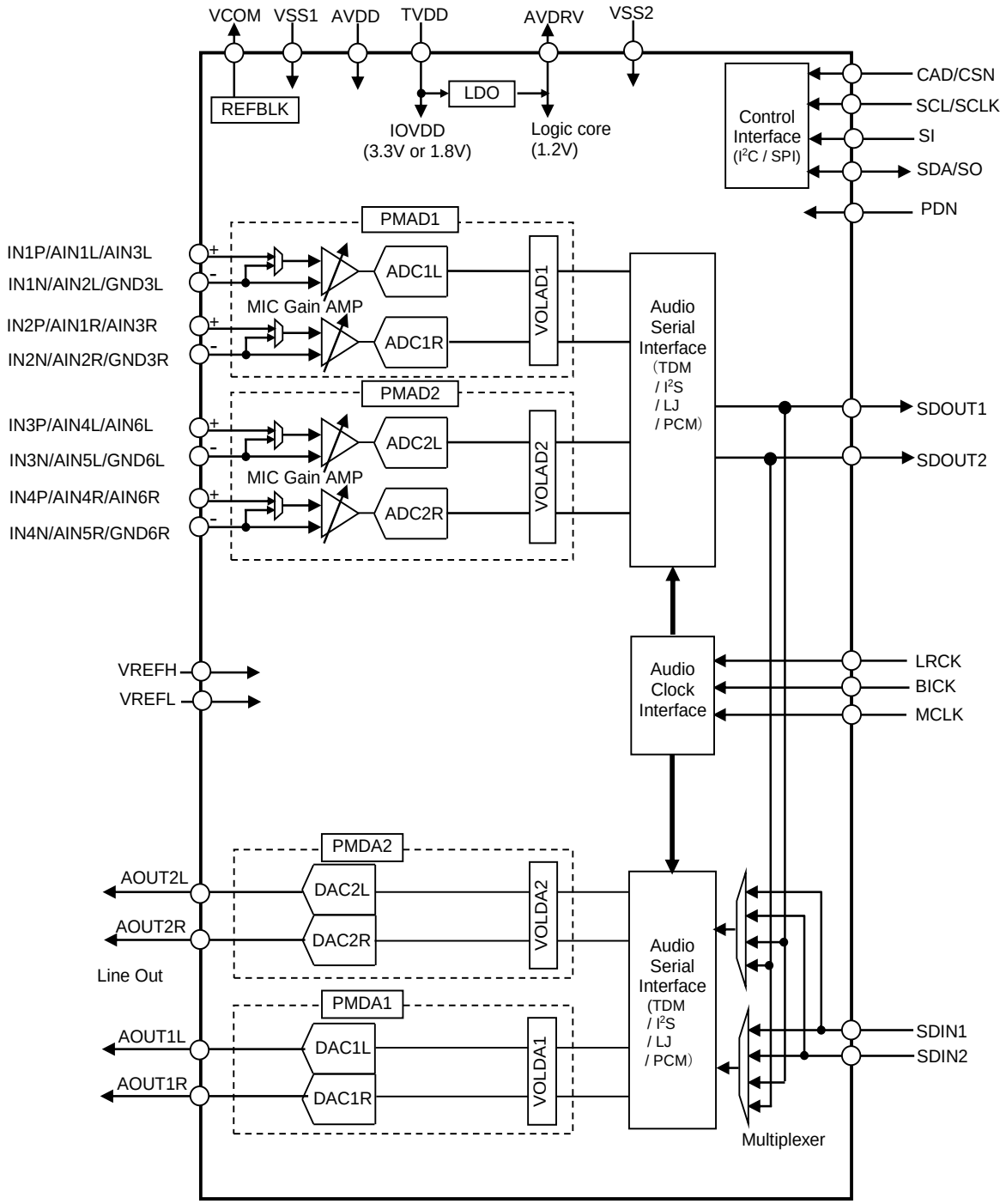


Figure 1. AK4619 Block Diagram

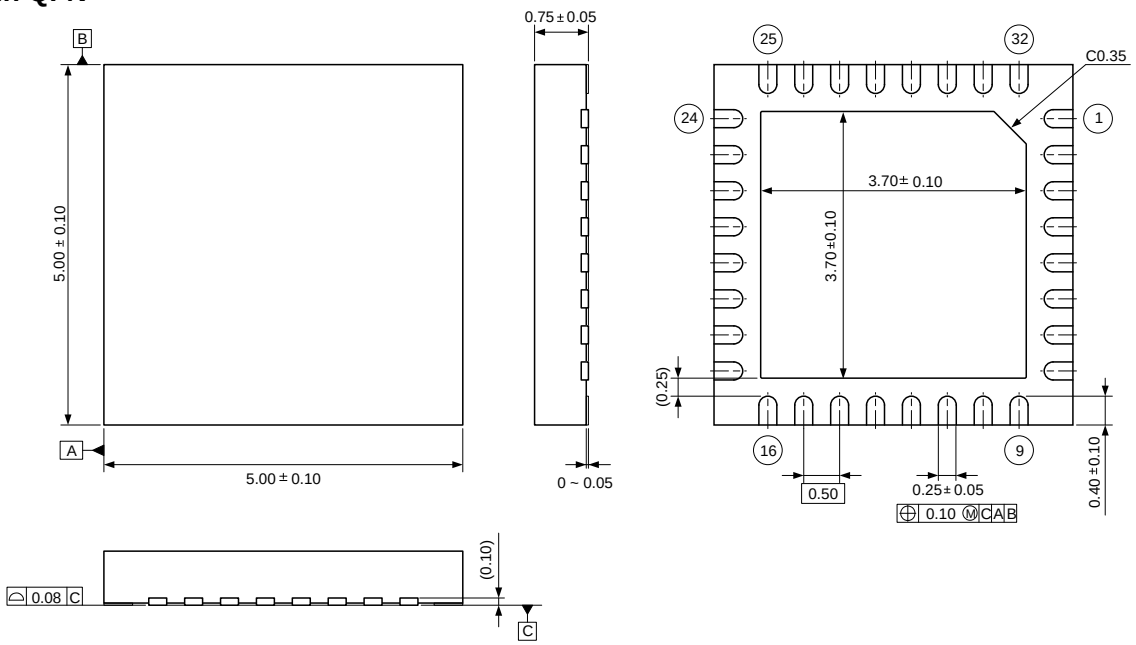
Block Function

Block	Function
REFBLK	Generate the internal reference voltage for analog block
LDO	Generate power for internal digital circuit (1.2 V typ.).
Control Interface	The interface for register access via I^2C bus or SPI.
MIC Gain AMP	Amplification for analog input signal.
ADC1/2	24-bit Analog to Digital converter
DAC1/2	32-bit Digital to Analog converter
VOLAD1,2 VOLDA1,2	Digital Volume for ADC and DAC
Multiplexer	Serial Data Multiplexers (4 : 1 multiplexers)
Audio Clock Interface	Clock interface for ADC and DAC
Audio Serial Interface	Serial data interface for ADC and DAC

4. Package

4.1. Outline Dimensions (Unit: mm)

32-pin QFN

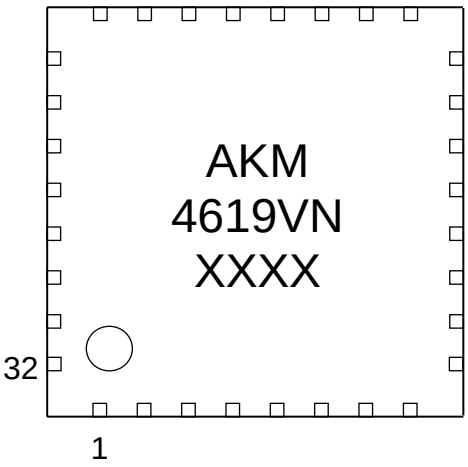


* The exposed pad on the bottom surface of the package is recommended to connect to the VSS1 pin.

4.2. Material & Lead Finish

Package molding compound: Epoxy, Halogen (bromine and chlorine) free
Lead frame material: Cu Alloy
Pin surface treatment: Solder (Pb free) plate

4.3. Marking



1) Pin #1 indication
2) Date Code: XXXX(4 digits)
3) Marking Code: 4619VN
4) Asahi Kasei Logo

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