



AK4493

Quality Oriented 32-Bit 2ch DAC

1. General Description

The AK4493 is a new generation Premium 32-bit 2ch DAC with VELVET SOUND™ technology, achieving industry's leading level low distortion characteristics. The newly adopted OSR-Doubler technology establishes wide signal band, low power consumption and low distortion characteristics. Moreover, the AK4493 has six types of 32-bit digital filters, realizing simple and flexible sound tuning in a wide range of applications. The AK4493 accepts up to 768kHz PCM data and 22.4MHz DSD data, ideal for high-resolution audio source playback that is becoming widespread in network audio, USB-DAC, etc.

2. Features

- THD+N: -113dB
- DR, S/N: 123dB (2Vrms), 125dB (Large Amplitude Mode), 126dB (Mono Mode)
- 256 Times Over Sampling
- Sampling Rate: 8kHz ~ 768kHz
- 32-bit 8x Digital Filter
 - Short Delay Sharp Roll-off, GD = 6.0/fs,
 - Short Delay Slow Roll-off, GD = 5.0/fs
 - Sharp Roll-off
 - Slow Roll-off
 - Low Dispersion Short Delay Filter
 - Super Slow Roll-off
- High Tolerance to Clock Jitter
- Low Distortion/ Low Noise High Performance Differential Amplifier Output
- Large Amplitude Output Mode
- DSD64, DSD128, DSD256, DSD512 Input Support
 - Filter1 (fc = 39kHz, DSD64 mode), Filter2 (fc = 76kHz, DSD64 mode)
- Digital De-emphasis for 32, 44.1 and 48kHz sampling
- Soft Mute
- Digital Attenuator (255 levels and 0.5dB step + mute)
- Mono Mode
- External Digital Filter Interface
- Audio I/F Format: 24/32 bit MSB justified, 16/20/24/32 bit LSB justified, I²S, DSD, TDM
- Master Clock
 - 8kHz ~ 32kHz: 256fs or 384fs or 512fs or 768fs or 1152fs
 - 8kHz ~ 54kHz: 256fs or 384fs or 512fs or 768fs
 - 8kHz ~ 108kHz: 256fs or 384fs
 - 108kHz ~ 216kHz: 128fs or 192fs
 - ~ 384kHz: 32fs or 48fs or 64fs or 96fs
 - ~ 768kHz: 16fs or 32fs or 48fs or 64fs
- 3-wire, I²C-bus Register Control Interface, or Pin Control
- Power Supply:
 - TVDD = AVDD = 3.0 ~ 3.6V (by internal LDO), VDDL/R = 4.75 ~ 5.25V
 - TVDD = AVDD = DVDD ~ 3.6V (by external supply), DVDD = 1.7V ~ 1.98V
 - VDDL/R = 4.75 ~ 5.25V
- Operational Temperature: -40 ~ 85 °C
- Digital Input Level: CMOS
- Package: 48-pin LQFP



3. Block Diagram

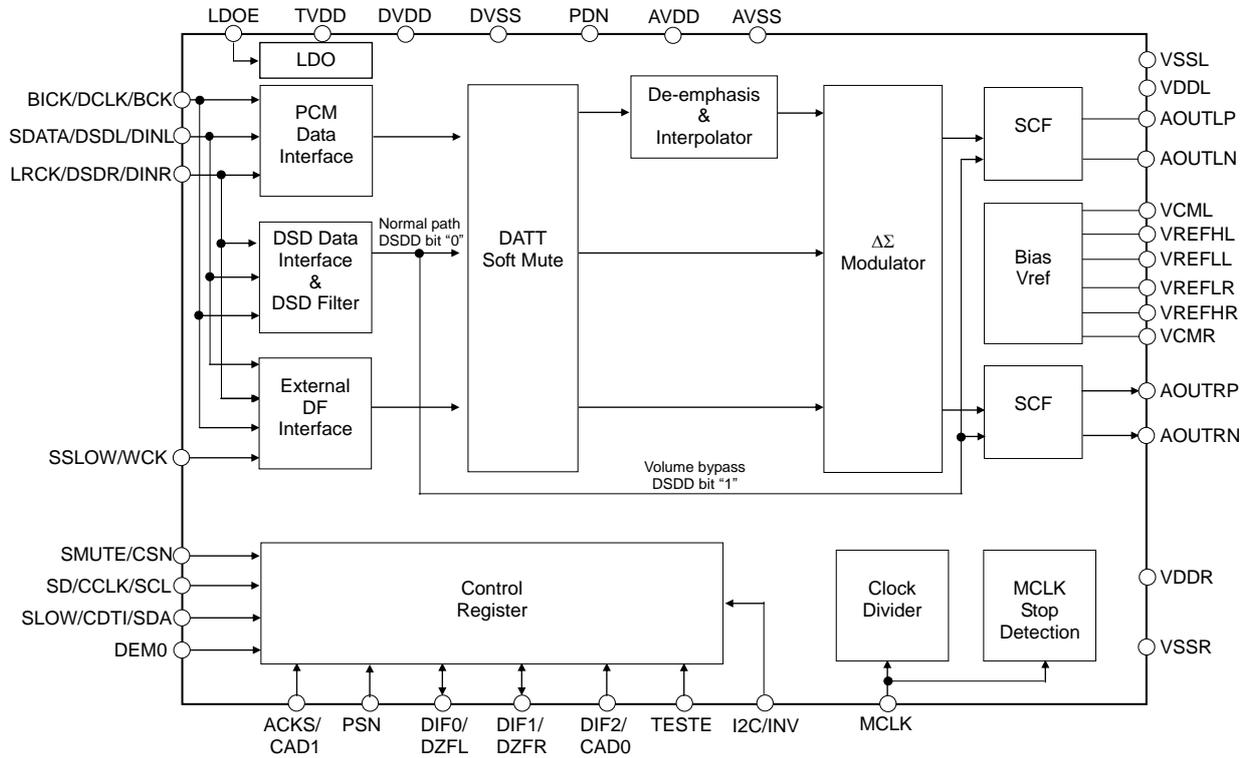
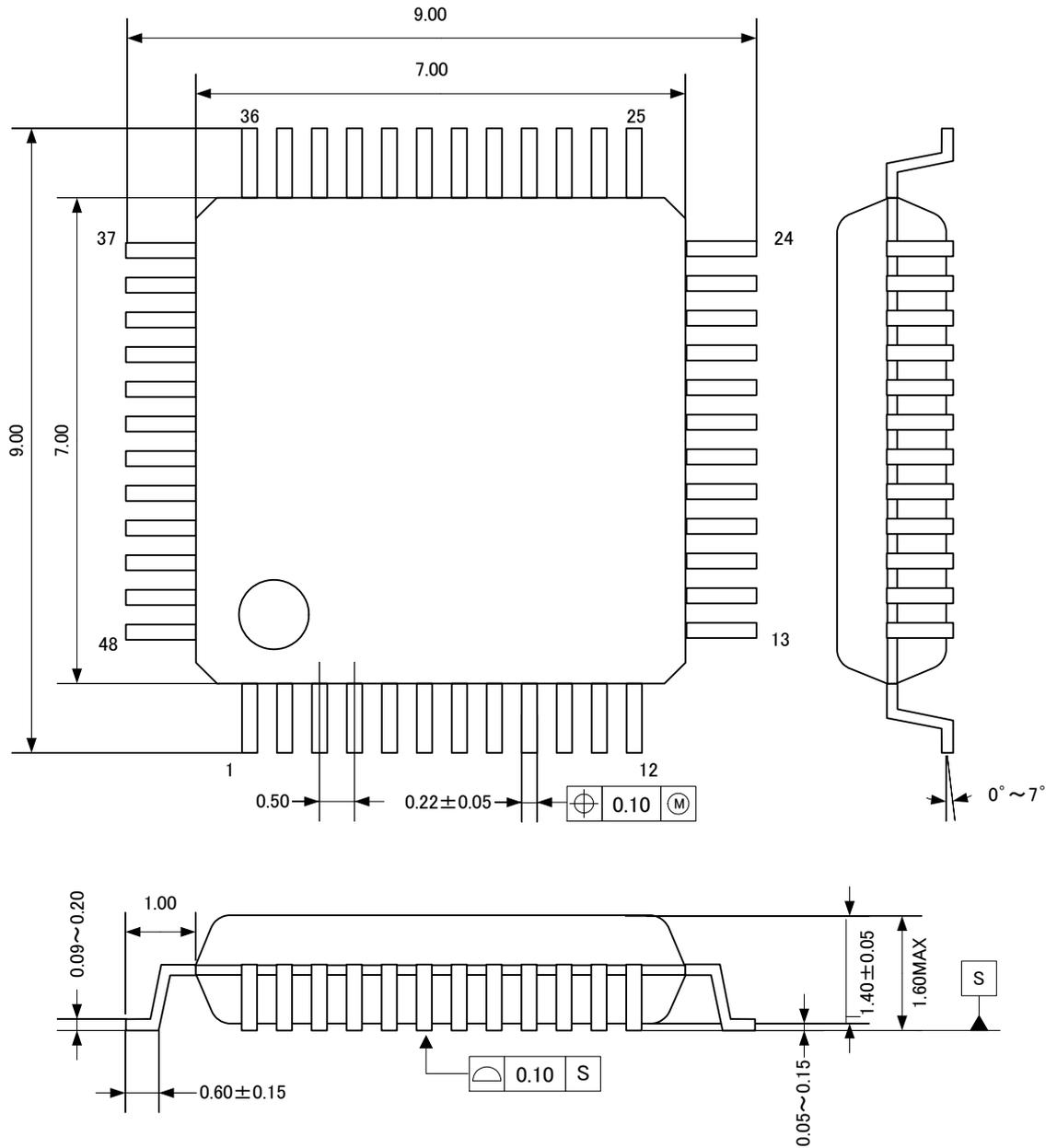


Figure 1. Block Diagram

4. Package

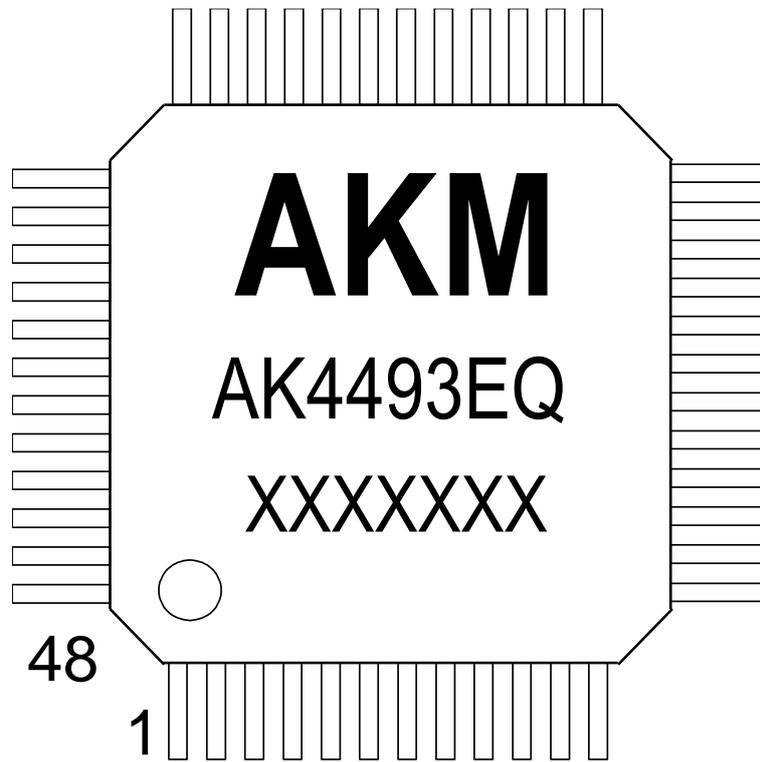
■ **Outline Dimensions (48-pin LQFP)**



■ **Material & Terminal Finish**

Package Molding Compound: Epoxy, Halogen (Br and Cl) free
 Lead Frame Material: EFTEC-64T
 Terminal Surface Treatment: Solder (Pb free) plate

■ **Marking**



- 1) Pin #1 indication
- 2) Date Code: XXXXXX (7 digits)
- 3) Marking Code: AK4493EQ
- 4) AKM Logo

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