



AK4376

Low-Power Advanced 32-bit DAC with HP

1. General Description

The AK4376 is stereo advanced 32-bit high sound quality audio DAC with a built-in ground-referenced headphone amplifier. An internal circuit newly developed 32-bit digital filters for better sound quality, achieving low distortion characteristics and wide dynamic range. The sampling frequency supports up to 384 kHz. The AK4376 is available in a 36-pin CSP package, utilizing less board space than competitive offerings.

2. Features

1. Stereo High Sound Quality Low Power Advanced 32-bit DAC
 - 4 types of Digital Filter for Sound Color Selection
 - 2 types of Operation Mode (High Performance Mode / Low Power Mode)
2. Ground-referenced Class-G Stereo Headphone-Amp
 - Output Power: 25 mW @ 32Ω, THD+N < -60 dB
40 mW @ 16Ω, THD+N < -60 dB
 - THD+N: -106 dB
 - S/N: 125 dB
 - Output Noise Level: -125 dBV (Analog Volume ≤ -14 dB)
 - Analog Volume: +6 to -20 dB & Mute, 2 dB Step
 - Ground Loop Noise Cancellation
3. Digital Audio interface
 - Master/Slave mode
 - Sampling Frequency:
 - Slave Mode: 8 k, 11.025 k, 12 k, 16 k, 22.05 k, 24 k, 32 k, 44.1 k, 48 k, 64 k, 88.2 k, 96 k, 128 k, 176.4 k, 192 kHz, 256 k, 352.8 k, 384 kHz
 - Master Mode: 8 k, 11.025 k, 12 k, 16 k, 22.05 k, 24 k, 32 k, 44.1 k, 48 k, 64 k, 88.2 k, 96 k, 176.4 k, 192 kHz
 - Interface Format: 32/24/16-bit I²S/MSB justified
4. Power Management
5. PLL
6. X'tal Oscillator
7. μP I/F: I²C (400 kHz)
8. Ta = -40 to 85°C
9. Power Supply:
 - AVDD (DAC, PLL): 1.7 to 1.9 V
 - CVDD (HP-Amp, Charge Pump): 1.7 to 1.9 V
 - LVDD (LDO2 for Digital Core): 1.7 to 1.9 V (built-in LDO)
 - TVDD (Audio I/F): 1.65 to 3.6 V
10. Package: 36-pin CSP (2.74 x 2.56 mm, 0.4 mm pitch)

3. Block Diagram and Functions

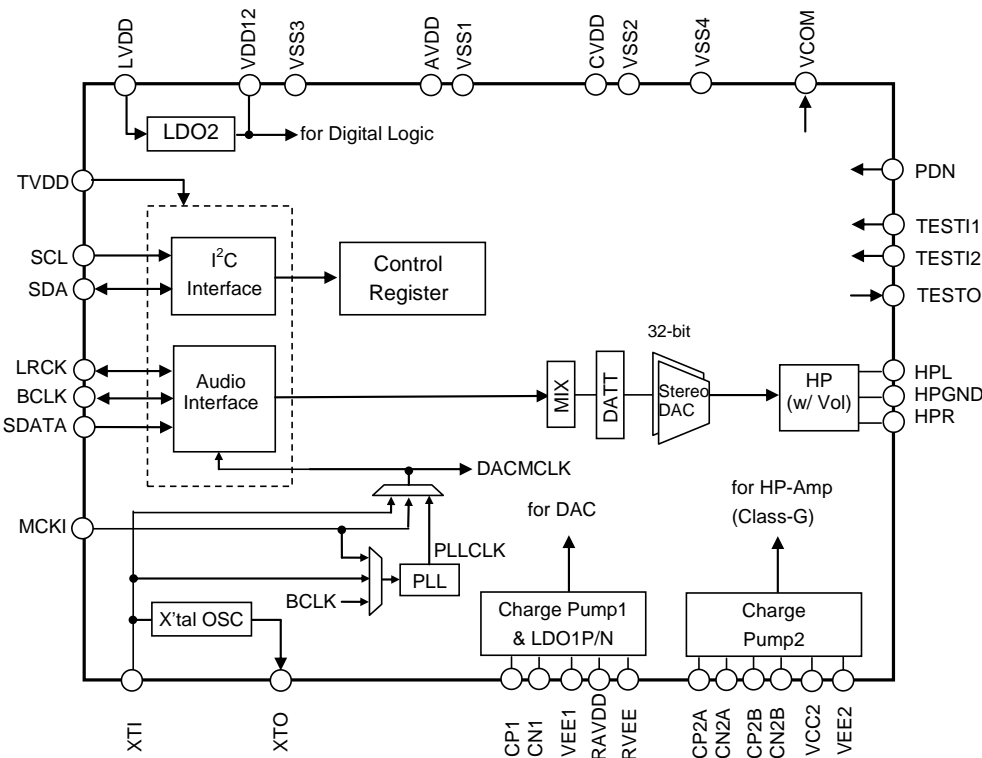
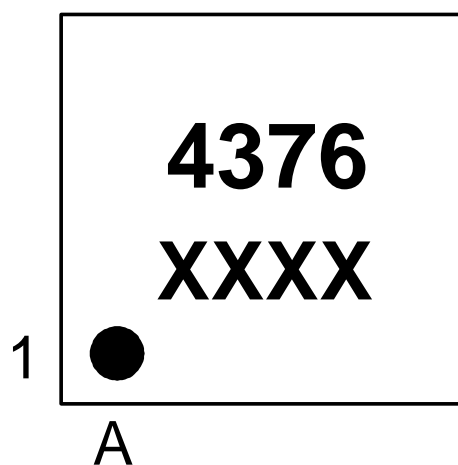


Figure 1. Block Diagram

■ Marking



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

5. Ordering Guide

| | | |
|-----------|-----------------------------|---------------------------|
| AK4376ECB | −40 to 85 °C | 36-pin CSP (0.4 mm pitch) |
| AKD4376 | Evaluation board for AK4376 | |

6. Revision History

| Date (Y/M/D) | Revision | Reason | Page | Contents |
|--------------|----------|---------------|------|----------|
| 15/11/27 | 00 | First Edition | | |

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