

Product Document

Enhanced Low Noise ANC Headphone Speaker Driver

www.ams.com/ANC



AS3415/35 – Enhanced Low Noise ANC Headphone Speaker Driver

- Complementary to ams high performance portfolio of ANC solutions
- Ultra-low noise architecture eradicates hiss noise
- Integrated Bypass feature allows system operation without power
- Complete toolchain available including EQ and ANC filter simulators enabling sound tuning, feedforward, feedback and hybrid system design

**Sensing
is life.**

General Description

The AS3415/35 are speaker drivers with Ambient Noise Cancelling function for headsets, headphones or ear pieces. They are intended to improve quality of e.g. music listening or a phone conversation by reducing background ambient noise.

The fully analog implementation allows the lowest power consumption, lowest system BOM cost and most natural received voice and music enhancement otherwise difficult to achieve with DSP implementations. The device is designed to be easily applied to existing architectures. An internal OTP-ROM can be optionally used to store the microphones gain calibration settings.

The AS3415/35 can be used in different configurations for best trade-off of noise cancellation, required filtering functions and mechanical designs.

The simpler feed-forward topology is used to effectively reduce frequencies typically up to 2-3 kHz. The feed-back topology with either 1 or 2 filtering stages has its strengths especially at very low frequencies.

The typical bandwidth for a feed-back system is from 20Hz up to 1 kHz. The filter loop for both systems is determined by measurements, for each specific headset individually, and depends very much on mechanical designs. The gain and phase compensation filter network is implemented with cheap resistors and capacitors for lowest system costs. The AS3415/35 are the first devices to integrate low impedance bypass transistors rendering the device transparent in case of power loss. They both employ a special architecture to avoid THD and SNR impact in unpowered conditions.

Benefits

- No mechanical switch for passive playback
- Lowest background hiss noise level
- EQ function to compensate acoustic weaknesses of headsets
- Reduced PCB size

Features

- 30dB noise reduction achievable
- Integrated bypass switches
- Music EQ filter stage
- Ultra low noise filter OPAMPs
- Up to 120mW output power (mono)
- 3 x PROM for production trimming
- Two I²C slave addresses
- Full digital control
- Support of Feed Forward-, Feedback- and Hybrid Topologies

Applications

- Stereo over ear headsets
- Stereo on ear headsets
- Stereo ear pieces
- Voice Communicating devices

AS3435 Block Diagram

