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Akustica, Inc.

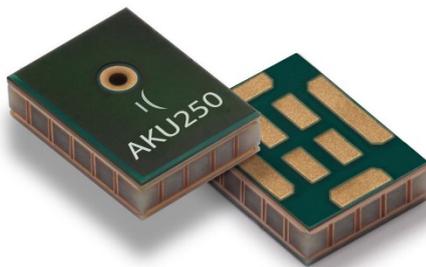
AKU250P/250

Digital HD Voice Silicon MEMS Microphone

General Description

The AKU250/P is an HD Voice quality, top-port, digital- output MEMS microphone. It consists of a MEMS acoustic sensor and an integrated circuit (IC) that includes a pre-amplifier, analog-to-digital converter, charge pump and supporting circuitry, all in an industry-standard package measuring 4.00 x 3.00 x 1.00mm³.

The robust digital output stream from the AKU250/P is virtually immune to all forms of Radio Frequency Interference (RFI) and Electromagnetic Interference (EMI), allowing designers the flexibility to integrate the component anywhere on the platform and obtain consistent SNR regardless of proximity to displays, Wi-Fi antennae, or other sources of interference that would degrade the signal of conventional analog microphones.



Product features

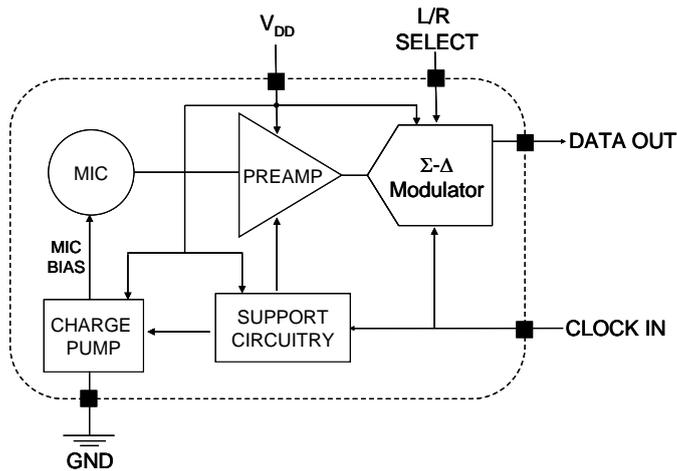
The device provides a pulse density modulated (PDM), single-bit digital stream designed to enable the multiplexing of stereo microphone data onto a single wire. With a user selectable L/R channel option, it is ideal for use in multiple microphone applications. The AKU250/P offers a high signal-to-noise ratio (SNR) of 65dB and uniform sensitivity matching of just +/-1dB among microphones.

TECHNICAL DATA	AKU250P/250
Package Dimension	4.00 x 3.00 x 1.00mm ³
Temperature Range	-40°C to 85°C
Supply voltage (VDD)	1.62V ... 3.6V
Directivity	Omni-directional
Signal-to-noise Ratio (SNR)	65 dB
Frequency Response	32Hz to 11.5kHz
Sensitivity	-26dB ± 1dB
Acoustic Overload Point (AOP)	120dB SPL
Power Supply Rejection (PSR)	-82dBFS
Current Consumption (with no load, typ.)	<850µA (clock on) 7µA (clock off)
Part-to-part Phase Matching	+2°

AKU250 target applications

- ▶ Ultrabooks and laptops
- ▶ Microphone arrays – multi-mic applications
- ▶ Webcams and camera modules

Functional block diagram



System Compatibility

The AKU250/P can be easily designed into ultrabooks, laptops, wearable, and other mobile applications requiring excellent voice capture capability. Leveraging a unique direct-port, top-port packaging technology, the AKU250/P provides audio engineers with the high SNR and flat frequency response of a bottom port MEMS microphone, but in a convenient and easy-to-use top-port form factor.

The Faraday cage package construction with enhanced filtering provides additional radiated RF rejection e.g. in GSM bands. This added RF immunity reduces the burden of external filtering components and decreases the necessary board redesign and testing re-certifications, thereby shortening time-to-market and reducing development as well as overall system costs. The microphones can also withstand more than twice the superior level of ESB air discharge, improving both manufacturing and end-user reliability.

Headquarters

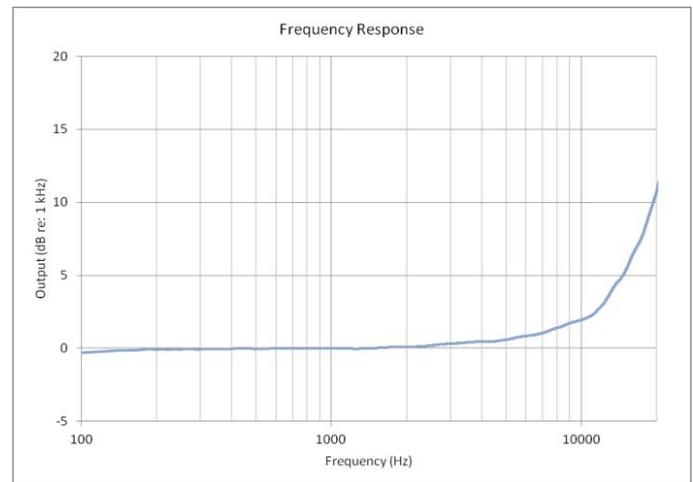
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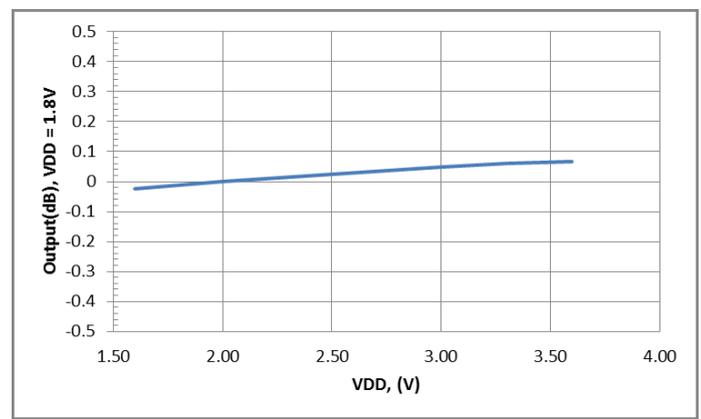
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Typical Frequency Response



Sensitivity vs. VDD



The performance of modern microphone systems is heavily dependent on the overall platform design including software algorithms, mechanical layout and hardware implementation. As an innovator in the field of MEMS microphones and leveraging significant consumer electronics application experience, Akustica has a deep understanding of acoustic design requirements and proper analysis methods. To ensure our customers a seamless integration experience and support constrained design cycles, we offer acoustic design and modeling services prior to assembly, and also provide production test services, training, and test equipment to help confirm the quality of both incoming components and final products.