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**Akustica, Inc.**

# BMU537R

## Differential Analog HD Voice Silicon MEMS Microphone

### General Description

The BMU537R is a high-performance, differential-output microphone in a metal lid package with a very high signal-to-noise ratio (SNR), excellent radio-frequency (RF) immunity, low current consumption, tight sensitivity tolerance, and low total harmonic distortion (THD). All of these can noticeably improve call quality and speech recognition accuracy, especially in far-field and array applications. The BMU537R is a bottom-port, analog-output micro-electromechanical systems (MEMS) microphone. It consists of a MEMS acoustic sensor and an integrated circuit (IC) that includes a pre-amplifier, charge pump, and supporting circuitry, all in an industry-standard package measuring 3.35mm x 2.50mm x 1.00mm.



### Product features

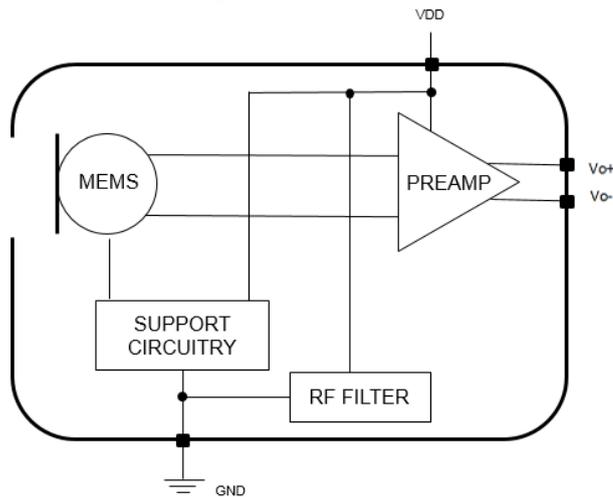
With the acoustic, mechanical, and electrical performance benefits of both a direct-port, top-port configuration and a metal lid package, the BMU537R is ideal for use in mobile handsets, wearable accessories, and other connected applications requiring excellent acoustic performance for speech recognition and far-field applications. The BMU537R offers a very high 66dB SNR and uniform sensitivity matching of just +/-1dB among microphones. The high acoustic overload point (AOP) of the BMU537R enables excellent recording in loud environments. It also provides a super-wideband frequency response delivering uniform audio capture across a broad audio spectrum. The BMU537R draws only 245µA in full performance mode, making it an attractive solution for wearable and other application requiring high performance and low power in a compact form factor. The BMU537R metal lid package is immune to RF and electromagnetic (EM) interferences, allowing for simplified integration into wireless devices.

TECHNICAL DATA	BMU537R
Package Dimension	3.35 x 2.50 x 0.98mm
Temperature Range	-40°C to 100°C
Supply voltage (VDD)	1.62V ... 3.6V
Directivity	Omni-directional
Signal-to-noise Ratio (SNR)	66dB
Frequency Response	80Hz to 12.5kHz
Sensitivity	-38dB ± 1dB
Acoustic Overload Point (AOP)	130dB SPL
Power Supply Rejection (PSR)	-90dBV(A)
Current Consumption (with no load)	245µA
Part-to-part Phase Matching	±4°

### BMU537R target applications

- ▶ Smartphones and mobile phones which require high-quality acoustic performance
- ▶ Voice-activated entertainment systems, set-top-boxes, and remote controls
- ▶ Wearable accessories, IoT
- ▶ Gaming consoles and controllers
- ▶ Microphone arrays – multi-mic applications

## Functional block diagram

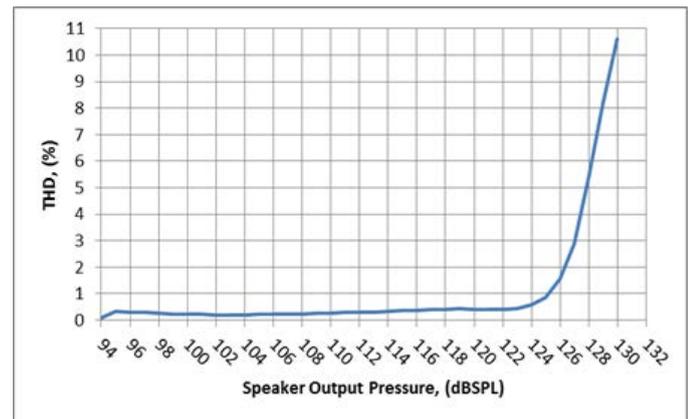


## System Compatibility

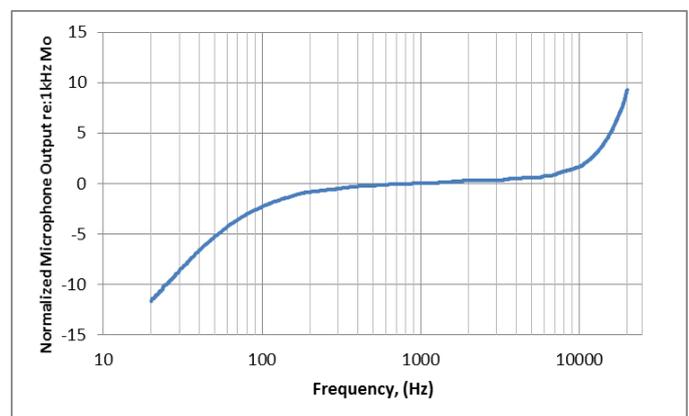
The BMU537R is housed in a gold-plated, metal-lid industry-standard footprint package that is mechanically and electrically robust. The metal-lid package in combination with the MEMS sensor design enables the BMU537R to withstand the many mechanical stresses from handling or dropping that occur during manufacturing and end-use.

The Faraday cage package construction with gold-plated lid and enhanced filtering provides additional radiated RF rejection in wireless frequency bands. This added RF immunity reduces the burden of external filtering components and decreases the number of necessary board redesign and testing re-certifications, thereby shortening time-to-market and reducing development and overall system costs. The microphones can also withstand more than twice specification of electrostatic discharge (ESD), improving both manufacturing and end-user reliability.

## Total Harmonic Distortion



## Frequency Response



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 with significant consumer electronics application experience, Akustica has a deep understanding of acoustic design requirements and proper analysis methods. To ensure a seamless integration experience for our customers and to support rapid 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.

### Headquarters

Akustica Inc.  
2555 Smallman Street, Suite 200  
Pittsburgh, PA/USA 15222  
(412) 390-1730

[sales@akustica.com](mailto:sales@akustica.com)

[www.akustica.com](http://www.akustica.com)