

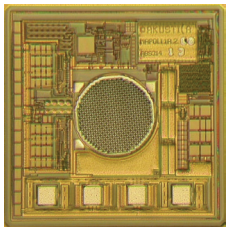
## PRODUCT BRIEF

### AKU1126

Analog Microphone  
With Selectable Gain

## GENERAL DESCRIPTION

The **AKU1126** is the world's smallest, analog-output microphone that uses standard CMOS semiconductor packaging technology and materials and has user selectable gain from 0 to 12dB. While other microphones degrade in performance as they shrink in size, the **AKU1126** maintains superior performance in an ultra-small, 2mm x 2mm form factor. The **AKU1126** is the first microphone product to leverage Akustica's 1mm x 1mm CMOS MEMS microphone die—a monolithic solution which integrates the acoustic transducer and accompanying electronics in a single chip of silicon. In contrast to other silicon microphones, Akustica's one die approach eliminates the need for inter-die wirebonds, allowing for smaller, higher performance, more reliable products.



AKU1126 CMOS MEMS  
1mm x 1mm Microphone Die

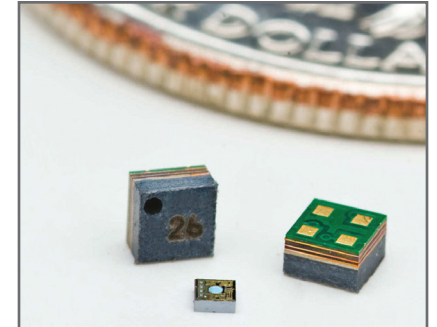
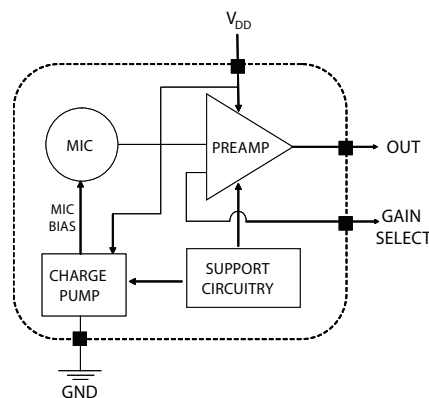
**AKU1126** microphones are simple to integrate into many consumer electronic devices with just minimal design changes. In addition, two or more **AKU1126** microphones can be used without increasing the PCB footprint dedicated to a single microphone used today. This makes the **AKU1126** ideal for use in very small end-user devices such as mobile phones and headsets where board space is at a premium and a high degree of voice quality can be achieved using microphone arrays and next generation noise suppression technology.

Additionally, up to 12dB of gain can be added to the **AKU1126** microphone sensitivity by using just one external resistor. The gain select feature provides a new level of flexibility as it allows the same microphone to be used for both near and far-field applications. For higher gain applications, applying the gain directly at the microphone, instead of in downstream electronics, will provide the solution with the lowest overall system noise.

## BENEFITS OF THE AKU1126

- ▶ Miniature 2mm x 2mm x 1.25mm package size
- ▶ Up to 12dB of selectable gain
- ▶ As much as 75% smaller than the footprint of alternative microphones
- ▶ 70% lower current consumption than traditional electret microphones
- ▶ 50% better THD performance at 115dB SPL than other microphones
- ▶ Lead-free surface-mountable for improved manufacturing reliability and efficiency
- ▶ Automated pick and place compatible
- ▶ RoHS compliant and halogen free

## FUNCTIONAL BLOCK DIAGRAM



## Key Features

- ▶ Tiny footprint of only 4mm<sup>2</sup>
- ▶ High performance, omni-directional analog-output microphone
- ▶ Monolithic CMOS MEMS microphone chip
- ▶ 57 dB SNR
- ▶ -33 to -45 dBV sensitivity
- ▶ 1.65V-3.6V operation
- ▶ 140  $\mu$ A current consumption
- ▶ <5% distortion at 115dB SPL
- ▶ Better than 45dB power supply rejection ratio (PSRR)
- ▶ Highly matched microphones in frequency and phase response

## Applications

- ▶ Small, thin-profile cell phones and other portable devices
- ▶ Wireless headsets and other space-constrained audio accessories
- ▶ Portable consumer electronic devices which use more than one microphone

## Akustica, Inc.

2835 East Carson Street, Suite 301  
Pittsburgh, PA 15203 USA  
ph: (412) 390-1730 fx: (412) 390-1737

www.akustica.com  
sales: sales@akustica.com

Covered by one or more of U.S. Patents: 5,717,631; 5,970,315; 7,215,527; 7,019,955; 6,829,131; 7,089,069; 7,026,184; 7,202,101; 7,049,051; 6,943,448; and 6,936,524.