That's how good hearing sounds.

Acceleration-based body sound sensor - BMA550

BMA550 for hearables makes a big wave against unwanted sound waves. The innovative accelerometer works as body sound sensor for sensing bone conducted voice. Smart "voice enhancement" filters out distracting noises during phone calls and amplifies your own voice. This means that the person you are talking to can always understand you, even in noisy atmospheres. The BMA features 5-7x lower noise than standard accelerometers, low power consumption and high data rate up to 48kHz for low latency.

Target applications

Hearables

Benefits

Easy-to-integrate
High level of integrability into compact devices such as hearables due to small size (2 x 2 x 0.65 mm³).

Enhanced speech processing
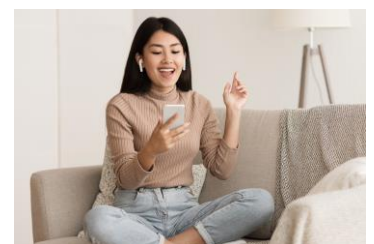"Immunity" to surrounding noise enhances speech processing.

Continuously usable
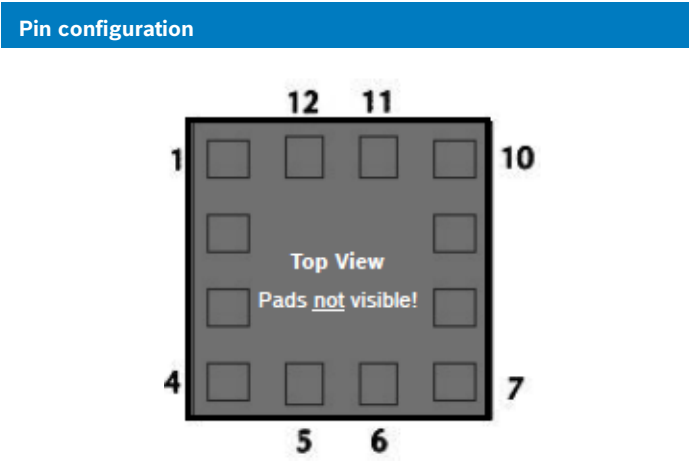Always-on low-power speech processing enables continuous use

Noise suppression and voice enhancement

Voice activity detection, key word trigger and speech processing

Speaker identification by voice

Doc.-Number: BST-BMA550-FL000-00 / Version_1.1_112023

Technical features

BMA550 technical data

Package dimensions (typ.)	2 x 2 x 0.65 mm³
Digital Resolution	16 bit
Supply voltage V_{DDIO}	1.08 ... 3.6 V
Supply voltage V_{DD}	1.71 ... 3.6 V
Interface	TDM interface + I2C
Output data rate	Up to 48 kHz
Bandwidth	50 Hz ... 2350 Hz
Noise (in low noise mode)	1.2 mg-rms @2350 Hz BW
Total Harmonic Distortion +Noise	0.25%
Power consumption	290 µA in low noise mode 104 µA in low power mode
FIFO	1kb
Interrupts	FIFO + Voice activity detection

Pin configuration

Pin	Name	Description
1	TDM_SDOUT	TDM mode data output
2	TDM_WCLK	TDM mode word clock
3	VDDIO	Power Supply for I/O
4	I2C_SDA	I2C Serial Data
5	I2C_SCL	I²C Serial Clock
6	I2CASEL	I²C Address selection line
7	VDD	Power Supply for VDD
8	GNDIO	0V Supply for I/O Pads
9	GND	0V Supply for Circuits
10	Res	Reserved
11	INT	Interrupt
12	TDM_BCLK	TDM Mode Bit Clock

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