

SBM140B series

84 dBA SNR and 146 dB AOP optical MEMS microphone with digital output

SBM140B Core Technology

The SBM140B is the world's lowest noise and widest dynamic range MEMS microphone. Built on sensiBel patented optical MEMS technology, it combines 10 dBA equivalent input noise with a 146 dB SPL Acoustic Overload Point — an 84 dBA Signal-to-Noise Ratio and 136 dB dynamic range, with no clipping or compression across the range.

The optical MEMS advantage

Our patented low-noise optical sensing technology enables a breakthrough in performance improvement over current MEMS microphones. Measuring diaphragm displacement optically rather than electrically lifts both ends of the range at once — 10 dBA input noise and 146 dB SPL in a single configuration.



Key product features

Parameter	Value typ	Unit
Sensitivity 94 dB 1 kHz	-46	dBFS
Signal-to-noise Ratio 20 Hz to 20 kHz	84	dBA
Equivalent Input Noise 20 Hz to 20kHz	10	dBA SPL
Acoustic Overload Point 1 kHz 10% THD	146	dB SPL
Dynamic range	136	dB
Low frequency roll-off (-3 dB re. 1 kHz)	10	Hz
Supply voltage	1.8	V
Package size	6 x 3.8 x 4	mm
Port location	Bottom port	
Sampling rate	Up to 192	kHz
Clock frequency	1.5 - 12	MHz
Digital interfaces	PDM, I2S, TDM (8 channel)	

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Smart configurability

An optional I²C interface is available for customization of built-in microphone functions including bi-qual filters and digital gain. This unique functionality enables optimization of the sensor, even after deployment in a product.

The SBM140B supports multiple operational modes to optimize performance and battery life. You can choose to have the highest performance or optimized power while still operating with exceptional SNR. Sleep mode with very low current consumption is also supported

The solution for demanding applications

The microphone is the most fundamental component in the audio processing signal chain, and the SBM140 series is ideal for demanding applications requiring crystal clear recordings, lowest noise data to your AI engine for voice and sound recognition, best-in-class teleconferencing audio, noise-free ANC applications, super-directivity beam forming, high-noise environments and many more



Interface options

The SBM140B series offer a variety of digital interfaces

1. The I2S provides easy stereo interfacing & wide dynamic range (24-bit and 28-bit resolution)
2. Pulse-Density Modulation (PDM) interfacing for low latency operation
3. Time-Division Multiplexing (TDM) for multi-microphone applications

Benefits

- True studio-quality recording
- Far-field sound reproduction
- Noise-free ANC and ambient mode headphones
- Very loud sound capture without clipping
- Ideal for high performance beamforming and audio algorithms
- Wide dynamic range digital output

Applications

- General conferencing
- Industrial sound detection
- Microphone arrays
- Over the ear & true wireless stereo
- Smartphone, tablets & laptops
- Spatial audio
- Wearables
- Optimised AI performance