AIStorm and DB HiTek Debut SpectroMic™ KWS—an 18uA Always-on Keyword-Spotting Solution Enabling IoT AI Voice Interaction

Configurable AI models plus Smart VAD and an integrated spectral engine let SpectroMic adapt to ambient noise or cut rolling-buffer power 10× in edge devices

HOUSTON, TX, UNITED STATES, June 30, 2025 /EINPresswire.com/ -- AIStorm, the leader in charge-domain solutions for edge AI, and DB HiTek, an analog and power specialty foundry, announced SpectroMic™ KWS, a keyword spotting solution that combines a MEMS microphone, a programmable amplifier, a charge pump, a smart voice activity detector (VAD) that can adapt to background noise, and a charge domain spectral engine —all in a single mic package that draws just 18 µA in always listening mode.

AIStorm is the leader in AI-in-sensor edge solutions for imaging, audio and biometrics. The company pioneered charge-domain processing — with more than 40 patents worldwide — which overcomes latency, optimizes power and minimizes the cost of inference and

> Designers can finally drop always-listening voice into wearables, remotes or appliances because the SpectroMic KWS 18 µA mic + spectral engine, Smart VAD, and rolling buffer slash idle power.”
>
> *David Schie, CEO of AIStorm*

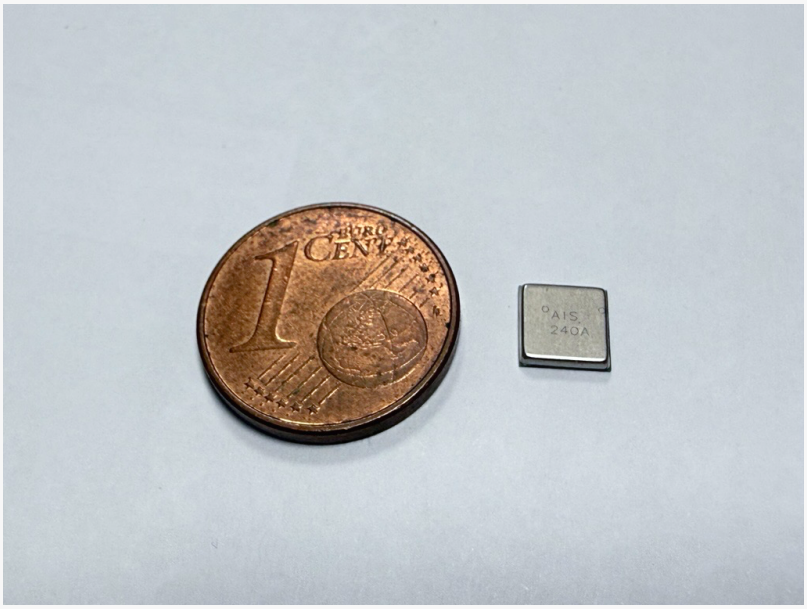
Models and software are available for multiple SpectroMic compatible microcontrollers—including Raspberry Pi Pico class devices—so developers can rapidly integrate keyword spotting to a wide range of consumer and industrial products. SpectroMic can wake the host microcontroller (MCU) only when acoustic activity of interest is detected and delivers a compact digital spectral image for local inference.

Its smart VAD can be used to continuously adapt to background noise, minimizing power even in noisy environments without missing words during mode transitions. Alternatively, the rolling buffer that stores past audio (and one of the largest power

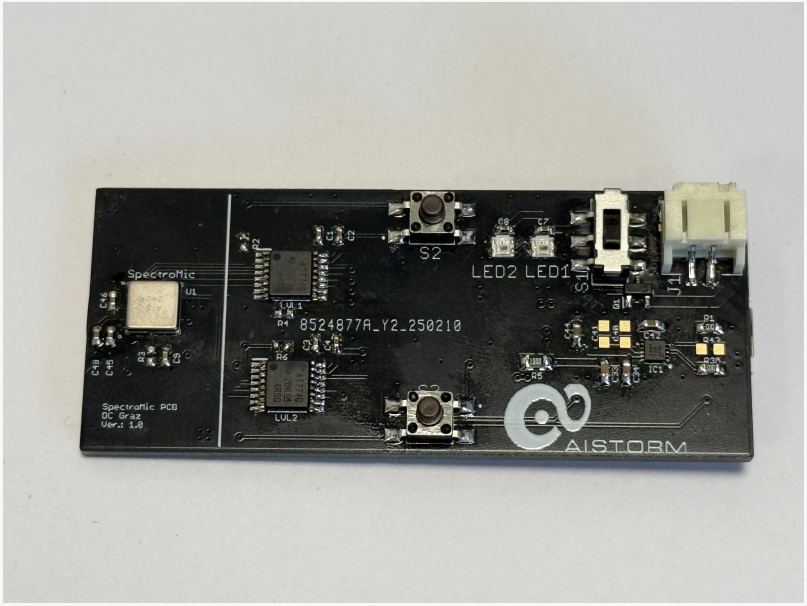
consumers in branded smart speaker devices such as Alexa®, Bixby®, Siri®) can be improved by storing compressed spectrum data instead of sample data, reducing buffer memory by 8× and power by 10× (patents pending).

“AIStorm is a breakthrough for designers of low power edge devices looking to add keyword spotting,” said David Schie, CEO of AIStorm. “SpectroMic’s charge domain spectral engine enables microcontrollers or GPUs of virtually any class to perform speech processing using AIStorm or third party models, while the smart VAD keeps always on power low—even in noisy environments. And for branded smart speaker enabled devices, SpectroMic enables a compressed spectral rolling buffer capability which can slash the single largest power draw.”

“SpectroMic is a paradigm shifting AI audio solution, made possible by our high performance analog processes,” said Rob Hultquist, SVP of US Sales at DB HiTek. “Where most MEMS microphones simply stream high-power digital audio and trigger false wakes, SpectroMic uniquely adapts to its environment and delivers a pristine, low-power spectral feed. We are very pleased to be part of this groundbreaking development.”



SpectroMic™ KWS is an integrated solution —MEMS microphone, smart VAD, and charge domain spectral engine— in a 5.5x5.5 mm package



SpectroMic™ KWS mounted on a demo PCB: its built-in spectral engine and Smart VAD deliver 18 µA always-on keyword spotting, while an optional rolling buffer cuts standby memory and power by 10×.

Key advantages of SpectroMic™ KWS

- Integrated solution — MEMS microphone, smart VAD, and charge domain spectral engine in a 5.5x5.5 mm microphone package
- 18 µA always on current — >10× lower standby power than conventional digital mics
- Smart VAD — maintains always on operation and reduces false triggers, can be used to adapt

to noisy environments and does not lose words emerging from low power mode
• Charge domain spectral processing — offloads heavy signal processing from the MCU, often eliminating the need for a separate DSP, further providing a continuous digital stream from the integrated spectral engine through SPI
• Spectral rolling buffer — can now store only required spectral components, reducing rolling buffer power by 10× and memory by 8× (patents pending), making digital time domain data available only once words are recognized for verification by online systems
• Configurable downloadable models — supports multiple recognition libraries for popular Cortex M33 and RP2350 MCUs

How it works

Traditional analog MEMS microphones stream a continuous analog signal that an always awake MCU must digitize—or designers switch to digital mics that consume hundreds of µW and add cost. Even when these legacy mics offer a voice activity detector (VAD), background noise often pushes them into high power mode, and their slow recovery from VAD can miss the first syllables of or entire words. SpectroMic fixes these problems; its charge domain spectral engine turns incoming sound into a compact spectral image and makes it available digitally through the SPI bus, while a smart VAD can be used to wake the MCU and adapt to ambient noise. Or for smart speaker enabled devices, only required spectra needs to be stored for the rolling buffer, minimizing power and memory but still providing the restored digital time domain information required by online branded smart speaker verification systems when necessary.

Pricing & availability

SpectroMic KWS is available now in a 5.5x5.5 mm microphone package. Pricing is <$3.00 (1,000-unit quantities).

Resources

For technical details and a datasheet, visit the SpectroMic™ KWS product page.

About AIStorm

AIStorm is the leader in AI-in-sensor edge solutions for imaging, audio and biometrics. The company pioneered charge-domain processing — with more than 40 patents worldwide — which overcomes latency, optimizes power and minimizes the cost of inference and learning at the edge. AIStorm offers always-on sentry AI-in-sensor imaging solutions, high-speed imaging solutions, smart always-on solutions for audio applications, and human interface & biometric solutions. To learn more, visit aistorm.ai.

About DB HiTek

DB HiTek is a worldwide leader in specialty foundry services. Operating from two world-class wafer fabrication facilities and leveraging key technology achievements spanning two decades, the company continues to meet the needs of fabless ventures around the globe. The company's business philosophy has always been driven by an aggressive mission to deliver the highest quality product backed by the most responsive customer service. Overarching this mission is the

vision to become the best-in-class supplier of foundry services. To learn more, visit dbhitek.com.

Tim Cox
ZingPR
tim@zingpr.com
Visit us on social media:
LinkedIn
