

Triad Semiconductor Reinvents Audio Signal Capture with TS5510: The Universal AFE

WINSTON - SALEM, NC, UNITED STATES, January 20, 2026 /EINPresswire.com/ -- [Triad Semiconductor](#), a leader in high-performance mixed-signal integrated circuits, today announced the production release of the TS5510 two-channel Analog Front End (AFE). Called "The Universal AFE," the TS5510 completely redefines the input stage for professional and prosumer audio equipment, offering an elegant, single-chip solution that simplifies design and dramatically improves real-world performance.

Audio engineers have struggled with a fundamental trade-off for decades: traditional mic pre-amp architectures, derived from Instrumentation Amplifier topologies, cannot seamlessly handle both extremely low-level microphone signals and very high-level line inputs (like an analog synthesizer output). This forces designers to incorporate external resistive pads or separate input circuits, which increases board complexity, consumes PCB space, and degrades the final Signal-to-Noise Ratio (SNR).

The TS5510 solves this universal problem by employing a revolutionary Current Conveyor-based architecture. This approach allows the integrated circuit (IC) to seamlessly and digitally scale a massive range of input amplitudes to perfectly match modern Audio ADCs, eliminating the need for bulky external components while minimizing any common mode noise introduced into the audio signal.

Industry-Leading Technical Proof

The TS5510 delivers a Total Input Capture Range (TICR) of 156dB — the difference between the largest input signal it can accept without clipping (up to +28dBu and the smallest signal it can resolve (Equivalent Input Noise of -128dBu. This unprecedented dynamic range, combined with a Common Mode Rejection Ratio (CMRR) of over 90dB and high common-mode voltage

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tolerance, ensures robust, noise-free performance in real-world, long-cable environments.

"This part is unbeatable," said one early evaluation customer. "The ability to handle both tiny and large signals without a pad solves my number one issue for field returns. This is just how it should be done."

Benefits for Design Engineers:

- Universal Input Compatibility: Accommodates high-level line inputs and low-level microphone signals on a single, shared input, simplifying front-panel design and maximizing design reuse across a wide range of end product applications.
- Smallest Footprint: The integrated design eliminates multiple external passive components, resulting in the smallest PCB X-Y footprint in the industry for a complete AFE.
- Superior Noise Rejection: Provides breakthrough common-mode noise suppression as well as industry-leading CM voltage input compliance, making products exceptionally reliable in electrically noisy environments.
- Simplified ADC Interface: Optimized for direct coupling to any differential input Audio ADC, minimizing system cost and complexity while eliminating the possibility of overdriving the ADC.

Availability

Samples of the TS5510 will be stocked at distribution in March of 2026, along with the full evaluation board (CEVB) and comprehensive collateral, including a datasheet and a white paper on its disruptive architecture.

About Triad Semiconductor

Triad Semiconductor, a fabless IC manufacturer, is a leader in developing high-performance custom analog and mixed-signal integrated circuits including Application Specific Integrated Circuits (ASICs) and Application Specific Standard Products (ASSPs). We are passionate about creating solutions for the real "analog" world. Together with our clients, we are addressing major advances in Virtual Reality and Augmented Reality, Audio, Automotive, Medical, Sensors, Silicon Photonics / Optical Communication, and Triad Micro Devices (TMD) Aerospace & Defense applications. The company was launched over twenty years ago and has attracted a team of highly skilled and experienced analog mixed-signal engineers from world leading semiconductor companies. These engineers bring their expertise and creativity to develop cutting-edge solutions for analog and mixed-signal applications. To learn more about Triad Semiconductor, please visit www.triadsemi.com.

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