

The Synaptics® Astra™ SR80 Series of Audio AI MCUs deliver industry-leading performance with ultra-low-power consumption, enabling the next generation of AI-enhanced, voice-driven, consumer and enterprise-grade IoT devices.

The AI MCUs combine an Arm® Cortex®-M33 MCU, Synaptics DSP cores, a Synaptics NPU, a Tensilica® HiFi 5 DSP, a built-in CODEC, high-speed USB, a rich set of I/O interfaces and advanced security features into a powerful platform designed for state-of-the-art wired and true-wireless (TWS) headsets, earbuds, voice-enabled smart-home devices, soundbars, and conferencing systems.

Turnkey AI-accelerated algorithms such as environmental noise cancellation (ENC) designed to exceed Microsoft® Teams™ version 5 Premium requirements, hybrid active noise cancellation (ANC), and speech and sound recognition, deliver natural, responsive voice experiences and human-machine interactions in real-world environments.

Open software and design collateral including the Astra SDK, audio performance tuning tools, reference designs, and evaluation hardware are supported on the SR80 Series to accelerate product development.

Features	SR82	SR85	SR88
MCU	Arm Cortex-M33	Arm Cortex-M33	Arm Cortex-M33
DSP Subsystem 1	2x Synaptics DSP, Low Latency Engine	2x Synaptics DSP, Low Latency Engine	2x Synaptics DSP, Low Latency Engine
DSP Subsystem 2	-	HiFi 5	HiFi 5
NPU	-	-	Synaptics NPU



### Benefits

- Enabling high-performance audio AI processing at ultra-low power
- Premium hybrid adaptive active noise cancellation (ANC)
- Personalization through speaker detection
- Programmable audio pipelines for local, private audio processing
- RTOS-based SDK for responsive application development
- Supports customer and third-party algorithm integration
- Customizable audio tuning with Synaptics Audio Toolkit

### Applications

- Audio front-end for agentic AI
- High-performance headsets and earbuds
- Soundbars, remote controls
- Security panels, conferencing systems
- Voice-controlled smart home appliances



PREMIUM AUDIO



ULTRA-COMPACT FOOTPRINT



ULTRA-LOW POWER CONSUMPTION

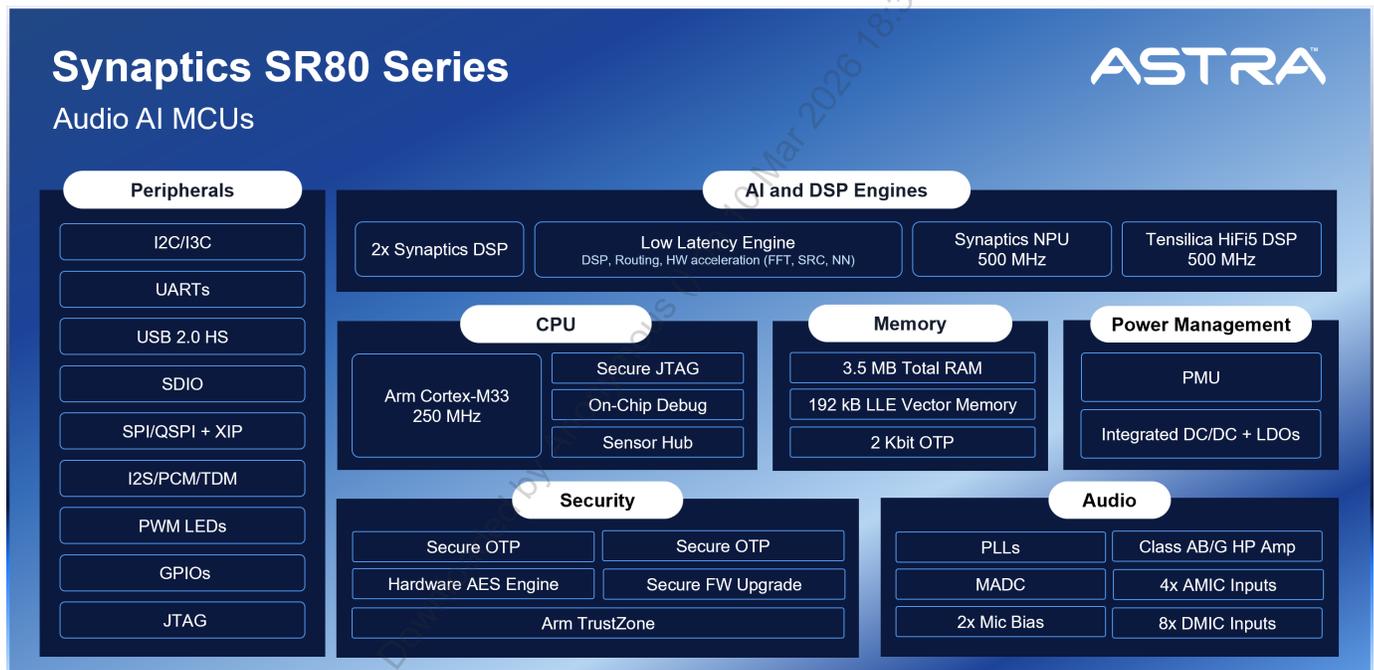


MULTI-CORE AUDIO PROCESSING ENGINES

## Features

- **Audio Interfaces:** 4x ADCs with 106 dB dynamic range, 8x DMICs, 2x DAC with 113 dB dynamic range, 120 dB SNR, Stereo class-AB + G headphone amplifier, 10-bit monitor ADC, 3.0V microphone bias
- **Digital Interfaces:** USB 2.0 High Speed, 3x I2S, I3C host/target, I2C host/target with clock stretching, 3x UART, 2x SPI host/target, QSPI host/target, PWM LED, GPIOs, JTAG, SDIO for communication with Wi-Fi® and Bluetooth® modules
- **Advanced Turnkey Algorithms:** AI Noise Reduction, Hybrid ANC and Ambient Fusion, ENC
- **Audio AI:** Synaptics ULP Edge NPU for AI processing; Dual DSP cores and a low-latency engine (LLE) for audio
- **MCU:** One 250-MHz Arm® Cortex®-M33 MCU core for off-host processing, sensor fusion and systems management
- **Classical Audio DSP:** Tensilica® HiFi 5 DSP core for third-party algorithms

## Block Diagram



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### Contact

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PN: 190-000443-01 REV A

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