



The Synaptics Astra™ SR100 Series of AI MCUs is designed to deliver high-performance, AI-Native, multimodal compute to consumer, enterprise, and industrial Internet of Things (IoT) workloads. Based on Arm® Cortex®-M55 cores with Helium™ technology and Arm Ethos™-U55 neural network processors (NPU), the MCUs feature multiple tiers of operation—performance, efficiency, low-power sensing, and always-on (AON)—that algorithmically deliver intelligence at every power level, to enable a new class of context-aware IoT devices. The AI-Native SR100 series supports a rich set of peripherals and accelerators, including dual MIPI camera interfaces, image processing with encode and pre-roll, motion and voice activity detection engines, and industry-standard security. These features make it well-suited for streaming vision and audio processing applications at the IoT device edge.

Benefits

- Energy-efficient single-chip IoT Edge AI solution
- Arm-based RTOS model with LiteRT
- Pre-integrated & build-your-own models for all AI deployment stages
- Programmable vision, audio pipelines
- I/O interfaces for multiple cameras, digital mics

Applications

- Battery-operated security cameras
- Industrial control systems
- AI-enhanced smart home appliances
- Wearables, fitness monitors, privacy sensors



HIGH-PERFORMANCE ULP AI COMPUTE



INTELLIGENT GEARING



MULTI-LEVEL INFERENCING



STREAMING VIDEO & AUDIO



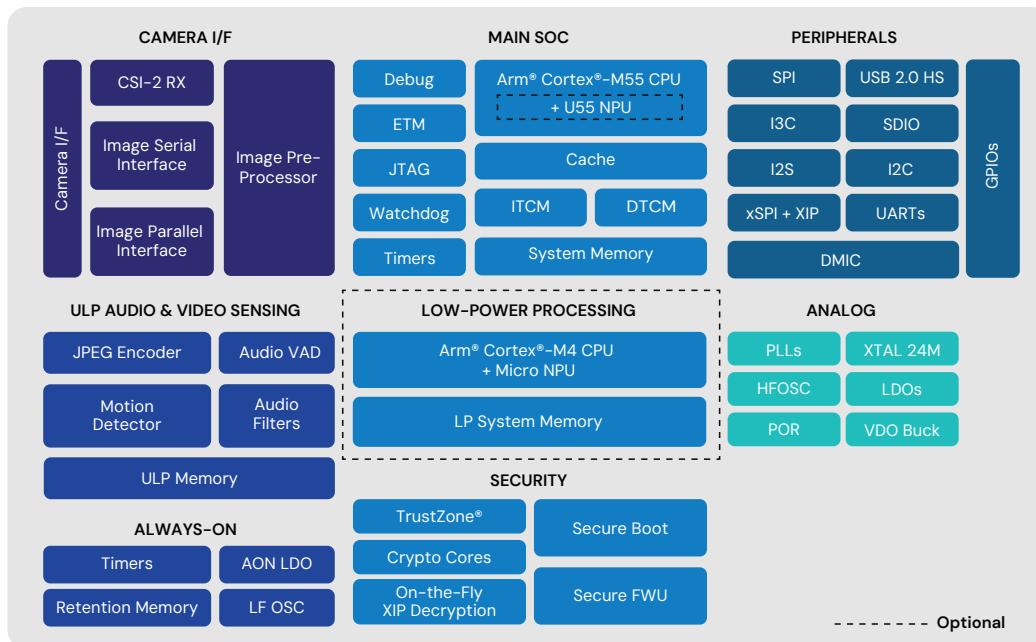
INDUSTRY STANDARD SECURITY

Features

- Performance domain: Arm Cortex-M55 @ 400MHz + Arm Ethos U55 NPU
- Efficiency domain: Arm Cortex-M4 @ 100MHz + Synaptics NPU engine
- Up to 3008 kB system memory + 630 kB ULP memory for image and audio storage
- Retention available on 1448 kB of system memory (LP) and ULP memory
- 16 kB of AON memory
- MIPI-CSI camera inputs and output
- Digital camera input support
- Audio interfaces
- ISP and CV pipeline
- Secure OTP
- TRNG, AES-256, RSA-4096, SHA-512
- Up to 43 general-purpose 1.8V inputs/outputs (GPIOs)
- USB 2.0 HS (480 Mb/s)
- Powered from 3.3V & 1.8V external sources or from a single 3.0 – 3.6V battery supply
- Low-power modes: active (sub-100 mW), low-power (sub-10 mW), ULP AON mode (sub-100 uW), and power-down mode
- Battery voltage monitor
- Power-enable pin powers up the device from complete power down and can be controlled from an external GPIO or button
- AON power island that stays on during low-power mode, with wake-up functions supported through external GPIO interrupts and timer events
- Available in WLCSP and BGA packages

Synaptics SR100 Series

High-performance context-aware AI MCUs



System Block Diagram



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