



The Synaptics SL-Series of embedded processors are highly integrated AI-Native Linux® and Android™ SoCs optimized for consumer, enterprise and industrial IoT workloads with hardware accelerators for multimodal edge inferencing, security, video, graphics, and audio.

The SL2610 product line—based on Arm® Cortex®-A55 and Cortex®-M52 with Helium™ cores, transformer-capable NPUs, and 3D GPUs with OpenGL® and Vulkan®—brings unmatched performance and power efficiency to the AI IoT device edge. The SoC families in the SL2610 product line—**SL2611, SL2613, SL2615, SL2617, SL2619**—cost-effectively address multimodal AI compute across a wide range of devices such as smart home appliances, wearables, casual gaming consoles, control and automation gateways, smart retail, charging infrastructure, robotics, transportation and industrial vision systems.

The SL2610 Synaptics Torq™ Edge AI platform features the 1 TOPS Torq T1 NPU and the industry's first production implementation of the RISC-V-based Coral NPU from Google. This integrated architecture allows for dynamic support of new operators, future-proofing Edge AI IoT system design. Torq promotes a developer-first approach, delivering an open-source Edge AI compiler and runtime based on IREE/MLIR.

An MCU-first approach allows for fine-grained, on-demand control over functional domains. PSA Level 3 certification provides assurances to build robust IoT systems shielded from sophisticated software, side-channel, and physical attacks.

With MIPI-CSI/DSI interfaces and Arm Mali® 3D GPUs, single and dual GbE and CAN with PTP/TSN support, distinct SL2610 SoC product families are architected to deliver high-performance AI compute for industrial and consumer IoT applications. In combination with Synaptics' best-in-class wireless portfolio, the SL2610 SoCs bring disruptive performance-per-watt benefits to the IoT AI device edge.

Benefits

- IoT-specific feature integrations minimize overall system cost
- Industry-leading performance/watt/\$ with secure, AI-Native compute
- Build future-ready IoT designs supporting multimodal GenAI workloads
- Reduce TTM with open source, developer-friendly Edge AI frameworks

Applications

- Home appliances and automation
- Home consumer goods
- Industrial process and control systems
- Smart retail and charging infrastructure
- Healthcare diagnostics systems
- Audio



AI-NATIVE IOT COMPUTE



SECURE EDGE INFERENCING



VISION, 3D GFX, AUDIO



PIN-TO-PIN COMPATIBILITY

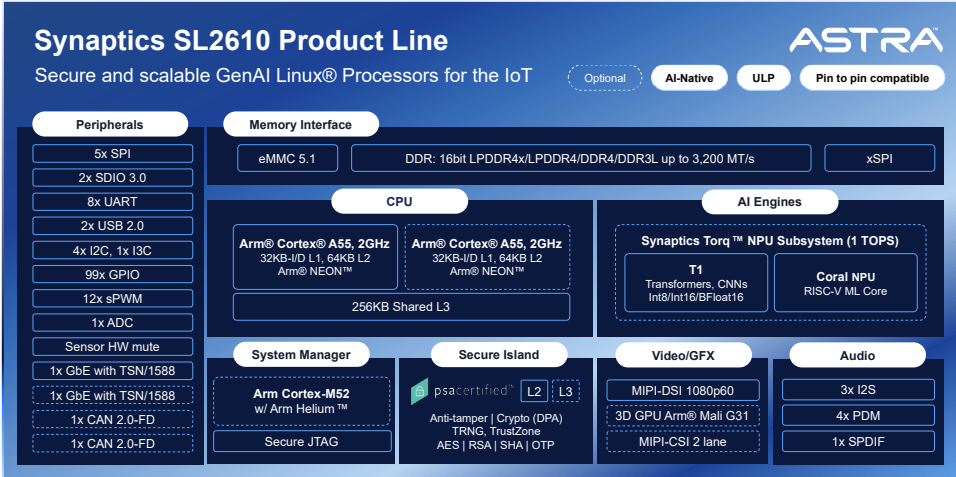


DISRUPTIVE PRICE-PERFORMANCE

Features

- Single and dual core Arm Cortex-A55 SoC domain
- Arm Cortex-M52 with Helium System Manager domain
- 1 TOPS Transformer-capable NPU
- Coral NPU (RISC-V ML Core)
- DDR4/LPDDR4/DDR3L with inline ECC
- 3D GPU with Arm Mali-G31
- PSA certified Level 3 (RoT), Level 2 (Product)
- Secure boot, TRNG, RSA, AWS, SHA, ECC, HASH
- MIPI-DSI & CSI with 2160p30 and HDR
- 3x TDM/I2S with 16 channels, support for 8 digital mics
- Hardware audio and camera mute
- 2 USB-2.0, 2 SDIO 3.0, 4 TWI/I2C, 8 UART
- 5 SPI, 2 xSPI, 99 GPIO
- 12-bit ADC and up to 12 smart PWM modules in SM domain
- Single and Dual GbE RGMII with Wake-on-LAN
- 1588 PTP and TSN, 802.1 p/q VLAN tagging
- Single/Dual CAN 2.0 A, B interfaces

SL2610 Block Diagram



SL2610 Product Families

Feature	SL2611	SL2613	SL2615	SL2617	SL2619
MPU	1x Arm Cortex-A55	1x Arm Cortex-A55	2x Arm Cortex-A55	2x Arm Cortex-A55	2x Arm Cortex-A55
MPU Cache	32KB I\$ + 32KB D\$ L1 + 64KB L2 + 256KB Shared L3				
MCU	1x Arm Cortex-M52 w/ Helium	1x Arm Cortex-M52 w/ Helium	1x Arm Cortex-M52 w/ Helium	1x Arm Cortex-M52 w/ Helium	1x Arm Cortex-M52 w/ Helium
MCU Memory	256KB on-chip	256KB on-chip	256KB on-chip	256KB on-chip	256KB on-chip
DRAM, Storage	16-bit DDR3L/DDR4/LPDDR4/4x with inline ECC, up to 4GB, xSPI / eMMC				
NPU	—	Synaptics Torq™ NPU and Coral NPU	Synaptics Torq™ NPU and Coral NPU	Synaptics Torq™ NPU and Coral NPU	Synaptics Torq™ NPU and Coral NPU
GPU / MIPI DSI	—	Arm Mali	Arm Mali	Arm Mali	Arm Mali
Common Security	PSA L2	PSA L2	PSA L2	PSA L2	PSA L2
	Secure boot, OTP, TRNG, RSA, AWS, SHA, HASH, sensor mute				
Additional Security	—	PSA L3	—	PSA L3	PSA L3
	—	ECC	—	ECC	ECC
Common Peripherals	GPIO, I2S, SPDIF, SDIO 3.0, USB 2.0, Smart PWM, ADC, UART, I2C, I3C, SPI, 1xGbE				
Additional Peripherals	—	MIPI CSI, 2x CAN	2x CAN	MIPI CSI	MIPI CSI, 2x CAN, 1xGbE
Optional shown in a gray background					



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