SL1640 Embedded IoT Processor

PRODUCT BRIEF

The Synaptics SL-Series of embedded processors are highly integrated AI-native Linux® and Android™ systems on chip (SoCs) optimized for multi-modal consumer, enterprise, and industrial IoT workloads with hardware accelerators for edge inferencing, security, video, graphics, and audio. The SL1640 is a cost and power optimized secure SoC with high-performance compute engines including a quad-core Arm® Cortex®-A55, 1.6+ TOPS NPU, GE9920 GPU, Ultra HD video encode and decode pipelines, and dual DSP.

The SL1640 supports the Synaptics Astra™ platform, delivering a unified experience combining standards-based open software frameworks, full-featured AI toolkits, and Synaptics' best-in-class wireless connectivity portfolio.

BENEFITS

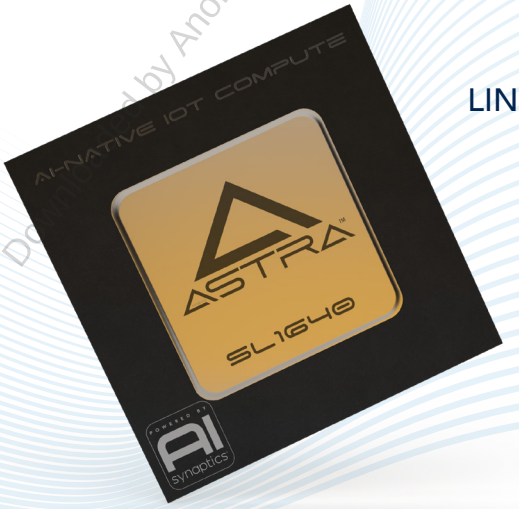
- Multi-modal IoT SoC for cost and power sensitive designs
- Heterogeneous accelerators enable out-of-the-box AI
- Pairs with best-in-class Synaptics wireless connectivity
- Enables fast time to market

APPLICATIONS

- Smart home appliances
- Enterprise conferencing
- Smart audio, displays, and signage
- Consumer and industrial control panels

PERFORMANCE / WATT

LINUX / ANDROID SDK



HETEROGENEOUS AI EDGE SOC

PROVEN SECURITY MODEL

PN: 190-000418-01 Rev C

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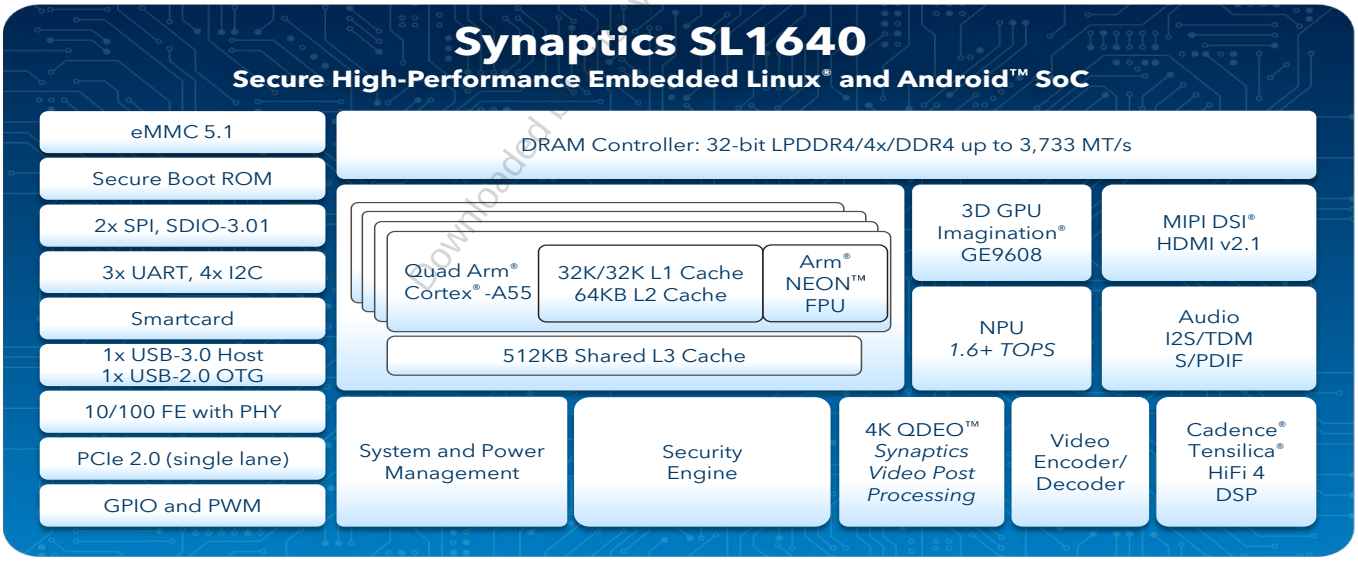
PRODUCT BRIEF

FEATURES

- Quad-core Arm® Cortex®-A55 processor with cryptographic extensions
- DRAM controller: 32/16-bit DDR4-3200 LPDDR4/LPDDR4x-3733
- Integrated GPU for 3D/2D graphics with concurrent execution and support for general-purpose compute
- 1.6+ TOPS NPU for edge inferencing
- Multi-standard video decoding with support for AV1, H.265/264 MVC, VP8, VP9, MPEG-2
- H.264 single 1080p30 8-bit encoding
- eMMC 5.1 controller
- Video, graphics post-processing and display pipeline with Synaptics QDEO®
- Audio processing with far-field voice, keyword detection, decompression and post-processing
- Base Crypto Module (BCM) security processor
- Memory scrambling and integrity checking
- True random number generator (TRNG)
- Physical attack mitigation
- On-chip 32 Kbit OTP
- Cadence® Tensilica® Dual HiFi 4 DSP
- System and power management unit
- Always-on (AON) domain for multi-protocol wake-up events
- Video, audio via MIPI DSI®, HDMI®-TX, I²S/TDM
- 10/100 networking, PCIe connectivity
- SPI, SDIO, UART, USB, GPIO, ADCs

SYSTEM BLOCK DIAGRAM



TRADEMARKS

For more information, reference the SL1640 Embedded IoT Processor Electrical Specification Datasheet (PN: 505-001415-01).

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