SL1680 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 SL1680 incorporates high-performance compute engines, including a quad-core Arm® Cortex®-A73 64-bit CPU subsystem, a multi-TOPS NPU, a high-efficiency, feature-rich GPU for advanced graphics and AI acceleration, and multimedia accelerators for image signal processing (ISP), 4K video encode/decode, and audio.

The SL1680 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 lowers system cost
- Powerful NPU enables out-of-the-box AI
- Pairs with best-in-class Synaptics connectivity
- Enables fast time to market

APPLICATIONS

- Smart appliances
- Home security gateways
- Industrial control systems
- Signage and displays
- Point-of-sale systems
- Scanners

AI-NATIVE EDGE SOC

HIGH PERFORMANCE PER WATT

DUAL CAMERA SUPPORT

PROVEN SECURITY MODEL

FEATURES

- Quad-core Arm® Cortex®-A73 64-bit processor with security extensions
- DDR: 64/32-bit LPDDR4/LPDDR4x-3733 DRAM controller
- Integrated GPU for 3D/2D graphics with concurrent execution and support for general-purpose compute
- Up to 7.9+ TOPS NPU for edge inferencing
- Multi-standard video decoding with support for AV1, H.265/264 MVC, VP8, VP9, MPEG-2
- Multi-stream encoding for H.264, VP8 and simultaneous 2160p60 decode and 1080p60 encode
- Secure ISP engine

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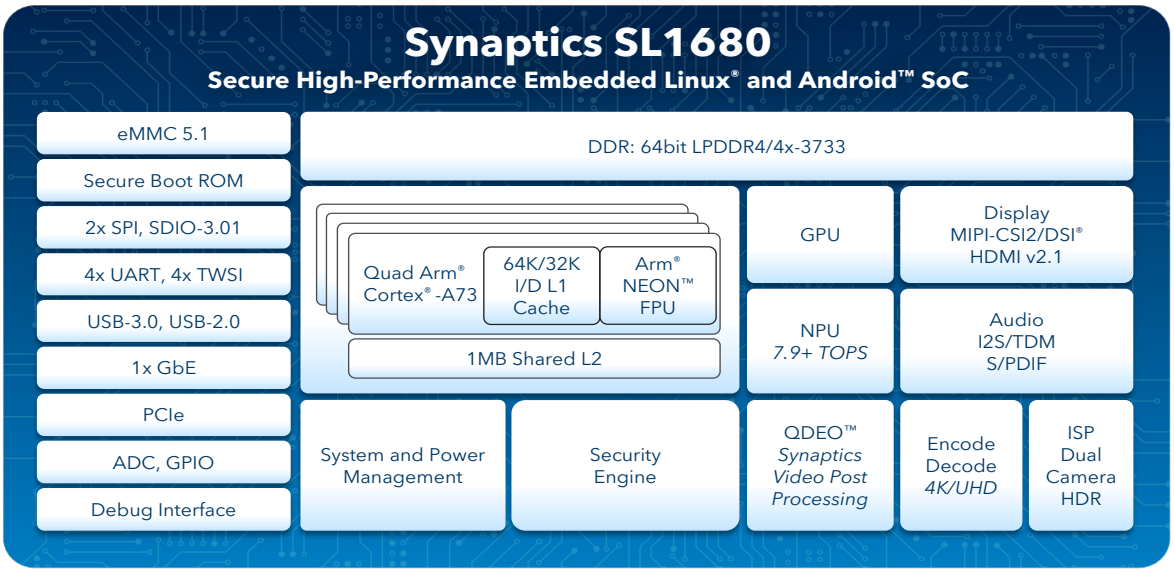
- Video, graphics post-processing, and display pipeline with Synaptics QDEO®
- Audio processing with far-field voice, keyword detection, decompression, and post-processing
- Base Crypto Module (BCM) security processor
- Memory scrambling and integrity checking
- True random number generator (TRNG)
- Physical attack mitigation
- On-chip 32 Kbit OTP
- System and power management unit
- Always-on (AON) domain for multi-protocol wake-up events
- eMMC 5.1 controller
- Video, audio via MIPI CSI-2®, MIPI DSI®, HDMI®, I²S/TDM
- Gbit networking, PCIe connectivity
- SPI, SDIO, UART, USB, GPIO, ADCs

SYSTEM BLOCK DIAGRAM



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