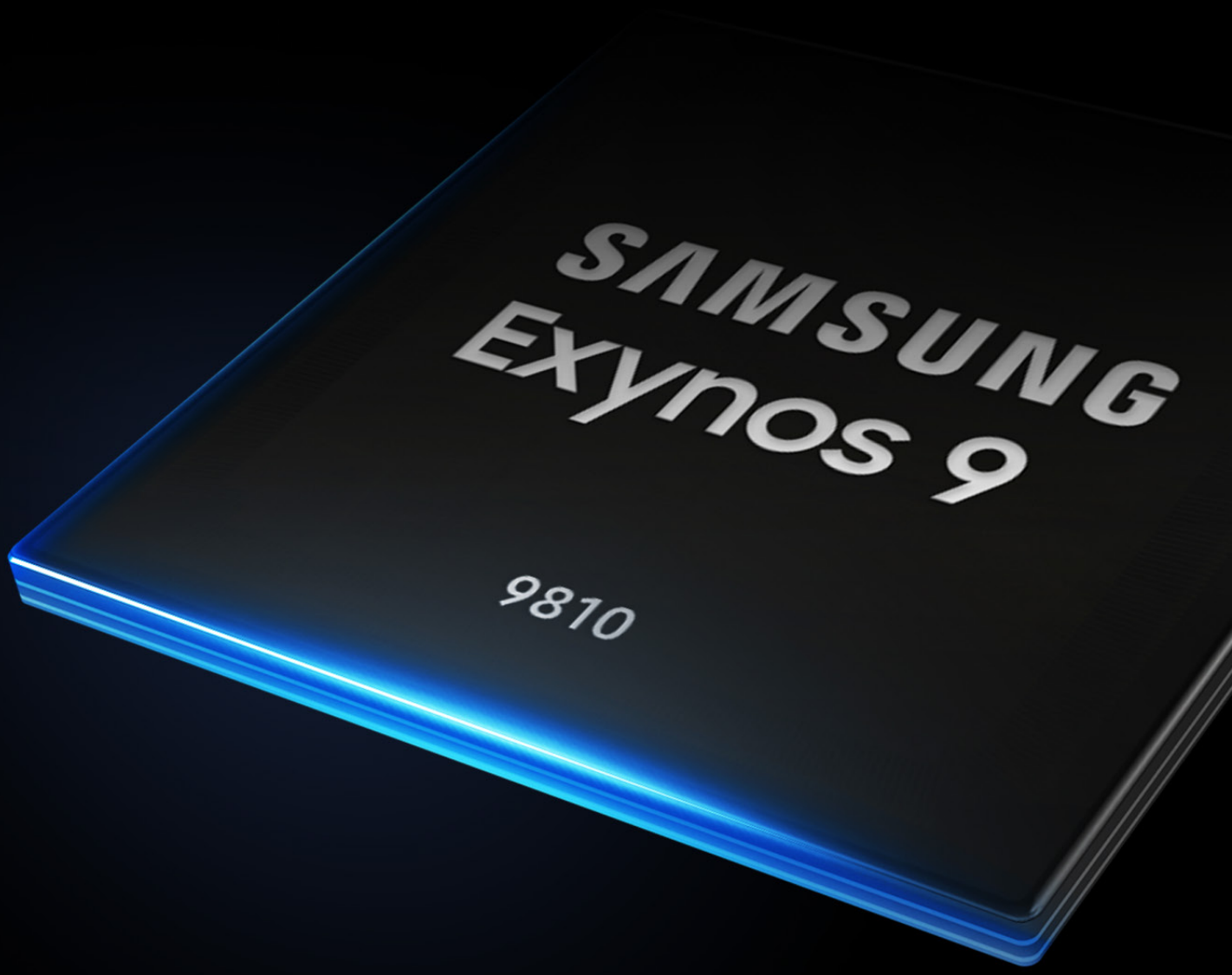
MOBILE PROCESSOR



Exynos 9 Series (9810)

MOBILE PROCESSOR FOR POSSIBILITIES BEYOND A COMPONENT

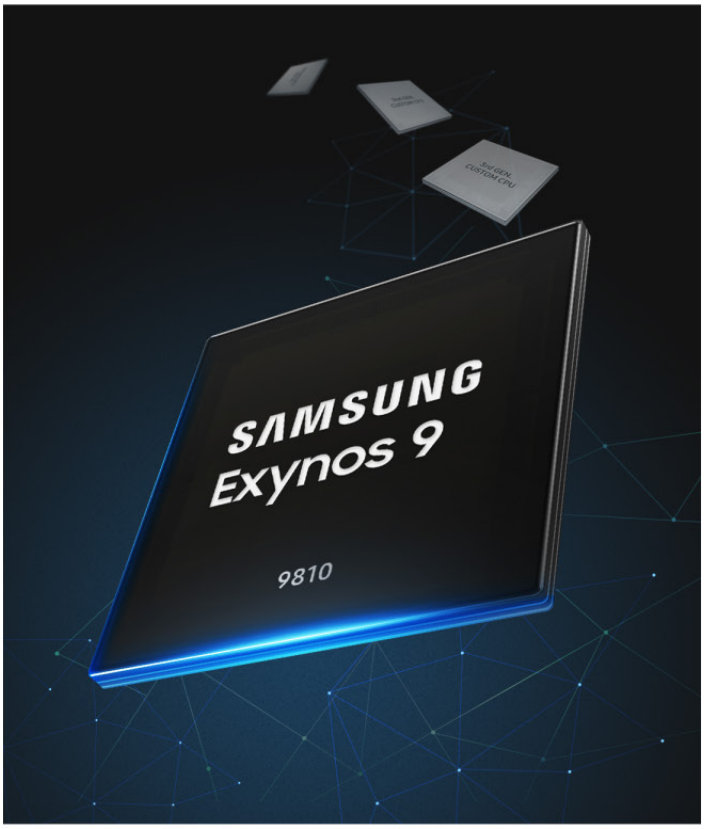
The Exynos 9 Series (9810) processor is engineered to bring infinite possibilities in mobile. From astonishing performance and efficiency to cutting-edge features for deep learning, versatility of the Exynos 9810 pushes the limits of the mobile innovation. The Exynos 9810 is the component that goes beyond a component as it creates limitless possibilities for all.

SAMSUNG

Deep Learning

Intelligence at your fingertips

The Exynos 9810 introduces sophisticated features to enhance user experience with deep learning-based software. This cutting-edge technology allows the processor to accurately identify items or persons in the photos for fast image searching or categorization. Furthermore, the Exynos 9810 enables a depth sensing feature to scan user's face in 3D for face tracking filters as well as strong security when unlocking a device with one's face.



Processing power

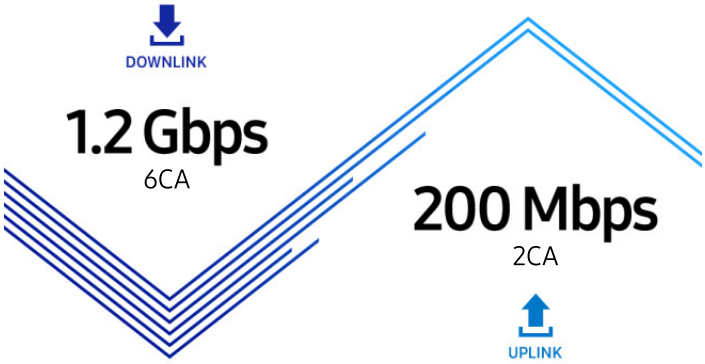
Get things done faster

The Exynos 9810 features a 3rd generation custom CPU upgraded with wider pipelines and optimized cache memory. With a clock speed of up to 2.9GHz, a 3rd generation custom CPU offers higher computing power so that its single-core and multi-core performances are improved around two-fold and 40 percent respectively when compared to its predecessor. With combination of octa-core CPU consisting of four custom CPUs for performance and four Cortex-A55 for efficiency, the Exynos 9810 offers greater processing power for intensive tasks resulting in seamless multi-tasking and computing experience. Notably, the Exynos 9810 is built on the 2nd generation 10nm FinFET process to deliver a powerful performance with less power.

LTE Modem

Connect with supersonic speed

The Exynos 9810 embeds LTE modem that supports category 18 with 6CA(carrier aggregation) for downlink and 2CA for uplink. With faster downlink and uplink speed of up to 1.2Gbps and 200Mbps respectively, the Exynos 9810 allows new kinds of video experience such as streaming of high quality virtual reality contents.
To maximize data throughput, the embedded modem supports 4x4 MIMO (Multiple-Input, Multiple-Output) and higher-order 256 QAM (Quadrature Amplitude Modulation) scheme, and utilizes eLAA (enhanced Licensed-Assisted Access).



4K UHD

10-BIT COLOR

HIGH-QUALITY AUDIO

Multimedia

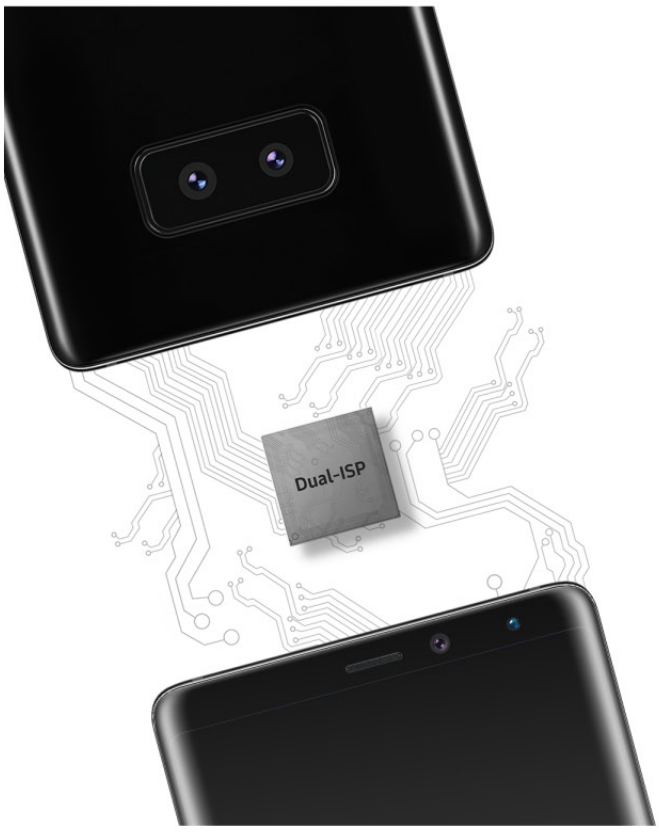
Film your story as you intended

To capture our daily lives in ultimate detail, the Exynos 9810 supports 4K UHD video recording and playback with frame rate up to 120fps. Furthermore, the advanced MFC (Multi-Format Codec) supports 10-bit HEVC and VP9 codecs that can render 1,024 different tones for each primary colors (red, green and blue). This means 1.07 billion colors, a 64 times more than 16.7 million colors of the conventional 8-bit color format, can be expressed for users to create and enjoy highly immersive contents. Last but not the least, the audio subsystem is also upgraded for better audio quality of up to 32bit/384kHz with stable processing in low power consumption.

Imaging

Engineered for a shutterbug

The Exynos 9810 features a dual-ISP (Image Signal Processor) that support up to 4 image sensors such as a dual-camera in the rear along with a camera and an iris sensor in the front. The dual-ISP consists of a high-performing ISP and another that is power efficient to take amazing quality photographs while using very low power. With an AF statistics engine that enables faster and accurate phase-detection AF, diverse image processing algorithms such as demosaic, noise reduction, edge enhancer, and face beautification have been drastically improved. Furthermore, the imaging sub-system offers an advanced stabilization and real-time out-of focus photography in high resolution image and video of up to UHD resolution.



Graphic Performance

Extreme gaming on the go

The Exynos 9810 features the latest ARM Mali-G72 GPU that brings more realistic graphics with 20% more powerful performance than that of the predecessor. The GPU is built on ARM's second generation Bifrost architecture intended for high performance with lower energy consumption. It's specifically designed with arithmetic optimization for the trending machine learning and high fidelity mobile gaming. This not only helps gaming graphics on the smart phone but also on the VR headsets delivering fully immersive graphical experience.

Security

Enhanced security for safe experience

The Exynos 9810 enables secure mobile experience with powerful features dedicated to security. The Exynos 9810 safeguards sensitive security software against malicious attack by combining binary encryption with enhanced DRAM encryption. The Exynos 9810 also features firewalls that isolate internal sub-systems from each other. For instance, with a firewall setup around modem or Wi-Fi sub-system, the processor is able to protect the main system against an unauthorized remote access via modem or Wi-Fi. Furthermore, the advanced hardware design utilizing a concept of secure and non-secure worlds hastens the growth of security-based mobile experiences such as payment, biometric authentications, UHD DRM, and so on.

Spec

CPU
Up to 2.9GHz Quad-core (Custom CPU)+ Up to 1.9GHz Quad-core (Cortex®-A55)

GPU
Mali™-G72 MP18

Process
2nd gen. 10nm FinFET Process

Display
Up to WQUXGA (3840x2400), 4K UHD (4096x2160)

LTE Modem
LTE Cat.18 6CA 1.2Gbps (DL) / Cat.18 2CA 200Mbps (UL)

GNSS
GPS, GLONASS, BeiDou

Storage
UFS 2.1, SD 3.0

Memory
LPDDR4x

Camera
Rear 24MP, Front 24MP, Dual Camera 16+16MP

Video
4K UHD 120fps encoding and decoding with 10-bit HEVC (H.265), H.264, VP9 Codec

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