Qualcomm

Qualcomm® SDM660/ SDA660 Processors

Designed to support on-device artificial intelligence, advanced photography, and enhanced user experiences with low power consumption and fast LTE speeds.

The SDM660/SDA660 processor supports a leap in performance, engineered to allow enhanced user experiences and battery performance.

The SDM660/SDA660 uses an advanced 14 nm, FinFET process for lower active power dissipation and fast CPU performance. It features eight Qualcomm® Kryo™ 260 64-bit cores that are divided in two clusters—a fast cluster of four cores with up to 2.2 GHz and a power-saving efficiency cluster of four cores with up to 1.8 GHz.

Additional features in the processor include the powerful Qualcomm® AI Engine, Qualcomm Spectra™ ISP, and Qualcomm® Hexagon™ 680 DSP with Hexagon Vector eXtensions (HVX), designed to support Caffe2 and Tensorflow for machine learning and image processing.

High-end features in the SDM660/SDA660 processor make it powerful and optimized for unique user experiences. Designed to support on-device artificial intelligence, advanced photography, and enhanced gaming, SDM660/SDA660 offers up to 30% higher graphics performance and twice the LTE and Wi-Fi downlink speed compared to the prior generation 600-tier processor.

Highlights

Outstanding image quality

The 14-bit Qualcomm Spectra 160 ISP is engineered to support capture of up to 25 megapixels with zero shutter lag, and offers smooth zoom, fast autofocus and true-to-life colors for improved image quality.

On-device intelligence powered by the Qualcomm AI Engine

The Qualcomm AI Engine is on-device intelligence that delivers mobile-optimized computer vision (CV) experiences for a wide array of use cases.

Enhanced graphics and 3D gaming

Qualcomm® Adreno™ 512 GPU supports lifelike visuals and more efficient rendering of advanced 3D graphics. Developers gain access to the latest graphics APIs.

Powerful Kryo CPU

The Kryo 260 CPU has up to 20% higher performance than the prior generation—with independent efficiency and power clusters, each designed to optimize for a unique user experience.

Faster connection speeds

With faster LTE and Wi-Fi downlink speeds, the Snapdragon® X12 modem (SDM660 only) can download files quickly. Improved Wi-Fi coverage is engineered to provide a stronger signal, even through hard-to-penetrate walls.

PRODUCT LONGEVITY PROGRAM

Expected Product Longevity: April 2027

The SDM660/SDA660 processors are a part of the Product Longevity Program for Qualcomm IoT Portfolio. These products are developed and engineered with product longevity and durability in mind, helping to bring stability to our customer product designs. Product longevity dates are subject to change without notice.

87-PU779-1 Rev. C

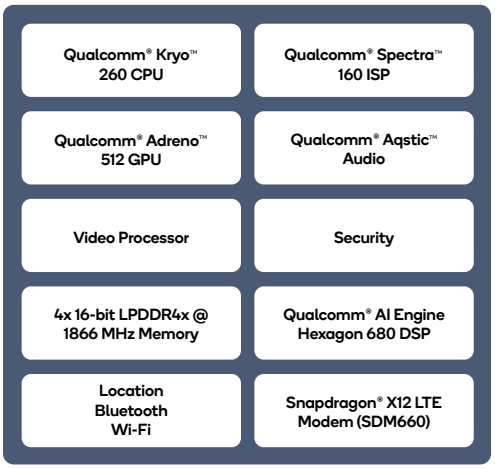
SDM660/SDA660 Target Applications

- IoT Edge Devices
- Smart Cities
- Artificial Intelligence
- Portable Healthcare
- Connected Cameras
- Digital Signage

Features

- Custom-built 64-bit octa-core Arm® v8-M architecture-compliant Kryo 260 CPU arranged in two dual-clusters:
  - Quad high-performance Kryo cores operating at 2.2 GHz – Gold cluster with 1 MB L2
  - Quad low-power Kryo cores operating at 1.8 GHz – Silver cluster with 1 MB L2
- Hexagon DSP with HVX (dual-HVX512) 787 MHz
- Adreno GPU 512 with 64-bit addressing; designed for 650 MHz
- Dual-channel non package-on-package (non-PoP) high-speed memory, LPDDR4/4x SDRAM designed for 1866 MHz clock
- Display support: Up to 2560 x 1600 10-bit at 60 Hz, up to eight hardware layers
- Two 4-lane DSIs D-PHY 1.2 @ 2.1 Gbps per lane and 1080p30 Miracast/4K30DP
- Three 4-lane CSIs (4/4/4 or 4/4/2/1) D-PHY 1.2 at 2.1 Gbps per lane or three 3-lane C-PHY 1.0 at 17 Gbps (2.5 G symbols per trio per second)
- Video support: 3840 x 2160 @ 30 Hz, HEVC Main 10, VP9, H264, and other popular video formats
- Dual 14-bit image signal processing (ISP): 16 +16 MP, 540 MHz each; 24 MP30 ZSL with dual ISP; 16 MP30 ZSL with a single ISP
- Support for UFS 2.1 gear 3 (one-lane), eMMC 5.1, and SD 3.0
- Support for USB 3.1 Type-C with DisplayPort and USB 2.0

Block Diagram



Specifications

Package	12.4 x 12.4 x 0.58 mm MEP (without memory device on top)
CPU	8x Kryo 260 CPU, from 1.95 up to 2.2 GHz
Modem	Snapdragon X12 LTE modem @ up to 1.2 Gbps (SDM660 only)
ISP	Qualcomm Spectra 160 Image Signal Processor
Camera	Up to 25 MP single camera, up to 16 MP dual camera
Video	Up to 4K UltraHD capture @ 30 fps; Up to 4K UltraHD playback @ 30 fps; H.264 (AVC), H.265 (HEVC), VP9
GPU	Adreno 512 GPU with support for Open GL ES 3.2, Open CL 2.0 full, Vulkan, DX12
DSP	Hexagon 680 DSP with HVX
Memory & Storage	LPDDR4x dual-channel, up to 1866 MHz, 8GB RAM, eMMC and UFS
Wireless Connectivity	Wi-Fi: Integrated 802.11ac 2x2 with MU-MIMO, 2.4 GHz/5 GHz, Bluetooth 5.0
Audio	Qualcomm Aqstic™ audio technology; Qualcomm® aptX™ audio technology
Location	GPS, Glonass, BeiDou, Galileo, QZSS, and SBAS

To learn more visit: qualcomm.com

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