

Qualcomm

# Qualcomm® APQ8096SG Application Processor

**The APQ8096SG application processor supports premium tier, cutting edge applications for the Internet of Things (IoT).**

The APQ8096SG features leading-edge premium mobile technology for powering next-generation devices, while supporting the ultimate in performance and power efficiency, ideal for small form factors and a wide variety of innovative and intelligent IoT applications.

The APQ8096SG is designed to support connected computing and powerful, yet power-efficient, multi-core processing for computer vision, artificial intelligence and immersive multimedia – all in one package. This makes it an ideal choice for next generation IoT applications such as virtual reality, smart retail, industrial IoT, robotics and more.

The powerful and versatile APQ8096SG features a 64-bit Arm-v8 compliant quad-core Qualcomm® Kryo™ CPU, an ideal processor for building advanced systems, and supports Bluetooth/Wi-Fi, six position location satellite systems and high quality multi-channel audio.

The APQ8096SG has a rich set of options available to support a fast-track deployment path for OEMs and developers from development boards and kits to customized solutions – including integration services, production-ready, customizable System-on-Modules (SoMs) and Single Board Computers (SBCs).

## Highlights

### Next-generation computer vision

Enhanced object detection and navigation functionality allows recognition and tracking of multiple objects to navigate and perform dynamic collision avoidance in commercial drones and robots.



### Highly integrated single-chip solution for compact designs

The high level of integration aims to reduce the bill-of-material (BOM) delivering board-area savings. The package-on-package implementation adds LPDDR4 SDRAM memory without increasing a device's footprint or PCB area.



### Powerful multi-core processing

The combination of the APQ8096SG application processor's powerful Qualcomm® Adreno™ 530 GPU and quad-core Kryo CPU expands the possibilities of connected computing while providing the ultimate in performance, power efficiency and high quality visual experiences.



### Immersive, life-like virtual reality

Realistic visual and audio immersion and smooth VR/AR action are enabled by the APQ8096SG heterogeneous compute platform designed for high performance and long battery life.



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APQ8096SG

## APQ8096SG Target Applications

- Industrial IoT
- Digital Signage
- UAVs and Robotics
- Smart Retail
- Smart Glasses
- VR/AR

## Features

- Customized quad-core Kryo 64-bit CPU delivers maximum performance and low power consumption
- Fabricated using the advanced 14 nm FinFET process for low active power dissipation & fast peak CPU performance
- 28MP camera support (zero shutter lag) via dual 14-bit ISP
- Dual-channel PoP high-speed memory – LPDDR4 SDRAM @1866MHz clock rate
- Hardware assisted (HEVC/H.265) 4K Ultra HD video capture, streaming and playback
- Adreno 530 GPU with 64-bit addressing @653MHz with latest API support
- Qualcomm® Hexagon™ 680 DSP with dedicated Sensor Core to support always-on low power use cases with direct access to internal cores
- Worldwide ecosystem of Qualcomm vendors, customers, developers and embedded device OEMs

## Ordering Information

| Product                   | Part Numbers                           |
|---------------------------|----------------------------------------|
| APQ8096SG SoC             | APQ-8096SG-1-994CMNSP-AC               |
| Power Management ICs      | PM18996-0-224WLP<br>PM18996-0-210WLNTP |
| Audio Codec               | WCD9335-0-113FOWLP                     |
| GPS & Glonass RF Receiver | WGR7640-0-17WLNTP                      |

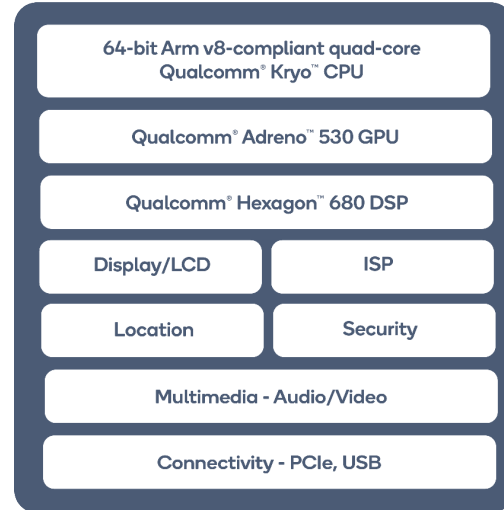
Part numbers are subject to change. Please check with the distributor for most accurate ordering information.

To learn more visit:

[www.qualcomm.com](http://www.qualcomm.com) or

[www.developer.qualcomm.com](http://www.developer.qualcomm.com)

## APQ8096SG Block Diagram



## APQ8096SG Specifications

|                           |                                                                                                                                                                  |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Package</b>            | 15.6 x 15 x 0.64mm* 994-pin NSP, 0.4mm pitch                                                                                                                     |
| <b>CPU</b>                | Custom 64-bit Kryo quad-core CPU @ up to 2.34 GHz                                                                                                                |
| <b>Memory and Storage</b> | LPDDR4 SDRAM dual-channel PoP @1866 MHz<br>UFS 2.0 gear 3 (1-lane), eMMC 5.1, SD3.0                                                                              |
| <b>Connectivity</b>       | 802.11ac 2x2 MU-MIMO 2.4/5GHz, Bluetooth 4.2                                                                                                                     |
| <b>Location</b>           | Qualcomm® Location Gen 8C GNSS                                                                                                                                   |
| <b>GPU</b>                | Adreno 530 3D graphics accelerator with 64-bit addressing<br>APIs: OpenGL ES 3.0/3.1/GEP; GL4.4; DX11.3/4;<br>Path Rendering; OpenCL 2.0 Full; RenderScript-Next |
| <b>DSP</b>                | Hexagon 680 DSP with dual-Hexagon vector processor (HVX-512) @ 825 MHz                                                                                           |
| <b>Display Support</b>    | 3840x2400 @60 fps<br>Up to 3 concurrent displays; 2 panels + external                                                                                            |
| <b>Camera Support</b>     | Dual 14-bit ISP: 28MP and 13MP @600 MHz                                                                                                                          |
| <b>Multimedia</b>         | H.264 (AVC) playback and capture @4K60<br>H.265 (HEVC) playback @4K60 and capture @4K30                                                                          |
| <b>Interfaces</b>         | 3x PCIe 2.1, 1x USB 3.0, 1x USB 2.0, 12x BLSP, 2x TSIF,<br>3x MIPI-CSI, 2x MIPI-DSI, SLIMbus, I2S, PCM                                                           |
| <b>Security</b>           | Secure Boot, Code signing service                                                                                                                                |

\* Height dimension does not include the memory device

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