

Qualcomm® Snapdragon™ 820E Embedded Platform

The Snapdragon 820E embedded platform supports premium tier, cutting edge applications for the Internet of Things (IoT).

The Snapdragon 820E embedded platform (APQ 8096SGE) 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 Snapdragon 820E embedded platform 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 for next generation of IoT applications such as virtual reality, smart retail, industrial IoT, robotics and more. Designed for longevity, the Snapdragon 820E embedded platform provides extended availability for a minimum of ten years from the initial commercial sample (until 2025), in order to support customers with longer product life cycles.

The powerful and versatile Snapdragon 820E embedded platform, features a 64-bit Arm-v8 compliant quad-core Qualcomm® Kryo™ CPU, an ideal processor for building advanced systems. The embedded platform also supports Bluetooth/Wi-Fi, six position location satellite systems and high quality multi-channel audio.

The Snapdragon 820E embedded platform has a rich set of options available to support a fast-track deployment path for embedded device OEMs and developers from development boards and kits to customized solutions – including integration services, production-ready, customizable SoMs (System-on-Modules), and SBCs (Single Board Computers).

Solution Highlights

Highly integrated platform 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 Snapdragon 820E platform'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.



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.



Immersive, life-like virtual reality

Realistic visual and audio immersion and smooth VR/AR action are enabled by the Snapdragon 820E heterogeneous compute platform designed for high performance and long battery life.



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Snapdragon 820E 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
- Fast-track deployment path for embedded device OEMs and developers— utilizing SoMs and SBCs available now from our Snapdragon Technology Providers

Ordering Information

| Product | Part Numbers* |
|---------------------------|--|
| Snapdragon 820E SoC | APQ-8096SGE-1-994CMNSP-AC |
| Power Management ICs | PM18996-0-224WLP PM18996-0-210WLNSP |
| Audio Codec | WCD9335-0-113FOWLPL |
| GPS & Glonass RF Receiver | WGR7640-0-17WLNSP |

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

To learn more visit:

snapdragon.com/embedded
or developer.qualcomm.com

Snapdragon 820E Block Diagram



Snapdragon 820E Specifications

| | |
|---------------------------|--|
| Package | 15.6 x 15 x 0.64mm* 994-pin NSP, 0.4mm pitch |
| CPU | Custom 64-bit Kryo quad-core CPU @ up to 2.35GHz |
| Memory and Storage | LPDDR4 SDRAM dual-channel PoP @1866MHz UFS 2.0 gear 3 (1-lane), eMMC 5.1, SD3.0 |
| Connectivity | 802.11ac 2x2 MU-MIMO 2.4/5GHz, Bluetooth 4.2 |
| Location | Qualcomm® Location Gen 8C GNSS |
| GPU | Adreno 530 3D graphics accelerator with 64-bit addressing APIs: OpenGL ES 3.0/3.1/GEP; GL4.4; DX11.3/4; Path Rendering; OpenCL 2.0 Full; RenderScript-Next |
| DSP | Hexagon 680 DSP with dual-Hexagon vector processor (HVX-512) @825MHz |
| Display Support | 3840x2400 @60fps Up to 3 concurrent displays; 2 panels + external |
| Camera Support | Dual 14-bit ISP: 28MP and 13MP @600 MHz |
| Multimedia | H.264 (AVC) playback and capture @4K60 H.265 (HEVC) playback @4K60 and capture @4K30 |
| Interfaces | 3x PCIe 2.1, 1x USB 3.0, 1x USB 2.0, 12x BLSP, 2x TSIF, 3x MIPI-CSI, 2x MIPI-DSI, SLIMbus, I2S, PCM |
| Security | Secure Boot, Code signing service |
| Longevity | Product availability extended for a minimum of 10 years from initial commercial sample (to 2025) |

* Height dimension does not include the memory device

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