



# Qualcomm® Snapdragon™ System-in- Package

The world's first Qualcomm® Snapdragon™ System-in-Package is custom-built with the manufacturer in mind, providing an integrated solution that supports design flexibility and robust features on long-lasting devices.\*



## All-in-one package

Qualcomm Technologies combines multiple high-end software and hardware components into one robust, feature-rich integrated semiconductor. With this unified approach, devices containing a Snapdragon System-in-Package may be developed in less time and at lower cost.



## Integrated semiconductor for design flexibility

Incorporating advanced Snapdragon technologies into a single semiconductor maximizes space and minimizes board size. Manufacturers can choose, depending on need, whether they will produce a thinner device or build in more features like additional cameras or bigger batteries.



## Connections that go the distance

In the heart of the city or on the outskirts, devices powered by Snapdragon are designed to provide excellent coverage. The Snapdragon X9 LTE modem is designed to support global networks and bands for reliable connectivity and super-fast speeds, allowing users to quickly share high-res photos and videos.



## Powering advanced mobile experiences

This integrated semiconductor balances cutting-edge performance with ultra-low power usage. The system is designed to handle advanced on-device interactions without unnecessarily draining the battery, so users can accomplish more on a single charge.



## Maximizing every on-device moment

Bring forth the gamut of entertainment experiences. Turn your device into a multimedia machine with support for brilliant displays, hi-fi audio and action-packed mobile gaming. In the photography department, multi-camera support provides access to an expansive set of advanced features.

To learn more visit  
[snapdragon.com](http://snapdragon.com)

\*Battery life varies significantly with settings, usage and other factors.

Qualcomm Snapdragon is a product of Qualcomm Technologies, Inc. and/or its subsidiaries.

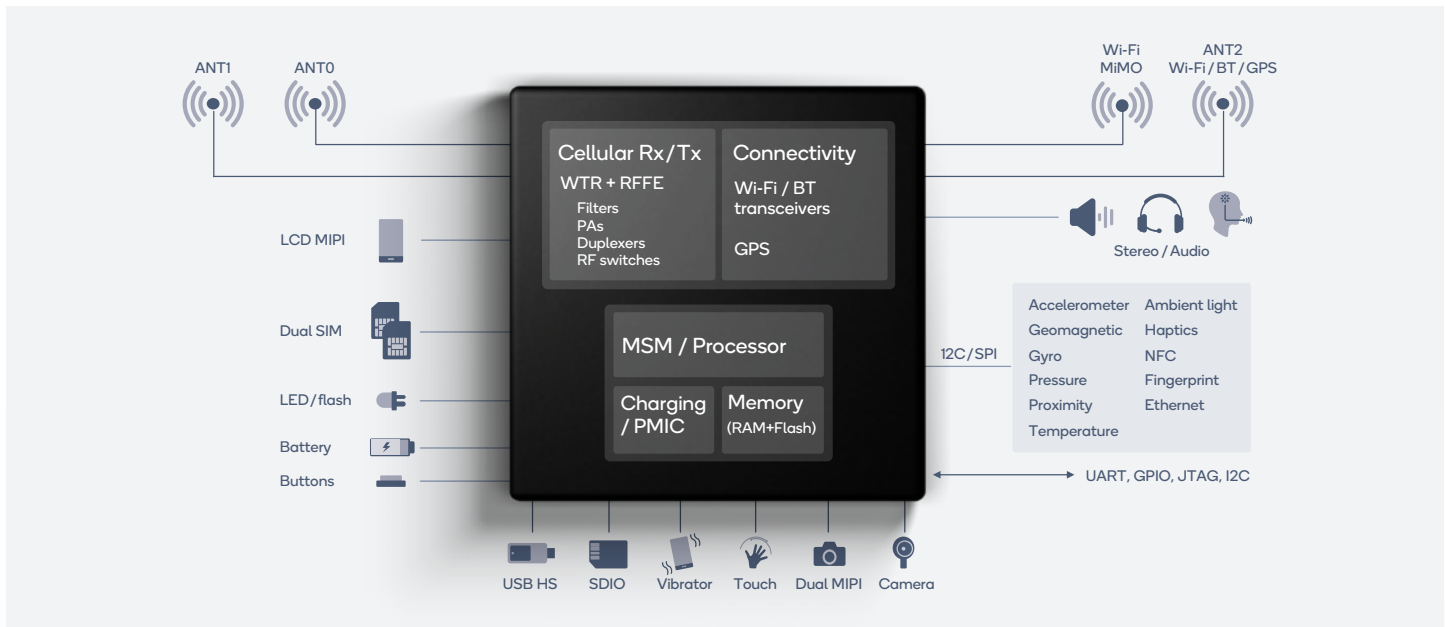
**Qualcomm**  
snapdragon

# Qualcomm® Snapdragon™ System-in-Package

Qualcomm  
snapdragon



## SPECIFICATIONS & FEATURES



### Modem

- Snapdragon X9 LTE modem
- Cat 7 downlink, up to 300 Mbps, 2xCA
- Cat 13 uplink, up to 150 Mbps
- 64-QAM UL
- Qualcomm® Snapdragon™ All Mode
- Qualcomm® Snapdragon™ Upload +

### Connectivity

- Integrated 802.11ac Multi-User MIMO (MU-MIMO)
- Qualcomm® Location technology Gen8C Lite
- USB version 3.0
- Bluetooth version 4.2 + BLE

### CPU

- 8x Arm Cortex A53
- Up to 1.8 GHz
- 14nm process technology

### DSP

Qualcomm® Hexagon™ 546 DSP

### GPU

- Qualcomm® Adreno™ 506 GPU
- OpenGL ES 3.1, OpenCL 2.0 Full

### Display

- Primary Full HD+
- One 4-lane DSI
- Qualcomm® Low-Power Picture Enhancement support
- Qualcomm® TruPalette™ Display Feature support
- Qualcomm® improveTouch™ technology support

### Camera

- Support up to 4 cameras
- Three 4-lane CSI at 2.1 Gbps per lane
- Dual concurrent camera operation
- Dual 14-bit image signal processing (ISP):
  - Dual camera: up to 13 MP + 13 MP at 30 fps ZSL
  - Single camera: up to 21 MP at 30 fps ZSL or
  - Single camera: up to 24 MP at 24 fps

### Video

FHD+ @ 60 fps HEVC capture & playback

### Audio

- Qualcomm Aqstic™ Audio codec (WCD9335)
  - Hi-Fi music playback: 192 kHz/24-bit,
  - Total Harmonic Distortion + Noise (THD+N), Playback: -109 dB
  - Dual Oscillator Support, Playback: 44.1 kHz, 48 kHz

- Qualcomm Aqstic smart speaker amp (WSA881x)
  - Total Harmonic Distortion + Noise (THD+N), Playback: -80 dB
  - Amplifier output power: Up to 4 W
  - Smart speaker protection
- Crystal clear VoLTE w/ Ultra HD Voice (EVS)
- Dolby Digital Plus 5.1 & DTS-HD surround sound
- Qualcomm® Audio & Voice optimization technology

### RF Front-End

- Integrated RF Transceiver
- Integrated low-/mid-/high-band Power Amplifier modules
- Integrated Average Power Tracker
- Integrated Dynamic Antenna Tuning solution for superior power efficiency
- Integrated Diversity Antenna Switch

### Charging

Qualcomm® Quick Charge™ 3.0 technology

### Memory

- eMCP (SDRAM+eMMC), LPDDR3
- Memory Configurations
  - 3 GB RAM + 32 GB ROM
  - 4 GB RAM + 64 GB ROM

Certain optional features available subject to Carrier and OEM selection for an additional fee.

Qualcomm Snapdragon, Qualcomm Snapdragon Upload+, Qualcomm Snapdragon All-Mode, Qualcomm Location, Qualcomm Hexagon, Qualcomm Adreno, Qualcomm Low-Power Picture Enhancement, Qualcomm TruPalette, Qualcomm improveTouch, Qualcomm Aqstic, Qualcomm Audio & Voice, Qualcomm RFFE and Qualcomm Quick Charge are products of Qualcomm Technologies, Inc. and/or its subsidiaries.

©2019 Qualcomm Technologies, Inc. and/or its affiliated companies.

Qualcomm, Snapdragon, Adreno, Hexagon and improveTouch are trademarks of Qualcomm Incorporated, registered in the United States and other countries. Qualcomm Aqstic, TruPalette and Quick Charge are trademarks of Qualcomm Incorporated. Other products and brand names may be trademarks or registered trademarks of their respective owners.