Qualcomm Dragonwing™
QCS6490/QCM6490 Processors

Powering connected, performance-driven, and AI-enhanced edge devices with premium, multi-gigabit connectivity, scalable compute, intelligent camera capabilities, and expanded I/O for enterprise and commercial IoT deployments.

The Dragonwing QCS6490 processor is designed to offer a combination of high-performance compute, edge AI loads, scalability, connectivity, and power efficiency with multi-OS support across Linux, Android, Ubuntu, and Windows.

There is pin-to-pin compatibility between the Dragonwing QCS6490 and Dragonwing QCS5430 hardware to match varying performance and connectivity needs. Equipped with a multi-core CPU (up to 8 cores), GPU, and Qualcomm® AI Engine (NPU & DSP) delivering up to 12 dense TOPS, these processors enable devices to perform complex processing at the edge. This makes them ideal for high-compute applications such as robotics, edge AI, and smart vision solutions.

Related Products

The Dragonwing QCS6490 can be evaluated with the Dragonwing RB3 Gen 2 Development Kit, which eases the development of efficient, high-performance, and AI-enhanced solutions for robotics, AI vision, and smart security.

Highlights

HIGH-PERFORMANCE EDGE COMPUTING
Delivers powerful heterogeneous compute with an 8-core CPU running up to 2.7 GHz, a dedicated GPU, and an NPU capable of up to 12 dense TOPS.

MULTI-OS SUPPORT AND LONGER SUPPORT
Long-term support for Android OS upgrades, Linux, Ubuntu, Windows 11 IoT Enterprise, security updates, and enterprise-grade hardware.[1]

ADVANCED CAMERA
Provides superior support for up to five concurrent cameras, up to 4K60 video decoding and 4K30 streaming and video concurrency. The processor delivers powerful edge AI vision and real-time object detection at low power.
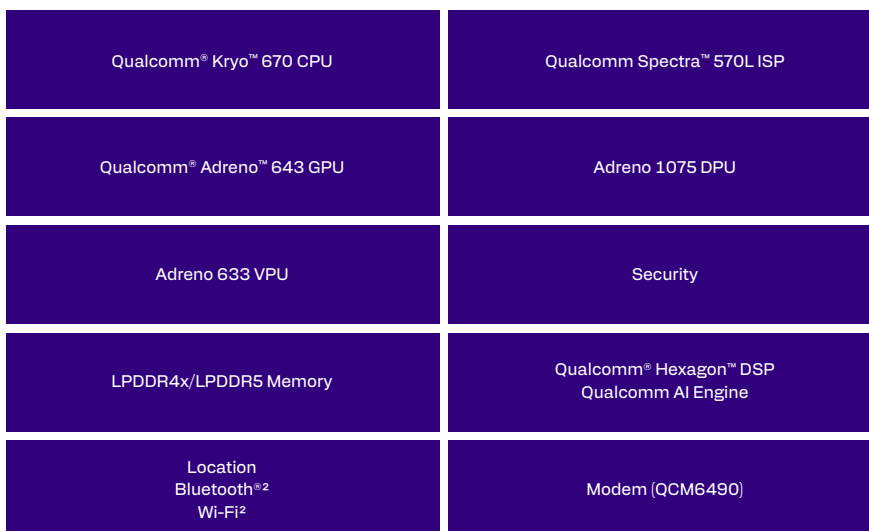
EXPANDED INTERFACES
Features include USB 3.1 Type-C with DisplayPort, USB 2.0, PCIe Gen 3, and support for discrete memory beyond LPDDR4x/LPDDR5 multi-chip package—enabling flexible, high-performance industrial and commercial IoT designs.

[1] Part of the Qualcomm Product Longevity Program, subject to change without notice. Refer to the product longevity page for details.

Block Diagram

Qualcomm® Kryo™ 670 CPU	Qualcomm Spectra™ 570L ISP
Qualcomm® Adreno™ 643 GPU	Adreno 1075 DPU
Adreno 633 VPU	Security
LPDDR4x/LPDDR5 Memory	Qualcomm® Hexagon™ DSP Qualcomm AI Engine
Location Bluetooth®[2] Wi-Fi[2]	Modem (QCM6490)

[2] Supported with a companion module

Target Applications

- Industrial Handhelds & Scanners
- Transportation & Logistics
- Smart Warehouses

- Robotics & Drones
- Smart Cameras & Surveillance
- Video Conferencing

- Smart Retail
- AI Boxes
- Healthcare Solutions

Features

- Octa-core Kryo 670 CPU up to 2.7 GHz
- Designed with the 6 nm process for superior performance and power efficiency
- 6th gen AI Engine: Compute Hexagon DSP with dual Hexagon Vector eXtensions (HVX), Hexagon Co-Processor (Hexagon CP) 2.0 and Hexagon Tensor Accelerator
- Adreno 643 GPU @ 812 MHz
- Dual-channel, non-PoP, high-speed memory, LPDDR5/LPDDR4x SDRAM
- Qualcomm® Universal Bandwidth Compression (UBWC) with camera, display, GPU, video, and compute DSP
- Display support: FHD+, 10-bit DisplayPort, eight hardware layers, improved HDR10+, and wide color gamut, Qualcomm® Low-Power Picture Enhancement display feature, and Qualcomm® True Palette Display feature
- One 4-lane DSI DSC 1.2, D-PHY 1.2, or C-PHY 1.0; VESA DSC 1.2
- Triple 14-bit image signal processors (ISPs) + two lite ISPs: 22 + 22 + 22 MP, 64 MP/30 fps
- Five 4-lane CSIs (4/4/4/4/4) D-PHY 1.2 or C-PHY 1.2
- Adreno 633 VPU for high-quality, ultra HD video encode and decode
- Support for USB 3.1 Type-C with DisplayPort and USB 2.0
- Long-term support for Android OS upgrades, Linux, Ubuntu, Windows 11 IoT Enterprise, security updates, and enterprise-grade hardware[1]

Specifications

Dragonwing QCS6490/QCM6490	
SKU	QCS6490
CPU	8-core Kryo 670 CPU · Kryo Gold Prime: One high-performance core @ 2.7 GHz · Kryo Gold: Three high-performance cores @ 2.4 GHz · Kryo Silver: Four low-power cores @ 1.9 GHz
AI Performance	Hexagon 770, 12 dense TOPS[3]
GPU	Adreno 643 GPU @ 812 MHz
Memory	2x16 LPDDR5 @ 3200 MHz 2x16 LPDDR4x @ 2133 MHz
Addressable Memory	Up to 16 GB
Audio DSP (LPASS)	Hexagon DSP 1980 MPPS 3x DMIC, 6x TDM/I2S/PCM
Display Support	Adreno 1075 2x concurrent displays FHD+ @ 144 Hz, 4K @ 60 Hz, 1080 x 2520 pixels 2x PCIe, DP 1.4 SST, 1x 4-lane DSI
Video Decode	1x 4K60, 2x 4K30, 4x 1080p60 Formats: H.264, H.265, VP9
Video Encode	1x 4K30, 4x 1080p30 Formats: H.264, H.265
Camera	Up to 5x concurrent cameras Spectra 570L ISP (Triple ISP) 64 MP / 36+22 MP / 3x22 MP at 30 fps ZSL 192 MP non-ZSL 4x 4-lane MIPI-CSI
PCIe	2x PCIe Gen 3 (1x NVMe support)
USB	1x USB Type-C 3.1, 1x USB 2.0
Networking	Ethernet support through QPS615
Other I/O	169x GPIO, QUP[4] x 21, UART, SPI, I2C, I3C
Storage	eMMC 5.1, SD 3.0 (SDCC), UFS 3.1/2.0
Wi-Fi/Bluetooth/WAN	Through companion chips: Wi-Fi 6 & Wi-Fi 6E, Bluetooth® 5.2 technology
Power	6–9 W (typical)
OS	Android, Qualcomm® Linux®, Ubuntu, Windows 11 IoT Enterprise
Package	14.0 x 12.0 x 0.91 mm / ball pitch: 0.35 mm
Temp. Range (Tj)	-30 to 105 ºC
Longevity	July 2036[1]

[3] Learn more about dense vs. sparse TOPS
[4] Qualcomm Universal Peripheral Serial Engines

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