

Open-Q™ 5165N SOM (System on Module)

Based on Qualcomm® Dragonwing™ QRB5165N System-on-Chip



Advanced Robotics SOM in LGA Form Factor

- SOM with powerful specialized processing cores
- On-device Qualcomm® AI Engine for machine vision, neural networks, deep learning
- Power-efficient edge AI computing solution pushing 15 TOPS
- Ubuntu 18.04 Linux with support for Robot Operating System 2.0
- Container and accelerator APIs - Docker, TensorFlow Lite, NNAPI and others

The Open-Q™ 5165N SOM is a LGA (54mm x 45mm) production-ready computing module based on the powerful Qualcomm® Dragonwing™ QRB5165N System-on-Chip. The QRB5165N utilizes Qualcomm Technologies' heterogenous compute expertise to provide an SoC with multiple specialized processing cores such as the 5th generation AI Engine, hardware video analytics engine, Qualcomm Spectra™ ISP, Qualcomm Adreno™ GPU, and Qualcomm Hexagon™ DSP. Supporting Wi-Fi 6 connectivity (external), advanced camera features, and high-speed interfaces, the 5165N SOM creates the perfect computing core for a variety of leading-edge robotics applications. Along with the companion development kit, advanced robotics-focused OS and SDKs, and available accessories, it will accelerate your time to market for innovative new products requiring the highest AI processing performance in low-power embedded situations.

Key Features

- Qualcomm® Dragonwing™ QRB5165N SoC – long life IIoT chipset
- 8GB LPDDR5 RAM
- Ubuntu 18.04 Linux
- On-device AI Engine up to 15 TOPS
- Dedicated Computer Vision Engine
- Multiple MIPI camera and display ports
- Multiple high speed connectivity options
- LGA 54 x 45 mm form factor

Applications

- Advanced Robotics – consumer/industrial/defense
- AI-enabled Drones and UAVs
- Machine vision platforms
- AI processing gateways
- Face detection and recognition
- Deep learning and neural network processing
- Autonomous systems

Engineering Services:

We provide a full solution – our unparalleled engineering expertise and product development skills deliver innovative products that are cost-effective and can jumpstart your go-to-market timeline.

Our business model offers turnkey product development services, or we can augment your team in specific areas of development. The choice is yours.

Key development expertise in:

- Camera development and tuning
- Voice control
- Machine learning
- Mechanical & RF design
- Thermal & power optimization.

IoT product development made easy.



Hardware Specifications:

• Processors	Qualcomm® Dragonwing™ QRB5165N SoC built on 7nm technology: Kryo™ 585 Octa-core CPU: 1 Kryo Gold prime @ 2.84 GHz + 3 Kryo Gold @ 2.42 GHz + 4 Kryo Silver @ 1.81 GHz Hexagon™ 698 DSP with quad Hexagon Vector eXtensions	
	Adreno™ 650 GPU @ Fmax = 670 MHz Spectra™ 480 Image Signal Processor Adreno™ 665 Video Processing unit	Adreno™ 995 Display Processing unit NPU230 Neural Processing unit SPU240 Secure Processing unit
• Memory/Storage	8GB LPDDR5, external UFS 1x 2-lane, 1x 1-lane	
• Wireless	Supports external 802.11ax 2x2 MU-MIMO + Bluetooth 5.1	
• Display Interfaces	Up to three 4K displays (1 internal display through DSI and 2 external displays through DisplayPort) 2x 4-lane MIPI DSI D-PHY 1.2, up to 5040 × 2160 @ 60 fps (or 120 Hz in VR mode) + touchscreen support DisplayPort v1.4 on USB Type-C, at 8.1 Gbps/lane, with USB3 and USB2 data concurrency	
• Camera Interfaces	6x 4-lane MIPI CSI camera ports + CCI I2C control	Spectra 480 ISP supporting multiple concurrent cameras 64 MP 30 fps ZSL with a dual ISP
• Video Performance	Decode up to 4K240/8K60, Encode up to 4K120/8K30	Concurrent 4K60 decode & 4K30 encode for wireless display
• Audio	Supports WCD938x high fidelity audio codec and WSA881x speaker amp on carrier board Dedicated Hexagon™ audio DSP, SoundWire, MI2S, DMIC, TDM/PCM interfaces for audio devices on carrier board	
• High Speed Connectivity	2x PCIe Gen3 2-lane, 1x PCIe 1-lane 1x USB3.1 with support for Type-C + DisplayPort v1.4 with USB SS data concurrency, 1x USB 3.1 Type-A	
• I/O Interfaces	4-bit SD 3.0, UART, I2C, I3C, SPI, configurable GPIOs, sensor I/O to dedicated Hexagon™ sensor DSP	
• Power/Battery	Power management and battery charging solution on SOM	
• Operating Environment	Input voltage: 3.7V nominal Operating Temperature: -25°C to +85°C	
• Form Factor	54mm x 45mm LGA 829 pads	

Software:

• Ubuntu Linux OS	Ubuntu 18.04
• On-device Dev Tools	LLVM compiler, Python v2.7.5, Git, Perl, GCC, GDB
• Artificial Intelligence	Support for TensorFlow Lite, Qualcomm Neural Processing SDK, Computer Vision SDK, Neural Networks API
• Robotics Specific	Robot Operating System (ROS2) support

Purchasing Information:

• Open-Q™ 5165N SOM (8GB)	PN: QC-SOM-5165N-A
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Alternate SOM configurations available by special order (minimum order quantities apply) - e.g. different memory size, etc. Contact sales to discuss your specific needs today.

Certifications

