AQUANTIA

AQtion AQC100 10 GbE MAC Controller

Low-power, Small-footprint & Cost-effective PCI Express to SFP+ Solution

Product Overview

The Aquantia AQtion AQC100 10G Ethernet MAC controller provides a flexible and highly optimized 10G solution to enable SFP+ port or backplane connectivity. Its 7 mm x 11 mm package offers a small-footprint, cost-effective PCI Express to 10GbE solution that can be used in a range of applications including gateways, routers, switches, workstations, servers, chassis-based systems, Network Attached Storage (NAS), Network Interface Cards (NICs) and other embedded applications.

By using the AQtion AQC100 10G controller for applications that require SFP+ modules, both fiber and copper modules can be supported. The AQtion AQC100 lowers costs, complexity, and power by delivering the following benefits and features:

- PCI Express 3.0 with x4/x2/x1 lane operation
- SFP+ for Direct Attach Copper (DAC) and optical SFP modules
- Board-level or backplane connectivity between chips
- Support for Windows, macOS, Linux, Data Plane Development Kit and other operating systems
- Less than 1 W power consumption
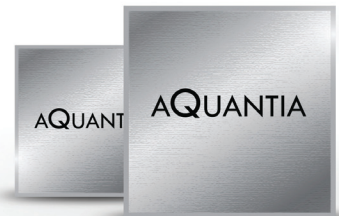
Applications

The AQtion AQC100 10GbE MAC controller is designed for SFP+ NICs, SFP+ dongles, NAS, routers, gateways, and other embedded applications.

Drivers: Aquantia provides driver support for Windows and Linux

Utilities: Product test tool, ROM programming and Windows Installer

Boot Options: UEFI and PXE

Package: 7 mm x 11 mm, 0.8 mm pitch flip chip ball Grid Array (FCBGA)

MAC Specific Features	Benefits
• Large Send Offload (LSO) • Receive Side Scaling (RSS) • Direct Cache Access (DCA) • Header checksum	Increased network performance and lower host CPU utilization
Wake-on-LAN (WoL) power management	Supports lower power modes
On chip CPU DASH	Desktop management
Internet Control Message Protocol (ICMP)	Supports diagnostic, error, and operational information messages
Address Resolution Protocol (ARP)	Resolves network layer addresses into link layer addresses
Multicast Domain Name System (mDNS)	Resolves host names to IP addresses
Transmission Control Protocol (TCP) Keepalive (KA)	Supports link checking between devices
Quality of Service (QoS) support	Supports up to eight traffic classes and Data Center Bridging (DCB)
Jumbo frames (up to 16 Kbytes)	Improves network performance while reducing CPU utilization
IPv4/6, IPv6/TCP and IPv6/UDP checksum offload	Offloads calculations and improved CPU usage

AQtion AQC100 Block Diagram

Host

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                          PCI Express Gen3 x4

      SMBus          RX DMA            TX DMA

      CPU                TX + RX Buffer

SPI   Instr. RAM     RX Offloads       TX Offloads

      Data RAM       Packet Filter     Scheduler

                    Ethernet MAC

                    XFI Interface
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Network

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