Product Brief

Marvell® AQC111C & AQC112C Ethernet Controllers

5 GbE & 2.5 GbE PCIe AQtion Multi-Gigabit Ethernet Controller

Overview

The Marvell® AQtion AQC111C 5G and the AQC112C 2.5G are high-performance, Multi-Gig Ethernet controllers housed in a compact 9 mm x 9 mm package. Their ultra-small footprint and low-cost design makes these controllers the perfect solution for PCIe LAN on Motherboard (LOM) implementations as well as other embedded platforms. By offering Multi-Gig Ethernet speeds up of 5 GbE and 2.5 GbE, Marvell AQtion AQC111C and AQC112C controllers offer flexible design options for OEMs of desktop workstations, mass-market PCs and motherboards looking to offer a seamless, Multi-Gig upgrade path to their customers.

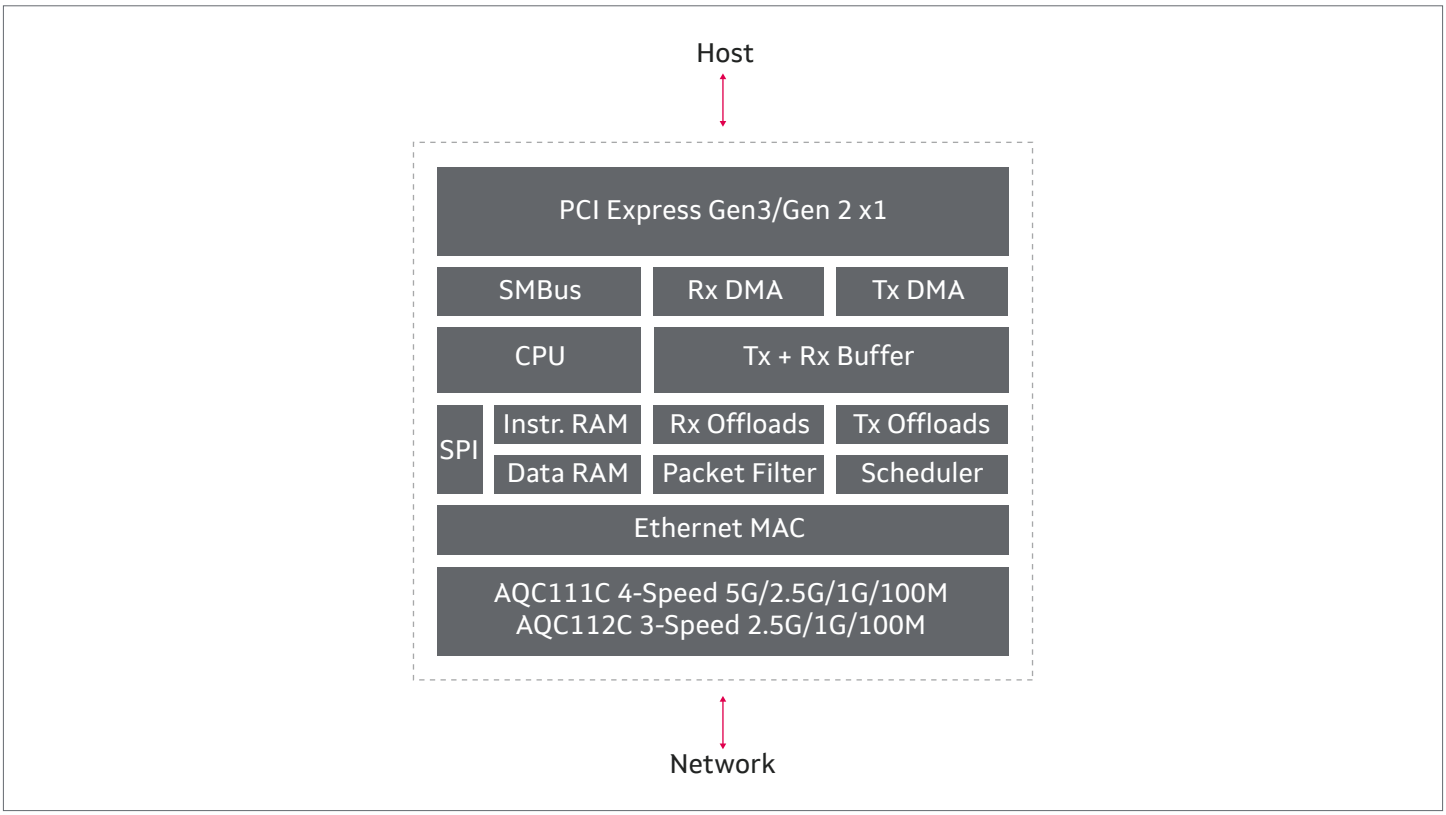
End-users will benefit from the out-of-the-box Multi-Gig experience, without the need to upgrade, and can easily maximize the benefit of the existing Cat 5e cabling that is commonly found in most buildings.

With support for PCI Express Gen3/Gen2 x1, this new AQtion architecture easily handles up to 5 GbE line-rate performance. Both the AQC111C and the AQC112C incorporate the industry proven Marvell AQrate PHY technology which delivers 5 GbE and 2.5 GbE network connectivity speed through 100 meters of the Cat 5e cabling.

The AQC111C controller supports both 5 and 2.5 Multi-Gig Ethernet over copper, or 5/2.5GBASE-T, and is compliant with the IEEE 802.3an/bz standard, as well as the NBASE-T Alliance PHY specification.

All AQtion controllers are backward-compatible with legacy 1000BASE-T Ethernet or Gigabit Ethernet. The AQC111C and AQC112C are also backward compatible to support 100Mb Ethernet. Both controllers integrate Energy Efficient Ethernet (EEE), and delivers wire-speed performance at all supported rates.

Block Diagram



Key Features

Features	Benefits
Single-chip solution	• Integrated PCIe, MAC, and PHY minimizes board space and power utilization
PCI Express Gen3/Gen2	• Supports line rate of up to 8.0 GT/s per lane
Bus width	• Supports Gen3/Gen2 x1
MSI, MSI-X, and legacy INTx PCIe interrupts	• Improves CPU utilization and network performance
Two SMBus (Master/Slave + Slave)	• Supports communication and management function
PHY Specific Features	**Benefits**
Integrated Marvell AQrate PHY featuring NBASE-T technology	• 100 meters over Cat 5e or better at 5 Gbps, 2.5 Gbps, 1 Gbps, • 100 Mbps (requires no change to existing infrastructure or cabling)
Advanced cable diagnostics	• On-chip high resolution cable analyzer
Audio Video Bridging (AVB) and PTP/1588v2	• Management of time-sensitive traffic packets
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) Keepalives (KA)	• Supports link checking between devices
Quality of Service (QoS)	• Supports up to eight traffic classes and Data Center Bridging (DCB)
Jumbo Frames (up to 16Kbytes)	• Improves network performance while reducing CPU utilization
IPv4/v6, IPv6/TCP, and IPv6/UDP checksum offload	• Offloads calculations and improves CPU usage

Ordering Codes

Part Number	Speed	Package
AQC111C	4-Speed	9 mm x 9 mm
AQC112C	3-Speed	9 mm x 9 mm

This AQtion device is in a 9 mm x 9 mm, 0.8 mm pitch 100-pin FCBGA

Target Applications

Motherboards, PCs, Workstations, docking stations, NAS, Routers, Gateways, and other embedded applications.

Drivers: Windows 10 (32-bit/64-bit), Windows 8.0/8.1 (32-bit/64-bit), Windows 7 (32-bit/64-bit), Linux 3.10 and higher

Utilities: ROM programming and Windows installer

Boot Options: UEFI and PXE

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