

Marvell G.hn Chipset

G.hn-Compliant MAC/PHY Transceiver with MIMO and G.cx



PRODUCT OVERVIEW

Marvell®'s 1Gbps ITU G.hn standard compliant transceiver chipset supports home networking over powerline, phoneline/twisted-pair or coax cables. The chipset comprises the Marvell 88LX3142 digital baseband processor and the Marvell 88LX2718 baseband analog front-end. In addition to the G.hn PHY, MAC and DLL, the Marvell 88LX3142 integrates a powerful CPU and a rich set of serial interfaces in a cost-effective design. The Marvell 88LX2718 analog front-end device integrates two fully programmable reception and transmission paths, enabling MIMO operation and maximum throughput.

The Spirit® Home Networking Software and its powerful Application Programming Interface (API) enable broad customization for high-end applications (e.g. HD-IPTV) by integrating advanced features such as full TCP/IP stack, IGMP/MLD Snooping, TR-069 and TR-111 remote management clients.

HIGH-SPEED MODEM APPLICATION

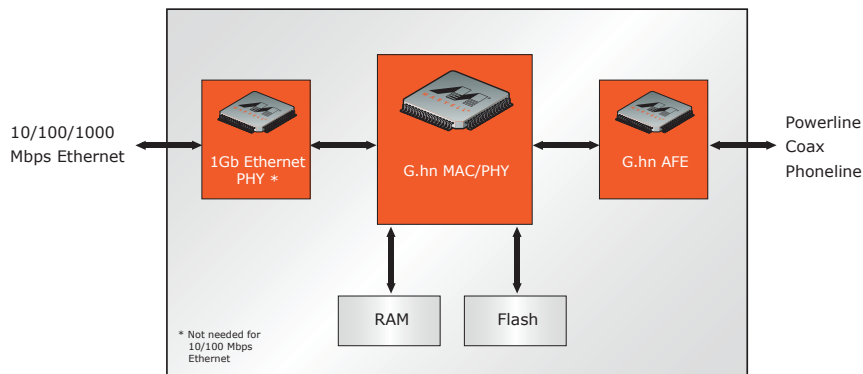


Fig 1. High-Speed Modem Diagram

FEATURES

ITU-T Standards-based

- G.hn (G.9960/61)
- G.cx (G.9972) over powerline

PHY Data Rate

- Up to 1Gbps PHY rate
- G.hn chipset family supports all baseband bandplans
 - 25-, 50- and 100 MHz.
 - Flexible notching capability

Reliability and Robustness

- LDPC forward error correction (FEC) provides enhanced FEC over all wire media
- Automated PHY block level error detection and retransmission
- Enhanced Selective repeat ARQ based ACK for improved integrity in noisy channels
- Robust Communication Mode for high noise environments

Automatic Mesh Networks

- Relaying between nodes that cannot connect directly

Full G.hn low power and sleep mode support

Security

- 128-bit AES CCMP encryption
- End-to-End encryption pairwise keys
- Strict authentication rules

BENEFITS

- Global acceptance and market
- Enhanced performance and coverage over PLC medium
- Coexistence with legacy products including deployed UPA devices

- Best performance over any wire medium
- More than 4x data rate versus legacy technology
- Interoperability with any G.hn baseband plans

- Best noise robustness
- Best Block Error Rate
- Ensured communications even under worst noise scenario
- Reliability of data delivery

- Ensured communication and delivery
- Reliability of links between nodes

- Best-in-class power management

- Best-in-class security from contemporary threat model
- Ensured message confidentiality and integrity
- Digital content protection



MARVELL-SPECIFIC FEATURES

Extending the Standard

- Advanced Algorithms for Neighboring Networks

Enhanced Hardware design

- Enhanced Traffic handling
 - Hardware packet inspection for IPv4 IGMP snooping and IPv6 MLD
 - Hardware-based bandwidth limitation
 - 8 levels of packet prioritized QoS
- Power Management
 - Enable modem optimized design for supporting EU Code of Conduct V3.0 and EU directive on low power mode based on Ethernet link activity

Embedded Stacks and Clients

- Dual TCP/IP with IPv4/IPv6 stacks built-in
- Native TR-069 and TR-111 (Part-1 and Part 2) clients
- HTTP server for remote configuration management
- DHCP, DNS, NTP, FTP clients for remote firmware management and access

Rich Set of Interfaces

- Fast-Ethernet MDI
- MII/RGMII
- 2x SPI
- 2x UART
- SDIO 2.0
- GPIO
- DDR2
- JTAG

Packages

- Marvell 88LX3142 (Digital Baseband Processor) - QFP128
- Marvell 88LX2718 (Analog Front-End) - QFN32

BENEFITS

- Optimized performance in high density MDUs
- Most efficient packet inspection for multicast traffic provides fast setup and tear down and IPTV performance
- Enables CoS and Bandwidth Allocation for Triple-Play applications
- Differentiation of traffic flows per traffic requirements
- Best-in-class reduction of power consumption
- No proxy or outside CPU needed, best for socket adapters
- Easy to build/add value add applications
- Remote Management ready
- Identification of CPE-Gateway connection
- ACS-enabled session with CPE operating behind a NAT gateway
- Flexible customization through extensive API
- Embedded Fast Ethernet PHY enables lower BoM for applications requiring 100 Mbps real throughput
- Maximize integration and performance at minimum cost
- Minimize power consumption
- Reduced design footprint



APPLICATIONS

Marvell's G.hn transceiver chipset delivers optimal networking solutions for a broad range of applications in the Consumer Electronics and Service Provider environments.

- Marvell G.hn chipset enables standalone Gigabit Ethernet adapters for powerline, coax and phone line applications, providing instant connectivity to Ethernet equipment all around the home. Marvell G.hn chipset-based standalone adapters enable quick and easy installation with a simple pairing procedure to extend the home network.
- Marvell G.hn chipset is an ideal solution for embedded applications in consumer electronic products that require plug-and-play networking capabilities. Further, Marvell G.hn chipsets can be embedded in broadband gateways and routers, IPTV and OTT Set Top Boxes, and other network gear enabling a truly high speed 'connected home' experience for the user.

Marvell is providing full integration and combinations of technology with a wide range of networking products, such as Marvell's Alaska® (Gigabit Ethernet), Avastar™ (Wi-Fi), Avanta™ (UPON) and Armada® (STB) chips. Cost competitive, flexible, and advanced platforms can be G.hn-enabled with Marvell G.hn chipsets such as Wi-Fi extenders, UPON gateways with Wi-Fi and G.hn connectivity and STBs and media players with G.hn ports.

THE MARVELL ADVANTAGE: Marvell chipsets come with complete reference designs which include board layout designs, software, manufacturing diagnostic tools, documentation, and other items to assist customers with product evaluation and production. Marvell's worldwide field application engineers collaborate closely with end customers to develop and deliver new leading-edge products for quick time-to-market. Marvell utilizes world-leading semiconductor foundry and packaging services to reliably deliver high-volume and low-cost total solutions.

ABOUT MARVELL: Marvell is a leader in storage, communications, and consumer silicon solutions. Marvell's diverse product portfolio includes switching, transceiver, communications controller, processor, wireless, power management, and storage solutions that power the entire communications infrastructure, including enterprise, metro, home, storage, and digital entertainment solutions. For more information, visit our Web site at www.marvell.com.



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