Qualcomm® ETHOS®

The Need. Hunger for bandwidth on today's media rich networks.
The Feed. Ethernet.
Qualcomm Engineered.

Solution Highlights

- SGMII and RGMII MAC interface support
- Qualcomm ETHOS-Designed Green Ethernet (EDGE™) power-saving technology
- Fiber support to 1000Base-X and 100Base-FX with fault detect
- Integrated MDI termination resistors
- Full IEEE 802.3az support
- Support SmartEEE to enable Energy Efficient Ethernet capability for legacy switch or MAC
- Wake-on-LAN (WOL)
- Support up to 10K bytes Jumbo Frame
- Synchronous-Ethernet support with recovered clock output
- Support IEEE 1588v2 and Synchronous Ethernet timing
- Single 3.3V supply

AR8031 System Architecture

Qualcomm ETHOS

Qualcomm ETHOS technologies provide customers with industry-leading low-power and solution size to enable Fast or Gigabit Ethernet connectivity in networking equipment, consumer electronics and computing platforms. Our PHY, controller and switch solutions support the IEEE 802.3az standard for Energy Efficient Ethernet, to extend battery-charges on computing platforms and deliver power-efficiencies in networking equipment. Qualcomm also enables incremental power-saving techniques to offer our customers the very lowest power Ethernet in the industry today. The unmatched efficiency and advanced carrier-class features of Qualcomm ETHOS solutions give customers a competitive edge when designing products for energy-conscious consumers and businesses.

AR8031 Product Overview

The AR8031 is part of the Arctic family of PHYs – which includes the AR8030, AR8033, and AR8031. The AR8031 is Qualcomm' 4th generation, single port, 10/100/1000 Mbps Ethernet PHY. It supports both RGMII and SGMII interfaces to the MAC.
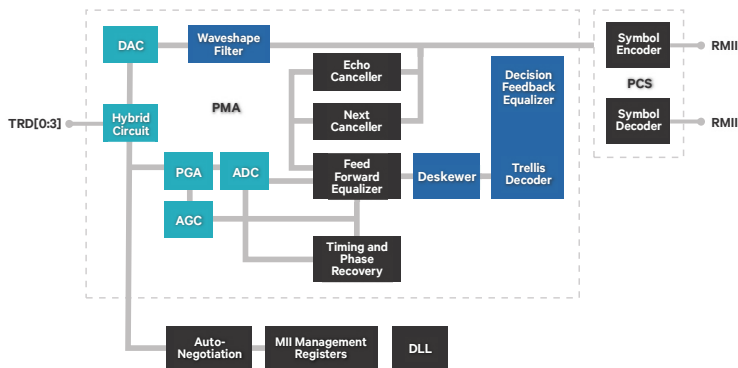
The AR8031 provides a low-power, low BOM (bill-of-materials) cost solution for a wide range of applications, including enterprise, carrier and home networks, SFP modules and media converters.

The AR8031 supports both Sync-E and IEEE1588-V2 timing protcols. The AR8031 device incorporates a 1.25 GHz SERDES which can be connected directly to fiber-optic transceivers for 1000 Base-X/100 Base-FX mode.

The AR8031 integrates Qualcomm ETHOS-Designed Green Ethernet (EDGE) power saving technologies to automatically save significant power in all operating and idle modes. The AR8031 also supports IEEE 802.3az EEE standard (Energy Efficient Ethernet) with proprietary SmartEEE technology to improve energy efficiency in systems using legacy MAC devices without 802.3az support – enabling customers to fully realize the energy benefits of the new standard by just replacing the PHY devices in their designs.

The AR8031 also supports Wake-on-LAN (WoL), embeds CDT (Cable Diagnostics Test) technology on-chip, and requires only a single, 3.3V power supply. On-chip regulators provide the other voltages. It integrates the termination R/C circuitry on both the MAC interfaces (RGMII/SGMII) and the line side.

AR8031 Specifications

10/100/1000Base-T IEEE 802.3 compliant

Supports 1000Base-T PCS and auto-negotiation with next page support

Supports RGMII and/or SGMII interfaces to MAC devices

Supports Fiber and Copper combo mode when MAC interface works in RGMII mode

Supports additional IEEE 1000 Base-X and 100 Base-FX with Integrated Serdes

RGMII timing modes support internal delay and external delay on both Rx and Tx paths

Qualcomm ETHOS-Designed Green Ethernet (EDGE) power saving modes with internal automatic DSP power saving scheme

Supports 802.3az (Energy Efficient Ethernet)

Supports Wake-on-LAN (WoL) to detect magic packet and notify the sleeping system to wake up

Fully integrated digital adaptive equalizers, echo cancellers, and near end crosstalk (NEXT) cancellers

All-digital baseline wander correction

Supports Synchronous Ethernet

Error-free operation up to 140 meters of CAT5 cable

Automatic channel swap (ACS)

Automatic MDI/MDIX crossover

Automatic polarity correction

IEEE 802.3u compliant Auto-Negotiation

Jumbo Frame support up to 10K Bytes (full duplex)

Software programmable LED modes

Multiple loopback modes for diagnostics

Single power supply: 3.3V, optional for external regulator for core voltage

Qualcomm Cable Diagnostic Test (CDT) Technologies

IEEE 802.3 remote fault indication and fault propagation in fiber mode

Pin to Pin compatible with the AR8033

48-pin QFN package

Industrial temperature range option

Qualcomm Atheros is a wholly owned subsidiary of Qualcomm Technologies, Inc. and a leading provider of wireless and wired technologies for the mobile, networking, computing and consumer electronics markets. We're focused on inventing technologies that connect and empower people in ways that are elegant and accessible to all.

Our broad connectivity portfolio allows us to offer our global customer base high-performance, end-to-end solutions, featuring Wi-Fi®, GPS, Bluetooth®, FM, Ethernet, HomePlug™ Powerline and PON technologies. By leveraging substantial expertise in RF, signal processing, software and networking we can deliver highly-integrated, low-power, system-level solutions that enable developers to create high-performance, differentiated products.

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