Solution Highlights

- SGMII and RGMII MAC interface support
- Atheros 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
- Atheros proprietary SmartEEE support
- Wake-on-LAN (WOL)
- Jumbo frame support up to 10 kb full duplex
- Synchronous-Ethernet support with recovered clock output
- Complete IEEE 1588 V2 support
- Single 3.3V supply

AR8031 Architecture

The AR8031 is part of the Arctic family of PHYs – which includes the AR8030, AR8033, and AR8035. The AR8031 is Atheros’ 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, including optical modules and media converters.

The AR8031 supports both Sync-E and IEEE1588-V2 timing protocols. 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 Atheros 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.
Atheros Communications is a global leader in innovative technologies for wireless and wired communications. Atheros combines its wireless and networking systems expertise with high-performance radio frequency (RF), mixed signal and digital semiconductor design skills to provide highly integrated chipsets that are manufactured on low-cost, standard complementary metal-oxide semiconductor (CMOS) processes. Atheros technology is used by a broad base of leading customers, including networking equipment, computing and consumer device manufacturers.

### 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
- Atheros 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 10KB (full duplex)
- Software programmable LED modes
- Multiple loopback modes for diagnostics
- Single power supply: 3.3V, optional for external regulator for core voltage
- Atheros Cable Diagnostic Test (CDT) Technologies
- IEEE 802.3 remote fault indication and fault propagation in fiber mode
- Pin to Pin compatible with low cost AR8033
- 48-pin QFN package
- Industrial temperature range option

For more information on the AR8031 or other solutions from Atheros contact your local representative:

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For more information on Atheros and Atheros wireless technology please visit www.atheros.com

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