



KSZ9031RNX

Gigabit Ethernet Transceiver with RGMII Support

Description

The KSZ9031RNX is a completely integrated triple-speed (10Base-T/100Base-TX/1000Base-T) Ethernet physical-layer transceiver for transmission and reception of data on standard CAT-5 unshielded twisted pair (UTP) cable.

The KSZ9031RNX provides the Reduced Gigabit Media Independent Interface (RGMII) for direct connection to RGMII MACs in Gigabit Ethernet processors and switches for data transfer at 10/100/1000Mbps.

The KSZ9031RNX reduces board cost and simplifies board layout by using on-chip termination resistors for the four differential pairs and by integrating an LDO controller to drive a low-cost MOSFET to supply the 1.2V core.

The KSZ9031RNX offers diagnostic features to facilitate system bring-up and debugging in production testing and in product deployment. Parametric NAND tree support enables fault detection between KSZ9031 I/Os and the board. The LinkMD® TDR-based cable diagnostic identifies faulty copper cabling. Remote and local loopback functions verify analog and digital data paths.

The KSZ9031RNX is available in a 48-pin, lead-free QFN package.

Applications

- GPON residential gateway
- SOHO media center
- Voice-over-Internet Protocol (VoIP) gateway
- Network attached storage
- Laser printers and projectors
- Wired/wireless Gigabit SOHO/SMB router media converter
- VPN/firewall-based SMB/SME router
- Gigabit Ethernet LAN on motherboard
- Integrated broadband CPE (ADSL/VDSL/FTTH) router
- IPTV and IP set top boxes

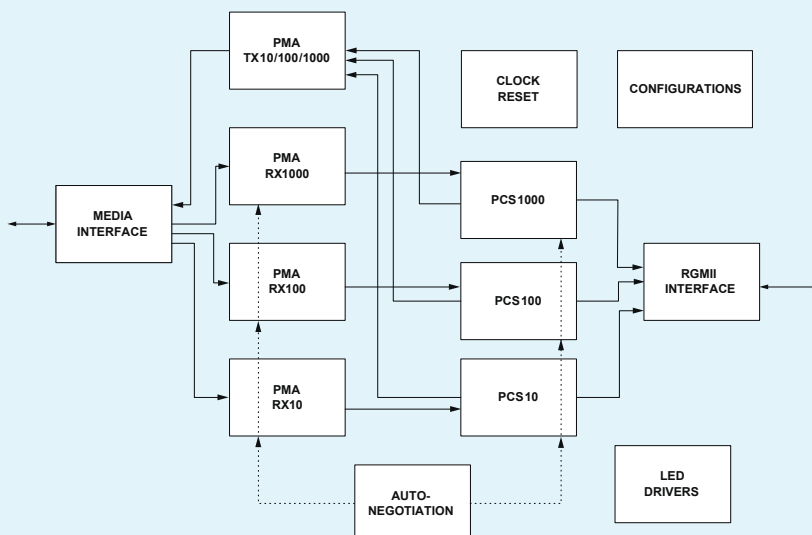
For more information, contact your local Micrel sales representative, or visit Micrel at:

www.micrel.com

Micrel Inc., is a leading global manufacturer of IC solutions for the worldwide analog, Ethernet and high bandwidth markets. The Company's products include advanced mixed-signal, analog and power semiconductors; high performance communication, clock management, Ethernet switch and physical layer transceiver ICs. Company customers include leading manufacturers of enterprise, consumer, industrial, mobile, telecommunications, automotive, and computer products. Corporation headquarters and state-of-the-art wafer fabrication facilities are located in San Jose, CA with regional sales and support offices and advanced technology design centers situated throughout the Americas, Europe and Asia. In addition, the Company maintains an extensive network of distributors and reps worldwide.

www.micrel.com

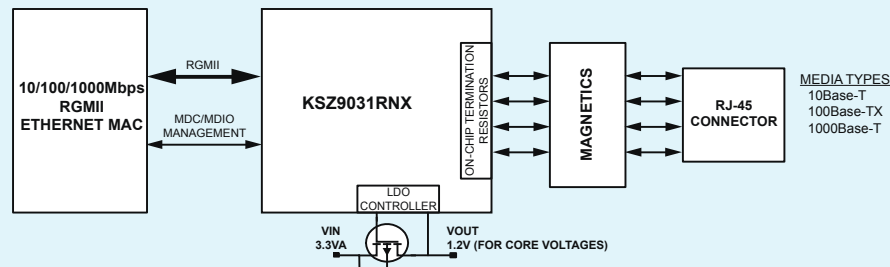
Block Diagram



KSZ9031RNX - Gigabit Ethernet Transceiver with RGMII Support

Key Features	Benefits
Energy Efficient Ethernet (EEE) support with low-power idle (LPI) mode and clock stoppage for 100Base-TX/ 1000Base-T and transmit amplitude reduction with 10Base-Te option	EEE saves power by keeping the voltage on the Ethernet cable at approximately 0V during periods of no traffic. The traffic can resume without any packet loss within 30µs at 100BT and 16µs at 1000BT.
Energy detect power-down mode for reduced power consumption when the cable is not attached	EDPD mode is used to reduce the transceiver power consumption when the cable is unplugged.
Wake-on-LAN (WOL) support with robust custom-packet detection	WOL mechanism allows many devices in a system to be in sleep until a magic packet from the system awakens them, thus keeping the total systems power level at a reduced level.
Automatic MDI/MDI-X crossover to detect and correct pair swap at all speeds of operation	Auto-MDI/MDIX eliminates the need for cross-over cable, thus reduces installation costs. Easy to use.
On-chip termination resistors for the differential pairs	On-chip termination (eliminating eight external resistors) not only simplifies PCB design and reduces system BOM, but also improves overall signal integrity and EMI emission.
On-chip LDO controller to support single 3.3V supply operation – requires only one external FET to generate 1.2V for the core	Integration of a LDO controller permits a low cost MOSFET to supply the 1.2V core, which reduces board cost and simplifies board layout.
LinkMD TDR-based cable diagnostic to identify faulty copper cabling	Built-in LinkMD diagnostics helps identification of common cabling problems, including those not addressed by IEEE. It simplifies network deployment and reduces network downtime.
125MHz reference clock output	125MHz clock output to the MAC eliminates external 125MHz oscillator and lowers the BOM cost.

Functional Diagram



Contact Micrel, Inc.

Location	Address		Telephone	Fax
Corporate HQ	2180 Fortune Drive	San Jose, CA 95131 USA	+1 408 944 0800	+1 408 944 0970
Western USA	2180 Fortune Drive	San Jose, CA 95131 USA	+1 408 944 0800	+1 408 944 0970
Central USA	2425 N. Central Express Way, Suite 351	Richardson, TX 75080 USA	+1 972 393 2533	+1 972 393 2370
Eastern USA	93 Branch Street	Medford, NJ 08055 USA	+1 609 654 0078	+1 609 654 0989
Latin America	2425 N. Central Express Way, Suite 351	Richardson, TX 75080 USA	+1 972 393 2533	+1 972 393 2370
Hong Kong	Unit 213-215, Photonics Centre, #2 Science Park East Ave., Hong Kong Science Park	Shatin, N.T., Hong Kong	+852 2886 8839	+852 2886 8851
China	Rm 601, Bldg B, Int'l Chamber of Commerce Mansion, Fuhua Rd 1 Futian Dist	Shenzhen, P.R. China 518048	+86 755 8302 7618	+86 755 8302 7637
Japan	Queens Tower 14F, 2-3-1, Minatomirai, Nishi-ku, Yokohama-shi	Kanagawa 220-6014, Japan	+81 45 224 6616	+81 45 224 6716
Korea	4F Manzo 2 Building, 198-47, Gungnae-dong, Bundang-ku, Seongnam-City	Kyungki-do, 463-470, Korea	+82 2 538 2380	+82 2 538 2381
Singapore/India	7500A Beach Road, #07-324 The Plaza	Singapore 199591	+65 6291 1318	+65 6291 1332
Taiwan	4F, No. 43 Lane 188, Rueiguang Road, Nei-Hu District	Taipei 11491 Taiwan, R.O.C	+886 2 8751 0600	+886 2 8751 0746
UK/EMEA	1st Floor, 3 Lockside Place, Mill Lane, Newbury, Berks	United Kingdom RG14 5QS	+44 1635 524455	+44 1635 524466
France/Southern Europe	Les Laurentides - Batiment Ontario, 3 Avenue du Quebec	91140 Villebon sur Yvette, France	+33 0 1 6092 4190	+33 0 1 6092 4189



1.800.944.0800 Tel
 1.408.474.1000 Fax
www.micrel.com

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Micrel:](#)

[KSZ9031RNXIC TR](#) [KSZ9031RNXIC-TR](#)