



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

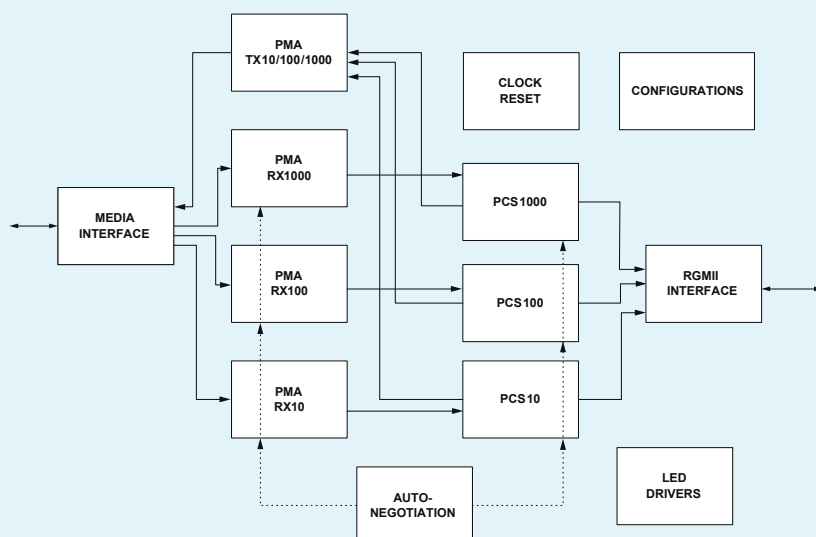
For more information, contact your local Micrel sales representative, or visit Micrel at:

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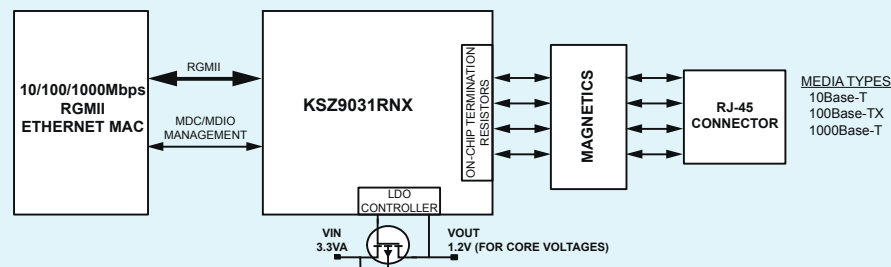
Block Diagram



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-Tc 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



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- Защита от снятия компонента с производства.



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