



KSZ8091MNX/KSZ8091RNB

10Base-T/100Base-TX Physical Layer Transceiver

Description

The KSZ8091 is a single-supply 10Base-T/100Base-TX Ethernet physical-layer transceiver for transmission and reception of data over standard CAT-5 unshielded twisted pair (UTP) cable.

The KSZ8091 is a highly-integrated PHY solution. It reduces board cost and simplifies board layout by using on-chip termination resistors for the differential pairs, by integrating a low-noise regulator to supply the 1.2V core, and by offering a flexible 1.8/2.5/3.3V digital I/O interface.

The KSZ8091MNX offers the Media Independent Interface (MII) and the KSZ8091RNB offers the Reduced Media Independent Interface (RMII) for direct connection with MII/RMII-compliant Ethernet MAC processors and switches.

Energy Efficient Ethernet (EEE) provides further power saving during idle traffic periods and Wake-on-LAN (WOL) provides a mechanism for the KSZ8091 to wake up a system that is in standby power mode.

The KSZ8091 provides diagnostic features to facilitate system bring-up and debugging in production testing and in product deployment. Parametric NAND tree support enables fault detection between KSZ8091 I/Os and the board. Micrel LinkMD® TDR-based cable diagnostics identify faulty copper cabling.

The KSZ8091MNX and KSZ8091RNB are available in 32-pin, lead-free QFN packages.

Applications

- Game console
- IP phone
- IP set-top box
- IP TV
- LOM
- Printer

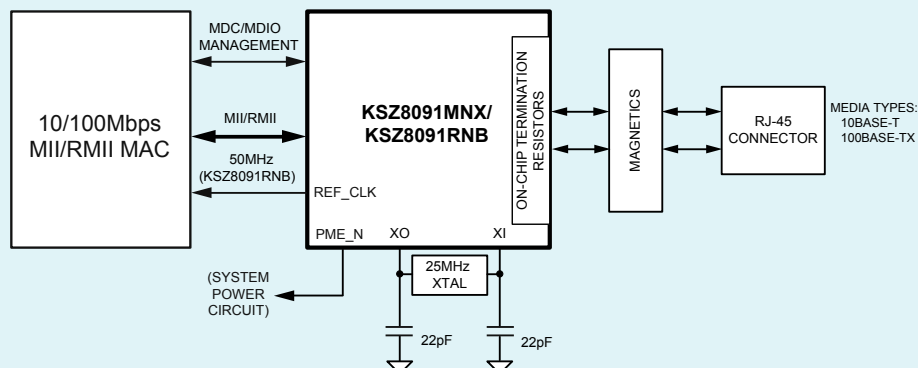
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Micrel Inc., is a leading global manufacturer of IC solutions for the worldwide analog, Ethernet and high bandwidth markets. The Company's products include advanced mixed-signal, analog and power semiconductors; high performance communication, clock 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.

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Functional Diagram



KSZ8091MNX/KSZ8091RNB - 10Base-T/100Base-TX PHYSICAL LAYER TRANSCEIVER

Key Features	Benefits
Single-chip 10Base-T/100Base-TX IEEE 802.3-compliant Ethernet transceiver	Standard compliance ensures that the device will work with other standard-compliant, already deployed devices
MII interface (KSZ8081MNX) and RMII v1.2 Interface support with a 50MHz reference clock output to MAC, and an option to input a 50MHz reference clock (KSZ8081RNB)	Provides flexible options for the 50MHz RMII reference clock as the input or output
Back-to-back mode support	Allows creation of low-cost 100Mbps copper repeater using only two KSZ8091 PHYs
MDC/MDIO management interface for PHY register configuration	Allows the MAC processor complete access to the KSZ8091 control and status registers
On-chip termination resistors for the differential pairs	On-chip termination (eliminating four external resistors) simplifies PCB design, reduces system BOM, and improves overall signal integrity and EMI emission
On-chip regulator	Reduces BOM cost by eliminating external regulator for 1.2V core
HP Auto MDI/MDI-X to reliably detect and correct straight-through and crossover cable connections with disable and enable option	Easy-to-use feature eliminates the need for crossover cable, which reduces installation costs
Energy Efficient Ethernet (EEE) support with low-power idle (LPI) mode and clock stoppage (MII version only) for 100Base TX and transmit amplitude reduction with 10Base-Te option	Saves greater than 50% power in idle mode
Wake-on-LAN (WOL) support with either magic packet, link status change, or robust custom-packet detection	Provides a mechanism to wake up a system that is in standby power mode, saving total system power consumption
Multiple loopback options	Allows diagnostic testing for RMII and line side data paths
Single 3.3V power supply with VDD I/O options for 1.8V, 2.5V, or 3.3V	Enables low-power and flexible I/O design
Power-down and power-saving modes	Optimizes power consumption based on the status of the link or the device
LinkMD TDR-based cable diagnostics	Identifies common cable faults in production testing and in deployment

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