Sierra Research and Technology, Inc.
The Global leader in Ethernet Intellectual Property
Subsidiary of TDK Semiconductor Corp.

100/10-Mbit/s Ethernet Stand-alone MAC with Optional Network Services
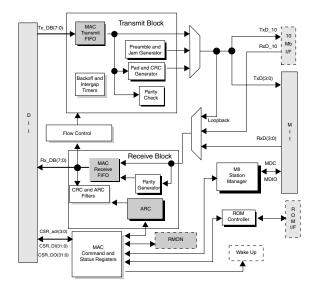
DESCRIPTION

TDK Semiconductor Corp. introduces a fourth generation Ethernet Controller that operates at either 100-Mbit/s or 10-Mbit/s. The controller supports Magic Packet™, OnNow, and the Advanced Configuration and Power Interface (ACPI) Specification. The controller also includes alignment control for received packets, optional network management block, which provides H/W, counters for RMON, SNMP, and other popular network management requirements. In half duplex mode the controller implements the IEEE 802.3 Carrier Sense Multiple Access with Collision Detection (CSMA/CD) protocol. In full duplex mode, the controller implements the IEEE 802.3 MAC Control Layer and the PAUSE Operation for flow control. The controller exchanges data with an external Direct Memory Access (DMA) controller with a simple full-duplex handshaking protocol. Data can be exchanged as either bytes or as four-byte double words. The controller is specified as either a net list or as a chip.

The controller has two independent interfaces: the Media Independent Interface (MII) and the DMA Independent Interface (DII). The MII conforms to the International Standard ISO/IEC 8802-3 for a media independent layer, which will separate physical layer issues from the MAC layer. The DII is an interface defined by Sierra which connects the MAC to specific bus controllers such as PCI, 680X0, EISA or S-Bus. The MAC layer consists of the receive and the transmit blocks, a Address Recognition Circuit (ARC) for storing network addresses, and a number of command, status and error counter registers.

FEATURES

- **Generic interface to system bus.**
- **80-byte transmit FIFO.**
- **16-byte receive FIFO.**
- **10/100-Mbit/s operation.**
- **Optional 7-wire interface.**
- **Full IEEE 802.3 compatibility.**
- **MII compliant interface.**
- **On chip ARC.**
- **Optional external CAM.**
- **Optional ROM or EEPROM.**
- **Power Management Support.**
- **Full duplex / PAUSE mode.**
- **Long packet mode.**
- **Short packet mod.**
- **PAD generation**

Ethernet System Overview