Product Brief
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microelectronics group

Lucent Technologies
Bell Labs Innovations

T7202 Smart Hub Controller (SHC)

Features

- Functional conforms to *IEEE** 802.3, Section 9, specification
- Supports *IEEE* 802.3K Repeater Management Draft Standard
- Supports *Novell*s† Hub Management Interface (HMI) Standard
- Lucent Technologies Microelectronics Group patented security feature license available
- Supports real-time hardware-based security in conjunction with the T7241 Multiple Ethernet Transmitter (METRX)
- 15-port repeater (12 twisted pair, two AUI, one MAC)
  - — On-chip twisted-pair receivers support squelch, link integrity, and automatic polarity reversal detection and correction.
  - — On-chip twisted-pair transmit logic, including link test pulse generation
  - — Interfaces directly to companion T7241 METRX
  - — One AUI port connects directly to transceiver cable via isolation
  - — Automatic handling of loopback energy on AUI ports
  - — On-chip data and clock recovery with ±18 ns jitter tolerance
  - — Manchester code violation detection and reporting
  - — Automatic full preamble regeneration
  - — Automatic packet fragment extension to 96 bits
  - — Per-port autopartition/reconnection state machines
  - — Programmable individual port disables
  - — Per-port link, traffic, collision, partition, FIFO error, and MAU jabber lockup protection status LEDs
- Multiple interfaces for hub management applications
  - — Microprocessor interface to internal register set
  - — FIFO port for preprocessed packet reporting
  - — Full MAC interface
  - — Serial data port for on-chip frame capture
- Supports modular parallel port expansion via multiple SHC devices
- Powers up in basic hub configuration
- 132-pin, plastic quad flat pack (PQFP)
- CMOS technology (TTL compatible signals)
- Single 5 V ± 10% supply

* *IEEE* is a registered trademark of The Institute of Electrical and Electronics Engineers, Inc.
† *Novell* is a registered trademark of Novell, Inc.

SECTION 2.2

Description

The T7202 Smart Hub Controller (SHC) is Lucent's third-generation multiport repeater controller IC for use in *IEEE* 802.3 10 Mbit CSMA/CD networks. It is targeted both for basic hubs and for smart hub applications where extensive network management capabilities through a central network hub are desired. To facilitate these repeater management capabilities, the T7202 has, in addition to basic repeater functions, a microprocessor interface for access to status and configuration registers, a full MAC interface port, and a packet postprocessor and associated FIFO port for statistics reporting. A block diagram is shown in Figure 1.

The T7202 is compatible with *IEEE* 802.3 Section 9 for basic repeater functions, 802.3I (10Base-T) for embedded TP ports, and 802.3K Repeater Management Draft Standard for repeater management functions.

The T7202 supports 12 twisted-pair (TP) ports and two attachment unit interface (AUI) ports. Each TP port contains an on-chip receiver with squelch and receive logic, including link-integrity test and automatic polarity reversal detection and correction options. Also, most of the transmit logic, including pre-equalization and link pulse generation, is on-chip. One of the AUI ports connects directly to the transceiver cable through isolation components.

Description (continued)

The T7202 can be cascaded in parallel fashion to create one logical hub with a large number of ports. For this parallel port expansion, the T7202 generates the necessary control, clock, and NRZ-format data signals.

For management of the hub, the T7202 has an extensive on-chip register set for configuration, control, statistics gathering, and status monitoring functions. This information is available through a microprocessor interface.

For time-critical applications, the T7202 can postprocess each packet and generate a report which is output through a FIFO port. This on-chip processing greatly unburdens the attached microprocessor in a heavy traffic environment.

If full MAC processing is desired, the T7202 MAC interface can be directly interfaced to most popular CSMA/CD LAN controllers available.

The T7202 includes all the functions of the T7201 MPR2 so that it can be configured as a nonintelligent (basic) hub. As a basic multiport repeater, it contains per-port autopartitioning and reconnection state machines, automatic preamble regeneration, data and clock recovery with ±18 ns jitter tolerance, and status LEDs.

The T7202 is packaged in a 132-pin, plastic quad flat pack (PQFP) and is fabricated using low-power CMOS technology.

Description (continued)

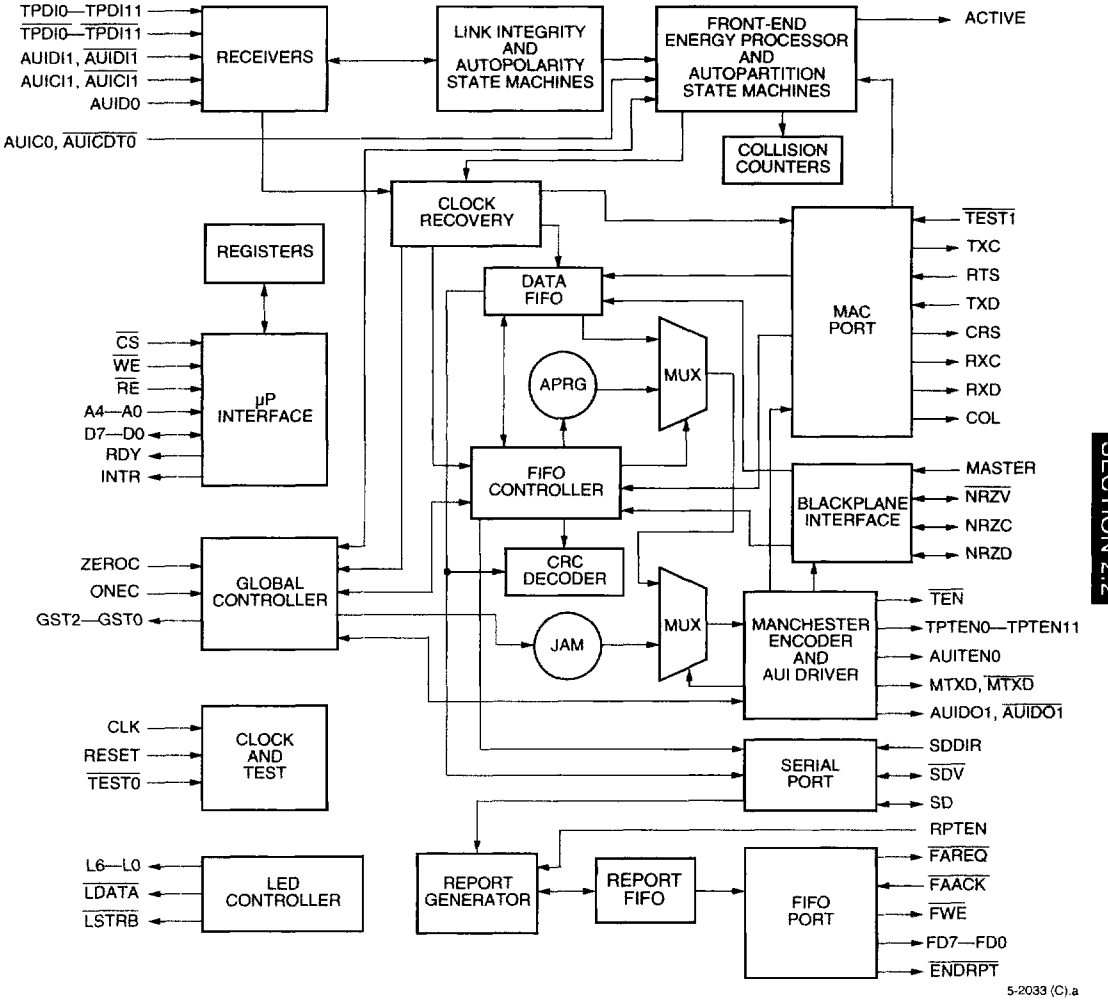

Figure 1. Block Diagram

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