Intel® 82551ER Integrated 10BASE-T/100BASE-TX Ethernet Controller

Integrated functions for high-performance, embedded Ethernet applications

Intel in Communications

The Intelligent Way to Connect

- High-performance/low-cost solution
- Advanced offloading features speed data transfers
- Footprint compatibility for flexible designs

Product Description

The Intel® 82551ER Integrated 10BASE-T/100BASE-TX Ethernet Controller expands the family of Intel® 8255x controllers. As part of Intel's fourth generation of fully integrated Fast Ethernet MAC/PHY solutions, the 82551ER is optimized for low-cost, embedded applications.

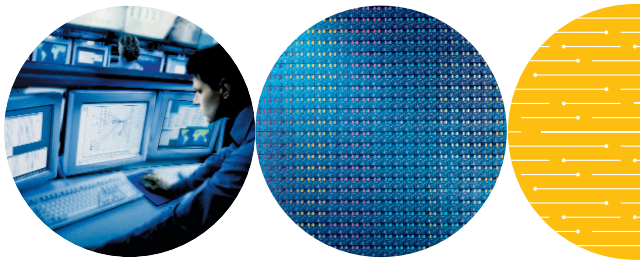
The 82551ER provides excellent performance with offloading of TCP, UDP and IP checksums. Its optimized 32-bit interface and efficient scatter-gather bus mastering capabilities enable the controller to perform high-speed data transfers over the PCI bus. These capabilities accelerate the processing of high-level commands and operations, lowering CPU utilization. The device's architecture enables efficient data flow from the bus interface unit to the 3KB transmit and receive FIFOs, providing the perfect balance between the wire and system bus. In addition, multiple priority queues augment Quality of Service (QoS) performance.

The 82551ER is pin-compatible with the Intel® 82559ER Fast Ethernet controller, and it is layout-compatible with Intel® 82540 and Intel® 82541 Gigabit Ethernet controllers. Intel-supported 82551ER drivers run on the standard Intel® 82551QM Fast Ethernet PCI/CardBus Controller, providing OEMs an upgrade path to the 82551QM for additional features and increased functionality.

Applications

The Intel 82551ER Integrated 10BASE-T/100BASE-TX Ethernet Controller is designed for use in the following applications:

- Information appliances, set-top boxes
- Point-of-Sales terminals, Web kiosks
- Printers
- Other embedded applications



Features / Benefits

Features	Benefits
Performance-enhancement Features	
▪ Offloads TCP, UDP, and IP checksums from PC processor	▪ Speeds data transfers
▪ Multiple priority transmit queues	▪ Enables packet prioritization for faster delivery of business-critical data
▪ Combination 10/100Mbps Fast Ethernet controller and physical layerinterface with glueless 32-bit PCI bus master interface	▪ Provides low-cost network connectivity for LOM or PCI adapters ▪ Reduces board space requirements and external support circuitry
▪ Improved dynamic transmit chaining	▪ Enhances performance
▪ Early-receive interrupt	▪ Processes receive data concurrently
▪ 3KB internal receive and transmit buffers	▪ Prevents data overruns or underruns
▪ Address Resolution Protocol (ARP) and flexible frame filtering	▪ Allows virtually connected IPv6, IPv4, Windows NT,* or next-generation systems
▪ Programmable transmit threshold	▪ Utilizes bus more efficiently
▪ Fast back-to-back transmission support with minimum interframe spacing	▪ Maximizes system throughput
Power-reduction Features	
▪ Advanced Configuration and Power Interface (ACPI) Specifications compliant	▪ Provides various power-down states and the ability to “wake-up” on a unique packet addressed to the system
▪ Reduced D3 power consumption	▪ Optimized for power-constraint designs
▪ Deep Power Down	▪ Minimizes power requirements
▪ Efficient dynamic standby mode	
Compatibility Features	
▪ Footprint-compatible with the Intel® 82540 Gigabit Ethernet controller	▪ Enables single-board design accommodating either 10/100/1000Mbps or 10/100Mbps Ethernet ▪ Provides an easy and safe migration path to Gigabit Ethernet
▪ Pin-compatible and driver-compatible with 82559ER	▪ Provides an easy upgrade path for existing 82559ER designs ▪ Supports robust, well-tested, high-performance drivers
▪ Intel-supported 82551ER drivers also run on Intel® 82551QM	▪ Provides upgrade path to standard Intel® 82551QM for advanced network features
Physical Features	
▪ Thin BGA 15x15mm package	▪ Minimizes board space requirements

Characteristics

Electrical	
▪ Power Supply	▪ 3.3V +/– 5%
▪ Power Dissipation	▪ 0.5W (typical)
Environmental	
▪ Operating temperature	▪ 0°C to 85°C (maximum)
▪ Storage temperature	▪ -65°C to 140°C
Physical	
▪ Package	▪ 196-pin BGA (1mm ball pitch)

Order Code

▪ GD82551ER

For more information, contact your Intel® sales representative.

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