



## 10/100/1000BASE-T CONTROLLER WITH INTEGRATED TRANSCEIVER

### FEATURES

- **Single-chip solution for LAN on Motherboard (LOM) and network interface card (NIC) applications**
  - Integrated 10BASE-T/100BASE-TX/1000BASE-T transceivers
  - 10/100/1000 triple-speed MAC
  - Host interfaces
    - PCI v2.2—32/64 bits, 33/66 MHz
    - PCI-X v1.0—64 bits, 66/100/133 MHz
  - Ultra-deep 96-KB on-chip packet buffer
  - Dual high-speed RISC cores with 16-KB caches
    - Programmable, in-line packet classification
  - SMBus 2.0 controller
  - On-chip power circuit controller and Wake on LAN (WOL) power switching circuit
- **Performance features:**
  - TCP, IP, UDP checksum
  - TCP segmentation
  - CPU task offload
  - Adaptive interrupts
  - Ultra-deep 96-KB packet buffer
- **Robust manageability:**
  - PXE 2.0 remote boot
  - Alert Standard Format—ASF 1.0 support
  - Wake on LAN
  - Out-of-box (OOB) Wake on LAN
  - Intelligent platform management interface (IPMI), version 1.5
  - Statistic gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB)
  - Comprehensive diagnostic and configuration software suite
  - ACPI 1.1a compliant multiple power modes
- **Advanced network features:**
  - Priority queuing—802.1p layer 2 priority encoding; support for four priority queues
  - Virtual LANs—802.1q VLAN tagging; support for up to 64 VLANs
  - Jumbo frames (9 KB)
  - 802.3x flow control
- **Advanced server features:**
  - Link aggregation—802.3ad, GEC/FEC, Smart Load Balancing™ (supports heterogeneous teams)
  - Heterogeneous, mixed-speed failover
  - PCI Hot-Plug support
- **Low-power, 0.13-um CMOS design**
- **400-pin FBGA package**
- **3.3V I/Os (5V tolerant)**
- **JTAG**

### SUMMARY OF BENEFITS

- **Industry's smallest 10/100/1000 MAC+PHY solution—power and space optimized for LOM and low-profile NIC applications**
- **Completely backward-compatible:**
  - To existing 10/100 network infrastructure
  - To existing PCI-based desktop and server platforms
- **Futureproof**
  - PCI-X interface, on-chip programmable CPUs, ASF support
- **Performance focused—optimized for throughput and CPU utilization**
  - Adaptive interrupts
  - PCI-X eliminates PCI bottlenecks
  - Ultra-deep 96-KB packet buffer lowers CPU utilization and avoids PCI congestion
  - CPU task offloads reduces utilization level of CPU
- **Robust and highly manageable**
  - PXE 2.0, ACPI 1.1a, Wake on LAN, ASF 1.0, IPMI
  - Integrated cable testing—link quality, length, pair skew, pair polarity, pair swap
- **Advanced features**
  - VLAN, priority queuing, jumbo frames
  - RISC processors for advanced packet classification
- **Server class reliability, availability, and performance features**
  - Link aggregation and load balancing
  - Switch-dependent
  - 802.3ad (LACP), generic trunking (GEC/FEC)
  - Switch- and NIC-independent
  - Smart Load Balancing™—unique technology that supports heterogeneous teams, and can operate with any switch
  - Failover
  - Smart Load Balancing allows heterogeneous failover
  - PCI Hot Plug
- **Low-power for zero airflow implementations**
  - 0.13-um CMOS design
  - Advanced power management
- **Space savings for LOM**
  - 400-pin FBGA package
  - No external memory
  - Integrated power circuitry