Features

Product Brief

🔴 **High-performance non-PCI local bus**

- ■ Supports 8/16-bit SRAM-like host interface (US Patent Approval), easily interfaced to most common embedded MCUs; or 8/16-bit local CPU interface including MCS-51 series, Renesas series CPUs

- ■ Supports Slave-DMA to minimize CPU overhead and burst mode read & write access for frame reception & transmission on SRAM-like interface for high performance applications

- ■ Supports variable voltage I/O (1.8/2.5/3.3V) and programmable driving strength (8/16mA)

- ■ Interrupt pin with programmable timer

🔴 **High-performance SPI slave interface**

- ■ Supports SPI slave interface for CPU with SPI master. The SPI slave interface supports SPI timing mode 0 and 3, up to 40MHz of SPICLK, variable voltage I/O and programmable driving strength

- ■ Supports optional Ready signal as flow control for SPI packet RX/TX

🔴 **Single-chip Fast Ethernet MAC/PHY controller**

- ■ Embeds 14KB SRAM for packet buffers

- ■ Supports IPv4/IPv6 packet Checksum Offload Engine to reduce CPU loading, including IPv4 IP/TCP/UDP/ICMP/IGMP and IPv6 TCP/UDP/ICMPv6 checksum generation & check

- ■ Supports VLAN match filter

- ■ Integrates IEEE 802.3/802.3u standards compatible 10BASE-T/100BASE-TX (twisted pair copper mode) Fast Ethernet MAC/PHY transceiver in one single-chip

- ■ Supports twisted pair crossover detection and correction (HP Auto-MDIX)

- ■ Supports full duplex operation with IEEE 802.3x flow control and half duplex operation with back-pressure flow control

- ■ Supports auto-polling function
- ■ Supports 10/100Mbps N-way Auto-negotiation operation

🔴 **Advanced Power Management features**

- ■ Supports dynamic power management to reduce power dissipation during idle or light traffic period

- ■ Supports very low power Wake-On-LAN (WOL) mode when the system enters sleep mode and waits for network event to awake it up. The wakeup events supported are network link state change, receipt of a Magic Packet or a pre-programmed Microsoft Wakeup Frame or through GPIO pin

- ■ Supports Protocol Offload (ARP & NS) for Windows 7 Networking Power Management

- ■ Supports complete I/O pins isolation during WOL mode or Remote Wakeup Ready mode to reduce leakage current on non-PCI and SPI slave host interface

🔴 Supports optional EEPROM interface to store MAC address

🔴 Supports up to four GPIOs and two of them support Wake-On-LAN

🔴 Supports programmable LED pins for various network activity indications with variable voltage I/O and programmable driving strength

🔴 Integrates voltage regulator, 25MHz crystal oscillator and power on reset circuit on chip

🔴 Supports optional clock output (25, 50, or 100MHz) for system use, if 25MHz crystal is present

🔴 Supports alternative clock input (25MHz) from system clock to save the 25MHz crystal cost

🔴 64-pin LQFP RoHS compliant package

🔴 Operates over 0 to +70°C or -40 to +85°C temperature range

Product Description

The AX88796C is a SPI or non-PCI Ethernet controller with low power, low-pin-count and variable voltage I/O for the Embedded and Industrial Ethernet applications. The AX88796C supports 8/16-bit SRAM-like or

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Address-Data Multiplex host interface with variable voltage I/O, providing a glue-less connection to common or high-end MCUs. The AX88796C also provides an alternative SPI slave interface for MCUs with SPI master for simplifying host interface connection. The AX88796C integrates on-chip Fast Ethernet MAC and PHY, which is IEEE 802.3/802.3u 10BASE-T/100BASE-TX compatible, and 14KB embedded SRAM for packet buffering to accommodate high bandwidth applications. The AX88796C offers a wide array of features including support for advanced power management, high performance data transfer on host interface, IPv4/IPv6 checksum offload engine, HP Auto-MDIX, and IEEE 802.3x and back-pressure flow control. The AX88796C supports two operating temperature ranges, namely, commercial grade from 0 to 70 °C and industrial grade from –40 to 85 °C. The small form factor of 64-pin LQFP package helps reduce the overall PCB space. The programming of AX88796C is simple, so the users can easily port the software drivers to many embedded systems very quickly.

Target Applications

- Netbook
- Industrial Computer
- Cable, Satellite and IP STB
- IPTV, Digital Media Adapter
- Network DVD, DVR-R, HDD
- IP/Video Phone, VoIP ATA
- Internet Radio
- POS Terminal, Kiosk
- Multi Functional Printer
- RFID Reader
- Time Attendance

- RS232/422/485 to Ethernet
- Building / Home Automation
  - HVAC Control
  - Networked Home Appliance
- Security System
  - Biometric Access Control
  - Fingerprint Reader
  - Network Camera
  - Remote Surveillance
  - Professional DVR
  - Fire and Safety

- Industrial Control
  - Remote Data Collection Equipment
  - Remote Monitor
  - Remote Control and Management
  - Environment Monitoring or Network Sensor
  - Automatic Meter Reading
  - Networked UPS
  - Lighting Control

System Block Diagram