Your contact: www.codico.com mailto: office@codico.com phone: +43/1/86305-0 fax: +43/1/86305-5000

AX88742

32-bit PCI 2-Port 10/100M Fast Ethernet Controller

Features

Product Brief

- **High Performance PCI Bus**
  - Supports 32-bit 33MHz PCI host interface, easily interface to most common embedded MCUs
  - Supports PCI Bus Master mode and ACPI Management function
  - Supports PPPoE/IPv4 IP/TCP/UDP/ICMP/ IGMP checksum offload to relieve CPU loading
- **Fast Ethernet MAC/PHY**
  - IEEE 802.3 10Base-T/100Base-TX compatible
  - Supports full-duplex operation with IEEE 802.3x flow control and half duplex with backpressure
  - 10/100M PHY supports twisted pair crossover detection and auto-correction (HP Auto-MDIX)
  - Support Wake-on-LAN by Microsoft Wakeup Frame, Magic Packet and link status change detection
- **Switching Fabric**
  - Performs non-blocking wire-speed forwarding and filtering
  - Embeds 32KB SRAM for packet buffering
  - Supports broadcast storm filtering
  - Supports per queue and per port ingress and egress programmable rate limit control (4K ~ 100M bps)
  - Integrated two-way Address-Lookup engine and table for 1K MAC addresses
  - Supports Routing Table/IGMP/VLAN Table access through PCI read/write operation
  - Supports 802.1D Spanning Tree Protocol and 802.1w Rapid Spanning Tree Protocol.
- **QoS**
  - Supports Quality-of-Service for Port-Based, 802.1p VLAN and IPv4 TOS/IPv6 COS packets with four priority queues
  - Supports RFC2475 DiffServ-based
- **VLAN**
  - Supports up to 3 VLAN groups for port-based VLAN and 16 VLAN entries for 802.1Q Tag-based VLAN function
  - Supports Double tagging 802.1Q-in-802.1Q function for WAN access
- **Security**
  - Supports ingress port security mode, incoming packets with unknown source MAC address could be dropped
  - Supports eight Security MAC Registrations
  - Supports 802.1X Port-Based Authorization
- **Multicast**
  - Supports GMRP/GVRP/GARP/LACP packet snooping
  - Supports up to 1K Multicast Group (shared with L2 MAC table)
  - Supports eight IGMP Multicast IP address snooping
- **Monitoring**
  - Supports RMON group 1,2,3,9 counter (RFC1213)
  - Supports Ethernet-like MIB counter (RFC 1643)
  - Supports Bridge MIB counter (RFC 1493)
  - Egress/Ingress Port Mirroring
  - Sniffer functions:
    - Source/Destination Port
    - DA/SA
    - VLAN ID
    - Ethernet Packet Type
    - IPv4/IPv6 Protocol
    - IPv4/IPv6 TCP/UDP Port Number
- **Optional Interfaces Supported:**
  - MII or Reverse-MII
  - RMII or Reverse-RMII
  - Optional serial EEPROM
- Integrates an on-chip voltage regulator requiring only a single power supply of 3.3V
- Integrates an on-chip oscillator and PLL requiring only a 25Mhz crystal to operate
- Integrates on-chip power-on reset circuit
- 128-pin LQFP RoHS compliant package
- Operating temperature range: 0˚C to 70˚C

Product Description

The AX88742 is a PCI 2-port 10/100M Ethernet controller which integrates a 3-port switching fabric, three 10/100M MACs, two 10/100M PHYs, and an 32-bit PCI bus interface. This controller is targeted at embedded system applications that need to support two Ethernet ports, typically one for a LAN port and one for a WAN port. The AX88742 supports a popular 32-bit 33Mhz PCI bus interface with bus master mode data transfer and routine packet checksum calculation which makes it easy to provide high performance 2-port Ethernet connectivity solutions for any embedded MCU. The built-in switching fabric supports non-blocking wire-speed forwarding and provides four priority queues for advanced QoS functions including Port-Based, 802.1p VLAN, IPv4 TOS/IPv6 COS for voice, video, audio and data traffic classification. The AX88742 combines the benefits of high integration and flexibility which makes it an ideal single-chip solution for designing high performance, QoS-aware, cost effective and small form factor 2-port Ethernet function for any embedded system application.

Block Diagram

Target Applications

- VoIP Phone, VoIP ATA Adapter
- IP Camera for Remote Surveillance
- Next Generation IP-STB and IPTV
- Industrial Controller and Networked Sensor
- Port Redundancy and Port Monitoring

Product Selection Guide

ASIX Electronics Corporation
4F, No.8, Hsin Ann Rd.,
Hsinchu Science Park,
Hsinchu 30078, Taiwan

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TEL: +886-3-579-9500
FAX: +886-3-579-9558
http://www.asix.com.tw/