ADM5120

HOME GATEWAY CONTROLLER

Product Overview
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About this Manual

Structure

This Product Overview contains 2 chapters

Chapter 1  Product Overview
Chapter 2  Packaging

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Chapter 1 Product Overview

1.1 Overview
ADM5120 is a high performance, highly integrated, and highly flexible SOC (System-On-Chip) that facilitates the functionalities of SOHO/SME Gateway, NAT Router, Print Server, WLAN Access Point, and VPN Gateway. ADM5120 enables the sharing of IP-based broadband services throughout the home/office using wired/wireless computers, entertainment equipment, printers, and other intelligent devices.

Internally, the ADM5120 ASIC consists of a high performance (227 MIPS) embedded MIPS CPU, an embedded switch engine, 10/100M PHY, an embedded PCI bridge, an embedded USB host, and interfaces for UART, SDRAM, Flash and VPN engines. The following diagram illustrates a system configuration that uses the supported functionalities/facilities of ADM5120.

1.1.1 Product Order Information
The ADM5120 comes in two packaging formats as follows:
Section 2.1  Ball Grid Array (BGA) 324-pin
Section 2.2  Plastic Quad Flat Pack (PQFP) 208-pin
1.2 Features

ASIC Features

Processor
- MIPS 4Kc CPU
- Embedded cache, 8K-byte I-cache, 8K D-cache
- Embedded memory management unit (MMU) – 32-entry TLB, organized as 16 entry pairs
- 175 MHz/227 MIPS

Network
- 6 ports
  - IEEE 802.3 Fast Ethernet
  - 5 auto-MDIX (auto-crossover) twisted paired LAN interfaces, embedded 10/100M PHY
- 1 GMII(MII)/MII interface
- Flexible WAN port selection
- Embedded switch engine
  - Embedded Data-buffer/Address-look-up table
  - Look-up table read/writeable
  - MAC layer security
  - MAC clone solution
  - Multicast grouping (IGMP)
  - MAC filtering, Bandwidth control
- Class of Services (CoS) with two priority levels
- Shared dynamic data buffer management, embedded SSRAM
- Port grouping VLAN (overlapping)
- TCP/IP accelerator
- Two bank support (2 chip select pins)
- Each bank can support -- 1Mx32 up to 32Mx32bit (128M-byte)
- Flash
  - NAND Flash boot (*)
  - NOR Flash boot: Two bank support (2 chip select pins)
  - NOR Flash boot: Each bank can support – 1Mx8-bit, up to 1Mx32-bit (4M-byte)

System
- UART interface (support MODEM interface)
- PCI bridge that supports 3 master devices (*)
- GPIO (**)
- USB 1.1 host
- Clock source
  - 25MHz crystal for 10/100
  - 48MHz crystal for USB
- 0.18u CMOS process
- 1.8V/3.3V dual power
- BGA/PQFP

VPN interface to ADM5001
* Available in BGA only, not PQFP
** PQFP has 4 GPIO pins v.s. BGA has 8 pins.
**Software Features**

- Linux/ECOS (Embedded Configurable OS) Real-Time OS
- Linux-based and ECOS-based turn key support
- Telnet
- IEEE 802.3 Ethernet Driver
- IEEE 802.11 WLAN Driver
- RS232 Driver for Console User Interface
- DHCP Server/Client
- PPP over Ethernet (PPPoE)
- Network Address Translation (NAT) for IP Address Mapping/Sharing/Security
- DNS Proxy
- Simple Network Time Protocol (SNTP)
- Firewall
- Web-Based Configuration: WEB and HTTP
- TFTP upload/download

**Typical Applications**

- IEEE 802.3 SOHO/SME Gateway
- NAT Router
- Single band 802.11g Access Point (through PCI bus: 5120+802.11g NIC)
- Multiple band 802.11a/b/g Access Point (through PCI bus: 5120+802.11a/b/g NIC)
- Print Server (through USB1.1)
- VPN Gateway (through memory bus: 5120+5001)
- 12-port SME Gateway (through GMII: 5120+6999U)
Chapter 2 Packaging

2.1 Ball Grid Array (BGA) 324-pin

Note: Scale = mm
2.2 Plastic Quad Flat Pack (PQFP) 208-pin

Note: Scale = mm

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