



**ADM5120**

**HOME GATEWAY CONTROLLER**

**Product Overview**

**03DEC03**

***ADMtek.com.tw***

Information in this document is provided in connection with ADMtek products. ADMtek may make changes to specifications and product descriptions at any time, without notice. Designers must not rely on the absence or characteristics of any features or instructions marked “reserved” or “undefined”. ADMtek reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them

The products may contain design defects or errors known as errata, which may cause the product to deviate from published specifications. Current characterized errata are available on request. To obtain the latest documentation please contact you local ADMtek sales office or visit ADMtek’s website at <http://www.admtek.com.tw>

\*Third-party brands and names are the property of their respective owners.

## **About this Manual**

### **Structure**

This Product Overview contains 2 chapters

Chapter 1      Product Overview

Chapter 2      Packaging

### **Customer Support**

ADMtek Incorporated,  
2F, No.2, Li-Hsin Rd.,  
Science-based Industrial Park,  
Hsinchu, 300, Taiwan, R.O.C.

### **Sales Information**

Tel + 886-3-5788879  
Fax + 886-3-5788871

# Table of Contents

<b>CHAPTER 1 PRODUCT OVERVIEW .....</b>	<b>1-1</b>
1.1 OVERVIEW .....	1-1
<i>1.1.1 Product Order Information.....</i>	<i>1-1</i>
1.2 FEATURES .....	1-2
<b>CHAPTER 2 PACKAGING .....</b>	<b>2-1</b>
2.1 BALL GRID ARRAY (BGA) 324-PIN.....	2-1
2.2 PLASTIC QUAD FLAT PACK (PQFP) 208-PIN .....	2-2

## 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.

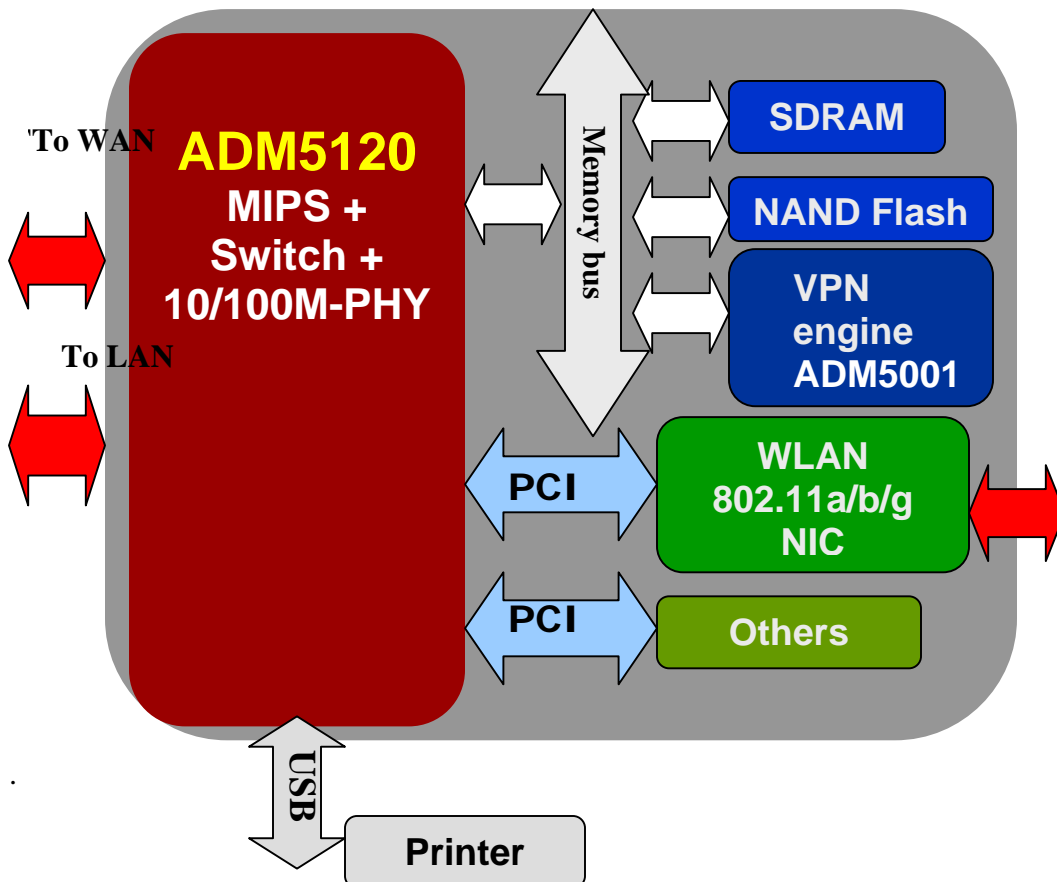
Internally, the ADM5120 ASIC consists of a high performance (227 MIPS) embedded MIPS CPU, an embedded switch engine, 10/100M PHY, an embedded PCI bridge, an embedded USB host, and interfaces for UART, SDRAM, Flash and VPN engines. The following diagram illustrates a system configuration that uses the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

#### Network

- 6 ports
  - IEEE 802.3 Fast Ethernet
  - 5 auto-MDIX (auto-crossover) twisted paired LAN interfaces, embedded 10/100M PHY
  - 1 GMII(\*)/MII interface
  - Flexible WAN port selection
- Embedded switch engine
  - Embedded Data-buffer/Address-look-up table
  - Look-up table read/write-able
  - 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 (overlap-able)
- TCP/IP accelerator

#### 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 toADM5001

**\* Available in BGA only, not PQFP**  
**\*\* PQFP has 4 GPIO pins v.s. BGA has 8 pins.**

#### Memory interface

- SDRAM

**Software Features**

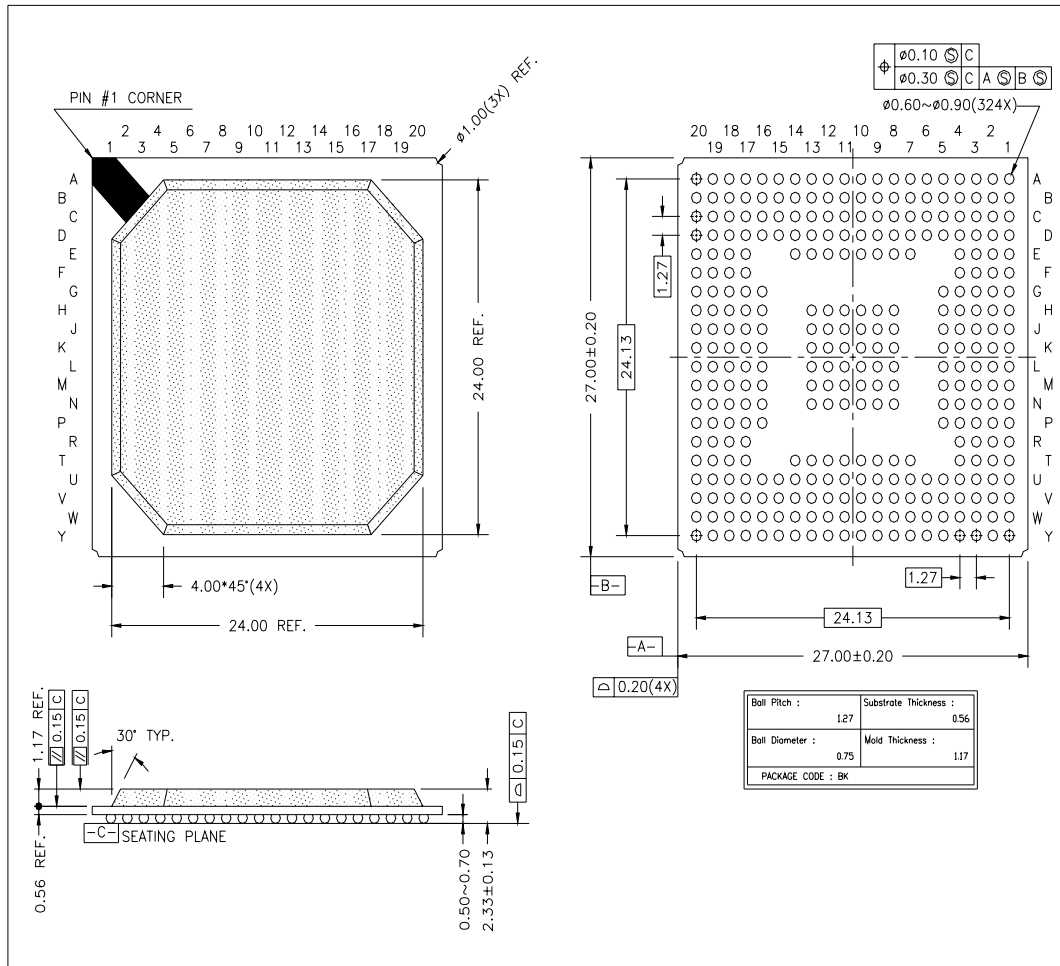
- Linux/ECOS (Embedded Configurable OS) Real-Time OS
- Linux-based and ECOS-based turn key support
- Telnet
- IEEE 802.3 Ethernet Driver
- IEEE 802.11 WLAN Driver
- RS232 Driver for Console User Interface
- DHCP Server/Client
- PPP over Ethernet (PPPoE)
- Network Address Translation (NAT) for IP Address 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)

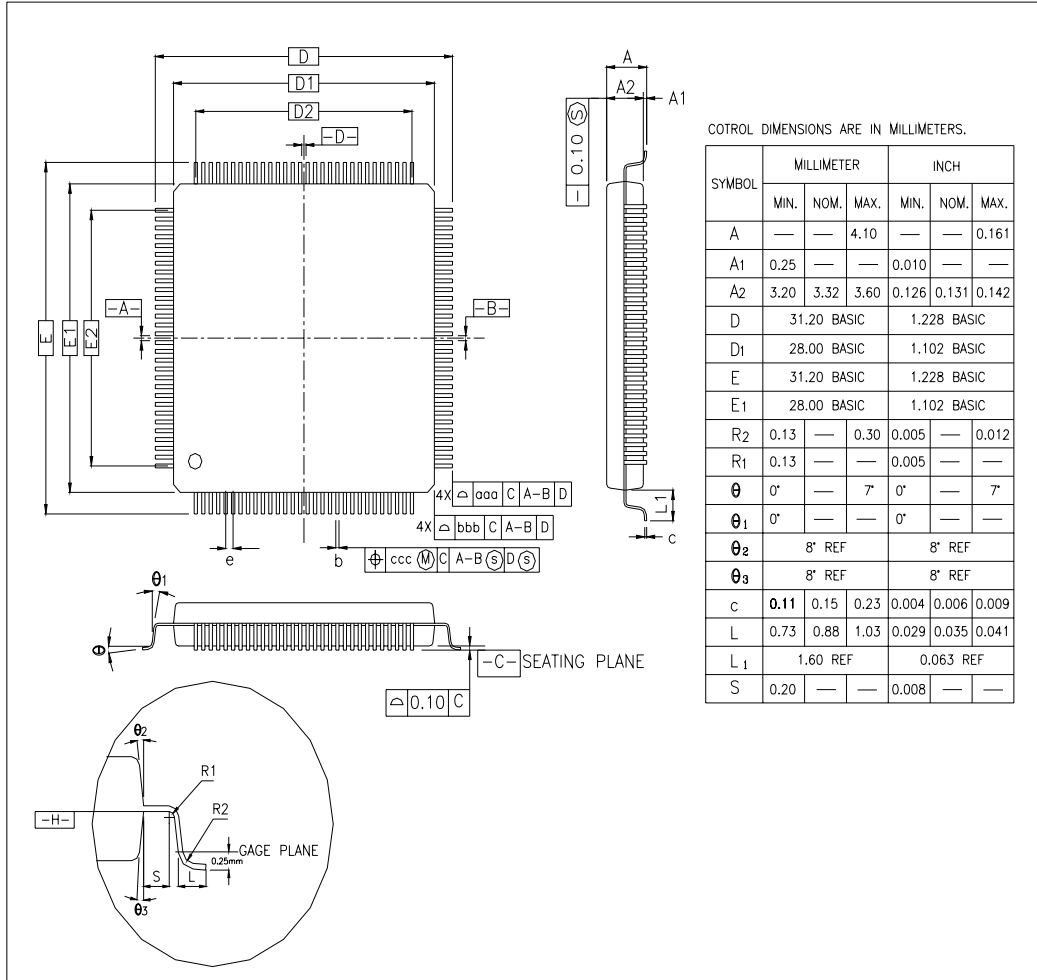
# Chapter 2 Packaging

## 2.1 Ball Grid Array (BGA) 324-pin



Note: Scale = mm

## 2.2 Plastic Quad Flat Pack (PQFP) 208-pin



Note: Scale = mm

Symbol	MILLIMETER			INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
b	0.17	0.20	0.27	0.007	0.008	0.011
e	0.50 BSC.			0.020 BSC.		
D2	25.50			1.004		
E2	25.50			1.004		
aaa	0.25			0.010		
bbb	0.20			0.008		
ccc	0.08			0.003		