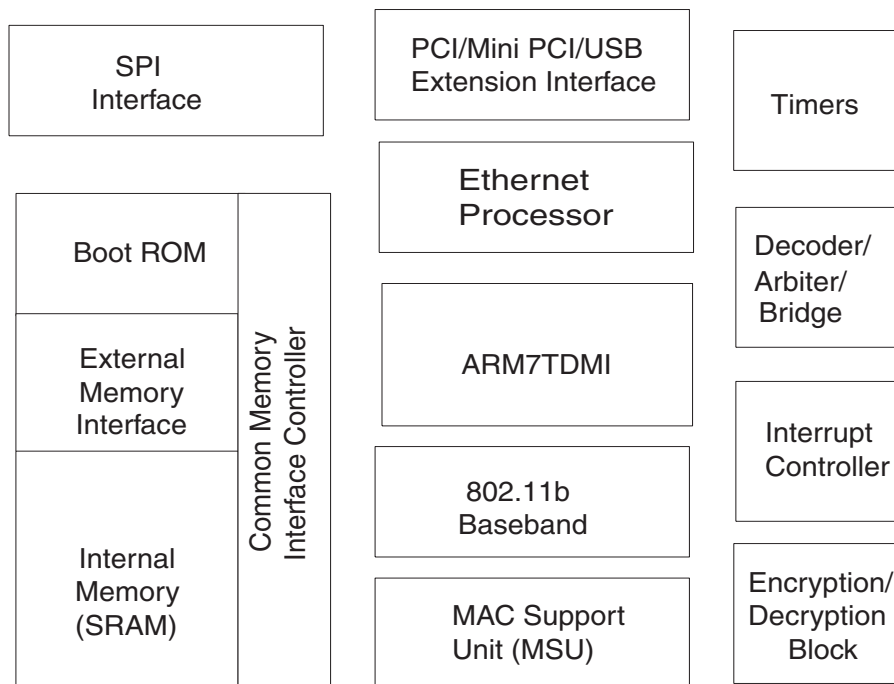


## Features

- Integrates the IEEE 802.11 Physical Layer (Baseband) and the Medium Access Controller (MAC) for Supporting Standard Rates up to 11 Mbps
- Supports Antenna Diversity Algorithm, Automatic Receive Gain Control, Transmit Gain Control, Transmit Filter for Japanese Regulatory and Differential or Single-ended I- and Q-Baseband Signals
- Integrates 160 KBytes of SRAM which are Organized in Five Banks of 32 KBytes each, Offering the Flexibility for Individually Configuring Each of Them as Program or Data Memory
- Zero Wait States for Program Execution
- Fast Data Transfers through DMA Channels
- Low Power ARM7TDMI® RISC Processor
- Integrates a Bootstrap ROM Supporting Firmware Uploading from a Serial DataFlash®
- Glueless Parallel Flash Memory Interface, Supporting up to 16 MBytes of Nonvolatile Memory
- Glueless External SRAM Interface for all MAC Operations, Supporting up to 16 MBytes of External Memory
- Wired Equivalency Privacy (WEP) in Hardware Supporting 64-bit and 128-bit Keys
- Hardware Implementation of TKIP
- Hardware Implementation of AES Encryption Supporting Various Modes (CCM/CTR/CBC)
- The WLAN Functions Can Be Easily Changed or Updated to New Requirements Since They are Implemented in Microcode
- Supports 11 Mbps Rates with Automatic Fallback to 5.5, 2 and 1 Mbps
- SPI Interface and 12 GPIO Pins
- Supports Two Extension Interfaces: A Full-Speed USB 2.0 Compliant Device and a Slave PCI Device
- 208-ball LFBGA Package
- Low-voltage 1.8V Operation

## Block Diagram



# Ethernet to Wireless Bridge Low-Cost Access Point

## AT76C509 Summary

2392AS-WLAN-01/04



Note: This is a summary document. A complete document is available under NDA. For more information, please contact your local Atmel sales office.

## Description

The AT76C509 is a Wireless to Ethernet Bridge (VNET-B) that performs the Internet-working for interconnecting a Wireless LAN with other Wireless LANs (WLAN) and legacy LANs. It acts as an Access Point (AP) to the WLAN and communicates packets that are destined outside the WLAN using IP over Ethernet. In case the WLAN user is mobile, roaming functions are also supported.

The AT76C509 is also a single-chip MAC Support Unit (MSU) and an 802.11b Base-band Controller that can handle IEEE 802.11b standard compliant data rates of up to 11 Mbps.

Furthermore, the AT76C509 chip contains a WEP/TKIP engine block, an AES engine block, two memory controllers and the ARM<sup>®</sup> subsystem consisting of an Interrupt Controller, two 32-bit timers and an address decoder unit.

The data transactions over this unified environment are categorized according to the type of end-to-end devices.

## End Stations Transactions

When two end stations communicate (irrespective to the type of network they belong), the inter-networking between the different networks should be transparent.

## Internetworking Device Transactions

The AT76C509 implements all necessary communication protocols for supporting inter-networking functions, implements logical grouping of users independent of their physical location and provides secure links by implementing encryption algorithms.

The ARM7TDMI core supports two alternative instruction sets. Powerful 32-bit code can be executed by the processor in ARM operating mode. However, a 16-bit instruction subset is also available in Thumb<sup>®</sup> mode. Thumb mode can be selected to exploit full processor power with limited external memory resources. Note that ARM7TDMI operating mode can be changed at run time with negligible overhead.

Apart from that, AT76C509 contains two extension interfaces: a full-speed USB 2.0 compliant device that can support up to four configurable End Points (EP) plus one Control EP, and a slave PCI device that allows Host access to any memory location of the device.



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[www.atmel.com/literature](http://www.atmel.com/literature)

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