



ATHEROS
COMMUNICATIONS

AR5006EX Technology Overview

Introducing the Atheros AR5006EX, the world's first single-chip IEEE 802.11a/b/g WLAN solution with support for PCI Express. AR5006EX integrates a complete WLAN solution-media access controller (MAC), baseband processor, and a high-performance 2.4/5-GHz radio in a low-cost digital CMOS design.

With the highest level of integration, the AR5006EX enables the entire WLAN solution to fit on a single-sided Mini Card or ExpressCard design, creating the ideal choice for embedded and aftermarket WLAN solutions for personal computers. This design exploits the ability of the PCI Express bus architecture to support high-performance computing with up to 2.5-gigabit-per-second transmit and receive rates – a 150 percent improvement over the existing PCI architecture.

AR5006EX

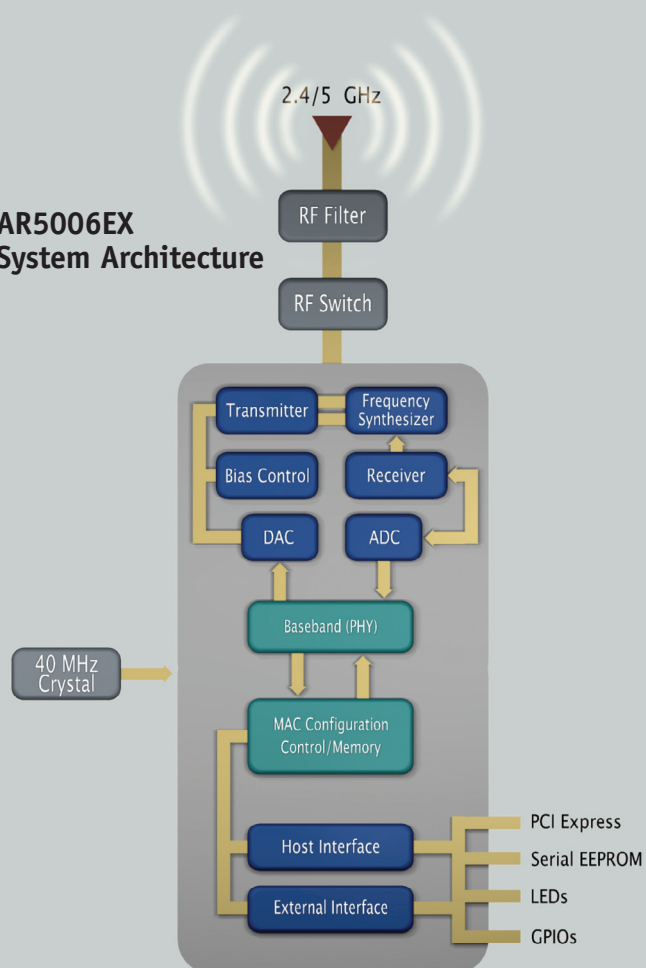
First complete single-chip IEEE 802.11a/b/g WLAN solution with support for PCI Express™



AR5423

Integrates an entire 802.11a/b/g solution in a low cost CMOS design

AR5006EX System Architecture



AR5423

AR5006EX Solution Highlights

- Uses digital CMOS technology exclusively, minimizing power consumption and cost while maximizing reliability
- Highly integrated single chip PCI Express CMOS solution with MAC/baseband processor and dual-band 2.4/5 GHz radio
- Compliant with IEEE 802.11a, 802.11b, 802.11g, 802.11d, 802.11h, 802.11i and 802.11j standards
- Supports draft 802.11e Quality of Service (QoS) standard
- Atheros XR™ eXtended Range technology gives Wi-Fi products twice the range of existing designs
- Hardware encryption for security provides Advanced Encryption Standard (AES), Temporal Key Integrity Protocol (TKIP) and Wired Equivalent Privacy (WEP) without performance degradation
- Extended tuning range (2.300-2.500 & 4.900-5.850 GHz) enables worldwide use

AR5423 Single-Chip PCI Express dual-band CMOS MAC/Baseband/Radio

- PCI Express Base specification 1.0a compliant
- Operates from 4.900 to 5.850 and 2.300 to 2.500 GHz
- Dynamic Frequency Selection/Transmit Power Control (DFS/TPC) support
- Industrial temperature version (-40 to 85°C) option available
- Advanced wideband receiver with best path sequencer for better range and multipath resistance than conventional equalizer-based designs
- Eliminates all IF filters and most RF filters; no external voltage-controlled oscillators (VCOs) or surface acoustic wave (SAW) filters needed
- Rx filter supports blocking specifications for half & quarter rate channels
- No external FLASH or RAM memory needed
- Serial EEPROM, LEDs, GPIOs peripheral interfaces
- Low power sleep modes



AR5006EX Specifications

Chipset	AR5423
Frequency Band	5 GHz and 2.4 GHz
Network Standard	802.11a, 802.11b, 802.11g
Modulation Modes	OFDM with BPSK, QPSK, 16 QAM, 64 QAM; DBPSK, DQPSK, CCK
FEC Coding Rate	1/2, 2/3, 3/4
Hardware Security	AES, TKIP, WEP
Quality of Service	802.11e (draft)
Media Access Technique	CSMA/CA
Host Interface	PCI Express
Peripheral Interface	GPIOs, LEDs
Supported Data Rates	
IEEE 802.11a	6 to 54 Mbps
IEEE 802.11b	1 to 11 Mbps
IEEE 802.11g	6 to 54 Mbps
Operating Voltage	1.8V +/-5% 3.3V +/-10%
Package Dimensions	13mm x 13mm
Package	224 Plastic Ball Grid Array

Reference Design Highlights

- PCI Express Mini Card 1.0 specification compliant single sided board design delivers lowest RBOM cost
- Worldwide regulatory compliant (country list available on request)
- Single worldwide SKU
- Integrated WPA supplicant supports Windows® drivers for Windows XP, Windows 2000
- A single driver and firmware code base supports previous generation Atheros chipsets, providing backward compatibility with legacy designs
- Client utility supports configuration profiles, current link status, statistics and diagnostics

Contact your local Atheros representative and ask about our AR5006EX solution as well as other technology solutions from Atheros:

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For more information on Atheros and Atheros WLAN Technology please visit www.atheros.com

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