



## AR5006EG Technology Overview

Introducing the Atheros AR5006EG, the world's first single-chip IEEE 802.11b/g WLAN solution with support for PCI Express. AR5006EG integrates a complete WLAN solution-media access controller (MAC), baseband processor, and a high-performance 2.4-GHz radio in a low-cost digital CMOS design.

With the highest level of integration, the AR5006EG 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.

# AR5006EG

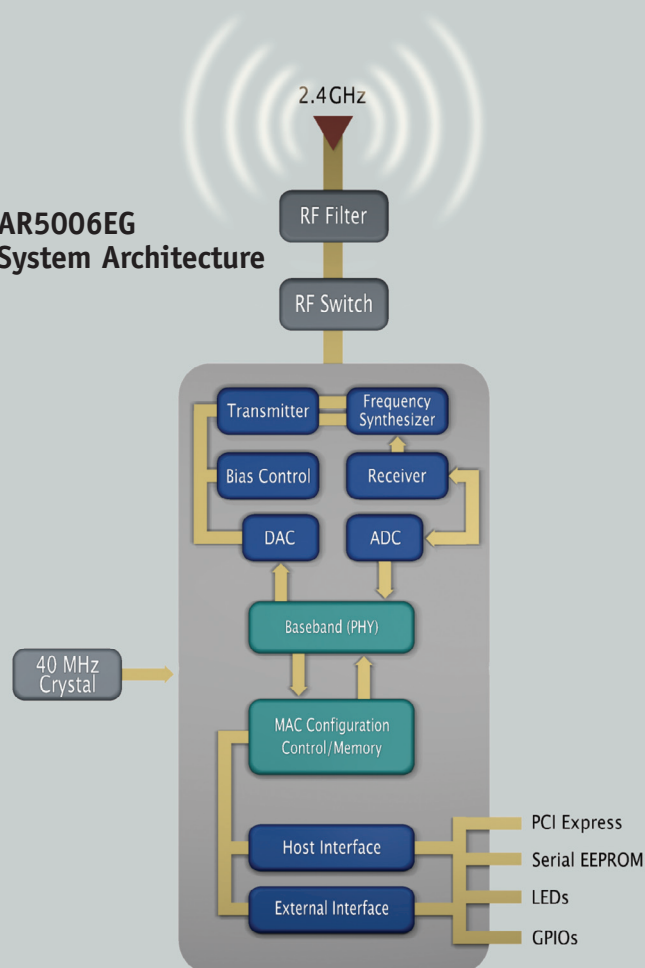
*First complete single-chip IEEE 802.11b/g WLAN solution with support for PCI Express™*



### AR2423

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

## AR5006EG System Architecture



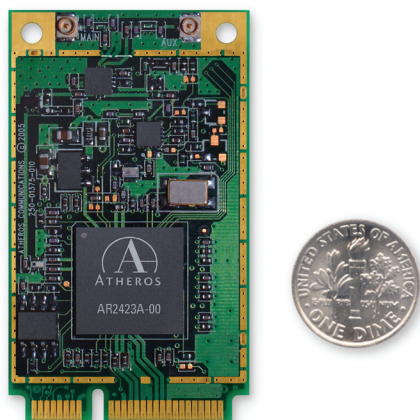
AR2423

## AR5006EG 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 2.4 GHz radio
- Compliant with IEEE 802.11b, 802.11g, 802.11d and 802.11i 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 GHz) enables worldwide use

## AR2423 Single-Chip 802.11b/g PCI Express CMOS MAC/Baseband/Radio

- PCI Express Base specification 1.0a compliant
- Operates from 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



## AR5006EG Specifications

|                        |                                                         |
|------------------------|---------------------------------------------------------|
| Chipset                | AR2423                                                  |
| Frequency Band         | 2.4 GHz                                                 |
| Network Standard       | 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 802.11b           | 1 to 11 Mbps                                            |
| IEEE 802.11g           | 6 to 54 Mbps                                            |
| Operating Voltage      | 1.8V +/-5%<br>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 AR5006EG 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](http://www.atheros.com)

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