AR5006EGS Technology Overview

Introducing the Atheros AR5006EGS, the world's first single-chip IEEE 802.11b/g WLAN solution with support for PCI Express and Super G. AR5006EGS 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 AR5006EGS 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.

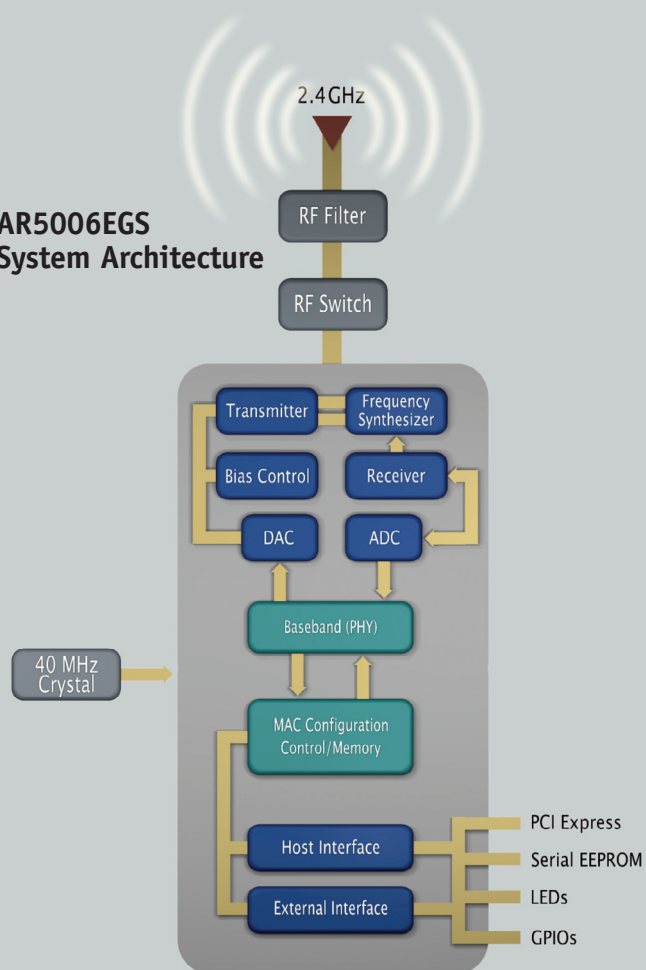# ATHEROS®
COMMUNICATIONS

AR5006EGS

First complete single-chip IEEE 802.11b/g WLAN solution with support for PCI Express™ and Super G®

AR2424
Integrates an entire Super G solution in a low cost CMOS design
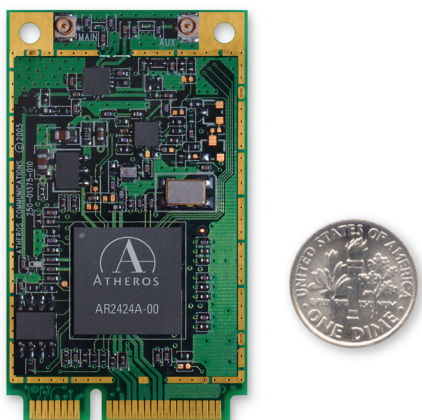

AR5006EGS System Architecture

AR2424

AR5006EGS 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
- Super G® mode delivers up to 108 Mbps data link rate with typical end user throughput exceeding 60 Mbps
- 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

AR2424 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
- Super G mode includes dynamic turbo capability, real-time hardware data compression, Fast Frames and standards-compliant bursting
- 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

AR5006EGS Specifications

Chipset	AR2424
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
Atheros Super G mode	Up to 108 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 AR5006EGS solution as well as other technology solutions from Atheros:

Atheros Communications, Inc.
t +1 408.773.5200   f +1 408.773.9940

Atheros Communications KK-Japan
t +81 3.5501.4100   f +81 3.5501.4129

Atheros Hong Kong Limited
t +852 8206.1131   f +852 8206.1301

Atheros Communications International, LLC-Taiwan
t +886 2.8751.6385   f +886 2.8751.6397