AR3012

The Only Bluetooth® Solution Optimized for Computing Applications

Atheros AR3000 - ROCm® Solutions for Bluetooth
Radio-On-Chip for Mobile (ROCm) Products

The AR3000 family consists of Bluetooth solutions based on the Atheros ROCm platform for high-performance mobile and embedded wireless products. The Atheros ROCm platform gives customers unsurpassed ability to:

- Build the most advanced power-efficient devices
- Design for the smallest form factor applications
- Achieve the most cost-effective designs
  - Greater integration of functionality
  - Low-cost chip solution
- Deliver Atheros-class performance in a wide array of mobile devices
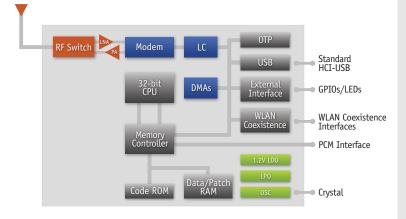- Advanced LE application support

AR3012 Solution Highlights

- Single chip Bluetooth 4.0 + HS solution
- Atheros Universal Wireless Cooperation™ support for maximum performance with Atheros WLAN combo design
- BQB certified
- Bluetooth Class 1 Radio
- USB 2.0 device interface supports standard HCI USB
- GPIOs to drive LEDs and control peripherals.
- Auxiliary serial Flash interface allowing for flexibility and customization
- Two 1.2v integrated voltage regulators
- On board PLL
- Internal or external low power clock
- 65nm CMOS technology

AR3012 Technology Overview

The Atheros AR3012 is a highly integrated, all-CMOS, single-chip solution specifically designed for PC applications. The Atheros AR3012 supports both the Bluetooth 4.0 + HS specification versions. It includes a Bluetooth EDR radio, a 32-bit Tensilica CPU, USB 2.0 interface, two 1.2v voltage regulators for analog and digital circuit, auxiliary serial Flash interface, on board PLL, and on board RAM/ROM. AR3012 also utilizes Atheros Universal Wireless Cooperation™ support for maximum performance with Atheros WLAN combo design.

The Atheros AR3012 supports the standard HCI USB interface, which makes it compatible with any upper layer Bluetooth® stack. Microsoft software is available for Win7, Vista, and XP. Linux BlueZ is also well supported.

AR3012 utilizes a small, cost-effective 5 mm x 5 mm Quad Flatpack No lead (QFN) package. A Bluetooth Qualification Body (BQB) certified reference design is available to customers for quick turn system integration. Atheros provides a complete Bluetooth software solution.

AR3012 Architecture

*Requirement for external memory depends on the application. Please consult with Atheros to see if your application can benefit from the unique architecture of AR3012 by eliminating the external memory.

There is Here.™

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AR3012 Additional Information

- Integrated Radio and Baseband on a single chip
- Bluetooth Class 1 Radio
- Supports both EDR of 2 Mbps (π/4-DQPSK) and 3 Mbps (8-DPSK)
- -91 dBm radio sensitivity
- +10 dBm maximum output power
- Eliminates the need for Balun and matching network

Bluetooth 2.1 + EDR enhancements

- Secure Simple Pairing
  - Improves ease of pairing of Bluetooth devices while implementing strong security
- Encryption Pause and Resume
  - Increases security in the link by ensuring that no user data is transmitted without encryption and enables periodic update of the keys
- Extended Inquiry Response
  - Provides better filtering of devices before connection
- Sniff Subrating
  - Reduces power consumption when devices are in the sniff, low-power mode, increasing battery-life

Bluetooth 3.0 + HS enhancements

- Alternate MAC/PHY (AMP)
  - Improvements to the host side that allow the use of higher speed radios on the system such as WLAN chips
- 802.11 PAL
  - Enables the use of the 802.11 MAC/PHY as a high speed radio alternative
- SDIO Host Interface
  - Added the SDIO bus to the list of standard HCI bus technologies
- Enhanced Power Control
  - Enables the radios to react more quickly and with greater resolution to radio output power requests resulting in a more power efficient design
- Unicast Connectionless Data
  - Enables much shorter latency for applications requiring only occasional and small data packet bursts.

Bluetooth 4.0 + HS Enhancements

- Adds Bluetooth Low Energy Dual-Mode operation
- Enables Bluetooth Low Energy applications such as: home automation, medical/health, HID devices, and security
- Adds the Bluetooth standard AES Encryption

AR3012 Specifications

Frequency Band	2.4000 - 2.4835 GHz
Bluetooth Standard	Bluetooth 4.0 + HS
Modulation technology	G-FSK, π/4-DQPSK, 8-DPSK
Communication Interface	USB 2.0
Peripheral Interface	GPIOs
Auxiliary Memory Interface	Serial Flash or EEPROM
Physical Specifications	
Package Dimensions	5 mm x 5 mm QFN
Power Supply	Two integrated 1.2v regulators

ATHEROS®