



AR3012

The Only Bluetooth® Solution
Optimized for Computing Applications



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Qualcomm® Bluetooth

Delivering best-in-class
Bluetooth solutions with
superior wireless coexistence.



Qualcomm AR3012

The AR3012 family consists of Bluetooth solutions based on the Qualcomm radio-on-chip platform for high-performance mobile and embedded wireless products. This platform gives customers unsurpassed ability to:

- Build the most 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 Qualcomm-class performance in a wide array of mobile devices

Solution Highlights

- Single chip Bluetooth 4.0 + HS solution
- Qualcomm Universal Wireless Cooperation™ support for maximum performance with Qualcomm 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

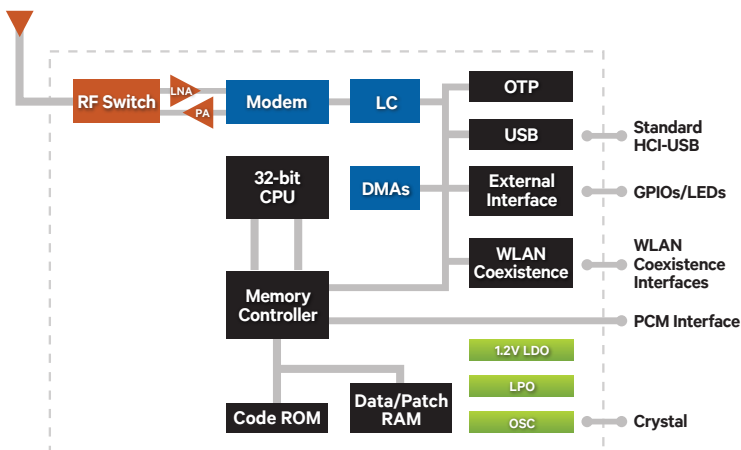
AR3012 Product Overview

The Qualcomm AR3012 is a highly integrated, all-CMOS, single-chip solution specifically designed for PC applications. The Qualcomm 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 Qualcomm Universal Wireless Cooperation™ support for maximum performance with Qualcomm WLAN combo design.

The Qualcomm 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. Qualcomm provides a complete Bluetooth software solution.

AR3012 System Architecture





AR3012 Additional Information

- Integrated Radio and Baseband on a single chip
- Bluetooth Class 1 Radio
- Supports both EDR of 2 Mbps ($\pi/4$ -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 24000 - 24835 GHz

Bluetooth Standard Bluetooth 4.0 + HS

Modulation Technology G-FSK, $\pi/4$ -DQPSK, 8-DPSK

Communications Interface USB 2.0

Peripheral Interface GPIOs

Auxiliary Memory Interface Serial Flash or EEPROM

Physical Dimensions

Package Dimensions 5 mm x 5 mm QFN

Power Supply Integrated dual 1.2 v regulators

Qualcomm Atheros is a wholly owned subsidiary of Qualcomm Technologies, Inc. and a leading provider of wireless and wired technologies for the mobile, networking, computing and consumer electronics markets. We're focused on inventing technologies that connect and empower people in ways that are elegant and accessible to all.

Our broad connectivity portfolio allows us to offer our global customer base high-performance, end-to-end solutions, featuring Wi-Fi®, GPS, Bluetooth®, FM, Ethernet, HomePlug™ Powerline and PON technologies. By leveraging substantial expertise in RF, signal processing, software and networking we can deliver highly-integrated, low-power, system-level solutions that enable developers to create high-performance, differentiated products.

For more information, please visit us online @ qca.qualcomm.com

