QUALCOMM®

QCA4002/4004

Qualcomm® low-power Wi-Fi™
The premier connectivity platform for emerging device categories that comprise the Internet of Everything

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The premier connectivity platform for emerging device categories that comprise the Internet of Everything

Qualcomm® low-power Wi-Fi

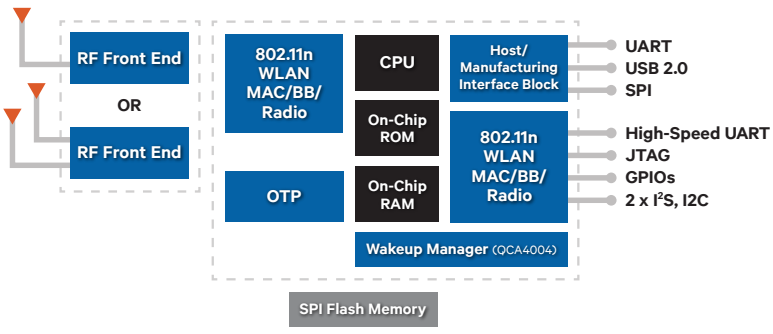
Delivering the premier Wi-Fi platform for the Internet of Everything. Providing standards-based Wi-Fi connectivity for a multitude of devices and systems in the home and office – from appliances and remote controls, to sophisticated home automation, security, and energy management systems.

Solution Highlights

The QCA4002/4004 are single-stream (1x1) IEEE 802.11n chip-on-board solutions featuring:

- Low energy
  - Power saving modes
  - Fast wake-up times
  - Support for Quad SPI flash for faster wake times
- Qualcomm's industry leading 802.11n Wi-Fi®
  - Integrated high-power, high-efficiency power amplifier
  - Full security support: WPS, WPA, WPA2, WEP
- Supports SPI and UART host interface
- Integrated networking and security
- Supports AllJoyn™ software to ensure seamless connectivity and services
- QCA4004 supports QCA4002 core feature set in addition to antenna diversity and Qualcomm Wake Up Manager which consists of ultra-low power clock, state retention RAM, and GPIO expansion

QCA4002/4004 System Architecture

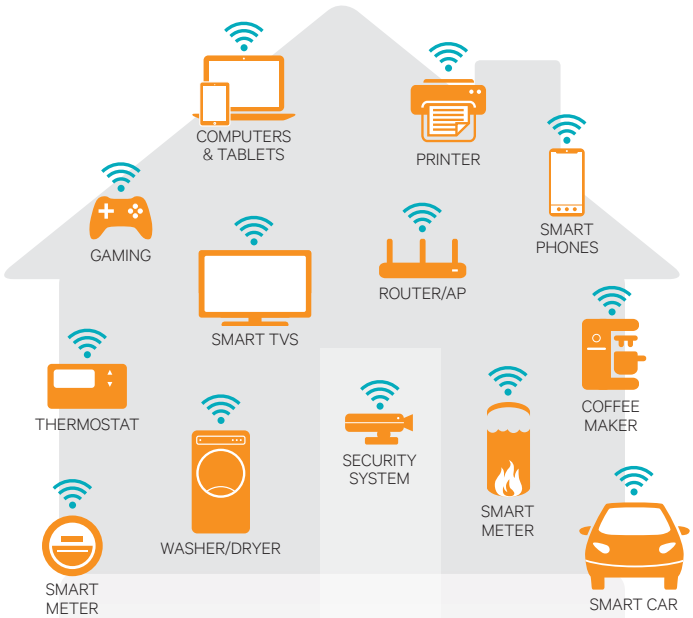


The QCA4002/4004 are an intelligent platform for the Internet of Everything. The complete networking platform enables customers to add full-featured Wi-Fi to a wide variety of products with minimal development effort and cost. It supports a network stack along with SSL security, enabling full-featured internet connectivity and reliable information exchange in a small, low-cost system.

The QCA4002/4004 provides two host interfaces for connecting to local system controllers. A UART-based host interface can be used for rapid development and deployment of simple data streams between the local device and the internet cloud. A SPI slave interface is available for applications that require more advanced connectivity to the network.

The QCA4002/4004 are full-featured, dual-band, single stream 802.11n solutions. The highly-integrated Wi-Fi link includes an energy efficient on-board power amplifier and LNA. For the 2.4 GHz band, RF switches are also integrated. The QCA4002/4004 are optimized for low system cost, and minimizes the number of components required to achieve a reliable Wi-Fi link. In addition, the QCA4004 can operate in a pure hostless mode of operation.

Developers can write simple applications directly on the QCA4004, eliminating the need for a standalone MCU. The QCA4004 also supports additional power gating technology to allow for direct battery connections, reducing the total BOM cost for products such as sensors and remotes.



Makes everyday objects smarter

Provides new ways to interact with your environment

Saves money by reducing the system cost and optimizing energy usage

QCA4002/4004

The premier connectivity platform for emerging device categories that comprise the Internet of Everything

IoE Applications

Energy Management

Home Automation

Security

Appliances

Features

- IEEE 802.11n Single Stream 1x1
- Dual-band 2.4 GHz/5 GHz
- Integrated PA, LNA with support for external PA, and LNA
- Single or dual Rx front end for receive diversity
- On-chip processor and memory
- Green Tx power savings
- Low power listen
- Lower power modes
  - IEEE Sleep with low power consumption and optimal state transition times
  - Power optimized listen, receive, transmit, and associated operating modes
  - Suspend mode (QCA4004) for hostless mode of operation with very low power consumption
  - Store and recall for hosted mode of operating to maintain state while minimizing power consumption
- Date rates up to 40 Mbps
- Full security support: WPS, WPA, WPA2, WEP
- SPI host interface
  Allows for simplified connection to local host microcontroller
  Host driver source code and programming API is available
- UART host interface
  - Allow simple interfacing to microcontrollers
  - With an AT style command set
- Integrated IPv4/IPv6 networking stack
- SSL security
- HTTP, DNS services
- On-chip user development for hostless applications
  - Real-time operating system (RTOS) on the chip central processing unit
  - Supported toolchain
- Manufacturing tools for manufacturing configuration and test
- AllJoyn™ software ensures seamless communication between devices, enhancing ease-of-use for consumers.

Currently supported development environment

- QCA4002 is currently supported with the DB142 development board
- Reference module platforms are available for QCA4002/4
  - SP140 is the microcontroller base board
  - SP141 is the solder on to SP140 QCA4002 module
  - SP143 is the solder on to SP140 QCA4004 module

QCA4002/4004 Specifications

Technology	802.11a/b/g/n
Interfaces	USB 2.0 for manufacturing test SPI/SDIO, UART, HS-UART, I^2C, 2xI2S, GPIOs
Antenna Design Options	UFL Chip or PCB printed
Frequency Band	2.4 GHz & 5 GHz
Package Type	QCA4002 SB/DB 7 x 7 mm 58 pin QFN QCA4004 SB/DB 8 x 8 mm 68 pin QFN
PCB Footprint (solution area)	< 25 x 20 mm SB QCA4002, single sided + ant.+ S-Flash
Temperature	Commercial: 0 to 85° C (case) Industrial: -40 ambient to 105° C (case)
Power source	3.3V
Network throughput over SPI	10 Mbps
Cost optimized RBOM	

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



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