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Qualcomm® QCA4002/4 Wi-Fi SoCs

Intelligent Wi-Fi System-on-Chips (SoCs) providing hosted or host-less connectivity for the Internet of Things (IoT).

QCA4002/4 are intelligent Wi-Fi SoCs for the Internet of Things (IoT). This networking platform is designed to enable customers to add full-featured Wi-Fi to a wide variety of products with minimal development effort and cost.

The Qualcomm® QCA4002 is a single-stream (1x1) IEEE 802.11n single-band SoC and Qualcomm® QCA4004 is a dual-band SoC for the IoT. The highly integrated Wi-Fi link includes an energy efficient on-board power amplifier and LNA. For the 2.4GHz band, RF switches are also integrated. Both QCA4002 and QCA4004 are engineered to optimize low system cost by minimizing the number of components required to achieve a reliable Wi-Fi link. In addition, QCA4004 can operate in a pure host-less mode of operation.

The QCA400x SoCs provide two host interfaces for connecting to local system controllers. A UART-based host interface can be used to support rapid development and deployment of simple data streams between the local device and the internet cloud. An SPI secondary interface is available for applications that require more advanced connectivity to the network. It supports a network stack along with SSL security designed to enable full-featured internet connectivity and reliable information exchange in a small, low-cost system. QCA400x SoCs also supports interoperability software framework and services, allowing devices to discover, connect and communicate directly with one another.

Highlights

Power saving Wi-Fi modes extend battery life

QCA400x SoCs support power saving modes and Quad SPI flash for faster wake time which minimizes power consumption and extends battery life.

On-board wake-up manager to further reduce sleep power

The onboard wake-up manager enables self-wake and sleep management on QCA400x, which can further reduce sleep power (down to microamps).

On-chip user development for hostless applications

Developers can write simple applications directly on the QCA4004, eliminating the need for a standalone MCU.

Dual-band support for more robust Wi-Fi connection

QCA4004 with dual-band connectivity for both 2.4GHz and 5GHz, is well-suited for applications in interference sensitive environments.

Materials are subject to change without notice.
87-YB660-1 Rev C

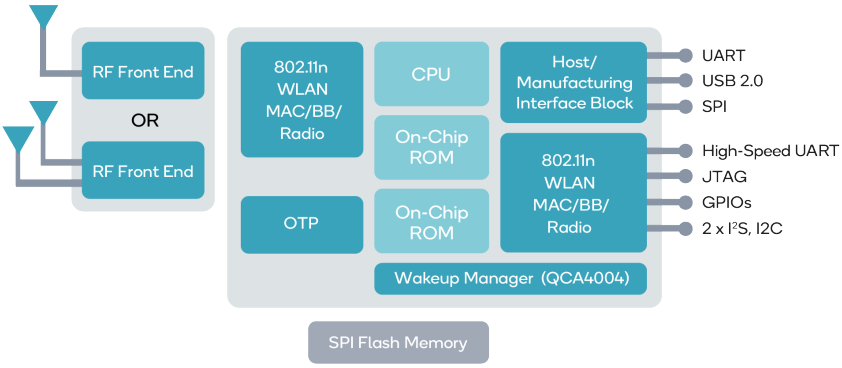
QCA400x Target IoT Applications

- Remote Controls
- Smart Appliances
- Home Automation
- Energy Management
- Smart Lighting
- Home Security

Features

- IEEE 802.11n 1x1 single or dual-band 2.4GHz/5GHz
- Single or dual Rx front end for receive diversity
- Integrated on-chip processor and memory
- Cost optimized RBOM with integrated PA and LNA
- Full security support: WPS, WPA, WPA2 and WEP
- SPI and UART host interface
- Data rates up to 10Mbps
- Integrated IPv4/IPv6 networking stack
- Green Tx power savings and Low power Rx listen
- Low 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 only) for hostless mode of operation with very low power consumption
  - Store and recall
- HTTP, DNS services
- Manufacturing tools for configuration and test

QCA400x Block Diagram



QCA4002/4 Specifications

Package Type	**QCA4004 -** SB/DB 8 x 8 mm 68-pin QFN **QCA4002 -** SB/DB 7 x 7mm 58-pin QFN
PCB Footprint (solution area)	**QCA4004** < 42 x 20 mm DB single sided + antenna + Diversity + S-Flash **QCA4002** < 25 x 20 mm SB single sided + antenna + S-Flash
WLAN Technology	802.11a/b/g/n
Antenna Design Options	UFL Chip or PCB printed
Interfaces	USB 2.0 for manufacturing test SPI/SDIO, UART, HS-UART, I²C, I²S, GPIOs
Frequency Bands	**QCA4004 -** 2.4GHz/5GHz dual-band **QCA4002 -** 2.4GHz single-band
Active Power Save	Green Tx & Low Power Listen (LPL)
Security Features	WPS, WPA, WPA2, WEP, SSL
Power Source	3.3V
Network Throughput	up to 10Mbps
Operating Temperature	Commercial: 0° to 85°C (case) Industrial: -40° to 85°C (ambient) -40° to 105°C (case)

Ordering Information

Product	Part Number
QCA4002 SOC	QCA-4002x-BL3A
QCA4004 SOC	QCA-4004x-BL3A

For additional product information and updates go to: developer.qualcomm.com /get-started/internet-of-things

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