



Qualcomm® Wi-Fi Solutions for the IoT

QCA400x

The premier intelligent connectivity platform for the Internet of Things

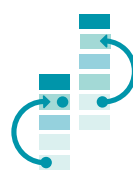
Models QCA4002 and QCA4004 Wi-Fi Modules

QCA400x is an intelligent Wi-Fi platform for the Internet of Things (IoT). This complete networking platform enables customers to add full-featured Wi-Fi to a wide variety of products with minimal development effort and cost.

QCA400x is a single-stream (1x1) IEEE 802.11n single-band (QCA4002) or dual-band (QCA4004) System-on-Chip (SoC) or module solution for the Internet of Things (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. The QCA400x is 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.

The QCA400x platform 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. An SPI slave interface is available for applications that require more advanced connectivity to the network. It supports a network stack along with SSL security, enabling full-featured internet connectivity and reliable information exchange in a small, low-cost system. It supports the AllJoyn™ connectivity software framework and services, allowing devices to discover, connect and communicate directly with one another.

Solution Highlights



Power saving Wi-Fi modes extend battery life

Supports 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 the QCA400x platform 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.



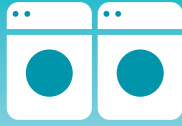
Dual-band support for more robust Wi-Fi connection

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

IoT Applications



Remote Control



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, 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) for hostless mode of operation with very low power consumption
 - Store and recall
- HTTP, DNS services
- Manufacturing tools for configuration and test
- AllJoyn software ensures seamless communication between devices, enhancing ease-of-use for consumers

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

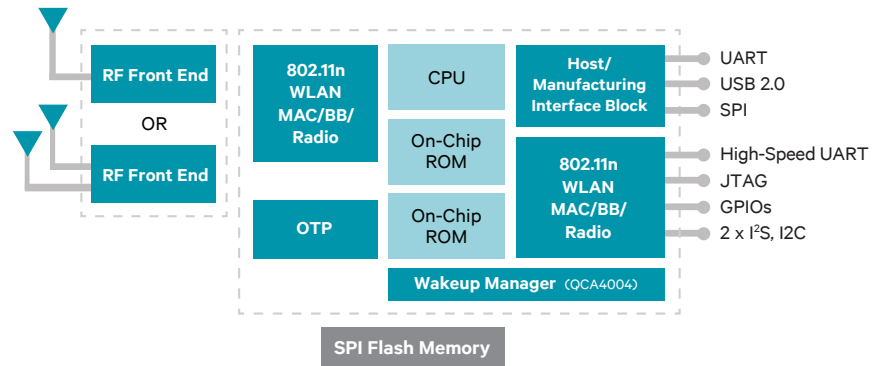
Related Products

Development kits, reference design platforms and production module information available at developer.qualcomm.com

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



QCA400x Block Diagram



QCA400x Specifications

Package Type	SB/DB 8 x 8 mm 68-pin QFN (QCA4004) SB/DB 7 x 7mm 58-pin QFN (QCA4002)
PCB Footprint (solution area)	< 42 x 20 mm DB (QCA4004) single sided + antenna + Diversity + S-Flash < 25 x 20 mm SB (QCA4002) 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, I ² C, I ² S, GPIOs
Frequency Bands	2.4GHz/5GHz dual-band (QCA4004) 2.4GHz single-band (QCA4002)
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)

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