



Qualcomm® QCA4010/12

Wi-Fi SoCs

Qualcomm® QCA4010 and Qualcomm® QCA4012 are intelligent connectivity Wi-Fi SoCs for the Internet of Things (IoT).

QCA401x SoCs are highly integrated and feature-rich intelligent Wi-Fi platforms for the IoT, engineered to answer manufacturer demand for increased computing performance, more customer memory, security, rich set of peripherals and advanced features while minimizing size, cost and power consumption.

Qualcomm QCA4010 is a one-stream (1x1) IEEE 802.11b/g/n single-band (2.4GHz) SoC and Qualcomm QCA4012 is a one-stream (1x1) IEEE 802.11a/b/g/n dual-band SoC (System-on-Chip) with 2.4GHz and 5GHz connectivity. The QCA4010/2 SoCs are designed to feature a fully integrated micro-control unit (MCU) in a single-chip solution and incorporate intelligence, security and advanced services for the devices and systems of the IoT—from appliances, smart lighting and remote controls, to sophisticated home automation, security, energy management systems and more.

QCA401x SoCs include a suite of communication protocols including IPv4v6, TCP/UDP, HTTP, SSL, DHCP, ICMP, IGMP and DNS, as well as support for multiple cloud service providers and offer a built-in security engine. In order to help address fragmentation in the IoT, the QCA401x SoCs are designed to support popular application layer interoperability standards, allowing products to connect across different brands and platforms. This helps achieve compatibility between products in the home, making them easier and more secure to use.

Highlights

Low power Wi-Fi supports energy efficient applications

Integrated low-power CPU for embedded applications supports power saving modes and extends battery life for home device applications.



Large internal memory for greater flexibility

Allows for a hostless architecture with up to 800KB of on-chip memory available to customer applications and third party software.



Dual-band support for more robust Wi-Fi connections

QCA4012 with dual-band connectivity for both 2.4GHz and 5GHz is well-suited for applications in interference sensitive environments.



Expansive interfaces for innovative IoT solutions

Rich interfaces directly interconnect with IoT sensors, actuators, display, lighting and audio components for advanced, feature rich products providing OEMs a simple and accelerated path to commercialization.



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QCA401x

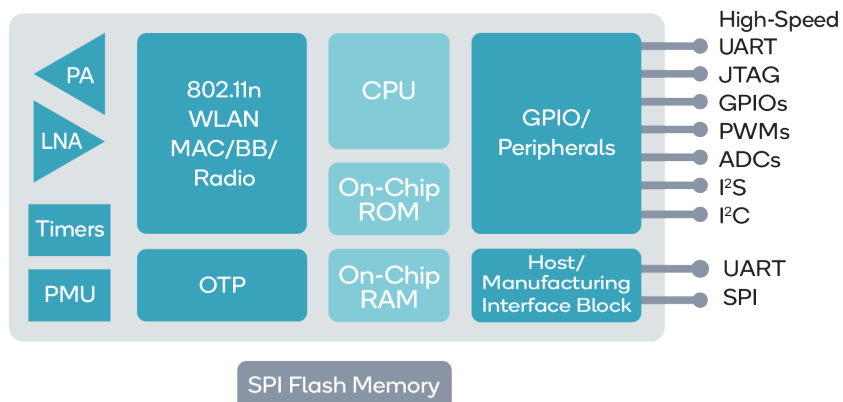
QCA401x Target IoT Applications

- Wearables
- Smart Appliances
- Sensors
- Remote Controls
- Home Security
- Medical Devices

Features

- IEEE 802.11n 1x1 single or dual-band 2.4GHz/5GHz
- Integrated on-chip application processor and memory (1.5MB)
- Advanced security features including anti-tampering, data integrity and root of trust
- Up to 40Mbps TCP/IP throughput
- Integrated IPv4v6 networking stack
- Low power CPU for embedded applications
- Low power modes:
 - IEEE Sleep with low power consumption and optimal state transition times
 - Power optimized listen, receive, transmit and associated operating modes
 - Store and recall
- HTTP and DNS services
- Manufacturing tools for configuration and test
- Cost optimized RBOM with integrated PA and LNA
- Software support for Apple HomeKit and Open Connectivity Foundation

QCA401x Block Diagram



QCA4010/12 Specifications

Package Type

9 x 9 x 0.9mm QFN
Dual-Row 116-pin, 0.5mm pitch
RoHS Compliant

PCB Footprint (solution area) < 25 x 20mm SB, single sided + antenna + S-Flash

WLAN Technology

QCA4010 - 802.11b/g/n
QCA4012 - 802.11a/b/g/n

Antenna Design Options

PCB printed or external antenna

Interfaces

SPI/SDIO, UART, HS-UART
I²C, I²S, GPIOs, PWMs, ADCs

Frequency Bands

QCA4010 - 2.4 GHz single-band
QCA4012 - 2.4/5 GHz dual-band

Active Power Save

Green Tx & Low Power Listen (LPL)

Security Features

WEP, WPA/WPA2-PSK, WPS2.0
with CCMP (AES) encryption
SSL – application level security
Integrated crypto accelerator

Analog Input

1.8V or 3.3V

Network Throughput

up to 10Mbps

Operating Temperature

Commercial: 0° to 85°C (C-Temp)
Industrial: -40° to 115°C (E-Temp)

Ordering Information

Product	Part Number
QCA4010 SOC	QCA-4010-0-116BDRQFN
QCA4012 SOC	QCA-4012-0-116BDRQFN

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

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