Qualcomm

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.

Materials are subject to change without notice.
87-YB661-1 Rev C

QCA401x Target IoT Applications

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

Features

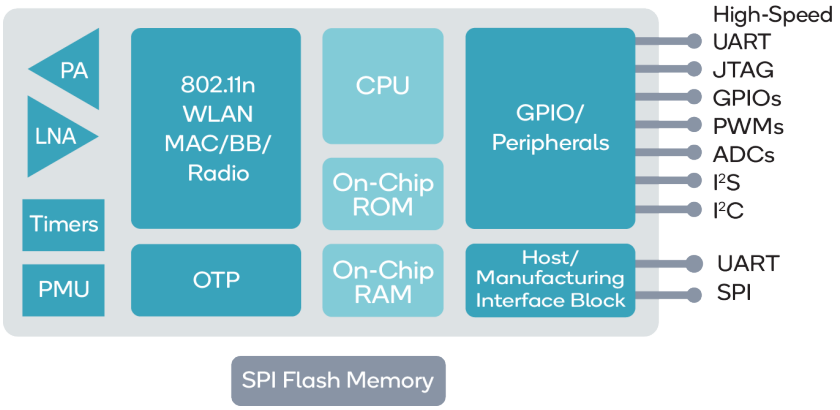
- IEEE 802.11n 1x1 single or dual-band 2.4GHz/5GHz
- Integrated on-chip application processor and memory (1.5MB)
- Advanced security features including anti-tampering, data integrity and root of trust
- Up to 40Mbps TCP/IP throughput
- Integrated IPv4v6 networking stack
- Low power CPU for embedded applications
- 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

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

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)

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