802.11b/g/n IOT Module

HYPER-TECH Systems
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WSDQ-103GNI

802.11b/g/n Industrial-Grade IOT Module, Qualcomm Atheros QCA4010 , 1T1R

Feature

- Standard: 802.11b/g/n
- Host Interface: UART, SPI/SDIO, I2C/I2S, USB, ADC
- Chipset: Qualcomm Atheros QCA4010
- Antenna: PCB Printed ANT, 1T1R
- Form Factor: Stamp Hole
- Operating Temperature Range: -40 ~ 85°C
- Enhanced wireless security: WEP, WPA, WPA2, WPS, IEEE802.1X
- Support AllJoyn

Order Information

- Evaluation Board (WSDQ-103GN-EVB)

Ultra-Low Power and Cost Effective

SparkLAN WSDQ-103GNI is an ultra-low-power and cost effective Wi-Fi IoT module with 802.11 b/g/n support. WSDQ-103GNI is based on Qualcomm QCA4010 single band SoC design that delivering Wi-Fi connectivity, integrated intelligence, security and advanced services for the devices and systems of the Internet of Everything.

Intelligent connectivity platform for the IOT

WSDQ-103GNI is suited for embedded wireless IoT product, it provide an integrated and feature-rich intelligent Wi-Fi solution. WSDQ-103GNI is able to function under server weather condition (-40~85°C), which is ideal for manufacturers to integrate with their devices that are designed for extended temperature range.

Speed time to Market and deploy IOT/M2M designs

For speed time to market and deploy IoT and M2M designs. WSDQ-103GNI is designed to answer manufacturer demand for increased computing, memory and advanced features while minimizing size, cost and power consumption.

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802.11b/g/n IOT Module

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Specification

Standard
802.11b/g/n

Chipset
Qualcomm Atheros QCA4010

Host Interface
SPI slave x 1 , SDIO 2.0 x1, debug UART x 1
High Speed UART x 2 (up to 3Mbps)
I2C master x 1 , I2C Slave x 1
I2S x 1, PWM x 6, ADC x 4, USB2.0 x 1

Form Factor
Stamp Hole

Data Rates
802.11b: 1 ~ 11Mbps / 802.11g: 6 ~ 54Mbps / 802.11n: MCS 0 ~ 7

Radio

Antenna	PCB Printed ANT, 1T1R
Operating Frequency	11b/g/n ISM Band: 2.412GHz ~ 2.462GHz
Modulation	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g: OFDM (BPSK,QPSK,16-QAM,64-QAM) 802.11n: OFDM (BPSK,QPSK,16-QAM,64-QAM)
Output Power (1T)	802.11b: 17dBm ± 2dBm@11Mbps 802.11g: 13dBm ± 2dBm@54Mbps 802.11n HT20: 12dBm ± 2dBm@MCS7 802.11n HT40: 11dBm ± 2dBm@MCS7
Receive Sensitivity (1R)	802.11b: ≤ -76dBm@11Mbps 802.11g: ≤ -65dBm@54Mbps 802.11n HT20: ≤ -64dBm@MCS7 802.11n HT40: ≤ -61dBm@MCS7

Power consumption

Continue TX	260mA
Continue RX	80mA

Operating Voltage
DC 3.3V ± 10% I/O supply voltage

Environmental

Temperature Range	-40 ~ 85°C (Operating)
Humidity (Non-Condensing)	5% ~ 90% (Operating)

Physical Specification

Dimensions	16x30x2.6 mm
Weight	2g

Software

Software	SparkLAN firmware (for more information. Please refer WSDQ-103GN CLI User Manual)
Security	WEP, WPA, WPA2, WPS, IEEE802.1X

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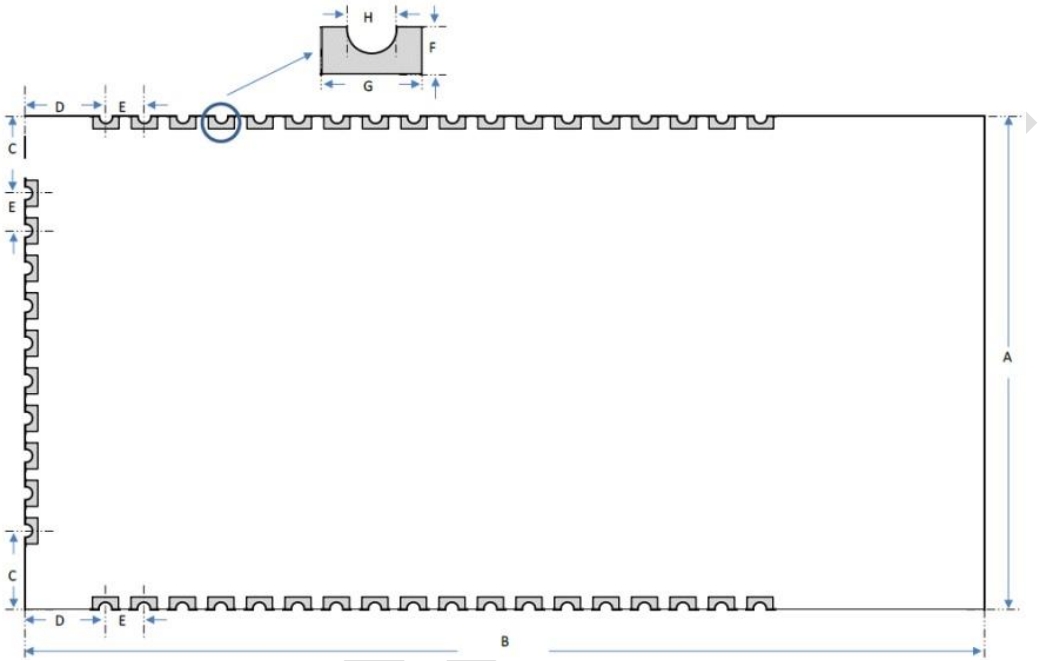
Mechanical Dimension (mm)



Label	Dimension (mm)
A	16
B	30
C	2.285
D	2.54
E	1.27
F	0.4
G	0.7
H (diameter)	0.5
Module height (including the RF shield)	2.6
Total height (with a coax cable plugged into the U.FL connector)	3.6

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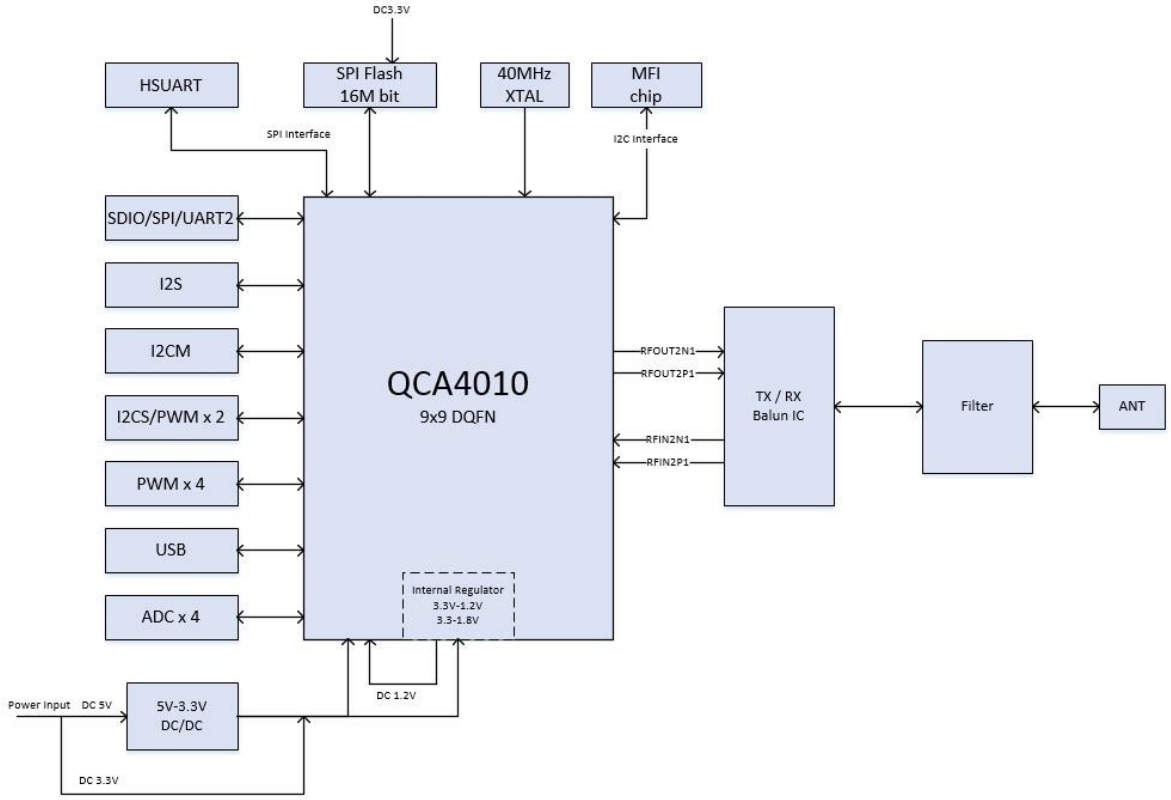
WSDQ-103GNI

Block Diagram



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Pin Assignment

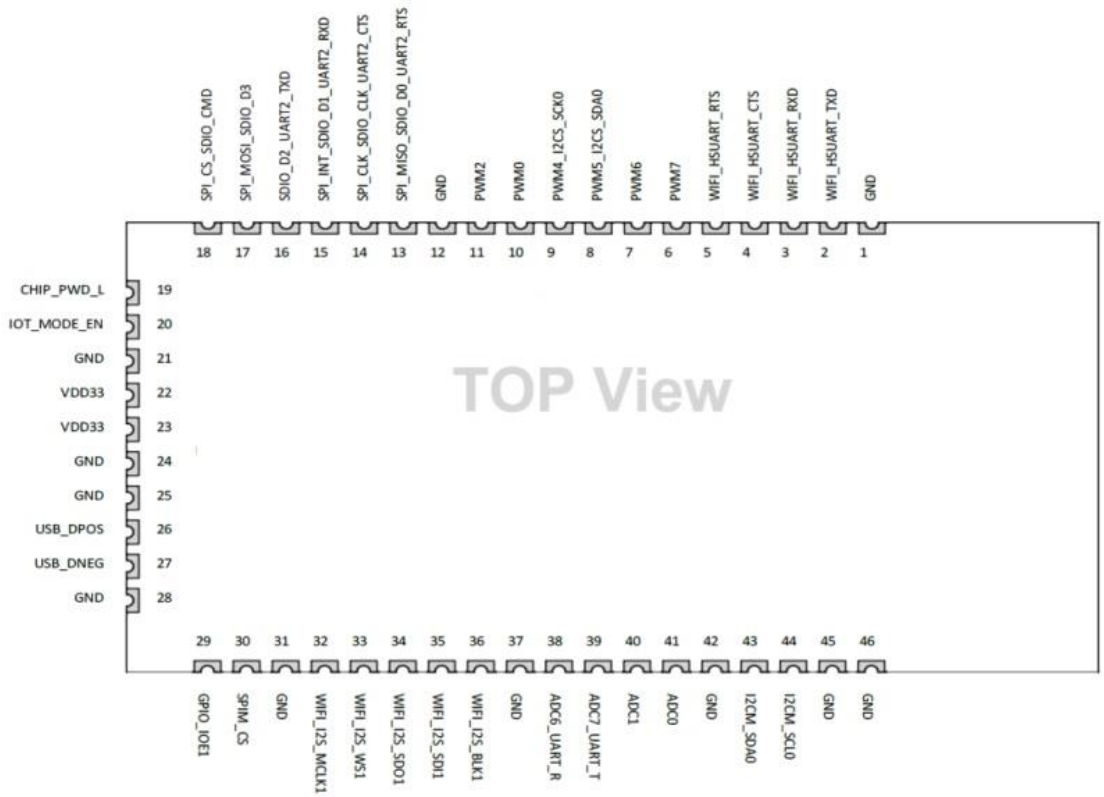

Figure: WSDQ-103GNI pinout definition

WSDQ-103GNI

Pin#	Pin name	ALT1	ALT2	ALT3	GPIO No
1	GND	GND	GND	GND	-
2	WIFI_HSUART_TXD	High speed UART transmit output	-	-	GPIO[24]
3	WIFI_HSUART_RXD	High speed UART receive input	-	-	GPIO[23]
4	WIFI_HSUART_CTS	High speed UART clear to send	-	-	GPIO[22]
5	WIFI_HSUART_RTS	High speed UART request to send	-	-	GPIO [21]
6	PWM7	PWM7 signal output	-	-	GPIO[13]
7	PWM6	PWM6 signal output	-	-	GPIO[12]
8	PWM5_I2CS_SDA0	PWM5 signal output	I2C data signal	-	GPIO[11]
9	PWM4_I2CS_SCK0	PWM4 signal output	I2C clock signal	-	GPIO[10]
10	PWM0	PWM0 signal output	-	-	GPIO[6]
11	PWM2	PWM2 signal output	-	-	GPIO[8]
12	GND	GND	GND	GND	-
13	SPI_MISO_SDIO_D0_UART2_RTS	SPI MISO signal	SDIO data0 signal	UART request to send	GPIO[4]
14	SPI_CLK_SDIO_CLK_UART2_CTS	SPI CLK signal	SDIO CLK signal	UART clear to send	GPIO[5]

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15	SPI_INT_SDIO_D1_UART2_RXD	SPI Interrupt signal	SDIO data1 signal	High speed receive input	GPIO[3]
16	SDIO_D2_UART2_TXD	-	SDIO Data2 signal	UART transmit output-	GPIO[2]
17	SPI_MOSI_SDIO_D3	SPI MOSI signal	SDIO Data3 signal	-	GPIO[1]
18	SPI_CS_SDIO_CMD	SPI CS signal	SDIO command	-	GPIO[0]
19	CHIP_PWD_L	Module reset, active	-	-	-
20	IOT_MODE_EN	Wakeup manager enable	-	-	-
21	GND	GND	GND	GND	-
22	VDD33	+3.3V	-	-	-
23	VDD33	+3.3V	-	-	-
24	GND	GND	GND	GND	-
25	GND	GND	GND	GND	-
26	USB_DPOS	USB D+ signal	-	-	-
27	USB_DNEG	USB D- signal	-	-	-
28	GND	GND	GND	GND	-
29	GPIO_IOE1	External wake up	-	-	-
30	SPIM_CS	Flash memory / CS pin	-	-	GPIO[35]
31	GND	GND	GND	GND	-
32	WIFI_I2S_MCLK1	I2S MCLK signal	-	-	GPIO[33]
33	WIFI_I2S_WS1	I2S WS1 signal	-	-	GPIO[32]
34	WIFI_I2S_SDO1	I2S SDO1 signal	-	-	GPIO[31]
35	WIFI_I2S_SDI1	I2S SDI1 signal	-	-	GPIO[30]
36	WIFI_I2S_BLK1	I2S BLK1 signal	-	-	GPIO[27]
37	GND	GND	GND	GND	-

38	ADC6_UART_R	Analog to digital converter input signal	Debug UART RXD	-	GPIO[29]
39	ADC7_UART_T	Analog to digital converter input signal	Debug UART TXD	-	GPIO[28]
40	ADC1	Analog to digital converter input signal	-	-	-
41	ADC0	Analog to digital converter input signal	-	-	-
42	GND	GND	GND	GND	-
43	I2CM_SDA0	I2C master SDA0 signal	-	-	GPIO[25]
44	I2C_SCL0	I2C master SCL0 signal	-	-	GPIO[26]
45	GND	GND	GND	GND	-
46	GND	GND	GND	GND	-

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Bootstrap

Certain pins in the QCA4010 are sampled at startup, and these samples values are used to select among various bootstrap modes and configurations.

Pin#	Bootstrap name	Description	
11	Test mode enable	Should be low while reset released, for normal function	
18 14	Host mode [1] Host mode [0]	Bootstrap for host interface selection Default mode is 00	
		00	USB / manufacturing test and configuration/hostless
		01	Hostless (serial AT command) mode
		10	SPI host mode
		11	SDIO host mode
20	IOT mode enable	Keep high always, for normal function	

General DC electrical characteristics

These conditions apply all DC characteristics unless otherwise specified Tamb = 25°C VDC33 = 3.3V

Symbol	Parameter	Conditions	Min	Type	Max	Unit
V_{IH}	High level I voltage	-	1.8	-	3.6	V
V_{IL}	Low level I voltage	-	-0.3	-	0.3	V
V_{OH}	High level O voltage	-	2.2	-	3.3	V
V_{OL}	Low level O voltage	-	0	-	0.4	V