

SKW103 Datasheet

2x2 MIMO WLAN Module

Document Information

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Revision	Description	Approved	Date
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V1.02	Update the Frequency Range	Wendy	20220702
V1.02	Update the PIN picture	Wendy	20221013

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1 General Description

The SKW103 module includes an 802.11n MAC and baseband, a 2.4GHz radio and FEM, a 650MHz MIPS CPU, a 2-port 10/100 fast Ethernet switch. Solution for low power, low-cost, and highly integrated AP router and consumer electronic devices, the module requires only an external 3.3V power supply. It supports 802.11n operating up to 144Mbps for 20 MHz and 300Mbps for 40 MHz channel respectively, and IEEE 802.11b/g data rates.

The module supports bridge mode and AP Client mode and Gateway mode. The high performance Module can process advanced applications effortlessly, such as routing, security and VoIP. It also includes a selection of interface to support a variety of applications, such as a USB port for accessing external storage and 3G/TLE modem. Especially in the IOT, a wide range of applications.

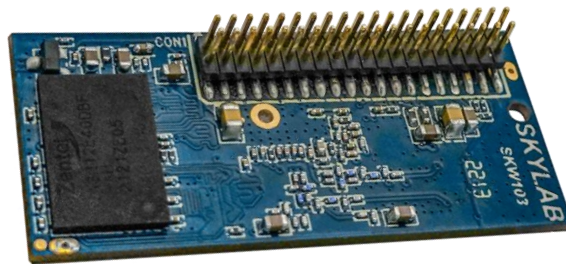


Figure 1: SKW103 Top View

2 Applications

- ◆ USB WiFi Camera
- ◆ IOT (internet of things)
- ◆ WiFi AP
- ◆ 3G/4G Wi-Fi Router
- ◆ WiFi Repeater
- ◆ Building Automation
- ◆ Home Automation
- ◆ Smart Home Gateway
- ◆ Industry Control

3 Features

- ◆ Compliant to IEEE 802.11b/g/n
- ◆ 2T2R mode with support for a 300Mbps PHY data rate
- ◆ DDR2 memory up to 1024Mb
- ◆ Flash memory up to 256Mb
- ◆ 1 LAN ports and 1 WAN port
- ◆ Support USB 2.0 slave device for USB disk and USB 3G/4G dongle and USB camera
- ◆ Security: WEP64/128, TKIP, AES, WPA, WPA2, WAPI
- ◆ Support AP/Client/Router mode
- ◆ ROHS compliance meets environment-friendly requirement
- ◆ Conform to FCC/CE/IC/ROHS certification standards
- ◆ 41.2(L) x 18.5(W) x 9.0(H) mm small dimension

4 Application Block Diagram

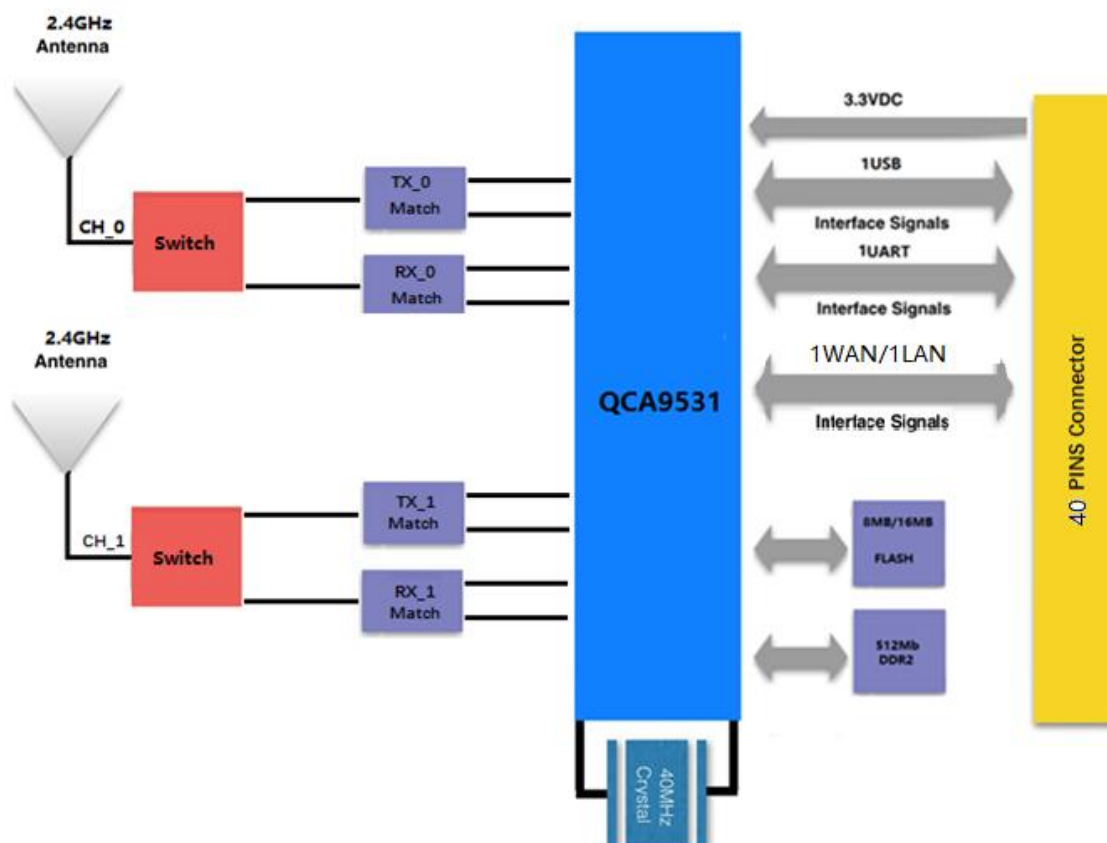


Figure 2: SKW103 Block Diagram

5 Interfaces

USB

The USB interface support USB slave devices for USB disk and USB 3G/4G dongle and USB camera.

UART

The UART default baud rate is 115200bps.

GPIO

SKW103 Pin Number	GPIO	Description	Share function
4	GPIO0	GPIO0	
6	GPIO1	GPIO1	
8	GPIO2	GPIO2	
10	GPIO3	GPIO3	
24		RESET_CONFIG	
26	GPIO17	JUMPSTART	
34	GPIO4	LED7/WAN LED, do not pull up.	LED
33	GPIO16	LED6/LAN1 LED	
20	GPIO13	LED1/SYSTEM LED	
35	GPIO12	LED0/Wireless LED	

WAN/LAN

The SKW103 module integrates 5-port 10/100Mbps fast Ethernet switch.

6 Module Specifications

Hardware Features	
Model	SKW103
Antenna Type	IPEX
Chipset solution	
Voltage	3.3V±5%

Dimension(L×W×H)	41.2mm*18.5mm*9.0mm
Wireless Features	
Wireless Standards	IEEE 802.11b/g/n
Frequency Range	2.412-2.484GHz
Data Rates	IEEE 802.11b : 1,2,5.5,11Mbps
	IEEE 802.11g : 6,9,12,18,24,36,48,54Mbps
	IEEE 802.11n : MCS0--MCS7 @ HT20
	MCS0--MCS7 @ HT40
Receiver Sensitivity	HT40 MCS7 : -69dBm@10% PER(MCS7)
	HT20 MCS7 : -71dBm@10% PER(MCS7)
	54M: -75dBm@10% PER
	11M: -88dBm@ 8% PER
Modulation Technique	DSSS (DBPSK, DQPSK, CCK)
	OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
Wireless Security	WPA/WPA2, WEP, TKIP and AES, WPS2.0, WAPI
Transmit Power	IEEE 802.11n: 13-16dBm @HT20/40 MCS7
	IEEE 802.11g: 14-17dBm @54MHz
	IEEE 802.11b: 16-20dBm @11MHz
Work Mode	Bridge/Gateway/AP Client
Others	
Certification	ROHS
Environment	Operating Temperature: -20℃~70℃
	Storage Temperature: -40℃~85℃
	Operating Humidity: 10%~90% non-condensing
	Storage Humidity: 5%~90% non-condensing

7 Module Pinout and Pin Description

ModulePinout

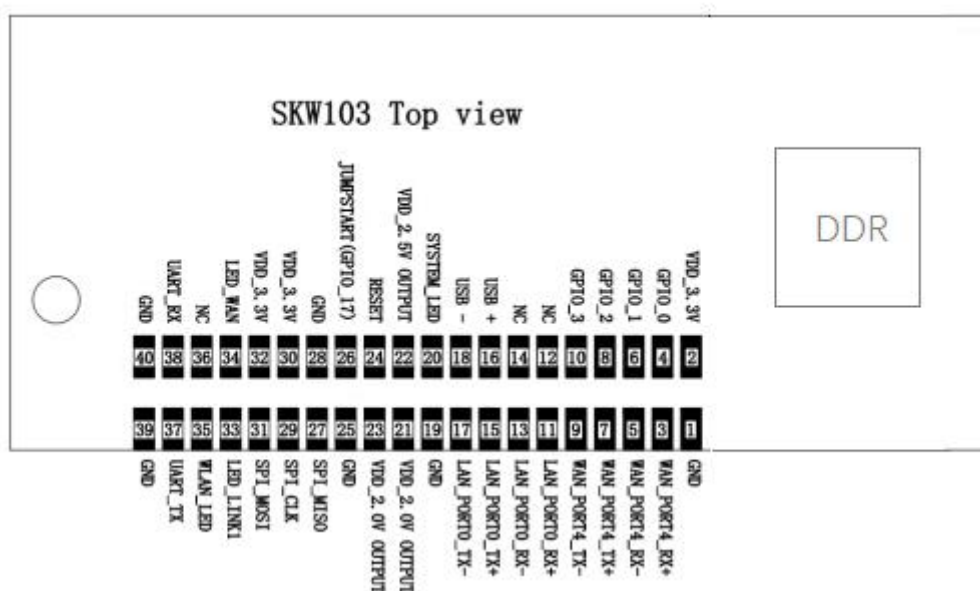


Figure 3: SKW103 Pin Package

Pin Description

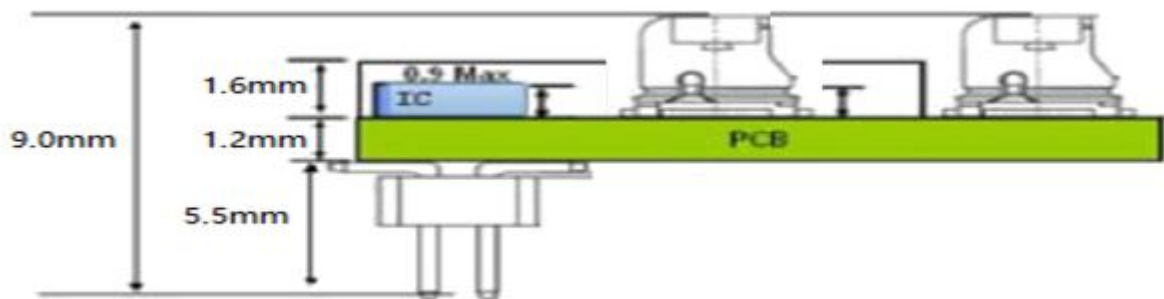
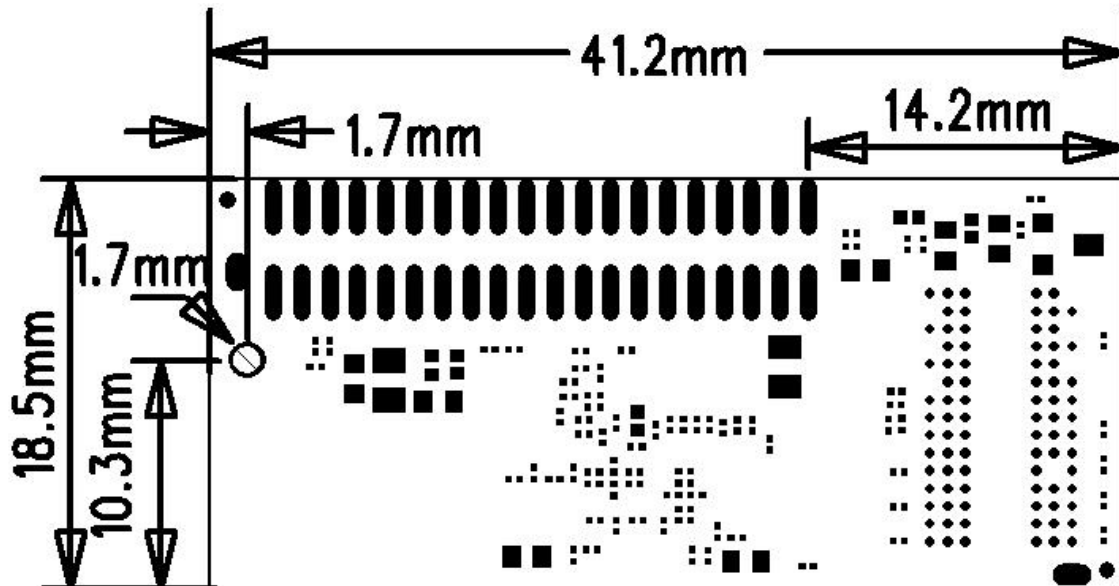
Pin No.	Pin name	Description
1	GND	Ground
2	VDD_3.3V	3.3V input 1000mA, recommended voltage 3.3V,Min2.97V, MAX 3.63V
3	WAN_PORT4_RX+	Ethernet Wan port
4	GPIO_0	GPIO#0
5	WAN_PORT4_RX-	Ethernet Wan port
6	GPIO_1	GPIO#1
7	WAN_PORT4_TX+	Ethernet Wan port
8	GPIO_2	GPIO#2
9	WAN_PORT4_TX-	Ethernet Wan port
10	GPIO_3	GPIO#3

11	LAN_PORT0_RX+	Ethernet port
12	NC	NC
13	LAN_PORT0_RX-	Ethernet port
14	NC	NC
15	LAN_PORT0_TX+	Ethernet port
16	USB +	USB signal, carries USB data to and from the USB 2.0 PHY
17	LAN_PORT0_TX-	Ethernet port
18	USB -	USB signal, carries USB data to and from the USB 2.0 PHY
19	GND	Ground
20	SYSTEM_LED	System LED, GPIO#13
21	VDD_2.0V OUTPUT	Power supply output for peripheral network transformer
22	VDD_2.5V OUTPUT	GPIO voltage output for LED
23	VDD_2.0V OUTPUT	Power supply output for peripheral network transformer
24	RESET	It has an internal 10k pull-up resistance, and trigger while Pulling down
25	GND	Ground
26	JUMPSTART (GPIO_17)	Resets the firmware to its default configuration, KEY_INPUT to start WPS function, it has a internal 10k pull-up resistance, and
27	SPI_MISO	SPI serial interface
28	GND	Ground
29	SPI_CLK	SPI serial interface
30	VDD_3.3V	3.3V input 1000mA, recommended voltage 3.3V, Min2.97V, MAX 3.63V
31	SPI_MOSI	SPI serial interface
32	VDD_3.3V	3.3V input 1000mA, recommended voltage 3.3V, Min2.97V, MAX 3.63V
33	LED_LINK1	Port #0 activity LED, GPIO#16
34	LED_WAN	WAN LED, GPIO#4, do not pull up to VDD_3V3
35	WLAN_LED	Wireless LED, GPIO#12

36	NC	No Connect
37	UART_TX	Serial data out, GPIO#10
38	UART_RX	Serial data in, GPIO#9
39	GND	Ground
40	GND	Ground

WARNING: GPIO4 do not pull up to VDD_3V3.

8 PCB Footprint and Dimensions



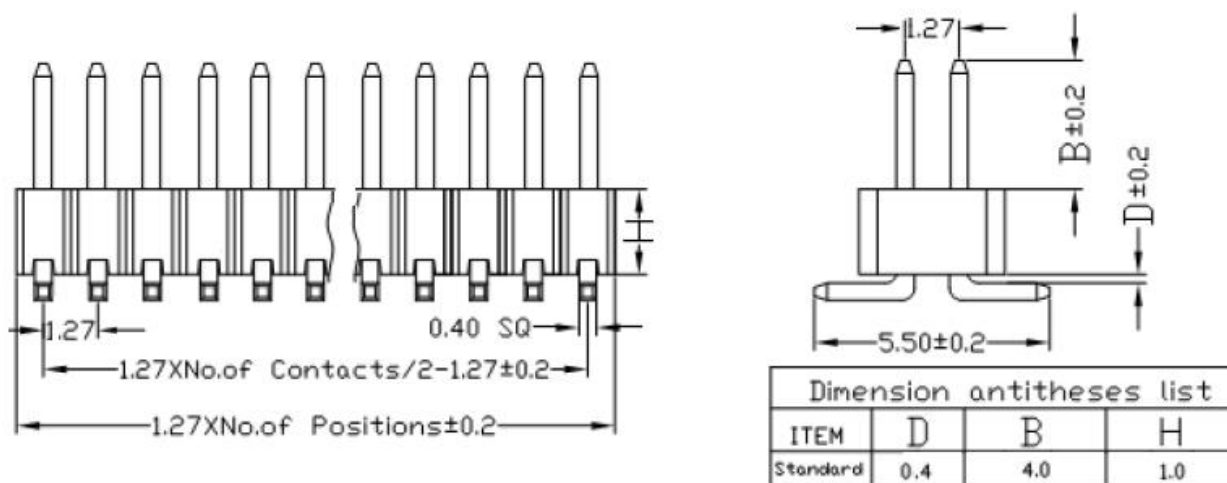


Figure 4: SKW103 Recommend PCB Footprint

9 Electrical Characteristics

a) Absolute Maximum Ratings

Table9-1: Absolute Maximum Ratings

Parameter	Condition	Min	Typ.	Max.	Unit
Storage temperature range		-40		125	°C
ESD Protection	VESD	/		2000	V
Supply voltage	VDD_3.3V	0		3.6	V
Voltage on any I/O pin		-0.3		3.63	V

SKW103 series modules are Electrostatic Sensitive Devices and require special precautions while handling.



ESD precautions

The SKW103 module contain highly sensitive electronic circuitry and are Electrostatic Sensitive Devices (ESD).

Handling the SKW103 module without proper ESD protection may destroy or damage them permanently.

The SKW103 module are electrostatic sensitive devices (ESD) and require special ESD precautions typically applied to ESD sensitive components. Proper ESD handling and packaging procedures must be applied throughout the processing, handling, transportation and operation of any application that incorporates the SKW103 module. Don't touch the module by hand or solder with non-anti-static soldering iron to avoid damage to the module.

b) Recommended Operation Ratings

Table9-2: Operating Conditions

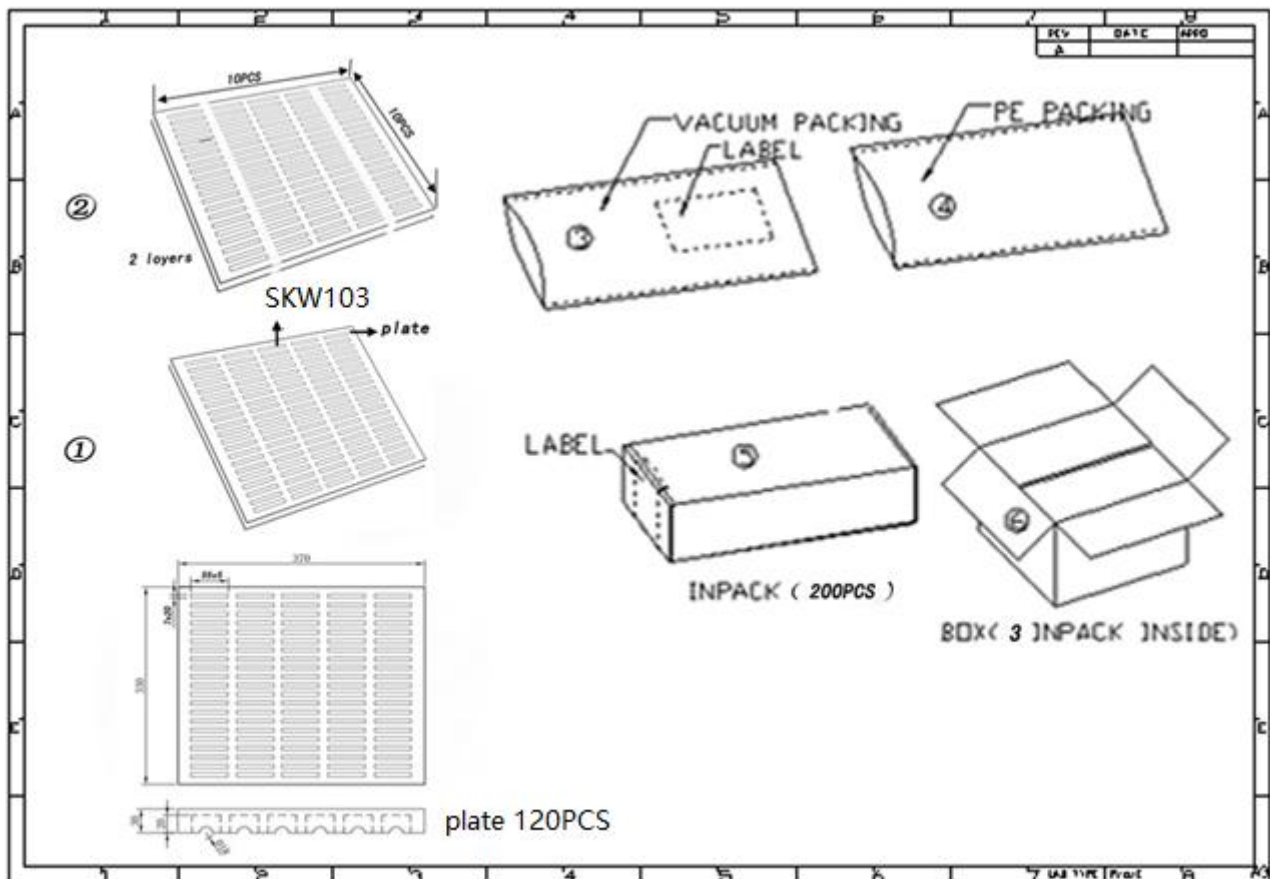
Parameter	Symbol	Minimum	Typical	Maximum	Unit
Extended temp. range	TA	-20		70	°C
Power Supply	VDD_3.3V	3.14	3.3	3.46	V
Input Low Voltage	VIL	-0.3		0.8	V
Input High Voltage	VIH	2		3.63	V

c) Measurement Conditions

Table9-3: Power Consumption in Different States

System state	Current (Typ.)@3.3V	Current (Max.)@3.3V
Standby	180 mA	210 mA
Transmit (2.4g; +15 dBm @ TX HT20 MCS7.)	400 mA	
Transmit (2.4g; +18 dBm @ 11b 11Mbps.)	580 mA	685 mA

10 Packaging Specification



11 Ordering Information

Module No.	SPI Flash Size	DDR2 Size
SKW103_E85	8M Bytes	512M bites
SKW103_E81	8M Bytes	1024M bites
SKW103_E165	16M Bytes	512M bites
SKW103_E161	16M Bytes	1024M bites
SKW103_E325	32M Bytes	512M bites
SKW103_E321	32M Bytes	1024M bites

12 Contact Information

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