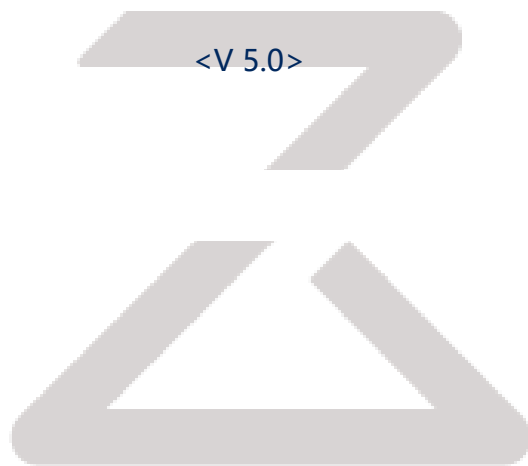


3181A-S SPEC



roborock

Content

1. General Description	3
2. Product Model Information	3
3. WIFI Specification	3
3.1 WIFI features.....	3
3.2 WIFI RF Performance	4
3.3 Block Diagram	5
3.4 Dimension.....	5
3.5 PIN Assignment	6
3.6 Schematic.....	8
4. Antenna Specification	10
4.1 Antenna lists	10
4.2 Wireless LAN antenna matching circuit.....	11
4.3 Antenna design requirements.....	11
5. FCC and IC Warning.....	12

roborock

1. General Description

3181A-S is a highly integrated 2.4 GHz Wi-Fi module that support the IEEE 802.11b/g/n baseband and RF circuit. It supports 20 MHz standard bandwidth and 5 MHz/10 MHz narrow bandwidth, and provides a physical layer rate up to 72.2 Mbit/s. Wi-Fi baseband supports the orthogonal frequency division multiplexing (OFDM) technology and is backward compatible with the direct sequence spread spectrum (DSSS) and complementary code keying (CCK) technologies, offering various data rates defined in the IEEE 802.11 b/g/n protocol.

Module chipset including the SPI, UART, I2C, PWM, GPIO, and multi-channel ADC. In addition, it provides high-speed SDIO2.0 slave interfaces, with clock frequency up to 50 MHz..

2. Product Model Information

Model Number	3181A-S
FCC ID	2AN2O-RSW06
IC	23317-RSW06

3. WIFI Specification

3.1 WIFI features

- Operate at ISM frequency Band (2.4GHz);
- IEEE standards support, 802.11 b/g/n,;
- Enterprise level security supporting: WEP 64bit&128bit, WPA, WPA2, WPA2-PSK and IEEE802.11i;
- IEEE 802.11e QoS Enhancement(WMM);
- Support 1 transmission and 1 receiving, transmission rate can up to 150Mbps (Physical Rate) in downstream and upstream.

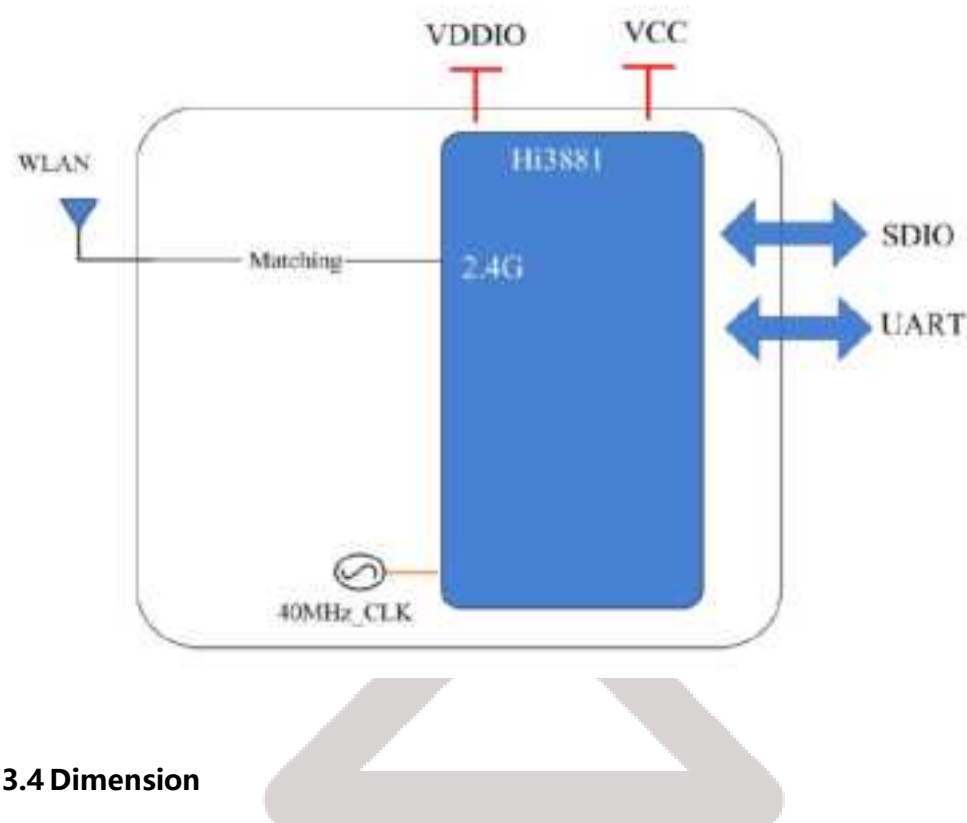
When it operating in the 2.4GHz ISM band (2.400 ~ 2.4835GHz,11 Channels).it support wireless WLAN standards include 802.11b/g/n, communication has 11 channels, whose center frequencies are

CH1: 2412MHz, CH2: 2417MHz, CH3: 2422MHz, CH4: 2427MHz, CH5: 2432MHz, CH6: 2437MHz, CH7: 2442MHz, CH8: 2447MHz, CH9: 2452MHz, CH10: 2457MHz, CH11:2462MHz respectively.

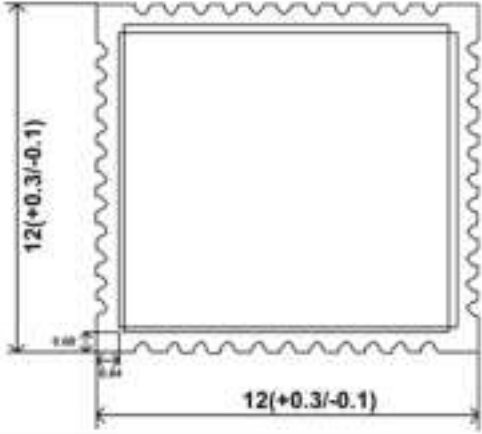
3.2 WIFI RF Performance

Feature	Description
Standard	IEEE 802.11 b/g/n
Data Rate	802.11 b: 11, 5.5, 2, 1 Mbps 802.11 /g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 802.11 n: MCS 0 to 7 for HT20MHz: 65 Mbps
Modulation mode	IEEE 802.11b mode: CCK, DQPSK, DBPSK IEEE 802.11g mode: 64QAM, 16QAM, QPSK, BPSK IEEE 802.11n mode : 64QAM, 16QAM, QPSK, BPSK
Network Architecture	Ad-hoc Mode(Peer-to-Peer) Infrastructure mode Scatter Net
Frequency Band	2.4GHz band: 2.400 ~ 2.4835GHz
Transmit Output Power (Tolerance: +/- 1.5dBm)	802.11 b: 19dBm;(Peak) 802.11 g: 21dBm; (Peak) 802.11 n (2.4GHz):21dBm(Peak): 20MHz;
Antenna Type	1x1 Diversity

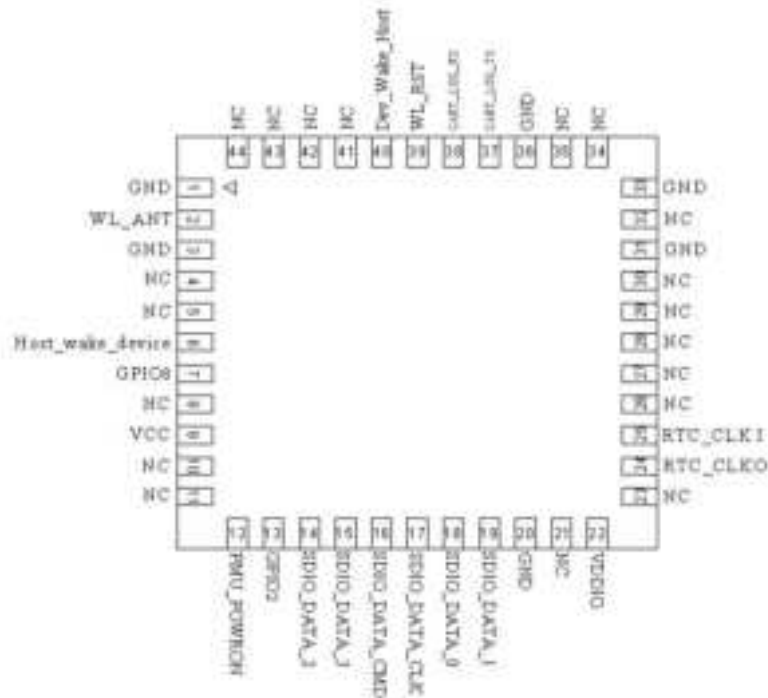
3.3 Block Diagram



3.4 Dimension

L x W : 12 x 12 (+0.3/-0.1) mm Shielding version   LDO version  	
H: 2.3 (±0.2) mm	
Weight	0.57g

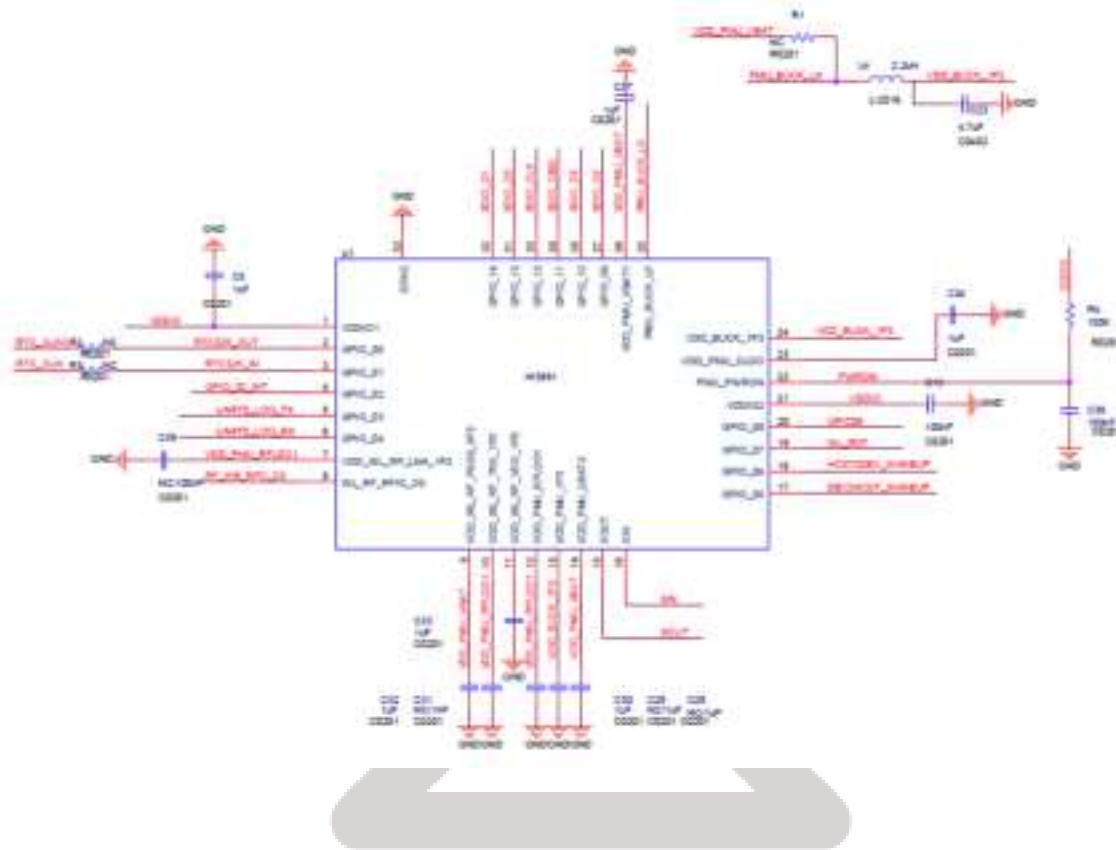
3.5 PIN Assignment



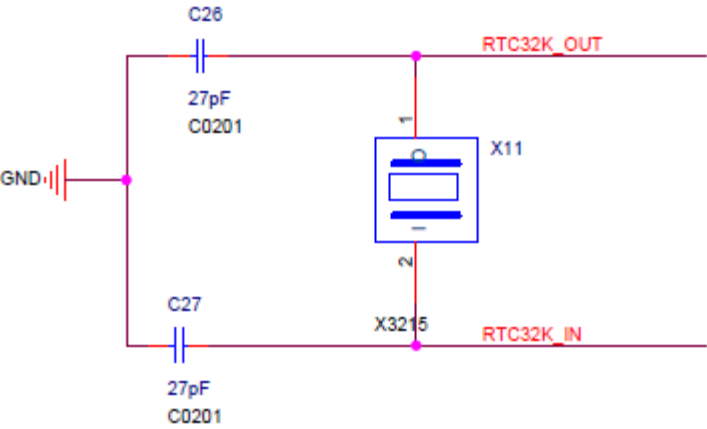
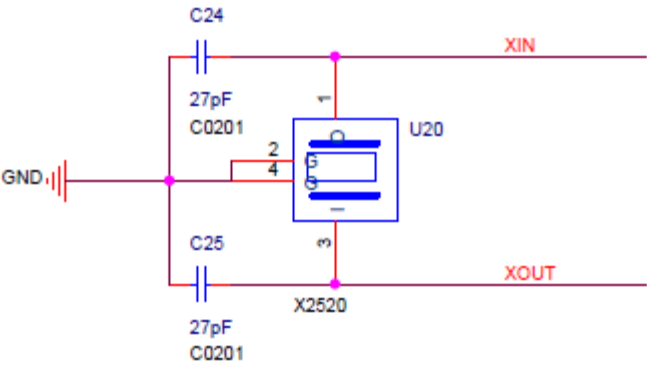
Pin #	Name	Type	Description
1	GND	/	Ground connections
2	WL_ANT	I/O	RF I/O port
3	GND	/	Ground connections
4~5	NC	/	Floating (Don't connected to ground)
6	Host wake device	I	Host Wake up Wi-Fi, GPIO06 (Don't support this function currently)
7	GPIO8	I/O	SDIO interrupt (Floating if not used)
8	NC	/	Floating (Don't connected to ground)
9	VCC	P	Main power voltage source input 2.3V-3.6V
10	NC	/	Floating (Don't connected to ground)
11	NC	/	Floating (Don't connected to ground)
12	PMU_POWRON	I	Enable pin for WLAN device Default ON: pull high ; OFF: pull low Suggest using this pin shut down module for saving mode

13	GPIO2	I/O	SDIO data interrupt. Or Dev wake host (wake function not supported currently)
14	SDIO_DATA_2	I/O	SDIO data line 2, GPIO09
15	SDIO_DATA_3	I/O	SDIO data line 3, GPIO10
16	SDIO_DATA_CMD	I/O	SDIO command line, GPIO11
17	SDIO_DATA_CLK	I	SDIO clock line, GPIO12
18	SDIO_DATA_0	I/O	SDIO clock line 0, GPIO13
19	SDIO_DATA_1	I/O	SDIO clock line 1, GPIO14
20	GND	/	Ground connections
21	NC	/	Floating (Don't connected to ground)
22	VDDIO	P	I/O Voltage supply input 1.8V/3.3V
23	NC	/	Floating (Don't connected to ground)
24	RTC_CLK O	I/O	Floating(not used), GPIO00
25	RTC_CLK I	I	Floating(not used), GPIO00
23~30	NC	/	Floating (Don't connected to ground)
31	GND	/	Ground connections
32	NC	/	Floating (Don't connected to ground)
33	GND	/	Ground connections
34~35	NC	/	Floating (Don't connected to ground)
36	GND	/	Ground connections
37	UART_LOG_TX	/	Floating(not used),GPIO03 For debug can floating this pin
38	UART_LOG_TX	/	Floating(not used),GPIO03 For debug can floating this pin
39	WL_RST	I	Wi-Fi reset pin. GPIO07 Low: reset enable, Default High: reset disable,(Don't support this function currently)
40	Dev_Wake_Host	O	Wi-Fi wake up host. GPIO05 (Don't support this function currently)
41~44	NC	/	Floating (Don't connected to ground)

3.6 Schematic



roborock



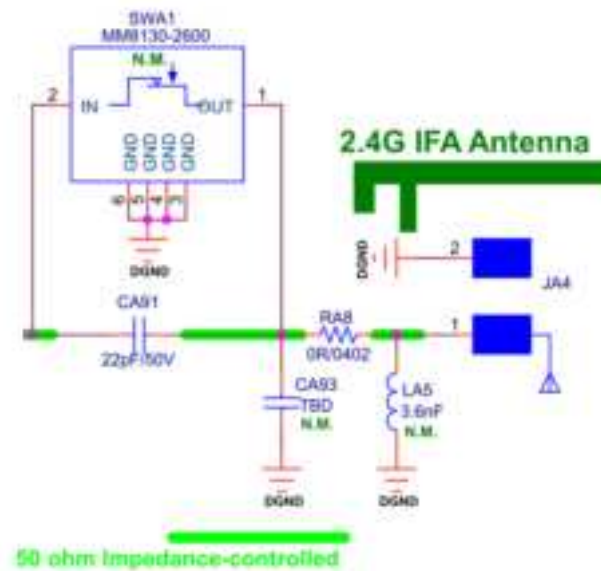
4. Antenna Specification

4.1 Antenna lists

No.	Type	Band(s)	Max Peak Gain(dBi)	Host Model
1	PCB antenna	2.4GHz - 2.5GHz	3.7	S501-01, S511-01, S551-01
2	PCB antenna	2.4GHz - 2.5GHz	3.3	roborock S6
3	PCB antenna	2.4GHz - 2.5GHz	4.2	roborock S4

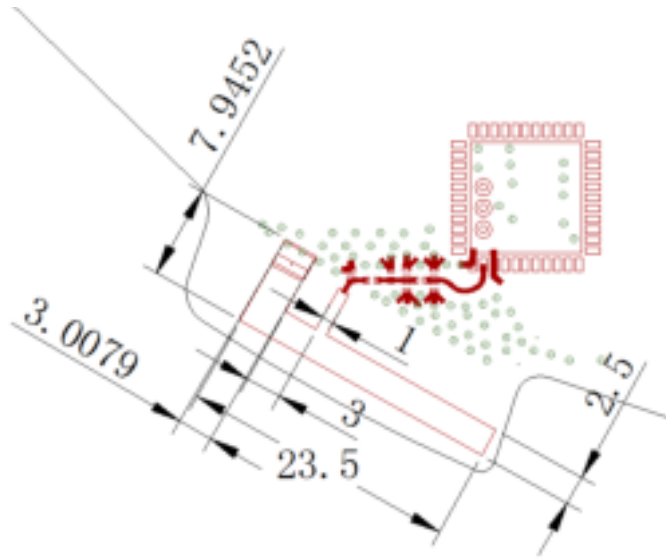
4	PCB antenna	2.4GHz - 2.5GHz	3.7	roborock S5 Max
5	PCB antenna	2.4GHz - 2.5GHz	3.7	S5 Max

4.2 Wireless LAN antenna matching circuit

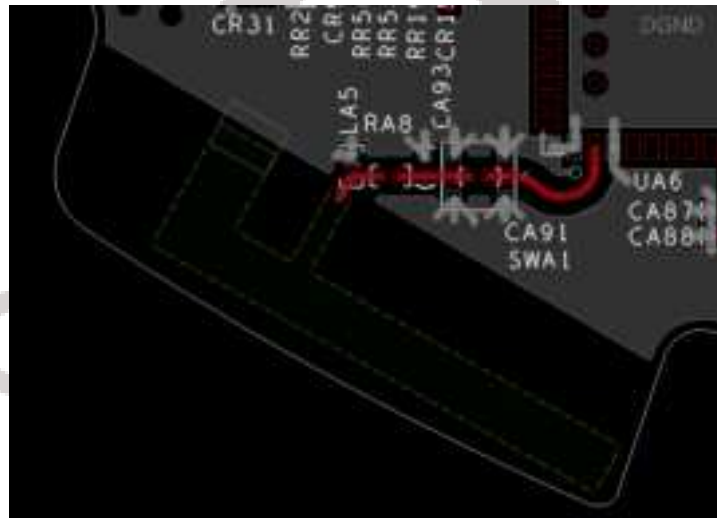


4.3 Antenna design requirements

- RF-line need 50Ω single line impedance;
- Antenna is 2.4G WiFi Frequency band MIFA type Board antenna
- Antenna length, width, shape(s) as follows, Company: mm;



- d) PCB thickness is 1.5mm, Copper-Layer 6, Antenna is Layer1;
- e) Antenna put on the edge of the pcb, Clearance around and below;



5. FCC and IC Warning

This device complies with Part 15 of the FCC Rules / Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To satisfy FCC / IC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended.

Les antennes installées doivent être situées de façon à ce que la population ne puisse y être exposée à une distance de moins de 20 cm. Installer les antennes de façon à ce que le personnel ne puisse approcher à 20 cm ou moins de la position centrale de l'

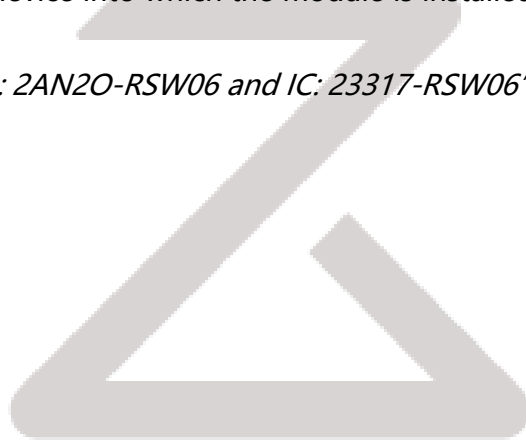
antenne. La FCC des états-unis stipule que cet appareil doit être en tout temps éloigné d'au moins 20 cm des personnes pendant son fonctionnement.

Limited by local law regulations, version for North America does not have region selection option.

This device is intended for OEM integrators only. Please see the full grant of equipment document for restrictions.

If the FCC ID of this module is not visible when it is installed inside another device, then the outside of the device into which the module is installed must be label with

"Contains FCC ID: 2AN2O-RSW06 and IC: 23317-RSW06".



roborock