

M169 WIFI Module specification

Features

- WI-FI Features
 - Support 802.11 b/g/n Wireless standards
 - Support WEP、WPA/WPA2
 - Support Station or Soft AP mode
 - Andes Technology N10 processor，128K ROM and 192KB SRAM for instruction and data SRAM in total
 - Integrate 16Mbit SPI flash in package
 - Support OTA
- PCB ANT
- Operating Voltage:DC 3.0V-3.6V
- External port
 - 2X UART (1xDebug URAT)
 - 4X ADC
 - 9X GPIO (include1XI2C, 4XPWM, 1XSPI_M)
- Work Temperature：-20℃ ~ +80℃
- Module Size：15mmX18mm，SMD package

Application

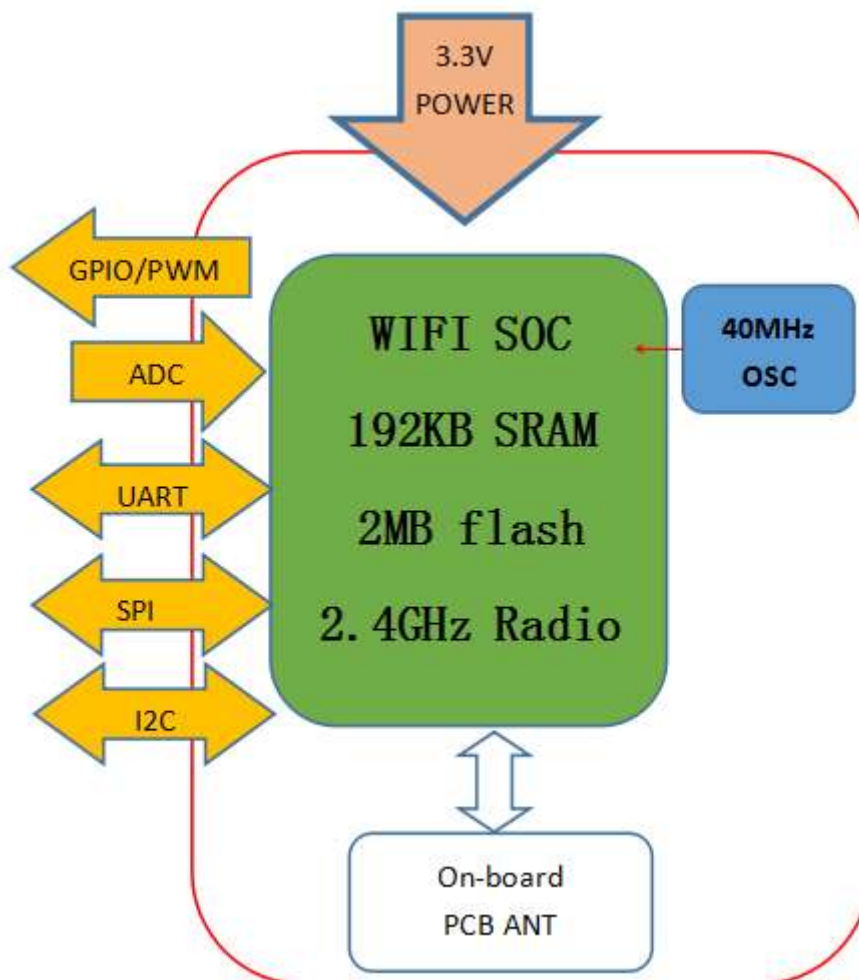
- intelligent lighting
- Intelligent Transportation System
- Smart home appliances
- Intelligent security
- industrial automation

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1. Product introduction

The Module include WLAN MAC、Baseband、RF，and the Processor speed up 160MHz. The WIFI SoC has 128K ROM and 192KB SRAM for instruction and data SRAM，also integrate 2MB SPI flash。The whole module is supplied with 3.3V power. Use SMT installation. The following figure is the hardware block diagram of the module：



Block diagram of module hardware

1.1. Pin definition

The module uses the DIP package and stamp hole package two kinds of interface design scheme to facilitate customer debugging.

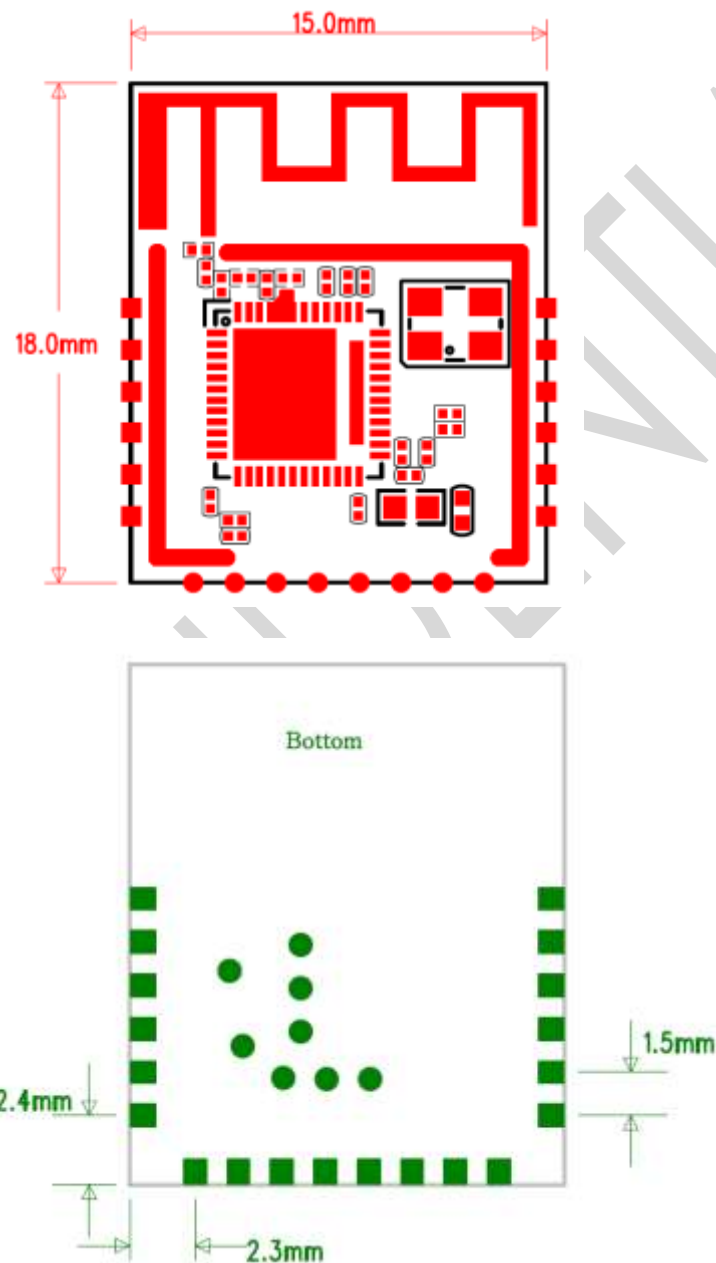


Figure1 Machine size map

1.2. Pin Assignment

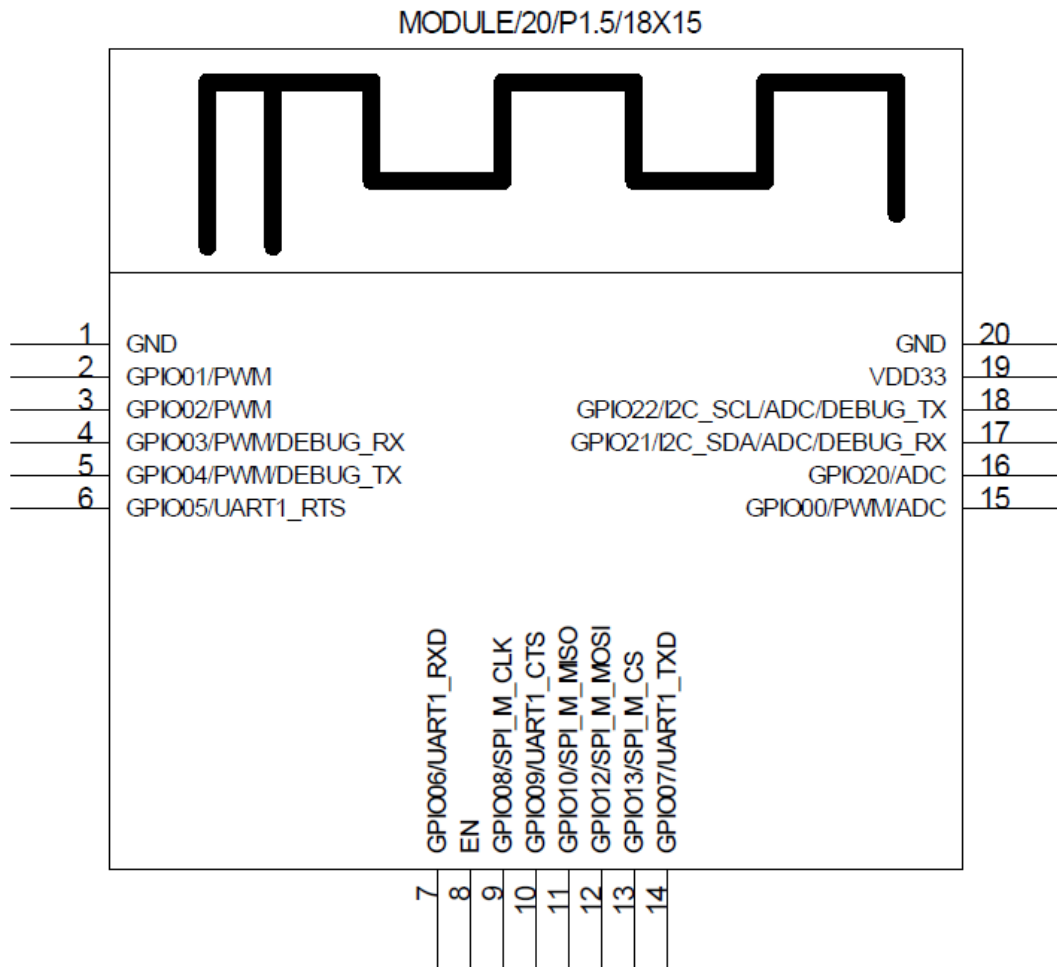


Figure2 M169 Pin Assignment

1.3. Pin Descriptions

Pin NO.	Pin Name	Description	Programmable functions		
1	GND	Ground			
2	GPIO01			PWM1	
3	GPIO02			PWM2	
4	GPIO03		Debug_UART_RX	PWM3	

5	GPIO04		Debug_UART_TX	PWM4	
6	GPIO05		UART1_RTS		
7	GPIO06		UART1_RXD		
8	EN	Reset signal and chip enable			
9	GPIO08		SPI_M_CLK		
10	GPIO09		UART1_CTS		
11	GPIO10		SPI_M_MISO		
12	GPIO12		SPI_M_MOSI		
13	GPIO13		SPI_M_CS		
14	GPIO07		UART1_TXD		
15	GPIO00			PWM0	ADC
16	GPIO20				ADC
17	GPIO21		I2C_SDA	Debug_UART_RX	ADC
18	GPIO22		I2C_SCL	Debug_UART_TX	ADC
19	VDD33	3.3V power supply			
20	GND	Ground			

2. Electric parameter

2.1 Absolute Maximum Ratings

The absolute maximum ratings in Table 2-1 indicate levels where permanent damage to the device can occur, even if these limits are exceeded for only a brief duration. Functional operation is not guaranteed under these conditions. Operation at absolute maximum conditions for extended periods can adversely affect long-term reliability of the device.

Table 2-1 Absolute Maximum Rating

Symbol	Description	Max Rating	Unit
VDD	Input power	-0.3 to 3.6	V

2.2 Operating Conditions

Table 2-2 Recommended Operating Conditions and DC Characteristics

Symbol	Description	MIN	TYP	MAX	Unit
VDD	Module input power	3.0	3.3	3.6	V
V _{IL}	Input Low (VDDIO=3.3V)	-0.3		0.8	V
V _{IH}	Input High (VDDIO=3.3V)	2		3.6	V
V _{OL}	output Low (VDDIO=3.3V)			0.4	V
V _{OH}	output High (VDDIO=3.3V)	2.4			V

2.3 Environmental Ratings

Table 2-3 Environmental Ratings

Characteristic	Conditions/Comments	Value	Units
Ambient Temperature	Functional operation	-20 to +80	° C
Max welding temperature	IPC/JEDEC J-STD-020	260	° C

2.4 Storage Condition

Characteristic	Conditions/Comments	Value	Units
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Storage Temperature		-40 to +125	° C
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3. Module assembly

3.1 Module layout

When the module used the on-board antenna, it is necessary to ensure that the module antenna extends directly from the bottom plate, and the antenna that cannot extend the bottom plate must also be hollowed out on the bottom plate, and the distance from other metal devices should be at least 16mm. The following figure shows the placement of the protruding edge of the module :

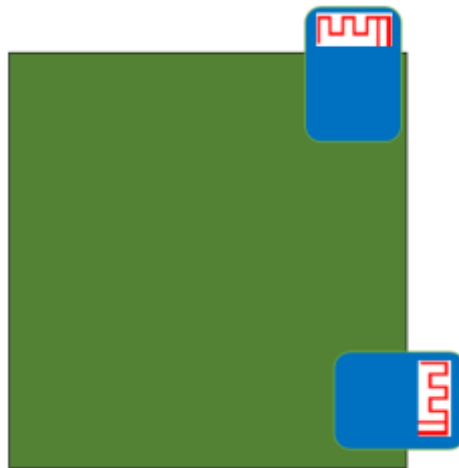


Figure 3 Schematic diagram of module installation position

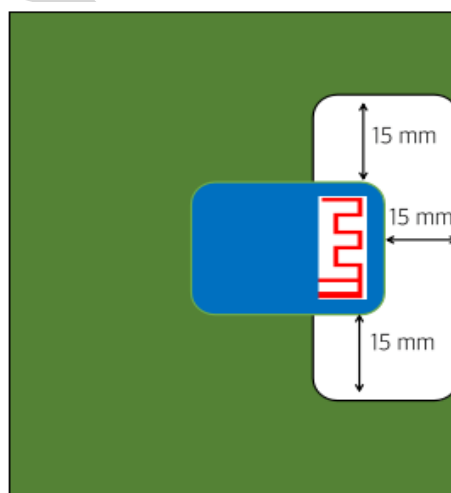


Figure4 Antenna hollow area requirements

FCC Warning

This device complies with Part 15 of the FCC Rules. 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.

NOTE 1: 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.

NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance.

Note 1: This module certified that complies with RF exposure requirement under mobile or fixed condition, this module is to be installed only in mobile or fixed applications.

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

A fixed device is defined as a device is physically secured at one location and is not able to be easily moved to another location.

Note 2: Any modifications made to the module will void the Grant of Certification, this module is limited to OEM installation only and must not be sold to end-users, end-user has no manual instructions to remove or install the device, only software or operating procedure shall be placed in the end-user operating manual of final products.

Note 3: Additional testing and certification may be necessary when multiple modules are used.

Note 4: The module may be operated only with the antenna with which it is authorized. Any antenna that is of the same type and of equal or less directional gain as an antenna that is authorized with the intentional radiator may be marketed with, and used with, that intentional radiator.

Note 5: To ensure compliance with all non-transmitter functions the host manufacturer is responsible for ensuring compliance with the module(s) installed and fully operational. For example, if a host was previously authorized as an unintentional radiator under the Supplier's Declaration of Conformity procedure without a transmitter certified module and a module is added, the host manufacturer is responsible for ensuring that the after the module is installed and operational the host continues to be compliant with the Part 15B unintentional radiator requirements. Since this may depend on the details of how the module is integrated with the host, (iComm Semiconductor Co., Ltd.) shall provide guidance to the host manufacturer for compliance with the Part 15B requirements.

Note 6: FCC ID label on the final system must be labeled with "Contains FCC ID: 2AQ5K-M169" or "Contains transmitter module FCC ID: 2AQ5K-M169".

Note 7: For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.