RE706B

WIFI Module product specification

Version ： V 1.2

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Version update instructions

DATE	Version	Updated content
2020-07-31	V1.0	Initial document
2020-08-07	V1.1	Update pin function
2020-10-25	V1.2	Update RF parameters

WIFI Module product specification

1. Product Introduction

Introduction

The RE706B wireless WIFI module adopts the latest low-power Simple-Chip WIFI SV6166F chip design from Southern Silicon Valley, and uses advanced design technology to achieve low power consumption and high throughput; the module hardware integrates WLAN MAC, Baseband , RF, integrated MCU inside the chip, clocked at 160MHz, built-in 192KB SRAM and 128K ROM. It works in the 2.4GHz frequency band and supports 802.11 b/g/n wireless standards; the module adopts 3.3V single power supply and SMT installation method with stamp hole, so that the module can be flexibly applied to various consumer products and can meet customer needs to the greatest extent.

2. Product Features

➢ Andes Technology N10 processor (main frequency 160MHz), 128K ROM and 192KB SRAM for instructions and data, Integrated 16Mbit SPI Flash

➢ DC working voltage: 3V-3.6V

➢ Interface: 1*UART, 4*ADC, 10*GPIO reusable

➢ Support 802.11 b/g/n wireless standard

➢ Support H20/H40

➢ Support STA/AP two working modes

➢ Support WEP, WPA/WPA2 security mode

➢ Support wireless upgrade

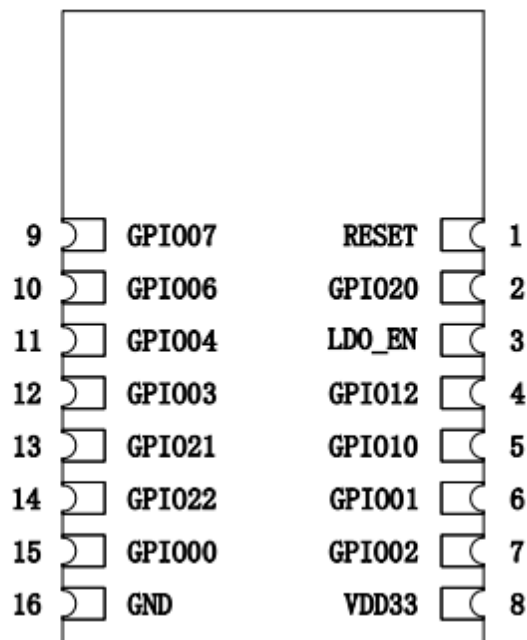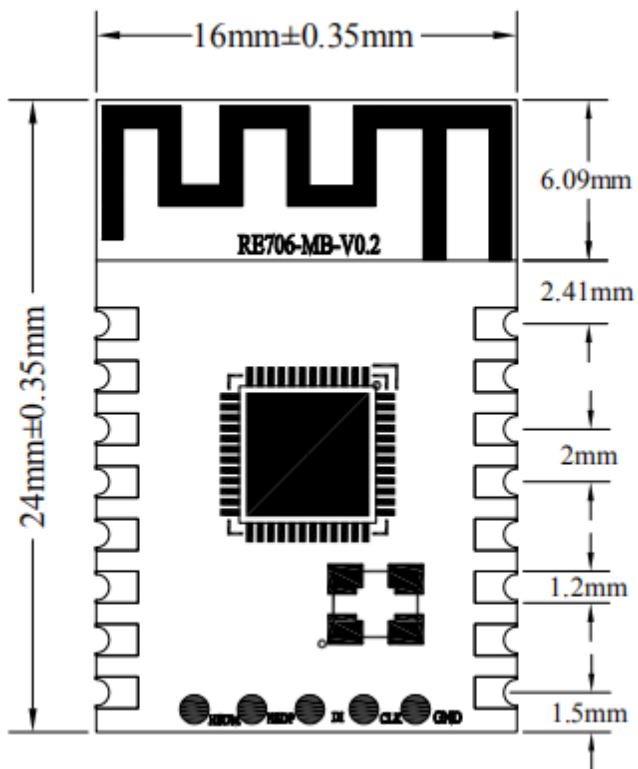PCB antenna, low cost, high performance

3. Application areas

➢ Smart home/home appliances

➢ Smart socket/smart lamp

➢ Smart buildings

➢ Industrial wireless control

➢ Baby monitoring room

➢ Webcamera

4. Module size and pin definition

4.1 Dimensions

Single board size (mm): 24mm*16mm*2.4mm, PCB thickness 0.8mm：

9	GPIO07	RESET	1
10	GPIO06	GPIO20	2
11	GPIO04	LDO_EN	3
12	GPIO03	GPIO12	4
13	GPIO21	GPIO10	5
14	GPIO22	GPIO01	6
15	GPIO00	GPIO02	7
16	GND	VDD33	8

4.2 Pin definition

Pin number	Pin name	Function description	Remark
1	RERST	Reset interface, active low	
2	GPIO 20	I2S0_MCLK /ADC2/GPIO	Range (0-1014mV)
3	LDO_EN	Module enable	high validity
4	GPIO 12	I2S_DO / SPI_M_MOSI / I2C_M_SCL / GPIO	
5	GPIO 10	I2S_DI / SPI_M_MISO / I2C_M_SDA / GPIO	
6	GPIO 01	PWM 1 / GPIO	PWM(0-20KHz)
7	GPIO 02	PWM 2 / GPIO	PWM(0-20KHz)
8	VDD33	Power supply interface 3.3V	3.0-3.6V
9	GPIO 07	UART1_TXD / GPIO	Communication Interface /115200
10	GPIO 06	UART1_RXD / GPIO	Communication Interface /115200
11	GPIO 04	PWM4/ GPIO	PWM(0-20KHz)
12	GPIO 03	PWM3/ GPIO	PWM(0-20KHz)
13	GPIO 21	UART0_TXD / I2C_S_SCL / ADC1 / GPIO	Log Interface
14	GPIO 22	UART0_RXD / I2C_S_SDA / ADC0 / GPIO	Log Interface
15	GPIO 00	ADC3 / PWM / GPIO	PWM(0-20KHz)
16	GND	Grounded	

Note: The initial state of GPIO7 cannot be pulled down by the peripheral when the module is powered on, otherwise it may not be powered on.

5. Electrical parameters

parameter	Description	Minimum value	Typical value	Maximum value	Unit
TS	storage temperature	-40	-	125	℃
VI	Supply voltage	-0.3	-	3.6	V
Electrostatic discharge voltage (human body model)	-25℃	-	-	2	KV
Electrostatic discharge voltage (machine model)	-25℃	-	-	0.5	KV
TA	Operating temperature	-20	25	80	℃
VCC	Operating Voltage	3	3.3	3.6	V
VCC	Working current 3.3V	10	-	400	mA

VIH	IO high level input	0.8	-	VCC	V
VIL	IO low level input	-0.3	-	0.24	V
VOH	IO high level output	0.8	-	VCC	V
VOL	IO low level output	-	-	0.1	V
Imax	IO drive current	-	-	12	mA

6. RF performance

2.4G-TX:

Mode	Channel	Rate	Power (dBm)	EVM
11b(EVM<35%)	1	11Mbps	16.7	-31
	11	11Mbps	16.8	-31
11g (EVM<-25)	1	54Mbps	14.1	-30
	11	54Mbps	14.4	-30
11n_HT20(EVM<-27)	1	MCS7	13.6	-30
	11	MCS7	13.9	-31
11n_HT40(EVM<-27)	3	MCS7	13.5	-30
	9	MCS7	13.8	-31

2.4G-RX:

Mode	Channel	Rate	Sensitivity (dBm)
11b(PER<8%)	1	11Mbps	-86
	11	11Mbps	-86
11g (PER<10%)	1	54Mbps	-72
	11	54Mbps	-72
11n_HT20(PER<10%)	1	MCS7	-71
	11	MCS7	-70
11n_HT40(PER<10%)	3	MCS7	-67
	9	MCS7	-66

7. Antenna design considerations

The module is an onboard antenna, and the following precautions need to be observed:

➢ The WIFI module adopts the PCB onboard antenna to ensure the best antenna efficiency, and the distance between the metal part and the antenna area is kept above 15mm.。

➢ PCB should not be wired or copper coated in the antenna area, so as not to affect the antenna performance. Ensure that there is no substrate medium under or above the printed antenna; ensure that the surrounding of the printed antenna is far away from the copper sheet, so as to ensure the radiation effect of the antenna to the greatest extent

8. Production recommended furnace temperature curve

Please carry out SMT patch according to the reflow soldering curve, the peak temperature is 245℃, and the reflow soldering temperature curve is shown in the following figure:

Refer to IPC/JEDEC standard ; Peak Temperature : <245℃ ; Number of Times: ≤2 times ;
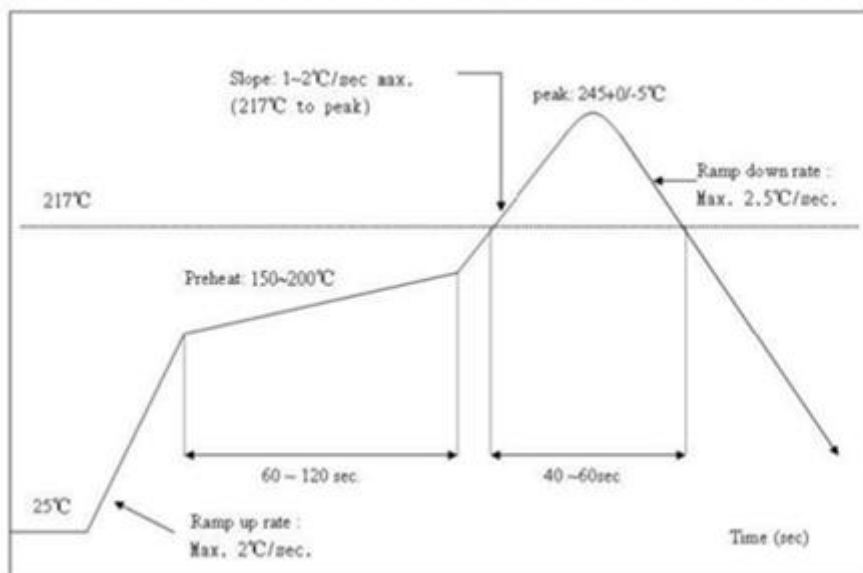
9. Packing and shipping method

The module must be mounted by the SMT machine, and the mounting must be completed within 24 hours after unpacking and burning the firmware, otherwise the vacuum packaging must be re-packed, and the module must be baked before mounting.

The storage conditions of the modules delivered are as follows:

The moisture-proof bag must be stored in an environment where the temperature is less than 30℃ and the humidity is less than 70%RH.

For dry-packaged products, the shelf life is 6 months from the date the package is sealed.

Vacuum packaging

10. FCC Warning

2.2 List of applicable FCC rules

FCC Part 15.247

2.6 RF exposure considerations

This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.

2.8 Label and compliance information

Remind end customers to FCC ID label on the final system must be labeled with "Contains FCC ID: 2AYCN-RE706" or "Contains transmitter module FCC ID: 2AYCN-RE706".

2.9 Information on test modes and additional testing requirements

Contact Shenzhen Water World Co., Ltd will provide stand-alone modular transmitter test mode. Additional testing and certification may be necessary when multiple modules are used in a host.

2.10 Additional testing, Part 15 Subpart B disclaimer

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, Shenzhen Water World Co., Ltd shall provide guidance to the host manufacturer for compliance with the Part 15B requirements.

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.

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 separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and difference antenna configurations.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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 product 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 product 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 product 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.

NOTE 3: 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 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: For all products market in US, OEM has to limit the operation channels to CH1 to CH11 for 802.11b/g/n-HT20 and CH3 to CH9 for 802.11n-HT40 by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.