MoreSense MSWB2213 WiFi and BLE Module User Manual

MoreSense MSWB2213 WiFi and BLE Module

Contents [hide

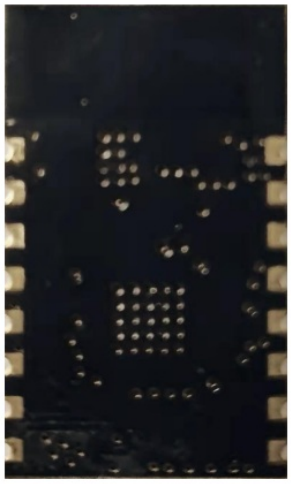
Product Description

The module of MSMB2213 series is ultra low-powered and highly integrated modules that integrates 2.4GHz Wi-Fi and low-powered Bluetooth (Bluetooth ®LE) dual mode wireless communication. It has the following features:

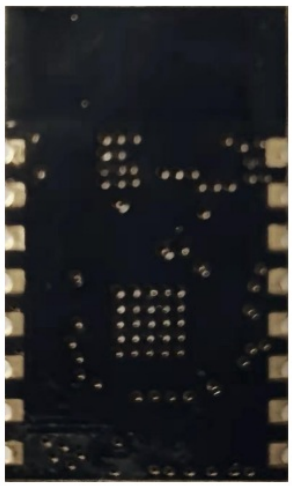
- Complete Wi-Fi subsystem, in line with IEEE802.11b/g/n protocol, with Station mode, Soft AP mode, Soft AP + Station mode and Promiscuous mode(a special mode);
- Low-powered Bluetooth subsystem, supporting Bluetooth5 and Bluetooth mesh • leading low-powered performance and radio frequency performance in the industry;
- RISC-V 32-bit single-core processor,four-stage pipeline architecture,main frequencyupto160MHz • Built-in 400KB SRAM(in which 16KB dedicated to cache),384KBROMstoragespace,and supports multiple external SPI,Dual SPI,QuadSPI,QPI flash;
- Perfect security mechanism-hardware encryption accelerator supports AES 128/256,Hash,RSA, HMAC, digital signature and secure boot-integrated hardware random number generator-support;
- Abundant communication interfaces and GPIO pins, which can support a variety of scenarios and complex applications.

Physical Map

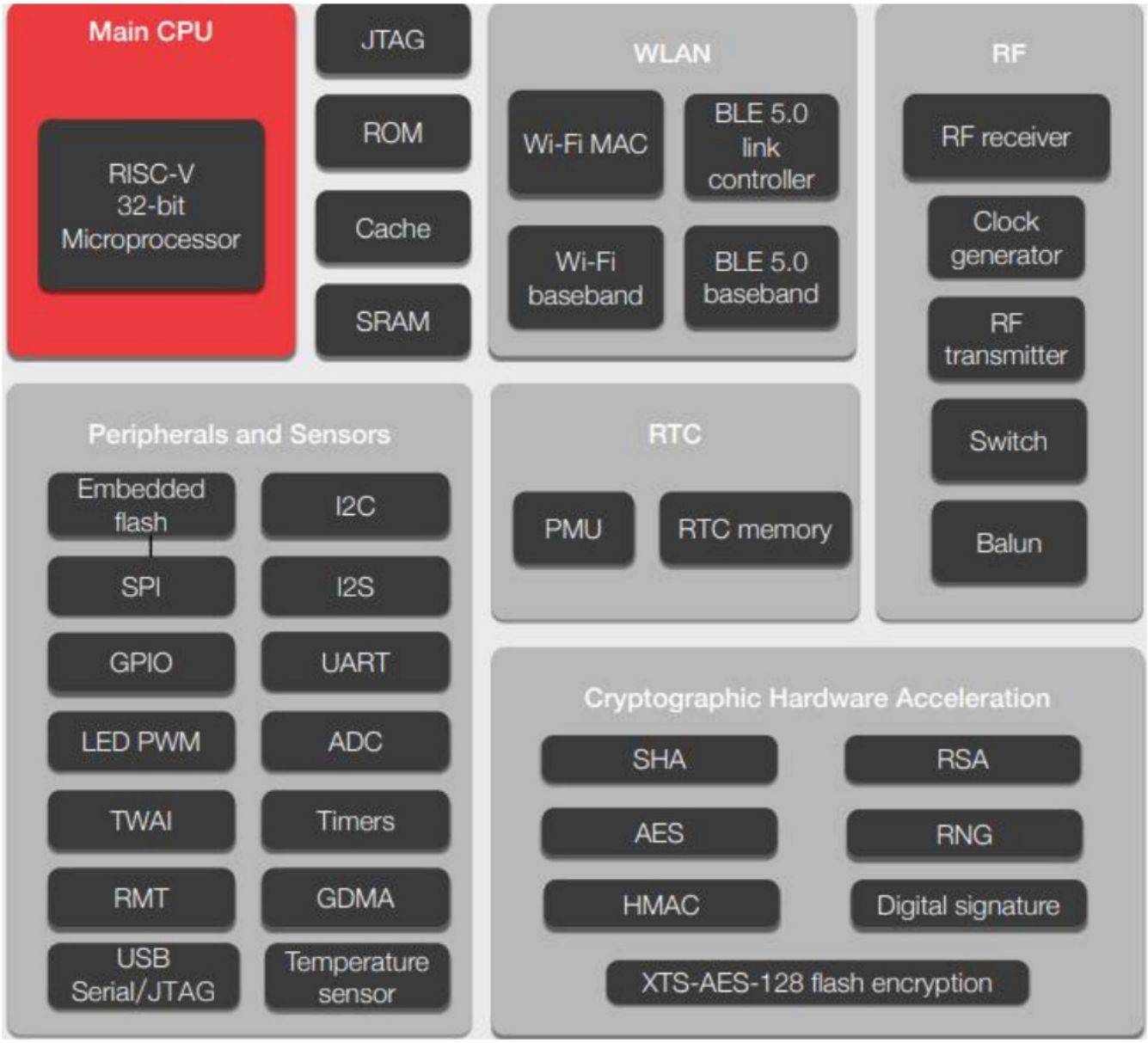
External Antenna:



Built-in Antenna:



System Block Diagram



Product Features

- Support IEEE802.11b/g/n protocol;
- Support 20MHz and 40MHz bandwidth in 2.4GHz band;
- Support 1T1R mode, data rate up to 150Mbps;
- 4 x Virtual Wi-Fi Interfaces
- Support infrastructure network (Infrastructure BSS)Station mode, Soft AP mode, Station + Soft AP mode and promiscuous mode;
- Bluetooth Low Energy (Bluetooth LE):Bluetooth5,Bluetoothmesh;
- The rate supports 125Kbps,500Kbps,1Mbps,2Mbps;
- Advertising Extensions;
- Multiple Advertisement Sets;
- Channel Selection Algorithm#2);
- 32-bit RISC-V single-core processor with a main frequency of up to 160MHz;
- 384KBROM;
- 400KBSRAM (in which 16KB is dedicated to cache);

- 8KBRTCSRAM;
- Embedded Flash 4M.

Key Application

- Security and Smart Surveillance: Cameras…
- Smart Home: smart lighting, smart buttons, smart sockets, indoor positioning
  •Industrial Automation: industrial robots, Mesh networking, human-machine interface, industrial bus applications
- Healthcare: health monitoring, baby monitor
- Consumer Electronics: smart watches, smart bands – OTT TV boxes, set top box devices –Wi-Fi and Bluetooth speakers, toys with data upload and proximity sensing toys
- Smart Agriculture: smart greenhouse, smart irrigation, agricultural robots
- Retail Catering: POS systems, service robots, cloud printers
- Universal Low-powered IoT data logger

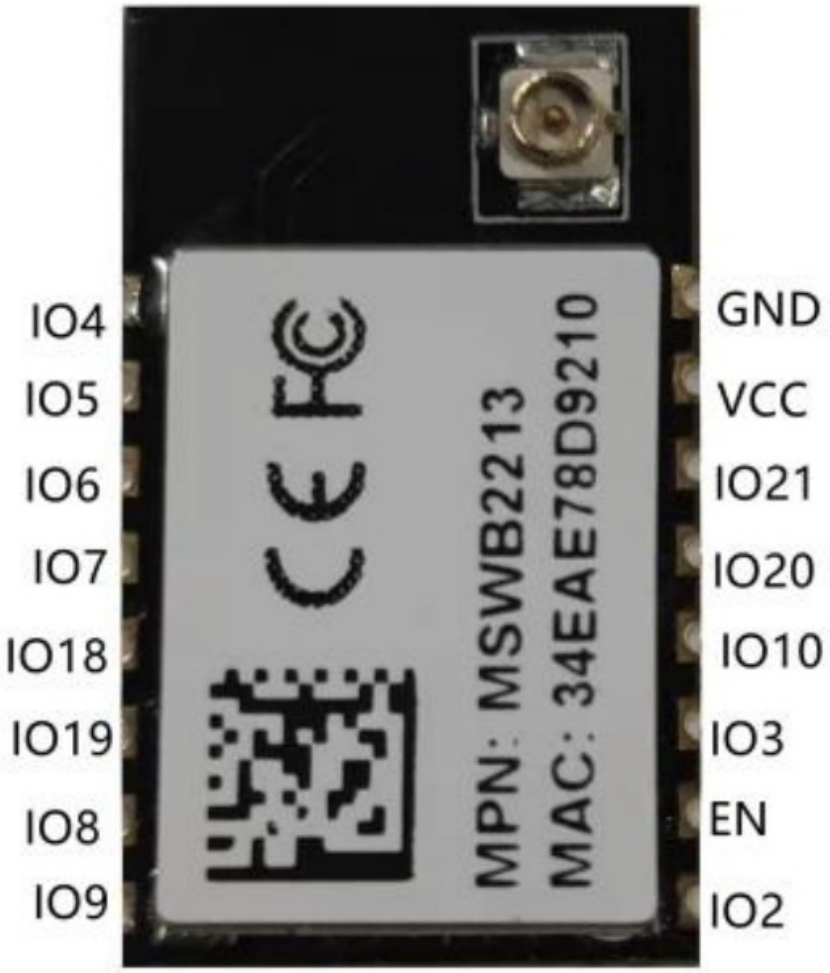
Parameter for MSWB2213

Type	Parameter	Value
WIFI Parameter	Certification Standards	FCC/CE/SRRC/RoHS
	Wireless Standards	802.11 b/g/n
	Frequency Range	2.412GHz-2.462GHz
	Transmit Power	802.11b: +16dBm(@11Mbps)
		802.11g: +14dBm(@54Mbps)
		802.11n: +13dBm(@HT20,MCS7)
	Receiver Sensitivity	802.11b: -87dBm (@11Mbps,CCK)
		802.11g: -87dBm (@54Mbps,OFDM)

		802.11n: -85dBm (@HT20,MCS7)
	Antenna	MSWB2213: Built-in: PCB antenna
Bluetooth Parameters	Wireless Protocol	BLE5.0
	Frequency Range	2.402GHz-2.480GHz
	Transmit Power	-1.5dbm
	Receiver Sensitivity	-90dBm
Hardware Parameters	Data Interface	UART
		GPIO,SPI
	Operating Voltage	3.0~3.6V
	Working Current	Peak(continuous transmission): 260mA Average (STA, connected and standby): 24mA (DTIM1) Average (STA,1KB/s): 54mA Average (AP): 85mA
	Operating Temperature	-40℃- 85℃
	Storage Temperature	-40℃- 125℃
	Humidity	<85%
	DIM.	MSWB2213 22mm x 13.5mm x 3mm

Software	Wireless Network Type	STA/AP/AP+STA/BLE5.0
	Security Mechanism	WEP/WPA-PSK/WPA2-PSK
	Encryption Type	WEP64/WEP128/TKIP/AES
Parameters	Upgrade Firmware	Local Wireless Remote upgrade
	Customization Development	Provide SDK for customer’s 2nd development
	Network Protocol	IPv4,TCP/UDP/HTTP/MQTT
	User Configuration	AT+ command set, Web page Android/iOS terminal Smart Link smart configuration APP

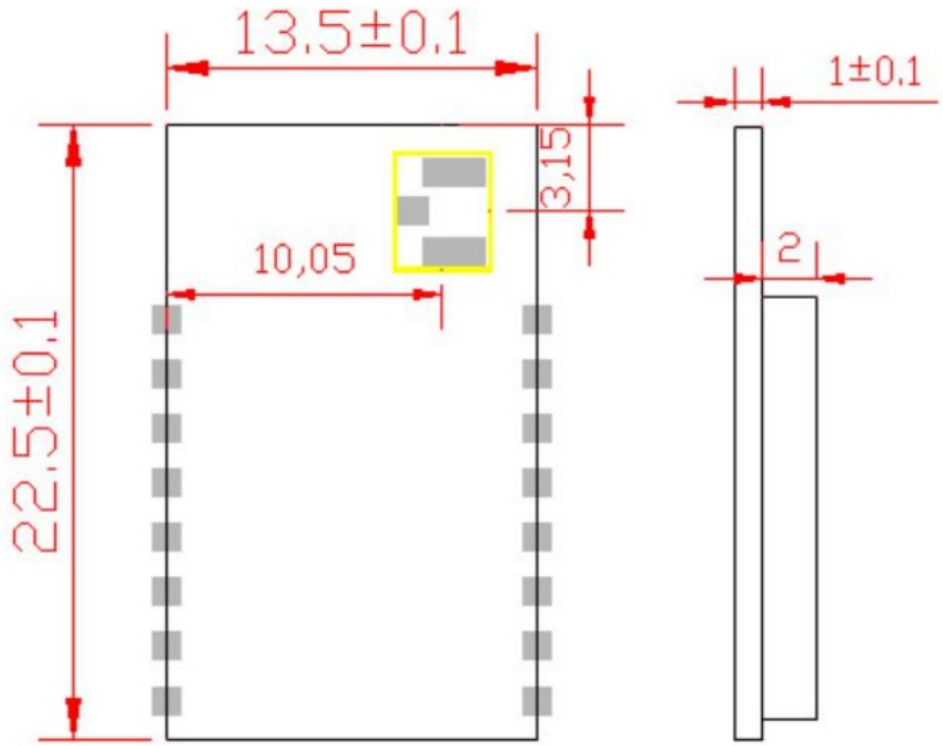
Pin Definition



Pin	Name	Type	Description
1	IO4	I/O/T	GPIO4,if it does not use-NC
2	IO5	I/O/T	GPIO5,if it does not use-NC
3	IO6	I/O/T	GPIO6,if it does not use-NC
4	I07	I/O/T	GPIO7,if it does not use-NC
5	UART0	O	3.3V Communication Serial Port 0 Output GPIO18
6	UART0	I	3.3V Communication Serial Port 0 Input GPIO19

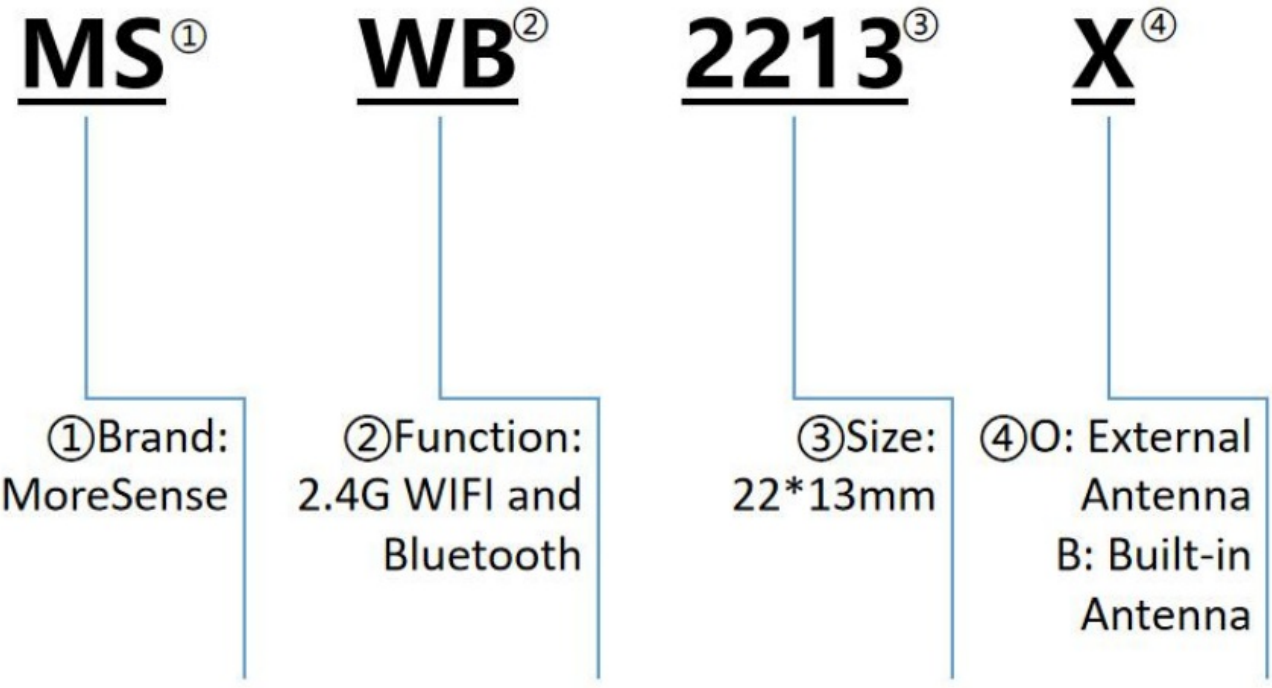
7	UART0_CTS	I/O/T	GPIO8,if it does not use-NC can do PWM0 function
8	UART0_RTS	I/O/T	GPIO9,if it does not use-NC can do PWM1 function
9	IO2	I/O	GPIO2,ADC function
10	Module Reset	I	Low active hardware reset input pin, there has internal reset circuit, external pull-up resistance is not allowed, avoiding prolong the reset time and cause abnormal startup.
11	Module Startup Instructions (can be configured as GPIO 3)	I/O/T	“0” – complete startup; “1” – do not complete startup; if it does not use-NC GPIO3,can do PWM2 function
12	Restore Default Configuration(can be configured as GPIO10)	I/O/T	GPIO10,can do PWM3 function
13	IO20	I/O/T	Debug_RX GPIO20
14	1021	I/O/T	Debug_TX GPIO21
15	+3.3V Power Supply	Power	
16	Ground	Power	

Module Dimension



Unit: Millimeter (mm)

Name Rules

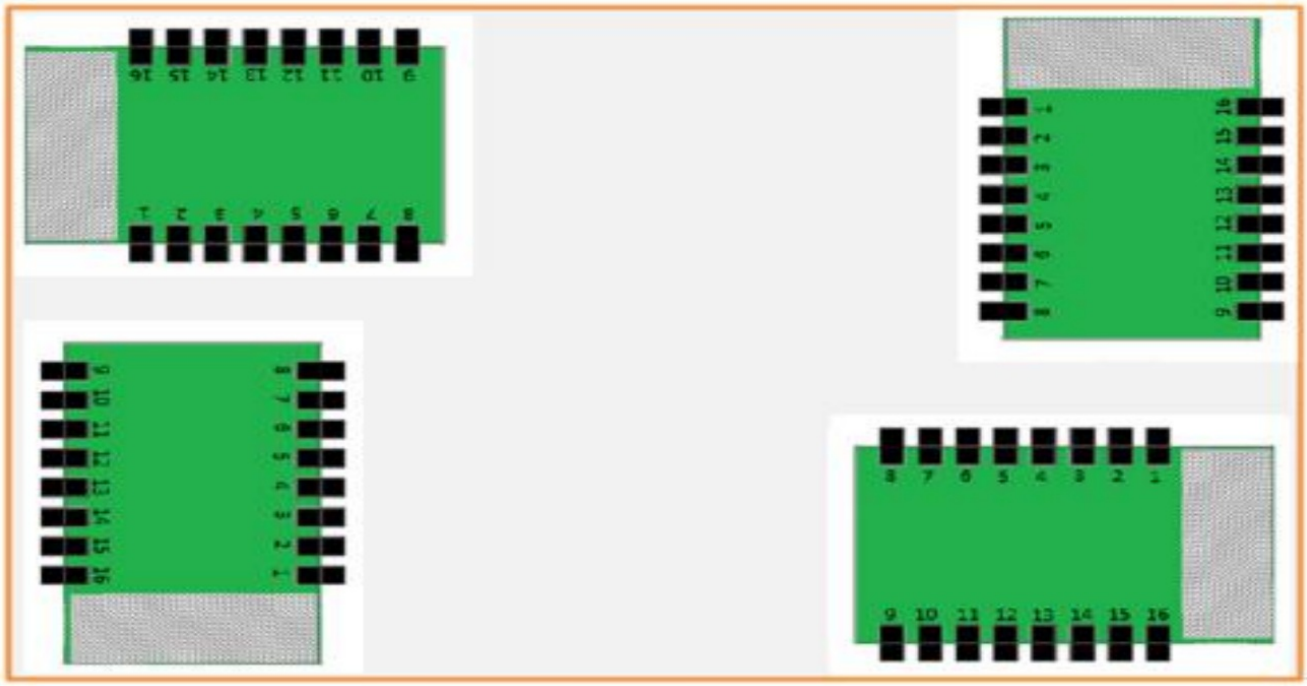


Precautions

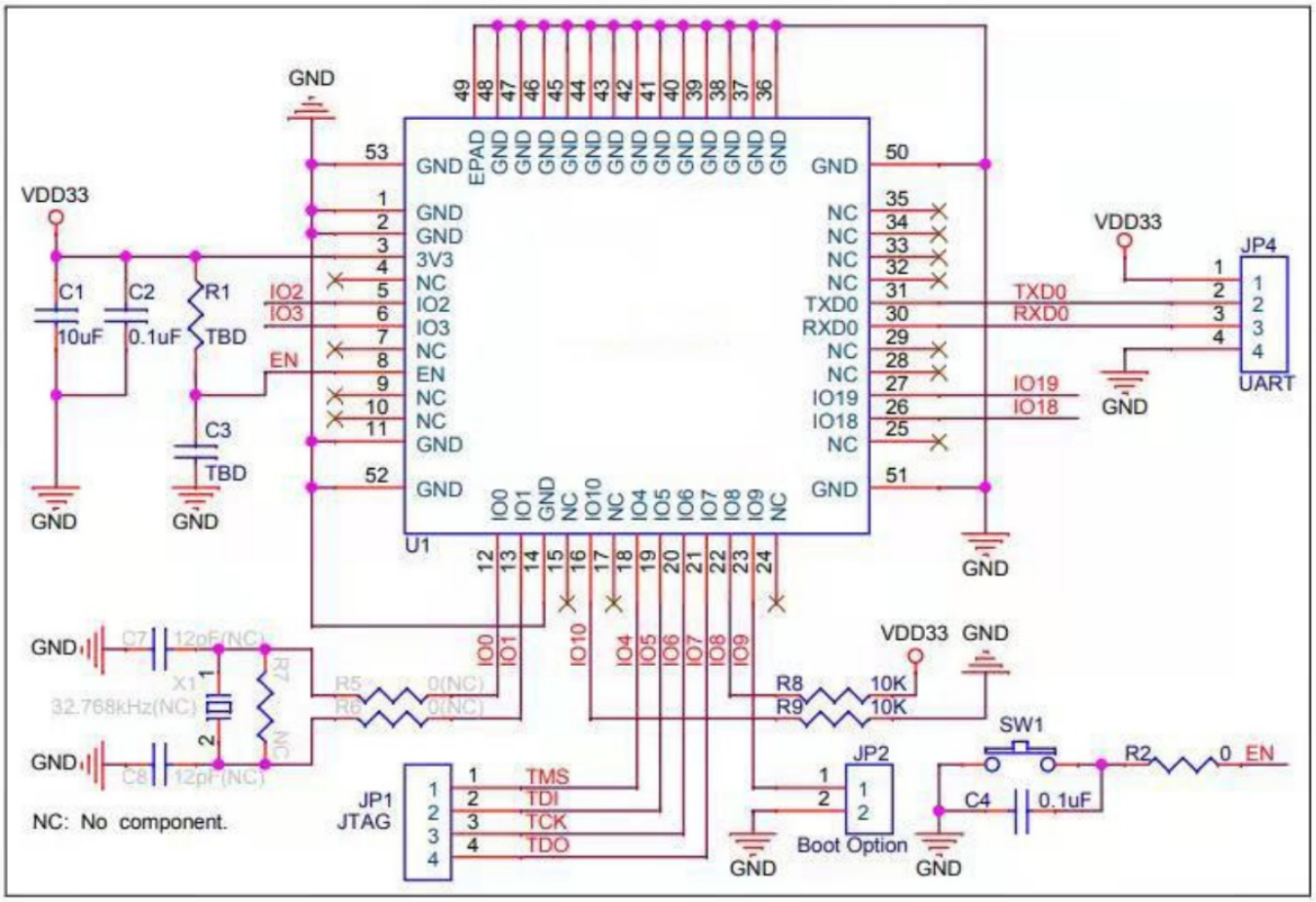
Precautions

MSMB2213 supports built-in antenna option. When customers chooses built-in antennas, they need to observe the following precautions for built-in antennas and general rules for modules placement:

- On the user's PCB board, the area corresponding to the strip area (MSWB2213:22.5×13.5mm) in the picture above cannot place components and lay GND;
- The antenna should be kept away from metal at least 10mm away from the surrounding high components;
- The antenna part cannot be blocked by the metal casing, and the plastic casing needs to beat least10 mm away from the antenna;
- More Sense recommends that the MSWB2213 module be placed in the following areas of the user board, which aimed to reducing the impact on the antenna and wireless signals. At the same time, please ask More Sense for technical support to assist in the placement of the module and the layout design of related areas.



Hardware Typical Application



Package Information

Recommended Reflow Soldering Profile

Figure 1.Thermal Reflow Profile

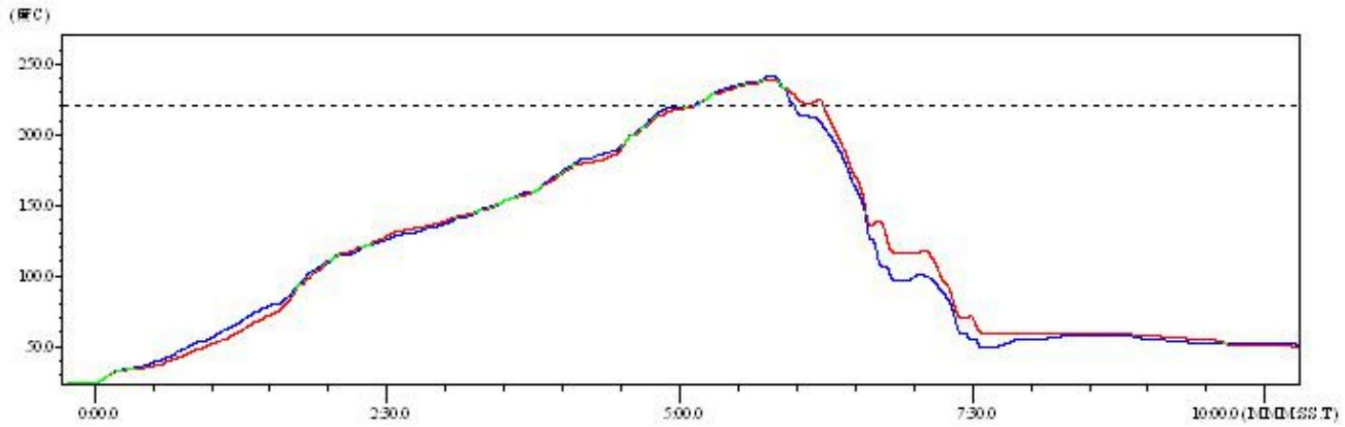


Table 1.Reflow Data

No.	Program	Temp. (°C)	Time(S)
1	Re-fluxing Time	Above 220°C	35~55S
2	Peak Temp.	Highest 260°C	

Note ：

1. It is recommended to use a nitrogen re-flux furnace;
2. The oxygen content is less than 300ppm.

Instruction

A. Sealed storage period:12 months in an environment with a temperature of less than 30°Cand a relative humidity of less than 60%.
B. Be re-baked before using if the window time exceeds 168 hours after unpacking.
C. Recommended to use nitrogen filling method for baking.
D. Recommended to use nitrogen filling method.
E, Baking and rework requirements for this model:125±5℃, 24 hours.
F. Recommended storage conditions ≦10%,relative humidity under vacuum packaging.
G. If the SMT process requires to pass twice reflow ovens:
① TOP Surface
② BOT Surface
Situation 1:The WIFI module is designed on the TOP surface of the customer's PCB. The the TOP surface needs to be baked when the TOP surface has not been produced after the BOT surface has been finished 168 hours (window time).
Situation 2;The WIFI module is designed on the BOT side of the customer's PCB and follows the normal baking rules.
Note: The window time means 168 hours from the end of the last baking to the beginning of the next reflow.

MSWB2213X Package Method

Reel Packaging
Dim.: 340*340*50 mm

FCC WARNING

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
Any changes or modifications not expressly approved by the party responsible for compliance

could void the user's authority to operate the equipment.
NOTE: 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 generate, 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.

Documents / Resources

	MoreSense MSWB2213 WiFi and BLE Module [pdf] User Manual 2A86J-MSWB2213, 2A86JMSWB2213, mswb2213, MSWB2213 WiFi and BLE Module, WiFi and BLE Module, BLE Module

References

- Diese Domain wurde geparkt | World4You