IEEE 802.11 b/g/n WiFi Module

Product Specifications

Model: RY3M08

Version: 1.0

Date: 2012/3/27

1. Introduction

RY3M08 is a WLAN module supporting IEEE 802.11 b/g/n standards with 6-pin connector supporting USB 2.0 /1.1 interface. This is a small form factor and low cost compact WLAN module designed for the wireless connectivity of products with embedded system.

This module operates in 2.4GHz ISM frequency band, it applies a highly integrated MAC/BBP and RF single chip RT5370 with 150Mbps PHY rate supporting. This module can be built-in other embedded applications such as IP Camera, IP set top box, GPS, Internet radio apparatus, it can be directly soldered on a main PCB.

1.1 Features

- 802.11b: 1, 2, 5.5, 11Mbps; 802.11g: 6, 9, 12, 24, 36, 48, 54Mbps
- 802.11n: (20MHz) MCS0-7, Support up to 72Mbps
  (40MHz) MCS0-7, Support up to 150Mbps
- OFDM, Peak rate 150Mbps, Peak throughput 90Mbps.
- Security support for 64/128 WEP, WPA, WPA2, TKIP, AES
- Operates in 2.4GHz frequency bands. Power Management
- Antenna configuration: Built-in On Board

2. Product Information

2.1 Typical Specification Overview

Standards	IEEE802.11b/g/n (1T1R mode)
Operating Frequency	2.412GHz ~ 2.4835GHz，the CH14 can be made upon request.
Protocols	802.11b: CCK, QPSK, BPSK, 802.11g/n: OFDM
Antenna	External antenna Via I-PEX MHF receptacle or Built-in On Board
Security	WPA/WP2/WPAI, 64/128/152-bit WEP, WPS
Transmit Output Power (Typical)	11b: 17±1.0dBm @ 11Mbps; 11g: 14±1dBm @ 54Mbps
	802.11n: (HT20), 12+/-1dBm, 802.11n: (HT40), 12+/-1dBm
Receive Sensitivity	11b: -83dBm @ 11Mbps; 11g: -70dBm @ 54Mpbs.
	802.11n: (HT20), -67dBm@MSC7, (HT40),-67dBm@MSC7
Operating Voltage	5.0V or 3.3VDV± 5%
Operating Current	5.0V power input,<170mA; 3.3V power input.<260mA

Bus Interface	USB 2.0/1.1
USB Interface	Max: 7 pins, 2.0 mm pitch pin header. Or Max: 7 pins semi-hole.

2.2 Hardware Information

2.2.1 General view

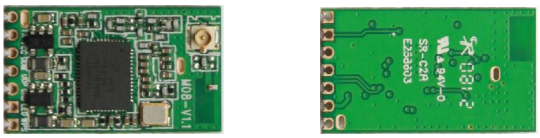


Fig 1

2.2.2 Block Diagram

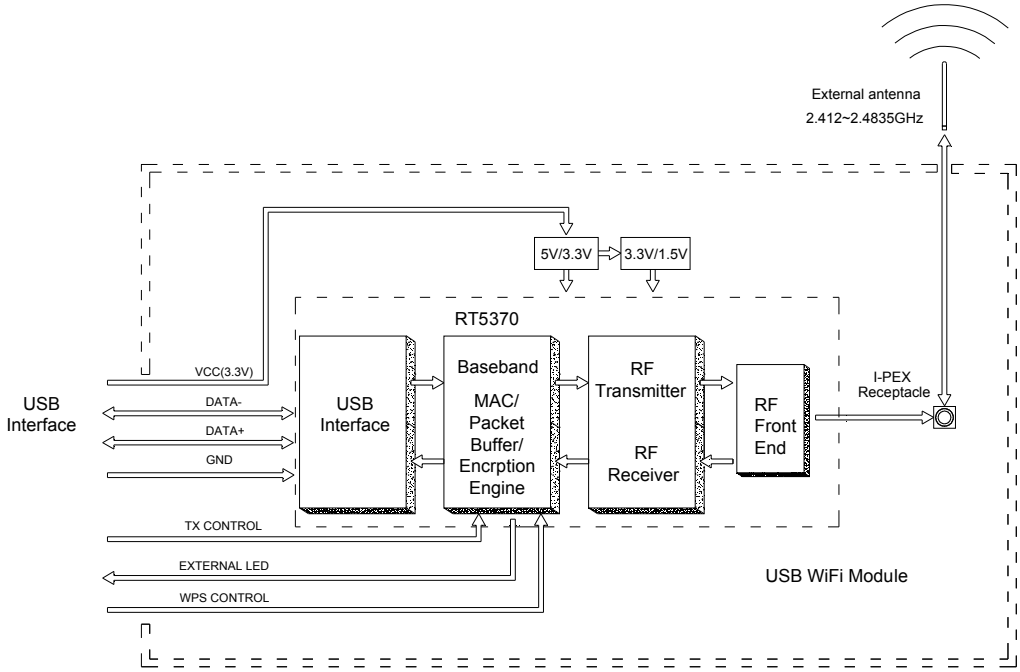


Fig 2. With external antenna used

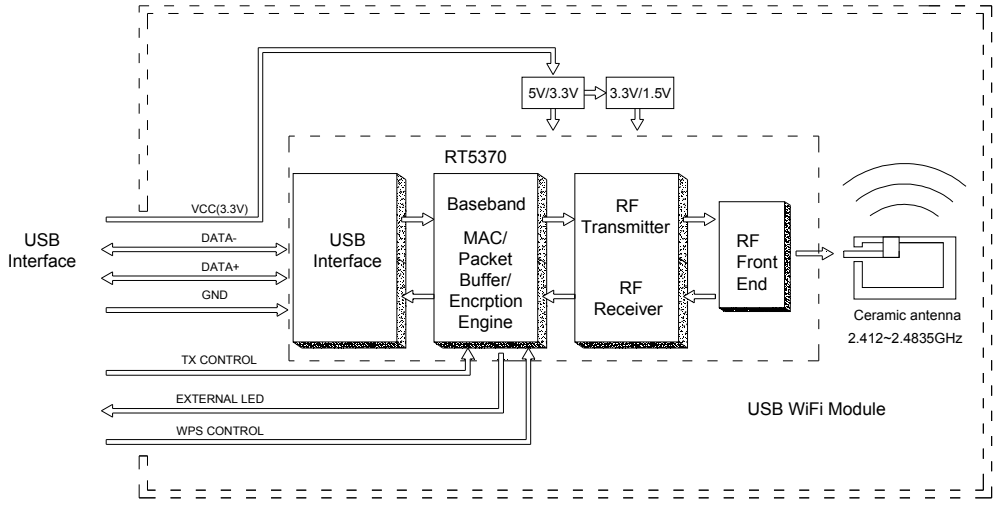


Fig 3. With on board ceramic antenna used

2.2.3 Mechanical Information

A. Physical Dimensions:

a. Semi-holes with 2.0mm pitch (external RF antenna via I-PEX MHF receptacle).

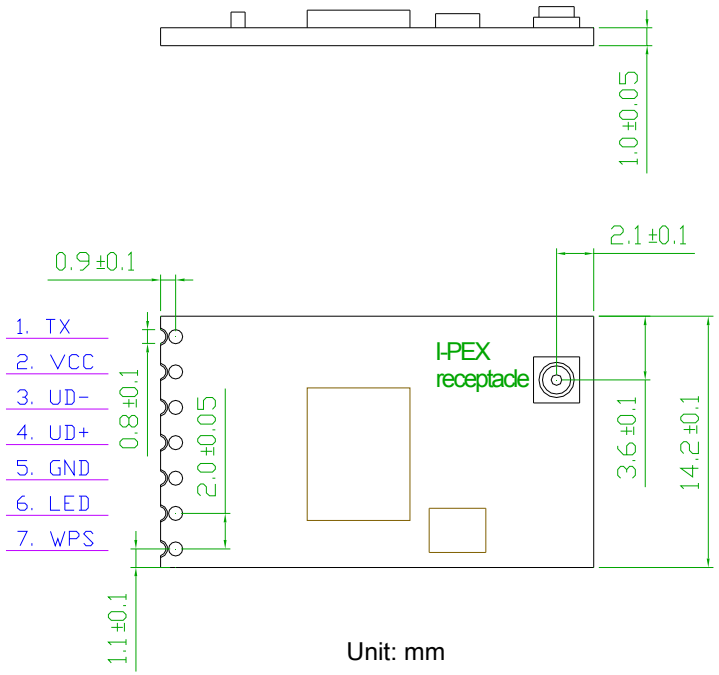


Fig 4.

b. Semi-holes with 2.0mm pitch (onboard ceramic antenna).

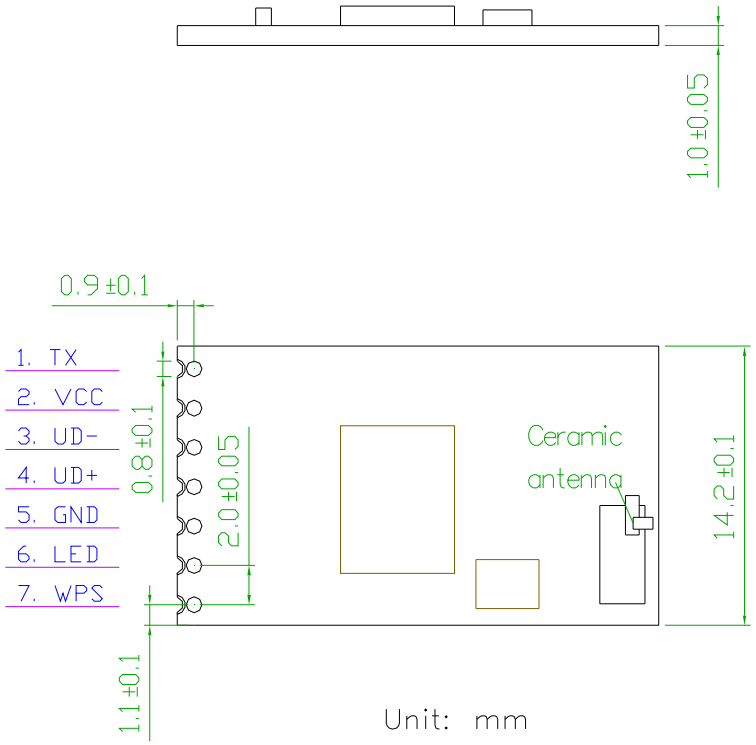


Fig 5.

c. Top side 7-pin pin header with 2.0mm pitch

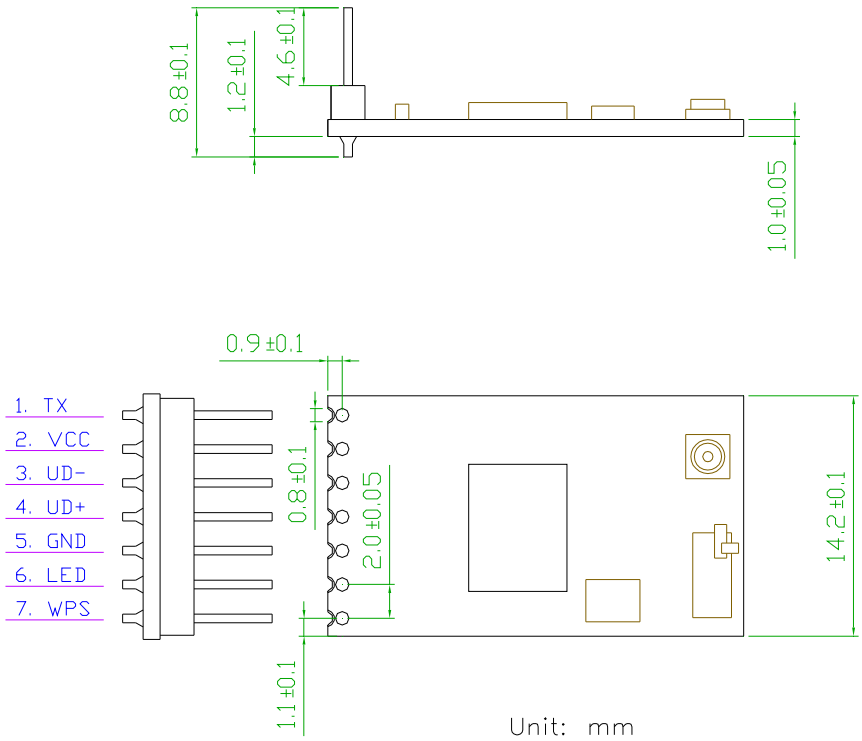


Fig 6.

d. Bottom side 7-pin pin header with 2.0mm pitch

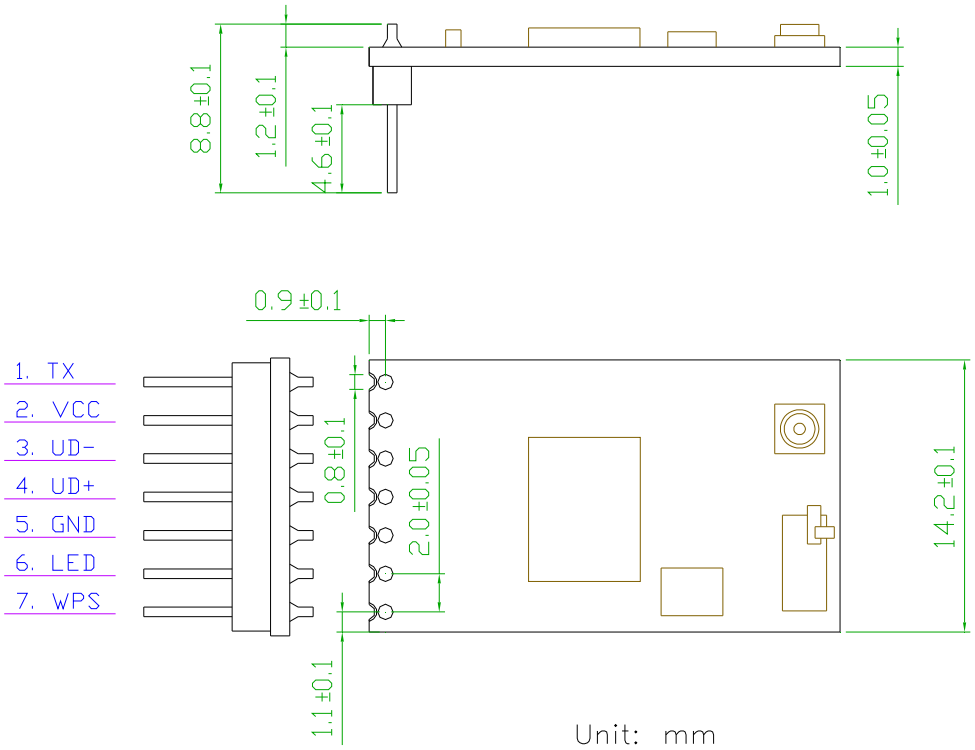


Fig 7.

e. 90 degree 7-pin pin header with 2.0mm pitch

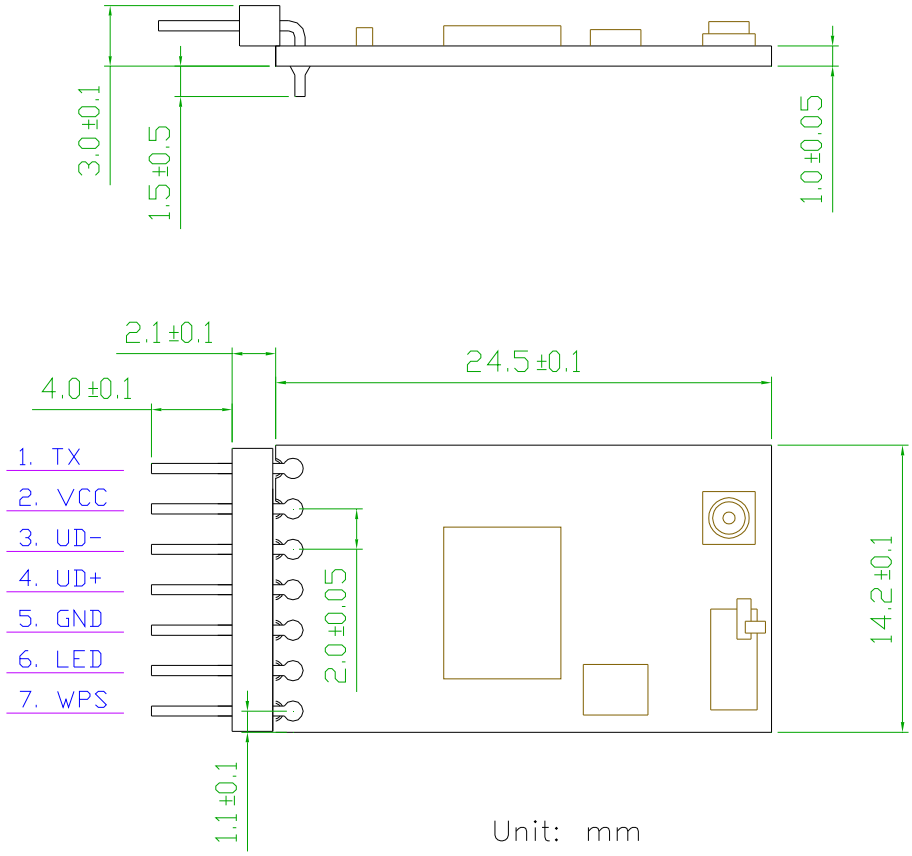


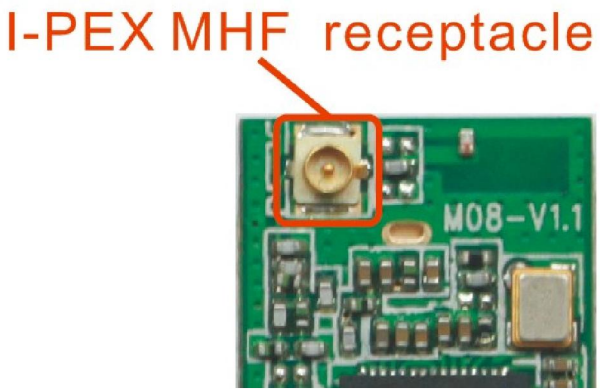
Fig 8.

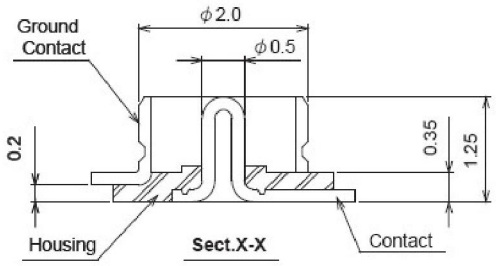
B. Pin Descriptions:

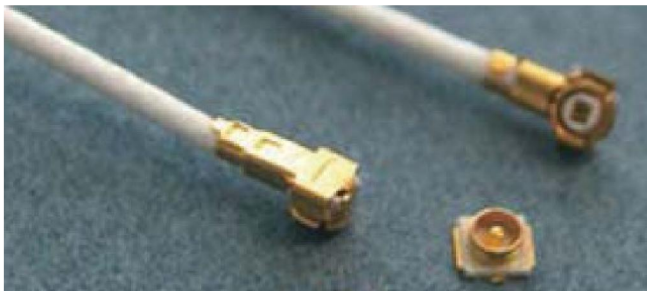
Pin	Name	Descriptions
1	TX	RF ON/OFF control; low level activated to OFF
2	VCC	5.0VDC or 3.3VDC, +/-5%
3	UD-	USB data-
4	UD+	USB data+
5	GND	Ground
6	LED	Indicate module working status
7	WPS	External to activate WPS function. Low level activated.

C. RF signal input and output:

a. A 50 ohm external antenna via an I-PEX receptacle. (Part No: 20279-001E-01)







The profile of the I-PEX connector

Fig 9.

Notes: When an external antenna is required via the I-PEX RF connector, the on board PCB antenna will be disconnected.

b. on-board ceramic antenna.

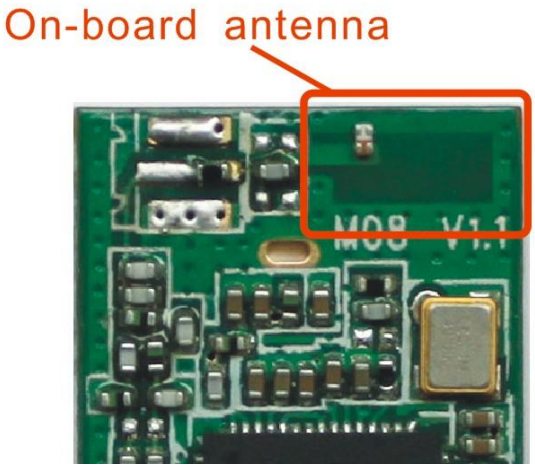


Fig 10.

Notes: *The on-baord antenna is designed with tiny space which affects the signal performance. If the on-board antenna does not satisafy user's application, please use other external antenna.*

c. External antenna via soldered RF cable.

Fig 11.

2.3 Software and system Information

Operation System	CPU Supplier	Driver
Linux 2.4/2.6	ARM, MIPSII	Available
Windows 2000/XP/Vista/7	X86 Platform	Available
Windows CE 5.0/6.0	ARM, MIPSII	Available
Mac OS X 10.3/10.4/10.5/10.6	N/A	Available

2.4. Design Concerns:

2.4.1 Power supply:

1) The input power can be 5.0VDC or 3.3VDC, please mentioned it when place an order.
2) The operation current of 5.0VDC power input will be different with that of 3.3V power input. The external power shall be well designed with enough capacity.
3) Should 3.3VDC power be selected, please be sure it's clean with low ripple; otherwise, the EMI or RF performance might be deteriorated.

2.4.12 Using pin headers:

1) The pins can be less than 7 pins, but the VCC, UD-, UD+, GND must be applied for USB interface communication.
2) Should the pin header connection be applied, please still keep enough metallic clear space around the antenna end of the module, this gives better antenna performance.

2.4.2 Using semi-holes:

1) When the module is designed to be soldered on a main PCB board directly, the area under the antenna end of the module should be keep clear of metallic components, connectors, vias, traces and other materials that can interfere with the radio signal. The

clear space requirements are refer to Fig 12 and Fig 13.

2) The module is not recommended using reflow oven process, hand soldering is suggested.

2.4.2 Clear place to use the module:

The following drawing shows a recommended footprint which can be a reference for a main PCB design.

The clear space requirement for on-board antenna is suit for either pin header or semi-holes connection application.

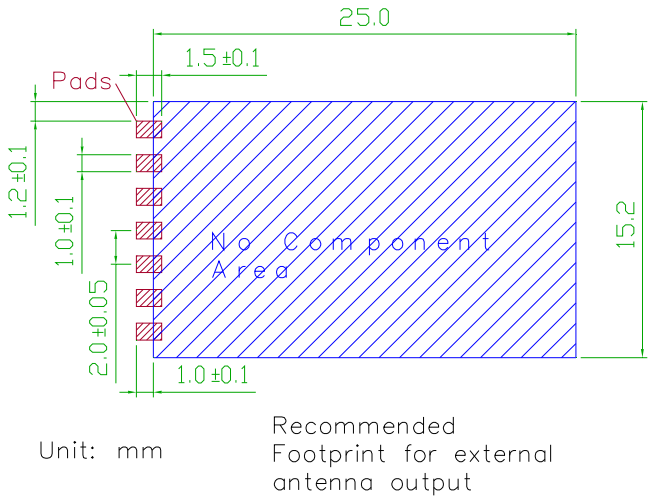


Fig 12.

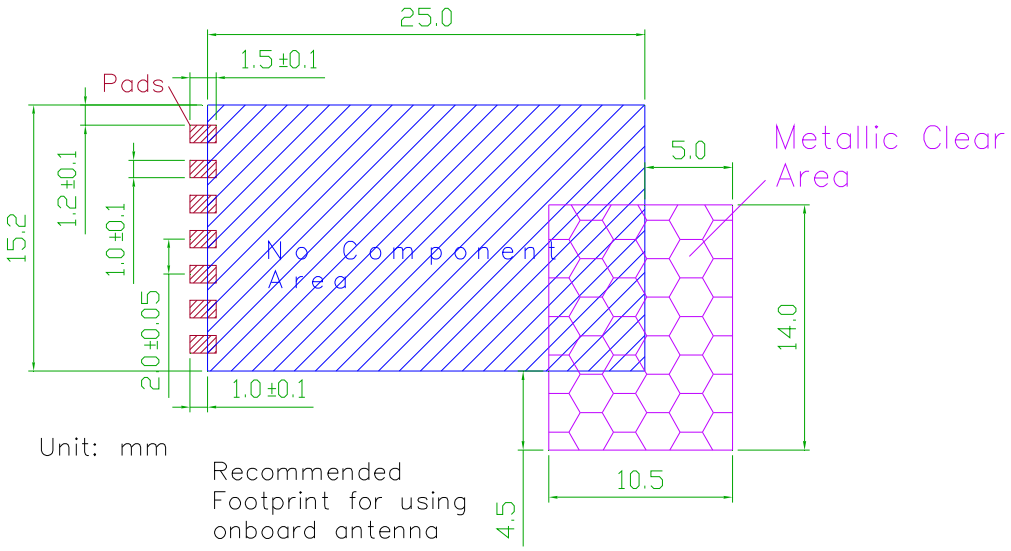


Fig 13.

2.5 Order information:

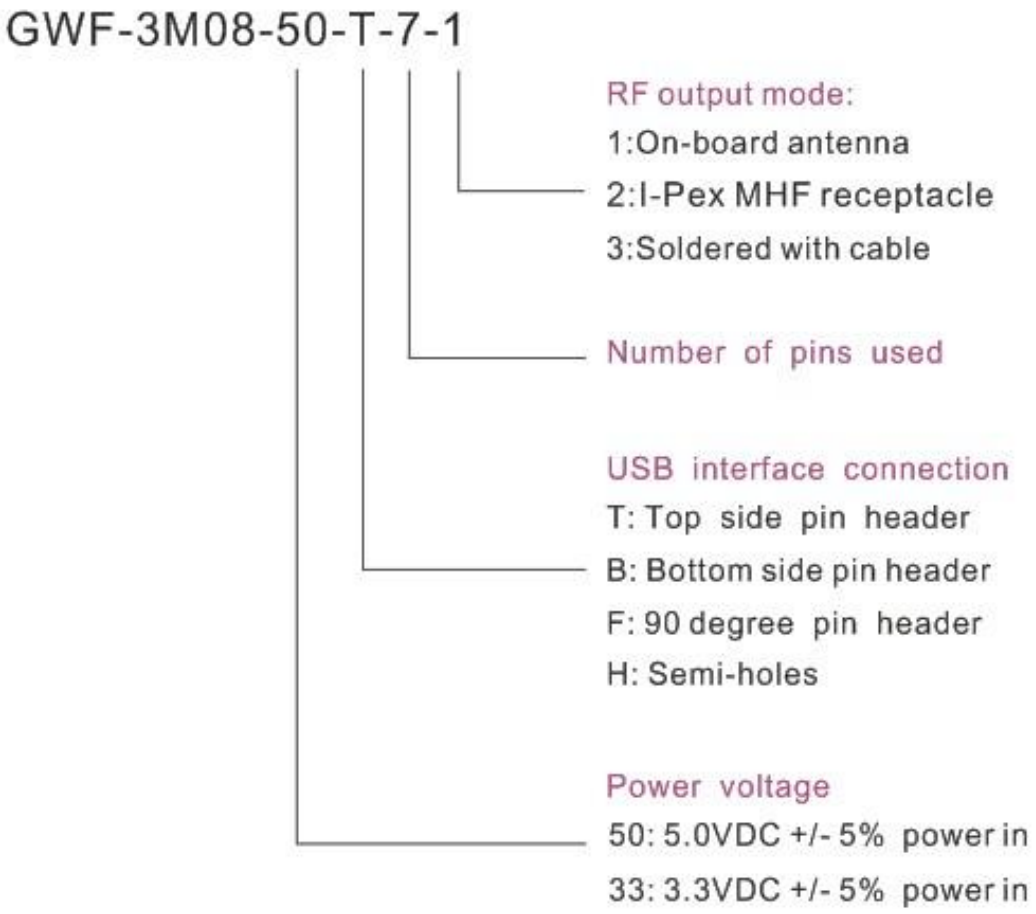


Fig 14

Due to the pin header can be different type and be upside down soldered, please specially mention the pin header type and its direction when ordering.

Should an external antenna connection is required; please mention the details while ordering.

3. Certificates and Approval

Certificate	Descriptions
FCC Part15	undergoing
CE	undergoing√
RoHS	RoHS process.

4. Environment

4.1 Temperature

4.1.1 Operating Temperature

Continuous reliable operation in ambient temperature: -10ºC to +60ºC.

4.1.2 Storage Temperature

The product is not damaged or degraded when keeping in -20ºC to +85ºC.

4.2 Humidity

4.2.1 Operating Humidity Conditions

The product should be capable of continuous reliable operation when subjected to relative humidity in the range of 20% to 80% (non-condensing) .

4.2.2 Non-Operating Humidity Conditions (including warehouse)

The product should not be damaged or degraded when kept in the place (where relative humidity range is in the range of 20% to 80%) for 48 hours.

5. Disclaimer

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