# Technical Specification

## Model : **XQ-** 02A

### 1、Product Description

The XQ-02A bidirectional signal amplification module is specially designed for various applications in the 2.4GHz frequency band. It's small size and convenient application make the design of the RF part of 2.4GHz wireless products extremely simple, greatly shortening the product development cycle and reducing product development costs!

Mainly used in various occasions with special requirements for 2.4G signal transmission distance and connection stability;

It can also be used in the field of Zigbee wireless data acquisition, and can enhance the coverage of Zigbee IoT signals in cooperation with Zigbee devices.

The module has a built-in intelligent transceiver discrimination circuit ( default working in the receiving state, amplifying the received signal ) ; when it is detected that the WiFi module starts to

transmit signals to the outside world, it will automatically switch to the transmitting state in a very short time to amplify the transmitted signal.

It can work normally without the control signal given by the main chip at all.

## 2、Specifications：

| | |
|---|---|
| Receive gain: | 10dB ±1.5dB |
| Transmit gain: | 11dB ±1.5dB |
| Noise Figure: | ≤3.0dB |
| Input power range: | 4dBm - 20dBm |
| Max Transmit power: | 33dBm ( 2W ) |
| Working status indication: | Receiving status: blue LED light off<br>Emission status: blue LED light on |
| Operating Voltage: | 5V |
| Average operating current: | ≤300mA |
| Dimensions : | 36mm*26mm*4.5mm ( L*W*H) |

Remark:

（1）The RF-IN port is connected to the RF signal output pin of the original circuit.

（2）The ANT port is connected to the antenna.

（3） The instantaneous current of this module can reach more than 500mA (the average working current is lower than 300mA ) when the module is in the transmitting state . Please ensure that the current margin of the power supply circuit is sufficient, and it is best to increase the capacity of the electrolytic capacitor at the 5V power supply port.

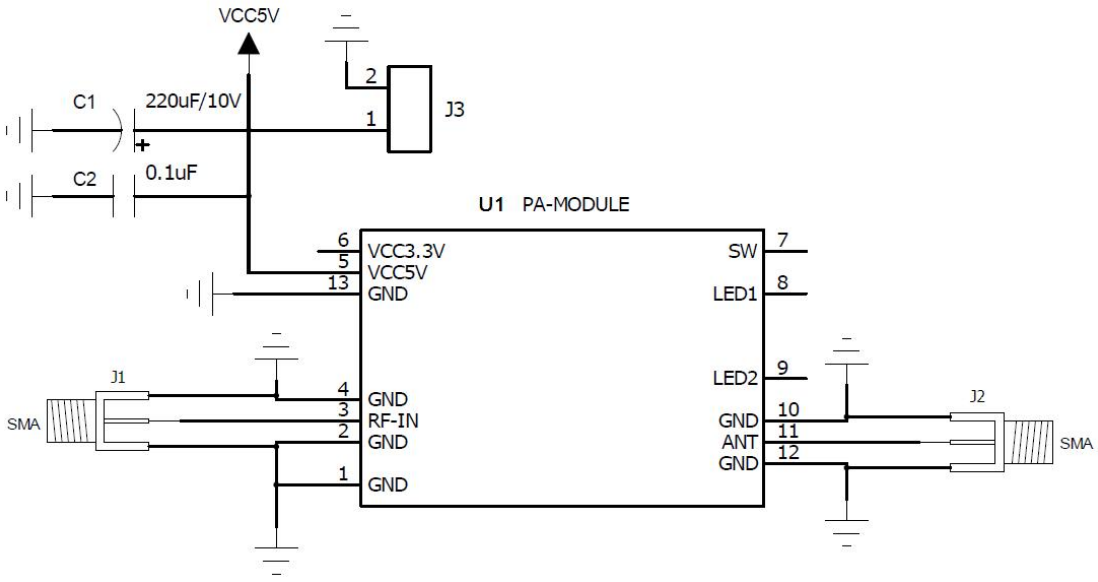
（4）Some vacant pins are reserved for some specific applications. In general applications, these pins only need to be left floating.

（5）This module can support other circuits to control the sending and receiving switching (not supported by default, it can be supported after the internal parameters of the module are adjusted), the SW pin in the above figure is reserved for this function (this pin needs to be set high when transmitting The level is 3.3V, and this pin needs to be set to a low level of 0V when receiving ) . If you need to use this external control function, please contact us.

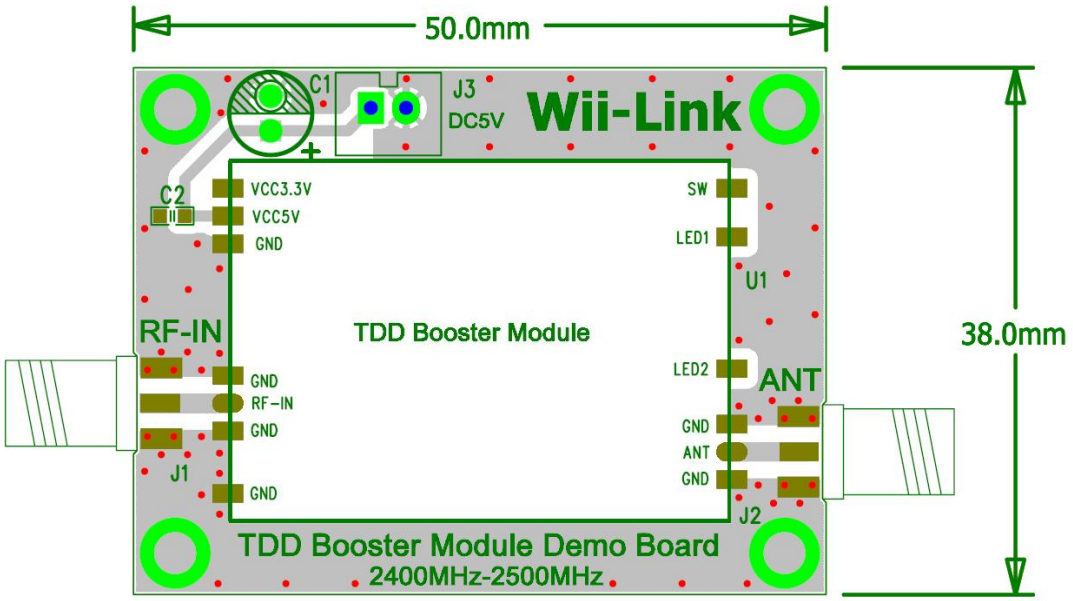
Module Front View

## 4、reference design

This module is extremely simple to use, with very few peripheral components, and it only needs to supply +5v power to the module to work normally.



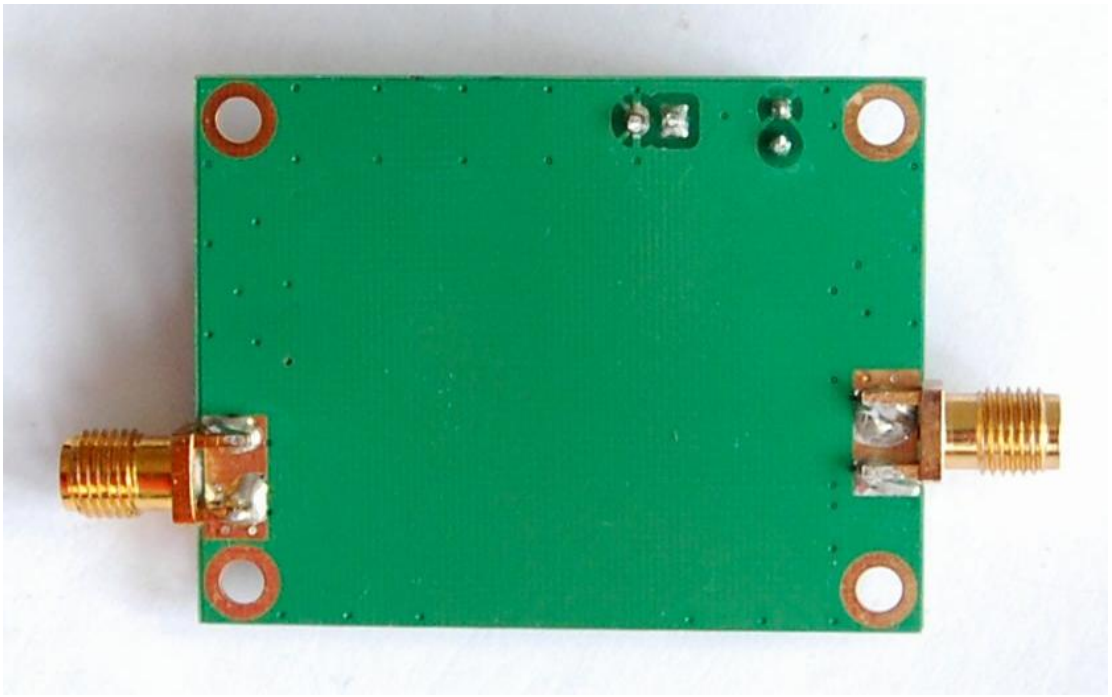

Evaluation Board Reference Schematic




Evaluation Board PCB Layout Schematic

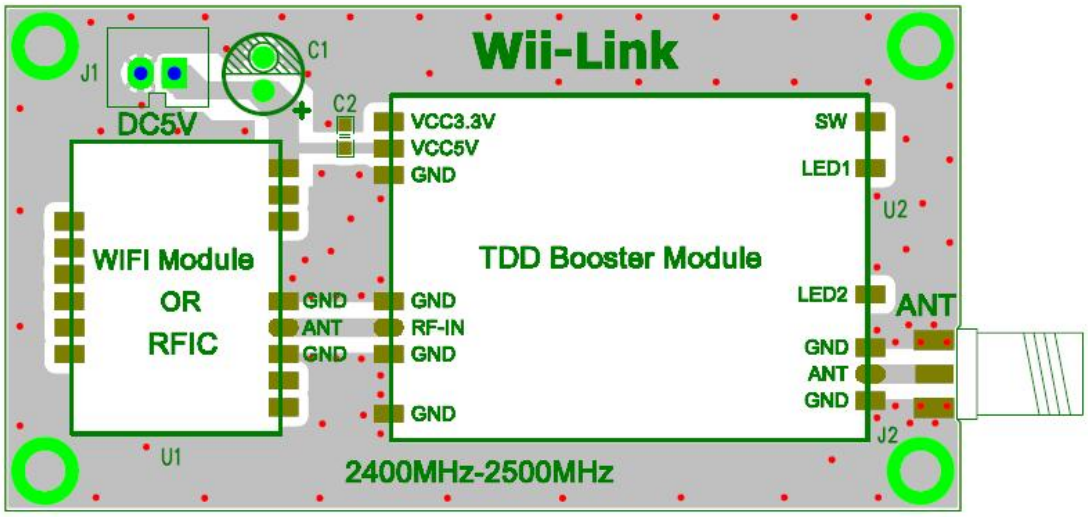
Notice:

This layout diagram is only a screenshot of the Top layer, and the Bottom layer needs to be a complete floor, as shown in the following physical diagram:

## 一. Application example

**(1). The module is mounted on the baseboard as a SMD component, and other RF circuits on the baseboard are directly connected to each RF port of the module through the RF microstrip line:**




In the above picture, there are other RF circuits (such as Wi-Fi modules or other 2.4GHz wireless chips) on the layout on the bottom plate. The original antenna (ANT) signal pins of this part of the circuit are directly connected to the RF of this module through a 50-ohm microstrip line. -The IN pin is docked, and the ANT port of this module is used as the final external antenna (ANT) port.

**(2). Use this module as an independent RF signal amplifier board, connect the power cable and ground wire, and connect the RF port to other components (such as Wi-Fi module, antenna, etc.) through thin shielded cables:**

The above picture is only a schematic diagram of RF cable welding, please be sure to connect +5V power supply and ground wire in actual use.