

Shenzhen Waytronic Electronic Co., Ltd

# **WT4101A-C01 microwave radar induction module specification**

Version: V1.01



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## Version Update

| Version Number | Description of Changes | Date of Modification |
|----------------|------------------------|----------------------|
| V1.00          | Original Version       | 2024-08-01           |
| V1.01          | Module Optimization    | 2025-07-08           |

# 1. Product Introduction

## 1.1 Product Introduction

Microwave radar is an electronic device that uses electromagnetic waves in the microwave band to detect and identify moving targets. Its core principle involves transmitting microwave signals and receiving the echoes reflected from the targets. By analyzing information such as the time delay, frequency shift, and phase difference of the echoes, it can determine and sense the presence of the targets.



## 1.2 Product Features

- Small size and low power consumption.
- Strong resistance to environmental interference; unaffected by temperature, humidity, airflow, dust, noise, brightness, and darkness.
- Strong penetration ability; can penetrate acrylic, glass, and thin non-metallic materials.
- Built-in MCU with multiple embedded digital filtering algorithms, including 50Hz/60Hz power frequency interference suppression and WiFi and other wireless communication interference algorithms, providing enhanced anti-interference capability.

## 2. Product Features and Specifications

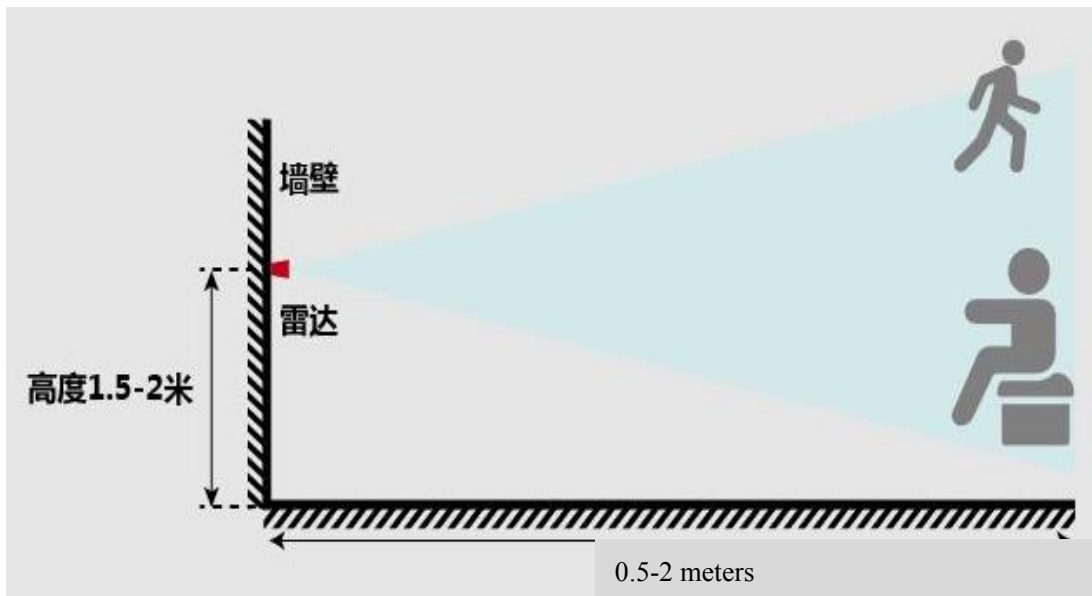
### 2.1 Product Features

- Detection range: 0.5 to 2 meters (frontal direction)
- Transmit power: 3 dBm
- Operating voltage: 2.8V ~ 3.5V
- Operating current: Default 880  $\mu$ A, 9.6 mA in high-power mode
- Integrated 50Hz/60Hz power frequency interference suppression algorithm
- Integrated WiFi and other wireless communication interference suppression algorithms
- Integrated light sensing function with adjustable sensitivity
- Module dimensions: 18mm  $\times$  12mm  $\times$  1.6mm
- Operating temperature: -20°C to 85°C

### 2.2 Output Characteristics

- Output signal: IO/PWM
- Output voltage: 0/3.3V
- Output delay: 3s

## 2.3 Detection Schematic Diagram



Looking at the detection diagram

### Remarks :

The test distance range is tested in the indoor installation environment. The height of the tester is 170cm, the weight is 65-75kg, and the walking speed is 1m/s. The distance may vary in different installation scenarios, and the actual test is subject to.

## 3. Application Area

### Smart Home :

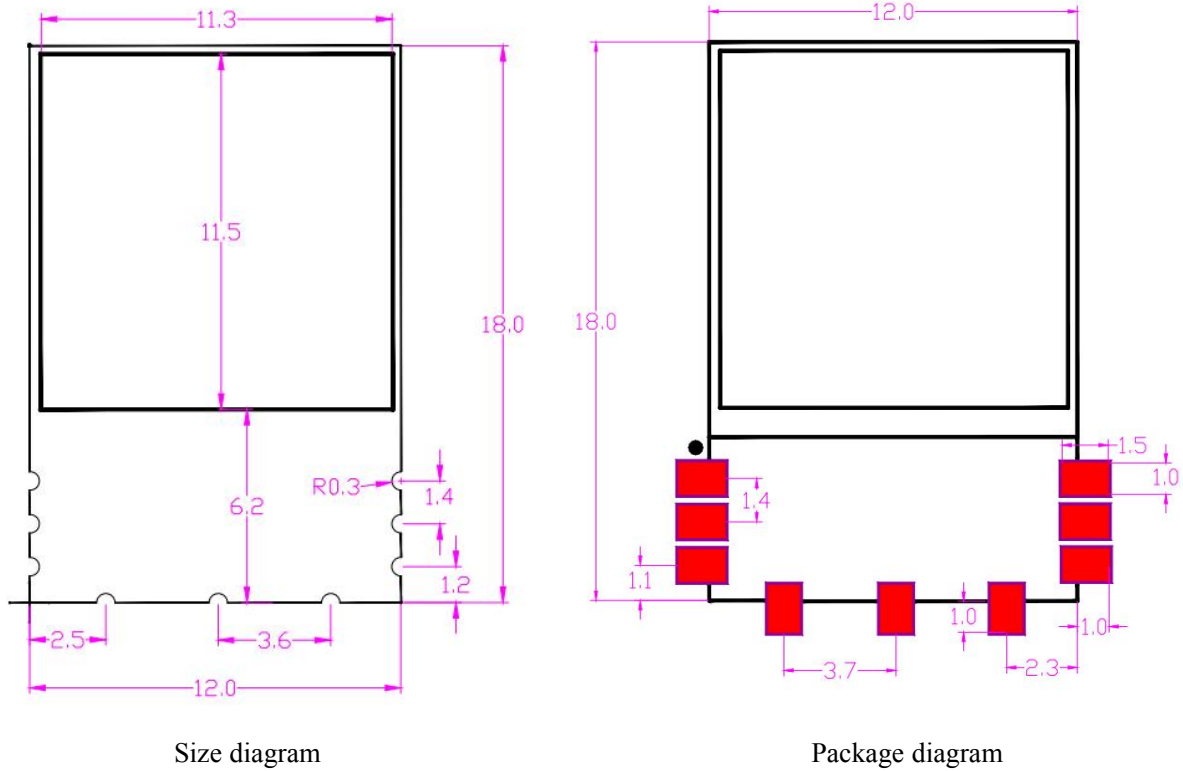
Perceive human movement to wake up panels, switches, door locks, doorbells, etc.;

### Smart Security:

Inductive access control, induction alarm, trigger linkage applications and cameras.

## 4. Dimension Diagram and Pin Description

### 4.1 Size diagram and Package Diagram (unit: mm, tolerance $\pm 0.2$ )

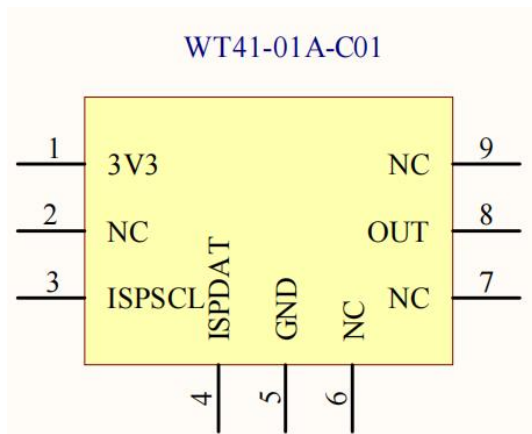


### 4.2 Package Diagram

| Order number | Pin    | Explain               |
|--------------|--------|-----------------------|
| 1            | 3.3V   | Power supply 2.8-3.5V |
| 2            | NC     |                       |
| 3            | ISPSCL | Burn the foot         |
| 4            | ISPSCL | Burn the foot         |
| 5            | GND    | landing               |

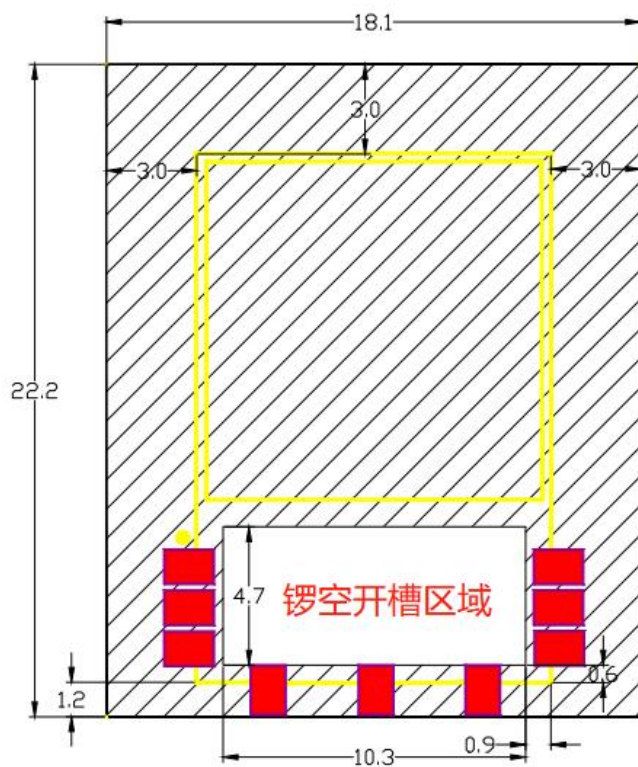


|   |     |               |
|---|-----|---------------|
| 6 | NC  |               |
| 7 | NC  |               |
| 8 | OUT | Analog output |
| 9 | NC  |               |

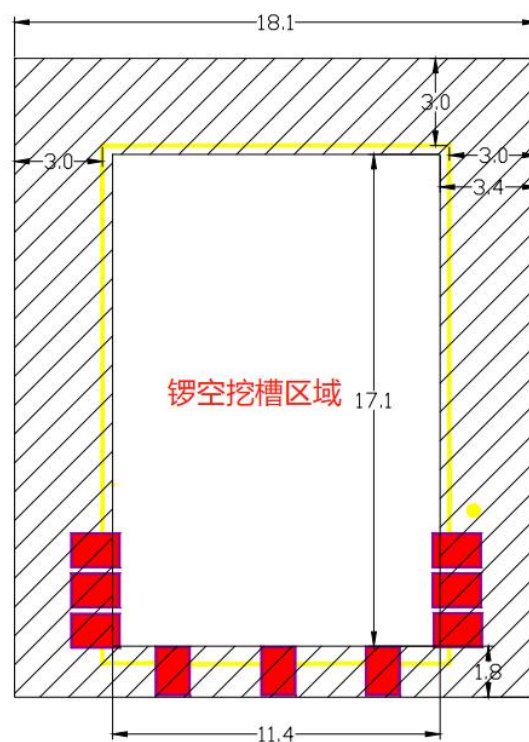


## 5. Precautions During Use

1. When installing the module patch, the PCB area corresponding to the antenna area on the base plate needs to be hollowed out. As shown in the figure below, the white box is the hollowed-out area, and the edge of the hollowed-out area is about 2MM away from the module.
2. The module has a good penetration effect on plastic and wood materials. It is recommended not to install metal, glass or ceramic in front of the antenna to avoid affecting the actual induction effect.
3. For power supply, use a power supply with small ripple to avoid interference and false alarm of the sensor. It is recommended that the power supply ripple should be guaranteed within 50mV-100mV.
4. When multiple radar sensors are applied in the same site, it is recommended that the installation distance between products should be more than 2m. If the installation distance is too close, some sensors may occasionally misreport.
5. The antenna radiation surface should avoid the coverage of large current circuits, so as not to interfere with the normal radiation of the antenna, resulting in false alarm or change of induction range.
6. If the microwave sensor is used together with wireless communication modules (NB, Bluetooth, WIF1, 2.4G module), the distance should be separated. It is recommended to keep a distance of more than 1m between the installation and high-power wireless communication equipment such as router and wireless hotspot.
7. The antenna surface of the microwave sensor should avoid facing the drive power supply, and try to stay away from the rectifier bridge, transformer, switching tube and other high-power components of the drive power supply, so as not to cause false alarm.



Front installation



Side installation