
# SILION SIM3200 UHF RFID Module User Manual



Contents



## SILION SIM3200 UHF RFID Module


### Specifications

- **Frequency range:** Customizable, 840 MHz
- **Output power:** 5 dBm
- **Channel isolation:** 32 dB
- **Reception sensitivity:** -81 dBm
- **Inventory label speed:** Up to 900 tags/s
- **Operating temperature range:** -20°C to +65°C
- **Power supply voltage:** 3.6 V

#### Product Introduction

The SIM3200 is equipped with the new generation E710 RF chip from Impinj, offering high sensitivity, wide reading range, low power consumption, and strong performance. It provides super tag reading performance with fast and stable tag reading, multi-tag anti-collision capability, and long reading distances.

- **New Generation E710 RF Chip:** Ensures high sensitivity, wide reading range, low power consumption, and strong performance.
- **Super Tag Reading Performance:** Fast tag reading speed, stable reading, strong multi-tag anti-collision ability, and long reading distances.
- **Lower Power Consumption:** Operates in a low voltage mode (3.6V) with a maximum power output of 6.5W and standby power consumption of only 0.25W.
- **Multiple Monitoring Functions:** Supports label RSSI detection, antenna connection status detection, and

working temperature detection for efficient use.
- **Excellent Stability:** Works in temperatures from -20°C to +65°C and humidity of 5% – 95%, suitable for various working environments.

## Product Usage Instructions

- Ensure the power supply voltage is within the specified range (3.6V).
- Connect the power source to the designated connector on the device.
- Connect the appropriate antenna to the device following the provided pin configuration and function description in the manual.

### Operating Temperature

- Operate the device within the temperature range of -20°C to +65°C for optimal performance and longevity.

## FAQ

- **Q:** What is the maximum tag reading speed of the SIM3200?
- **A:** The SIM3200 can achieve a tag reading speed of up to 900 tags per second.
- **Q:** What is the power supply voltage requirement for the SIM3200?
- **A:** The SIM3200 requires a power supply voltage of 3.6V for normal operation.

### A revision history

| The file number | The version number | Artificial person / The modifier | Proposed/revised date | Change the reason | Change the content |
|---|---|---|---|---|---|
| | V1.0 | | 2021-10-16 | The initial release | No |
| | | | | | |

## Product introduction

The UHF high-power module SIM3200 is a high-performance UHF RFID read-write module developed by the technology team of Xinliangzhan based on the new generation of IMPINJ RF chip E710. It is specially designed to meet the requirements of high-performance RFID handheld devices, and mobile or portable RFID devices. The SIM3200 module provides one MMCX antenna interface, supporting up to 33 dBm RF output. This module has the characteristics of low power consumption, small size, and high sensitivity. Combined with the advanced multi-tag algorithm of Xinliangzhan, it is a priority for RFID mobile devices.

## Product Features

### New generation E710 RF chip

- Impinj’s new generation E710 UHF RF reader chip is adopted, which has high sensitivity, wide reading range, low power consumption, and strong performance.

### Super tag reading performance

- The tag reading speed is fast, the reading is stable, the multi-tag anti-collision ability is strong, and the reading distance is long.
- When using the 4dBi four-wall spiral antenna, the reading distance is more than 9 meters, and the multi-tag reading speed is fast, up to 900 pieces/second.

**Lower power consumption**

- It can work normally in the 3.6V low voltage mode.
- The maximum power output power consumption is 6.5W, and the standby power consumption is only 0.25W.
- The excellent low power consumption design makes the product have a longer service life.

**Multiple monitoring functions and excellent stability**
The module supports label RSSI detection, antenna connection status detection, and working temperature detection. Multiple data detection is more convenient for users to use efficiently; The module can work stably in the ambient temperature of -20℃ to+65℃, and supports stable operation in the ambient humidity of 5% – 95%. It has high efficiency and stable performance and can be applied to a variety of harsh working environments.

## Electrical characteristics

| parameter | conditions | min | type | max | unit |
|---|---|---|---|---|---|
| Frequency | | | | | |
| Frequency range | According Customization | 840 | | 960 | MHz |
| Frequency step value | According Customization | | 250/500 | | KHz |
| **output** | | | | | |
| output power | | 5 | | 33 | dBm |
| Output power accuracy | | | +/- 1 | | dB |
| Flatness of output power | | | +/- 0.2 | | dB |
| Channel isolation | | | 32 | | dB |
| label | | | | | |
| Reception sensitivity | Profile1 | | -81 | | dBm |
| Inventory label peak speed | | | 900 | | tag/s |
| Label cache | 96 bit EPC | | 1000 | 1200 | tag |
| Logic level | | | | | |
| VIL，Input Low Voltage | | -0.5 | | 0.8 | V |
| VIH，Input High Voltage | | 2 | | Vdd+0.5 | V |
| Temperature range | | | | | |
| Storage temperature | | -40 | | 85 | ℃ |
| Working temperature | | -20 | | 65 | ℃ |
| The input power | | | | | |
| The power supply voltage | | 3.6 | 5.0 | 5.25 | V |
| Can make model | | | 40 | | mA |
| Standby mode | | | 50 | | mA |
| Read the card model | Pout=30dBm, 50 Ω Load | | 1300 | | mA |

The current will vary depending on the load antenna.

**Absolute maximum rated parameter**

| parameter | rating |
|---|---|
| power supply voltage | +5V |
| Digital I/O Voltage to GND | 3.3V |
| Working temperature | -20 ~ +65°C |
| Storage temperature | -40 ~ +85°C |

**Pin configuration and function description**


**Definition of FPC connector**

| The serial n umber | define |
|---|---|
| **1** | VCC(+3.6 – 5V) |
| **2** | VCC(+3.6 – 5V) |
| **3** | GND |
| **4** | GND |
| **5** | EN module power enable LOW(POWER DOWN) HIGH&DISCONNECT(ACTIVE) |
| **6** | Digital Output 2 (GPIO OUT2 |

| | |
|---|---|
| **7** | Digital Input 1  GPIO IN1 |
| **8** | Digital Input 2  GPIO IN2 |
| **9** | RXD (DATA INPUT  TTL level) |
| **10** | TXD (DATA OUTPUT  TTL level) |
| **11** | RST (LOW ACTIVE  Please hang in the air if not used) |
| **12** | Digital Output 1  GPIO OUT1 |

**Definition of bottom welding point**

| The serial number | define |
|---|---|
| **1** | GND |
| **2** | GND |
| **3** | VCC(+3.6 – 5V) |
| **4** | VCC(+3.6 – 5V) |
| **5** | EN module power enable LOW(POWER DOWN) HIGH&DISCONNECT(ACTIVE) |
| **6** | RXD (DATA INPUT  TTL level) |
| **7** | TXD (DATA OUTPUT  TTL level) |
| **8** | RST (LOW ACTIVE  Please hang in the air if not used) |
| **9** | Digital Output 1  GPIO OUT1 |

## The application of information

### The input power

- It is recommended to filter the VCC port with a capacitance of 100~470uF to reduce the traction to the power supply caused by the quick opening and closing of the power amplifier during RF transmission. 0.1uF/100pF capacitors filter out power supply ripple in different frequency bands.
- Since the current is high when the module is working at full power, the module may not work stably when the battery is low when the handheld device is powered directly by the battery, so it is recommended to boost the VCC to 5V.

### Enable or reset

- EN is enabled, with built-in pull-up resistance (100k) to VCC. When the module is powered on at a high level or suspended, the module will be powered off when it is connected to a low level (low-level l should be less than 0.4V, the high level should be greater than 0.9V, and less than VCC).
- Rst reset, built-in pull-up resistance to 3.3V, reset when connected to a low level.

### GPIO interface

- Input:
- Logic low  0.8V minimum 0V
- Logic high  2 V Maximum 3.3 V
- Output:
- Logic Low maximum 0.4V
- Logic High has a minimum of 2.9V and a maximum of 3.3V
- The maximum output current of the I/o port is 5mA.

**The antenna connection**

- The output impedance of the antenna port is 50 ohms, and the antenna standing wave ratio is recommended to be less than 1.5. A better antenna standing wave ratio can get a better card reading effect.

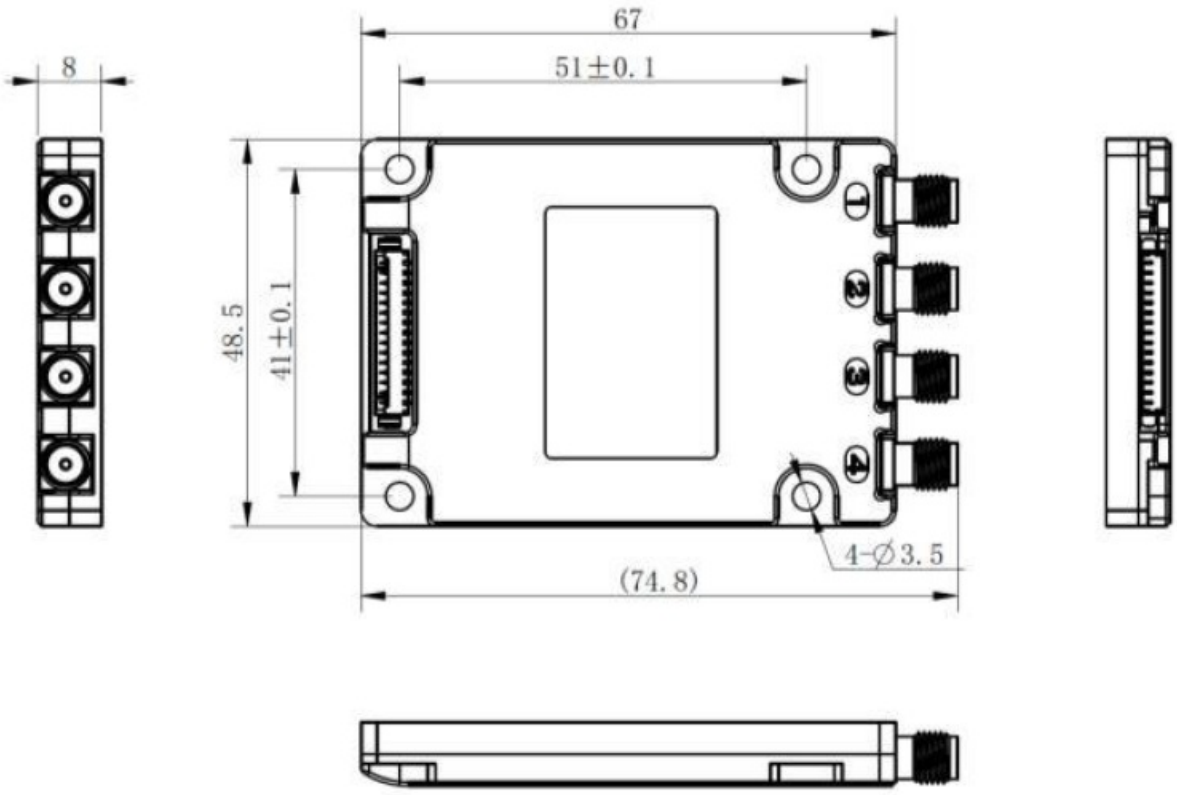
**The communication interface (RDX/txD)**

- The communication interfaces RXD and TXD are at TTL level, and the default baud rate is 115200bps

**Physical properties**

- Product size 74.8mm × 48.5mm × 8mm
- weight 56g

## Dimension




## FCC STATEMENT

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.

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, according to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used under 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 the receiver.
- Connect the equipment to 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.

This equipment complies with FCC 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 & your body.

This product complies with the radio interference requirements of the European Community.

- Product name: RFID module
- Product model: SIM3200
- Manufacturer: Beijing Silicon Technology Corp., Ltd.
- Frequency Range: 865.7MHZ~867.5MHZ
- Max. Transmit Power: 30dBm Max

**SIMPLIFIED EU DECLARATION OF CONFORMITY**

- The simplified EU declaration of conformity referred to in Article 10(9) shall be provided as follows:
- Hereby, Beijing Silicon Technology Corp., Ltd. declares that radio equipment type SIM3200 complies with Directive 2014/53/EU, and this product is allowed to be used in all EU member states.
- The full text of the EU Declaration of Conformity is available at the following company website: **https://www.silion.com.cn**
- This product can be used across EU member states.
- EUT Operating temperature: -25~65℃

## CONTACT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- Tel: +86 010-62153842/62153840
- **http://www.silion.com.cn**


## Documents / Resources

| | |
|---|---|
|  | **SILION SIM3200 UHF RFID Module** [pdf] User Manual<br>SIM3200, SIM3200 UHF RFID Module, UHF RFID Module, RFID Module, Module |

## References

- **-RFID |E710|E510|E310 RFID**
- **User Manual**