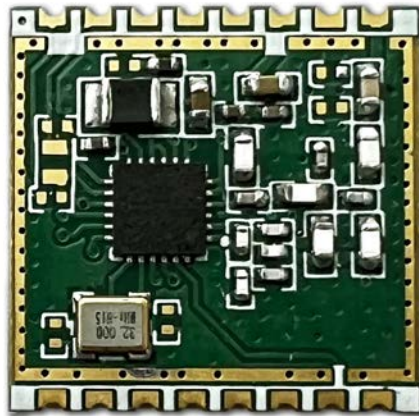


# **RFM310HW/RFM310W**

## **Wireless Transceiver Module**



### **Overview**

RFM310HW/RFM310W module is a low -power, high- performance, OOK, (G)FSK, 4(G)FSK RF transceiver module for wireless applications. It supports a variety of data packet formats and encoding and decoding methods, which can flexibly meet various application requirements. Rich GPIO and interrupt configuration, Duty-Cycle operation mode, channel monitoring, high-precision RSSI, low-voltage detection, power-on reset, low-frequency clock output, fast frequency hopping, squelch output and other functions, making the application more flexible.

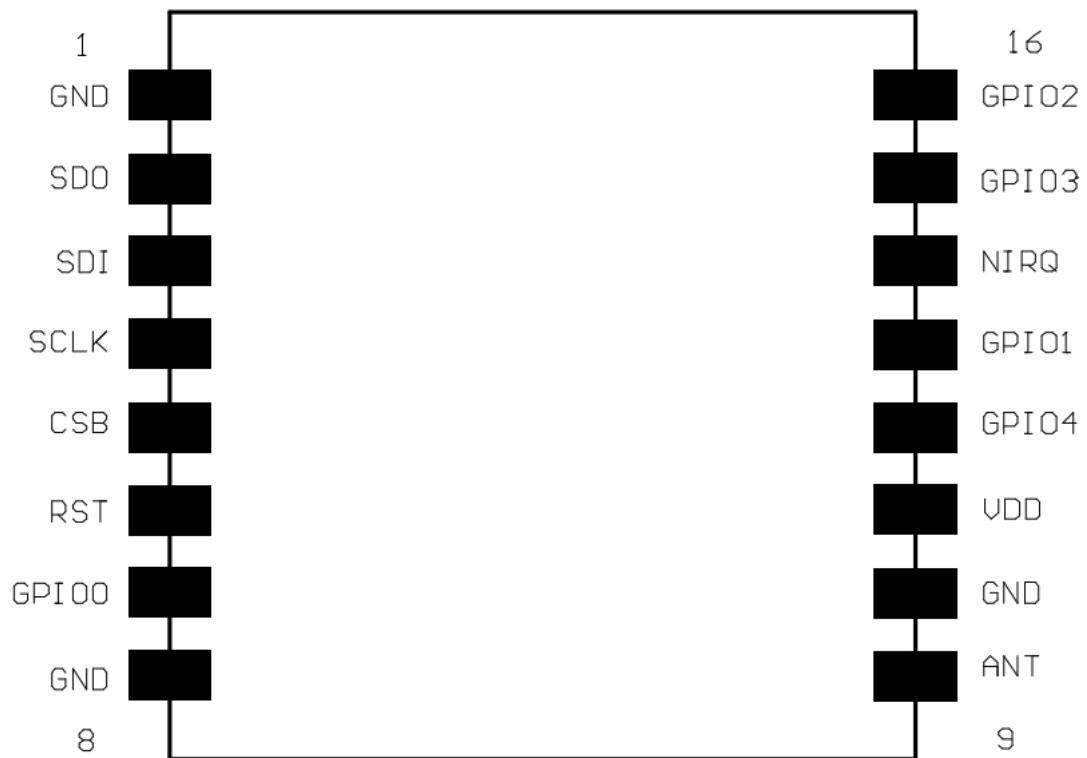
### **Features**

- Super strong anti-interference ability, suitable for use in complex interference environments
- Receiving Sensitivity: -114dBm, DR=10Kbps, DEV=5KHz @433.92MHz
- Working Frequency: 433.92/868/915MHz
- Working Voltage: 1.8V-3.6V
- Output Power: +20dBm @RFM310H, +13dBm @RFM310
- Transmitting Current: 82mA @20dBm @433.92MHz, 28mA @13dBm @433.92MHz
- Receiving Current: 10mA (DCDC Enable) @433.92MHz
- Quick and stable automatic frequency control (AFC)
- Quick and accurate valid signal detection (PJD, RSSI)
- Automatic ACK and re-sending
- 4-wire SPI interface
- Supporting both direct and packet modes

## Applications

- Automatic meter reading
- Home security and building automation
- ISM-band data communication
- Industrial monitoring and control
- Remote control and security system
- Remote key entry
- Wireless sensor node
- Tag reader and writer

## Pin Arrangement



**Figure 1. RFM310HW/RFM310W Module Pin Arrangement (Top View)**

**Pin Description****Table 1. RFM310HW/RFM310W Module Pin Description**

| <b>Pin #</b> | <b>Pin Name</b> | <b>Description</b> |
|--------------|-----------------|--------------------|
| 1            | GND             | GND                |
| 2            | SDO             | SPI data output    |
| 3            | SDI             | SPI data input     |
| 4            | SCLK            | SPI clock          |
| 5            | CSB             | Chip select bar    |
| 6            | GPIO5/RST       | IO, Configurable   |
| 7            | GPIO0           | IO, Configurable   |
| 8            | GND             | GND                |
| 9            | ANT             | Antenna port       |
| 10           | GND             | GND                |
| 11,          | VDD             | Power supply       |
| 12           | GPIO4           | IO, Configurable   |
| 13           | GPIO1           | IO, Configurable   |
| 14           | NIRQ            | IO, Configurable   |
| 15           | GPIO3           | IO, Configurable   |
| 16           | GPIO2           | IO, Configurable   |

## Electrical Specifications

Test conditions: working voltage 3.3V, working temperature 25°C.

**Table 2. RFM310H/RFM310 Module Electrical Specifications**

| Parameter             | Symbol             | Condition                            | Min. | Typ.   | Max. | Unit |
|-----------------------|--------------------|--------------------------------------|------|--------|------|------|
| Working Frequency     | F <sub>C</sub>     | RFM310HW/RFM310W-433S2               |      | 433.92 |      | MHz  |
|                       |                    | RFM310HW/RFM310W-868S2               |      | 868    |      |      |
|                       |                    | RFM310HW/RFM310W-915S2               |      | 915    |      |      |
| Receiving Sensitivity | S                  | FSK: DR=10Kbps, DEV=5KHz, @433.92MHz |      | -114   |      | dBm  |
|                       |                    | FSK: DR=10Kbps, DEV=5KHz, @868MHz    |      | -109   |      |      |
|                       |                    | FSK: DR=10Kbps, DEV=5KHz, @915MHz    |      | -109   |      |      |
| Working Voltage       | V <sub>DD</sub>    |                                      | 1.8  | 3.3    | 3.6  | V    |
| Receiving Current     | I <sub>Rx</sub>    | 433.92MHz DCDC Enable                |      | 10     |      | mA   |
|                       |                    | 868MHz DCDC Enable                   |      | 10.4   |      |      |
|                       |                    | 915MHz DCDC Enable                   |      | 10.4   |      |      |
| Transmitting Current  | I <sub>Tx</sub>    | 433.92MHz DCDC Enable @20dBm         |      | 82     |      | mA   |
|                       |                    | 868MHz DCDC Enable @20dBm            |      | 92     |      |      |
|                       |                    | 915MHz DCDC Enable @20Bbm            |      | 93     |      |      |
| Transmitting Current  | I <sub>Tx</sub>    | 433.92MHz DCDC Enable @13dBm         |      | 28     |      | mA   |
|                       |                    | 868MHz DCDC Enable @13dBm            |      | 32     |      |      |
|                       |                    | 915MHz DCDC Enable @13dBm            |      | 33     |      |      |
| Sleep Current         | I <sub>Sleep</sub> | Duty Cycle=OFF                       |      | 0.6    |      | uA   |
| Working Temperature   | T <sub>OP</sub>    |                                      | -40  |        | +85  | °C   |

**Note: The module operating frequency needs to be modified through RFPDKF software configuration. The default value of Xtal Cap Load is 2. When the 433.92MHz/868MHz/915MHz frequency is used, this value needs to be modified to 31.**

### Dimensions

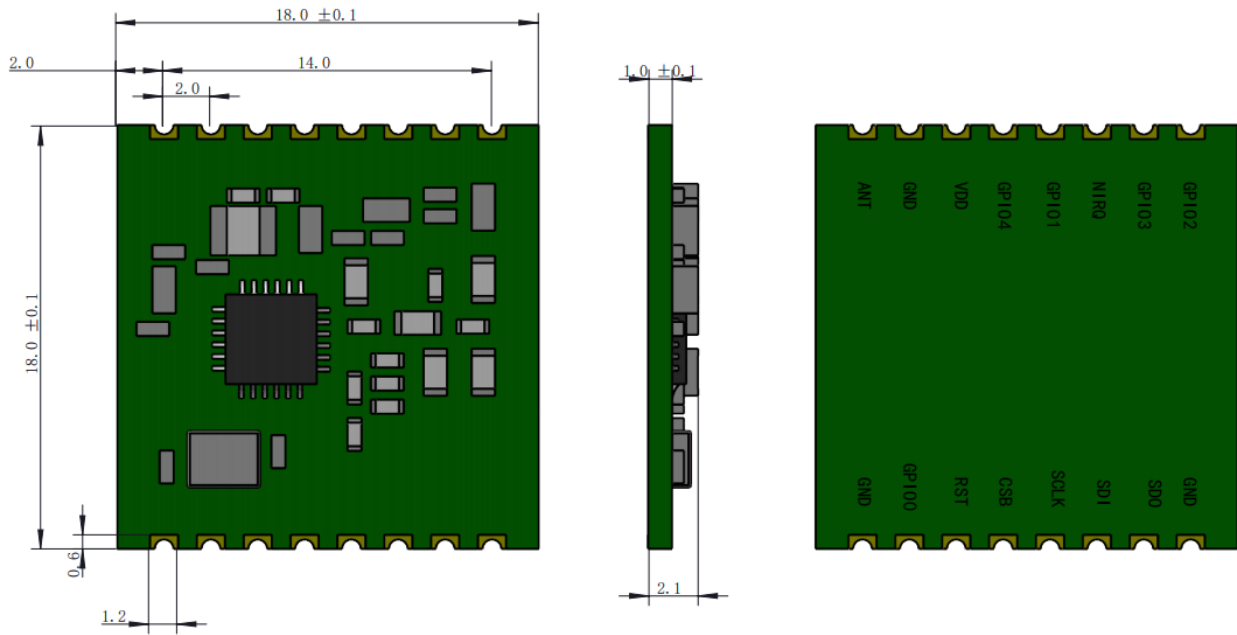
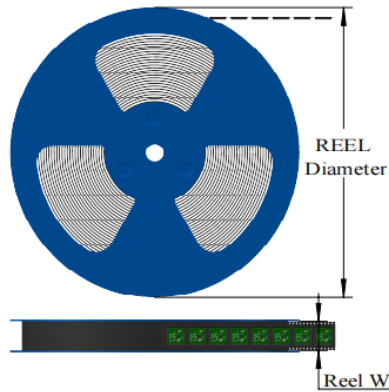


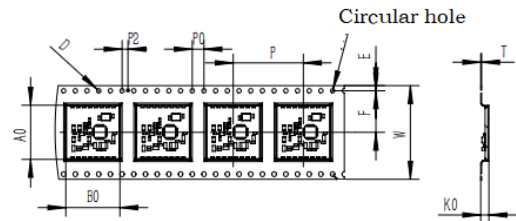
Figure 2. RFM310HW/RFM310W Module Dimensions (Unit: mm)

### Tape & Reel Specification: 940pcs per reel

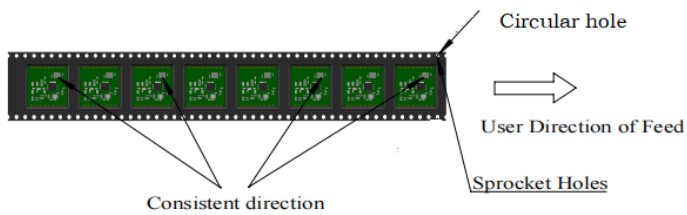
TAPE AND REEL INFORMATION



TAPE DIMENSIONS



QUADRANT ASSIGNMENTS FOR ORIENTATION IN TAPE



| Device  | SPQ | Reel diameter (mm) | Reel width (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P (mm) | W (mm) | D0 (mm) | F (mm) | T (mm) | E (mm) | P0 (mm) | P2 (mm) | Pin1 Quad |
|---------|-----|--------------------|-----------------|---------|---------|---------|--------|--------|---------|--------|--------|--------|---------|---------|-----------|
| RFM310H | 900 | 330                | 33.1            | 18.5    | 18.5    | 2.8     | 24     | 32     | 1.5     | 14.2   | 0.3    | 1.75   | 4       | 2       |           |

### Ordering Information

| Part Number                | Working Frequency |
|----------------------------|-------------------|
| RFM310HW/RFM310W-433S2 (R) | 433.92MHz         |
| RFM310HW/RFM310W-868S2 (R) | 868MHz            |
| RFM310HW/RFM310W-915S2 (R) | 915MHz            |