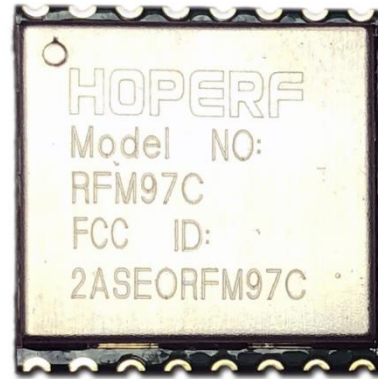

915MHz LoRa/FSK Transceiver Module

General Description

RFM97CW Sub-GHz radio transceivers are ideal for long range wireless applications. With high integration, the RFM97CW simplifies the peripheral materials needed in system design. The sensitivity up to -138dBm that optimizes link performance for applications. In addition, the RFM97CW also supports the function of duty cycle operation mode, channel listening, high-precision RSSI, power on reset, squelch output, etc., which makes the application design more flexible and realizes product differentiation design. The working voltage of RFM97CW is from 1.8V to 3.7V. When the sensitivity of -138dBm is reached, only 9.9mA current is consumed, and the ultra-low power consumption receiving mode can further reduce the receiving power consumption of the chip.



RFM97CW

Ordering Information

| Part No. | Working Frequency |
|---------------|-------------------|
| RFM97CW-915S2 | 915MHz |

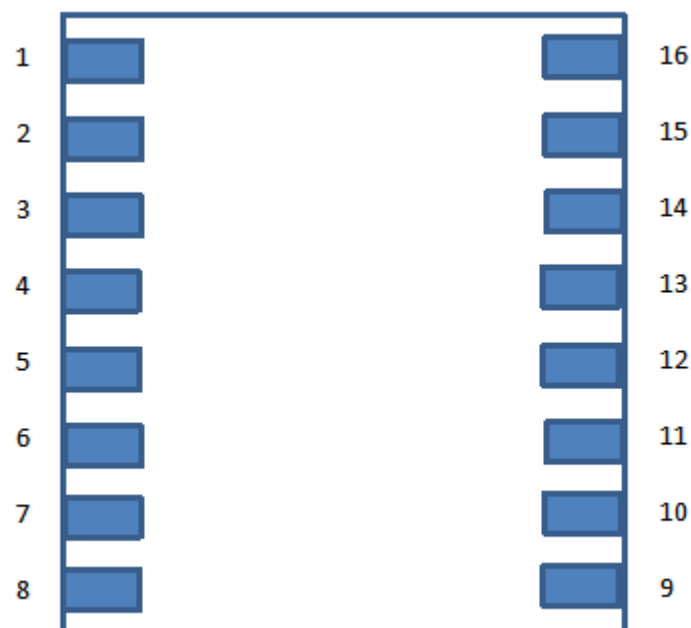
Product Features

- Working Frequency: 915MHz
- Modulation and Demodulation Mode: LoRa
- Data Rate: 0.018~37.5 kbps
- Sensitivity: -138dBm, BW=125KHz, SF=12
- Voltage Range: 1.8 ~3.7 V
- Receiving Current: 12.5 mA @ BW=125KHz
- Support ultra-low power consumption receiving mode
- Sleeping Current:
 - * 160 nA, DutyCycle = OFF
 - * 600 nA, DutyCycle = ON
 - * 4-wire SPI Interface
- Support fully automatic independent working mode

Applications

- Automated Meter Reading
- Home and Building Automation
- ISM Band Data Communication
- Industrial Monitoring and Control
- Wireless Alarm and Security Systems
- Remote Control Application
- Intelligent Instrument
- Supply Chain and Logistics
- Intelligent Agriculture
- Smart City
- Retail Industry
- Asset Tracking
- Intelligent Streetlight
- Intelligent Parking
- Environmental Monitoring
- Health Monitoring

Module Pin Information



Pic 1. RFM97CW Front View

Table1. RFM97CW Module Pin Definition

| Pin No | Pin Name | Description |
|--------|----------|---|
| 1 | DIO5 | Data I / O pin, software configuration |
| 2 | RESET | Reset pin, effective at low level |
| 3 | SCK | SPI clock input |
| 4 | MISO | SPI data output |
| 5 | MOSI | SPI data input |
| 6 | NSS | SPI slave input |
| 7 | GND | Ground |
| 8 | ANT | Antenna I / O |
| 9 | GND | Ground |
| 10 | GND | Ground |
| 11 | 3.3V | Power Supply 3.3V |
| 12 | DIO0 | Data I / O pin, software configuration |
| 13 | DIO1 | Data I / O pin, software configuration |
| 14 | DIO2 | Data I / O pin, Receiving data output pin |
| 15 | DIO3 | Data I / O pin, software configuration |
| 16 | DIO4 | Data I / O pin, software configuration |

Electrical Parameters

Testing Conditions: Power Supply 3.3V, Temperature 25°C

Table 2. Recommended operating conditions

| Parameters | Symbol | Condition | Min | Typical | Max | Unit |
|----------------------------|--------|-----------|-----|---------|-----|-------|
| Working Voltage | VDD | | 1.8 | 3.3 | 3.7 | V |
| Working Temperature | T | | -40 | | 85 | °C |
| Power supply voltage slope | | | 1 | | | mV/us |

Table 3. Absolute Rated Maximum

| Parameters | Symbol | Condition | Min | Max | Unit |
|--------------------------|---------|--------------|------|-----|------|
| Supply Voltage | VDD | | -0.5 | 3.9 | V |
| Interface Voltage | VIN | | -0.3 | 3.3 | V |
| Junction Temperature | TJ | | -40 | 125 | °C |
| Storage Temperature | TSTG | | -50 | 150 | °C |
| Welding Temperature | TSDR | At least 30s | | 255 | °C |
| ESD Level ^[2] | HBM | | -2 | 2 | kV |
| Latch Current | @ 85 °C | | -100 | 100 | mA |

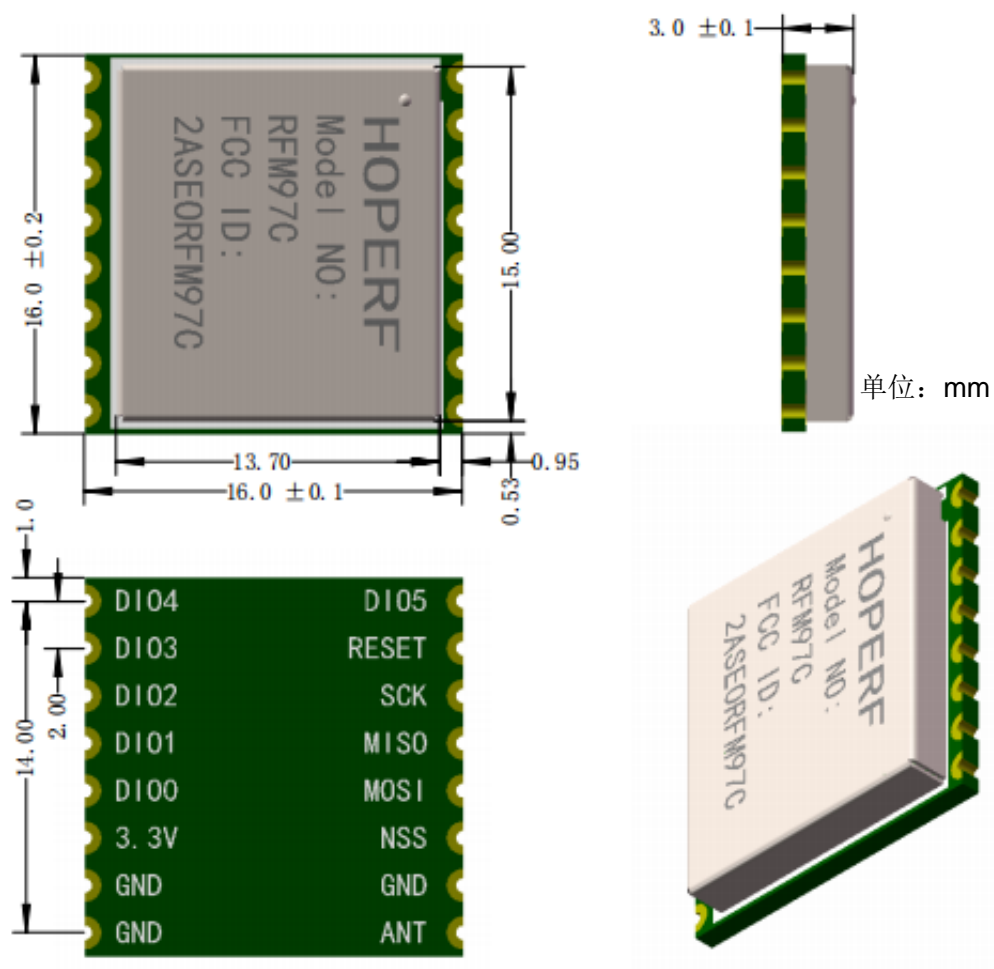
Table 4. Transmitting Parameters

| Parameters | Condition | Min | Typical | Max | Unit |
|------------------------------|-------------------|---------|---------|---------|------|
| Transmission Frequency Range | 915 MHz | 914.988 | 915 | 915.012 | MHz |
| Transmitting Power | 915MHz Vbat=3.3V | - | 18.3 | - | dBm |
| Power Reduction | 16.3dBm Vbat=2.7V | - | 2 | - | dBm |
| | 15.3dBm Vbat=2.4V | - | 3 | - | |
| | 12.3dBm Vbat=1.8V | - | 6 | - | |
| Emission Current | 915MHz | | 120 | 140 | mA |

Table 5. Receiving Parameters

| Parameters | Condition | Min | Typical | Max | Unit |
|--|-----------|-----|---------|-----|------|
| Receiving Sensitivity (Lora) SF12 BW125KHZ, CR4/5 | 915MHz | - | -138 | - | dBm |

Module Outline Dimension Diagram



Pic 2. Module Outline Dimension Diagram

HOPEMICROELECTRONICSCO.,LTD

Add:2/F,Building3,Pingshan Minqi Park, Xili Town,
Nanshan District,
Shenzhen, GD, China
Tel: 86-755-82973805
Fax: 86-755-82973550
Email: sales@hoperf.com
Website: <https://www.hoperf.com>

This document may contain preliminary information and is subject to change by Hope Microelectronics without notice. Hope Microelectronics assumes no responsibility or liability for any use of the information contained herein. Nothing in this document shall operate as an express or implied license or indemnity under the intellectual property rights of Hope Microelectronics or third parties. The products described in this document are not intended for use in implantation or other direct life support applications where malfunction may result in the direct physical harm or injury to persons. NO WARRANTIES OF ANY KIND, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE OFFERED IN THIS DOCUMENT.