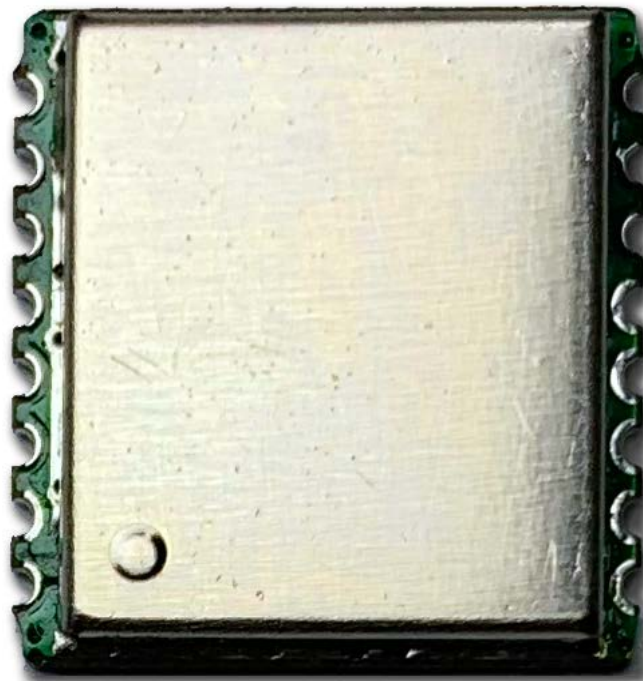


# **RFM68LCW LORA Transceiver Module**



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## **1 Product Overview**

The RFM68LCW is an ultra-low power, high performance, high integration LORA/FSK transceiver for a wide range of 150 to 960 MHz wireless applications. The RFM68LCW supports fewer peripheral components, transmitting power up to +22 dBm, receiving sensitivity up to -129 dBm, duty-cycle operation mode, channel listening, high-precision RSSI, etc. The level of integration and the low consumption of the RFM68LCW can provide more flexible long range wireless applications and make products more differentiated and competitiveness.

## **2 Features**

- Frequency Range: 150-960 MHz
- Tx Power: 22dBm Max. (configurable through software)
- Modulation: LORA/GFSK/FSK
- Data Rate: 1.76-62.5 kbps (LORA) or 0.6-300 kbps (FSK)
- Sensitivity: -129dBm @ BW=125KHz and SF=9
- Working Voltage: 1.8-3.7V
- Receiving Current: 8.8mA @ BW=125Khz
- Sleep Current: 160nA @ Duty Cycle=OFF, 600nA @ Duty Cycle=ON
- 4-wire SPI Interface
- Support Fully Automatic Independent Working Mode

## **3 Applications**

- Smart meters
- Supply chain and logistics
- Building automation
- Agricultural sensors
- Smart cities
- Retail store sensors
- Asset tracking
- Street lights
- Parking sensors
- Environmental sensors
- Healthcare

- Safety and security sensors
- Remote control applications

## 4 Pin Diagram

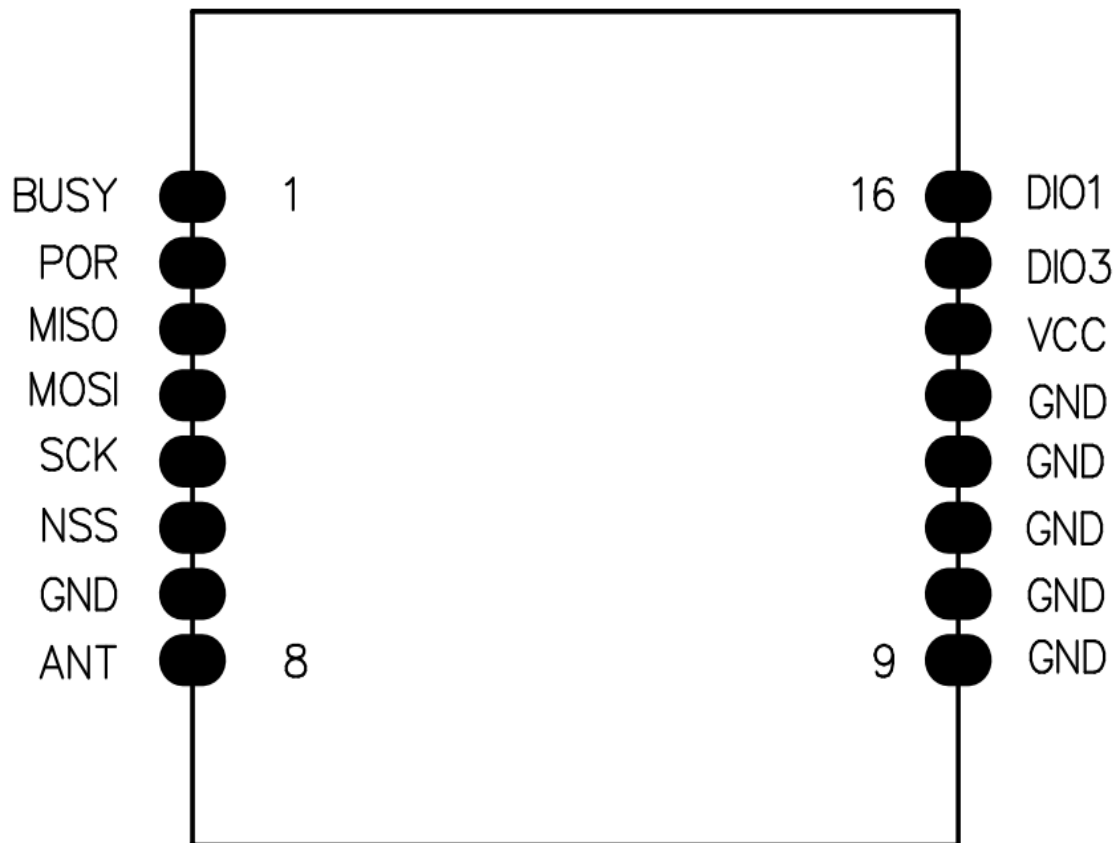
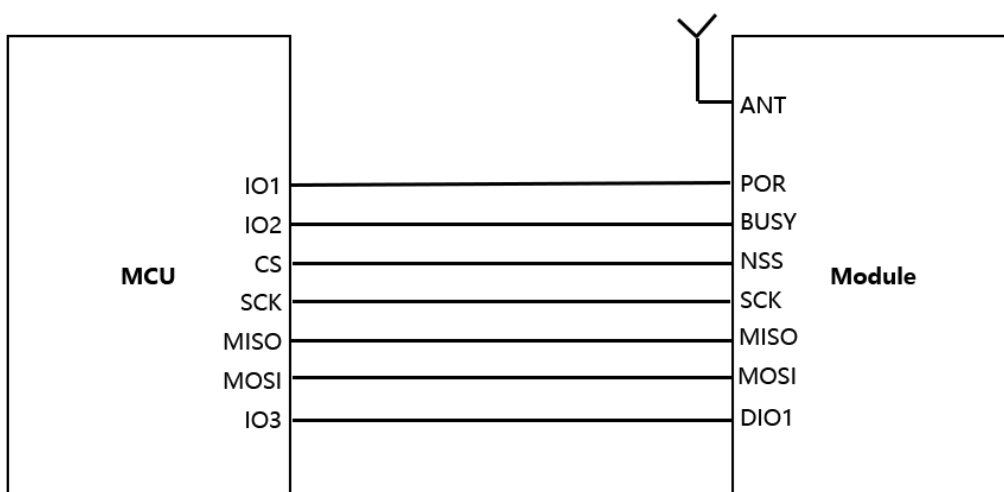


Figure 1. Pin Diagram Top View

**Table 1. RFM68LCW Pin Description**

Pin No.	Pin Name	Description
1	BUSY	Busy indicator
2	POR	Reset signal, active low
3	MISO	SPI slave output
4	MOSI	SPI slave input
5	SCK	SPI clock
6	NSS	SPI slave select
7	GND	Ground
8	ANT	Antenna port
9	GND	Ground
10	GND	Ground
11	GND	Ground
12	GND	Ground
13	GND	Ground
14	VCC	Input voltage
15	DIO3	Interrupt signal output or external TXCO input voltage
16	DIO1	Interrupt signal output

## 5 Reference Design



**Table 2. Reference Design**

## 6 Electrical Characteristics

Testing Conditions: 3.3V @ 25°C

**Table 2. Recommended Operating Conditions**

<b>Parameters</b>	<b>Symbol</b>	<b>Status</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
Operating Voltage	VDD		1.8	3.3	3.7	V
Operating Temperature	T		-40		85	°C
Antenna Port VSWR					10:1	

**Table 3. Absolute Maximum Ratings**

<b>Parameters</b>	<b>Symbol</b>	<b>Status</b>	<b>Min.</b>	<b>Max.</b>	<b>Unit</b>
Working Voltage	VDD		-0.5	3.9	V
Interface level	VIN		-0.3	3.3	V
Storage Temperature	TSTG		-55	125	°C
Soldering Temperature	TSDR	Continue for at least 30 seconds		255	°C
ESD Level	HBM			2	kV
Antenna Port Input Level				10	dBm

**Table 4. Transmitting Parameters**

Parameters	Conditions	Min.	Typ.	Max.	Unit
Tx Frequency	433.92 MHz	433.914	433.92	433.926	MHz
	470 MHz	469.994	470	470.006	MHz
	868 MHz	867.990	868	868.010	MHz
	915 MHz	914.990	915	915.010	MHz
Tx Power	433.92 MHz	-	22	-	dBm
	470 MHz	-	22	-	dBm
	868 MHz	-	22	-	dBm
	915 MHz	-	22	-	dBm
Tx Current @ VCC=3.3V	433.92 MHz	-	110	125	mA
	470 MHz	-	110	125	mA
	868 MHz	-	120	135	mA
	915 MHz	-	120	135	mA

**Table 5. Receiving Parameters**

Parameters	Conditions	Min.	Typ.	Max.	Unit
Receiving Sensitivity (FSK Mode) Rate=38.4Kbps, FDA=40KHz	433.92 MHz	-	-107	-	dBm
	470 MHz	-	-107	-	dBm
	868 MHz	-	-107	-	dBm
	915 MHz	-	-107	-	dBm
Receiving Sensitivity (Lora Mode) SF=9, BW=125KHz	433.92 MHz	-	-	-129	dBm
	470 MHz	-	-	-129	dBm
	868 MHz	-	-	-129	dBm
	915 MHz	-	-	-129	dBm

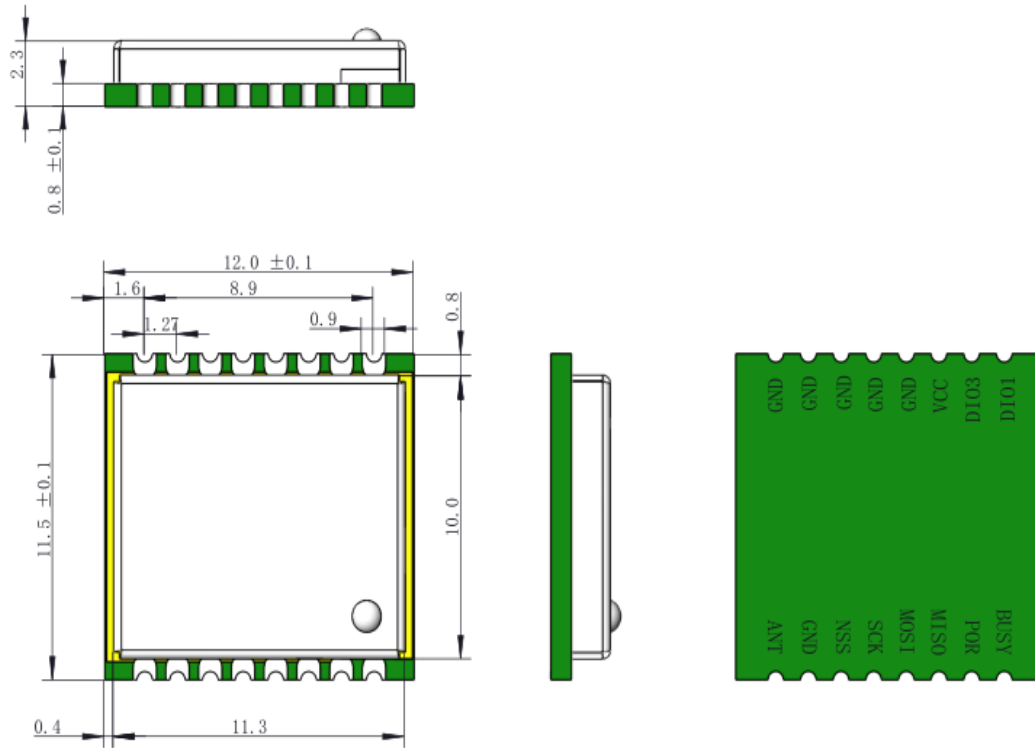
LORA Mode: RX/TX, BW=125-250-500KHz

LORA Mode: SF=5-6-7-8-9 for BW=125KHz

LORA Mode: SF=5-6-7-8-9-10 for BW=250KHz

LORA Mode: SF=5-6-7-8-9-10-11 for BW=500KHz

## 7 Packaging Information (Unit: mm)



## 8 Ordering Information

Model	Frequency
RFM68LCW-433S2	433.92MHz
RFM68LCW-470S2	470MHz
RFM68LCW-868S2	868MHz
RFM68LCW-915S2	915MHz



## 9 Contact Information

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