

## 1. Overview

RFM6601SE is a general LPWAN wireless communication module, with integrated RF transceiver, modem and a 32-bit RISC MCU. The MCU uses ARM China STAR-MC1 processor, with 48MHz operation frequency. The RF transceiver has continuous frequency coverage from 150MHz to 960MHz. The modem supports LoRa modulation for LPWAN use cases and (G)FSK modulation for legacy use cases. The modem also supports BPSK modulation in TX and (G)MSK modulation in TX and RX. RFM6601SE provides ultra-long range and ultra-low power communication for LPWAN applications. RFM6601SE can achieve a high sensitivity to -138 dBm and the maximum transmit power is up to +22 dBm. This makes RFM6601SE suitable to be used in long-range LPWAN with high efficiency.



## 2. Features

- Operating voltage: 1.7V - 3.7V
- Frequency range: 470MHz、868MHz、915MHz
- Sensitivity: -138dBm@SF=12, BW=125KH
- Data rate: up to 62.5 Kbps in LoRa modulation mode  
up to 300 Kbps in (G)FSK modulation mode
- LoRa TX current: 108mA@+22dBm (3.3V), 470MHz
- LoRa RX current: 9.2mA@470MHz
- Maximum power: +22dBm constant RF output

## 3. Applications

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

- Safety and security sensors
- Remote control applications

## 4. Pin Diagram

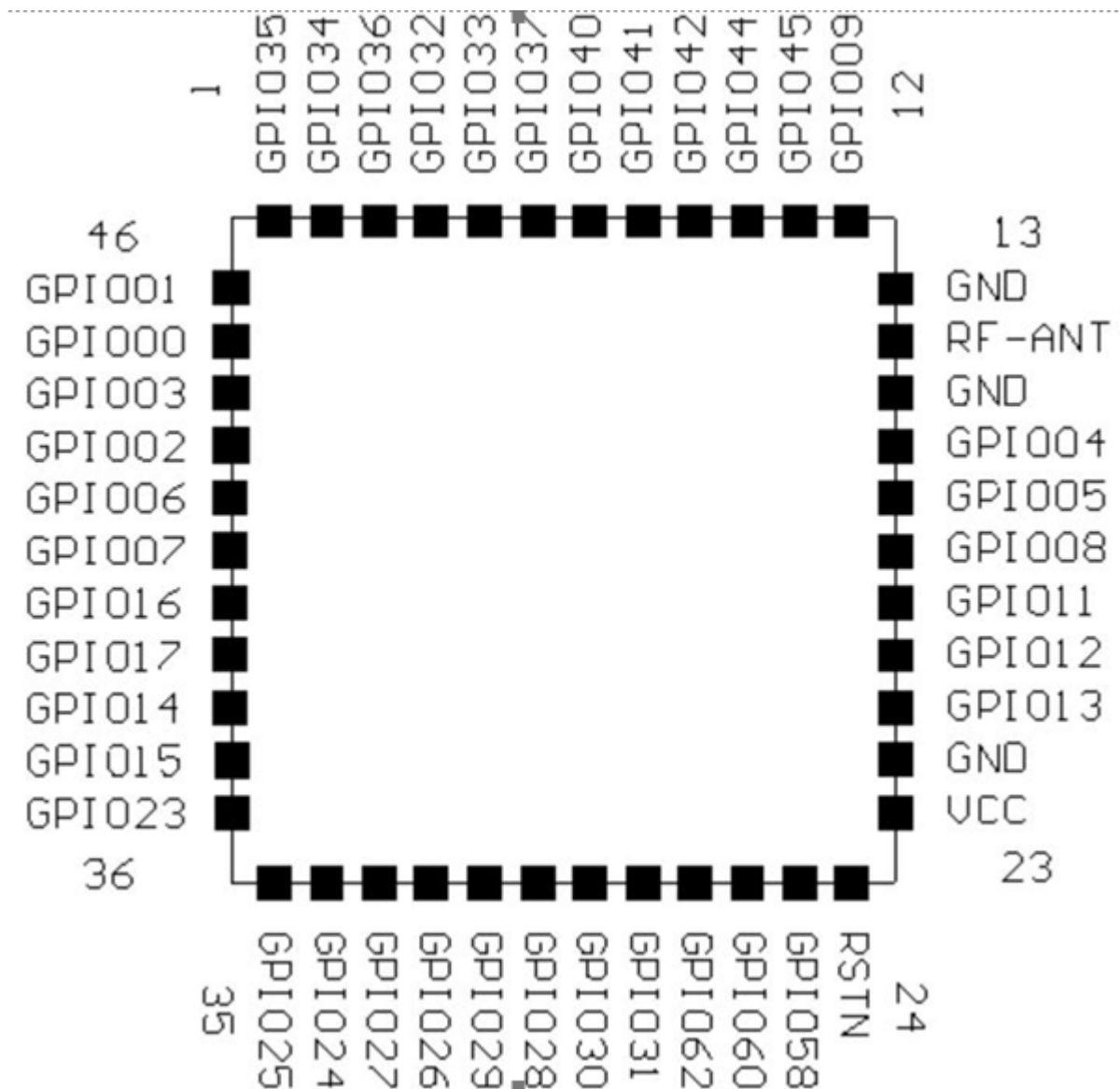


Figure 1. RFM6601SE Pin Diagram (Top View)

**Table 1. RFM6601SE Pin Definition**

Pin	Name	Function
1	GPIO35	MCU GPIO
2	GPIO34	MCU GPIO
3	GPIO36	MCU GPIO
4	GPIO32	MCU GPIO
5	GPIO33	MCU GPIO
6	GPIO37	MCU GPIO
7	GPIO40	MCU GPIO
8	GPIO41	MCU GPIO
9	GPIO42	MCU GPIO
10	GPIO44	MCU GPIO
11	GPIO45	MCU GPIO
12	GPIO09	MCU GPIO
13,15,22	GND	Ground
14	RF-ANT	Antenna Port
16	GPIO04	MCU GPIO
17	GPIO05	MCU GPIO
18	GPIO08	MCU GPIO
19	GPIO11	MCU GPIO
20	GPIO12	MCU GPIO
21	GPIO13	MCU GPIO
23	VCC	Power
24	RSTN	External Reset
25	GPIO58	MCU GPIO
26	GPIO60	MCU GPIO
27	GPIO62	MCU GPIO (UART_RXD)
28	GPIO31	MCU GPIO
29	GPIO30	MCU GPIO
30	GPIO28	MCU GPIO
31	GPIO29	MCU GPIO
32	GPIO26	MCU GPIO
33	GPIO27	MCU GPIO
34	GPIO24	MCU GPIO
35	GPIO25	MCU GPIO
36	GPIO23	MCU GPIO
37	GPIO15	MCU GPIO
38	GPIO14	MCU GPIO
39	GPIO17	MCU GPIO (UART_TXD)
40	GPIO16	MCU GPIO

41	GPIO07	MCU GPIO
42	GPIO06	MCU GPIO
43	GPIO02	MCU GPIO
44	GPIO03	MCU GPIO
45	GPIO00	MCU GPIO
46	GPIO01	MCU GPIO

## 5. Electrical Parameters

Test Conditions: Operating Voltage = 3.3V, Operating Temperature: +25°C

**Table 2. Electrical Parameters**

Parameter	Symbol	Status	Min.	Typ.	Max.	Unit
Frequency	F <sub>c</sub>	RFM6601SE-470S2		470		MHz
		RFM6601SE-868S2		868		MHz
		RFM6601SE-915S2		915		MHz
Sensitivity	S	LORA: SF=12, BW=125KHz		-138		dBm
Operating Voltage	V <sub>DD</sub>		1.7	3.3	3.7	V
Rx Current	I <sub>Rx</sub>	470MHz		9.2		mA
		868MHz		9		mA
		915MHz		9		mA
Tx Current	I <sub>Tx</sub>	470MHz @+22dBm		108		mA
		868MHz @+22dBm		122		mA
		915MHz @+22dBm		122		mA
Sleep Current	I <sub>sleep</sub>	Without configuration for RF and RTC		1.5		uA
Operating Temperature	T <sub>OP</sub>		-40		+85	°C

## 6. Dimension

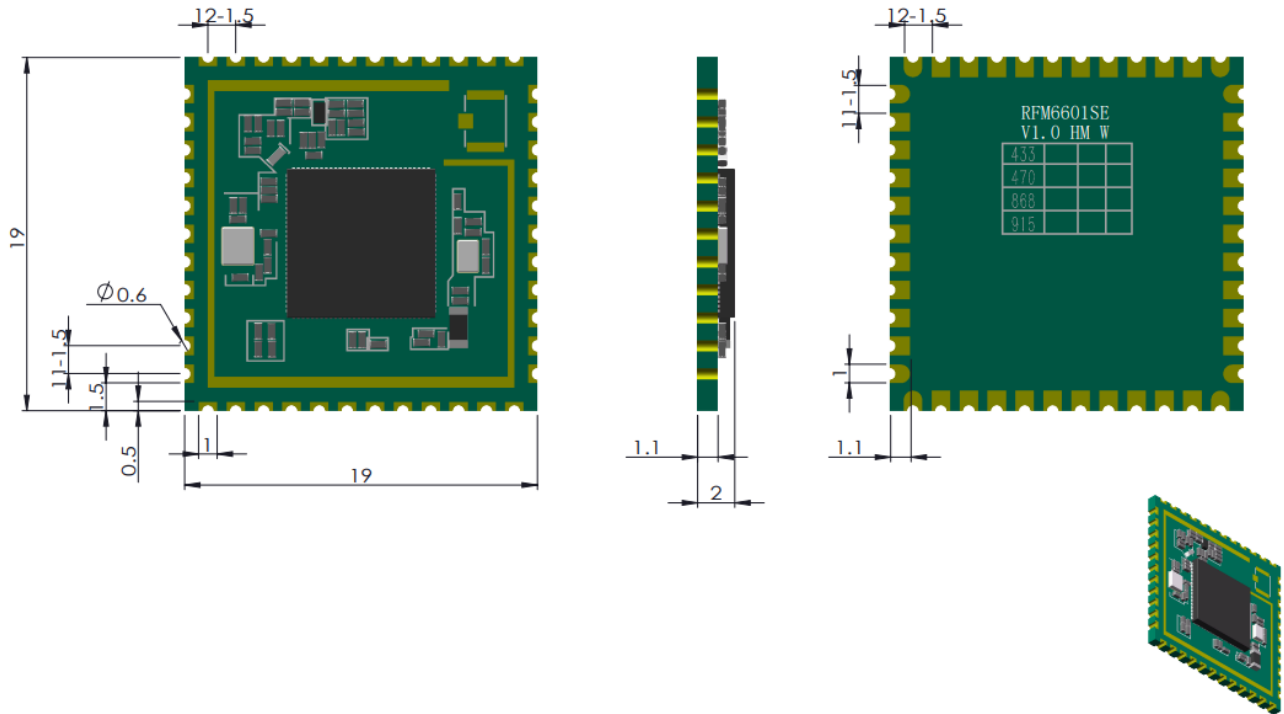


Figure 2. Dimension (unit: mm)

## 7. Ordering Information

Part Number	Frequency
RFM6601SE-470S2	470MHz
RFM6601SE-868S2	868MHz
RFM6601SE-915S2	915MHz

## 8. Revision History

Version	Release Notes	Date
1.0	First Release	2023.3.14

## 9. Contact Information

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