RFM6501W LoRaWAN Module Specification

General Description

The RFM6501W module is a SOC LoRaWAN module embedded with a Cypress 32-bit Cortex-M0+ low power MCU and a LoRa chip SX1262 of Semtech. It has ultra-low power consumption, high sensitivity, long distance communication and high performance. It integrates a wealth of peripherals, provides multiple general purpose IO, 32.768 kHz external crystal oscillator, channel interception, high precision RSSI, and 12-bit high-speed ADC input channel, etc.

Features

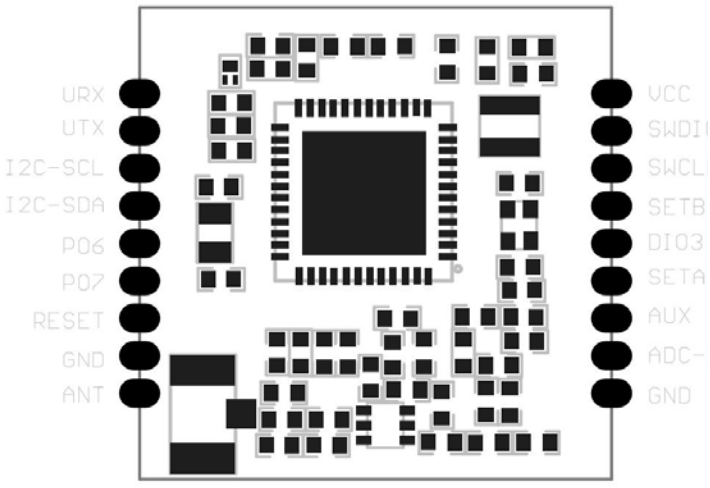
- Ultra strong capacity of resisting disturbance, suitable for complex interference environment scenarios
- Receiving sensitivity: -137dBm SF=12、BW=125KHz
- Working Frequency: 470MHz、868MHz、915MHz
- Supply Voltage:2.4V-3.7V
- Transmit Current: 107mA +22dbm 470MHz
- Receiver Current: 9mA 470MHz

Applications

- LoRaWAN End Node
- Smart Meter Reading
- Building Automation
- Remote Control Application
- Security System
- Smart Parking
- Smart City
- Environmental Monitoring
- Supply Chain and Logistics

Ordering Information

Model No.	Working Frequency
RFM6501W-470S2	470MHz
RFM6501W-868S2	868MHz
RFM6501W-915S2	915MHz



Pic1. RFM6501W Front View

Module Pin Information

Table1. RFM6501 Module pin definition

Pin No	Pin Name	Description
1	URX	UART RX
2	UTX	UART TX
3	I2C-SCL	I2C-SCL
4	I2C-SDA	I2C-SDA
5	P06	UART CTS, also be used as an external 24MHz crystal input.
6	P07	UART RTS, also be used as an external 24MHz crystal output.
7	RESET	External Reset Control Port
8	GND	Ground
9	ANT	Antenna input and output ports
10	VCC	Power- supply
11	SWDIO	SWDIO Data
12	SWCLK	SWCLK Clock
13	SETB	MCU GPIO
14	DIO3	Multipurpose digital I/O, not used as external GPIO
15	SETA	MCU GPIO
16	AUX	MCU GPIO
17	ADC-IN	ADC Input
18	GND	Ground

Notes:

1 The chip ASRF6501's Pin 35 MISO and Pin 20 have been externally connected.
2 The chip ASRF6501's Pin 36 MISO and Pin 19 have been externally connected.
3 The chip ASRF6501's Pin 37 SCK and Pin 21 have been externally connected.
4 The chip ASRF6501's Pin 39NSS and Pin 22 have been externally connected.

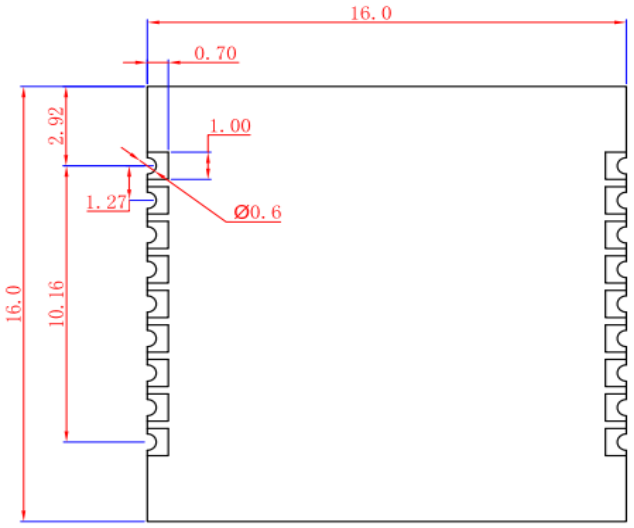
Electrical Parameters

Testing Conditions: Power Supply 3.3V, Temperature 25℃

Table2. Electrical Parameters

Parameters	Symbol	Condition	Min	Typical	Max	Unit
Working Frequency	Fc	RFM6501-470S2		470		MHz
		RFM6501-868S2		868		MHz
		RFM6501-915S2		915		MHz
Receiving Sensitivity	S	LORA:SF=12 BW=125KHz		-137		dBm
		LORA:SF=12 BW=125KHz		-137		dBm
		LORA:SF=12 BW=125KHz		-137		dBm
Working Voltage	V_{DD}		2.4	3.3	3.7	V
Receiving Current	I_{Rx}	470MHZ		9	10	mA
		868MHZ		9	10	mA
		915MHZ		9	10	mA
Transmitting Current	I_{Tx}	470MHZ +22dbm		107	120	mA
		868MHZ +22dbm		118	130	mA
		915MHZ +22dbm		118	130	mA
Sleeping Current	I_{Sleep}	No RF & No RTC		2	3	uA
Working Temperature	T_{OP}		-40		+85	℃

Module Outline Dimension Diagram



Unit：mm

Pic2. Module Dimension Diagram

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