

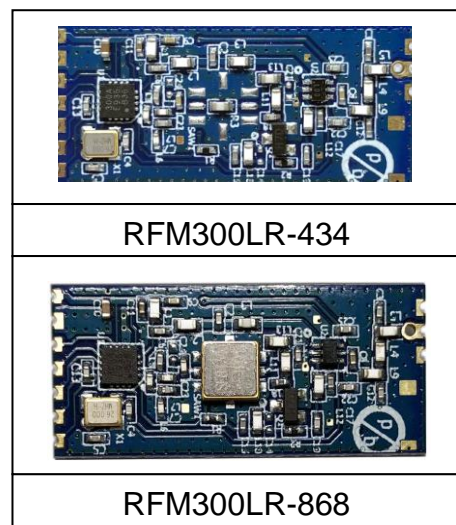
RFM300LR

ISM Transceiver Module With +20dBm(100mW) Output Power

(The purpose of this RFM300LR spec covers mainly for the hardware and RF parameter info of the module, For software info please refer to CMT2300 chip datasheets and demo program of HopeDuino™ Development Kit)

1. General Introduction

RFM300LR module series' design is based on the high performance CMOSTEK NextGenRF™ CMT2300 chip, It operate at 433/868MHz ISM band , The low receive sensitivity(-123dBm) coupled with +20dBm output power ensures extended range and improved link performance, High Adjacent Channel Rejection Ratio is -55dbc;High Blocking Rejection Ratio is -75dBc(@Frequency868.5MHz,DR = 3 kbps, FDEV = 10 kHz; BW=100kHz, 200kHzChannel spacing, interference with the same modulation,Blocking Rejection@+-1MHz)



2. Features:

- 143 dB maximum link budget.
- Low RX current of 11mA.
- +20 dBm output power
- High Adjacent Channel Rejection Ratio is -55dbc @Frequency868.5MHz,DR = 3 kbps, FDEV = 10 kHz; BW=100kHz, 200kHz Channel spacing
- High Blocking Ratio Rejection is -75dBc@868.5MHz +-1MHz
- Programmable bit rate up to 300 kbps@FSK/40 kbps@OOK
- High sensitivity: down to -123dBm.
- FSK, GFSK, and OOK modulation.
- SMD Package (32x14.5X1mm)

3. Application:

- Meter Reading
- Wireless data collection
- Automobile security system

- Home automation and security system

4. Pin Definition:

4.1 RFM300LR-434 Pin Definition

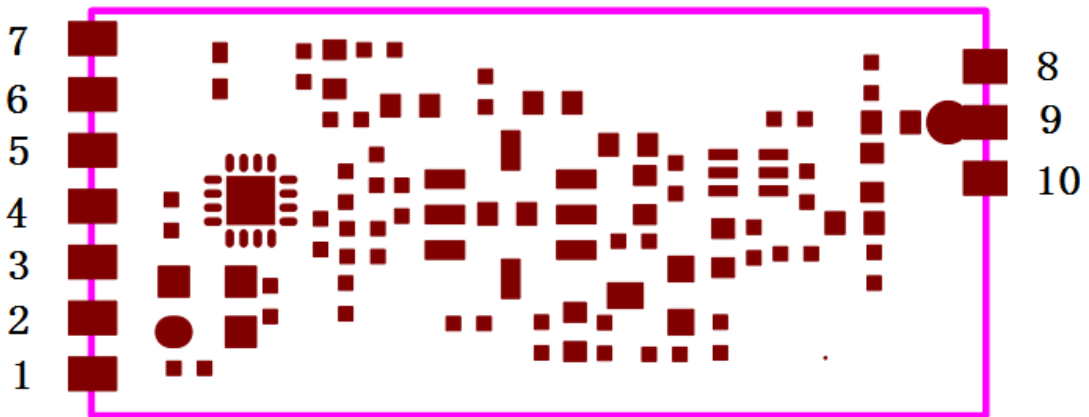


Figure 1. RFM300LR Pin Definition

Number	Definition	Type	Function
1	FCSB	I	SPI FIFO select input, active low.
2	CSB	I	SPI Chip select input, active low.
3	SDIO	I/O	SPI Data input and output.
4	SCK	I	SPI Clock input.
5	GPIO3	I/O	General Purpose Digital I/O that may be configured through the registers to perform various functions
6	GND	G	Ground.
7	3.3V(VDD)	PI	Power supply input, 1.8-3.6V.
8	GND	G	Ground.
9	ANT	AI/ AO	RF signal input/output.
10	GND	G	Ground.

4.2 RFM300LR-868 Pin Definition

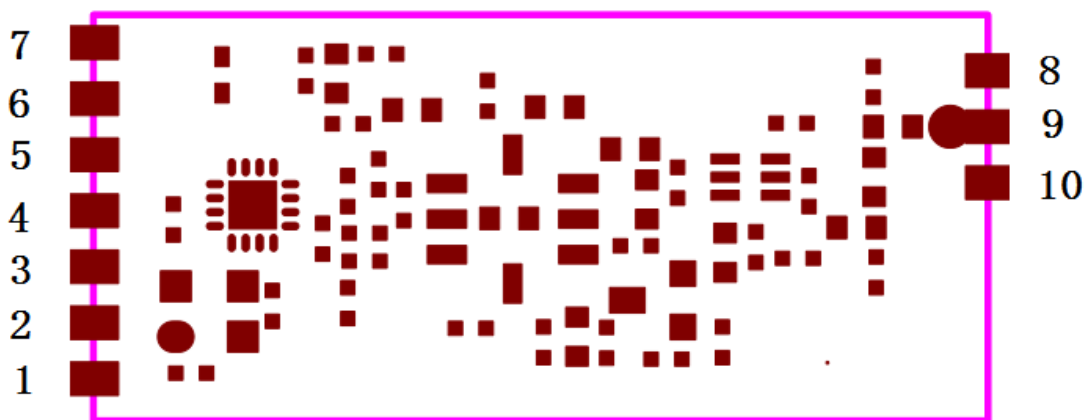


Figure 2. RFM300LR Pin Definition

Number	Definition	Type	Function
1	FCSB	I	SPI FIFO select input, active low.
2	CSB	I	SPI Chip select input, active low.
3	SDIO	I/O	SPI Data input and output.
4	SCK	I	SPI Clock input.
5	GPIO3	I/O	General Purpose Digital I/O that may be configured through the registers to perform various functions
6	GND	G	Ground.
7	3.3V(VDD)	PI	Power supply input, 1.8-3.6V.
8	GND	G	Ground.
9	ANT	AI/ AO	RF signal input/output.
10	GND	G	Ground.

5. Electrical Parameter:

Maximum

parameter	minimum	maximum	Unit
Positive Power Supply	-0.3	+3.6	V
Voltage On Digital Control Inputs	-0.3	VDD + 0.3	V
Voltage On Analog Inputs	-0.3	VDD+ 0.3	V
RX Input Power	-	+10	dBm
Storage Temperature	-55	+125	°C
Soldering Temperature(10s)	-	+255	°C
ESD Rating(Human Body Model)	-2	2	KV

Recommended working range

parameter	minimum	maximum	Unit
Positive Power Supply	+1.8	+3.6	V
Working Temperature	-40	+85	°C
Supply Voltage Slew Rate	1	-	mV/us

DC characteristic

parameter	conditions	minimum	typical	maximum	Unit
RFM300LR TX WorkingCurrent	433MHz band, P _{out} =+20dBm	-	75	100	mA
	868MHz band, P _{out} =+20dBm	-	80	100	
	915MHz band, P _{out} =+20dBm	-	85	100	
RFM300LR RX WorkingCurrent	433MHz band, 868MHz band,	- - -	10 11	10.5 11.5	mA
RFM300LR Sleep Current	All band	-	-	1	

Transmitter AC characteristic

parameter	conditions	minimum	typical	maximum	Unit
TX Frequency Range Programmable	433 MHz band, 868 MHz band,	413 868.3	- - -	453 869	MHz
RFM300LR Output Power	433/868/915MHz band	-	+20	-	dBm
Symbol Rate, FSK Mode	Programmable	0.1	-	300	kbps
SymbolRate, OOK Mode	Programmable	0.1	-	40	kbps
Frequency Deviation,FSK	Programmable	1	-	200	KHz
Frequency Resolution		-	24.8	-	Hz

Receiver AC characteristic

parameter	conditions	minimum	typical	maximum	Unit
RX Frequence Range Programmable	433 MHz band, 868 MHz band,	413 868.3	- - -	453 869	MHz
RX Sensitivity OOK ModeSR =3 kbps,	433MHz 868MHz	- - -	-123 -120	- -	dBm
RX Sensitivity FSK ModeFDEV = 19.2 kHz, SR =1.2 kbps,	433MHz 868MHz 915MHz	- - -	-121 -119 -119	- -	dBm
Receiver Bandwidth		50		500	KHz
Blocking Immunity	+/-1MHz offset +/-2MHz offset +/-10MHz offset	- - -	76 80 83	- -	dB
Image Rejection Ratio	IF=280KHz	-	35	-	dB

6. Typical Application:

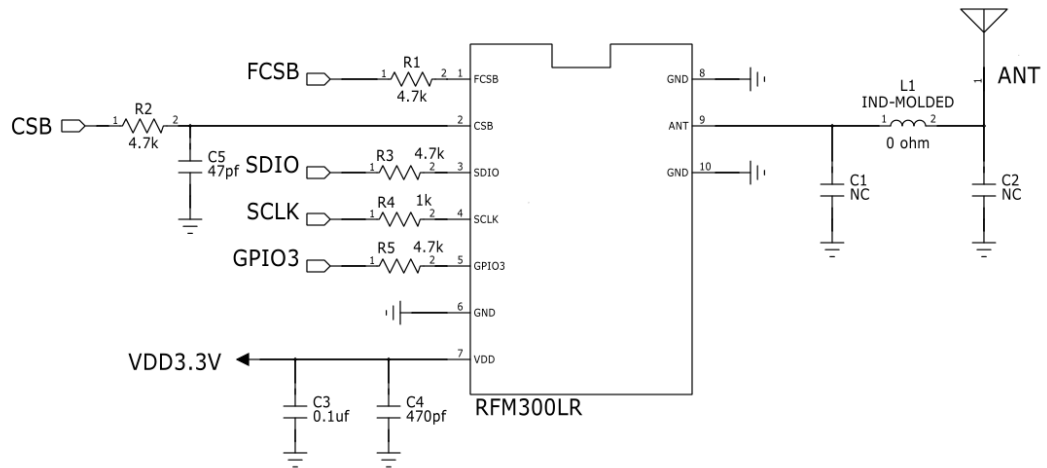


Figure 3. RFM300LR Application

(For software info please refer to CMT2300 chip datasheets and demo program of HopeDuino™ Development Kit)

Note:

- 1、 the entire matching network has been as close as possible to the RF module and antenna;
- 2、 the resistance of the SPI has been as close as possible to the RF module;
- 3、 C5 has been as close as possible to the RF modul;

7. Mechanical Dimension

(All units in mm)

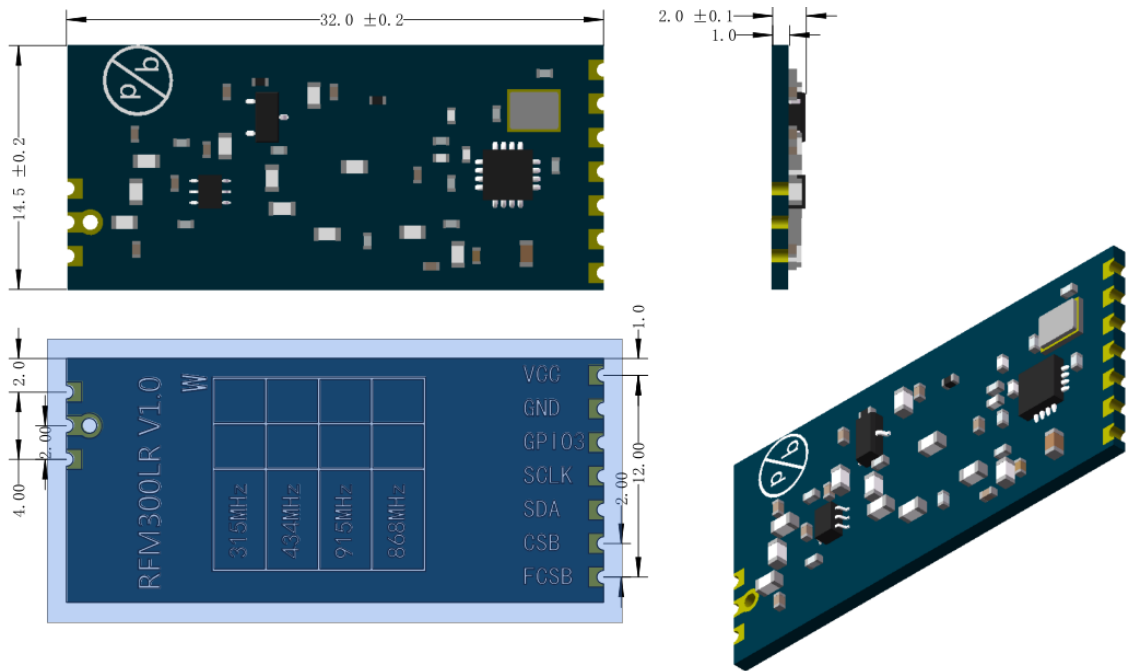


Figure5. RFM300LR Mechanical Dimension

8. Order information

Model	Frequencyband	Output power
RFM300LR-433	433MHZ	+20dBm
RFM300LR-868	868.5MHZ	+20dBm

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