

## RFM300H/RFM300 (W)

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

(The purpose of this RFM300H/RFM300 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)

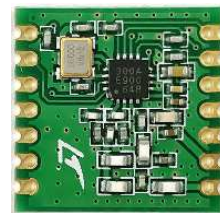
### 1. General Introduction

RFM300H/RFM300 module series' design is based on the high performance CMOSTEK NextGenRF™ CMT2300 chip, It operate at 433/868/915MHz ISM band , The low receive sensitivity(-120dBm) coupled with +20dBm (RFM300H)/+13dBm(RFM300) output power ensures extended range and improved link performance.

RFM300H



RFM300



### 2. Features:

- 140dB maximum link budget.
- Low RX current of 7mA.
- +20 dBm output power @RFM300H; +13 dBm output power @RFM300.
- Programmable bit rate up to 300 kbps@FSK/40 kbps@OOK
- High sensitivity: down to -120dBm.
- FSK, GFSK, and OOK modulation.
- SMD Package (16x16X1.8mm)

### 3. Application:

- Meter Reading
- Wireless data collection
- Automobile security system
- Home automation and security system

## 4. Pin Definition:

### 4.1 RFM300H Pin Definition

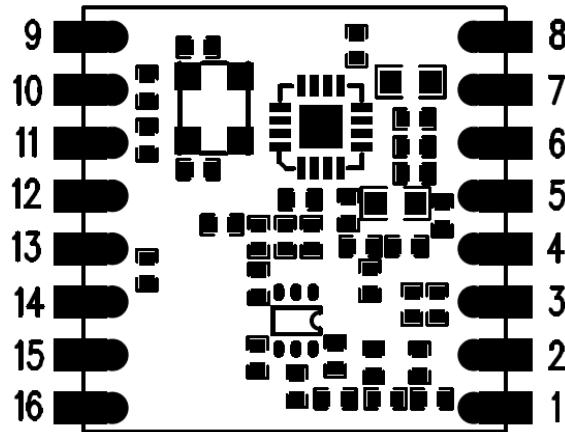


Figure 1. RFM300H Pin Definition

Number	Definition	Type	Function
1	ANT	AI/ AO	RF signal input/output.
2	GND	G	Ground.
3	TX-ANT	I/O	Tx Antenna select input pin, When RFM300H is TX state, TX_ANT should be = 0, RX_ANT should be = 1
4	RX-ANT	I/O	Rx Antenna select input pin, When RFM300H is RX state, RX_ANT should be = 0, TX_ANT should be = 1
5	3.3V(VDD)	PI	Power supply input, 1.8-3.6V.
6	GPIO1	I/O	General Purpose Digital I/O that may be configured through the registers to perform various functions
7	GPIO2		
8	GPIO3		
9	GND	G	Ground.
10	SDIO	I/O	SPI Data input and output.
11	CSB	I	SPI Chip select input, active low.
12	SCK	I	SPI Clock input.
13	FCSB	I	SPI FIFO select input, active low.
14	NC		No Connect.
15	NC		No Connect.
16	GND	G	Ground.

## 4.2 RFM300 Pin Definition

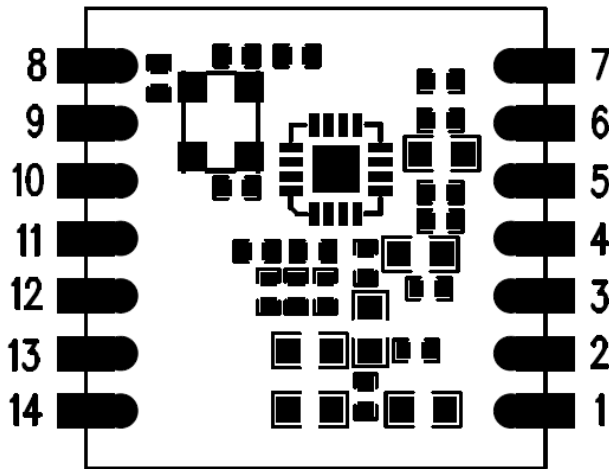


Figure 2. RFM300 Pin Definition

Number	Definition	Type	Function
1	ANT	AI/ AO	RF signal input/output.
2	3.3V(VDD)	PI	Power supply input, 1.8-3.6V.
3	GND	G	Ground.
4	NC		No Connect.
5	CSB	I	SPI Chip select input, active low.
6	SCK	I	SPI Clock input.
7	FCSB	I	SPI FIFO select input, active low.
8	SDIO	I/O	SPI Data input and output.
9	GPIO1	I/O	General Purpose Digital I/O that may be configured through the registers to perform various functions
10	GPIO3		
11	GPIO2		
12	NC		No Connect.
13	NC		No Connect.
14	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	-20	+70	°C
Supply Voltage Slew Rate	1	-	mV/us

### DC characteristic

parameter	conditions	minimum	typical	maximum	Unit
RFM300H TX WorkingCurrent	433MHz band, P <sub>out</sub> =+20dBm	-	75	85	mA
	868MHz band, P <sub>out</sub> =+20dBm	-	80	90	
	915MHz band, P <sub>out</sub> =+20dBm	-	85	95	
RFM300 TX WorkingCurrent	433MHz band, P <sub>out</sub> =+13dBm	-	28	35	mA
	868MHz band, P <sub>out</sub> =+13dBm	-	30	35	
	915MHz band, P <sub>out</sub> =+13dBm	-	30	35	
RFM300H/RFM300 RX WorkingCurrent	433MHz band,	-	7	10	mA
	868MHz band,	-	7.5	10.5	
	915MHz band,	-	7.5	10.5	
RFM300H/RFM300 Sleep Current	All band	-	-	1	uA

**Transmitter AC characteristic**

parameter	conditions	minimum	typical	maximum	Unit
TX Frequency Range Programmable	433 MHz band,	413	-	453	MHz
	868 MHz band,	848	-	888	
	915 MHz band,	895	-	935	
RFM300H Output Power	433/868/915MHz band	-	+20	-	dBm
RFM300 Output Power	433/868/915MHz band	-	+13	-	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 Frequency Range Programmable	433 MHz band,	413	-	453	MHz
	868 MHz band,	848	-	888	
	915 MHz band,	895	-	935	
RX Sensitivity OOK ModeSR =1.2 kbps,	433MHz	-	-120	-	dBm
	868MHz	-	-118	-	
	915MHz	-	-118	-	
RX Sensitivity FSK ModeF <sub>DEV</sub> = 19.2 kHz, SR =1.2 kbps,	433MHz	-	-118	-	dBm
	868MHz	-	-116	-	
	915MHz	-	-116	-	
Receiver Bandwidth		50		500	KHz
Blocking Immunity	+/-1MHz offset	-	52	-	dB
	+/-2MHz offset	-	74	-	
	+/-10MHz offset	-	75	-	
Image Rejection Ratio	IF=280KHz	-	35	-	dB

## 6. Typical Application:

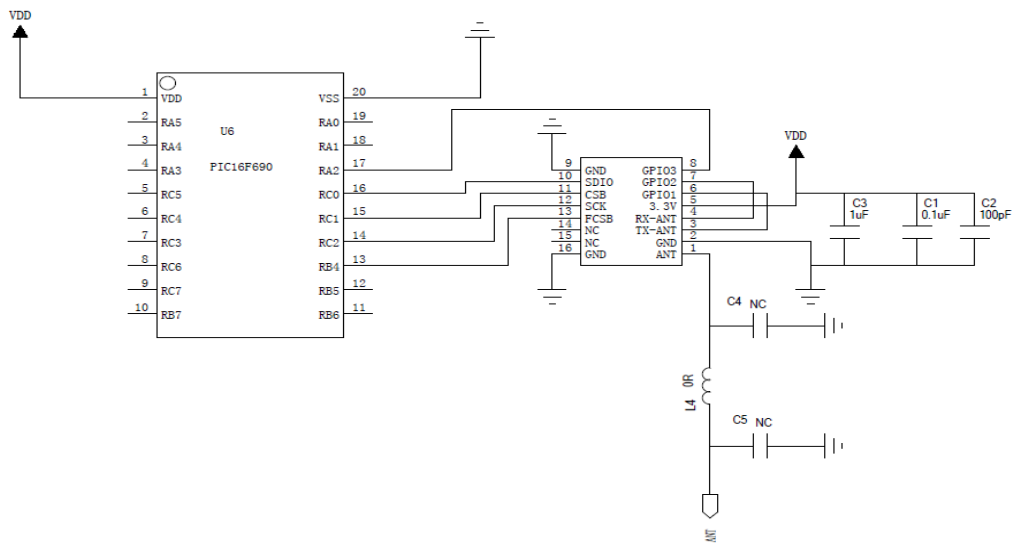


Figure 3. RFM300HApplication

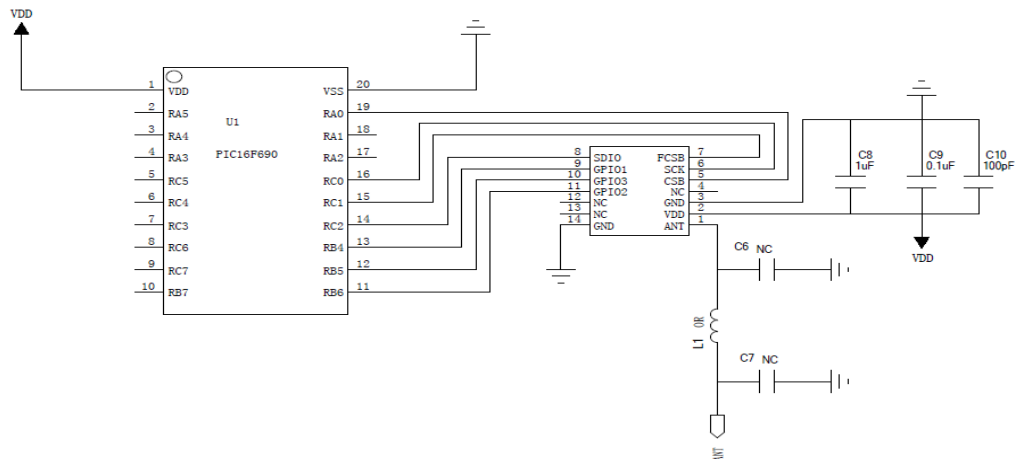


Figure 4. RFM300Application

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

## 7. Mechanical Dimension

(All units in mm)

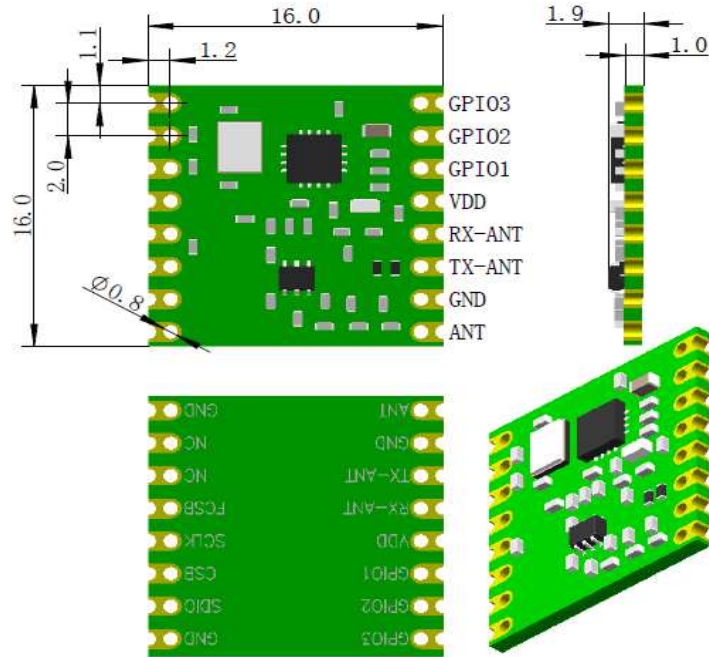


Figure5. RFM300H Mechanical Dimension

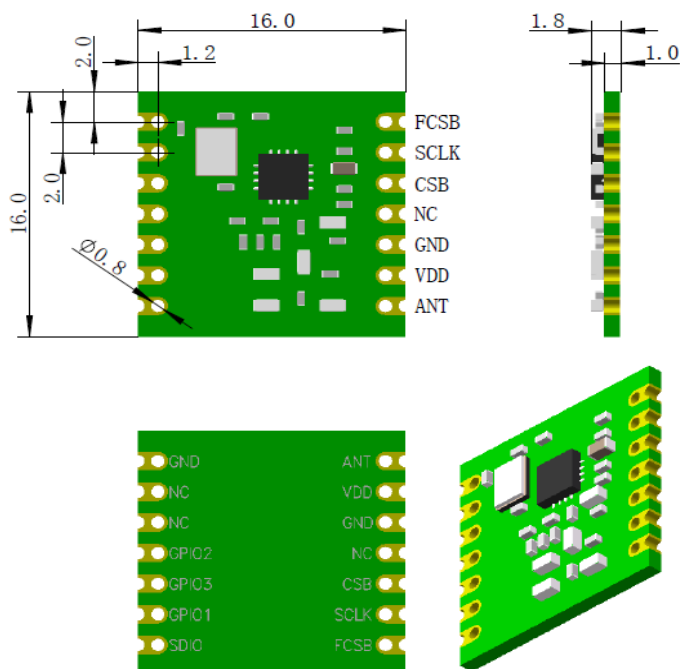


Figure6. RFM300 Mechanical Dimension

## 8. Order information

<b>Model</b>	<b>Frequencyband</b>	<b>Output power</b>
RFM300H-433S2	433MHZ	+20dBm
RFM300H-868S2	868MHZ	+20dBm
RFM300H-915S2	915MHZ	+20dBm
RFM300-433S2	433MHZ	+13dBm
RFM300-868S2	868MHZ	+13dBm
RFM300-915S2	915MHZ	+13dBm

<p><b>HOPEMICROELECTRONICS CO.,LTD</b> Add:2/F,Building3,pingshan Private Enterprise science and Technology Park,xili Town,Nanshan District,</p> <p>Tel: 86-755-82973805 Fax: 86-755-82973550 Email: <a href="mailto:sales@hoperf.com">sales@hoperf.com</a> <a href="mailto:trade@hoperf.com">trade@hoperf.com</a> Website: <a href="http://www.hoperf.com">http://www.hoperf.com</a> <a href="http://www.hoperf.cn">http://www.hoperf.cn</a> <a href="http://hoperf.en.alibaba.com">http://hoperf.en.alibaba.com</a></p>	<p>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.</p> <p>©2006, HOPE MICROELECTRONICS CO.,LTD. All rights reserved.</p>
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