RFM300H/RFM300

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

（The purpose of this RFM300H/RFM300 spec covers mainly for the hardware and RF parameterinfo of the module, For software info please refer toCMT2300 chip datasheets and demo program of HopeDuino™ Develo -pment Kit）

RFM300H

RFM300

1. General Introduction

RFM300H/RFM300module series' design is based on the high performanceCMOSTEK NextGenRF™ CMT2300 chip, Itoperate 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.

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

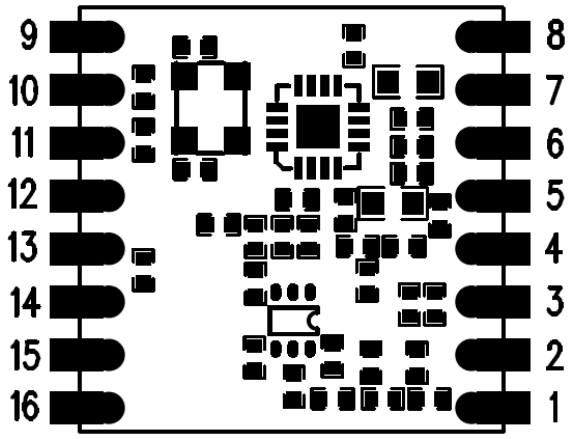

Figure 1. RFM300H Pin Definition

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 variousfunctions
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

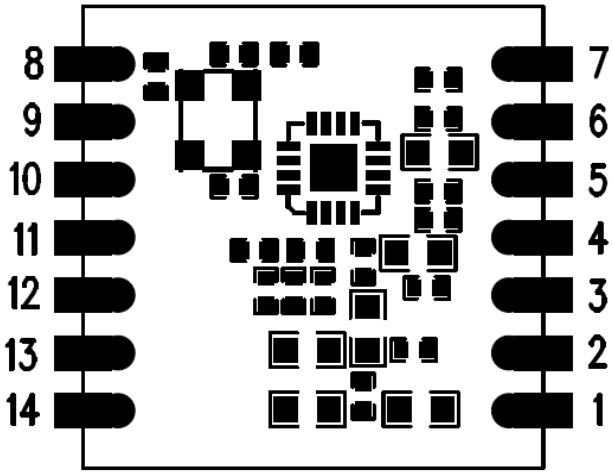

Figure 2. RFM300 Pin Definition

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 variousfunctions
10	GPIO3		
11	GPIO2		
12	NC		No Connect.
13	NC		No Connect.
14	GND	G	Ground.

Notes:

[1]. INT1 and INT2 are interrupts. DOUT is demodulated output. DIN is a modulation input. DCLK is a modulation or demodulation data rate synchronization clock, automatic switching in TX/RX mode.

[2]. The SCLK pin connects an internal pull-down resistor of 4.7 kΩ inside the chip. Thus in low-power applications, the MCU cannot output high level (pull up), otherwise it will generate leakage current and will cause low-power implementation failure.

[3]. The SDIO pin connects an internal pull-up resistor of 15 kΩ inside the chip. Thus in low-power applications, the MCU cannot output low level (pull down), otherwise it will generate leakage current and

will cause low-power implementation failure.

The GPIO pins connect an internal pull-up resistor of 15 kΩ inside the chip. Thus in low-power applications, the MCU cannot output low level (pull down), otherwise it will generate leakage current and will cause low-power implementation failure.

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	℃
Soldering Temperature(10s)	-	+255	℃
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	℃
Supply Voltage Slew Rate	1	-	mV/us

DC Characteristic

parameter	conditions	minimum	typical	maximum	unit
RFM300H	433MHz band, P_{out} =+20dBm	-	75	100	mA
TX WorkingCurrent	868MHz band, P_{out} =+20dBm	-	80	100	
	915MHz band, P_{out} =+20dBm	-	85	100	
RFM300	433MHz band, P_{out} =+13dBm	-	28	45	mA
TX WorkingCurrent	868MHz band, P_{out} =+13dBm	-	30	45	
	915MHz band, P_{out} =+13dBm	-	30	45	
RFM300H/RFM300	433MHz band,	-	7	10	mA
RX WorkingCurrent	868MHz band,	-	7.5	10.5	
	915MHz band,	-	7.5	10.5	
RFM300H/RFM300	All band	-	-	1	uA
Sleep Current					

Transmitter AC Characteristic

parameter	conditions	minimum	typical	maximum	unit
TX Frequency Range Programmable	433 MHz band, 868 MHz band, 915 MHz band,	413 848 895	- - -	453 888 935	MHz
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 Frequence Range Programmable	433 MHz band, 868 MHz band, 915 MHz band,	413 848 895	- - -	453 888 935	MHz
RX Sensitivity OOK ModeSR =1.2 kbps,	433MHz 868MHz 915MHz	- - -	-120 -118 -118	- - -	dBm
RX Sensitivity FSK ModeF_{DEV} = 19.2 kHz, SR =1.2 kbps,	433MHz 868MHz 915MHz	- - -	-118 -116 -116	- - -	dBm
Receiver Bandwidth		50		500	KHz
Blocking Immunity	+/-1MHz offset +/-2MHz offset +/-10MHz offset	- - -	52 74 75	- - -	dB
Image Rejection Ratio	IF=280KHz	-	35	-	dB

6. Typical Application：

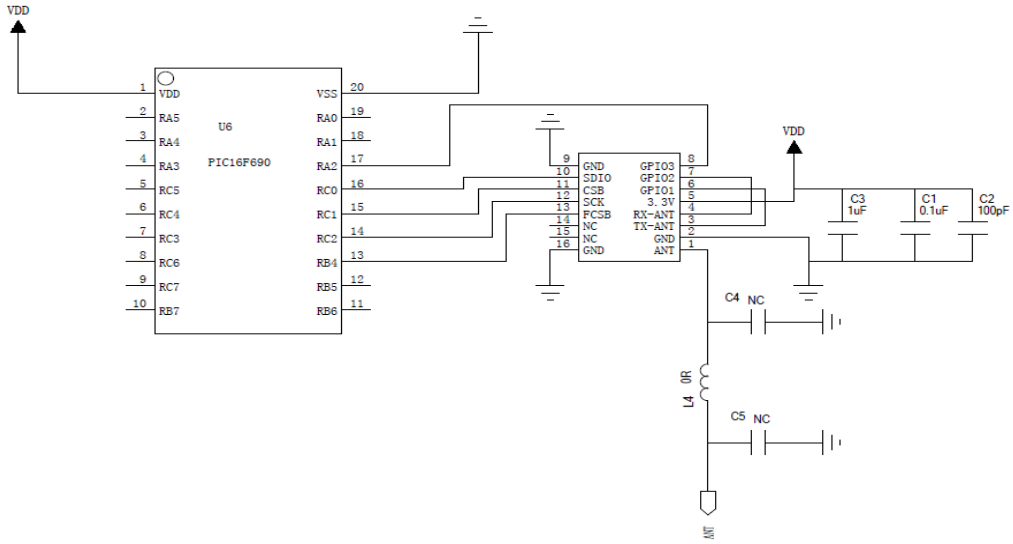

Figure 3. RFM300H Application

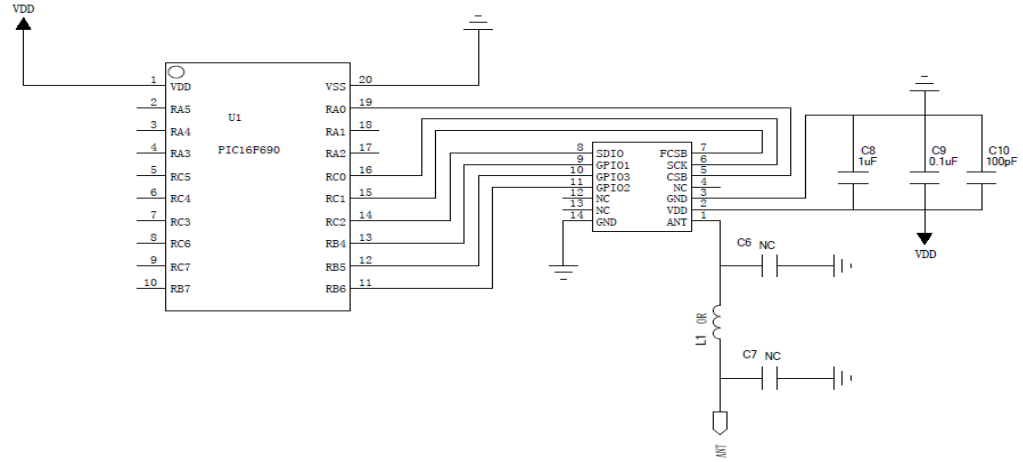

Figure 4. RFM300 Application

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

7. Mechanical Dimension

（All units in mm）

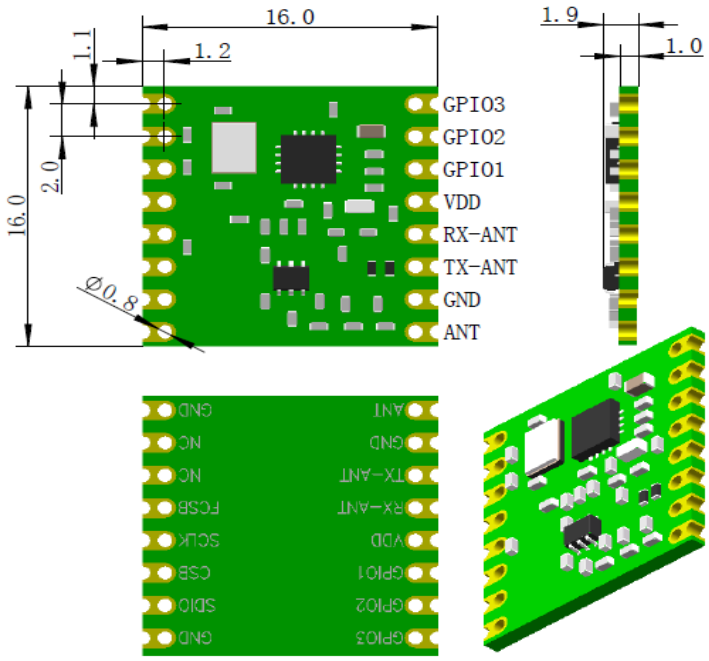

Figure5. RFM300H Mechanical Dimension

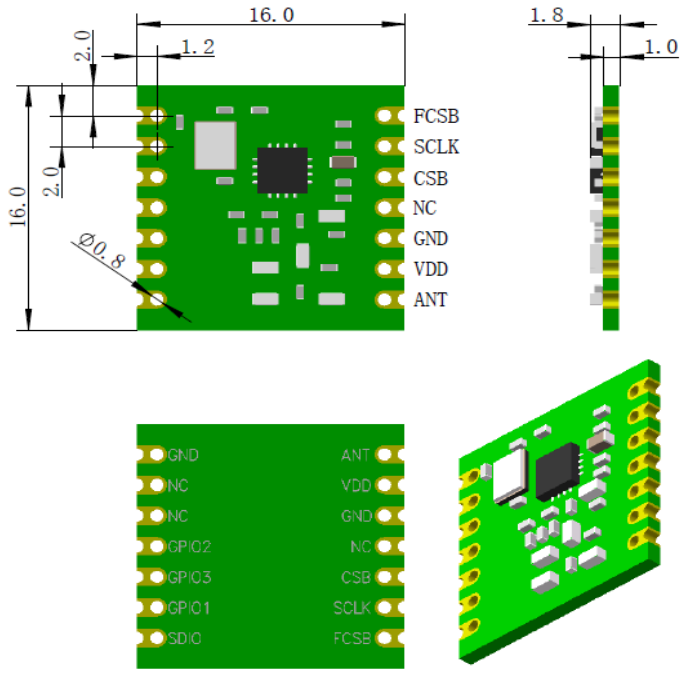

Figure6. RFM300 Mechanical Dimension

8. Order Information

Model	Frequency	Output power
RFM300H-433S2	433MHZ	+20dBm
RFM300H-868S2	868MHZ	+20dBm
RFM300H-915S2	915MHZ	+20dBm
RFM300-433S2	433MHZ	+13dBm
RFM300-868S2	868MHZ	+13dBm
RFM300-915S2	915MHZ	+13dBm

HOPEMICROELECTRONICS CO.,LTD
Add: 30th floor of 8th Building, C Zone, Vanke Cloud City, Xili Sub-district, Nanshan, Shenzhen, GD, P.R. China

Tel: 86-755-82973805
Fax: 86-755-82973550
Email: sales@hoperf.com
Website: https://www.hoperf.com