

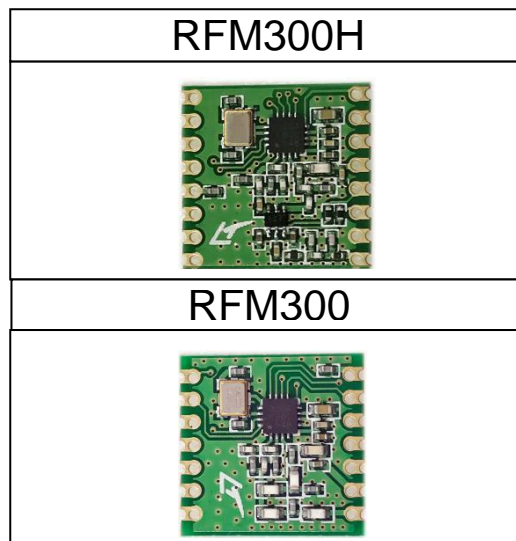
## RFM300H/RFM300

### 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.



### 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

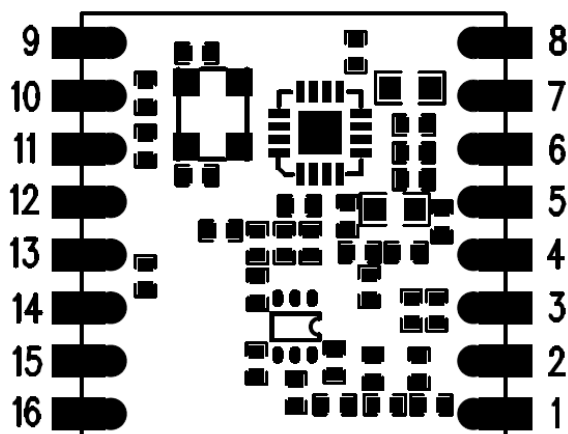


Figure 1. RFM300H Pin Definition

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

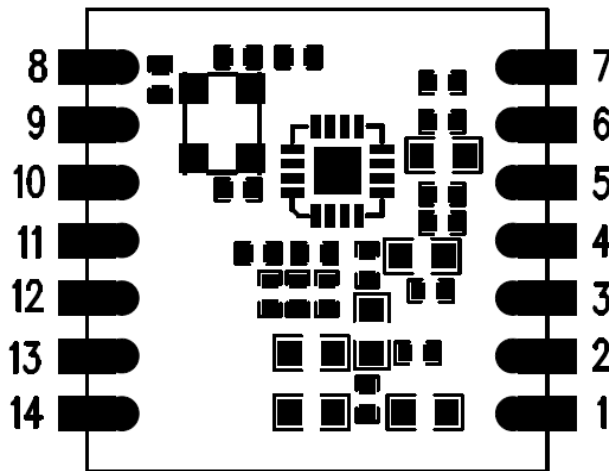


Figure 2. RFM300 Pin Definition

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.

**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 k $\Omega$  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	°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
RFM300H TX WorkingCurrent	433MHz band, P <sub>out</sub> =+20dBm	-	75	100	mA
	868MHz band, P <sub>out</sub> =+20dBm	-	80	100	
	915MHz band, P <sub>out</sub> =+20dBm	-	85	100	
RFM300 TX WorkingCurrent	433MHz band, P <sub>out</sub> =+13dBm	-	28	45	mA
	868MHz band, P <sub>out</sub> =+13dBm	-	30	45	
	915MHz band, P <sub>out</sub> =+13dBm	-	30	45	
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:

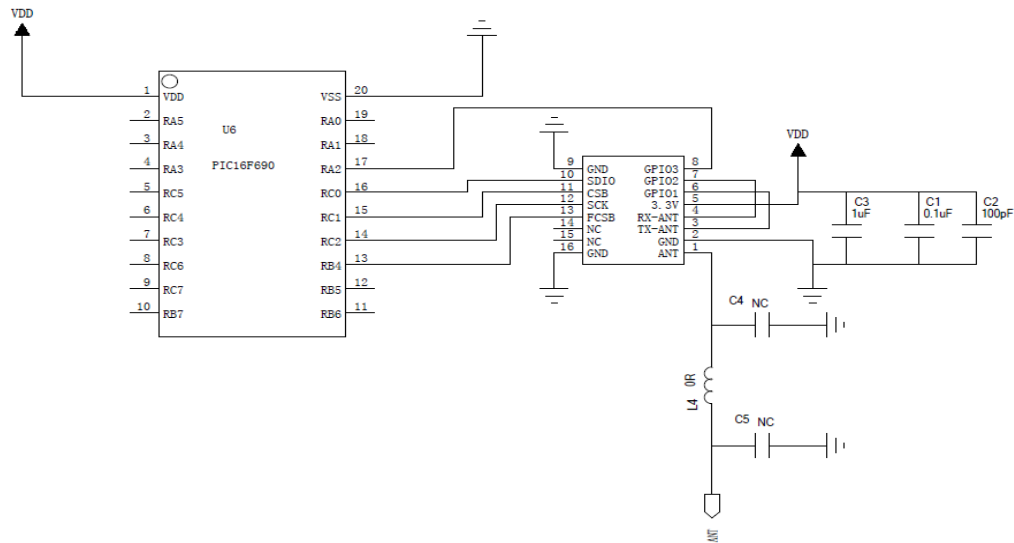


Figure 3. RFM300HApplication

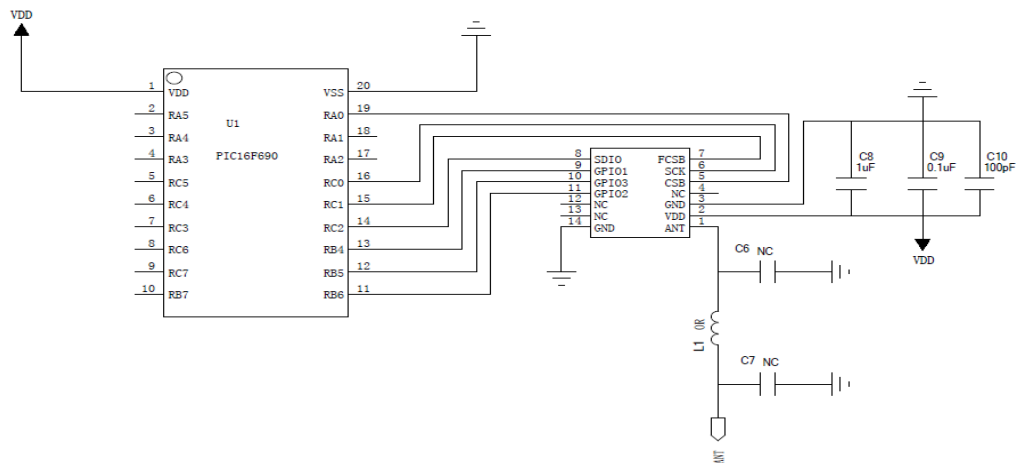


Figure 4. RFM300Application

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

## 7. Mechanical Dimension

(All units in mm)

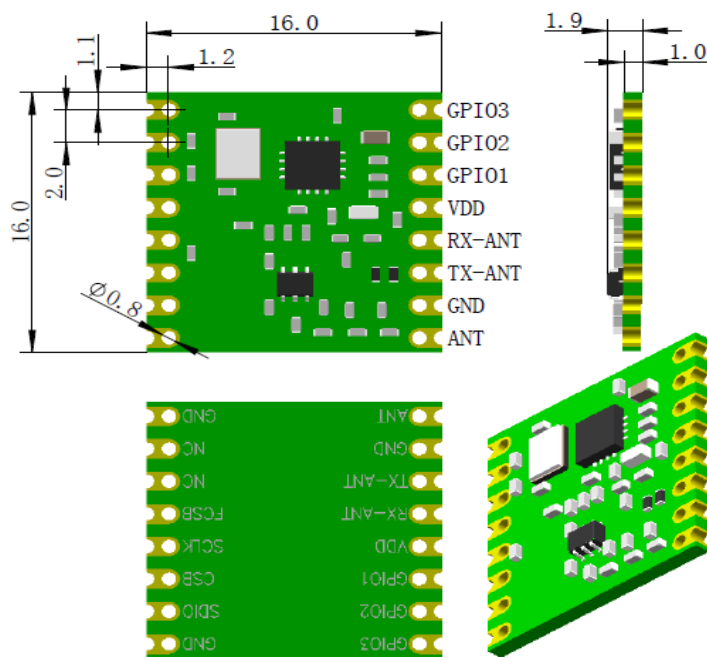


Figure5. RFM300H Mechanical Dimension

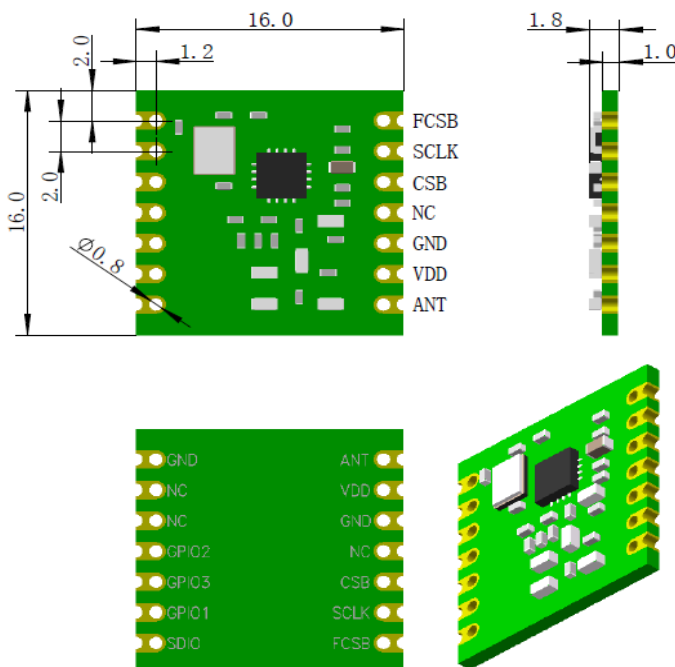


Figure6. RFM300 Mechanical Dimension

## 8. Order information

Model	Frequencyband	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

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