

RFM300HW/RFM300W

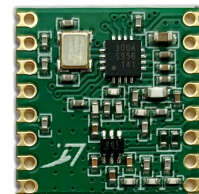
ISM Transceiver Module With +20dBm (100mW) Output Power

(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)

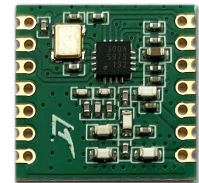
1. General Introduction

RFM300HW/RFM300W series' design is based on the high performance CMOSTEK NextGenRF™ CMT2300 chip, It operate at 315/433/470/868/915MHz ISM band , The low receive sensitivity(−120dBm) coupled with +20dBm(RFM300HW)/+13dBm(RFM300W) TX power ensures extended range and improved link performance.

RFM300HW



RFM300W



2. Features

- 140dB maximum link budget.
- Low RX current of 7mA.
- +20 dBm output power @RFM300HW; +13 dBm output power @RFM300W.
- 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 RFM300HW Pin Definition

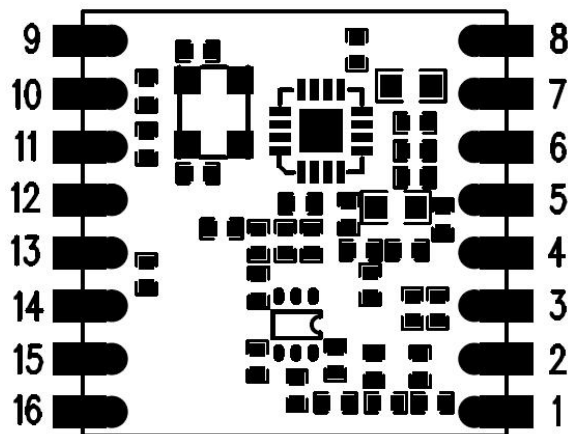


Figure 1. RFM300HW Pin Definition

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 RFM300W Pin Definition

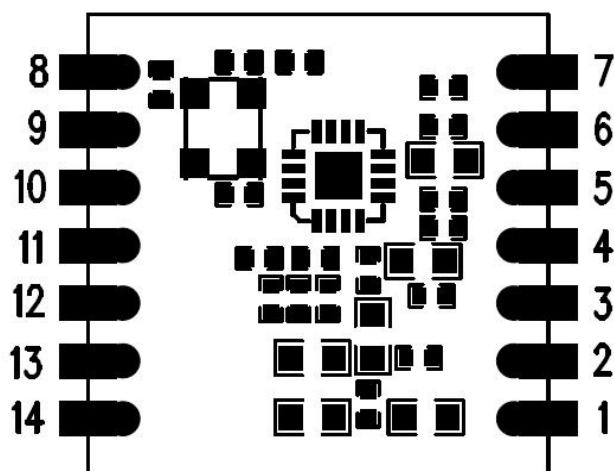


Figure 2. RFM300W Pin Definition

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 Ω 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
RFM300HW TX WorkingCurrent	315MHz band, P _{out} =+20dBm	-	75	100	mA
	433MHz band, P _{out} =+20dBm	-	75	100	
	470MHz band, P _{out} =+20dBm	-	75	100	
	868MHz band, P _{out} =+20dBm	-	80	100	
	915MHz band, P _{out} =+20dBm	-	85	100	
RFM300W TX WorkingCurrent	315MHz band, P _{out} =+13dBm	-	28	45	mA
	433MHz band, P _{out} =+13dBm	-	28	45	
	470MHz band, P _{out} =+13dBm	-	30	45	
	868MHz band, P _{out} =+13dBm	-	30	45	
	915MHz band, P _{out} =+13dBm	-	30	45	
RFM300HW/RFM300W RX WorkingCurrent	315MHz band,	-	7	10	mA
	433MHz band,	-	7	10	
	470MHz band,	-	7	10	
	868MHz band,	-	7.5	10.5	
	915MHz band,	-	7.5	10.5	

RFM300HW/RFM300W Sleep Current	All band	-	-	1	uA
-----------------------------------	----------	---	---	---	----

Transmitter AC Characteristic

parameter	conditions	minimum	typical	maximum	unit
TX Frequency Range Programmable	315 MHz band,	300	-	340	MHz
	433 MHz band,	413	-	453	
	470 MHz band,	450	-	490	
	868 MHz band,	848	-	888	
	915 MHz band,	895	-	935	
RFM300HW Output Power	315/433/470/868/915MHz band	-	+20	-	dBm
RFM300W Output Power	315/433/470/868/915MHz 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	315 MHz band,	300	-	340	MHz
	433 MHz band,	413	-	453	
	470 MHz band,	450	-	490	
	868 MHz band,	848	-	888	
	915 MHz band,	895	-	935	
RX Sensitivity OOK ModeSR =1.2 kbps,	315 MHz	-	-120	-	dBm
	433MHz	-	-120	-	
	470MHZ	-	-120	-	
	868MHz	-	-118	-	
	915MHz	-	-118	-	
RX Sensitivity FSK ModeFDEV = 19.2 kHz, SR =1.2 kbps,	315 MHz	-	-118	-	dBm
	433MHz	-	-118	-	
	470MHZ	-	-118	-	
	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:

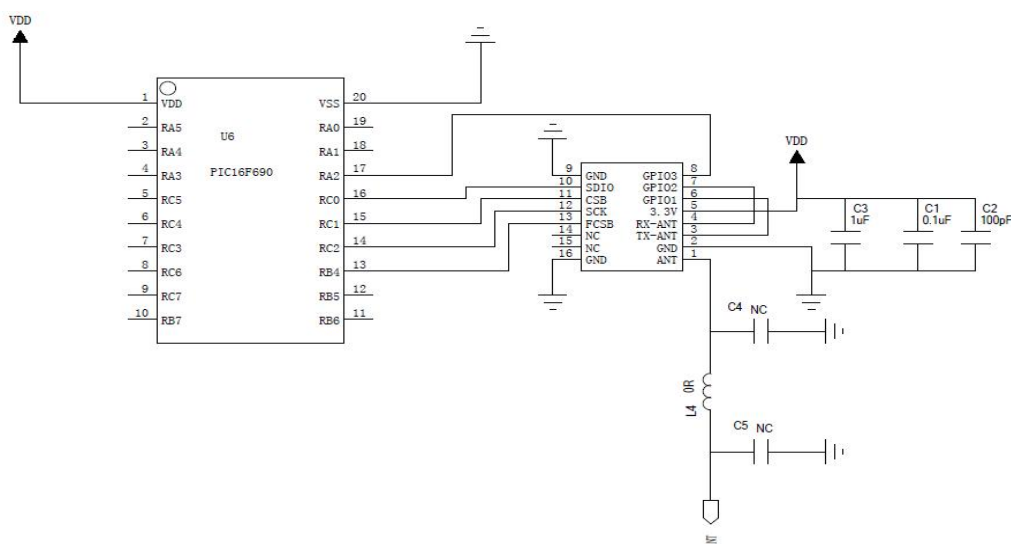


Figure 3. RFM300HW Application

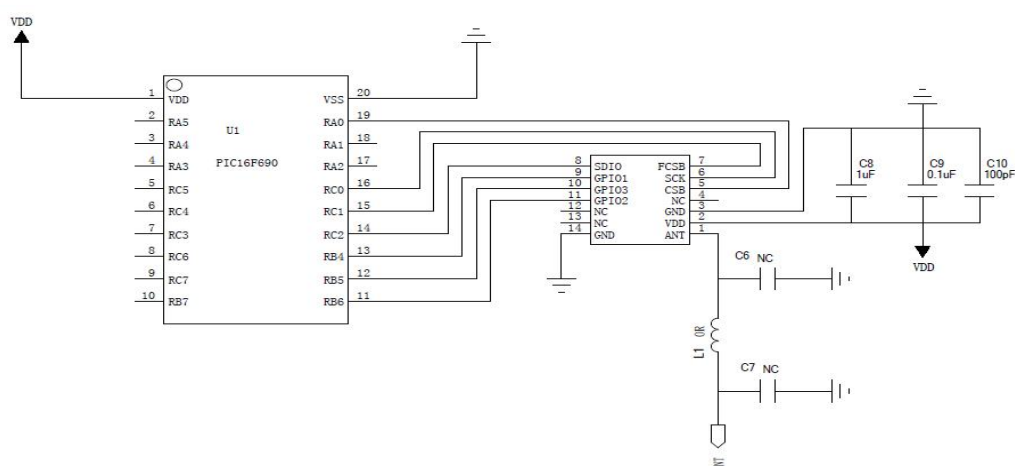


Figure 4. RFM300W Application

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

7. Mechanical Dimension

(All units in mm)

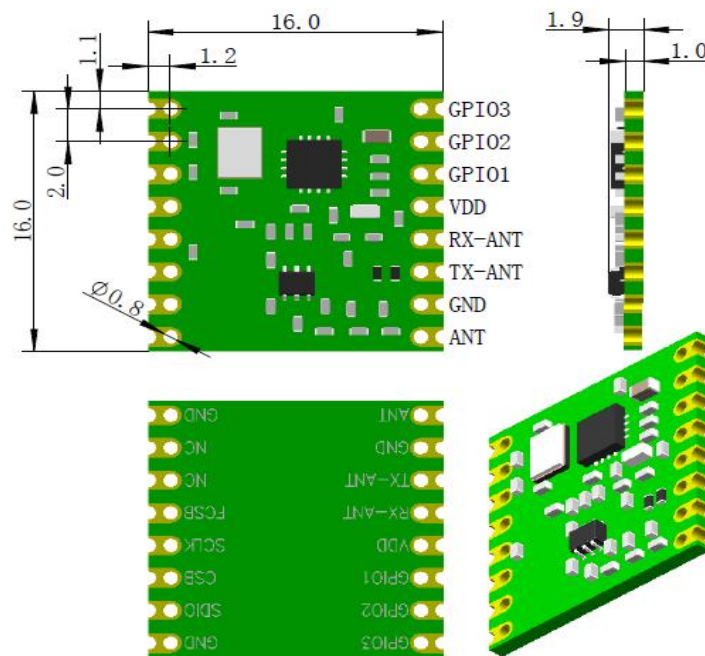


Figure5. RFM300HW Mechanical Dimension

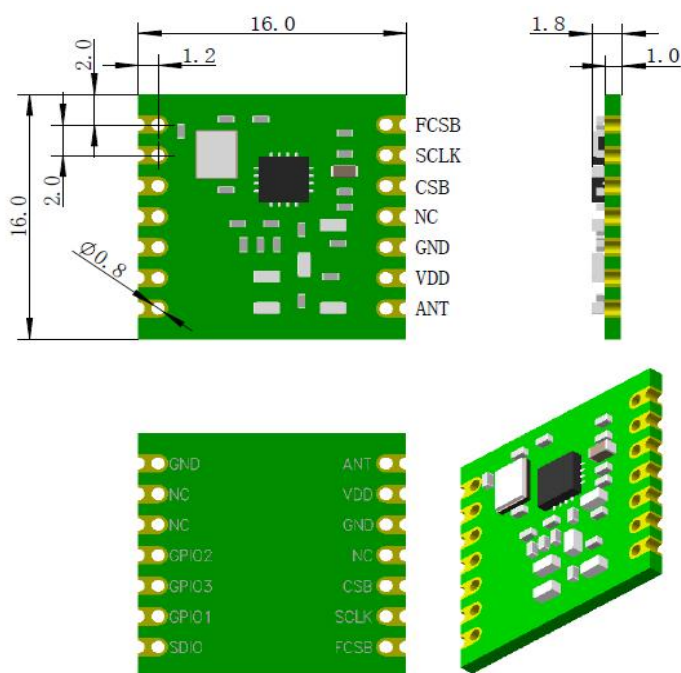


Figure6. RFM300W Mechanical Dimension

8. Order Information

Model	Frequency	Output power
RFM300HW-315S2	315MHZ	+20dBm
RFM300HW-433S2	433MHZ	+20dBm
RFM300HW-470S2	470MHZ	+20dBm
RFM300HW-868S2	868MHZ	+20dBm
RFM300HW-915S2	915MHZ	+20dBm
RFM300W-315S2	315MHZ	+13dBm
RFM300W-433S2	433MHZ	+13dBm
RFM300W-470S2	470MHZ	+13dBm
RFM300W-868S2	868MHZ	+13dBm
RFM300W-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	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. ©2006, HOPE MICROELECTRONICS CO. LTD. All rights reserved.
--	--