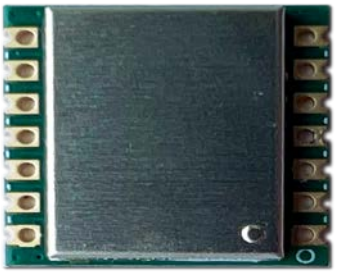
RFM300C

ISM Transceiver Module With +13dBm Output Power



（The purpose of this RFM300C spec covers mainly for the hardware and RF parameter info of the module, for software info please refer to CMT2300A chip datasheets and demo program of HopeDuino Development Kit）

1. General Introduction

RFM300C module series' design is based on the high performance CMOSTEK NextGen RF CMT2300A chip, it operates at 433/868/915MHz ISM band, the low receive sensitivity (–118dBm) coupled with +13dBm output power ensures extended range and improved link performance.

2. Features

- 140dB maximum link budget.
- Low RX current of 7mA.
- +13 dBm output power.
- Programmable bit rate up to 300 kbps @FSK 40 kbps OOK.
- High sensitivity: down to -118dBm (433.92MHz).
- 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 RFM300C Pin Definition

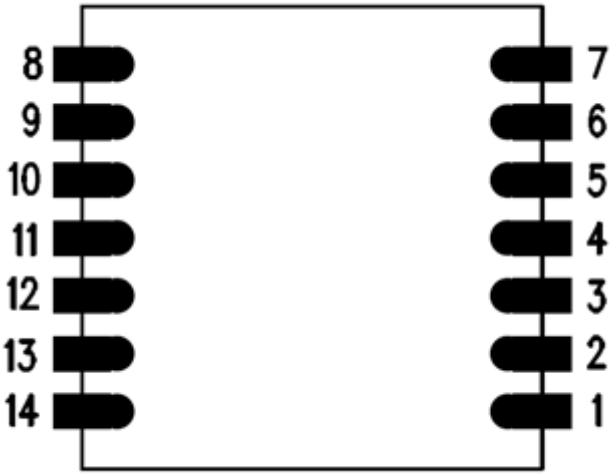


Figure 1. RFM300C Pin Definition

No.	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 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	Min.	Max.	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	Min.	Max.	Unit
Positive Power Supply	+1.8	+3.6	V
Working Temperature	-40	+85	℃
Supply Voltage Slew Rate	1	-	mV/us

DC Characteristic

Parameter	Conditions	Min.	Typ.	Max.	Unit
RFM300C	433MHz band, P_{out}	-	29	45	mA
TX Working Current	=+13dBm	-	31	45	
	868MHz band, P_{out}	-	31	45	
	=+13dBm				
	915MHz band, P_{out}				

	=+13dBm				
RFM300C RX Working Current	433MHz band, 868MHz band, 915MHz band,	- - -	7 7.5 7.5	10 10.5 10.5	mA
RFM300C Sleep Current	All band	-	-	1	uA

Transmitter AC Characteristic

Parameter	Conditions	Min.	Typ.	Max.	Unit
RFM300C Output Power	433/868/915MHz band	-	+13	-	dBm
Symbol Rate, FSK Mode	Programmable	0.1	-	300	kbps
Symbol Rate, OOK Mode	Programmable	0.1	-	40	kbps
Frequency Deviation, FSK	Programmable	1	-	200	KHz
Frequency Resolution		-	24.8	-	Hz

Receiver AC Characteristic

Parameter	Conditions	Min.	Typ.	Max.	Unit
RX Sensitivity FSK Mode FDEV = 10 kHz, SR =0.6 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

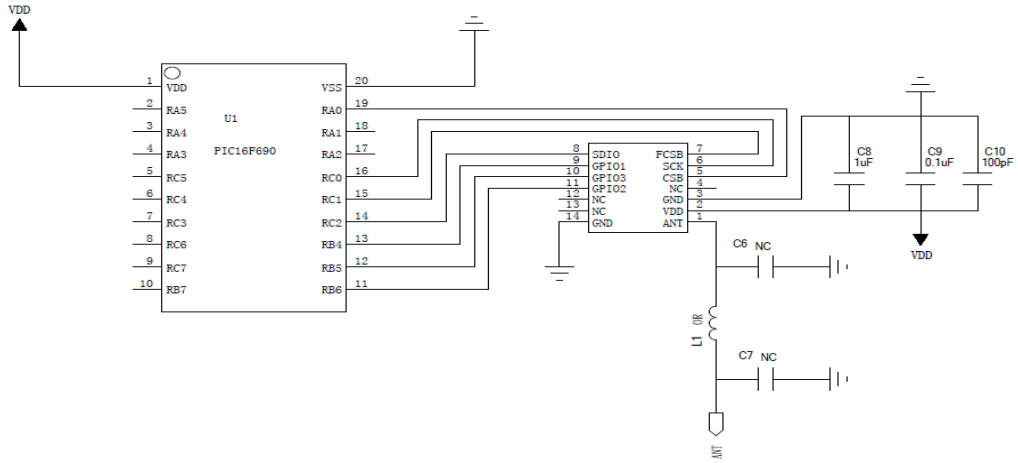


Figure 2. RFM300C Application

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

7. Mechanical Dimension (Unit: mm)

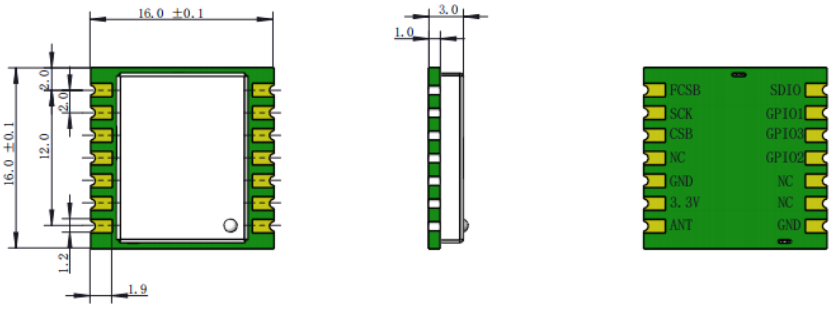


Figure3. RFM300C Mechanical Dimension

8. Order Information

Model	Frequency	Output Power
RFM300C-433S2	433MHZ	+13dBm
RFM300C-868S2	868MHZ	+13dBm
RFM300C-915S2	915MHZ	+13dBm

9. Contact Information

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