HC03RFM

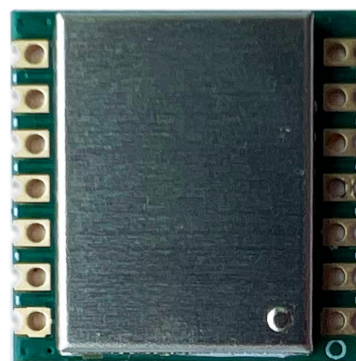## ISM Transceiver Module With +13dBm Output Power

Notes:
The purpose of this HC03RFM specification covers mainly for the hardware and RF parameter information of the module.

HC03RFM

1. General Introduction

HC03RFM is a high performance module. It supports to operate at 917.3MHz, 917.9MHz, 918.5MHz, 919.1MHz, 919.7MHz, 920.3MHz, 920.7MHz, 920.9MHz, 921.1MHz, 921.3MHz, 921.5MHz, 921.7MHz, and 921.9MHz ISM frequency band, and provides down to –118dBm receiving sensitivity coupled with up to +13dBm output power.

2. Features

- Up to 131dB maximum link budget.
- Low RX current of 7mA.
- Up to +13dBm output power.
- Programmable bit rate up to 1.2kbps.
- High sensitivity: down to -118dBm.
- SMD Package (16x16X3.0mm)

3. Applications

- Meter Reading
- Wireless data collection
- Automobile security system
- Home automation and security system
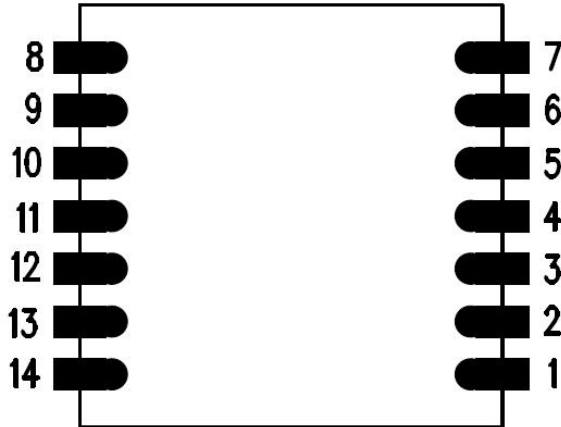
4. Pin Definition

4.1 HC03RFM Pin Definition

Figure 1. HC03RFM Pin Definition

Table 1. HC03RFM Pin Description

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 4.7kΩ 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 15kΩ 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.

[4]. The GPIO pins connect an internal pull-up resistor of 15kΩ 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

Absolute Maximum Rating

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
HC03RFM TX Working Current	917MHz band, P_{out} =+13dBm	-	30		mA
HC03RFM RX Working Current	917MHz band,	-	7		mA
HC03RFM Sleep Current	All band	-	-	1	uA

Transmitter AC Characteristic

parameter	conditions	minimum	typical	maximum	unit
HC03RFM Output Power	917MHz band	-	+13	-	dBm
Symbol Rate	Programmable		1.2		kbps
Frequency Resolution		-	24.8	-	Hz

Receiver AC Characteristic

parameter	conditions	minimum	typical	maximum	unit
RX Sensitivity @1.2kbps	917MHz band	-	-118	-	dBm
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

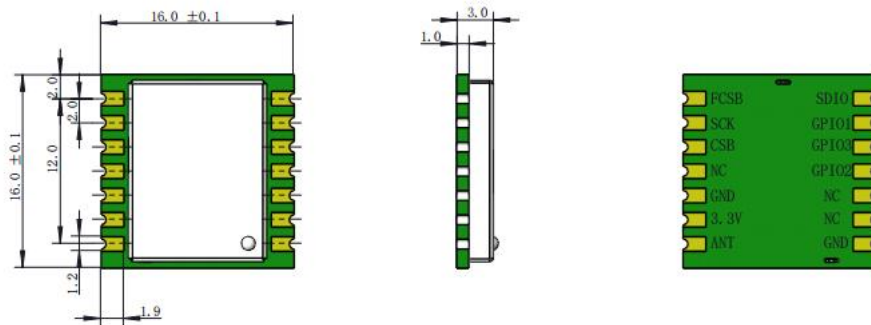**Figure 2. HC03RFM Application**
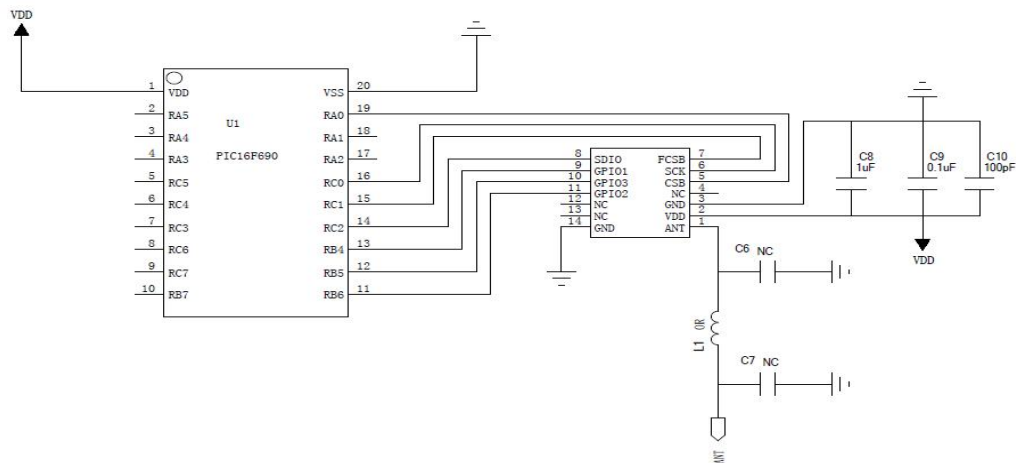
7. Mechanical Dimension（All units in mm）

Figure5. HC03RFM Mechanical Dimension