RF-BM-ND05

Hardware Specification

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● Version History

Version No.	Date	Update
V1.0	2017/01/10	✓ First Release
V1.1	2018/04/28	✓ Update the module photo ✓ Update the parameters
V1.1	2018/08/02	✓ Update company address

Table of Contents

● Overview

These Bluetooth modules are BLE RF modules. With advantages of low power consumption, compact design, long transmission distance and strong anti-interference capability, the modules embedded with high performance IFA, can be widely used in low power local area network communication.

RF-BM-ND05 built upon chip Nordic52840. The module can be used to develop consumer electronic products and phone peripherals over BLE 5.0. It provide a quick BLE solution for the communication between customer's products to mobile devices.

● Module Parameters

SoC	nRF52840QIAA
Supply Voltage	1.7V ~ 5.5V，3. 3V will be recommended
Frequency	2400 MHz ～ 2483.5MHz
Tx Power	-20dBm ～ +8dBm
Sensitivity	-96 dBm
Frequency Error	±20 kHz
FLASH	1MB
RAM	256KB
Operating Temperature Range	-20℃ ～ +70℃ (Chip support -40℃~+85℃， can adjust the working temperature by change the crystal)
Storage Temperature Range	-40℃ ～ +125℃
Module Size	24.8*15.0*2.3mm

● Pin assignment

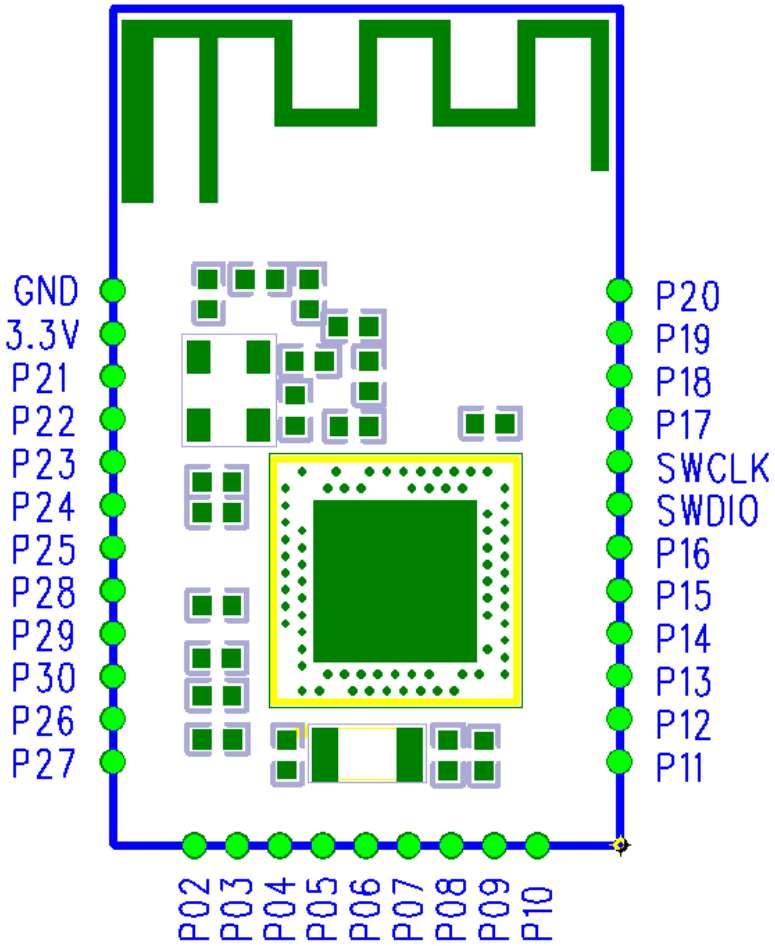

Figure 1 Pin assignment

Pin	Name	Definition	Remarks
Pin1	GND	Ground	Ground
Pin2	VCC	Positive Input	Power Supply: 3.3V
Pin3	P21	I/O	
Pin4	P22	I/O	
Pin5	P23	I/O	
Pin6	P24	I/O	
Pin7	P25	I/O	
Pin8	P28	I/O	
Pin9	P29	I/O	
Pin10	P30	I/O	
Pin11	P26	I/O	
Pin12	P27	I/O	
Pin13	P02	I/O	
Pin14	P03	I/O	
Pin15	P04	I/O	
Pin16	P05	I/O	
Pin17	P06	I/O	
Pin18	P07	I/O	
Pin19	P08	I/O	
Pin20	P09	I/O	
Pin21	P10	I/O	
Pin22	P11	I/O	
Pin23	P12	I/O	
Pin24	P13	I/O	
Pin25	P14	I/O	
Pin26	P15	I/O	
Pin27	P16	I/O	
Pin28	SWDIO	—	
Pin29	SWCLK	—	
Pin30	P17	I/O	
Pin31	P18	I/O	
Pin32	P19	I/O	
Pin33	P20	I/O	

● Package Size

Thickness of the module is 2.3 ± 0.1 mm。

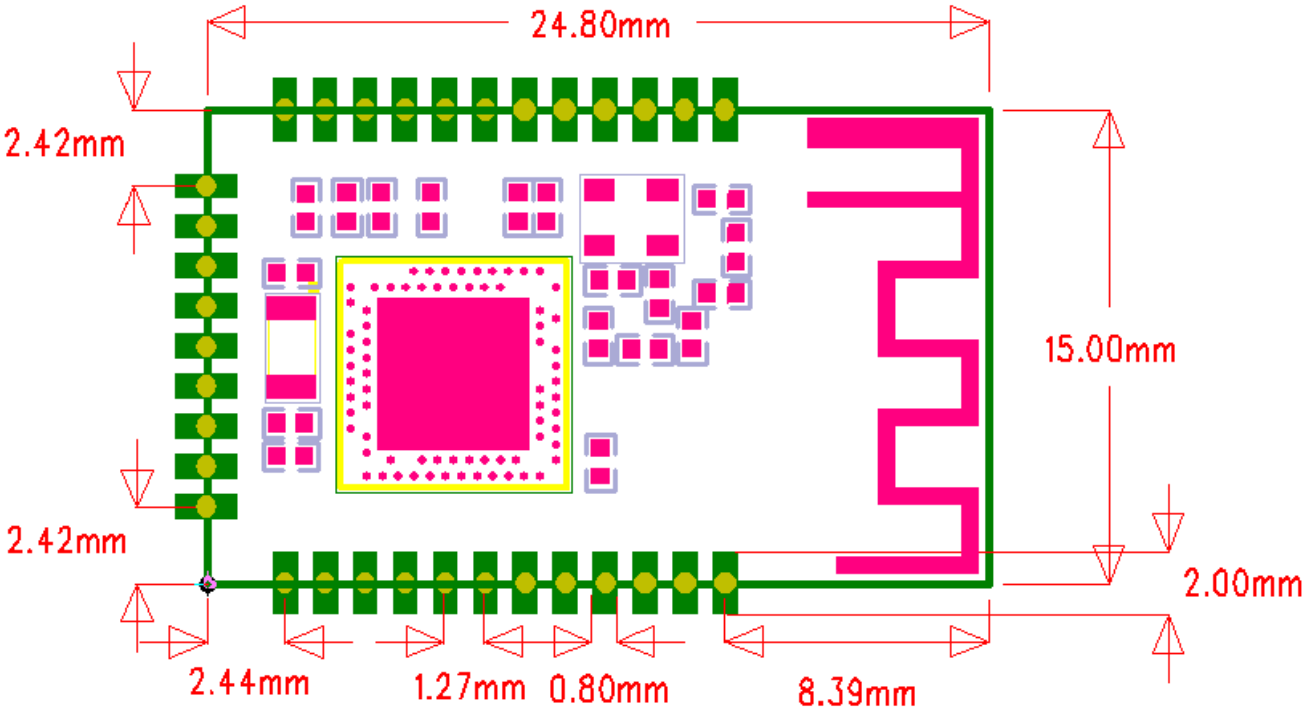

Figure 2 Package Size

● Layout Proposals

The serpentine antenna on PCB is free space electromagnetic radiation. The place and layout range are keys to enhance the data rate and transmit range.

Thus， Below are the layout proposals for antenna and route:

1, Place the antenna on the edge(corner) of the PCB backplane.

2, Make sure there is no signal or copper foil in each layer.

3, Hollowing out the yellow pane part (figure 3) to make less S11 interference.

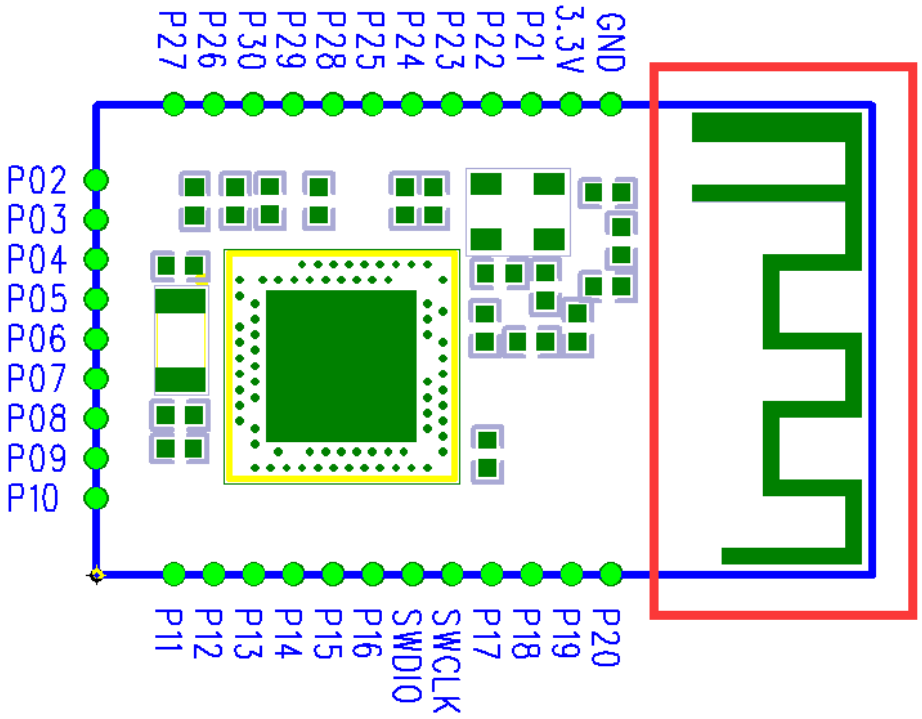

Figure 3

● Recommended Operating Conditions

Notes：

(1) The operating temperature is limited to the change of crystal's frequency.

(2) To ensure the RF performance, the ripple wave of the source must be less than ±300mV.

Identification	Test Condition	Min	Typ	Max	Unit
Source & IO	Battery mode	1.6	3.3	5.5	V
Operating Temperature	/	-20	25	70	℃
Environmental Hot Pendulum		-20		20	℃/Min

● Reflow Conditions

1. Heating mode： conventional convection or IR convection；
2. Times allowed to reflow: 2 times, for the below reflow (conditions)（figure 4）；
3. Temperature curve: the reflow should be in accordance with the temperature curve shown below (figure 4)；
4. Highest： 245℃。

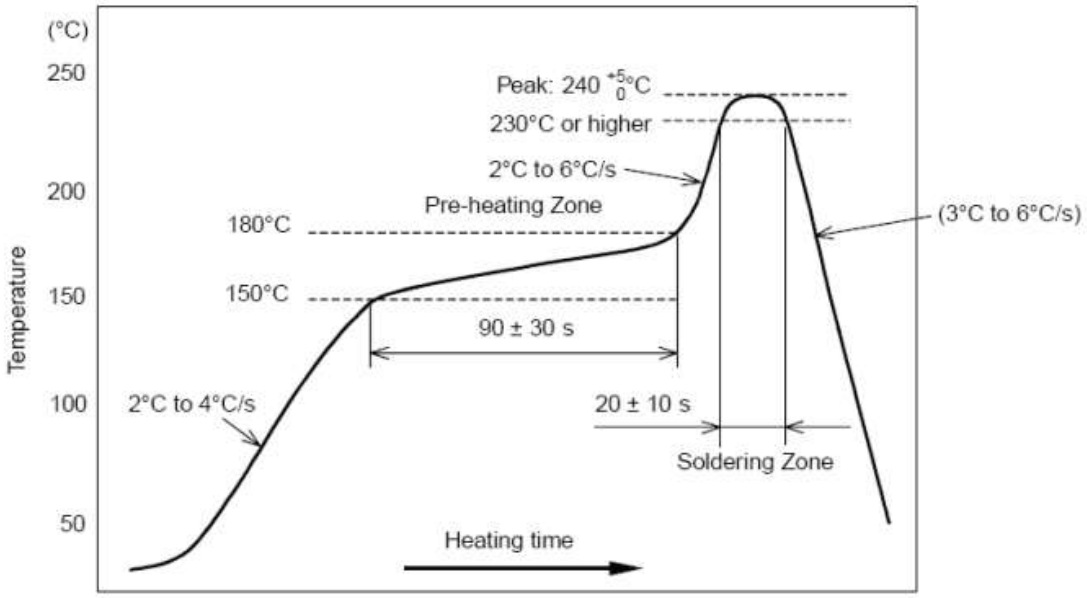

Figure 4 Parts' heat-resistance temperature curve for welding(welding point）

● Electrostatic Discharge Warnings

Module will be damaged for the discharge of static, RF star suggest that all modules should follow the 3 precautions below.:

1. According to the anti-static measures, bare hands are not allowed to touch modules.
2. Modules must be placed in anti- static areas.
3. Take the anti-static circuitry(when inputting HV or VHF) into consideration in product design.

Static may result in the degradation in performance of module, even causing the failure.

● Contact Us

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