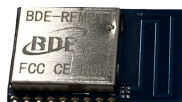


Low Power, Long Range Sub-1 GHz Module



Key Features

- n Ultra low power Sub-1 GHz
- n Supports 868MHz, 903MHz~927MHz
- n Powerful Cortex-M3 MCU for your IoT products
- n RF performance
 - Ø Max. tune-up power with tolerance: 10 ± 1.0 dBm
 - Ø RX sensitivity: up to -124 dBm using Long-Range Mode, -110 dBm at 50 kbps (Sub-1 GHz)
- n Communication range:
 - Ø 2000 meters (LOS) @ +15 dBm, 625 bps
 - Ø 1000 meters (LOS) @ +10 dBm, 2.4 kbps
- n Ultra-low power:
 - Ø Power supply: 1.8 V ~ 3.8 V
 - Ø RX: 5.4 mA
 - Ø TX @ +10 dBm: 13.4 mA
 - Ø Standby: 0.7 uA (RTC running and RAM/CPU retention)
 - Ø Shutdown: 185 nA (Wake up on external events)
- n Antenna: PCB antenna
- n Small Size:
 - Ø 20.5 mm x 13 mm x 1.5 mm (Without Shielding)
 - Ø 20.5 mm x 13 mm x 2.3 mm (With Shielding)
- n FCC, CE, RoHs compliant

Descriptions

BDE-RFM204 is an ultra-low power, long-range Sub-1 GHz module targeted at low power sensors and long range applications.

BDE-RFM204 integrates a high performance RF core and also a powerful ARM cortex-M3 processor, which makes it suitable for certain products that need high performance MCU to deal with difficult applications.

The module supports 868MHz, 903MHz~927MHz, with the maximum output power 10 ± 1.0 dBm, along with its Long-Range Mode feature, the module is to be the best choice for IoT products which utilize battery supply power and require long range communication.

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Applications

- n Long-range sensor applications
- n Smart grid and automatic meter reading
- n Wireless healthcare applications
- n Industry monitoring and control
- n Home and building automation
- n Energy-harvesting applications

Electrical Characteristics

- n Absolute maximum rating

Rating	Min	Typ	Max	Unit
Storage Temperature	-40	-	125	°C
VDDS	-0.3	-	4.1	V
Other Digital Terminals	-0.3	-	$V_{DDS}+0.3 \leq 4.1$	V

- n Recommended operating conditions

Rating	Min	Typ	Max	Unit
Operating Temperature	-40	-	85	°C
VDDS	1.8	3.3	3.8	V

Pin Out

Fig. 1 shows the pin out of BDE-RFM204.

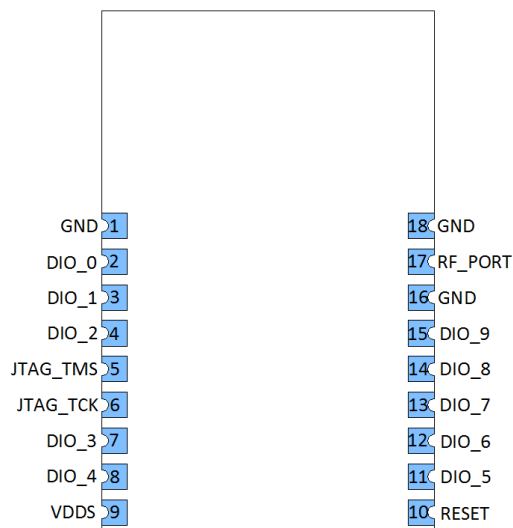


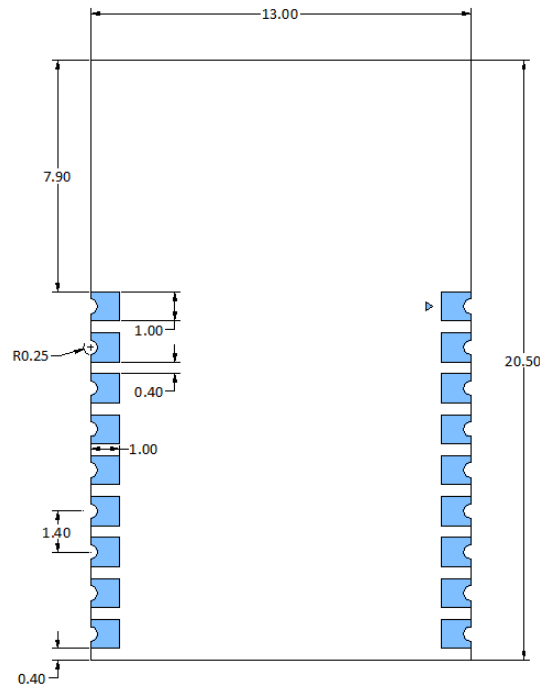
Fig. 2: The pin out of BDE-RFM204 (TOP VIEW)

Table 1: Pin definitions of BDE-RFM204

Pin Number	Pin Name	Definitions
1	GND	Power Ground
2	DIO_0	GPIO, Sensor Controller, high-drive capability
3	DIO_1	GPIO, Sensor Controller, high-drive capability
4	DIO_2	GPIO, Sensor Controller, high-drive capability
5	JTAG_TMS	JTAG_TMS
6	JTAG_TCK	JTAG_TCK
7	DIO_3	GPIO, High-drive capability, JTAG_TDO
8	DIO_4	GPIO, High-drive capability, JTAG_TDI
9	VDDS	Power Supply
10	RESET	Reset, Active-low
11	DIO_5	GPIO, Sensor Controller, Analog
12	DIO_6	GPIO, Sensor Controller, Analog
13	DIO_7	GPIO, Sensor Controller, Analog
14	DIO_8	GPIO, Sensor Controller, Analog
15	DIO_9	GPIO, Sensor Controller, Analog
16	GND	Power Ground
17	RF_PORT	Antenna Port
18	GND	Power Ground

Overall Dimensions

Fig. 2 shows the overall dimensions of BDE-RFM204. The module measures 13 mm long by 13 mm wide by 1.5 mm high without the shield.



Note: All dimensions are in mm

Fig. 2: Overall Dimensions of BDE-RFM204 (BOTTOM VIEW)

Warning(to be placed on End Products)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may

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cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

If power exceeds the limit and the distance (Over 20cm distance in actual use between the device and user) is compliant with the requirement

FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.

Notice to OEM integrator

The end user manual shall include all required regulatory information/warning as show in this manual.

The OEM integrator is responsible for testing their end-product for any additional compliance requirements required with this module installed.

If the FCC ID is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. The end product shall have the words "Contains Transmitter Module FCC ID:2ABRUBDRFM204".

Contacts

BDE Technology Co. Ltd

Address: Innovation Building C1-1105, 182 Science Ave, Science City, Guangzhou, 510663, China

494 E Thornhill Ln, Palatine, IL 60074, USA

Tel: +86-020-28065335 Fax: +86-020-28065338

Website: www.bdecomm.com Email: info@bdecomm.com