General Description



BDE-RFM214 is an ultra-low power, long-range Sub-1 GHz module targeted at low power sensors and long range applications.

BDE-RFM214 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 multiple ISM bands and SRD Systems, such as: 315 MHz, 433 MHz, 470 MHz, 500 MHz, 779 MHz, 868 MHz, 915 MHz, and 920 MHz, with the maximum output power up to 15 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.

Key Features

- Ultra low power Sub-1 GHz
- Supports multiple ISM bands and SRD Systems, such as: 315 MHz, 433 MHz, 470 MHz, 500 MHz, 779 MHz, 868 MHz, 915 MHz, 920 MHz
- Powerful Cortex-M3 MCU for your IoT products
- RF performance
  - TX power: Up to +15 dBm
  - RX sensitivity: up to -124 dBm using Long-Range Mode, -110 dBm at 50 kbps (Sub-1 GHz)
- Communication range:
  - 3000 meters (LOS) @ +15 dBm, 625 bps
  - 2000 meters (LOS) @ +10 dBm, 2.4 kbps
- Ultra-low power:
  - Power supply: 1.8 V ~ 3.8 V
  - RX: 5.4 mA
  - TX @ +10 dBm: 13.4 mA
  - Standby: 0.7 uA (RTC running and RAM/CPU retention)
  - Shutdown: 185 nA (Wake up on external events)
- Antenna: no antenna, connect with user board through half-hole
- Small Size:
  - 13 mm x 13 mm x 1.5 mm (Without Shielding)
  - 13 mm x 13 mm x 2.3 mm (With Shielding)

Applications

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

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1. References

[1] CC1310 resources: https://www.ti.com/product/CC1310

2. Block Diagram

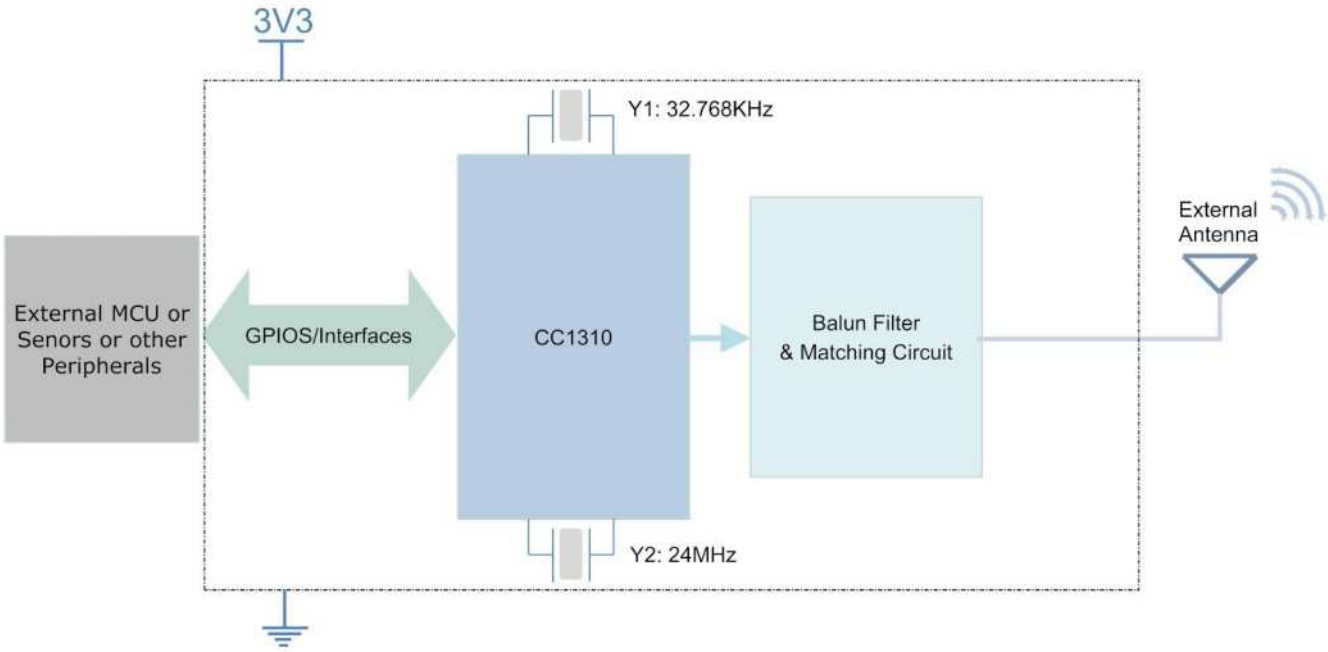


Figure 2-1. BDE-RFM214 Module Block Diagram

3. Terminal Configuration and Functions

3.1 Pin Diagram

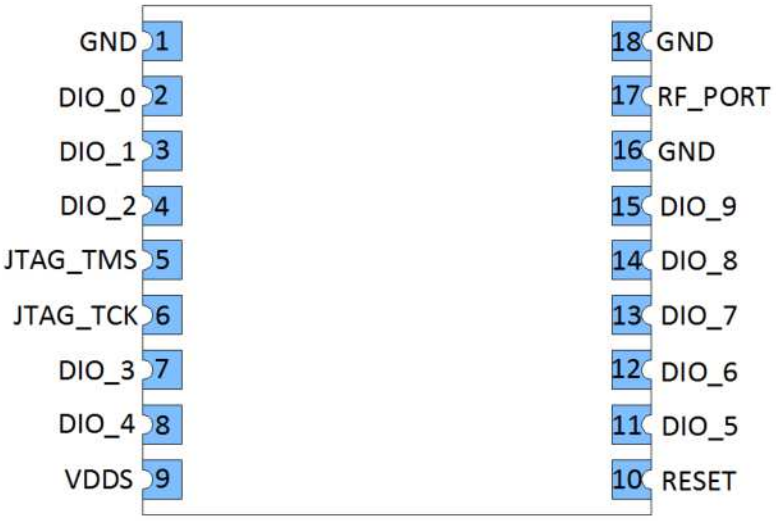


Figure 3-1. Pin Diagram (Top View)

3.2 Pin Attributes and Pin Multiplexing

Table 3-1. Pin Description

Pin #	Pin Name	Description
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

4. Specifications

4.1 Absolute Maximum Ratings

PARAMETER	MIN	MAX	UNIT
VDDS	-0.3	4.1	V
Other Digital Terminals	-0.3	VDDS+0.3≤4.1	V
Storage Temperature	-40	125	°C

4.2 Recommended Operating Conditions

PARAMETER	MIN	TYP	MAX	UNIT
VDDS	1.8	3.3	3.8	V
Operating Temperature	-40	-	85	°C

5. Mechanical Specifications

5.1 Dimensions

Fig 5-1 shows the overall dimensions of BDE-RFM214. The module measures 13 mm long by 13 mm wide by 1.5 mm high without the shield.

Note: All dimensions are in mm.

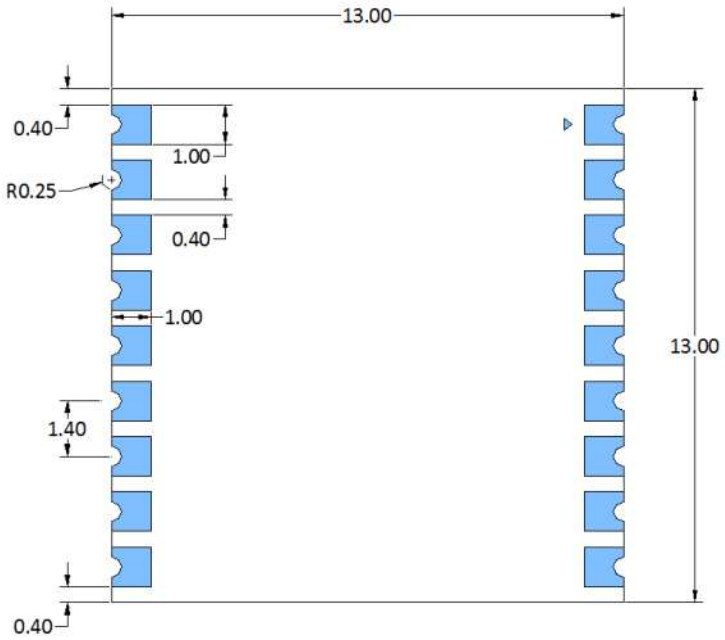


Figure 5-1. Mechanical Drawing

6. Packaging Information



Fig 6-1. Package information

7. Ordering Information

Part Number	Size (mm)	Core Chip	Shipping Form	MOQ
BDE-RFM214	13 x 13 x 2.3	CC1310	Tray	1K

8. Revision History

Revision	Date	Description
V1.0	6-May-2018	Initial Release
V2.0	14-Apr-2021	Replacement of template

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