RAK13300 WisBlock LPWAN Wireless Module Datasheet

Overview

Description

The RAK13300 is a LoRa module based on the SX1262 LoRa chip. It provides an easy-to-use, small-size, and low-power solution for long-range wireless data applications.

The module complies with LoRaWAN standards and supports LoRa point-to-point communication. It can easily connect to different LoRaWAN server platforms like TheThingsNetwork (TTN), Chirpstack, Actility, etc.

Features

- Based on Semtech SX1262 LoRa chip
- LoRaWAN Specification compatible
- Supports the following bands: EU433, CN470, IN865, EU868, AU915, US915, KR920, RU864, and AS923
- LoRaWAN Activation by OTAA/ABP
- LoRa Point-to-Point (P2P) communication
- Ultra-Low Power Consumption
- Supply Voltage: 2.0 V ~ 3.6 V
- Temperature Range: -40° C ~ 85° C
- Module Size: 25 mm x 35 mm

Specifications

Overview

Mounting

The RAK13300 WisBlock LPWAN can be mounted to the IO slot of the WisBlock Base b

Figure 1 shows the mounting mechanism of the RAK13300 on a WisBlock Base board, such
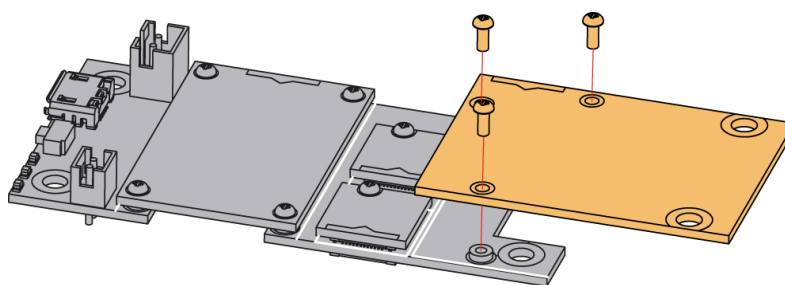
as the RAK5005-O ⧉ .

Figure 1: RAK13300 WisBlock LPWAN Mounting

Hardware

The hardware specification is categorized into five parts. It shows the pinouts and their corresponding functions and diagrams. It also covers the rf, electrical, and mechanical parameters, which include the tabular data of the functionalities and standard ratings of the RAK13300 WisBlock LPWAN Wireless Module.

Chipset

Vendor	Part number
Semtech	SX1262

Pin Definition

The RAK13300 WisBlock LPWAN comprises a standard WisIO connector. The WisIO connector allows the RAK13300 module to be mounted to a WisBlock baseboard, such as RAK5005-O. The pin order of the connector and the pinout definition is shown in **Figure 2**.

> 💡 **NOTE**
>
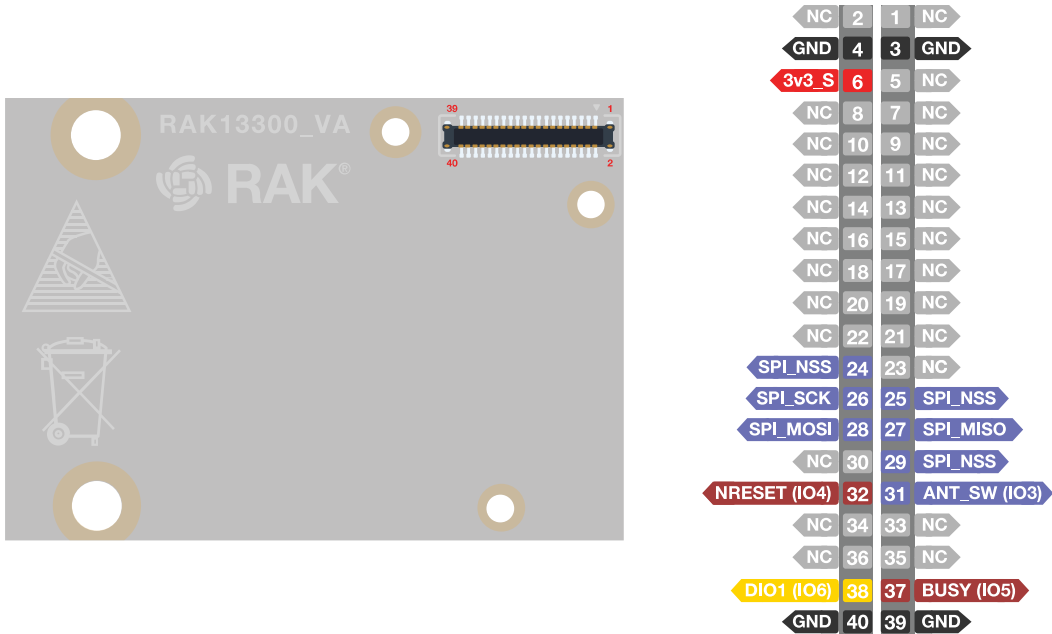> SPI related pin, NRESET, ANT_SW, DIO1, 3V3 and GND are connected to WisIO connector.

Figure 2: RAK13300 WisBlock LPWAN Pinout

RF Characteristics

Operating Frequencies

The table below shows the supported LoRaWAN Bands of the RAK13300 module:

Module	Region	Frequency (MHz)
RAK13300(L)	Europe	EU433
	China	CN470
RAK13300	Europe	EU868
	America	US915
	Australia	AU915
	Korea	KR920
	Asia	AS923
	India	IN865
	Russia	RU864

Electrical Characteristics

Absolute Maximum Ratings

Symbol	Description	Min.	Nom.	Max.	Unit	Note
3V3_S	LoRa chip and IO pins supply voltage	-0.5	3.3	3.9	V	Connected internally to VBAT_SX and VBAT_SX_IO
ESD HBM	Human body model	-	-	2000	V	
ESD CDM	Charged device model	-	-	500	V	

Recommended Operating Conditions

Symbol	Description	Min.	Nom.	Max.	Unit	Note
3V3_S	LoRa chip and IO pins supply voltage	2.0	3.3	3.7	V	Connected internally to VBAT_SX and VBAT_SX_IO

Mechanical Characteristics

Board Dimensions

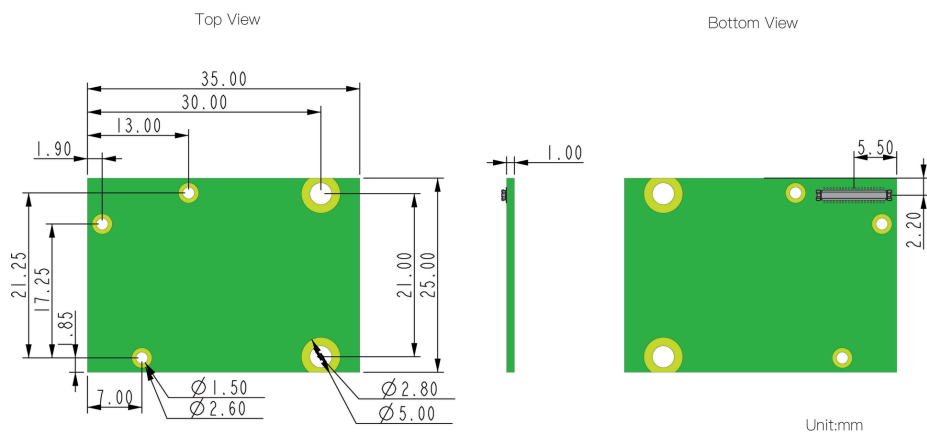Figure 3 shows the dimensions and the mechanical drawing of the RAK13300 module.

Figure 3: RAK13300 WisBlock LPWAN Dimensions
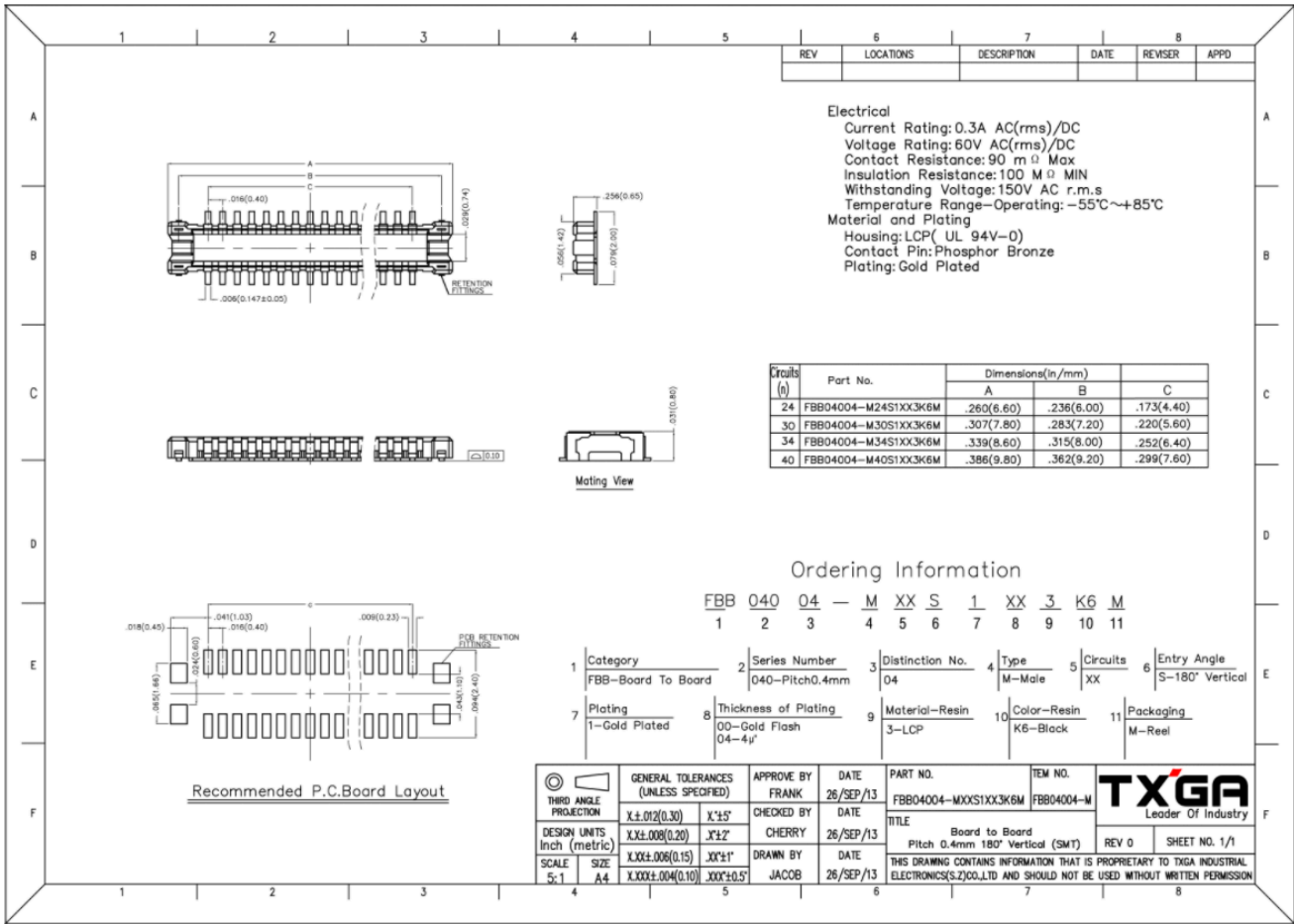
WisConnector PCB Layout

Figure 4: WisConnector PCB Footprint and Recommendations
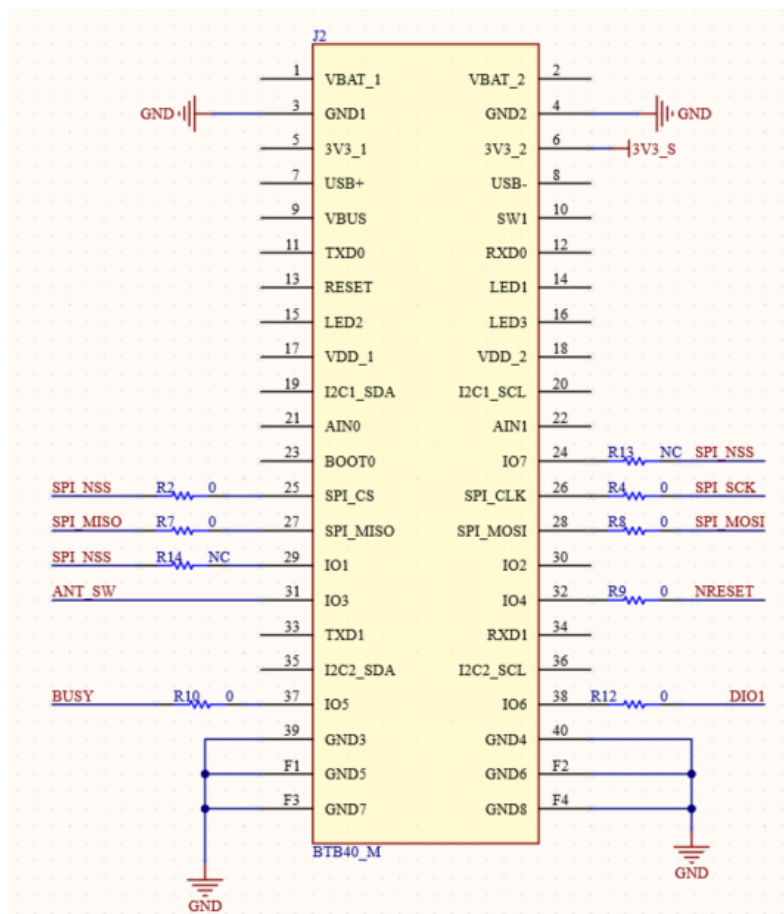
Schematic Diagram
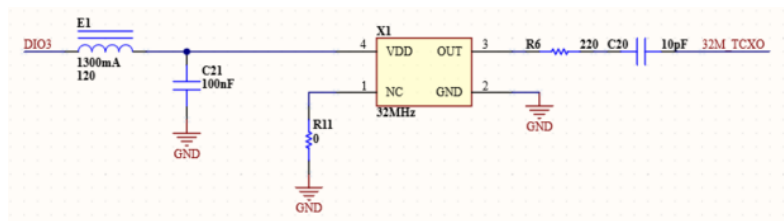
Connector

Figure 5: RAK13300 Module WisConnector
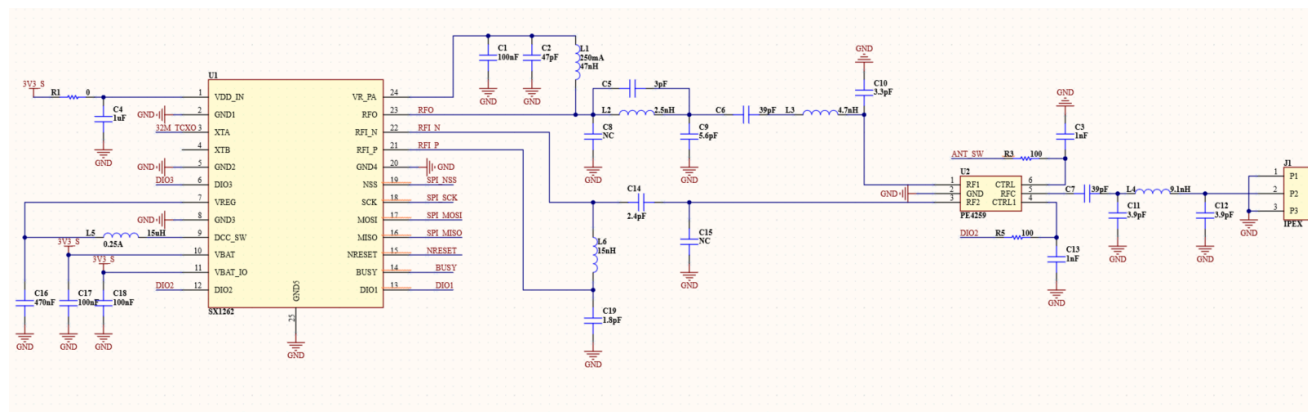
Oscillator

Figure 6: RAK13300 Oscillator

SX1262

Figure 7: RAK13300 Module WisConnector

💡 **NOTE**

- Uses DC-DC Converter as default.

- **J1** is an IPEX Connector for LoRa antenna.

Certification

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