RAK1901 WisBlock Temperature and Humidity Sensor Datasheet

Overview

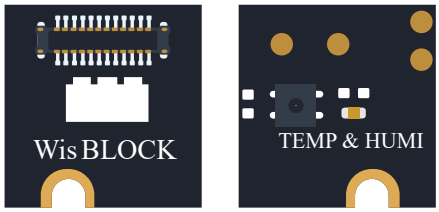


Figure 1: RAK1901 WisBlock Sensor

Description

RAK1901 is a WisBlock Sensor that extends the WisBlock system with a Sensirion SHTC3 temperature and humidity sensor. A ready-to-use SW library and tutorial make it easy to build up an environmental temperature and humidity data acquisition system.

Features

- **Temperature sensor accuracy**: ±0.2° C
- **Temperature range**: -40° C to +125° C
- **Humidity sensor accuracy**:±2.0% RH
- **Humidity range**:0 to 100%
- **Voltage Supply**: 3.3 V
- **Current Consumption**: 0.3 uA to 270 uA
- **Chipset**: Sensirion SHTC3
- **Module size**: 10 × 10 mm

Specifications

Overview

Mounting

Figure 2 shows the mounting mechanism of the RAK1901 module on a WisBlock Base board. The RAK1901 module can be mounted on the slots: A, B, C, D, E, & F.

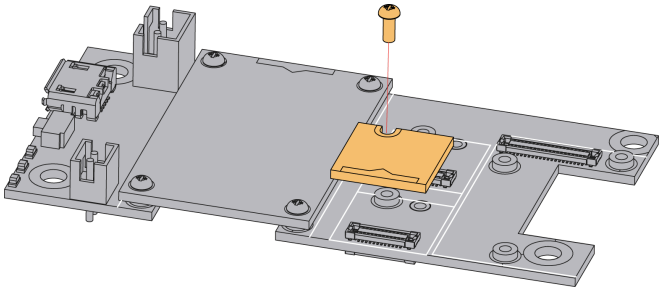


Figure 2: RAK1901 WisBlock Sensor Mounting

Hardware

The hardware specification is categorized into six parts. It shows the chipset of the module and discusses the pinouts, sensors, and the corresponding functions and diagrams. It also covers the electrical and mechanical parameters that include the tabular data of the functionalities and standard values of the RAK1901 WisBlock Temperature and Humidity Sensor.

Chipset

Vendor	Part number
Sensirion	SHTC3

Pin Definition

The RAK1901 WisBlock Temperature and Humidity Sensor comprises a standard WisBlock connector. The WisBlock connector allows the RAK1901 module to be mounted to a WisBlock Base board. The pin order of the connector and the pinout definition is shown in Figure 3.

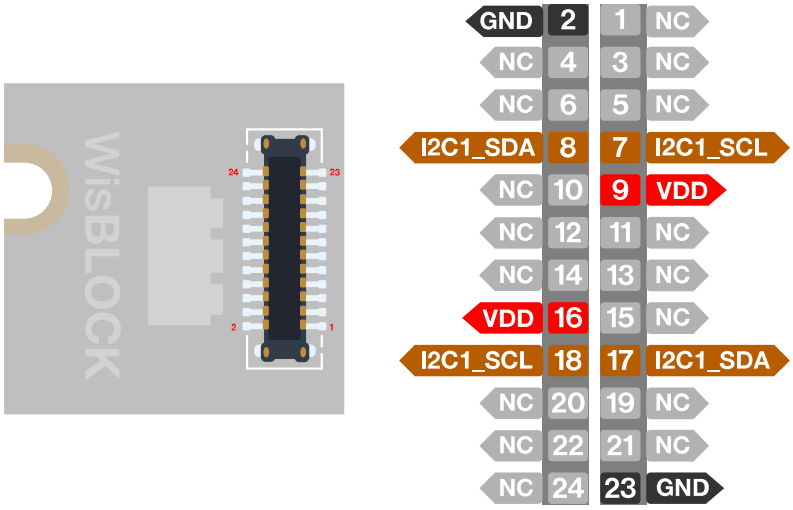


Figure 3: RAK1901 WisBlock Sensor Pinout Diagram

> **NOTE**
>
> Only the **I2C** related pins, **VDD** and **GND** are connected to this module.

If a 24-pin WisBlock Sensor connector is used, the IO used for the output pulse depends on what slot the module is plugged in. The following table shows the default IO used for different slots:

SLOT A	SLOTB	SLOT C	SLOT D	SLOT E	SLOT F
WB_IO1	WB_IO2	WB_IO3	WB_IO5	WB_IO4	WB_IO6

Sensors

Temperature Sensor

Parameter	Conditions	Value	Units
Accuracy Tolerance	Typ.	±0.2	°C
Repeatability	-	0.1	°C
Resolution	-	0.01	°C
Specified Range	-	-40 to +125	°C
Response Time	τ 63%	<5 to 30	s

Parameter	Conditions	Value	Units
Long-term Drift	Typ.	<0.2	°C/y

Humidity Sensor

Parameter	Conditions	Value	Units
Accuracy Tolerance	Typ.	±0.2	%RH
Repeatability	-	0.1	%RH
Resolution	-	0.01	%RH
Hysteresis	-	±1	%RH
Specified Range	extended	0 to 100	%RH
Response Time	τ 63%	8	s
Long-term Drift	Typ.	<0.25	%RH/y

Electrical Characteristics

Recommended Operating Conditions

Symbol	Description	Min	Nom.	Max	Unit
V_{DD}	Power supply for the module	1.6	3.3	3.6	V
I_{sleep}	Sleep current	-	0.3	-	uA
I_{DD}	Measure current (normal mode)	-	430		uA
I_{DD}	Measure current (low-power mode)	-	270	-	uA

Mechanical Characteristics

Board Dimensions

Figure 4 shows the dimensions and the mechanic drawing of the RAK1901 module.

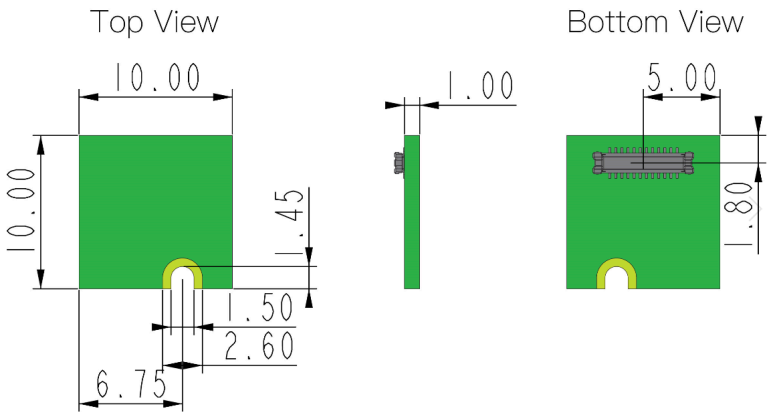
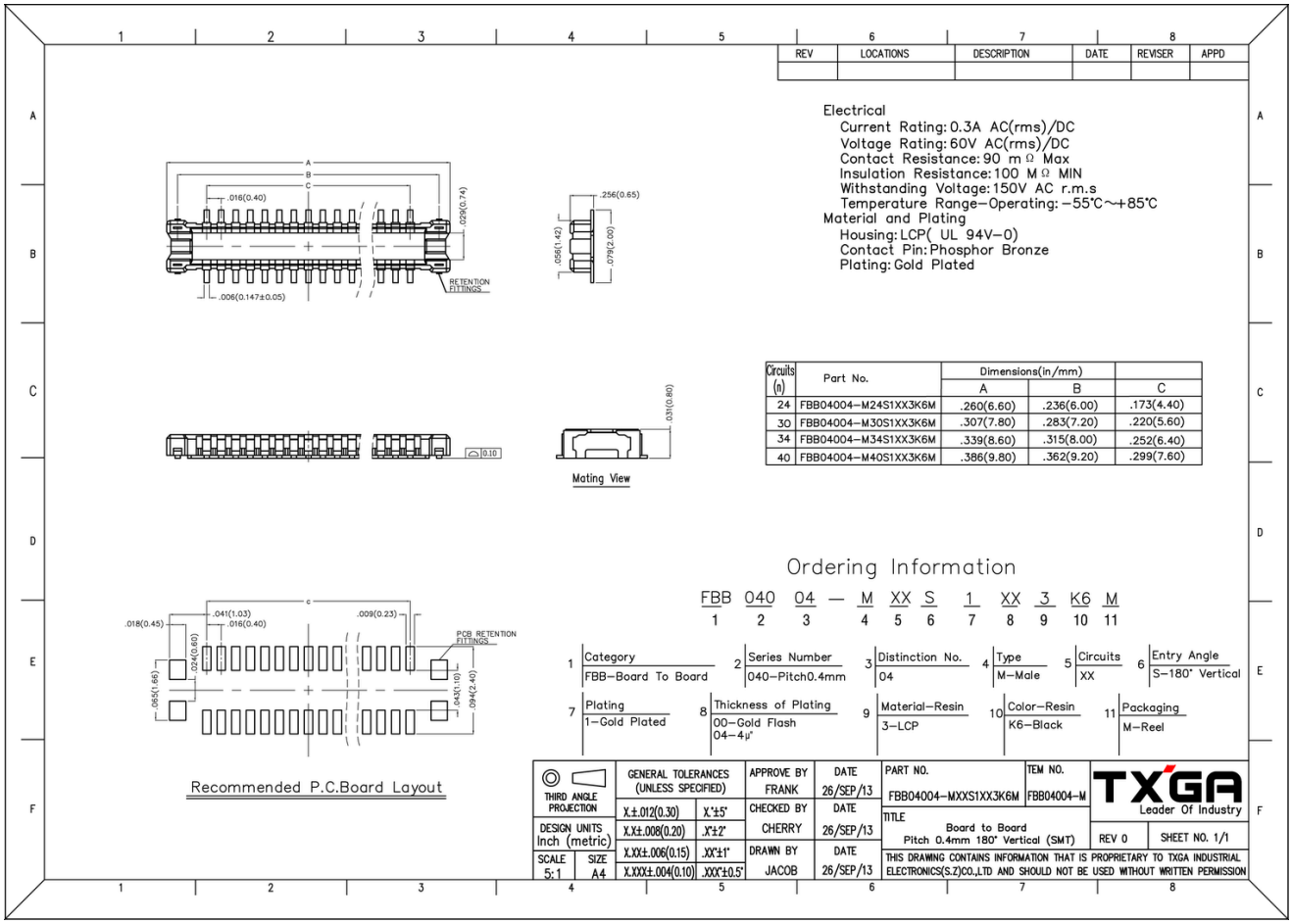


Figure 4: RAK1901 WisBlock Sensor Mechanic Drawing

WisConnector PCB Layout



Circuits (n)	Part No.	Dimensions(in/mm) A	B	C
24	FBB04004-M24S1XX3K6M	.260(6.60)	.236(6.00)	.173(4.40)
30	FBB04004-M30S1XX3K6M	.307(7.80)	.283(7.20)	.220(5.60)
34	FBB04004-M34S1XX3K6M	.339(8.60)	.315(8.00)	.252(6.40)
40	FBB04004-M40S1XX3K6M	.386(9.80)	.362(9.20)	.299(7.60)

Figure 5: WisConnector PCB footprint and recommendations

Schematic Diagram

Figure 5 shows the schematic of the RAK1901 module.

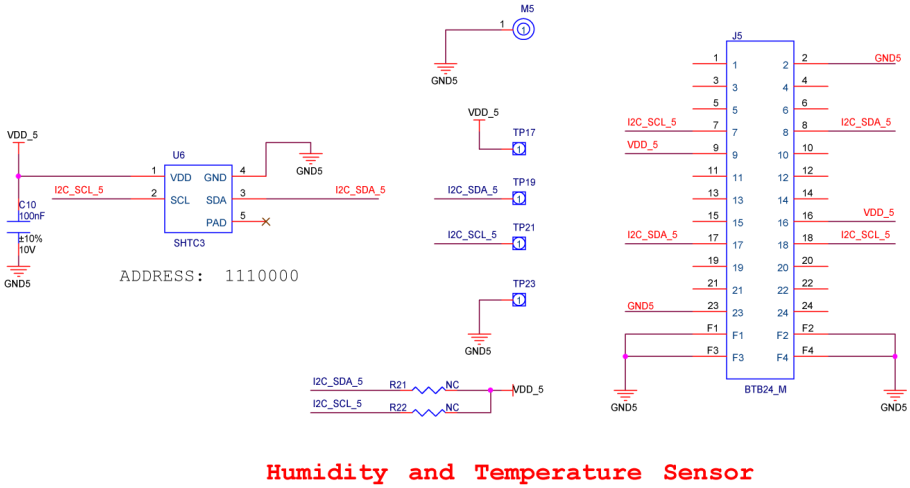


Figure 6: RAK1901 WisBlock Sensor schematics

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