RAK12047 WisBlock VOC Sensor Module Datasheet

Overview

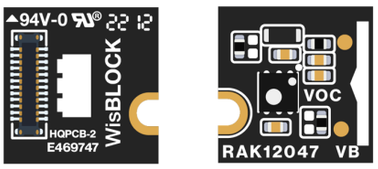


Figure 1: RAK12047 WisBlock VOC Sensor Module

Description

The RAK12047 WisBlock VOC Sensor Module is an indoor air quality sensor based on MOx-based Sensirion Gas Sensor SGP40. It can detect a wide range of Volatile Organic Compounds (VOCs) and is ideal for applications such as air quality monitoring, home automation, and building IoT solutions. The sensor readings are in digital form and interfaced via the I2C protocol.

Features

- Voltage Supply: 3.3 V
- Current Consumption: 34 uA to 3.0 mA
- Chipset: Sensirion SGP40
- Measures VOC
- Measurement range: 0 to 1000 ppm (Ethanol in clean air)
- I2C digital interface
- **Module size**: 10 x 10 mm

Specifications

Overview

Figure 2 shows the mounting mechanism of the RAK12047 module on a WisBlock Base board. The RAK12047 module can be mounted on the slots: **A, B, C, D, E, & F**.

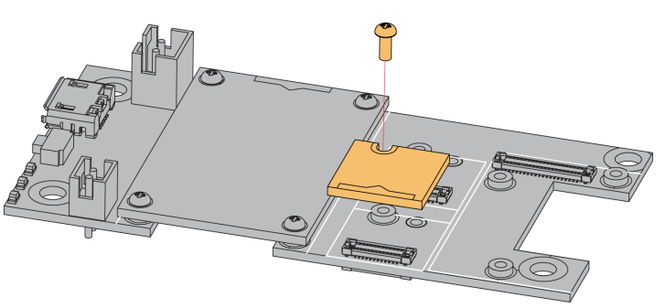


Figure 2: RAK12047 WisBlock VOC Sensor Mounting

Hardware

The hardware specification is categorized into five 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 RAK12047 WisBlock VOC Sensor.

Chipset

Vendor	Part number
Sensirion	SGP40

Pin Definition

The RAK12047 WisBlock VOC Sensor Module comprises a standard WisBlock connector. The WisBlock connector allows the RAK12047 module to be mounted to a WisBlock Base board. The pin order of the connector and the pinout definition is shown in **Figure 3**.

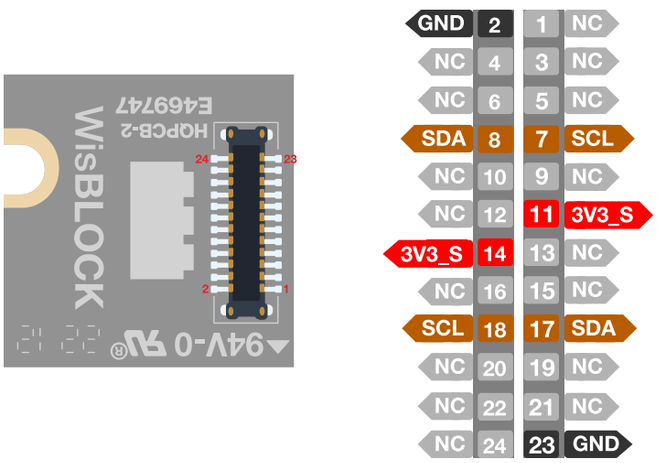


Figure 3: RAK12047 WisBlock VOC Sensor Pinout Diagram

> 📝 **NOTE:**
>
> - Only the **I2C** related pin, **3V3_S**, and **GND** are connected to this module.
> - **3V3_S** voltage output from the WisBlock Base that powers the RAK12047 module can be controlled by the WisBlock Core via **WB_IO2** (WisBlock IO2 pin). This makes the module ideal for low-power IoT projects since the WisBlock Core can totally disconnect the power of the RAK12047 module.

Electrical Characteristics

Absolute Maximum Ratings

Parameter	Min.	Max.	Unit
3V3_S	-0.3	3.6	V
Operating temperature range	-40	70	°C
ESD	-	2 (HBM)	KV

Power Supply Ratings

Symbol	Description	Min.	Nom.	Max.	Unit
3V3_S	Voltage supply	1.7	3.3	3.6	V
IDD1	Idle current	-	34	105	uA
IDD2	Current supply under operation	-	2.6	3.0	mA

Mechanical Characteristics

Board Dimensions

Figure 4 shows the dimensions and the mechanic drawing of the RAK12047 module.

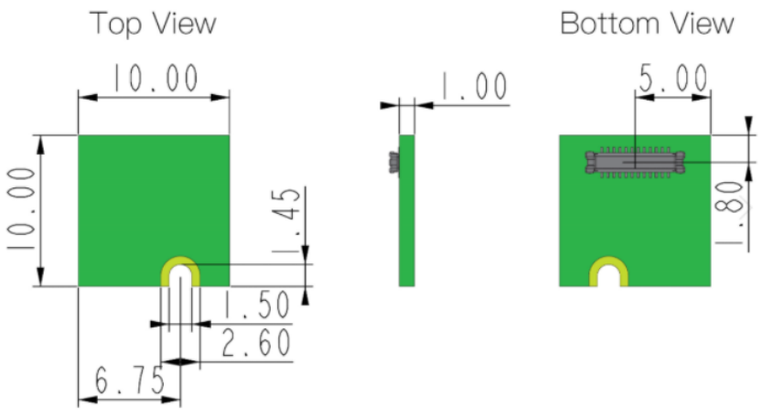
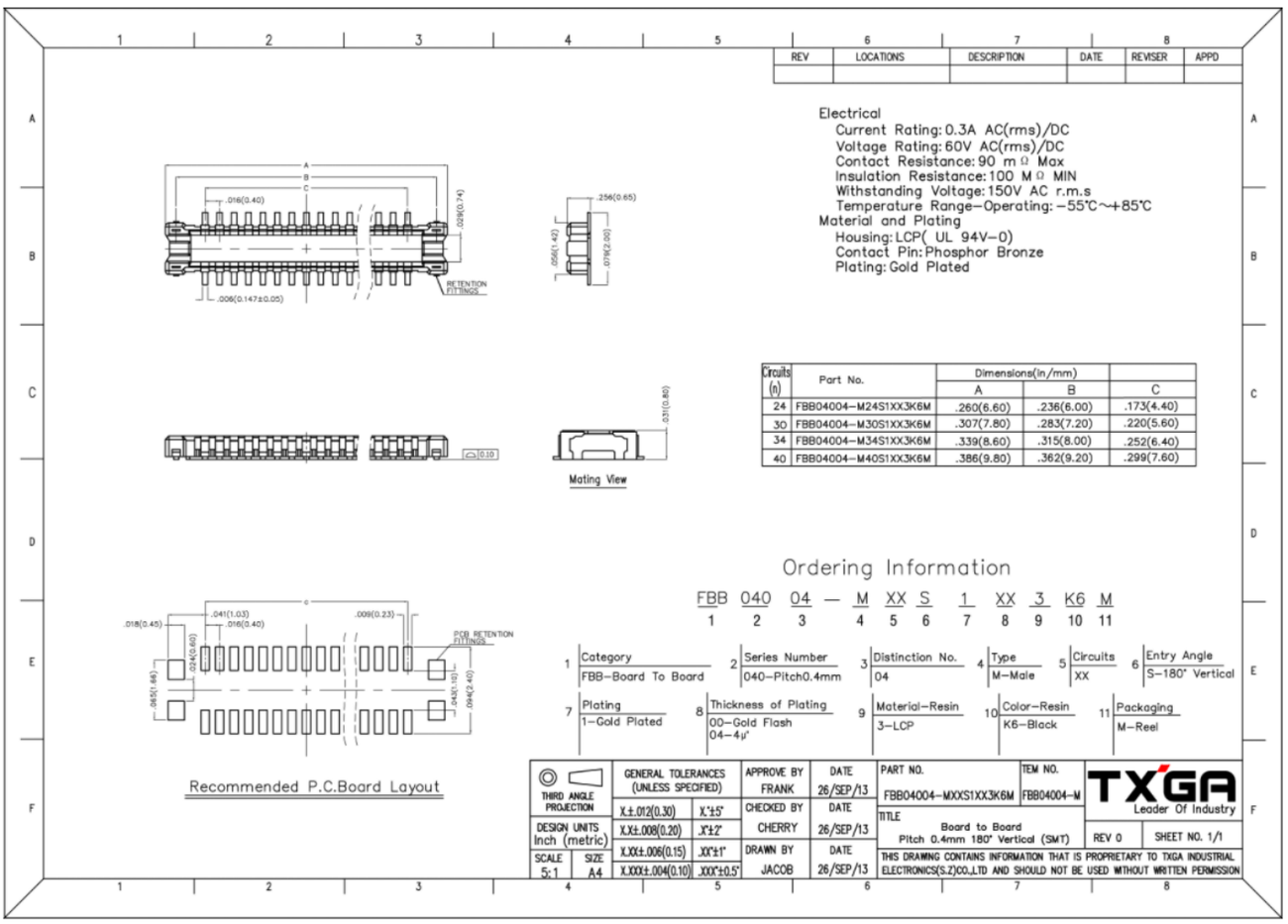


Figure 4: RAK12047 WisBlock VOC Sensor Mechanical Drawing

WisBlock Connector 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: WisBlock Connector PCB footprint and recommendations

Schematic Diagram

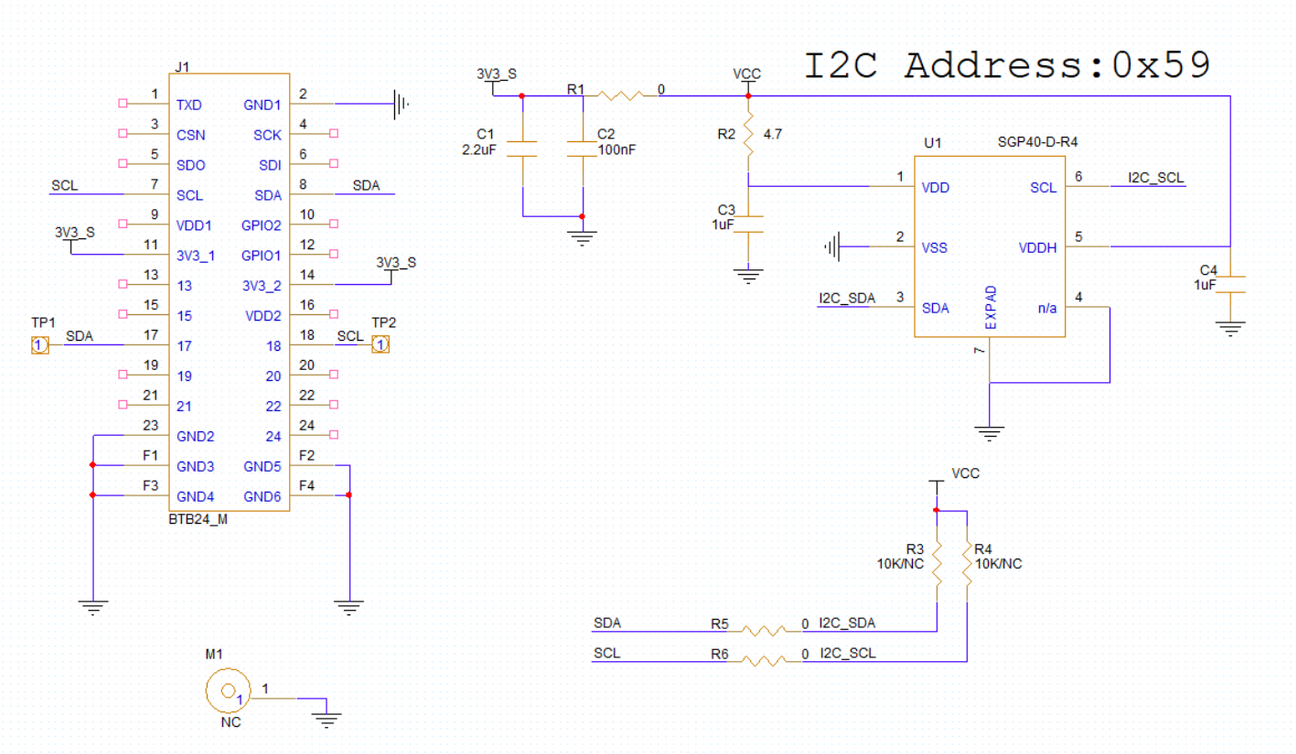


Figure 6: RAK12047 WisBlock VOC Sensor schematic

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