RAK12017 WisBlock IR Detection Sensor Module Datasheet

Overview

Description

The RAK12017 is an IR detection module. This module uses ITR20001 optical switch from Everlight to detect whether the IR Signal reflects. Sample applications of this module are: to identify if an object is approaching and check changes between black and white lines.

Features

- Detect whether IR Signal is reflected back
- λP=940 nm
- 3.3 V Power supply
- Current Consumption: < 21 mA
- Chipset: Everlight ITR20001
- Infrared Line Tracking Range: 1 cm to 5 cm
- Module Size: 15 mm x 25 mm

Specifications

Overview

Mounting

The RAK12017 WisBlock IR Detection Sensor Module can be mounted to the IO slot of the WisBlock Base board. **Figure 1** shows the mounting mechanism of the RAK12017 on a WisBlock Base module.

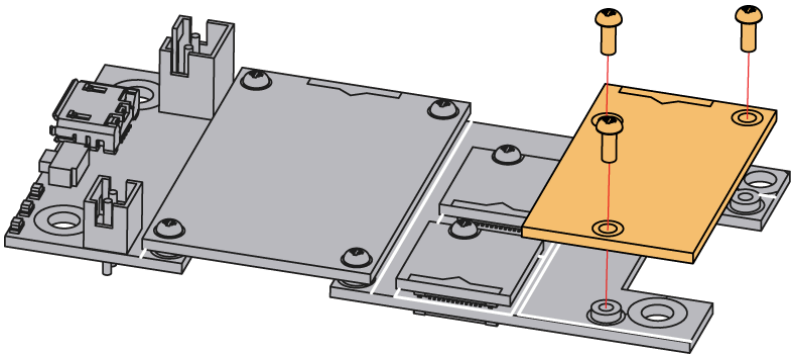

Figure 1: RAK12017 WisBlock IR Detection Module Mounting

> **NOTE**
>
> - RAK12017 has a connector(default NC), and if you need to get the module out of WisBlock Base board, you can solder it with cable and RAK13003 WisBlock IO Expansion Module to position the module however you like.

Hardware

The hardware specification is categorized into five (5) parts. It shows the chipset of the module and discusses the pinouts and their 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 RAK12017 WisBlock IR Detection Sensor Module.

Chipset

Vendor	Part number
Everlight	ITR20001

Pin Definition

The RAK12017 WisBlock IR Detection Sensor Module comprises a standard WisBlock connector. The WisBlock connector allows the RAK12017 module to be mounted to a WisBlock Base board. The pin order of the connector and the pinout definition is shown in Figure 2.

> **NOTE**
>
> - 3V3_S, GND, AIN1, OUT are connected to WisConnector.

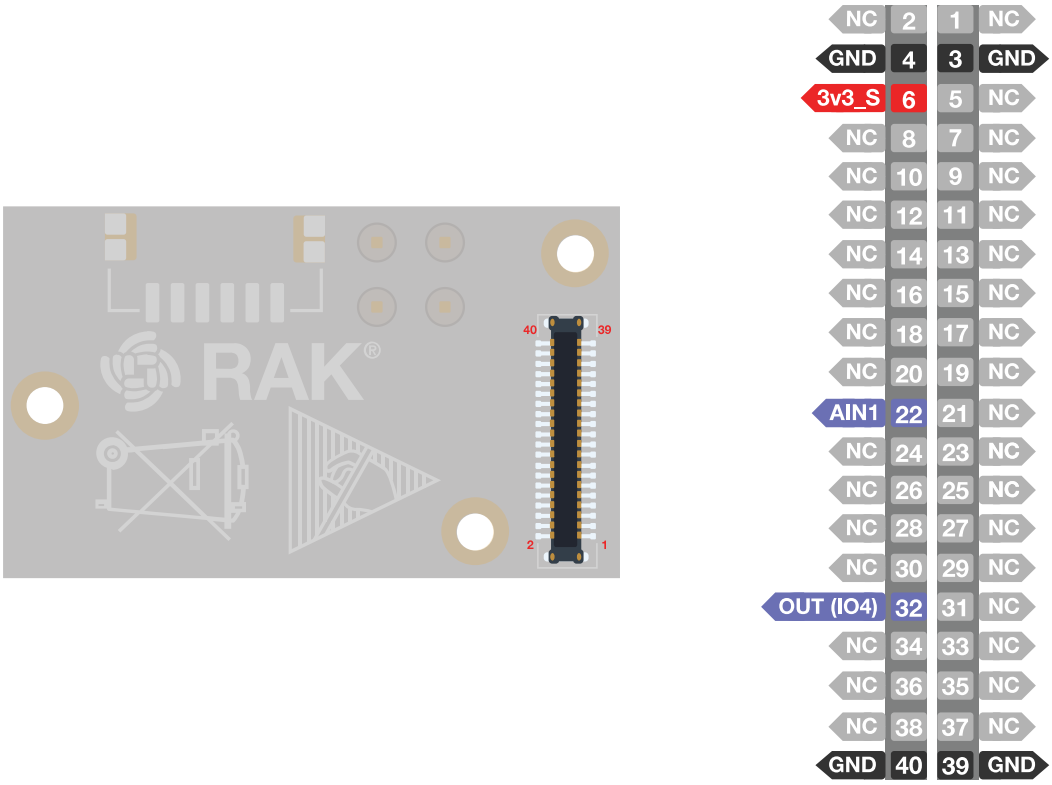

Figure 2: RAK12017 WisBlock IR Detection Module Pinout

Electrical Characteristics

Symbol	Description	Min.	Nom.	Max.	Unit
VDD	Power supply	-	3.3	-	V
λP	Peak Wavelength	-	940	-	nm
VF	Forward Voltage	-	1.2	1.5	V
IF	Forward Current	18	21	-	ma
ICEO	Dark Current	-	-	100	nA
VCE(sat)	C-E Saturation Voltage	-	-	0.4	V
tR	Rise Time	-	25	-	us
tF	Fall Time	-	25	-	us

Mechanical Characteristics

Board Dimensions

Figure 3 shows the dimensions and the mechanical drawing of the RAK12017 module.

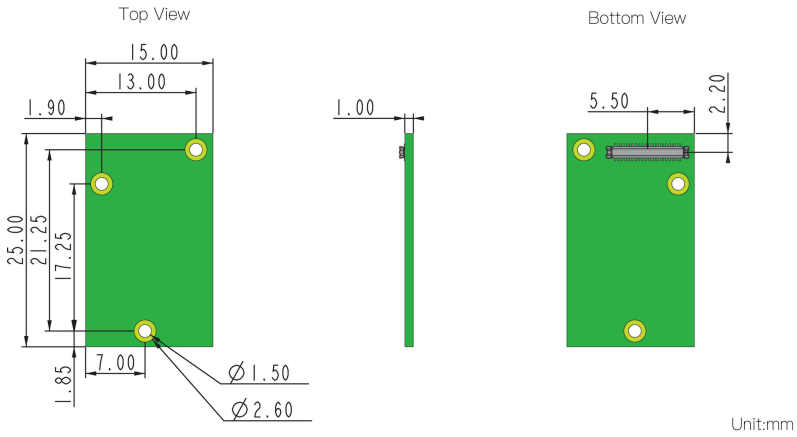

Figure 3: RAK12017 WisBlock IR Detection Module Dimensions

WisConnector PCB Layout

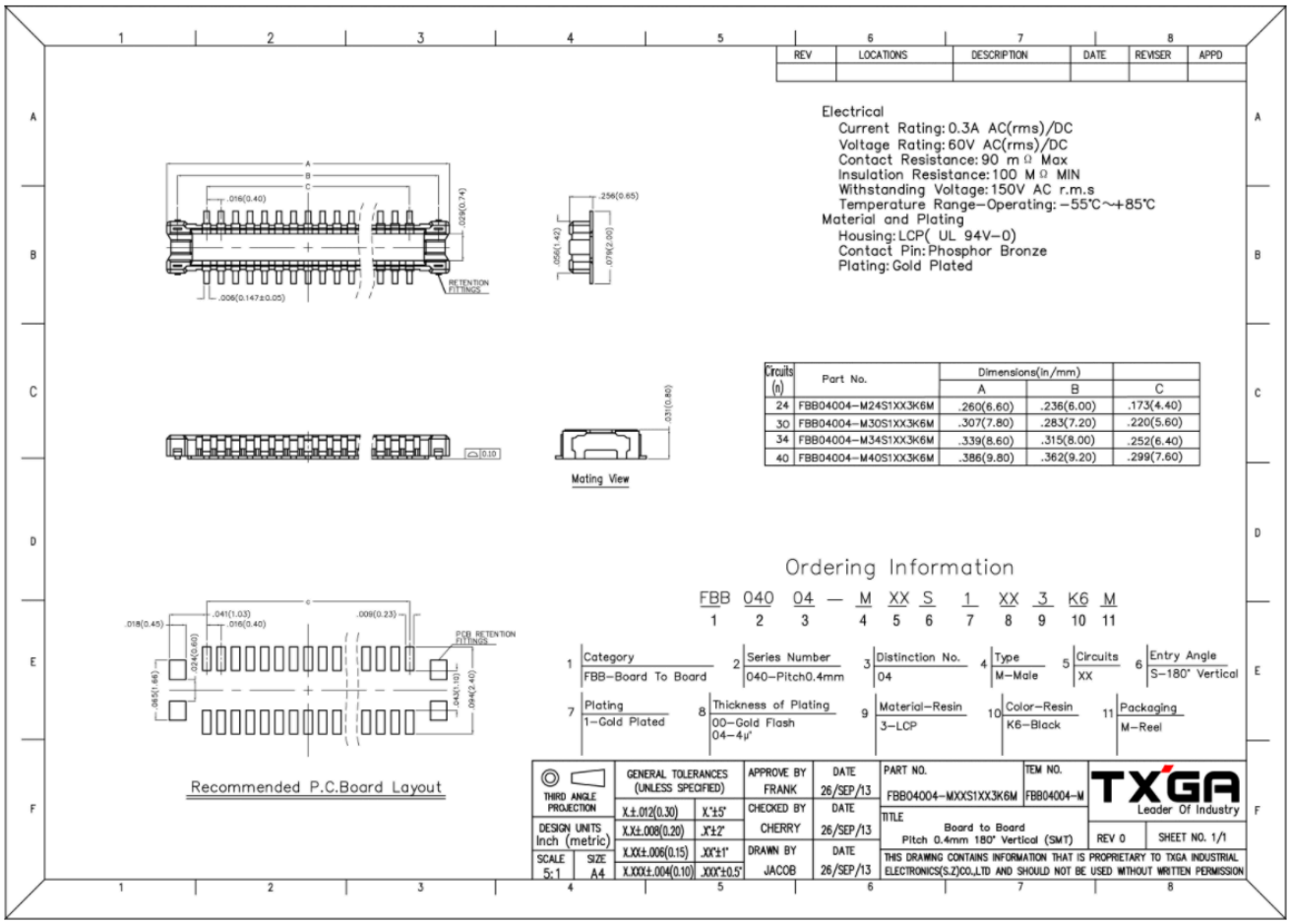

Figure 4: WisConnector PCB Footprint and Recommendations

Schematic Diagram

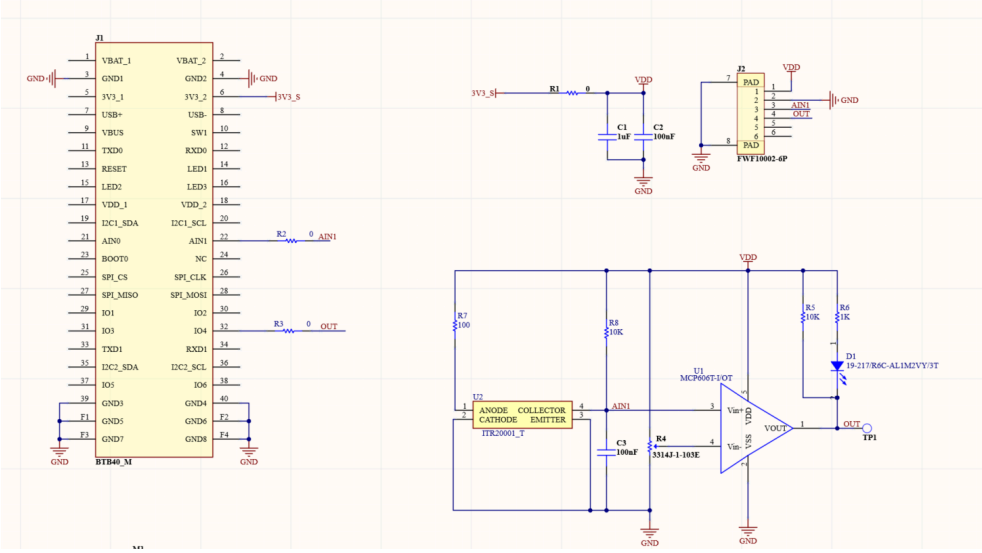

Figure 5: WisConnector and RAK12017 Schematic

NOTE

- 3V3_S is supported by WisBase.
- AIN1 is an analog input.
- The voltage depends on reflection strength.
- The reverse level of MCP606 can be adjusted by indicator.
- D1 is an LED used as an indicator light.
- J2 is used for cable when the module is out of the base.

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