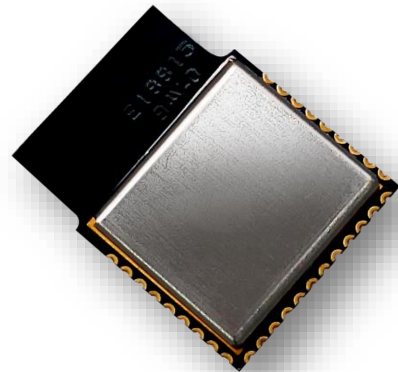
REYAX
TECHNOLOGY CORPORATION, LTD

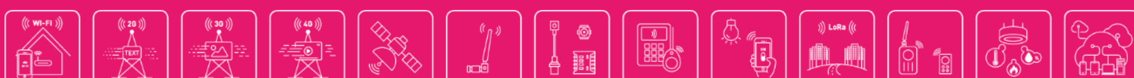
23-MAY-2019 56312E30

RYB090D

2.4GHz dual-mode Bluetooth Module with Integrated Antenna

Datasheet





PRODUCT DESCRIPTION

The RYB090D is a dual-mode (BR/EDR/LE) Bluetooth v2.x & v5.0 Module. It supports SPP and GATT profiles. Data is transferred over the Bluetooth link by sending/receiving data via transparent mode, making it easy to integrate with any processor or microcontroller with a UART interface.
Configuration is made easy through ASCII commands via UART.

FEATURES

- Complies with Bluetooth Core Specification v5.0 with LE 2Mbps
- Supports Basic Rate (BR), Enhanced Data Rate (EDR) 2&3Mbps, Bluetooth Low Energy (BLE)
- CYPRESS CYW20719 industry-standard chip
- Designed with PCB integrated antenna
- Metal cover against EMI interference
- Support Customizable Firmware

APPLICATIONS

- Smart phone/Tablet accessories
- Remote monitoring and control
- Smart home
- Indoor positioning
- Sensors

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SPECIFICATION

Item	Min.	Typical	Max.	Unit	Condition
Operation Voltage	1.9		3.63	V	VDD
RF Output Power			4	dBm	
RF Sensitivity	-95.5			dBm	BLE
TX current		5.6		mA	BLE 0dBm
RX current		5.9		mA	BLE
Baud Rate	1200	115200	921600	bps	
RF Frequency Range	2379		2496	MHz	
Communication Range		10		M	Open Space
Operating Temperature	-40	25	+85	˚C	
Antenna					Embedded PCB Antenna
Dimensions					16.7mm*13mm*2.2mm
Weight		0.8		g	

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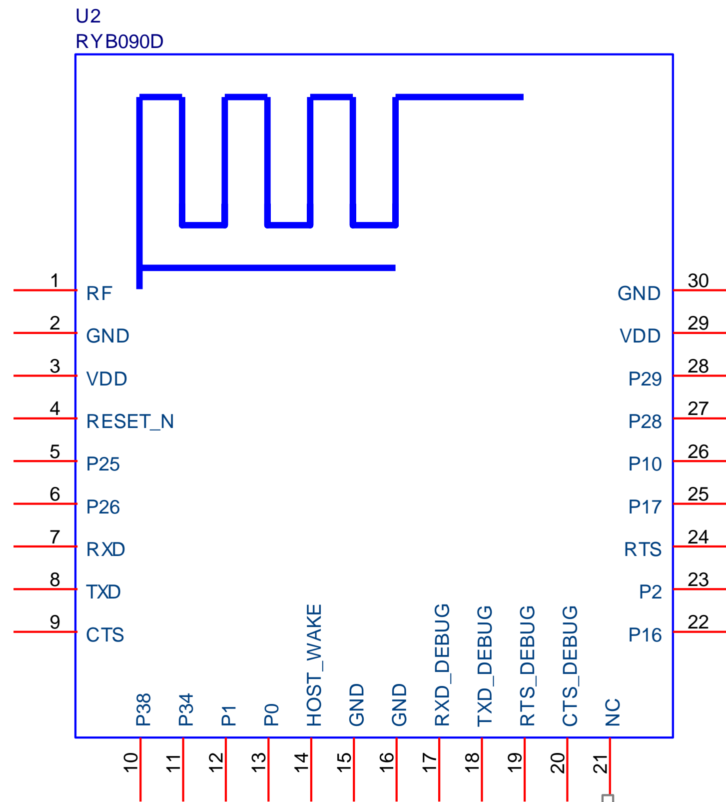
PIN DESCRIPTION



Pin	Name	I/O	Condition
1	RF		External Antenna Version Used
2	GND	-	Ground
3	VDD	I	Power Supply
4	RESET_N	I	Low Reset
5	P25	I/O	GPIO Reserved, Leave Unconnected.
6	P26	I/O	GPIO Reserved, Leave Unconnected.
7	RXD	I	UART Data Input
8	TXD	O	UART Data Output
9	CTS	I	Clear To Send control
10	P38	I/O	GPIO Reserved, Leave Unconnected.
11	P34	I/O	GPIO Reserved, Leave Unconnected.
12	P1	I/O	GPIO Reserved, Leave Unconnected.
13	P0	I/O	GPIO Reserved, Leave Unconnected.
14	HOST_WAKE	O	A signal from the CYW20719 device to the host indicating that the Bluetooth device requires. attention.

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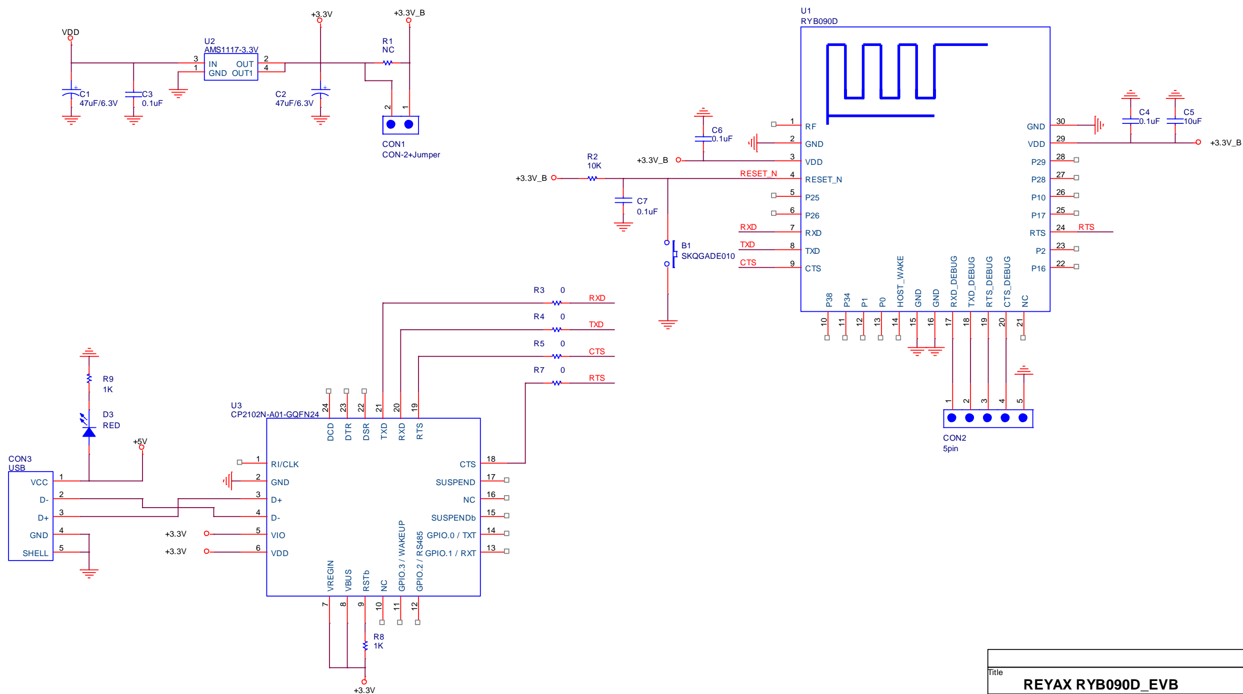
15	GND	-	Ground
16	GND	-	Ground
17	RXD_DEBUG	I	UART Data Input, DEBUG
18	TXD_DEBUG	O	UART Data Output, DEBUG
19	RTS_DEBUG	O	Request to send, DEBUG
20	CTS_DEBUG	I	Clear to Send control, DEBUG
21	NC	-	Leave Unconnected.
22	P16	I/O	GPIO Reserved, Leave Unconnected.
23	P2	I/O	GPIO Reserved, Leave Unconnected.
24	RTS	O	Request to send
25	P17	I/O	GPIO Reserved, Leave Unconnected.
26	P10	I/O	GPIO Reserved, Leave Unconnected.
27	P28	I/O	GPIO Reserved, Leave Unconnected.
28	P29	I/O	GPIO Reserved, Leave Unconnected.
29	VDD	I	Power Supply
30	GND	-	Ground

APPLICATION SCHEMATIC



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REFLOW SOLDERING

Consider the "IPC-7530 Guidelines for temperature profiling for mass soldering (reflow and wave) processes, published 2001. **Only single reflow soldering processes are recommended for REYAX modules. Repeated reflow soldering processes and soldering the module upside down are not recommended.**

Preheat phase

Initial heating of component leads and balls. Residual humidity will be dried out. Please note that this preheat phase will not replace prior baking procedures.

- Temperature rise rate: max. 3 °C/s If the temperature rise is too rapid in the preheat phase it may cause excessive slumping.
- Time: 60 - 120 s If the preheat is insufficient, rather large solder balls tend to be generated. Conversely, if performed excessively, fine balls and large balls will be generated in clusters.
- End Temperature: 150 - 200 °C If the temperature is too low, non-melting tends to be caused in areas containing large heat capacity.

Heating/ Reflow phase

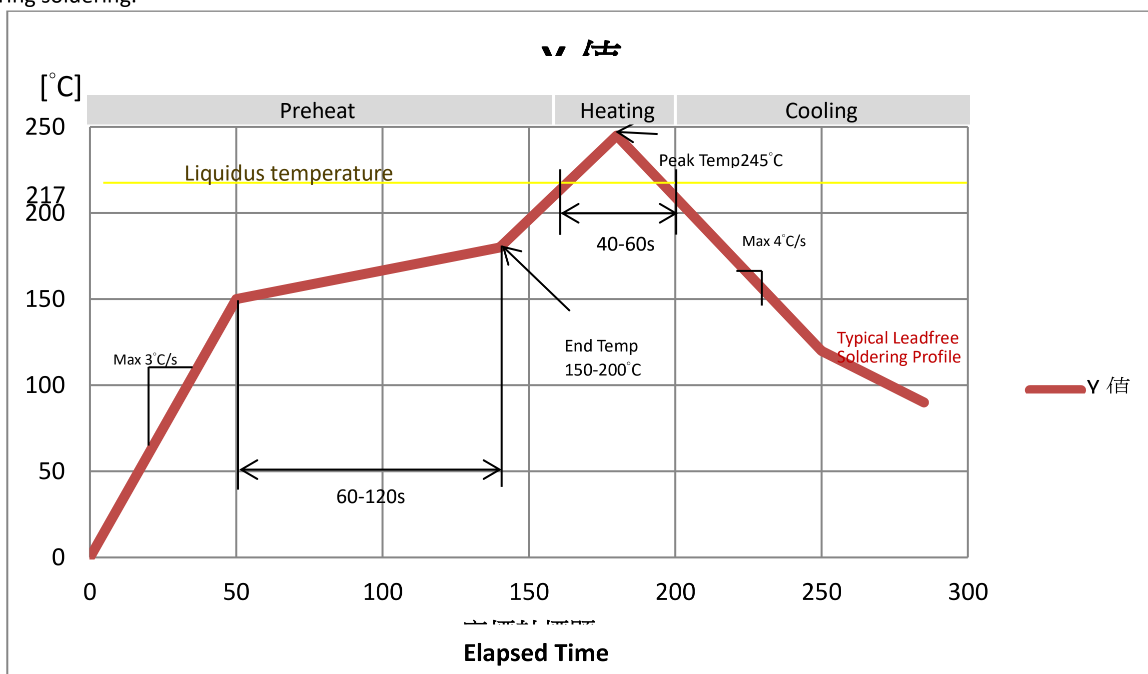
The temperature rises above the liquidus temperature of 217°C. Avoid a sudden rise in temperature as the slump of the paste could become worse.

- Limit time above 217 °C liquidus temperature: 40 - 60 s
- Peak reflow temperature: 245 °C

Cooling phase

A controlled cooling avoids negative metallurgical effects (solder becomes more brittle) of the solder and possible mechanical tensions in the products. Controlled cooling helps to achieve bright solder fillets with a good shape and low contact angle.

- Temperature fall rate: max 4 °C/s To avoid falling off, the REYAX module should be placed on the topside of the motherboard during soldering.



Recommended soldering profile

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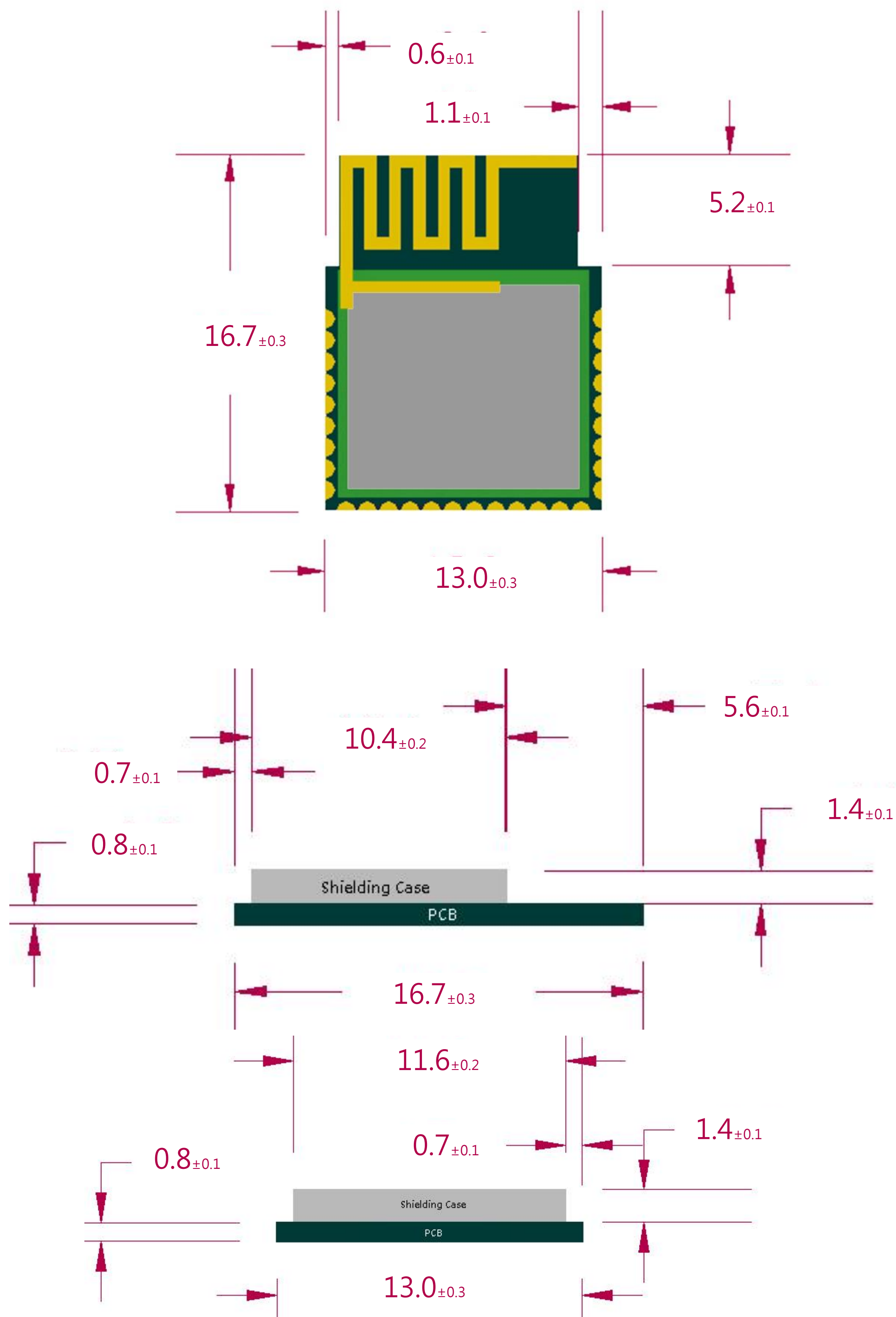
DIMENSIONS



Unit : mm

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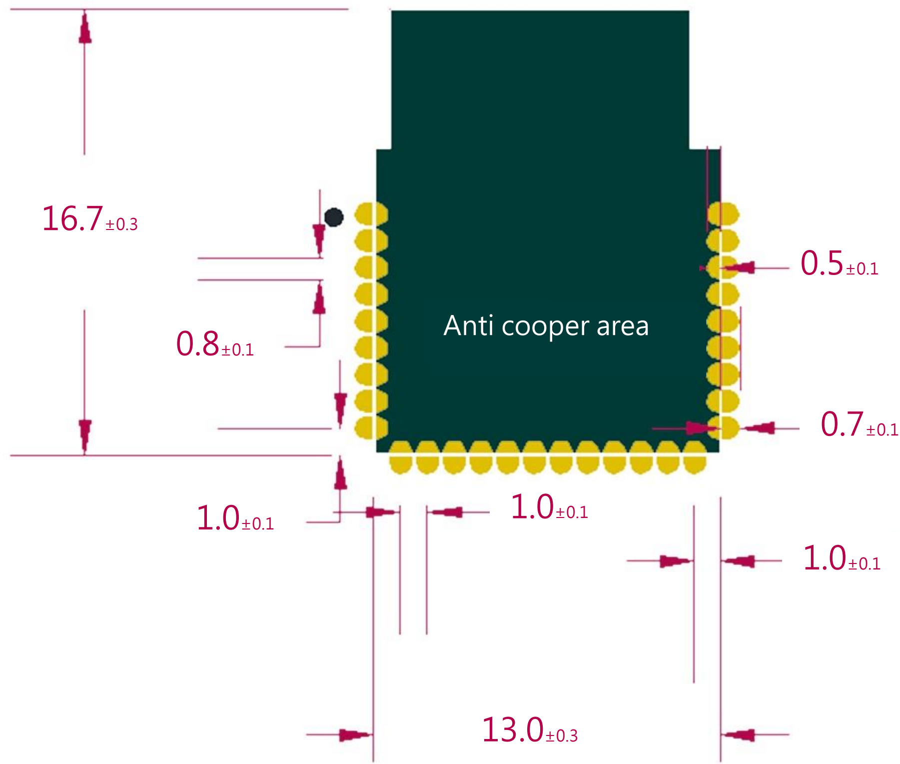
LAYOUT FOOTPRINT RECOMMENDATIONS



Unit : mm

ORDER INFORMATION

Ordering No.	Baud rate
RYB090D-9600	9600
RYB090D-38400	38400
RYB090D	115200
RYB090D-921600	921600

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