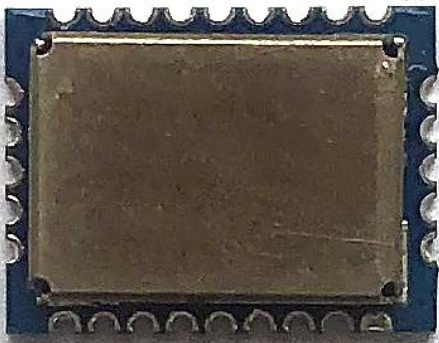


RYBG210

2.4GHz Bluetooth 5.1
High power long range module

Datasheet



PRODUCT DESCRIPTION

The RYBG210 is a Bluetooth V5.1 Low Energy Module.

By using the AT command which is developed by REYAX, your products could be fast and easily connected with the smartphones and all kinds of Bluetooth devices.

FEATURES

- Bluetooth V5.1 with Bluetooth Low Energy.
- SILABS 32-bit ARM® Cortex®-M33 core industry-standard chip.
- Can connect 8 Host-Client RYBG21x modules at the same time.
- Metal cover against EMI interference.
- Control easily by AT commands.
- Standard Generic Attribute Profile (GATT).

APPLICATIONS

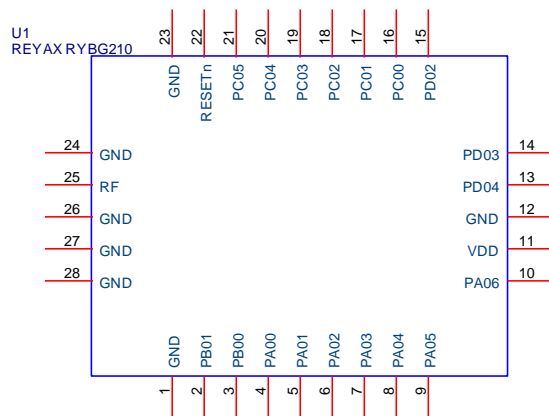
- Smart phone/Tablet accessories.
- Remote monitoring and control.
- Smart home.
- Indoor positioning.

APPROVED CERTIFICATIONS

SPECIFICATION

| Item | Min. | Typical | Max. | Unit | Condition |
|-----------------------------|------|---------|--------|------|------------------|
| Operation Voltage | 1.71 | 3.3 | 3.8 | V | VDD |
| RF Output Power | | 18.5 | 20 | dBm | |
| Active Current | | 185 | 200 | mA | |
| Advertising Average Current | | 6 | | mA | |
| Sleep Current | | 5 | | uA | |
| Wake Up Time | | 63 | | ms | |
| UART Baud Rate | | 9600 | 115200 | bps | |
| RF Frequency Range | 2400 | | 2483.5 | MHz | |
| Flash erase cycles | | 10 | | K | Cycles |
| Operating Temperature | -40 | 25 | +85 | °C | |
| Antenna | | | | | External Antenna |
| Weight | | 0.8 | | g | |

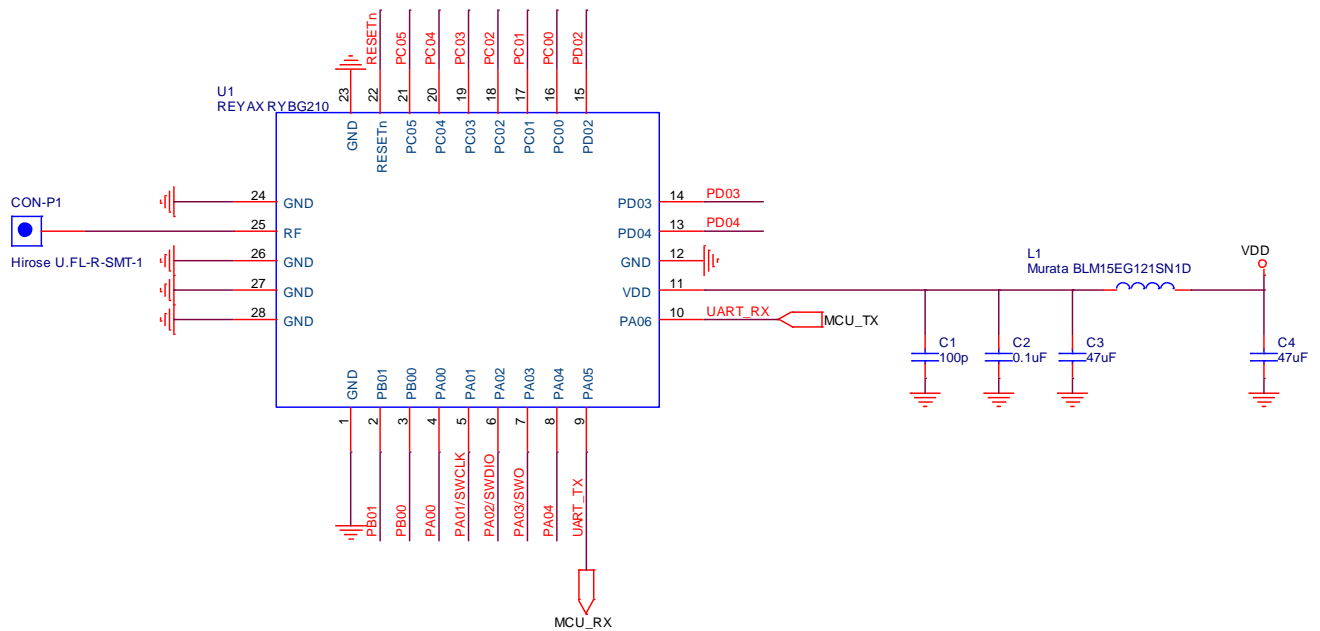
PIN DESCRIPTION



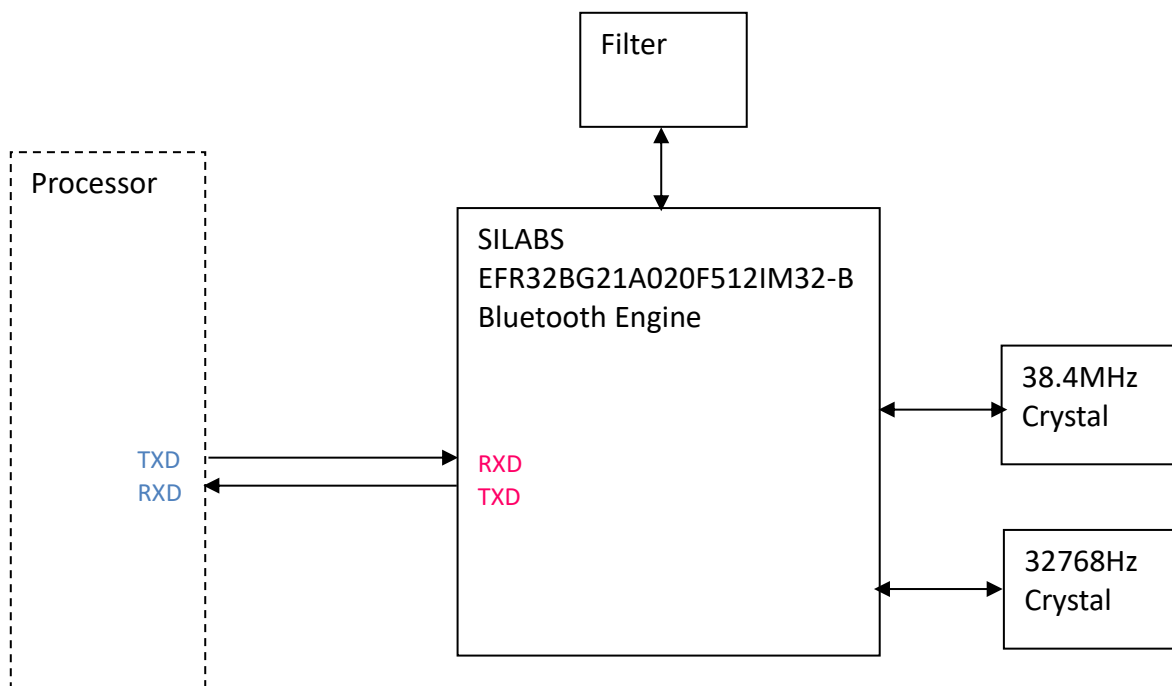
| Pin | Name | I/O | Condition |
|-----|------------|------|------------------|
| 1 | GND | - | Ground |
| 2 | PB01 | GPIO | Reserved |
| 3 | PB00 | GPIO | Reserved |
| 4 | PA00 | GPIO | Reserved |
| 5 | PA01/SWCLK | GPIO | Reserved |
| 6 | PA02/SWDIO | GPIO | Reserved |
| 7 | PA03/SWO | GPIO | Reserved |
| 8 | PA04 | GPIO | Reserved |
| 9 | PA05/TXD | O | UART Data Output |
| 10 | PA06/RXD | I | UART Data Input |
| 11 | VDD | I | Power Supply |
| 12 | GND | - | Ground |
| 13 | PD04 | GPIO | Reserved |
| 14 | PD03 | GPIO | Reserved |
| 15 | PD02 | GPIO | Reserved |
| 16 | PC00 | GPIO | Reserved |
| 17 | PC01 | GPIO | Reserved |
| 18 | PC02 | GPIO | Reserved |
| 19 | PC03 | GPIO | Reserved |
| 20 | PC04 | GPIO | Reserved |
| 21 | PC05 | GPIO | Reserved |
| 22 | RESETn | I | Low Reset |
| 23 | GND | - | Ground |

| | | | |
|----|-----|-----|------------------------|
| 24 | GND | - | Ground |
| 25 | RF | I/O | RF Signal Input/Output |
| 26 | GND | - | Ground |
| 27 | GND | - | Ground |
| 28 | GND | - | Ground |

APPLICATION SCHEMATIC



BLOCK DIAGRAM



REFLOW SOLDERING

Consider the "IPC-7530 Guidelines for temperature profiling for mass soldering (reflow and wave) processes, published 2001.

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

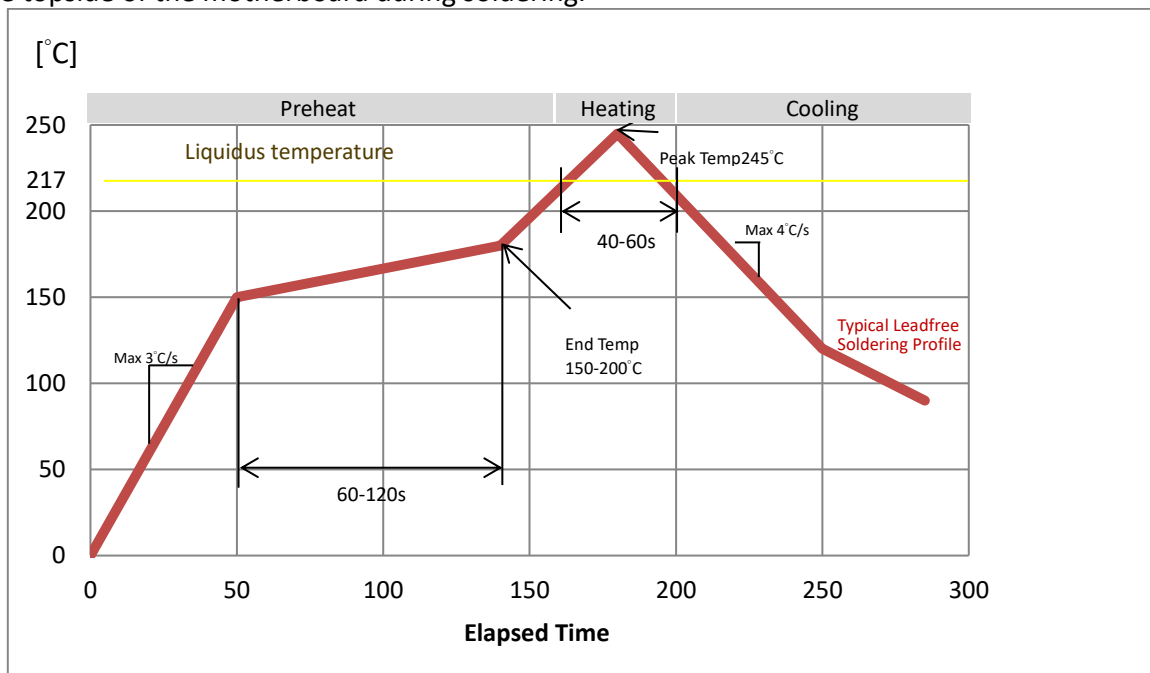
The temperature rises above the liquidus temperature of 217°C. Avoid a sudden rise in temperature as the slump of the paste could become worse.

- 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.

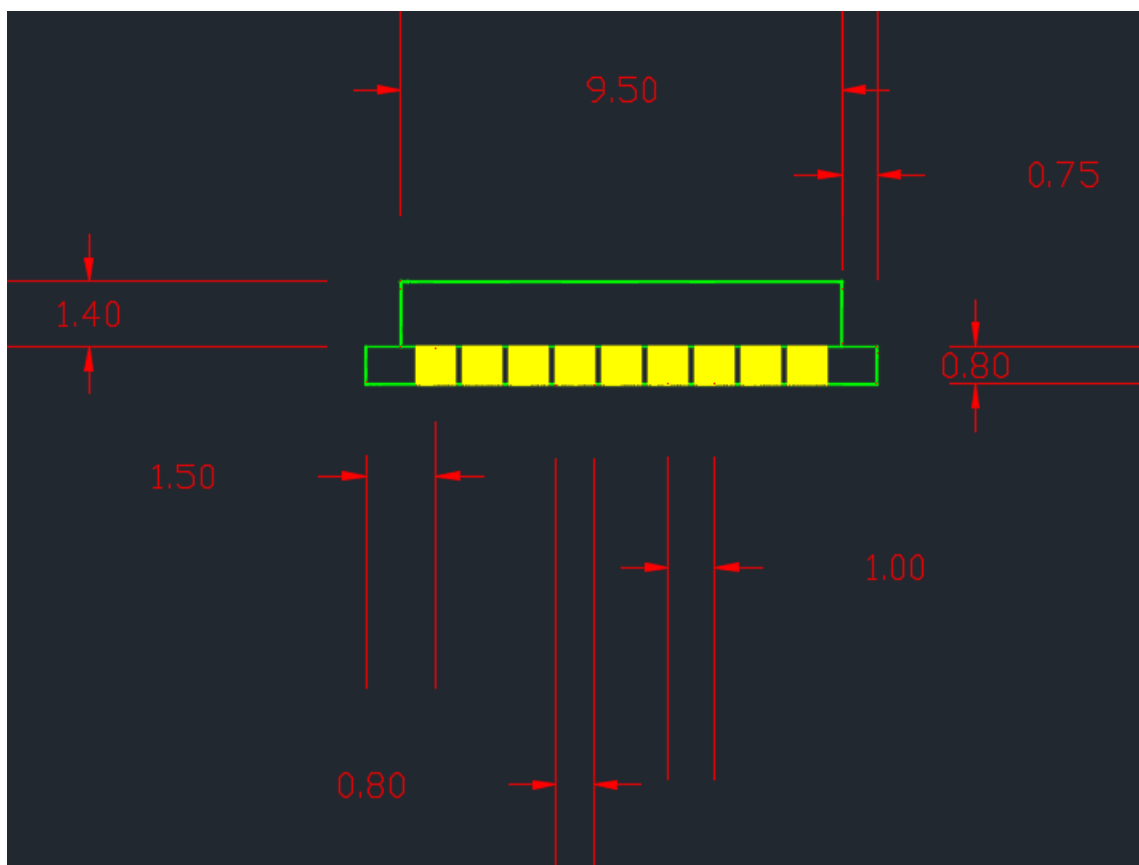
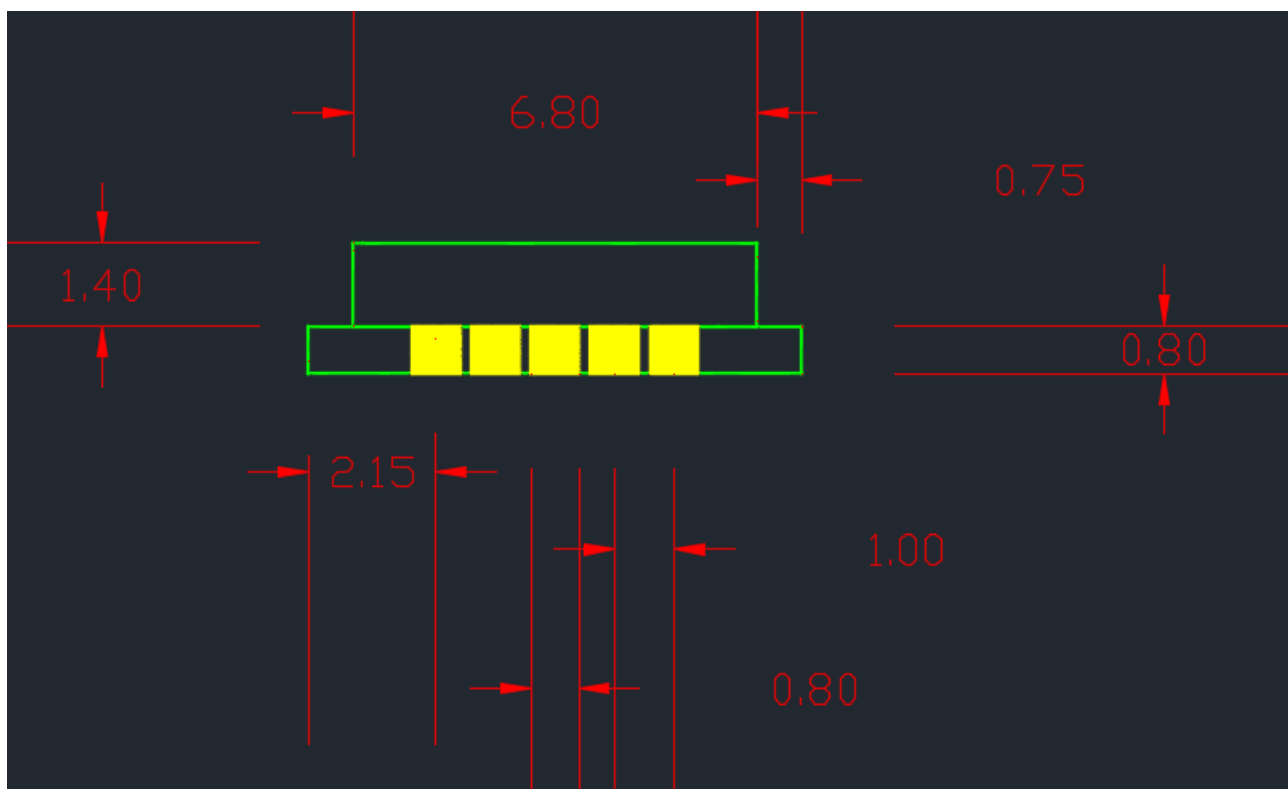
- Temperature fall rate: max 4 °C/s To avoid falling off, the REYAX RYB070I module should be placed on the topside of the motherboard during soldering.



Recommended soldering profile

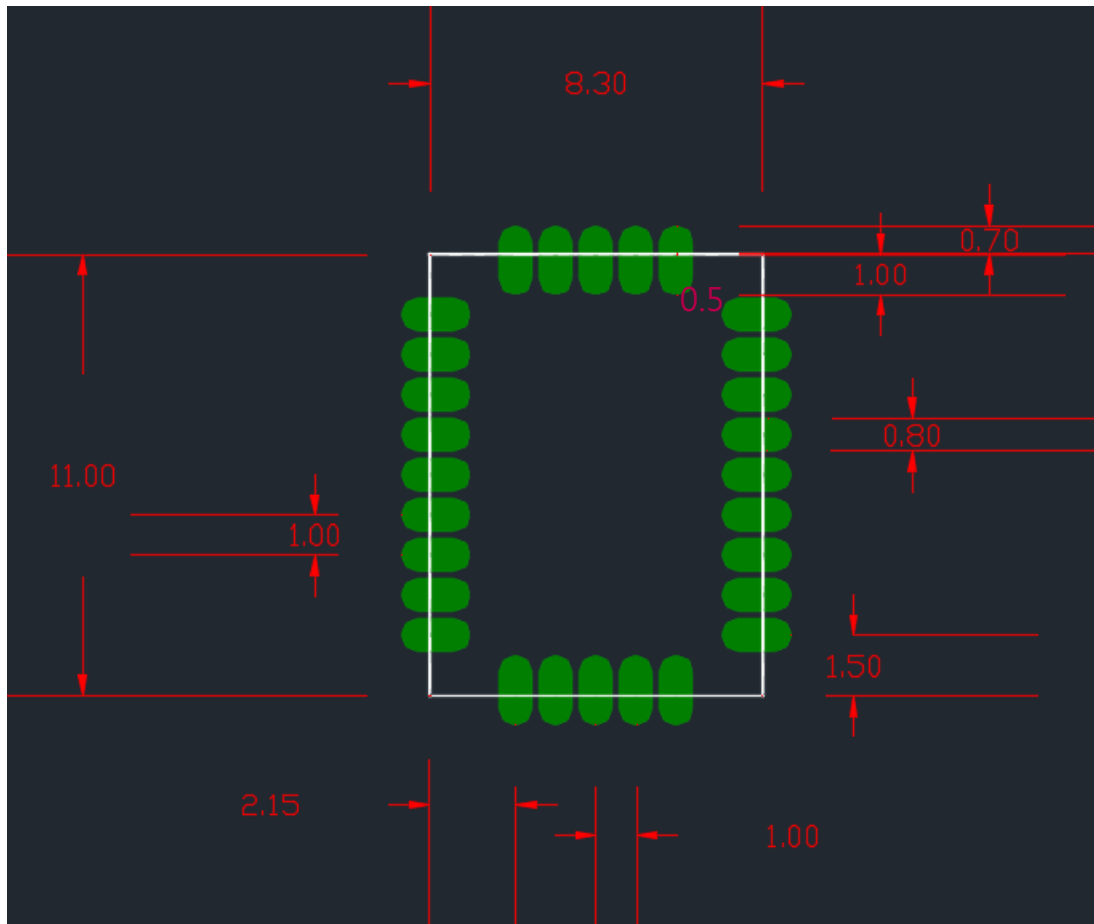
*Note: Does not support upside-down/bottom side reflow.

DIMENSIONS



Unit : mm

LAYOUT FOOTPRINT RECOMMENDATIONS



Unit : mm

ORDER INFORMATION

| Ordering No. | Function | Firmware version |
|--------------|----------|------------------|
| RYBG210 | | |
| | | |

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