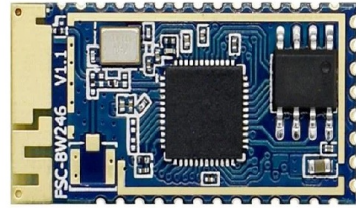


ICECO IBS23 Bluetooth Module



ICECO IBS23 Bluetooth Module Owner's Manual

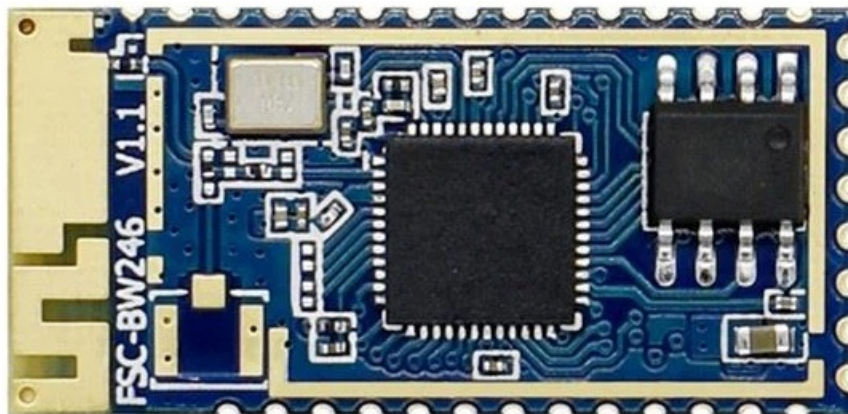
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ICECO IBS23 Bluetooth Module



Description

The IBS23 Bluetooth module utilizes the JieLi AC6328A2 Bluetooth chip, featuring a built-in 96M 32-bit high-

performance processor, 73KB large-capacity RAM, and 256Kb FLASH. Supports 2GPIOs, which can be software-configured as peripherals such as UART (default), GPIO, ADC, PWM, etc. Low-power Bluetooth technology, with minimum power consumption as low as 18uA (in power down mode). Supports Bluetooth 5.3 BLE, enabling direct communication with apps and mini-programs.

Basic Features

- Bluetooth 5.3, BLE Bluetooth
- RISC 32-bit 96MHz CPU
- 256bit Flash
- 73KB RAM
- Voltage Input: 1.8V-3.4V
- Dimensions: 17*12.6*0.8mm
- Operating Temperature: -20 to 85°C

Recommended Operating Conditions

Parameter	Min	Typica	Max	Unit
Operating temperature	-20	—	+85	°C
Voltage input	-1.8	+3.0	+3.4	V
Frequency range	2402		2480	MHz

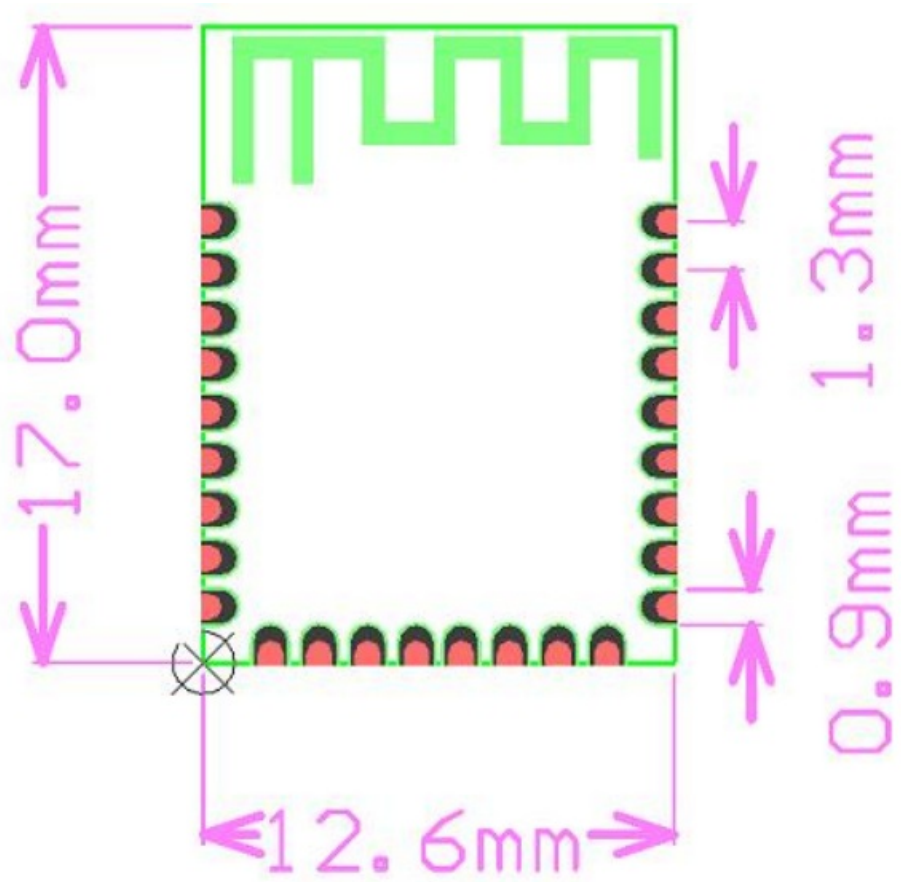
Bluetooth Performance

Parameter	Index	Test Conditions
Bluetooth transmit power	0dBm	25°C VCC=3.3V, fixed frequency mode, test point at chip transmit pin
Receive sensitivity	-92dBm	25°C VCC=3.3V

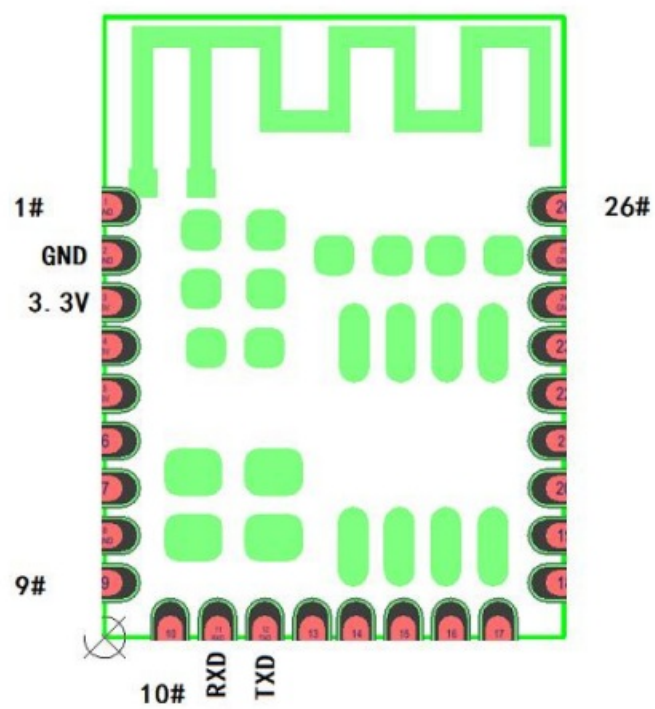
IO Characteristics

Symbol	Parameter	Min	Typ	Max	Unit	Test Conditions
VIL	Low-Level Input Voltage	-0.3	—	0.3* VDDIO	V	VDDIO = 3.3V
VIH	High-Level Input Voltage	0.7*VDDIO	—	VDDIO+0.3	V	VDDIO = 3.3V
VOL	Low-Level Output Voltage	—	—	0.33	V	VDDIO = 3.3V
VOH	High-Level Output Voltage	2.7	—	—	V	VDDIO = 3.3V

The size of the module graph



Device pin out diagram



Pin definition

Pin	Symb	I/O	Description
1	GND	GND	GND
2	GND	GND	GND
3	VCC3V	Analog	Power, 3 V
4	VCC3V	Analog	Power, 3 V
5	VCC3V	Analog	Power, 3 V
6	—	—	—
7	—	—	—
8	GND	GND	GND
9	—	—	—
10	—	—	—
11	USB0DM	Digital I/O	General purpose IO/RXD
12	USB0DP	Digital I/O	General purpose IO/TXD

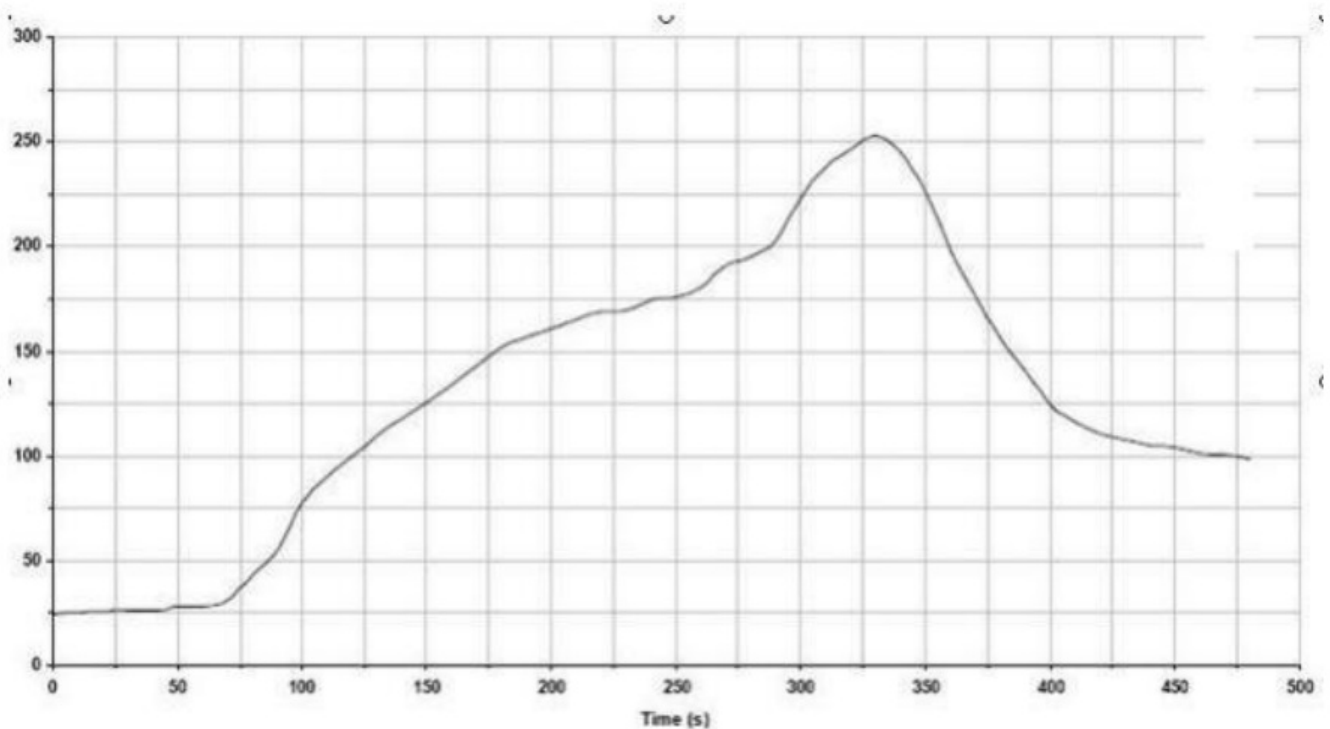
13	—	—	—
14	—	—	—
15	—	—	—
16	—	—	—
17	—	—	—
18	—	—	—
19	—	—	—
20	—	—	—
21	—	—	—
22	—	—	—
23	—	—	—
24	GND	GND	GND
25	GND	GND	GND
26	—	—	—

Design notes

Please avoid the impact of interference sources such as power amplifiers, boost circuits, and DC/DC circuits on the module. Avoid forming a series circuit between the module's power supply loop and high-power circuit units to improve the overall SNR.

Note

- A. Regarding the usage environment of wireless Bluetooth, wireless signals, including Bluetooth applications, are greatly affected by the surrounding environment. Obstacles such as trees and metal can absorb wireless signals, thus affecting the data transmission distance in practical applications.
- B. Since Bluetooth modules are typically integrated into existing systems and placed within enclosures, and metal enclosures can shield wireless RF signals, it is recommended not to install the module in a metal enclosure.
- C. PCB Layout: The antenna part of the Bluetooth module is a PCB antenna. Since metal can weaken the antenna's functionality, it is strictly prohibited to lay ground or route traces under the module's antenna during PCB layout. If possible, it is better to hollow out the area.
- D. If there are batteries, metal objects, LCD screens, speakers, etc., near the module's antenna, ensure they are at least 15mm away from the antenna.
- E. During layout, it is recommended to use star routing for the power supply lines and ensure good linearity of the Bluetooth module's power supply. Additionally, the BT ground must be separated from the grounds of amplifiers, power amplifiers, MCUs, etc., and there should be no other interfering grounds under the BT module.
- F. Do not route control lines, power lines, audio lines, MIC lines, or other interfering lines near the antenna.



Key features of the profile

- Initial Ramp=1-2.5°C/sec to 175°C equilibrium
- Equilibrium time=60 to 80 seconds
- Ramp to Maximum temperature (250°C)=3°C/sec Max
- Time above liquidus temperature(217°C): 45 – 90 seconds
- Device absolute maximum reflow temperature: 250°C

Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

List of applicable FCC rules

FCC Part 15.247

Specific operational use conditions

This transmitter/module and its antenna(s) must not be co-located or operating in conjunction with any transmitter. This information also extends to the host manufacturer's instruction manual.

Limited module procedures

Not applicable

Trace antenna designs

It is "not applicable" as trace antenna which is not used on the module.

RF exposure considerations

The equipment complies with FCC Radiation exposure limit set forth for an uncontrolled environment. The device shall be operated and installed without restriction. The host product manufacturer would provide the above information to end users in their endproduct manuals.

Antennas

PCB antenna; -7.19dBi; 2.402 GHz 2.480GHz

Label and compliance information

The end product must carry a physical label or shall use e-labeling followed KDB784748D01 and KDB 784748 stating “Contains Transmitter Module FCC ID: 2ATOGIBS223”.

Information on test modes and additional testing requirements

For more information on testing, please contact the manufacturer.

- manufacturer GUANGDONG ICECO ENTERPRISE CO.,LTD.
- Address: 23 Health Rd., National Health Technology Park,Torch Development Zone, Zhongshan, Guangdong, P.R. China
- Contacts Liu yanping
- Mobile: +86-198-6083-2010
- e-mail yp.liu@iceco.com
- <https://www.iceco.cn>

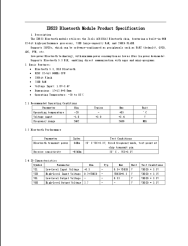
Additional testing, Part 15 Subpart B disclaimer

The modular transmitter is only FCC authorized for the specific rule parts (FCC Part 15.247) listed on the grant, and the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed when contains digital circuitry.

Frequently Asked Questions

- **Q: What are the FCC compliance requirements for this \product?**
 - A: The device complies with Part 15 of the FCC Rules. Operation is subject to certain conditions to avoid harmful interference.

Documents / Resources

	ICECO IBS23 Bluetooth Module [pdf] Owner's Manual IBS23, IBS23 Bluetooth Module, Bluetooth Module, Module
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References

-  [- !](#)
- [User Manual](#)

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