

Bluetooth MODULE (BZT001) Specification

Version: V02

Date: September 5, 2025

1. Product Overview

BZT001 is a compact, low-power, highly reliable Bluetooth Mesh module operating in the 2.4 GHz band, designed based on the TELINK wireless SoC TLSR8258F1KET32/TLSR8258F1KAT32. It supports SIG Mesh V1.0 standard, with a theoretical maximum of 16,383 nodes per network. The chip integrates a high-performance 32-bit MCU up to 24 MHz, with maximum TX power up to 10 dBm and minimum sleep current of 0.4 μ A.

PMN: Bluetooth MODULE

HVIN: BZT01

FCC ID: 2BCSG-BZT01

IC: 34154-BZT01

1.1 Features

- Built-in low-power 32-bit CPU, can serve as application processor
- Up to 24 MHz clock frequency
- Wide operating voltage: 1.8V–3.6V (typical 3.3V)
- Peripherals: 9×PWM, 1×UART, 1×SWS
- Bluetooth RF:
 - * Bluetooth 5.4
 - * Data rate up to 2 Mbps
 - * TX power: -0.1 dBm
 - * RX sensitivity: -96 dBm @1 Mbps, -93 dBm @2 Mbps
- Hardware encryption with AES-128
- On-board PCB antenna or IPX antenna interface
- Operating temperature: -40°C to 85°C

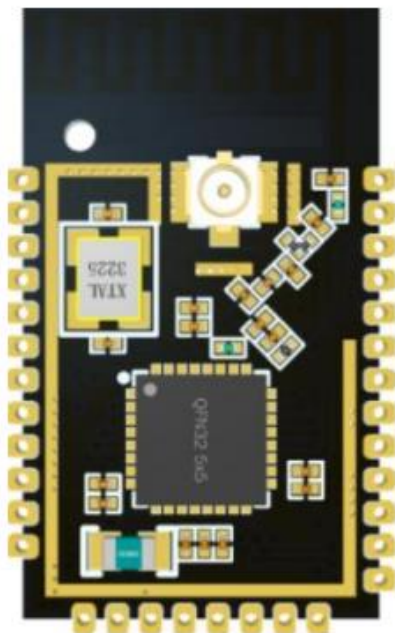
1.2 Applications

- Smart Lighting
- Smart Home
- Smart Sensors
- Smart Office
- Smart Gateway
- Smart Industry

2. Module Interface

2.1 Pin Layout

The module has 33 pins in 3 rows, pitch 1.30 mm.



2.2 Pin Definition

(P = Power, I/O = Input/Output, AI = Analog Input, I = Input)

Pin No.	Symbol	IO Type	Function
1	GND	P	Module power supply reference ground
2	D4	I/O	General purpose I/O Can be used as LED driver PWM output Corresponds to IC PB4 (Pin14)
3	B4	I/O	General purpose I/O Can be used as LED driver PWM output Can be used as 12-bit ADC port Corresponds to IC PB4 (Pin14)
4	B5	I/O	General purpose I/O Can be used as LED driver PWM output Can be used as 12-bit ADC port Corresponds to IC PB5 (Pin15)
5	B6	I/O	General purpose I/O Can be used as 12-bit ADC port Corresponds to IC PB6 (Pin16)
6	C1	I/O	General purpose I/O Can be used as LED driver PWM output Can be used as I2C SCK Corresponds to IC PC1 (Pin21)
7	C0	I/O	General purpose I/O Can be used as LED driver PWM output Can be used as I2C SDA Corresponds to IC PC0 (Pin20)

8	NC	-	No connection
9	GND	P	Module power supply reference ground
10	NC	-	No connection
11	NC	-	No connection
12	B1	I/O	UART_TX (serial transmit pin) Can be used as LED driver PWM output Can be used as 12-bit ADC port Corresponds to IC PA0 (Pin6)
13	A0	I/O	UART_RX (serial receive pin) Can be used as LED driver PWM output Corresponds to IC PA0 (Pin3)
14	VDD	P	Module power supply pin (typical supply voltage: 3.3V)
15	C2	I/O	General purpose I/O Can be used as LED driver PWM output Can be used as I2C SDA Corresponds to IC PC2 (Pin22)
16	C3	I/O	General purpose I/O Can be used as LED driver PWM output Can be used as I2C SCK Corresponds to IC PC3 (Pin23)

17	C4	AI	General purpose I/O Can be used as LED driver PWM output Can be used as 12-bit ADC port Corresponds to IC PC4 (Pin24)
18	SWS	I	Module programming pin Corresponds to IC PA7 SWS (Pin5)
19	NC	-	No connection
20	B1	I/O	UART_TX (serial transmit pin) Can be used as LED driver PWM output Can be used as 12-bit ADC port Corresponds to IC PA0 (Pin6)
21	GND	P	Module power supply reference ground
22	GND	P	Module power supply reference ground
23	D2	I/O	General purpose I/O Can be used as LED driver PWM output Corresponds to IC PD2 (Pin31)
24	NC	-	No connection
25	NC	-	No connection
26	NC	-	No connection
27	NC	-	No connection
28	D3	I/O	General purpose I/O Can be used as LED driver PWM output Corresponds to IC PD3 (Pin32)

29	B7	I/O	General purpose I/O UART_RX (serial receive pin) Can be used as 12-bit ADC port Corresponds to IC PB7 (Pin17)
30	A1	I/O	General purpose I/O Corresponds to IC PA1 (Pin4)
31	D7	I/O	General purpose I/O Corresponds to IC PD7 (Pin2)
32	RST	I	Hardware reset pin (active low) Corresponds to IC RESETB (Pin25)
33	GND	P	Module power supply reference ground

3. Electrical Parameters

Parameter Item	Description
Operating Frequency	2402~2480MHz
Wireless Standard	Bluetooth 5.3
Data Transfer Rate	1Mbps, 2Mbps
Antenna Type	Onboard PCB antenna or IPX antenna connector
Supply Voltage	1.8~3.6V (typical supply voltage: 3.3V)
ESD Voltage (Human Body Model)	TAMB-25°C 2KV
ESD Voltage (Machine Model)	TAMB-25°C 0.5KV
Operating Temperature	-40°C ~ +85°C
Storage Temperature	-65°C ~ +150°C

4. RF Parameters

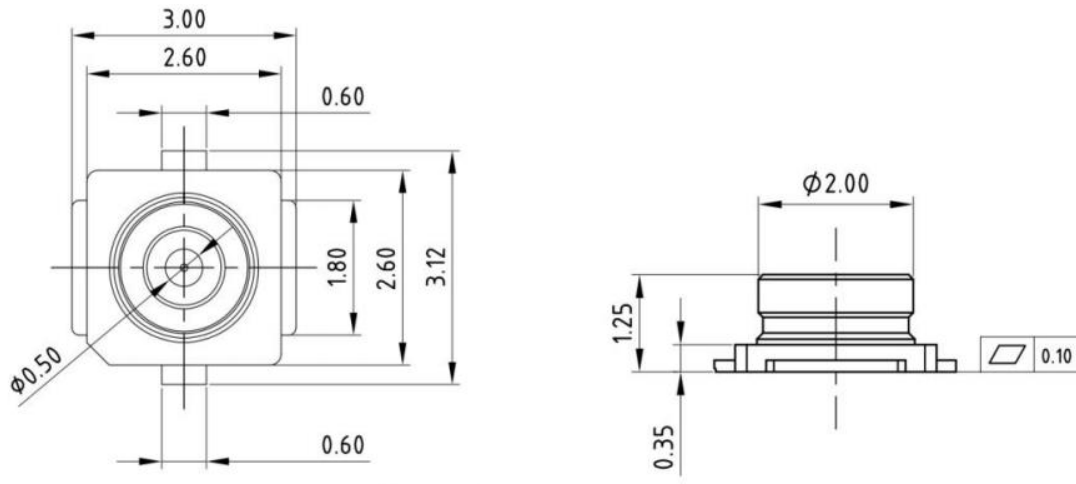
Parameter	Min	Typical	Max	Unit
Transmit Power				
RF Average Output Power	-0.1		20	dBm
20dB Modulation Signal Bandwidth (1M)	-	2500	-	KHz

5. Power Consumption

Operating State	Max (Typical)	Unit
Continuous transmission, 10dBm output power	21	mA
Continuous reception	6.1	mA
Mesh networking operating state (Average)	6.7	mA
Mesh networking operating state (Peak)	24.9	mA
Deep sleep mode (16KB RAM retained)	1.2	μ A
Deep sleep mode (no RAM retained)	0.4	μ A

6. Antenna

6.1 Type

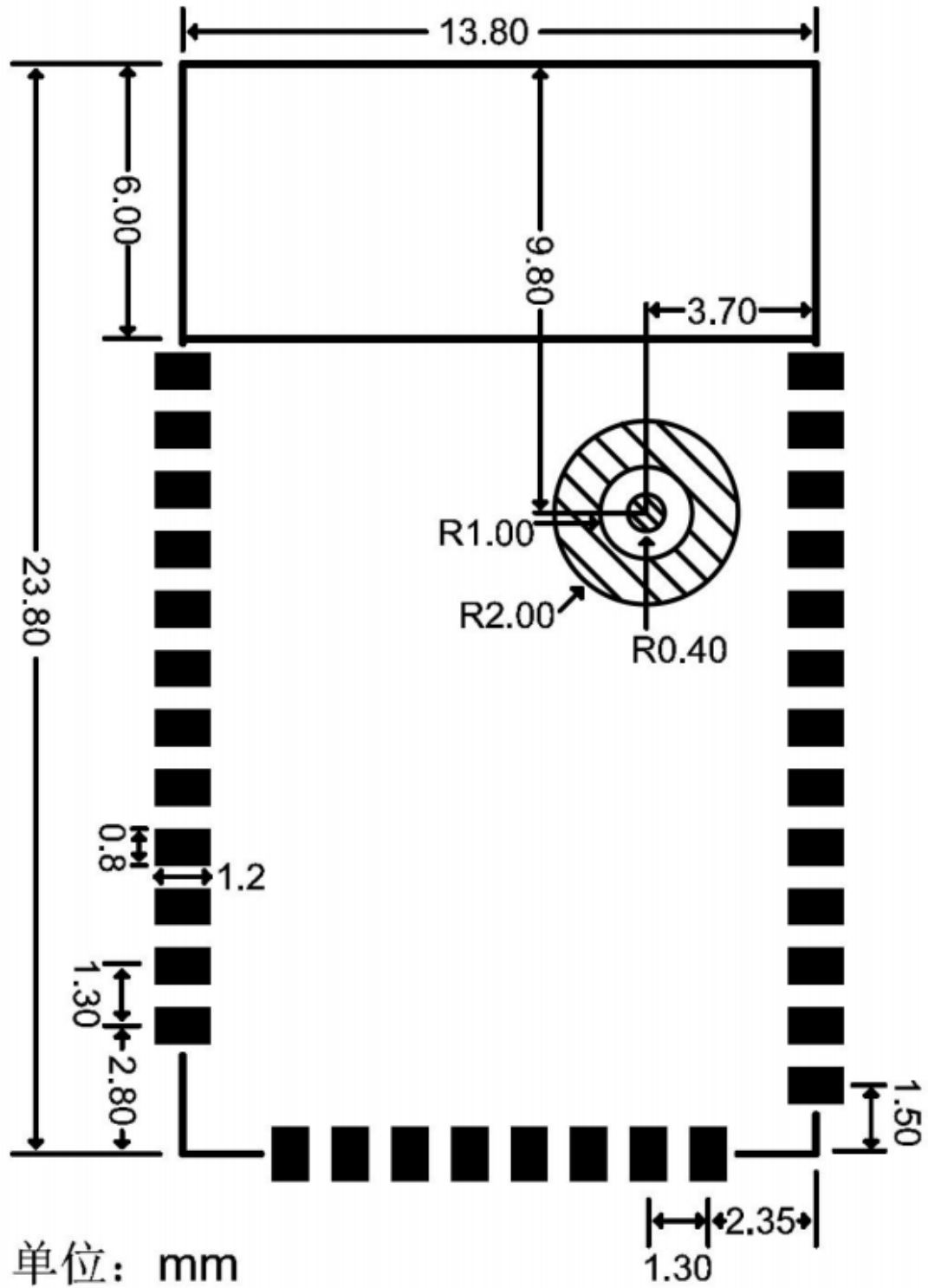


6.2 Interference Reduction

Keep antenna ≥ 15 mm from metal objects.

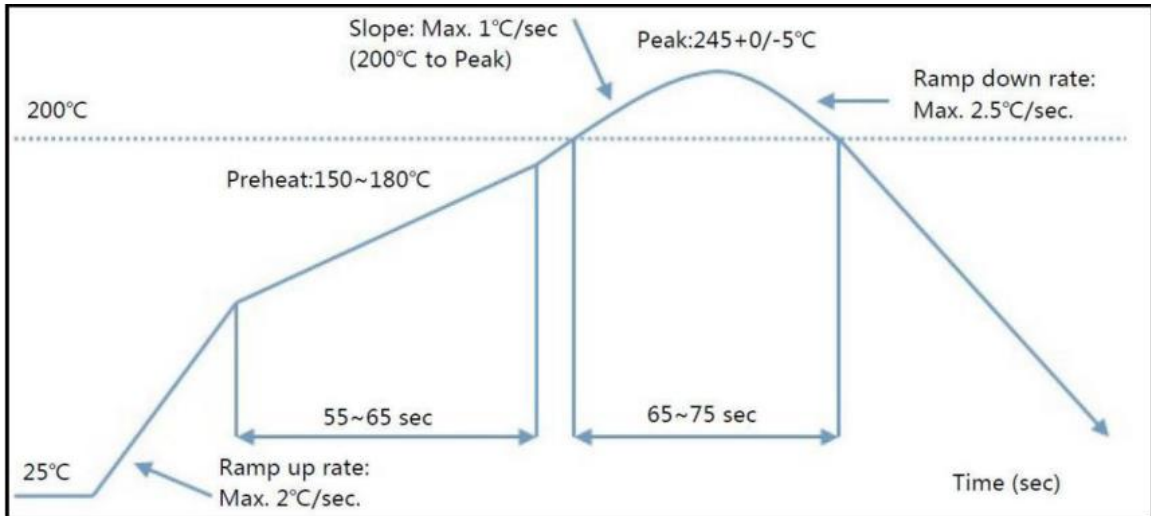
7. Package

Dimensions: 13.8×23.8×3.0 mm



8. Reflow Profile

Peak: 245°C, max 250°C, ≤2 cycles



10. MOQ & Packaging

Product Model	Antenna	MOQ (PCS)	Packaging Method	Quantity per Reel (PCS)	Number of Reels per Carton
BZT001	Onboard PCB	3600	Carrier tape & reel	900	4
BZT001-IPEX	External antenna	3600	Carrier tape & reel	900	4

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

Conditions on using Shenzhen Linktop IOT Co., Ltd regulatory approvals:

- A. Customer must ensure that its product (The "Bluetooth MODULE") is electrically identical to Shenzhen Linktop IOT Co., Ltd reference designs. Customer acknowledges that any modifications to Shenzhen Linktop IOT Co., Ltd reference designs may invalidate regulatory approvals in relation to the CUSTOMER Product, or may necessitate notifications to the relevant regulatory authorities.
- B. Customer is responsible for ensuring that antennas used with the product are of the same type, with same or lower gains as approved and providing antenna reports to Shenzhen Linktop IOT Co., Ltd
- C. Customer is responsible for regression testing to accommodate changes to Shenzhen Linktop IOT Co., Ltd reference designs, new antennas, and portable RF exposure safety testing/approvals.
- D. Appropriate labels must be affixed to the CUSTOMER Product that comply with applicable regulations in all respects.
- E. A user's manual or instruction manual must be included with the customer product that contains the text as required by applicable law. Without limitation of the foregoing, an example (for illustration purposes only) of possible text to include is set forth below:

2.2 List of applicable FCC rules

FCC Part 15 Subpart C 15.247

2.3 Specific operational use conditions

Radio Technology: Bluetooth BLE

Operation frequency: 2402-2480MHz

Channel No.: 40 channels

Data rate: 1Mbps/2Mbps

Channel Separation: 2MHz

Modulation type: GFSK

Antenna Type: PCB antenna, Maximum Gain is 3.5dBi

The module can be used for mobile or portable applications with a maximum 3.5dBi antenna. The host manufacturer installing this module into their product must ensure that the final composite product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules, including the transmitter operation. The host manufacturer has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as shown in this manual.

2.4 Limited module procedures

Not applicable. The module is a Single module and complies with the requirement of FCC Part 15.212.

2.5 Trace antenna designs

The antenna used is the PCB antenna on the module.

2.6 RF exposure considerations

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. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The antennas used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be located or operating in conjunction with any other antenna or transmitter.

2.7 Antennas

Antenna Specification are as follows:

Antenna Type: PCB antenna

Antenna Gain (Peak): BLE: 3.5dBi (Provided by applicant)

This device is intended only for host manufacturers under the following conditions:

The transmitter module may not be co-located with any other transmitter or antenna;

As long as the conditions above are met, further transmitter test will not be required. However, the host manufacturer is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

2.8 Label and compliance information

Host product manufacturers need to provide a physical or e-label stating "Contains FCC ID: 2BCSG-BZT01" With their finished product.

2.9 Information on test modes and additional testing requirements

Radio Technology: Bluetooth BLE

Operation frequency: 2402-2480MHz

Channel No.: 40 channels

Data rate: 1Mbps/2Mbps

Channel Separation: 2MHz

Modulation type: GFSK

Antenna Type: PCB antenna, Maximum Gain is 3.5dBi

2.10 Additional testing, Part 15 Subpart B disclaimer

The modular transmitter is only FCC authorized for FCC Part 15 Subpart C 15.247 that 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. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuitry), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

IC warning statements:

-English Warning Statement:

RSS-GEN ISSUE 5, 8.4 User manual notice

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) This device may not cause interference.
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

The digital apparatus complies with Canadian CAN ICES-3 (B)/NMB-3(B).

-French Warning Statement:

RSS - Gen version 5, 8.4 avis du manuel de l'utilisateur

Cet appareil contient un émetteur / récepteur sans licence conforme au RSS sans licence d'innovation, science et développement économique Canada. L'opération doit satisfaire aux deux conditions suivantes:

Cet équipement peut ne pas causer d'interférence.

L'équipement doit accepter toute interférence, y compris toute interférence qui pourrait entraîner un fonctionnement indésirable de l'équipement.

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment and meets RSS-102 of the IC radio frequency (RF) Exposure rules. This equipment has very low levels of RF energy that are deemed to comply without testing of specific absorption ratio (SAR). Cet équipement est conforme aux limites d'exposition aux rayonnements énoncées pour un environnement non contrôlé et respecte les règles d'exposition aux fréquences radio électriques (RF) CNR-102 de l'IC. Cet équipement émet une énergie RF très faible qui est considérée conforme sans évaluation du débit d'absorption spécifique (DAS).

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Lors de l'installation et du fonctionnement de cet équipement, la distance minimale entre le radiateur et le corps doit être de 20 cm.