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Chengdu Ebyte Electronic Technology Co.,Ltd.

E104-BT01 Datasheet v1.0

1. Introduction

E104-BT01

E104-BT01 is a SMD Bluetooth wireless module, which is SMD type, pin pitch is 1.27mm. the module features with high Performance PCB antenna.



E104-BT01 is based on original imported RF IC CC2541 from TI in USA. the chip integrates 8051 MCU and wireless transceiver, and it is suitable for BLE protocol. The module leads all the IO ports, and can be developed via multi-direction

E104-BT01 is a hardware platform without program and users need to carry on a second development.

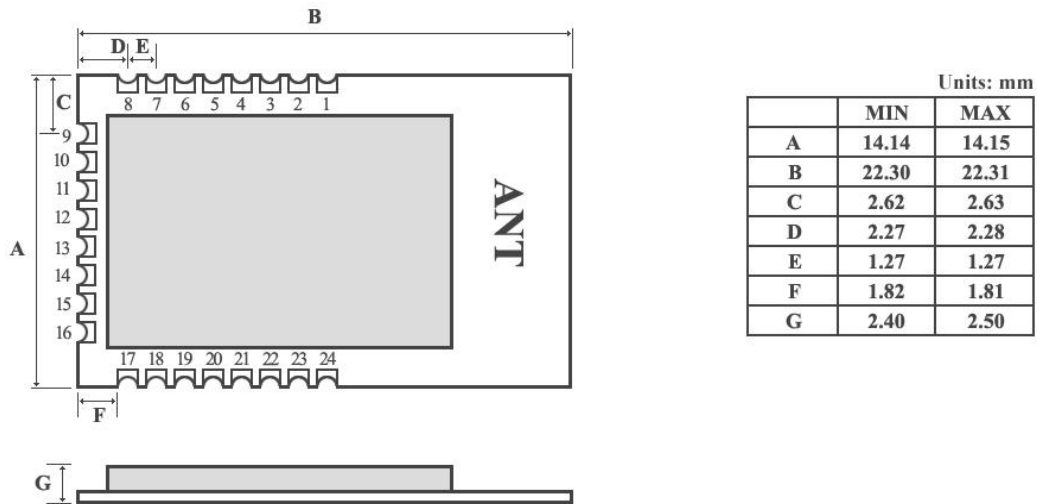
2. Electrical parameter

E104-BT01

No.	Parameter item	Parameter details	Description
1	Chip	CC2541	TI
2	Size	14 * 22mm	-
3	Weight	1.15g	-
4	Frequency	2379~2496MHz	Adjustable
5	PCB	4-layer	Impedance-matching, lead-free
6	Connector	3 * 8 * 1.27mm	SMD
7	Supply voltage	2.0 ~ 3.6V DC	The voltage higher than 3.6V is forbidden
8	Communication level	0 ~ 3V	VCC refers to the supply voltage
9	Operation Range	50m	Open area; 0dBm; Height: 2m; Air data rate: 250kbps
10	Max Power	Max 0dBm	1mW
11	Air data rate	4 level	250kbps, 500kbps, 1Mbps, 2Mbps
12	Shutdown current	0.5uA	MCU in sleep , wireless closed , VCC=3.3V
13	Transmitting current	14.3mA@0dBm	Power supply must be greater than 40mA
14	Receiving current	14.7mA	3.3V
15	Communication interface	Leads out IO	See details in Pin definition
16	Transmitting length	20 bytes	BLE
17	Receiving length	20 bytes	BLE
18	RSSI support	Available	Find more details on <CC2541 datasheet>
19	Antenna type	PCB	50Ω characteristic impedance
20	Operating temperature	-40 ~ +85°C	Industrial-grade
21	Operating humidity	10% ~ 90%	Relative humidity, without condensation
22	Storage temperature	-40 ~ +125°C	Industrial-grade
23	Sensitivity	-94dbm@1Mbps	Find more details on <CC2541 datasheet>

3. Pin definition

E104-BT01




Pin No.	Pin item	Pin direction	Pin application
1	GND		Ground
2	VCC		Power supply 2.0 ~ 3.6V DC.
3	P2.2	Input /Output	MCU GPIO
4	P2.1	Input /Output	MCU GPIO
5	P2.0	Input /Output	MCU GPIO
6	P1.7	Input /Output	MCU GPIO
7	P1.6	Input /Output	MCU GPIO
8	SCL	Input /Output	IIC clock
9	SDA	Input /Output	IIC data
10	P1.5	Input /Output	MCU GPIO
11	P1.4	Input /Output	MCU GPIO
12	P1.3	Input /Output	MCU GPIO
13	P1.2	Input /Output	MCU GPIO
14	P1.1	Input /Output	MCU GPIO
15	P1.0	Input /Output	MCU GPIO
16	P0.7	Input /Output	MCU GPIO
17	P0.6	Input /Output	MCU GPIO
18	P0.5	Input /Output	MCU GPIO
19	P0.4	Input /Output	MCU GPIO
20	P0.3	Input /Output	MCU GPIO
21	P0.2	Input /Output	MCU GPIO
22	P0.1	Input /Output	MCU GPIO
23	P0.0	Input /Output	MCU GPIO
24	RESET_N	Input	Reset port
★ Please see more details in < CC2541 Datasheet > , such as pin definition, software drivers, and communication protocol. ★			

4. Note**E104-BT01**

No.	Item	Attention
1	Static electricity	Please try not to touch the electronic components with bare hands.
2	Welding	When welding, soldering iron needs grounding. The producer needs to wear cable electrostatic bracelet which is grounding when mass production.
3	Power supply	Power quality has a great impact on the performance of the module, please make sure the power supply has small ripple and avoid the frequent and large jitter. π filter is recommended(Ceramic capacitor // tantalum capacitor + inductance).
4	Ground	Single-point grounding is recommended. 0 ohm resistor or 10mH inductance are recommended.
5	Antenna	How to install antenna has a great impact on the performance of the module, please make sure the antenna is exposed and vertical upward. It will lead to the transmitting distance greatly weakened if the antenna installs in the interior of housing. When the module is installed in the interior of the housing, high-quality antenna extension line can be used to extend the antenna to the outside of the housing.
6	Interference	If there are different modules work in other frequency band in the same product, the user need to plan rationally and take measures to shield, in case the harmonic interference and intermodulation interference exist.
7	Crystal oscillator	Please increase the liner distance between the crystal oscillators as possible, if there are crystal oscillators in the module near the PCB.

5. USAGE**E104-BT01**

No.	Keywords	Notes
1	The burning process	<p>Module embedded with 8051 MUC, please use our CC-Debugger to download the program (click to open the link), cannot use the serial port or any other tools. Such as JTAG, ISP, ICP</p> <p>Users can modify their own functions based on the official TI BLE protocol stack .</p> <p>They can also download the compiled HEX file directly,</p> 
2	Test board	N/A

6. FAQ**E104-BT01**

★ Operation Range is too short to reach the ideal distance		
1	Barrier	It has deep influence on the operation range when there are barriers. The degree of attenuation is inconsistent in different environment
2	Interference resource	Temperature, humidity, same frequency interference can increase the packet loss rate of the communication
3	Metal	Metal objects around the antenna, antenna placed inside metal case, which cause the signal attenuation badly.
4	Parameter values	Wrong parameter setting. Setting the air data rate too high, which lead to the shorter distance.
5	Low voltage	When the voltage below 3.3V, the lower the voltage is, the lower the transmitting power can be.

7. About us**E104-BT01**

Chengdu Ebyte Electronic Technology Co., Ltd is a high-tech company, focus on wireless transmission. Our company owns a number of independent research & development products and obtain unanimously approved customers. With powerful R&D team, our company can provide customers with perfect After-sales service and technical assistance



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