
Bluetooth module BK8000L manual



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1. BK8000L



Map 1.1 BK8000L Advertising map



Map 1.2 BK8000L Adapter plate (2.1x3.5cm)

1.1 Module Description

This module uses the master Beken (Broadcom) of BK8000L Chip module provides a high sound quality and compatibility, superior overall performance. Bluetooth module uses driver-free way, customers just need to block access to applications, you can quickly achieve wireless transmission of music, enjoy **wireless music, stand by SPP Data transmission, and supports key AT Serial control command, SPP It can be carried out simultaneously with the audio. Can be stored 6 A paired device, the module automatically switched back to the last connected device pairing. in case 6 Paired devices simultaneously opened, the device automatically connects the last pairing .**

1.2 Applications

The module is mainly used for short distance transmission of music, you can easily and notebook computers, mobile phones, PDA And other digital products connected to Bluetooth devices, wireless transmission of music.

- 1) Bluetooth stereo speakers;
- 2) Stereo Bluetooth headset;
- 3) Bluetooth phone;
- 4) Bluetooth control and multimedia equipment;
- 5) Bluetooth SPP Serial data transmission.

1.3 Basic characteristics

- 1) Bluetooth v2.1 + EDR ;
- 2) A2DP v1.2 ;
- 3) AVRCP v1.0 ;
- 4) HFP v1.5 ;
- 5) GAVDP1.2 ;
- 6) HSP1.2 ;
- 7) IOP .

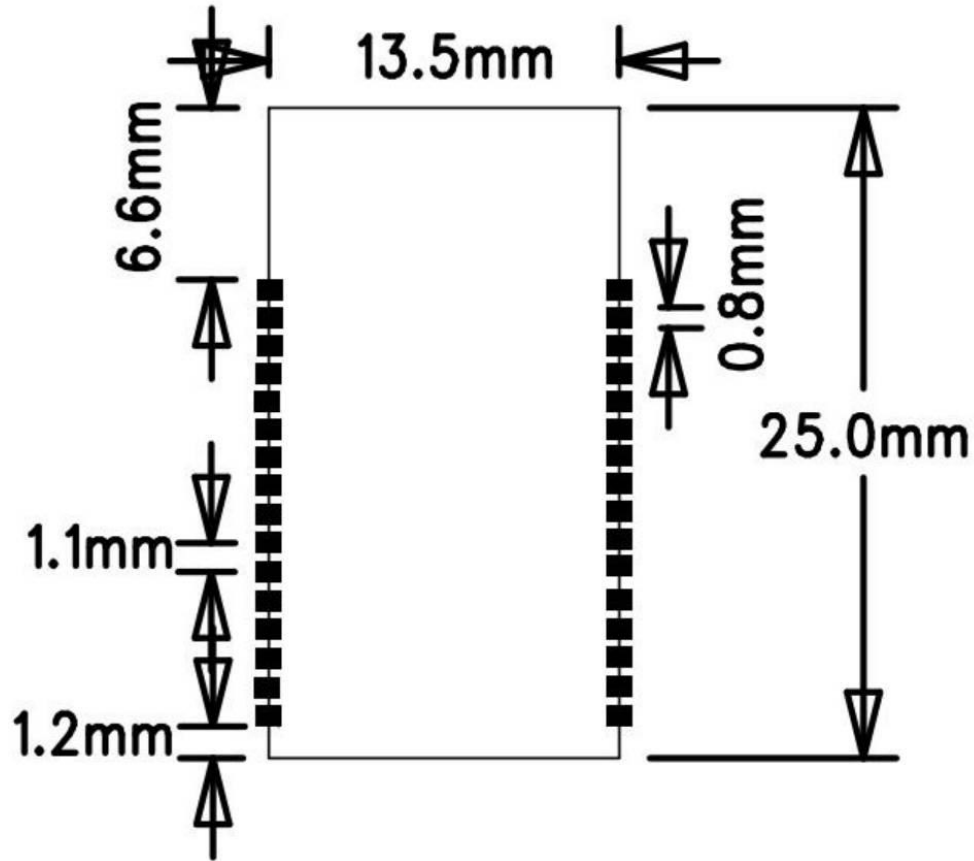
1.4 Performance parameters

model	BK8000L
Bluetooth Specification	Bluetooth V2.1
Supply voltage	DC3.3-4.2V , $\leq 2.9V$ Automatic shutdown, $\leq 3.1V$ Call the police
Bluetooth protocol support	HFPV1.5 , A2DPV1.2 , AVRCPV1.4 , HSP1.2 , GAVDP1.2 , IOP
Working current	$\leq 60mA$
Standby Current	$<500\mu A$
temperature range	$-40^{\circ}C \sim + 85^{\circ}C$
Wireless transmission range	≤ 10 Meters
transmit power	Class2 4dbm
Sensitivity	$-80dBm <0.1\%$ BER
Frequency Range	2.4GHz ~ 2.480GHz
External Interface	Serial (TTL Level), and PC Connection requires conversion level, such as CH340G , USB turn TTL
Audio Performance	SBC decoding
Module size	25x13.5x1.8mm
Size adapter plate	21x29mm

1.5 Module size

Pad size: 1.6x0.8mm

模块尺寸图:



Map 1.3 BK8000L Dimensions

1.6 IO definition

IO Numbering	IO name	IO description
1	GND	The antenna _
2	ANT	An antenna (default built-in antenna, external OFF)
3	GND	The antenna _
4	VOL + (TMS)	Volume Up
5	VOL- (TCK)	Volume down
6	NEXT (TDO)	next track
7	PREV (TDI)	previous piece
8	RSTN	Reset (active low)
9	MBISTEN	Unused
10	TX (GPIO0)	Serial ports TX (TTL Level 3.3V)
11	RX (GPIO1)	Serial ports RX (TTL Level 3.3V)
12	PP / CALL (GPIO2)	Play / Pause / phone / releases / re-pair
13	LED0 (GPIO3)	Status Indicator
14	LED1 (GPIO4)	Status Indicator
15	MUTE (GPIO5)	<u>Mute Control (mute output low), the control terminal of the power amplifier</u>
16	GND	Power Ground
17	AGND	AUX Ground
18	AUX_DET (GPIO11)	AUX Insertion detection (active low)
19	AUX_R	AUX Right channel input
20	AUX_L	AUX Left channel input
twenty one	MIC_N	Microphone negative terminal
twenty two	MIC_P	Microphone positive terminal
twenty three	VMIC	Microphone bias voltage
twenty four	LN	Audio left differential output negative end
25	LP	Audio left positive differential output terminal
26	RP	Audio right differential output positive terminal
27	RN	Audio right differential output negative end
28	VBUS	Unused
29	VBAT	power input(3.3 ~ 4.2V)
30	3V0	Unused
31	ADC	Unused
32	GND	Power Ground

1.7 Precautions

1. Application of the process module, please avoid influence of interference source amplifier, a booster circuit of other module, for avoidance module
An electrical series circuit with the power loop forming circuit means, in order to improve the whole SNR .
2. About Bluetooth wireless environment, wireless signal including Bluetooth applications are greatly affected by the surrounding environment, such as tree
Wood, metal and other obstructions will absorb a certain radio signal, so that in practical application, the distance data transmission by a certain extent.
3. Since Bluetooth module supporting the existing system should be placed in the housing. Since the metal housing of the radio frequency signal
There is a shielding effect. It is recommended not installed in a metal housing.
4. PCB Layout: Bluetooth module antenna portion is PCB Antenna, since the metal would impair the functioning of the antenna, when a layout of the module, the module floor and below the antenna traces prohibited, if hollowed out better.

1.8 AT instruction

1.8.1 Serial Configuration

1. Baud Rate 9600 ;
- 2.8 Data bits;
3. No parity bit;
4. One stop bit;
5. 9600 , N , 8 , 1 .

1.8.2 Instruction format

Control Instruction format: AT + <CMD> [<param>] \r \n

Feedback data format: < IND> [<param>] \r \n

Description: The instruction is a control panel to control the Bluetooth control commands to " AT + "Back to start followed by < CMD> Control instruction, if the instruction to continue the transmission parameters, the instruction immediately < param> Parameters, and finally to "\r \n "End.

The feedback data is Bluetooth data and various status information back to the host, < IND> A feedback command, if desired parameters, then followed < IND> After continuing transmission < param> parameter.

note:

- \R \n : Character is Wrap , Hexadecimal 0x0D , 0x0A .

1.8.3 Control instructions

Serial command	parameter	description	For example
CA		Pairing	AT + CA \r \n
CB		Exit pairing	AT + CB \r \n
CC		The last paired device connected	AT + CC \r \n
CD		Disconnect	AT + CD \r \n
CE		Answer the call	AT + CE \r \n
CF		To reject a call	AT + CF \r \n
CG		Hang up the phone	AT + CG \r \n
CH		Redial	AT + CH \r \n
CK		Volume Up	AT + CK \r \n
CL		Volume down	AT + CL \r \n
CO		Channel switching (invalid)	AT + CO \r \n
CW	Retention		
CX	Retention		
CZ		Memory clear	AT + CZ \r \n
CP		Shutdown	AT + CP \r \n
CV		Open phone VOICE	AT + CV \r \n
CM		Multi-language switch	AT + CM \r \n
CMM	<Number> : (0-4) Set the number of multi-lingual		AT + CMM4 \r \n
CT		Enter the test mode	AT + CT \r \n
MA		Music Play / Pause	AT + MA \r \n
MC		The music stops	AT + MC \r \n
MD		next track	AT + MD \r \n
ME		previous piece	AT + ME \r \n
MF		Fast forward	AT + MF \r \n
MH		Rewind	AT + MH \r \n

1.8.4 Query / feedback command

Serial command	description	For example	Bluetooth return information
ERR	error		ERR\r\n
OK	Complete control instruction identifying		OK\r\n
MR	Queries Bluetooth address	AT + MR\r\n	AD: 111111111111\r\n
MP	PIN Code query	AT + MP\r\n	PN: 0000\r\n
MN	Bluetooth name query	AT + MN\r\n	NA: BK8000L\r\n
MQ	Query software version	AT + MQ\r\n	XZX-V1.2\r\n
MO	Bluetooth connection status inquiry	AT + MO\r\n	connection succeeded:" C1\r\n" no connection:" C0\r\n"
MV	Bluetooth playback status inquiry	AT + MV\r\n	Play: " MB\r\n " time out:" MA\r\n " disconnect:" M0\r\n "
MY	Bluetooth inquiry HFP status	AT + MY\r\n	disconnect:" M0\r\n " connection:" M1\r\n " Caller: " M2\r\n " Outgoing: " M3\r\n " calling:" M4\r\n "
The following is the Bluetooth initiative sent to the state			
II		connection succeeded	II\r\n
IA		disconnect	IA\r\n
MA			time out: MA\r\n
MB			Play: MB\r\n
IR-	<Number>	Caller ID	IR-136XXXXXX
PR-	<Number>	Outgoing Number	PR-136XXXXXX
ON		Bluetooth is turned on	ON\r\n

1.8.5 SPP Introduction

Status of the Bluetooth unsolicited			
SPP Data Format	description	For example	Bluetooth return information
APT + SPP8888	Four-digit password (8888), Through a password to open SPP	APT + SPP8888 \r\n	Long hair once the password is correct: OK\r\n <u>wrong password: ERR\r\n</u>
APT + XXXXXXX The total length of each of the data,	Do not exceed recommended 64byte	APT + XXXXXX \r\n Data sent to the mobile terminal	<u>success: OK\r\n</u> <u>error: ERR\r\n</u>
APR + XXXXXXX The total length of each of the data,	Do not exceed recommended 64byte	APR + XXXXXX \r\n Data received from the mobile terminal	Data sent over the phone <u>APR + XXXXXX \r\n</u>

1.8.6 Serial demo

When the serial connection is successful, the module is powered on return "ON\r\n" After connecting the main device returns "II\r\n", As 1.4 Below:



Map 1.4 Serial Open

Send Open SPP Cryptographic module returns "OK\r\n" Figure 1.5 Below:



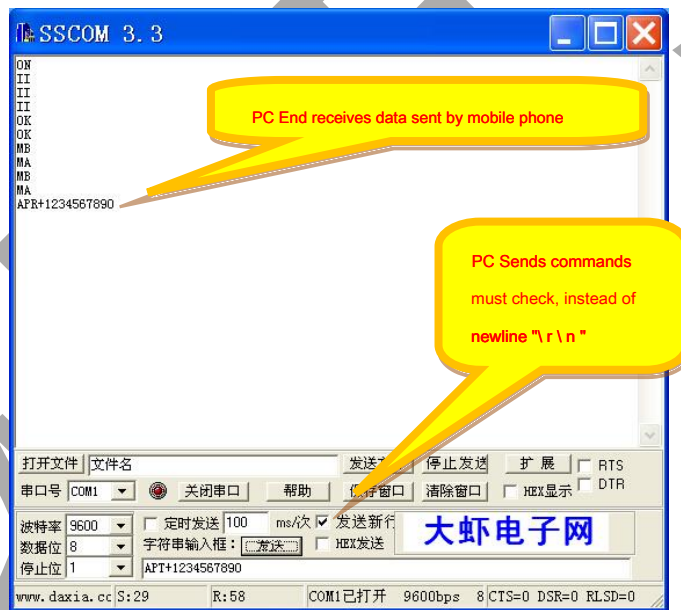
Map 1.5 send SPP Open password

Android phone to install the software and run the software, click the link, the connection appears BK8000L , As 1.6 Below:



Map 1.6 Cellular phone APP

In SSCOM Transmission format in accordance with an instruction SPP Data, as 1.7 Fig. In the mobile phone APP Receive the corresponding data, as shown in 1.7 Fig.



Map 1.7 Serial receive data

In the mobile phone APP Transmission format in accordance with an instruction SPP Data, as 1.8 Fig. in SSCOM Receive the corresponding data, as shown in 1.7 Fig.



Map 1.8 Cellular phone APP Send and receive data