

SH-HC-08 Data Sheet

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Bluetooth 4.0 BLE Module

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1、 Overview

SH-HC-08 is a next-generation, class 2, Bluetooth 4.0 ble module. It uses TI CC2541 bluetooth 4.0 ble chip .Support the AT command, the user can according to need to change the baud rate of serial port, name of equipment, matching parameters such as password, use agile. SH-HC-08 is a highly integrated and sophisticated Bluetooth module, containing all the necessary elements .Therefore SH-HC-08 provides an ideal solution for developers who want to integrate Bluetooth wireless technology into their designs with limited knowledge of Bluetooth and RF technologies.

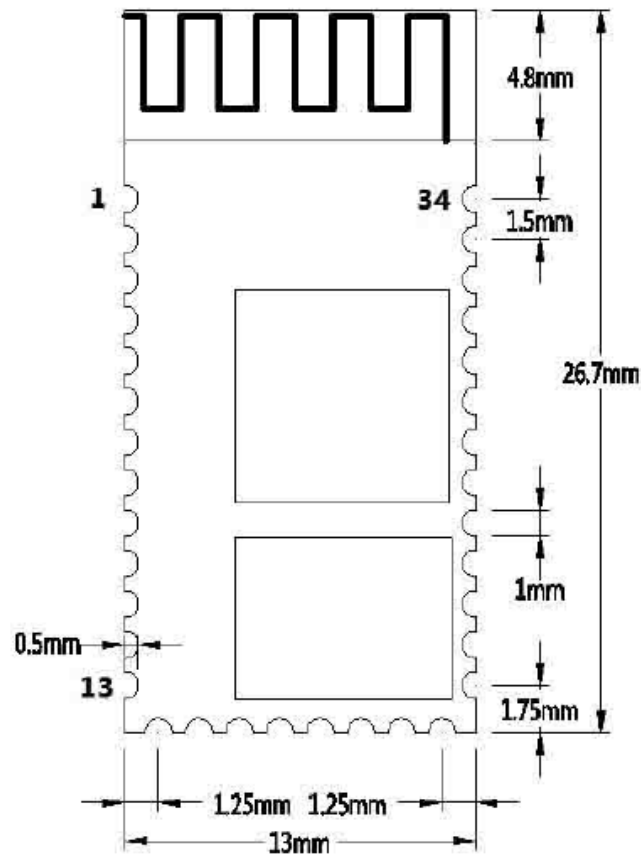
2、 Feature

- Bluetooth protocol: Bluetooth Specification V4.0 BLE,
- open environment and iphone 4 s can achieve 110 meters extreme distance communication.
- Based on TI CC2541 chipset
- Bluetooth class 2
- Industrial level SPP Bluetooth module
- Integrated chip antenna
- Size: 26.7 x 13 x 2 mm
- Industrial temperature range from -40℃ to +85℃
- Support for on-board applications
- Operating frequency: 2.4 GHz ISM band
- Modulation method: GFSK (Gaussian Frequency Shift Keying)
- Acuity: -84 DBM or less BER at 0.1%
- Transfer rate: Asynchronous: 6 KBPS Synchronous: KBPS
- Security features: Authentication and encryption
- Support services: Central and Peripheral UUID FFE0, FFE1

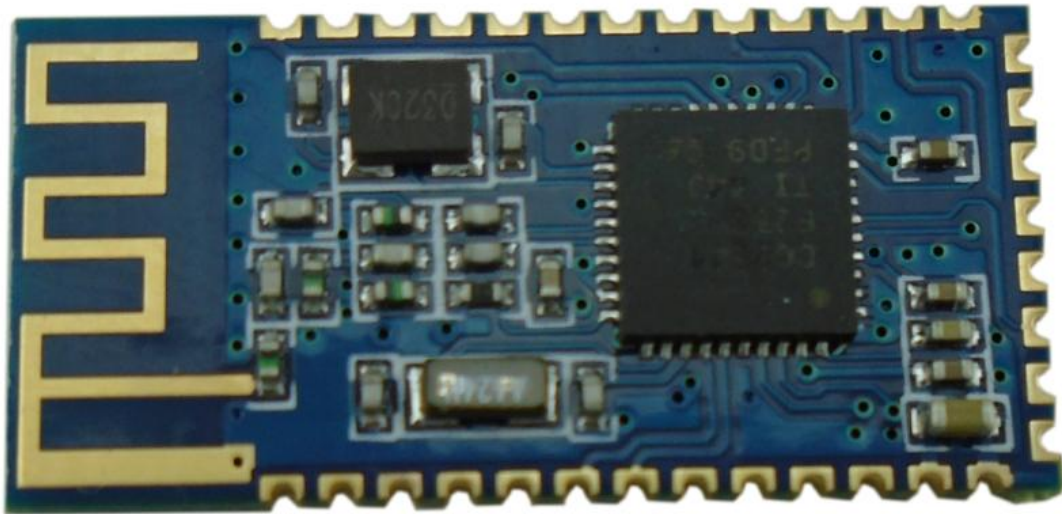
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- Power consumption: automatic sleep mode, the standby current 400 ~ 1.5 mA, transfer 8.5 mA.
- Power supply: + 3.3 VDC 50 MA

3、Product's picture



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4. Application Fields

- Cable replacement
- Point-of-sales systems
- Barcode readers and pay terminals
- Telemetry and machine-to-machine devices
- Logistics and transportation systems
- Automotive inspection and measurement systems
- Medical systems
- Fitness and sports telemetry devices
- PDA and other portable terminals
- PCs and laptop
- OBD

5. Physical Characteristics

Operating Frequency Band	2.4GHz ISM band
Bluetooth Specification	BLE4.0 BLE
Output Power Class	Class 2

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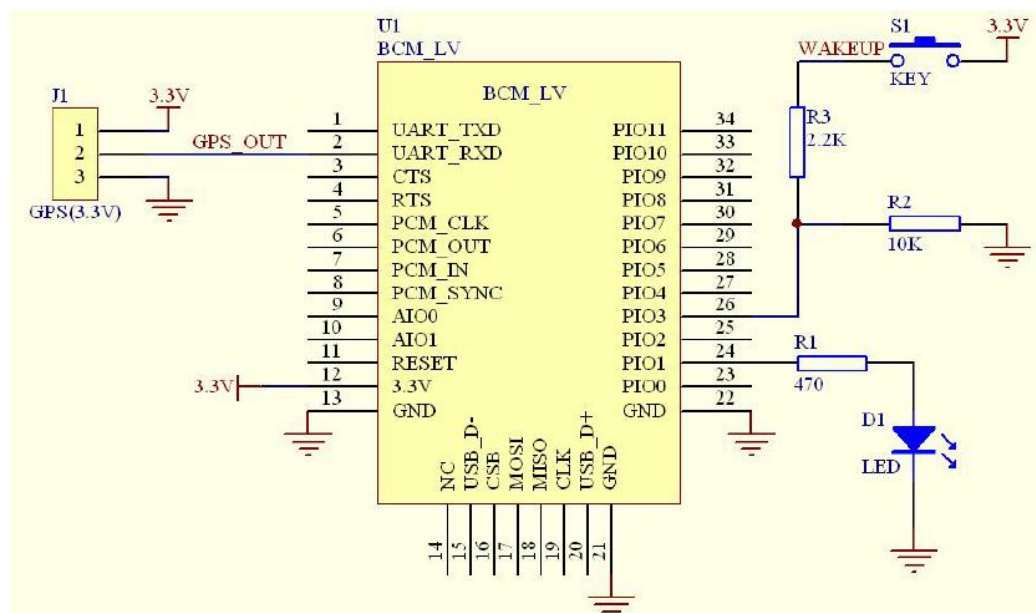
Operating Voltage	3.3V
Host Interface	UART
Dimension	27mm (L) x 13(W) mm x 2mm (H)

6. Electrical Characteristics

Absolute Maximum Ratings		
Rating	Min	Max
Storage temperature	-40℃	+150℃
Supply voltage: VBAT	-0.4V	5.6V
Other terminal voltages	VSS-0.4V	VDD+0.4V

Recommended Operating Conditions		
Operating Condition	Min	Max
Operating temperature range	-40℃	+150℃
Guaranteed RF performance range ^(a)	-40℃	+150℃
Supply voltage: VBAT	2.2V	4.2V ^(b)

7. Application Circuit Diagram



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8、 PINs description

PIN NO.	NAME	FUNCTION
1	UART_TX	UART Data Output (P0_3)
2	UART_RX	UART Data Input (P0_2)
3	UART_CTS	UART Clear To Send Active Low (P0_4)
4	UART_RTS	UART Request To Send Active Low (P0_5)
5	NC	NC
6	DC	Debug the clock P2_2
7	DD	Debug the data P2_1
8	NC	
9	NC	
10	NC	
11	RESETB	Reset if low Input debounced so must below for>5ms to cause a reset
12	VCC	+3.3V Supply
13	GND	Ground
14	NC	
15	NC	
16	P1_4	
17	P1_6	
18	P1_7	
19	P1_5	
20	NC	
21	NC	
22	GND	
23	P1_1	LED
24	P1_0	
25	NC	
26	P0_6	wakeup
27	NC	
28	NC	
29	NC	
30	NC	
31	NC	

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32	NC	
33	NC	
34	P0_7	

9. Other configuration

State Instructions LED: P1_2 (PIN24)

Model	LED Display	Status
Slave	Even slow flash (800ms-on,800ms-off)	Waiting for matching
	Long bright	connection
Master	Even slow flash (800ms-on,800ms-off)	Waiting for matching
	Long bright	connection

Module dormancy set

Is only meaningful in from dormancy mode module, from the mode via a serial port to send "AT + SLEEP", if no accident, the module will return "OK+SLEEP" and enter a dormant state.

Wake up the module Settings

Method 1: short press the system button SW1 (PIN26).

WAKE up, a serial port will output "+ WAKE OK" string.

10.Layout Announcements

1, SH-HC-08 bluetooth module serial level should be 3.3 V, if the connection and 5V level system need to increase the level conversion chip.

2,Bluetooth signal is highly affected by the surrounding,such as trees, metal, wall can have certain absorption on the bluetooth signal or block, so the installation is not recommended in the metal case.

3,Due to metal will weaken the function of antenna, it is suggested that Lay in the module board, don't lay GND and a line under the antenna module, it is best to hollow out.

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11、AT Command

The way to the AT command mode: supply power to the module, it will enter to the AT mode if it needn't pair. The interval of command is about 1 second.

Default parameter: Baud rate:9600N81, Password:000000

Command 1 , Testing Connection Commands

Command	Answer	Parameter
AT	OK	None

Command 2 , Query/Set —— Baud Rate

Command	Answer	Parameter
Query: AT+BAUD?	OK+Get:[para1]	Para1: 4~8 4=9600;5=19200; 6=38400;7=57600; 8=115200 Default: 4 (9600)
Set: AT+BAUD[para1]	OK+Set:[para1]	

Example: Send:AT+BAUD6

Return:OK+Set:6

The baud rate to 38400

Send AT+BAUD?

Return: OK+Get:6

Command 3 , Query/Set —— Bluetooth Name

Command	Answer	Parameter
Query: AT+NAME?	OK+NAME:[para1]	Para1: the name of device
Set: AT+NAME[para1]	OK+Set[para1]	Default: SH-HC-08

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Example: Send: AT+NAME?

Return: OK+Name:SH-HC-08

Send: AT+NAMEyourname

Return : OK+Set:yourname

Command 4 , Query/Set ——PIN Code

Command	Answer	Parameter
Query: AT+PASS?	OK+PASS:[para1]	Para1 is PIN Code: 000000~999999 Default: 000000
Set: AT+PASS[para1]	OK+Set:[para1]	

e.g.

Query Pin Code

Send: AT+PASS?

Return: OK+PASS:000000

Setup Pin Code 123456

Send: AT+PASS123456

Return : OK+Set:123456

Command 5, Query/Set ——Module Bond Mode

Command	Answer	Parameter
Query: AT+TYPE?	OK+ Get:[para]	Para: 0 ~ 2 0: Not need PIN Code 1: Auth not need PIN 2: Auth with PIN Default: 0
Set: AT+TYPE[para]	OK+Set:[para]	

Command 6, Restore all setup value to factory setup

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Command	Answer	Parameter
AT+RENEW	OK+RENEW	None

Command 7, Restart module

Command	Answer	Parameter
AT+RESET	OK+RESET	None

Command 8, Query module bluetooth address

Command	Answer	Parameter
AT+ADDR?	OK+ADDR: [MAC]	MAC: Bluetooth address

Command 9, Query/Set —Module Power

Command	Answer	Parameter
Query: AT+TXPW?	OK+ TXPW:[para]	Para: 0 ~ 3 0: -23dbm、 1: -6dbm 2: 0dbm、 3: 4dbm Default: 2
Set: AT+TXPW[para]	OK+Set:[para]	

Command 10, Disconnect Bluetooth connection

Command	Answer	Parameter
Query: AT+DISCON	None	None

Command 11, set module into sleep mode

Command	Answer	Parameter
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AT+SLEEP	OK+SLEEP	None
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Only support Peripheral role.

When pin26 is high level and the module will go to normal mode.

Command 12, query verison

Command	Answer	Parameter
AT+VERSION	Version info	