SH-H3 Data Sheet

Bluetooth 4.0 Dual Mode Bluetooth Module

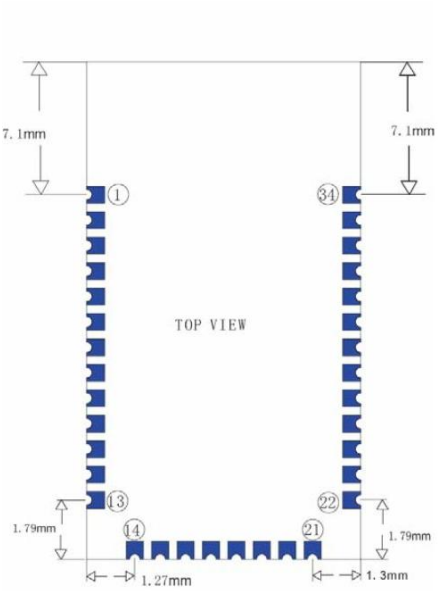
1、Overview

SH-H3 is a fully integrated Bluetooth module that complies with Bluetooth 4.0 dual mode protocols(BR/EDR/BLE). It provides several interfaces such as UART, I2C, PCM, AIO, PIO, etc., which can customized different applications.SH-H3 supports SPP, BLE profiles. It integrates MCU, Baseband controller, RF, etc. in a small package, so the designers can have better flexibilities for the product shapes.SH-H3 can be controlled by UART port or other interfaces. Please refer to software design guide for the interfacing protocol.

2、Feature

- Fully qualified Bluetooth 4.0/3.0/2.1/2.0/1.2/1.1
- Postage stamp sized form factor, 13mm x 27mm x 2mm
- Low power
- Class 1.5 support(high output power)
- The default UART Baud rate is 115.2Kbps and can support from 1200bps up to 921Kbps,.
- UART, I2C , PCM data connection interfaces.
- Embedded Bluetooth stack profiles support(requires no host stack): SPP, HFP/HSP,
- A2DP, AVRCP, MAP, and all BLE protocols.

3、Product’s picture



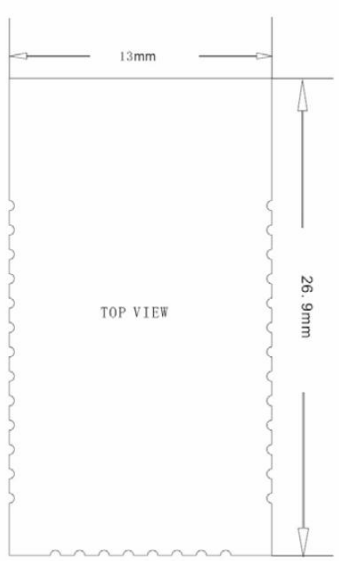


Figure 3

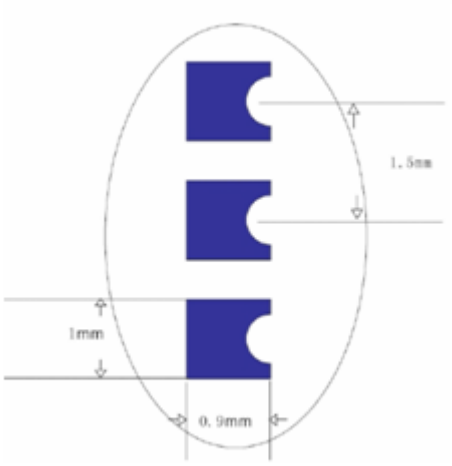
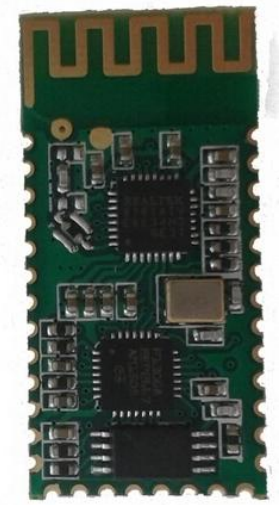


Figure 4



4. Application Fields

- Smart Watch and Bluetooth Bracelet
- Health & Medical devices
- Measurement and monitoring systems
- Industrial sensors and controls
- Asset tacking

5. GENERAL SPECIFICATION

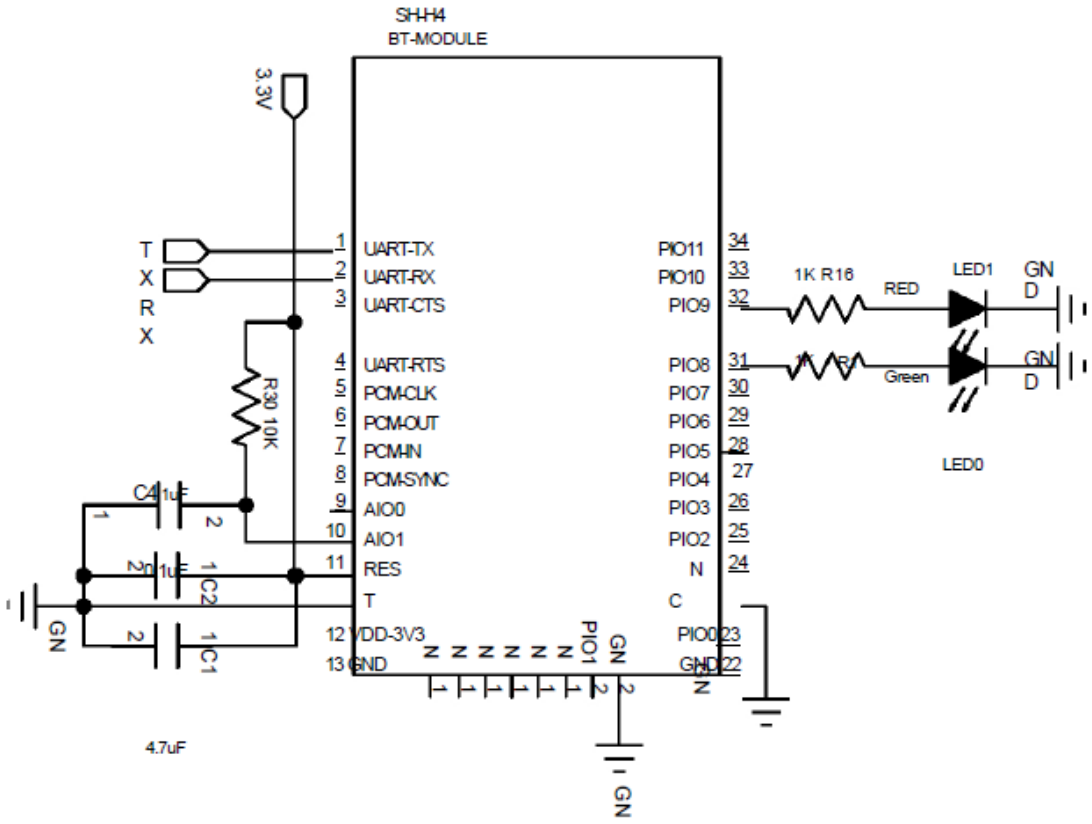
General Specification	
Chip Set	
Product ID	SH-H3
Dimension	13mm x 27mm x 2mm
Bluetooth Specification	Bluetooth V4.0 (Dual Mode)
Power Supply	3.3 Volt DC
Output Power	5.5 dBm
Sensitivity	-85dBm@0.1%BER
Frequency Band	2.402GHz -2.480GHz ISM band
Modulation	FHSS,GFSK,DPSK,DQPSK
Baseband Crystal OSC	26MHz
Hopping & channels	1600hops/sec, 1MHz channel space,79 Channels
RF Input Impedance	50 ohms
Antenna	Internal (Default) External (Option)
Interface	Data: UART (Standard), I2C Audio: PCM/I2S Others: PIO, AIO, Touch sensor, PWM.
Profile	SPP, BLE (Standard) HFP, A2DP, AVRCP, MAP，PBAP
Temperature	-25ºC to +75ºC
Humidity	10%~95% Non-Condensing
Environmental	RoHS Compliant

6，PINs description

Pin NO.	Pin Name	Type	Pin Descriptions
1	UART-TX	CMOS output	UART data output
2	UART-RX	CMOS input	UART data input
3	UART-CTS	CMOS input	UART clear to send active low Alternative Function:Programmable input/output line
4	UART-RTS	CMOS output	UART request to send active low Alternative Function:Programmable input/output line
5	PCM-CLK	Bi-directional	Synchronous data clock(Operating voltage level: 1.8V)
6	PCM-OUT	CMOS output	Synchronous data output(Operating voltage level: 1.8V)
7	PCM-IN	CMOS input	Synchronous data input(Operating voltage level: 1.8V)
8	PCM-SYNC	Bi-directional	Synchronous data sync(Operating voltage level: 1.8V)
9	AIO0	Bi-directional	Programmable input/output line
10	AIO1	Bi-directional	Programmable input/output line
11	REST	CMOS input	Reset if low. Input debounced so must be low for >5ms to cause a reset.
12	VDD-3V3	VDD	Power supply voltage 3.3V
13	GND	VSS	Power Ground
14	NC	NC	NC
15	NC	NC	NC
16	NC	NC	NC
17	NC	NC	NC
18	NC	NC	NC
19	NC	NC	NC
20	PIO12	NC	NC
21	GND	VSS	Power Ground

22	GND	VSS	Power Ground
23	PIO0	NC	NC
24	PIO1	NC	NC
25	PIO2	NC	NC
26	PIO3	NC	NC
27	PIO4	Bi-directional	Programmable input/output line
28	PIO5	Bi-directional	Programmable input/output line
29	PIO6	Bi-directional	Programmable input/output line Alternative Function:I2C Serial Clock input/output
30	PIO7	Bi-directional	Programmable input/output line Alternative Function:I2C Serial Data input/output
31	PIO8	Bi-directional	Programmable input/output line
32	PIO9	Bi-directional	Programmable input/output line
33	PIO10	Bi-directional	Programmable input/output line
34	PIO11	Bi-directional	Programmable input/output line

7，Application Circuit Diagram



PIN31, PIN32 for the LED output.

When in the connected state, PIN32 is high, when in the disconnected state, PIN32 is low.

When in the connected state, PIN31 is high, when in the disconnected state, PIN32 output flashing .

PIN34 is input PIN, when the module is connected to the phone, give a high level to the PIN34 , the module will be disconnected and phone connections.

8 , 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:115200N81

Format:
AT+ (CMD) {=PARA1 }{,PARA2 ,PARA3...} <CR><LF>
Description:
Command always start with AT+ and end with <CR><LF>.
<CR> means "carriage return" and corresponds to the hexadecimal value 0x0D.
<LF> means "line feed" and corresponds to the hexadecimal value 0x0A.
Parameter between [ ] may not exist.
Parameter always start with =if exist.
Example :
AT+BDNAME<CR><LF> :Query current device's name.
AT+BDPIN=8888 <CR><LF> :Modify current device's pin code to '8888'.

Command 1 , Testing Connection Commands

Command	Answer	Parameter
AT	OK	None

Command 2 , Query/Set —— Bluetooth Name

Command	Answer	Parameter
Query: **AT+BDNAME**	+BDNAME=[para1]	Para1: the name of device

Set：AT+BDNAME=[para1], [para2]	+BDNAME=[para1]	Default：SH-H3 Para2: 0 : not include Bluetooth address suffix 1: It contains the Bluetooth address suffix

Example: Send: AT+BDNAME

Return: +BDNAME=SH-H3

Send: AT+BDNAME=ABC,0

Return : +BDNAME=ABC

Command 3, Query module bluetooth address

Command	Answer	Parameter
AT+BDADDR	+BDADDR=[MAC]	MAC: Bluetooth address

Command 4 , Query/Set —— Baud Rate

Command	Answer	Parameter
Query：**AT+BDBAUD**	+BDBAUD=[para1]	Para1: 9600 38400 115200
Set：**AT+BDBAUD**=[para1]	+BDBAUD=[para1]	

Query device baudrate

Send:AT+BDBAUD

Return: +BDBAUD=9600

Modify device baudrate

Send:AT+BDBAUD=115200

Return: +BDBAUD=115200

Command 5 , Query/Set ——PIN Code

Command	Answer	Parameter
Query：**AT+BDPIN**	+BDPIN=[para1]	Para1 is PIN Code: Default：0000
Set：**AT+BDPIN=**[para1]	+BDPIN=[para1]	

e.g.

Query Pin Code

Send: AT+BDPIN

Return: +BDPIN=0000

Setup Pin Code 1234

Send: AT+BDPIN=1234

Return : +BDPIN=1234