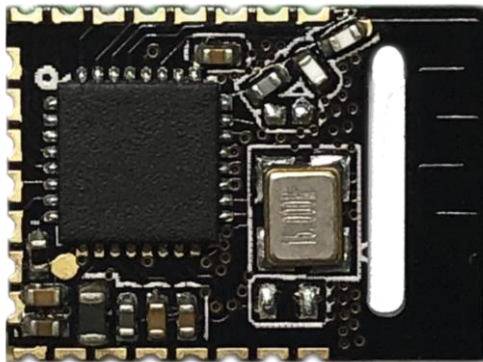


**Bluetooth Low Energy (BLE)
Pass-through Module Specification
HM-BT4502B(-1)**



HM-BT4502B



HM-BT4502B-1

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1 Product Overview

HM-BT4502B / HM-BT4502B-1 is a wireless data pass-through module based on CMT4502 low-power Bluetooth 5.0 chip. By connecting with MCU, it can quickly realize the connection and data communication between the module and Bluetooth devices such as smart phones and tablets. MCU takes up less resource and development is simple.

2 Module Features

- Easy to use without any experience in Bluetooth stack application.
- User interface uses universal serial port design, full-duplex two-way communication, minimum baud rate support 9600 bps;
- Default connection interval is 30 millisecond, fast connection;
- Support 2M symbol transmission;
- Support 244 bytes packet transmission;
- Support AT instruction for software reset and get MAC address;
- Support AT instruction to set Bluetooth connection interval and control different forwarding rates (dynamic power adjustment);
- Support AT instruction to adjust Tx power, modify advertisement interval, customize advertisement data, customize device identification, set data delay (user MCU serial port reception preparation time), modify serial port baud rate, modify module name. All the above parameters are saved after power-down;
- Serial port package length can be any length within 240 bytes (including 240 bytes) (automatic distribution of large packages);
- Support mobile device APP to modify module name, serial baud rate, product identification code, and customize advertisement content and advertisement

period. These settings can be saved after power-down.

- Support mobile device APP to reset module and set Tx power.
- Support mobile device APP to adjust Bluetooth connection interval. The setting can not to be saved after power down.
- Support full IO expansion including debugging port;
- Support anti-hijacking password settings, modification and recovery. Prevent malicious third party connections. Users can also not use them.
- Advertisement Content prompt the module real-time system status, including battery power, custom device identification code (suitable for advertisement application);
- Support internal RTC (real-time clock);

3 Electrical Characteristics

- Working voltage: 1.8V-3.6V
- Working temperature: -20°C~+85°C
- Modulation mode: GFSK (Gaussian Frequency Shift Keying)
- Modulation frequency: 2402MHz-2480MHz
- Transient current of receiving data: less than 8mA@3V
- Transient current of sending data: less than 8mA@3V@0dBm
- Current in the low power mode: less than 4uA@3V
- Tx power: - 20dBm ~+8dBm
- Rx sensitivity: -97dBm

4 Module Function Description

After the module starts, it advertises automatically. The opened specific APP on the mobile phone will scan and connect it. After successful connection, it can be operated through BLE protocol. User-controlled MCU can realize the communication with the mobile device through the serial port of the module. Users can also manage and control some communication parameters through the specific interface instruction.

User data format is defined by upper application program. Mobile devices can write to the module through APP, and the written data will be sent to the user's MCU through the module's external interface. When the module external interface receives the data package from the external MCU, it will automatically forward it to the connected mobile device. Users need to design the main MCU code and the smart mobile device APP.

5 Application Schematic

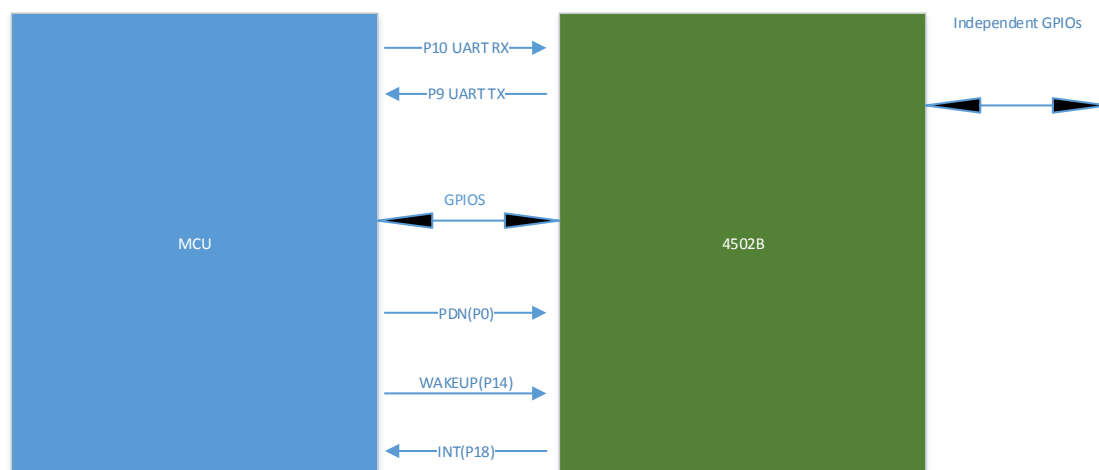


Figure 1. Application Schematic of the Pass-through Module

6 Module Pins

6.1 Module Pins Distribution

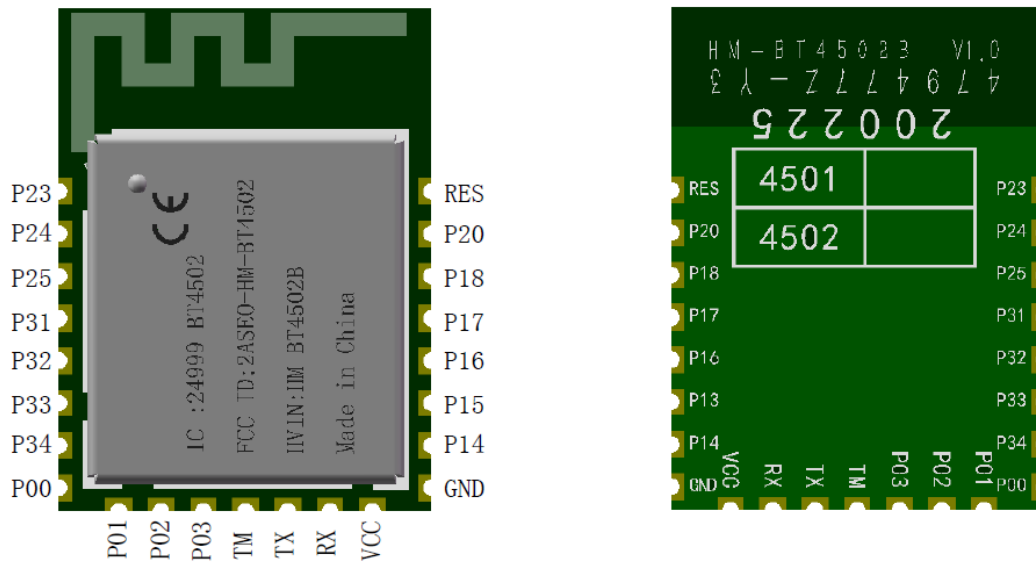


Fig. 2. Module Pins Distribution Diagram (Top / Bottom View)

6.2 Module Pins Definition

Pin No	Pin Name	Type	Description
1	RES	DI	Reset Pin
2	P20	I/O	GPIO20 ; ADC1
3	P18	I/O	GPIO18 ; Interrupt Pin
4	P17	I/O	GPIO17 ; 32.768KHz Crystal; PWC1
5	P16	I/O	GPIO16 ; 32.768KHz Crystal; PWC0
6	P15	I/O	GPIO15 ; ADC0
7	P14	I/O	GPIO14 ; Wakeup Pin
8	GND	DG	Digital Ground

9	VDD	AP,DP	Power Supply ; 1.8V~3.6V
10	UART_RXD	DI	UART RXD
11	UART_TXD	DO	UART TXD
12	TM	DI	UART Download Mode : High Level Active
13	P03	I/O	GPIO3
14	P02	I/O	GPIO2 ;
15	P01	I/O	GPIO1 ;
16	P00	I/O	GPIO0 ; Power-down Pin
17	P34	I/O	GPIO34 ; PWM3
18	P33	I/O	GPIO33 ; PWM2
19	P32	I/O	GPIO32 ; PWM1
20	P31	I/O	GPIO31 ; PWM0
21	P25	I/O	GPIO25 ; Periodical Flip Channel 1
22	P24	I/O	GPIO24 ; Periodical Flip Channel 0
23	P23	I/O	GPIO23

Table 1. Module Pin Definition

7 Module Size

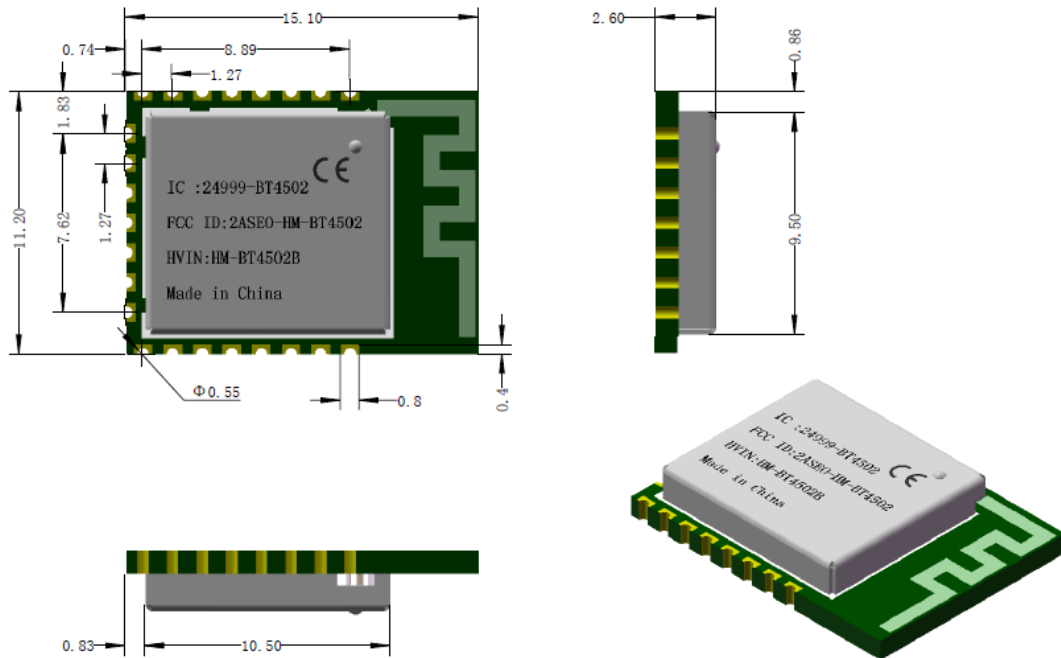


Fig3. HM-BT4502B Module Size Diagram

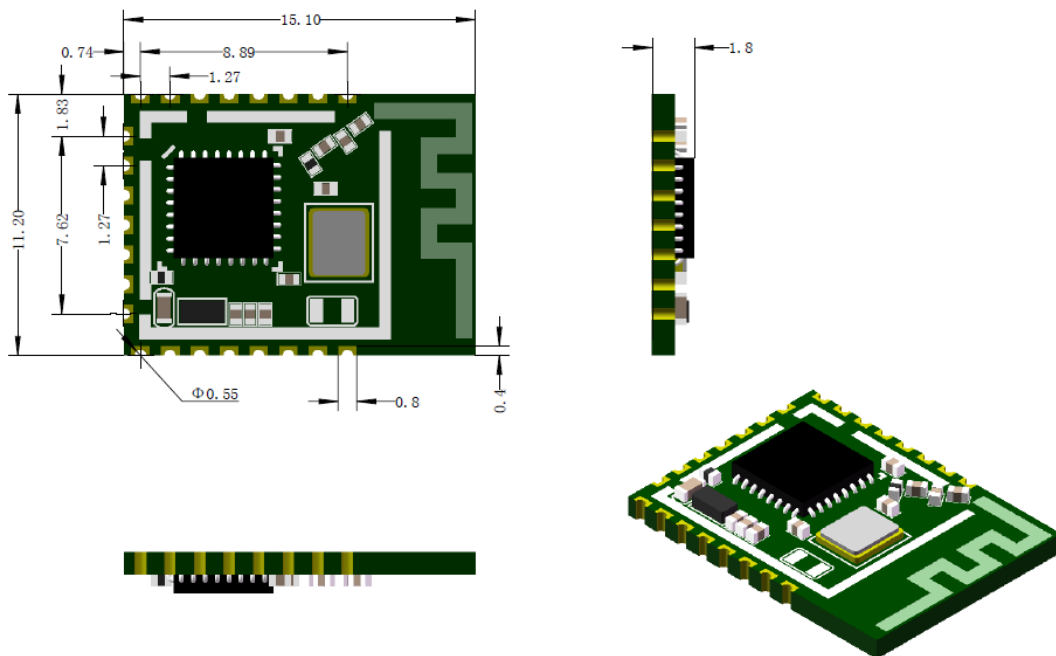


Fig4. HM-BT4502B-1 Module Size Diagram