

(1) The circuit 1 (connect the module to 3.3V serial port of MCU) is showed by figure 5.

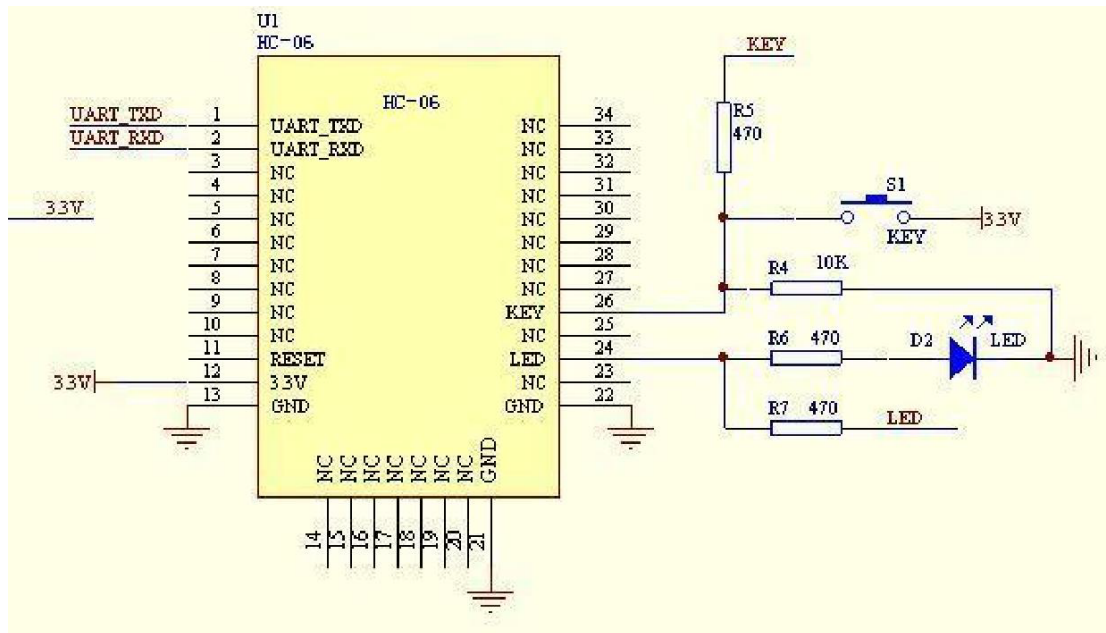


Figure 5 The circuit 1

In principle, HC-06 can work when UART_TXD, UART_RXD, VCC and GND are connected. However, for better testing results, connecting LED and KEY are recommended (when testing the master).

Where, the 3.3V TXD of MCU connects to HC-06's UART_RXD, the 3.3V RXD of MCU connects to HC-06's UART_TXD, and 3.3V power and GND should be connected. Then the minimum system is finished.

Note that, the PIN2:UART_RXD of Bluetooth module has no pull-up resistor. If the MCU TXD doesn't have pull-up function, then user should add a pull-up resistor to the UART_RXD. It may be easy to be ignored.

If there are two MCU which connect to master and slave device respectively, then before paired(LED will flicker) user can send AT commands by serial port when the system is power on. Please refer to HC-04 and HC-06's data sheet for detailed commands. In the last chapter, the command set will be introduced. Please pay attention to that the command of HC-04/HC-06 doesn't have terminator. For example, consider the call command, sending out AT is already enough, need not add the CRLF (carriage return line feed).

If the LED is constant lighting, it indicates the pairing is finished. The two MCUs can communicate with each other by serial port. User can think there is a serial port line between two MCUs.

(2) The circuit 2 (connect the module to 5V serial port of MCU) is showed by figure 6.

Figure 6 is the block diagram of Bluetooth baseboard. This kind of circuit can amplify Bluetooth module's operating voltage to 3.1-6.5V. In this diagram, the J1 port can not only be connected with MCU system of 3.3V and 5V, but also can be connected with computer serial port.

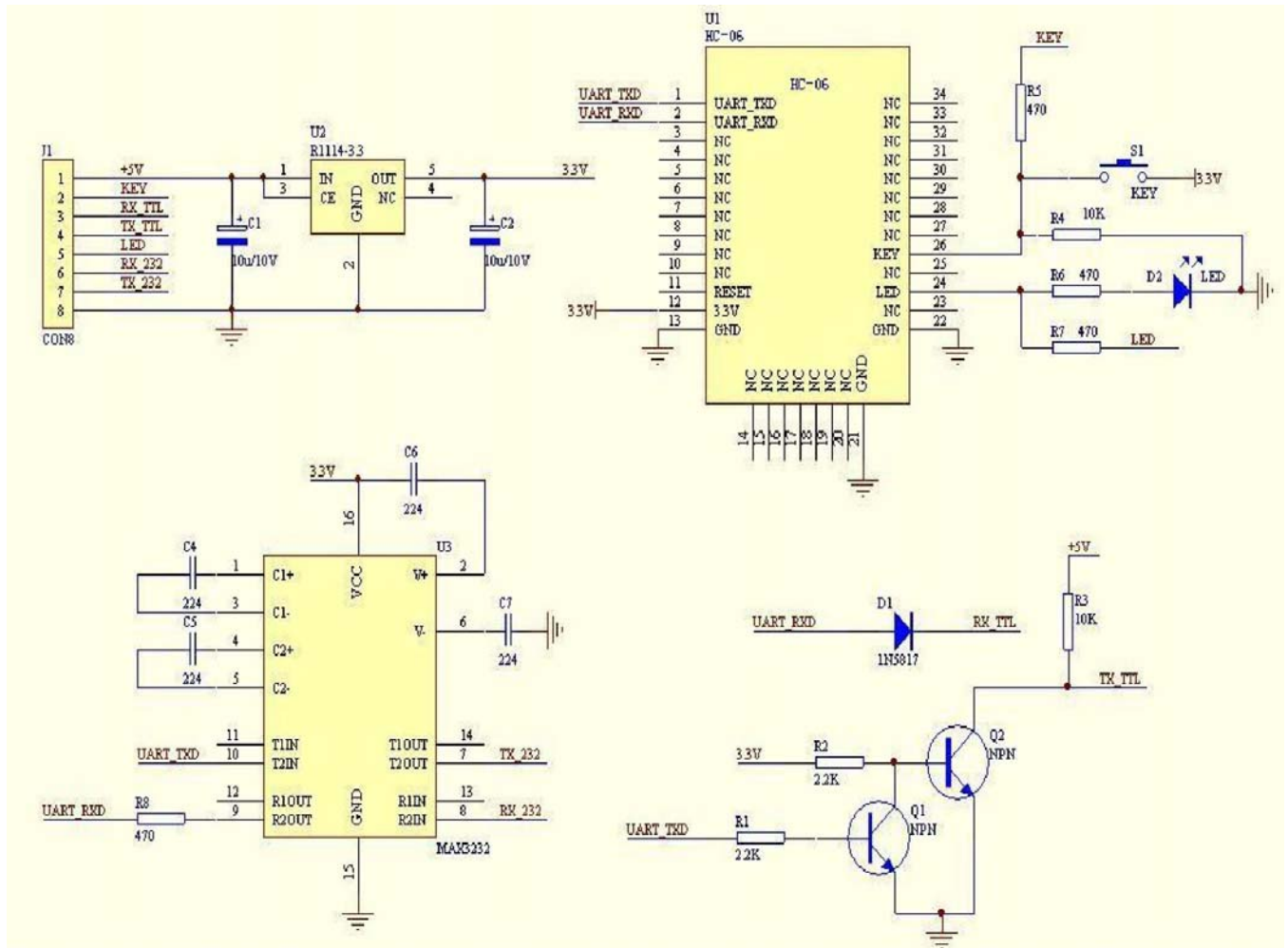


Figure 6 The circuit 2

(3) AT command test

Before paired, the mode of HC-04 and HC-06 are AT mode.

On the condition of 9600N81, OK will be received when user send the two letters AT. Please refer to the last chapter of datasheet for other commands of HC-06. Please pay attention to that sending out AT is already enough, need not add the CRLF (carriage return line feed).

The command set of Version V1.4 doesn't include parity. The version V1.5 and its later version have parity function. Moreover, there are three more commands of V1.5 than V1.4. They are:

No parity (default) A T+PN

Odd parity AT+PO

Even parity AT+PE

Do not let the sending frequency of AT command of HC-06 exceed 1Hz, because the command of HC-06 end or not is determined by the time interval.

(4) Pairing with adapter

User can refer to the download center of the company's website for "The Introduction of IVT" that introduces the Bluetooth module makes pair with computer adapter. That document taking HC-06-D for example introduces how the serial module makes pair with the adapter. That method is like to make pair with cell-phone. But the difference is that cell-phone need a third-party communication software to help. It's liked the kind of PC serial helper of and the hyper terminal. A software named "PDA serial helper" provided by our company is suitable for WM system. It has been proven that this serial module is supported by many smart phone systems' Bluetooth, such as, sypbian, android, windows mobile and etc.

(5) Pairing introduction

HC-06 master device has no memory before the first use. If the password is correct, the master device will make pair with the slave device automatically in the first use. In the following use, the master device will remember the Bluetooth address of the last paired device and search it. The searching won't stop until the device is found. If master device's PIN26 is input high level, the device will lose the memory. In that occasion, it'll search the proper slave device like the first use. Based on this function, the master device can be set to make pair with the specified address or any address by user.

(6) Reset new password introduction

User can set a new password for the HC-06 through AT+PINxxxx command. But the new password will become active after discharged all the energy of the module. If the module still has any energy, the old one is still active. In the test, for discharging all the system energy and activating the new password, we can connect the power supply PIN with GND about 20 seconds after the power is cut off. Generally, shutting down the device for 30 minutes also can discharge the energy, if there is no peripheral circuit helps discharge energy. User should make the proper way according to the specific situation.

(7) Name introduction

If the device has no name, it's better that user doesn't try to change the master device name. The name should be limited in 20 characters.

Summary: The character of HC-06: 1 not many command 2 easy for application 3 low price. It's good for some specific application. HC-04 is very similar with HC-06. Their only one difference is HC-04 is for industry, HC-06 is for civil. Except this, they don't have difference.

The following reference about HC-04 and HC-06 can be downloaded from company website

www.wavesen.com:

HC-06 datasheet .pdf (the command set introduction is included)

HC-04 datasheet .pdf (the command set introduction is included)

IVT BlueSoleil-2.6 (IVT Bluetooth drive test version)

Bluetooth FAQ.pdf

HC-04-D(HD-06-D)datasheet(English).pdf

HC-06-AT command software (test version) (some commands in V1.5 is not supported by V1.4)

PCB package of Bluetooth key modules (PCB package lib in protel)

IVT software manual.pdf (introduce how to operate the modern and make pair with Bluetooth module)

PDA serial test helper.exe (serial helper used for WM system)

5 manual for the first use of HC-05

This chapter will introduce how to test and use the HC-05 if it's the first time for user to operate it.

(1) PINs description

PIN1	UART_TXD, Bluetooth serial signal sending PIN, can connect with MCU's RXD PIN
PIN2	UART_RXD, Bluetooth serial signal receiving PIN, can connect with the MCU's TXD PIN, there is no pull-up resistor in this PIN. But It needs to be added an eternal pull-up resistor.
PIN11	RESET, the reset PIN of module, inputting low level can reset the module, when the module is in using, this PIN can connect to air.
PIN12	VCC, voltage supply for logic, the standard voltage is 3.3V, and can work at 3.0-4.2V
PIN13	GND

PIN31	<p>LED1, indicator of work mode. Has 3 modes:</p> <p>When the module is supplied power and PIN34 is input high level, PIN31 output 1Hz square wave to make the LED flicker slowly. It indicates that the module is at the AT mode, and the baud rate is 38400;</p> <p>When the module is supplied power and PIN34 is input low level, PIN31 output 2Hz square wave to make the LED flicker quickly. It indicates the module is at the pairable mode. If PIN34 is input high level, then the module will enter to AT mode, but the output of PIN31 is still 2Hz square wave.</p> <p>After the pairing, PIN31 output 2Hz square wave.</p> <p>Note: if PIN34 keep high level, all the commands in the AT mode can be in application. Otherwise, if just excite PIN34 with high level but not keep, only some command can be used. More information has provided at chapter 2.</p>
PIN32	<p>Output terminal. Before paired, it output low level. Once the pair is finished, it output high level.</p>
PIN34	<p>Mode switch input. If it is input low level, the module is at paired or communication mode. If it's input high level, the module will enter to AT mode. Even though the module is at communication, the module can enter to the AT mode if PIN34 is input high level. Then it will go back to the communication mode if PIN34 is input low level again.</p>

(2) Application circuit 1 (connect to the 3.3V system)

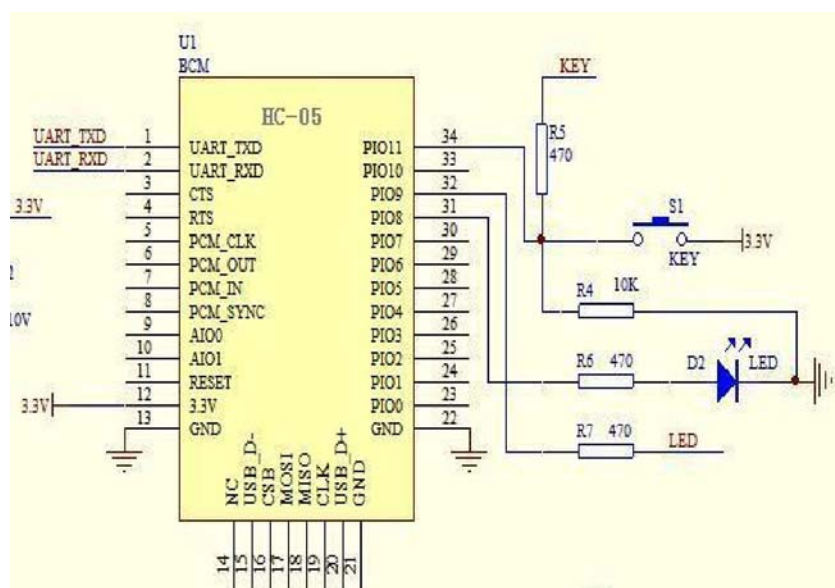


Figure 7 Application 1

(3) Application circuit 2 (connect to 5V serial system or PC serial)

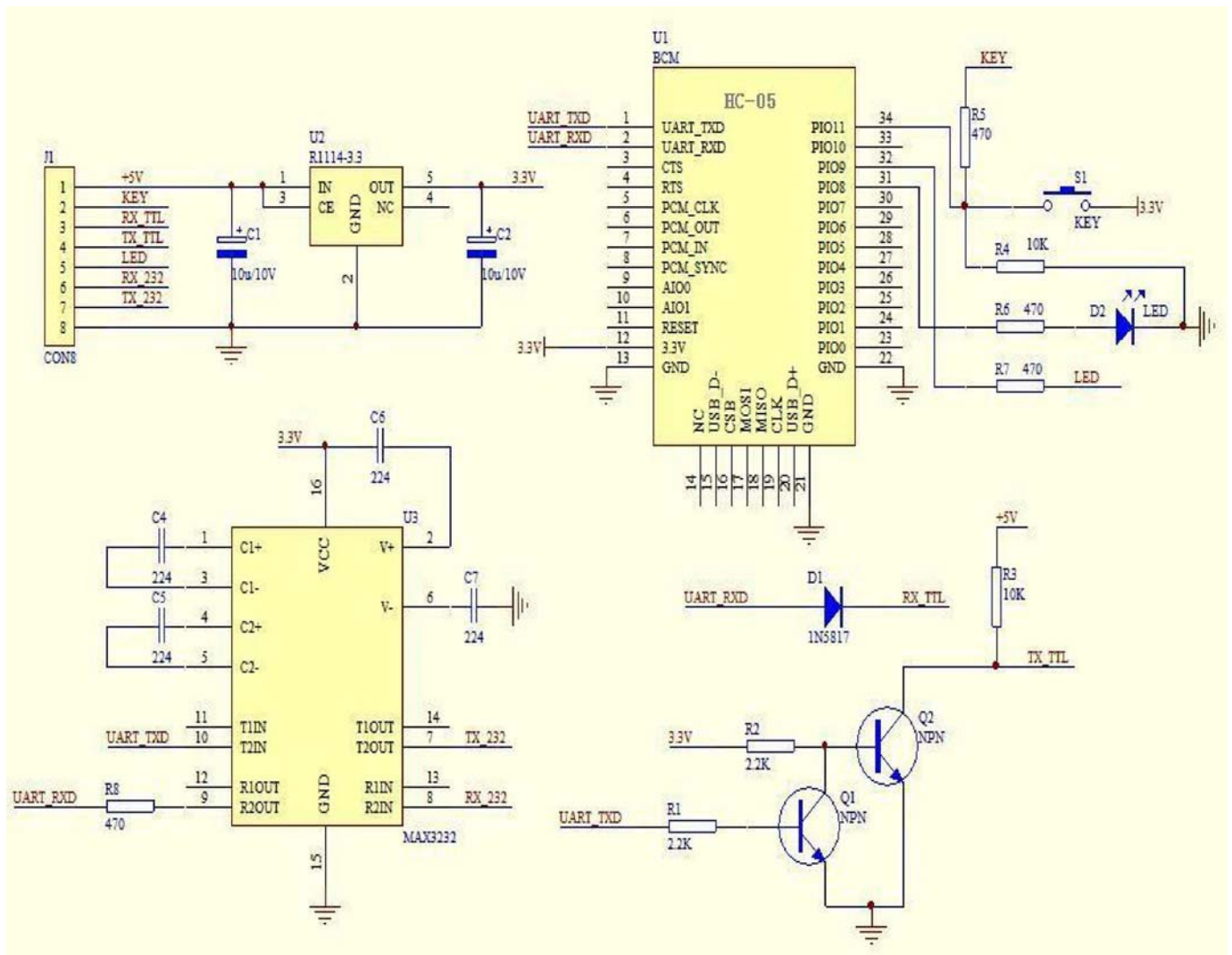


Figure 8 Application circuit 2

(4) AT command test

This chapter introduces some common commands in use. The detailed introduction about HC-05 command is in HC-0305 AT command set.

Enter to AT mode:

Way1: Supply power to module and input high level to PIN34 at the same time, the module will enter to AT mode with the baud rate-38400.

Way2: In the first step, supply power to module; In the second step, input high level to PIN34. Then the module will enter to AT mode with the baud rate-9600. Way1 is recommended.

Command structure: all command should end up with “\r\n” (Hex: 0X0D X0A) as the terminator. If

the serial helper is installed, user just need enter “ENTER” key at the end of command.

Reset the master-slave role command:

AT+ROLE=0 ----Set the module to be slave mode. The default mode is slave.

AT+ROLE=1 ----Set the module to be master mode.

Set memory command:

AT+CMODE=1

Set the module to make pair with the other random Bluetooth module (Not specified address). The default is this mode.

AT+CMODE=1

Set the module to make pair with the other Bluetooth module (specified address). If set the module to make pair with random one first, then set the module to make pair with the Bluetooth module has specified address. Then the module will search the last paired module until the module is found.

Reset the password command

AT+PSWD=XXXX

Set the module pair password. The password must be 4-bits.

Reset the baud rate

AT+UART== <Param>,<Param2>,<Param3>.

More information is provided at HC-0305 command set

Example:

AT+UART=9600,0,0 ----set the baud rate to be 9600N81

Reset the Bluetooth name

AT+NAME=XXXXX

Summary:

HC-05 has many functions and covers all functions of HC-06. The above commands are the most common ones. Besides this, HC-05 leaves lots of space for user. So HC-05 is better than HC-06 and

recommended. HC-03 is similar with HC-05. The above introduction also suits HC-03

The following reference about HC-03 and HC-05 can be downloaded from company website www.wavesen.com:

- HC-03 datasheet .pdf (the command set introduction is included)
- HC-05 datasheet .pdf (the command set introduction is included)
- IVT BlueSoleil-2.6 (IVT Bluetooth drive test version)
- Bluetooth FAQ.pdf
- PCB package of Bluetooth key modules (PCB package lib in protel)
- IVT software manual.pdf (introduce how to operate the modern and make pair with Bluetooth module)
- PDA serial test helper.exe (serial helper used for WM system)
- HC-03/05 Bluetooth serial command set.pdf

6. Ordering information

The website of Guangzhou HC Information Technology Co., Ltd is www.wavesen.com The contact information is provided at the company website.

Order Way: If you want our product, you can give order to the production center of our company directly or order it in Taobao. There is a link to Taobao in our company website.

Package: 50 pieces chips in an anti-static blister package. The weight of a module is about 0.9g. The weight of a package is about 50g.



Please provide the product's model when you order:

HC-04-M H C-04 master module

HC-04-S HC-04 slave module

HC-06-M HC-06 master module

HC-06-S HC-06 slave module

HC-03

HC-05 HC-03/05 can be preset to be master module or slave module.