

Design of Bluetooth Remote Control Intelligent Car

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Abstract: In recent years, wireless remote control trolley has become the focus of research. In the provincial, national university students electronic race, remote control car has also appeared frequently, major universities also attach great importance to the design of remote control car. In the scheme of wireless remote control, radio frequency, infrared, Bluetooth and so on can be adopted. In recent years, Bluetooth technology has been mature, and has been greatly used in the Internet of things. Therefore, using Bluetooth remote control for car remote control, increase the photosensitive resistance, temperature and humidity sensor, infrared sensor, running state real-time monitoring of car, automatic tracking, obstacle avoidance, temperature and humidity detection and wireless remote control function.

Introduction

Since the middle and late of last century, the research of wireless remote control car has also been started in our country. In support of the state, formed a research hotspot of wireless remote control car have been all over the country, in the contest of electronic and electronic contest of the remote intelligent vehicles have made research on this kind of problem, universities also attach great importance to. However, compared with developed countries, China's research is still relatively backward, and in terms of technology, it is urgent to update and develop. The designed car can avoid obstacle, complete serial communication and wireless remote control. In many wireless remote control implementations, such as radio frequency, infrared ray, Bluetooth, etc., this paper chooses Bluetooth as an advantageous technology.

Hardware Circuit Design

Remote Control Circuit Design

The Bluetooth module circuit is shown in figure 1. Figure 1 using 3.3V power supply, UART_TXD and UART_RXD can be connected to the microcontroller serial port, using serial port to control the Bluetooth module transceiver. In the open area, the Bluetooth module has a communication distance of 10 meters. The configuration of the Bluetooth module can be realized by the AT instruction set. The communication speed, send and receive status, parity check and so on of the module can be set up.

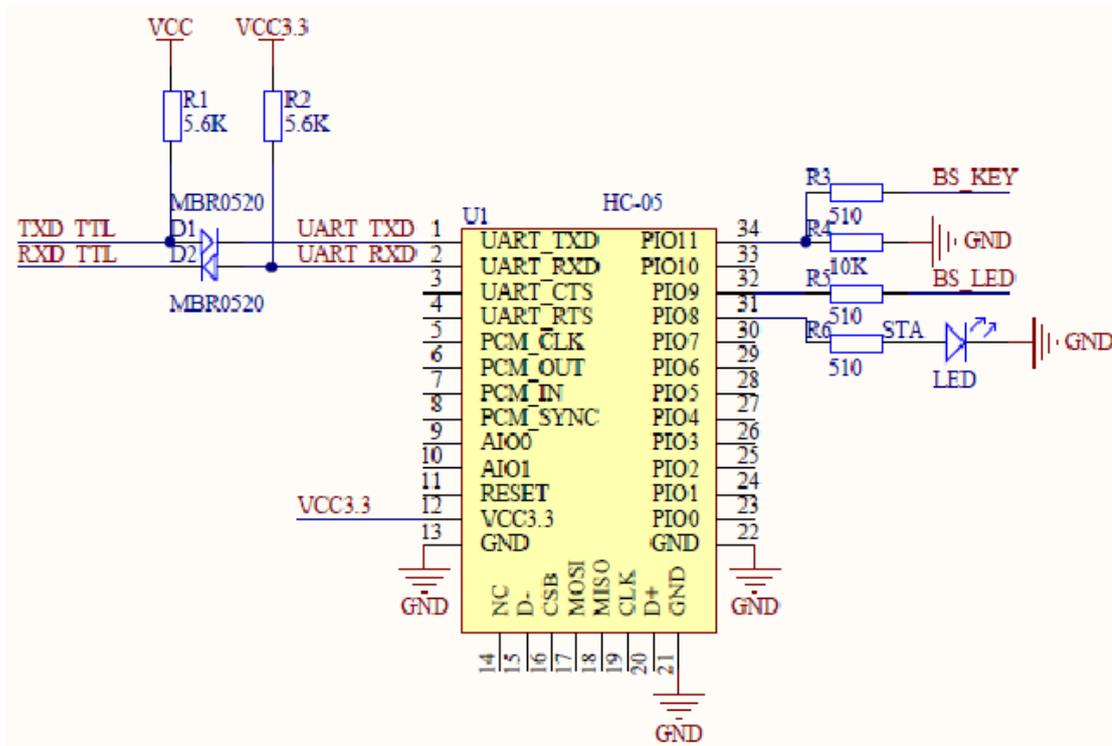


Figure 1 Bluetooth module circuit diagram

The power supply circuit is shown in Figure 2, the input voltage is 5V DC voltage, and the DC voltage of the 3.3V is output by the voltage regulator module RT9193-33. The utility model is supplied to the Bluetooth module and the singlechip.

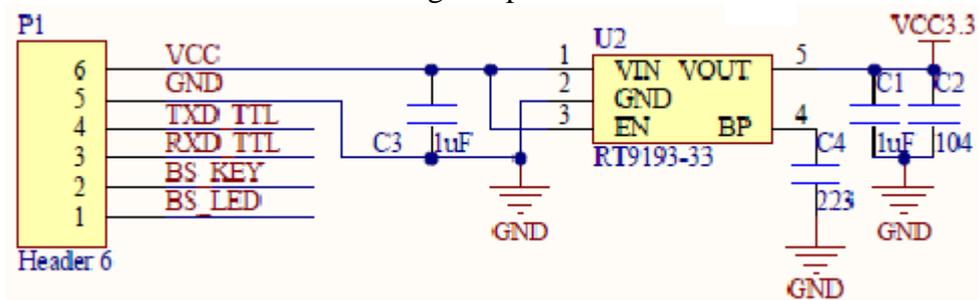


Figure 2 power circuit diagram

Software Programming

In this design, under KEIL 5, programming with C language. Bluetooth module initialization and transceiver control, and can realize the connection with the mobile phone, through the phone to send different characters to the car, control the car forward, back, left turn, right turn. Some code is given below:

```

u8 HC05_Init(void)
{
    u8 retry=10,t;
    u8 temp=1;
    RCC->APB2ENR|=1<<2;
    RCC->APB2ENR|=1<<4;
    GPIOA->CRL&=0XFFF0FFFF;
    GPIOA->CRL|=0X00080000;
    GPIOA->ODR|=1<<4;
    GPIOC->CRL&=0XFFF0FFFF;
    GPIOC->CRL|=0X00030000;
    GPIOC->ODR|=1<<4;
}
    
```

```

USART2_Init(36,38400);
while(retry--)
{
    HC05_KEY=1;
    delay_ms(10);
    u2_printf("AT\r\n");
    for(t=0;t<10;t++)
    {
        if(USART2_RX_STA&0X8000)break;
        delay_ms(5);
    }
    if(USART2_RX_STA&0X8000)
    {
        temp=USART2_RX_STA&0X7FFF;
        USART2_RX_STA=0;
        if(temp==4&&USART2_RX_BUF[0]=='O'&&USART2_RX_BUF[1]=='K')
        {
            temp=0;
            break; } } }
    HC05_KEY=0;
    if(retry==0)temp=1;
    return temp;
}

```

The above code implements the initialization of the Bluetooth module.

Summary

This paper expounds the control of the car by Bluetooth remote control, gives the hardware circuit design and describes its working principle. Under KEIL MDK, the program is written in C language, which realizes the initialization of Bluetooth module, realizes the connection of Bluetooth module and mobile phone, and controls the forward, backward, left turn and right turn of the car by mobile phone. It has certain practical value.

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