New application of **BA8206 BA4** remote control fan controller

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Abstract: BA8206 BA4 remote control fan dedicated controller has been widely used in various series of fan remote control
However, BA8206 BA4 can also be used for other aspects besides fan remote control. The article introduces BA8206
BA4 is used in the application of PTC heating fans and household integrated timing and speed control controllers, and gives the actual application
Use the circuit.

Keywords: remote controller, fan, heating fan, household appliance BA8206 BA4

1 Introduction to **BA8206 BA4**

BA8206 BA4 adopts DIP-18 pin package. Figure 1 is the pinout diagram of the BA8206 BA4 controller, and Table 1 is the BA8206 BA4
The pin function description, the main characteristic parameters of BA8206 BA4 are as follows:

Table **1** Pin function of **BA8206 BA4**

Foot position	name	I/O	Function Description	Foot position	name	I/O	Function Description
1	DI	I	Remote control signal input	10	SHO	O	Swing head drive output
2	OFF	I/O	shutdown key or on/off key input and LED scan output	11	STRONG	O	Strong wind drive output
3	TIMER	I/O	Timing key input and LED scan output	12	MEDIUM	O	Stroke drive output
4	SPEED	I/O	Wind speed key input and LED scan output	13	LOW	O	Low wind drive output
5	MODE	I/O	Wind type key input and LED scan output	14	VDD	-	Positive power
6	COM1	O	User code C1 selection and LED scanning common	15	BUZ	O	Buzzer drive output
7	COM2	O	User code C2 selection and LED scanning common terminal	16	OSC2	O	Crystal output
8	COM3	O	LED scan common	17	OSC1	I	Crystal input
9	SWING	I	Swing head key input and user code selection diode connection terminal	18	VSS	-	Negative power supply

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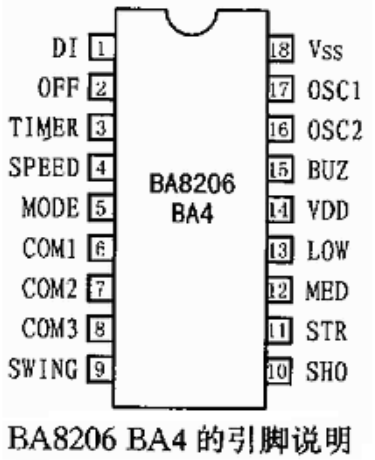

BA8206 BA4 的引脚说明

●Power supply voltage: -0.3V ~ 6V;

●Input/output voltage: Vss-0.3 ~ VDD+0.3V;

●Power loss: 500mW;

●Working temperature: -10 ~ 70℃;

●Storage temperature: -40 ~ 125℃.

In addition, BA8206 BA4 has the following features;

●With normal wind, natural wind, sleep wind and strong, medium and weak three
Kind of wind speed

●With timing mode: it can be counted progressively within 0.5 ~ 7.5 hours
Time;

●With a set of non-independent swing head (rotating blade) control function;

●Built-in buzzer sound: turn on "Bi-BI", turn off "Bi-" and other operations "Bi";

●Using 455kHz oscillator as the input of the oscillation circuit;

●Use stroke start;

●With memory function: that is, all states before shutting down are memorized, which can avoid the trouble of resetting the action mode every time the machine is turned on;

●Matching with BA5104 encoder can realize full-function remote control;

●2-digit user code setting;

●When the button is pressed for more than 6 seconds, there will be a Bi-Bi-Bi-Bi warning sound.

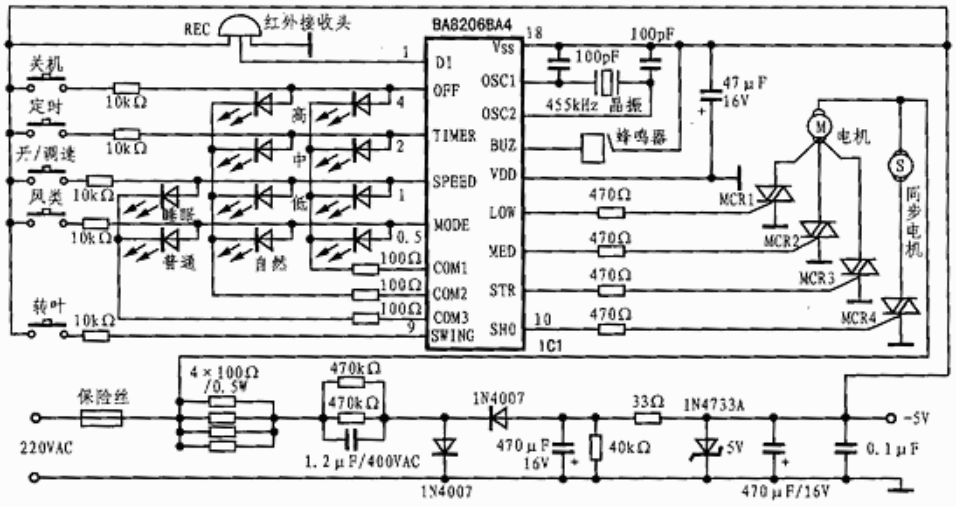

图 2　遥控系列转页扇电路图

2 The working principle of **BA8206 BA4**

BA8206 BA4 used to be the core control element of Gree brand remote control system turning fan. The good operation of various fans of nearly one hundred yuan has been sufficient. The practicability and reliability of the BA8206 BA4 application circuit is confirmed, and the working principle of it is introduced below in conjunction with the practical circuit; Figure 2 is Gree The schematic diagram of the circuit of the brand series turning fan.

The whole circuit is based on BA8206 BA4 (hereinafter referred to as IC1) as the core. Among them, the power supply part is a commonly used capacitor step-down circuit, which can be Provide -5V working voltage for integrated circuits.

In Figure 2, the DI terminal of pin 1 of IC1 is connected to an infrared receiver, which is responsible for receiving the shutdown, timing, opening/adjustment, etc. from the remote control. For signals such as wind and rotor remote control, the 14th pin is the positive power terminal, and the 18th pin is the negative power terminal.

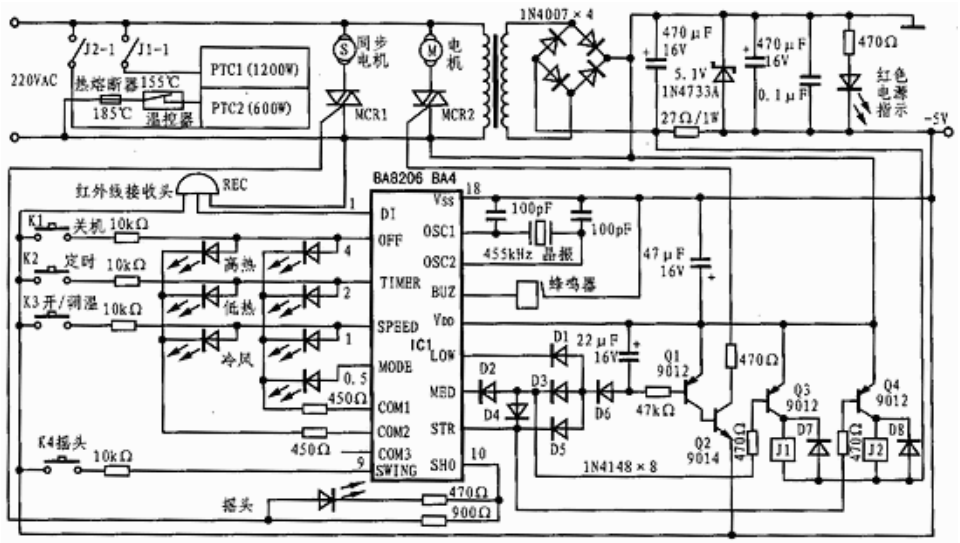

图 3　PTC 暖气机电路原理图

The 16th and 17th pins of IC1 are connected to an external 455kHz crystal oscillator and two 100pF capacitors, which together with the internal capacitors can form a clock oscillator circuit; the 15th pin An external buzzer is connected to the BUZ end. When IC1 receives a remote control or program control operation signal, it will sound "Bi" to remind the user that the operation is valid.

The 2nd~pins of IC1 are the input terminals for program-controlled shutdown, timing, on/speed regulation, and wind signals respectively, and form 4×3 with pins 6, 7 and 8 The matrix LED function display circuit displays the fair hour, wind type, and wind speed working status of the fan.

The 9th pin of IC1 is the signal input terminal of the program-controlled rotor.

The 10th to 13th pins of IC1 are the output terminals of the rotor and fan motor high, medium and low speed functions, and the low level is valid.

3 New usage of **BA8206 BA4**

3.1 Application in PTC heater

BA8206 BA4 is specially designed for fans Application IC, however, it can still be applied in Other small household appliances field. Of course, at this time BA8206 BA4 is partially adjusted, Figure 3 is BA8206 BA4 used for PTC heater circuit Schematic diagram.

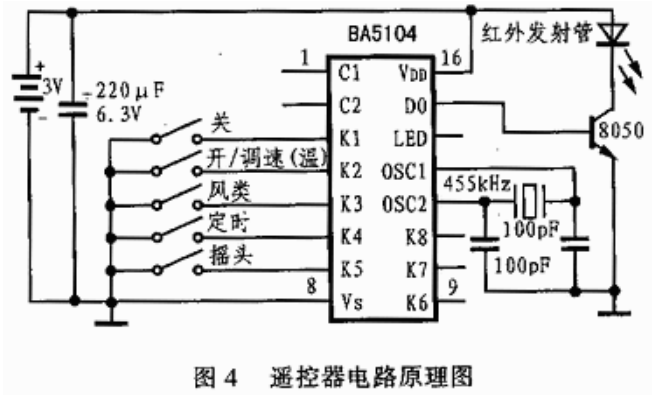

图 4　遥控器电路原理图

The PTC heater has a time of 0.5 ~ 7.5 hours Timed shutdown, swing leaf air supply, single cold air supply, High-heat air supply and other functions can be seen from Figure 3 To: The remote control receiver, oscillating circuit, buzzer, timing operation and display are exactly the same as the aforementioned fan circuit, and the synchronous motor with swing leaf and air supply The working principle is exactly the same as the aforementioned rotary blade step motor. The aforementioned wind selection function is completely included in the PTC heater.

As long as the PTC heater is turned on, the fan motor must supply air regardless of its working status. No air drying will cause related plastics. Thermal deformation of the material is damaged. The method and method to realize the power-on sending is the 11th to 13th pins of IC1 in Figure 3, and three diodes D1, D3, and D5 can be used. Into a three-and-gate circuit. Its working principle is: press the work/temperature key K3, the heater starts and enters the cold air working state, the 13th pin of IC1 is LOW. The terminal outputs low level, and the transistor Q1 is turned on through the D1 ~ D6 branch of the three-AND gate, Q2 is saturated, and the thyristor MCR2 is triggered to turn on, so that The fan motor is energized to work, and the cold wind light-emitting diode is turned on.

Press the on/temperature key K3 again, the heater enters the low-heat air supply working state, the 13th pin of IC1 returns to high level, and the 12th pin MED is output.
A low level, this low level passes through the D2-D3-D6 branch of the three-AND gate to maintain the conduction of the thyristor MCR2, that is, to maintain the fan motor operation. The other way
passes through the D2 branch of the two AND gate to reach the base of the transistor Q3 to turn on Q3, and the relay J1 is energized and closed, and its normally open contact
J1-1 pulls in, PTC1 (1200W) is energized and heated, and the low-heat light-emitting diode is turned on, so as to realize the function of low-heat air supply. At this time, PTC heating
The machine is only equivalent to a 1200W heater.

Press the K3 of the on/temperature key for the third time, the heater enters the working state of high-heat air supply, the 12th pin of IC1 returns to high level, the 1st pin STR
Output low level, the low level is divided into three ways to control, one way through the D5, D6 branch of the three-AND gate to maintain the fan motor work
The D4 branch of the second AND gate maintains the conduction of Q3, that is, maintains the pull-in of the relay J1 and the power-on operation of the PTC1 (1200W), and the third channel directly
Reach the base of the transistor Q4, turn on Q4, the relay J2 is energized and closed, its normally open contact J2-1 is closed, and the PTC2 (600W) is energized and added
When the heat, the high heat LED is turned on, the two sets of PTC heat at the same time, which is equivalent to a 1800W heater.

Continue to press the on/temperature key K3, and the heater circulates according to the working mode of cold air-replacing heat-high heat -...

Figure 4 is the schematic diagram of the remote control electrical appliances of the rotary fan and the PTC heater. In principle, they can be used interchangeably. The difference is that the
PTC heater does not Wind type selection function. Therefore, if you use the fan remote control to remotely control the heater, be careful not to use the wind type button.
PTC can't work in the best working condition and affect the heating effect.
The key to inclusion.

3.2 Multi-purpose integrated timing and adjustment controller

Figure 5 is a circuit diagram of a multi-purpose integrated timing and adjustment controller. The dedicated fan socket of the controller can not only
Fans can be controlled in a variety of ways, and other sockets can also be used to control other household appliances such as televisions. The controller has ordinary
In addition to the sockets and fan sockets, there are also special sockets for timing on and off. Therefore, a variety of timing control functions can be completed.

(1) Fan dedicated socket XS3

Insert an ordinary three-speed fan into the dedicated fan socket XS3 to achieve nine speeds, nine natural winds, nine sleep winds, 0.5 ~ 7.5
Hours timer shutdown function.

(2) Dedicated timing boot socket XS1

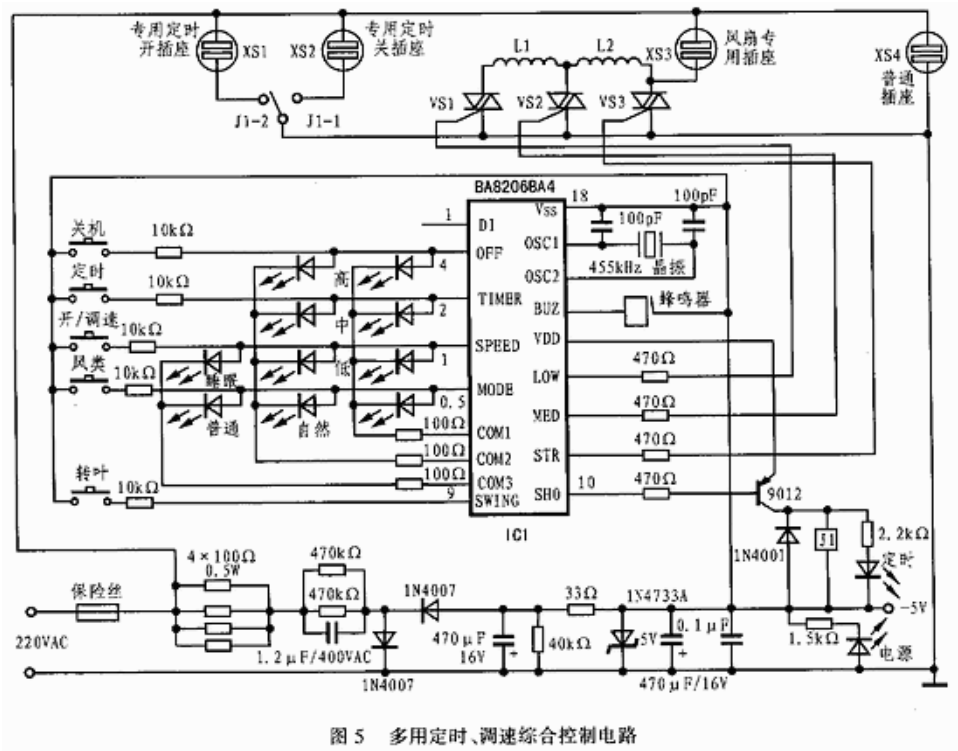

图 5　多用定时、调速综合控制电路

In normal times, you can plug the TV into the ordinary socket XS4 to enjoy the TV program. XS4 is directly connected in parallel with 220V and is not affected by IC1.
In the evening, the World Cup will be held at 3 in the morning. You can plug the power plug of the TV into the dedicated timing power-on socket XS1 to continue watching TV, and then choose
Choose a time, such as 9 o'clock in the evening, press the timer button K4, select a 6-hour timer (press 12 digits, the "4" and "2" indicator lights are on), and then you are sleeping
Adjust the TV channel before you feel it, press the dedicated button K2, the SHO terminal of IC1's 10th pin will output low level and reach the base of the transistor 9012.
9012 is on, the relay is energized and closed, the "timing" light-emitting diode is on, the relay normally closed contact J1-2 is off, XS1 is powered off, and the TV is turned off
The user can rest assured to go to sleep. At 3 o'clock in the morning, the timing of 6 hours ends, the SHO terminal of IC1 pin 10 returns to high level, and the transistor 9012 is cut off.
When the relay is de-energized, its normally closed contact J1-2 resumes closing, XS1 is re-energized, and the TV is powered on and starts to work. The lively ball game will remove you from
Waking up in sleep, nothing will be delayed.

(3) Dedicated timer shutdown socket XS2

If the elderly at home have the habit of watching TV while sleeping, and often forget to turn off the TV when they fall asleep, plug the power plug of the TV into the special
Use the timing shutdown socket XS2 to press the dedicated button K2. The SHO terminal of IC1's 10th pin can output low level, and 9012 is turned on.
The relay is energized, its normally open contact J1-1 is closed, XS2 is connected to the power supply, and you can enjoy the TV normally. It is estimated that the elderly will have to watch the
appointment before going to bed. 2 hours TV, you can press the timer button K4 to select the 2 hour timer (press 4 times, the "2" indicator light is on), you can rest assured, 2 hours
After time, when the timing is up, IC1 pin 2 returns to high level, 9012 is cut off, the relay is cut off, its normally open contact J1-1 is cut off, and XS2 is cut off.
When the TV is powered off, it turns off.

4 concluding remarks

This article briefly describes three application examples of BA8206 BA4. I believe that over time, BA series fan controllers will be used in small homes.
The electrical field has been widely used.