

NANOBOT

ASSEMBLY TUTORIAL

Lesson 3 Buzzer alarm Mode

The Points of Section

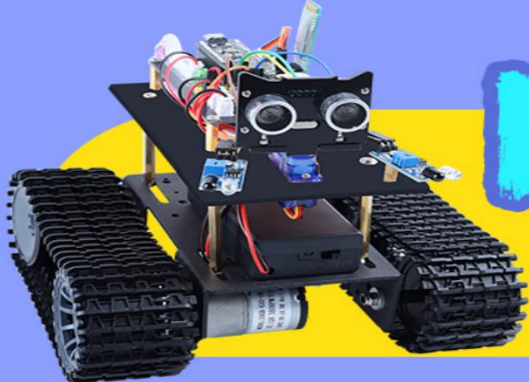
Buzzer alarm, in the car failure or encounter obstacles, you can use the buzzer alarm, so as to provide you with some fault information.

Learning Objectives:how to use a buzzer

Preparations:

A car (with battery)

A USB cable

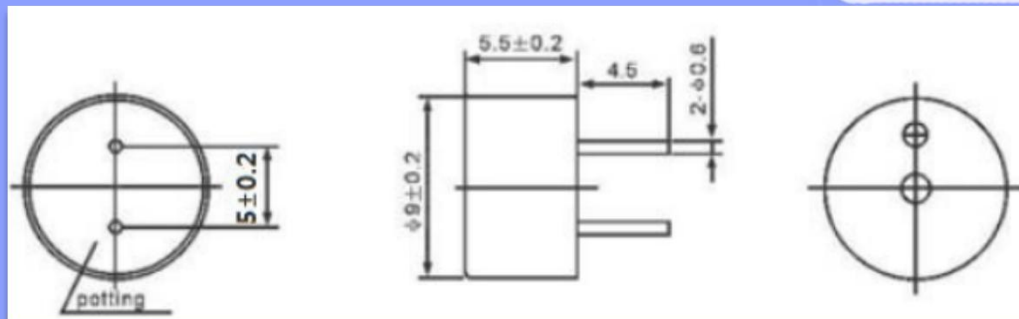


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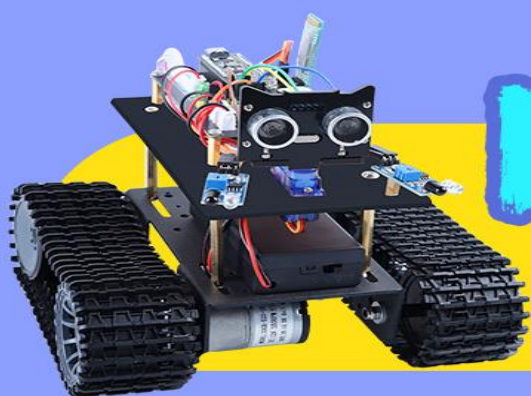
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① BEEP Module

The data of BEEP is as below:



Rated Voltage (VDC)	5
Operating Voltage (VDC)	3~7
Sound Output at 10cm (dB)	≥85
Current Consumption (mA)	≤30
Resonant Frequency (Hz)	2700 ± 200
Operating Temperature (°C)	-20~+70
Storage Temperature (°C)	-30~+80
Housing Material	Black PPO



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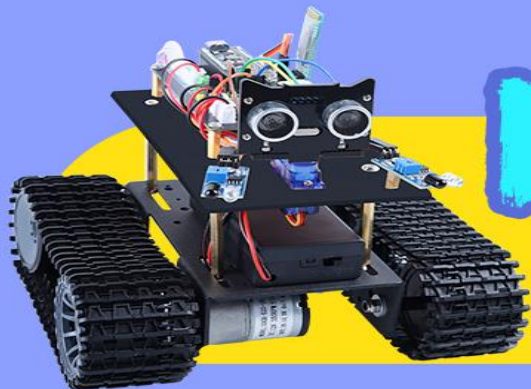
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② Introduction of principle

Working principle

Active buzzer is based on the principle of piezoelectric effect to sound, piezoelectric materials, generally common is a variety of piezoelectric ceramics. What makes this material special is that when a voltage is applied to the piezoelectric material, it causes mechanical deformation in response to changes in voltage and frequency. On the other hand, when the piezoelectric ceramic is vibrated, it generates an electric charge. That is to say, this material can convert mechanical deformation and electric charge into each other. The vibrating plate inside the piezoelectric buzzer is a piezoelectric ceramic. As mentioned above, to make it vibrate, in addition to the piezoelectric ceramic itself, a voltage of the appropriate size and frequency change is needed to apply to the piezoelectric ceramic. The active buzzer has a multivibrator inside, which can generate a voltage signal of 1.5 -- 2.5 kHz. That's how the active buzzer sounds.





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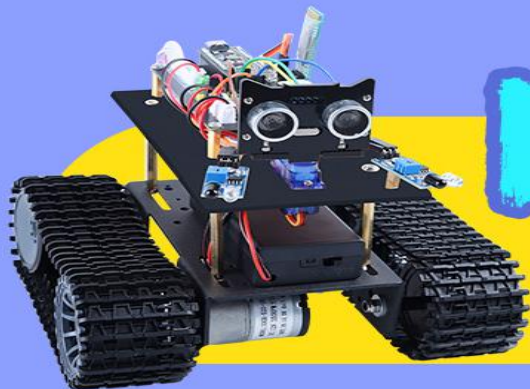
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③ Make a beep controlling car

Open the code file in the path “\Lesson 3 Buzzer alarm Mode\beep\beep.ino” and then upload the program as below to the car.

NANOBOTtutorial > Lesson 3 Buzzer alarm Mode > beep

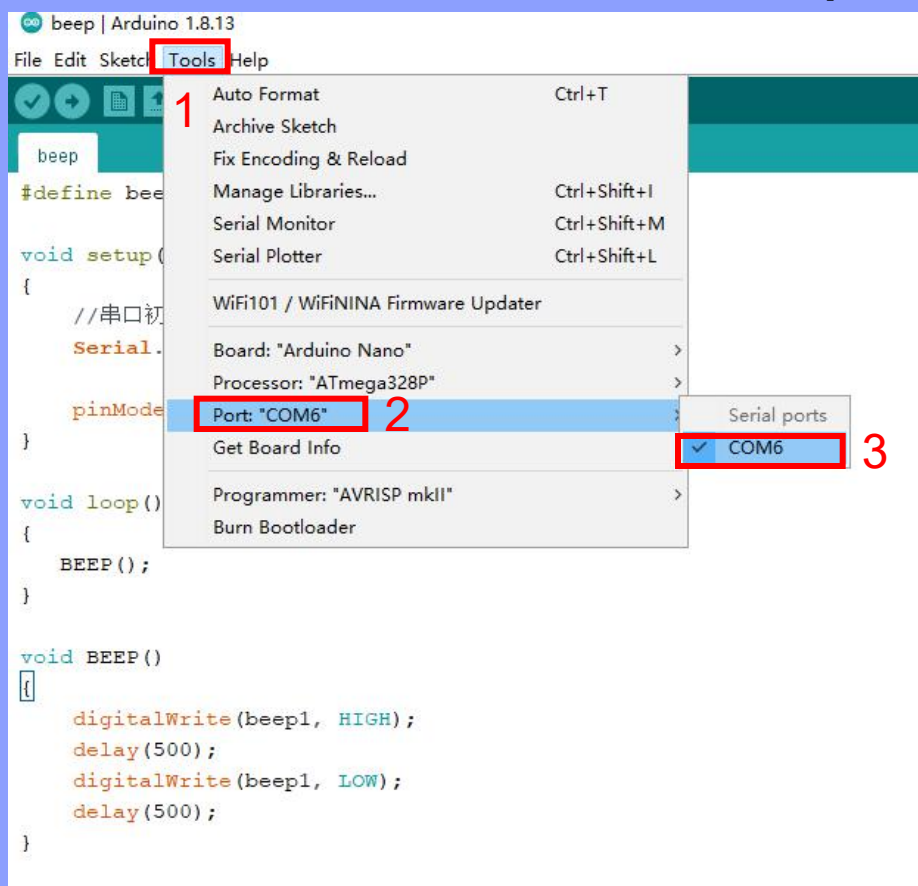
名称	修改日期	类型	大小
 beep	2021/1/14 10:41	Arduino file	1 KB

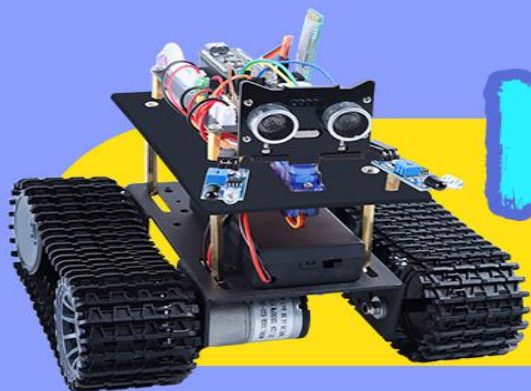


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Select the RF-NANO Board and Serial port.





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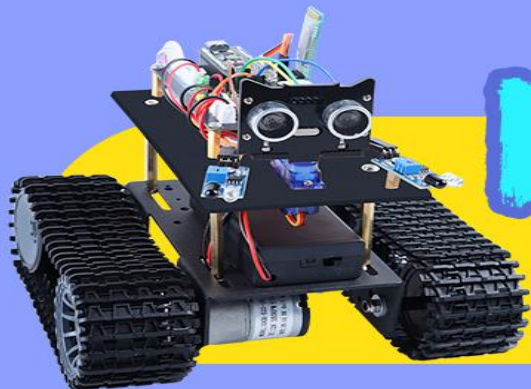
Press the upload button

```
File Edit Sketch Tools Help
[Checkmark] [Upload] [New] [Open] [Save]
beep $
#define beep1 15

void setup()
{
```

succeed

```
Done Saving.
avrdude done. Thank you.
```

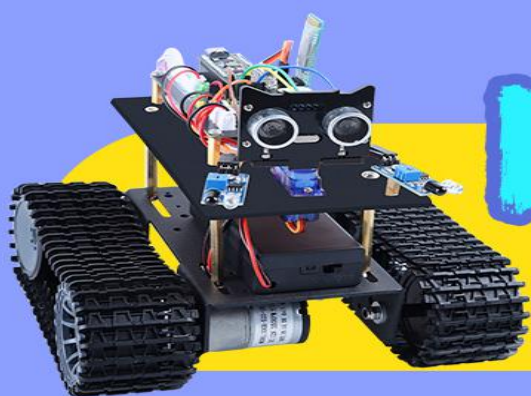


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The buzzer goes off every 500ms

```
void BEEP()  
{  
    digitalWrite(beep1, HIGH);  
    delay(500);  
    digitalWrite(beep1, LOW);  
    delay(500);  
}
```



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Thanks for watching!