

## 555 Oscillator with LDR

In this circuit a 555 integrated circuit is used as an oscillator that's frequency is controlled by the amount of light that falls on the LDR.

### BEFORE YOU START

You will need to identify each component by observing the following characteristics

The 1K ohm resistor do not have any polarity so you can insert any terminal in to its respective hole.

You can identify the ceramic capacitors by reading its value written as 104 on it again there is no polarity.

Identify the Electrolytic Capacitor by reading its value of 46uF 16V on it and also observe and insert the negative terminal indicated by a white strip.

The LDR (Light dependent resistor) have a transparent top showing the zik—zak resistant material.

The 555 is a 8 terminal component and you number its terminals by numbering them anti clock wise placing the indicated side at 12 o clock. You identify the indicated side by a half circle or a round dot on one of the sides.

Cut the paper strip of the resistors this will insure that no glue is left on there terminals.

Happy building if you have any questions please contact us!

### COMPONENTS REQUIRED

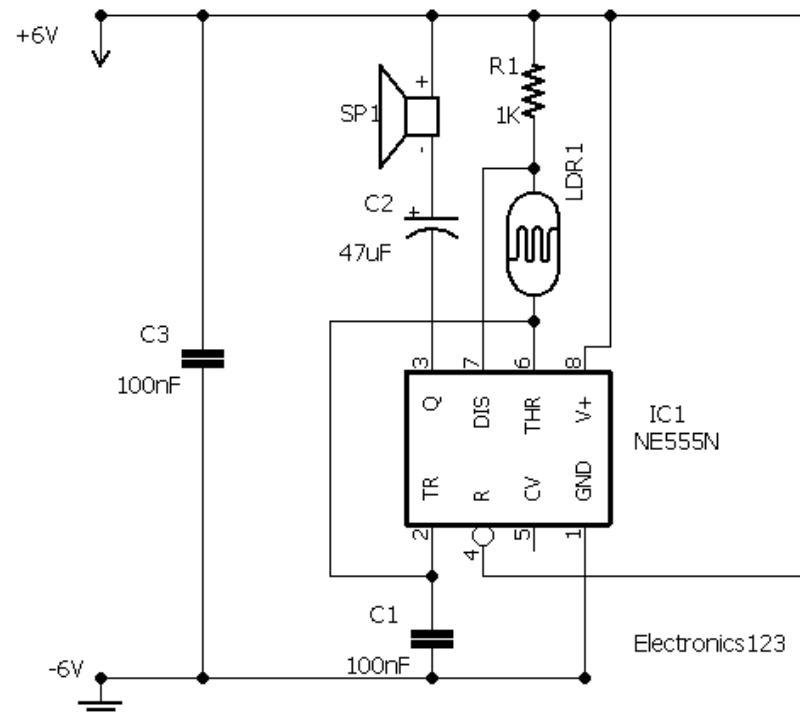
Electronic Workstation	JH656 X 1
4cm Black connecting wire	X 1
4cm Blue connecting wire	X 2

4cm Red connecting wire	X 2
4cm Yellow connecting wire	X 1
7cm Black connecting wire	X 1
15cm Red connecting wire	X 2
15cm Black connecting wire	X 1
15cm Orange connecting wire	X 1
1kΩ Resistor 1/4 Watt 5% (brown, black, red, gold)	DB056 X 1
100nF 50V Ceramic Capacitor	DB202 X 2

47μF 16V Electrolytic Capacitor	HB185 X 1
LDR	DB152 X 1
555 IC Timer (DIP8)	HB100 X 1

### CONFIGURATION TABLE

555 IC Timer (reference mark must show towards the left)	
Pin1	H27
Pin8	G27
LDR	G31 – G34



1k $\Omega$ Resistor 1/4 Watt 5% (brown, black, red, gold)	B28 – C28
100nF 50V Ceramic Capacitor	E25 – E27
100nF 50V Ceramic Capacitor	J28 – J27
47 $\mu$ F 16V Electrolytic Capacitor (-) Terminal	J29
(+) Terminal	J31
4cm Black connecting wire	M27 – L27
4cm Blue connecting wire	I28 – F29
4cm Blue connecting wire	E29 – E31
4cm Red connecting wire	B27 – C27
4cm Red connecting wire	I30 – F27
4cm Yellow connecting wire	D28 – D34
7cm Black connecting wire	M25 – G25
15cm Red connecting wire	B23 - (+ 6V)
15cm Red connecting wire	B29 – (SP+)
15cm Black connecting wire	M23 – (-6V)
15cm Orange connecting wire	L31 – (SP-)

### CIRCUIT FUNCTIONING

In this experiment the 555 IC functions as an astable oscillator. The frequency of the oscillator is determined by the amount of light that falls on the LDR. If the circuit is connected as shown in the circuit diagram the 555 IC will self trigger and oscillate. The external capacitor C1 charges through the resistor R1 + LDR1 and discharges through LDR1. The duty cycle may be precisely set by the ratio of these two resistors. In this mode of operation, the capacitor charges and discharges between  $1/3V_{cc}$  and  $2/3V_{cc}$ . The internal reference voltage ( $1/3V_{cc}$  and  $2/3V_{cc}$ ) changes as the supply voltage changes, and therefore the frequency of the oscillator is not dependent on the supply voltage.

### COMPANY DETAILS

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