



# UNIT I

# RESISTOR



# DC CIRCUITS



# WHAT IS RESISTOR ??

- A Resistor Is A Passive Two - Terminal Electrical Component That Implements Electrical Resistance As A Circuit Element.
- The Ratio Of The Voltage Applied Across A Resistor's Terminals To The Intensity Of Current Through The Circuit Is Called Resistance.
- This Relation Is Represented By Ohm's Law:

$$V = I R$$



# UNIT AND SYMBOL

- The Ohm (Symbol:  $\Omega$ ) Is The Si Unit Of Electrical Resistance, Named After Georg Simon Ohm.
- An Ohm Is Equivalent To A Volt Per Ampere
- Other Derived Units Are Milli Ohm ( $1\text{ m}\omega = 10^{-3}\ \Omega$ ), Kilo Ohm ( $1\text{ K}\omega = 10^3\ \Omega$ ), And Mega Ohm ( $1\text{ M}\omega = 10^6\ \Omega$ ).



**FIXED RESISTOR**



**VARIABLE RESISTOR**



# TYPES OF RESISTOR

**RESISTOR**

```
graph TD; A[RESISTOR] --- B[FIXED RESISTOR]; A --- C[VARIABLE RESISTOR]
```

**FIXED RESISTOR**

**VARIABLE RESISTOR**



# VARIABLE RESISTOR

## FIXED RESISTOR

➤ **Carbon Composite Resistor**

➤ **Film Resistor**

➤ **Wire Wound Resistor**

➤ **Resistance Wire**

➤ **Rheostat**

➤ **Potentiometer**

➤ **Thermistor**

➤ **Humistor**

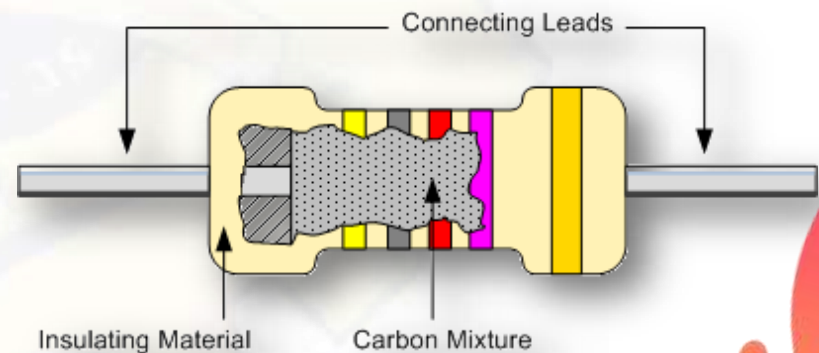
➤ **Varistor**

➤ **Photoresistor**



# CARBON COMPOSITE RESISTOR

- **Low Inductance**
- **Ideal For High Frequency Applications**
- **Very Cheap To Make**
- **Have Very Large Tolerances**



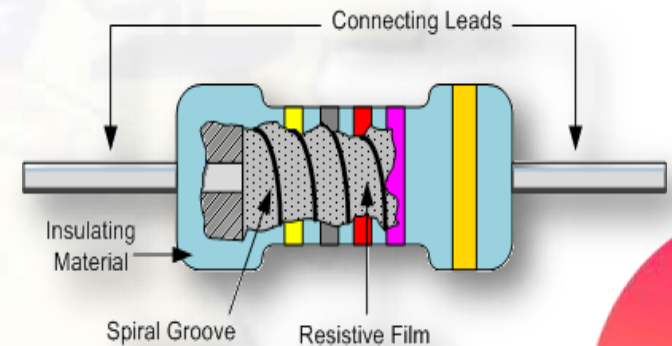
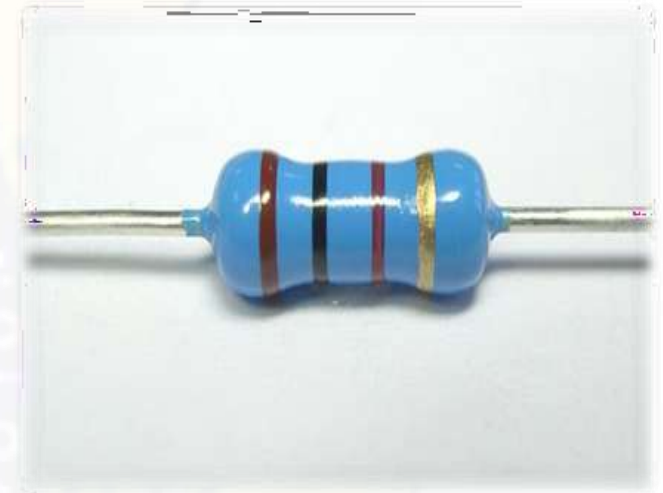


# FILM RESISTOR

➤ **The Resistive Value Of The Resistor Is Controlled By Increasing The Desired Thickness Of The Deposited Film.**

➤ **Resistane Upto  $10\text{m}\omega$  Can Be Obtained.**

➤ **Have Tolerance  $1\%$  Or Less**





# POTENTIOMETER

- **A Potentiometer Is, A Pot, In Electronics Technology Is A Three-terminal Resistor With A Sliding Contact That Forms An Adjustable Voltage Divider.**
- **Potentiometers Are Commonly Used To Control Electrical Devices Such As Volume Controls, Joysticks Etc.**







# HUMISTOR

- **A Humistor Is A Type Of Resistor Whose Resistance Varies Significantly With Humidity**
- **A Humidity Sensor Measures The Humidity Level By Measuring The Change In The Resistance Of An Element**

