Resistor

Intro

→ *So, in this video, we will see Resistor following the four-step process on which I have already created a video, so let's start.*

What is a Resistor?

→ *A resistor is used to resist the flow of current, so what you mean by the current is, that it is the speed of the flow of electrons. If we want to reduce the speed of flow of electrons and that is where we use a resistor. The unit of the resistor is Ohms*

→ *The process of reducing the speed of flow of electrons is known as resistance.*

Types of Resistors

→ *There are two types of resistors:*

- *Fixed value resistor:*

I. *4-Band*
II. *5-Band*
III. *6-Band*

→ *It has Bands according to its name. Like a 4-Band resistor has 4 Bands of different colors.*

- *Variable Resistor:*

I. *Potentiometer*
II. *LDR*
III. *Thermistor*

→ *We are going to see this type of resistor in the upcoming videos.*

→ *In this particular video our main focus will be 4-Band Resistor.*

Classification of Resistor

→ *So, each band has a name in the resistor, let's see them:*

- *Four Band Resistor:*

I. *First two bands are digits*
II. *Third band is Multiplier*
III. *Fourth band is Tolerance*

- *Five Band Resistor:*

I. *First Three bands are digits*
II. *Fourth band is Multiplier*
III. *Fifth band is Tolerance*

- ***Six Band Resistor:***

I. ***First Three bands are digits***
II. ***Fourth band is Multiplier***
III. ***Fifth band is Tolerance***
IV. ***Sixth band is temperature co-efficient***

How to find resistance value?

→ ***To calculate the resistance value of a resistor you need to remember two things,***

- ***The first one is to remember the colors in a particular order, so there are like 10 colors so only these ten colors will be coming on resistors. To remember the colors in a particular order there is a color-coding mnemonic or a short form. That short form is:***

BB ROY of

Great Britain

has Very Good

Wife

→ ***Now let's take an example to calculate:***

I. ***First Band = Brown***
II. ***Second Band = Black***
III. ***Third Band = Red***
IV. ***Fourth Band = Gold***

- *The Second thing is the formula to calculate:*

Digit Band - Write the number of the color as it is.

Multiplier - Add as many zeroes as the number of the color.

Tolerance – Include a +- with the corresponding number of color.

→ *Now the number of browns is 1 then black is 0 then red is 2 then gold is 5%.*

→ *That will be 1000Ω±5%.*

→ *Let's take another example:*

V. *First Band = Green*
VI. *Second Band = Red*
VII. *Third Band = Red*
VIII. *Fourth Band = Gold*

→ *Number of Green is 5, Then Red is 2, then Gold is 5%*

→ *That will be 5200Ω±5% = 5.2kΩ±.*

Circuit Symbol of Resistor

→ *There are two Symbols for the Fixed Value Resistor you can use either of them.*

Online Circuit Simulation

→ *Let's open our Tinker CAD, then we create a new project, and then we will simply drag some basic components like Bread Board, Battery, and a LED. Now we will drag a resistor.*

→ *In this simulation we are using a 1kΩ resistor.*

→ *Now let's do the connections, so we will connect the battery terminals to their respective power rails in the Bread Board, then we will connect the resistor to any random strip of the Board, then we will connect the Led's positive filament to the strip where resistor's 2nd terminal is connected then we will connect the positive power rail to the 1st terminal of the resistor and then we will connect the negative power rail to the strip which is connected the negative filament of the LED.*

→ *Now click on the 'Run Simulation' and your LED is glowing Perfectly.*

Practical Experimentation

→ *Components Required:*

- *A Bread Board*
- *A LED*
- *A Battery*
- *A 4-Band 1kΩ resistor*

→ *Experiment:*

→ ***First, we will connect the battery terminals to their respective power rails in the Bread Board, then we will connect the resistor to any random strip of the Board, then we will connect the Led's positive filament to the strip where resistor's 2nd terminal is connected then we will connect the positive power rail to the 1st terminal of the resistor and then we will connect the negative power rail to the strip which is connected the negative filament of the LED now your LED is glowing Perfectly.***

Circuit Diagram

→ ***First, we will draw the symbol of a battery, then the symbol of a LED, then any of the two circuit symbols of the resistor, then we will connect the negative line of the battery to the LED, then we will connect the positive line of the battery to the 1st terminal, then we will connect the 2nd terminal of the resistor to the Positive line of the LED, and your diagram is completed.***

Outro

→ ***That's all for this video and I will see you in this next one until then BYE BYE!!***