Light Emitting Diode (LED)

Intro

→ So, in this video, we are going to see LED following the four-step process which I have already created a video on, so let's start.

What is LED?

→ Let me share my screen, so this is basically the Light Emitting Diode (LED) and I will also show it to you. It is a semiconductor device which means that the filament of the LED conducts electricity and the oral capsule does not conduct so that's why it's a semi-conductor and it produces energy in the form of light when electricity is passed through it, it follows the principle of Electroluminescence principal.

Real-Time Application

→ We use LED in our day-to-day life like:

- LED Displays
- LED Bulbs
- Smartphone Back Lighting
- Traffic Signals

How to find LED's polarity?

→ *When you take a closer look at the LED then you will find that it has two filaments one smaller than the other, the long one is known as the Anode (positive) and the other is the cathode (negative). Suppose if the two pins are equally cut the other way to find positive and negative terminals is to see the LED from its top view and find the straight line of the capsule, wherever it is that's the negative pin and at the other side, it's the positive pin.*

Circuit Symbol of LED

→ *It Starts with a horizontal line and then It's basically a triangle and two arrows pointing at the top left and at the end one straight vertical line and another horizontal line.*

→ *Label the first horizontal line as the positive pin and the ending horizontal line as the negative pin. Like This:*

Anode   Cathode

+   −
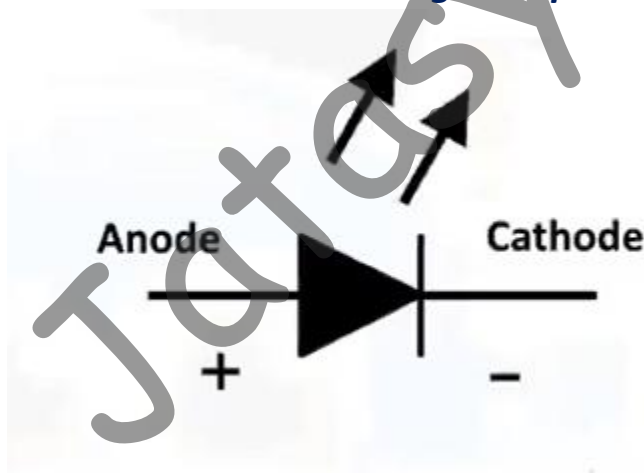
Circuit Diagram of LED

→ *Draw the circuit symbol of the battery which I have covered in one of my videos and then connect the positive terminal of the*

battery to the positive pin of the LED and the same for the negative terminal and pin. Like This:
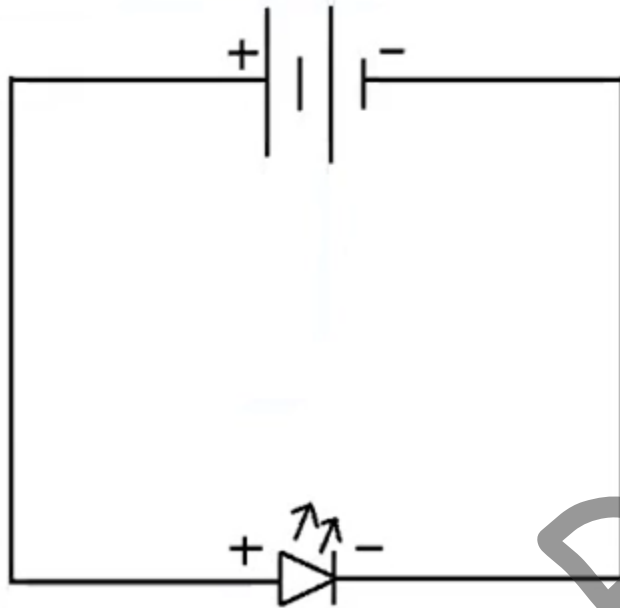
Online Circuit Simulation of LED

→ *Now we are going to create an online circuit and test it by running a simulation of it using the Tinker Cad.*

→ *Let's open our Tinker Cad then circuits and then click on "create new circuit". Now let's drag a LED, a Bread Board, and a 1.5v battery, now connect the positive terminal of the battery to any of the power rails of the board, but we must do the positive filament to the positive rail it is not compulsory but it's a good practice. Now let's connect the LED to the Bread Board. Let's connect the negative terminal and take the Led's Anode's strip and connect it to the positive rail and the cathode's strip to the negative rail now click on run simulation and you will see that*

your LED is glowing. You can also color code the wires if you want to, let's do that.

Practical Experimentation

→ *Now if you want to do this experiment with me you have to manage a breadboard, a LED, a battery, and some jumper wires.*

→ *Now let's connect the LED to Bread Board first, then connect the batteries terminals to the power rails and then simply connect the power rails to the anode and cathode pins of the LED. And there you go you have your LED physically glowing.*

Representation of the Circuit Diagram

→ *You can do this digitally or practically; I prefer doing this digitally so let's start.*

→ *So first draw the symbol of the battery which is a long vertical line following by a shorter vertical line following by a vertical line with the same height as the first line and at the end another vertical line with the same height as the second line, and then note the first line as positive and the last as negative.*

→ *So now we have to draw the symbol of the LED which is basically a horizontal line followed by a triangle and two arrows pointing towards at top left and a vertical line followed by a*

horizontal line. And then label the first horizontal line as a plus and the last horizontal line as a minus.

→ *Now connect the positive terminal of the battery to the positive pin (anode) and the negative terminal to the negative pin (cathode). And here you go folks you have the circuit diagram of the LED and it's done.*

Outro

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