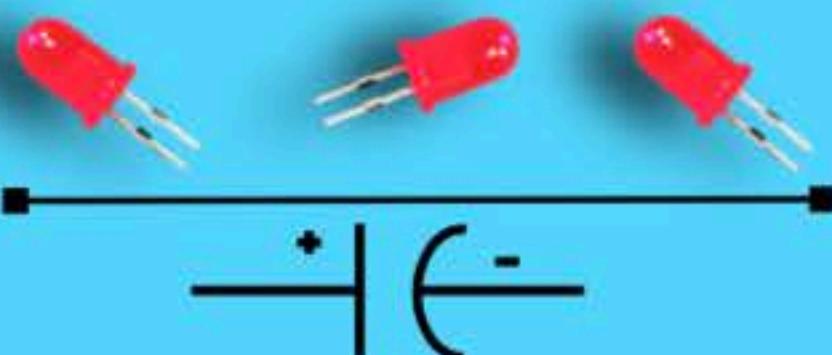


ETRON CIRCUIT LABS



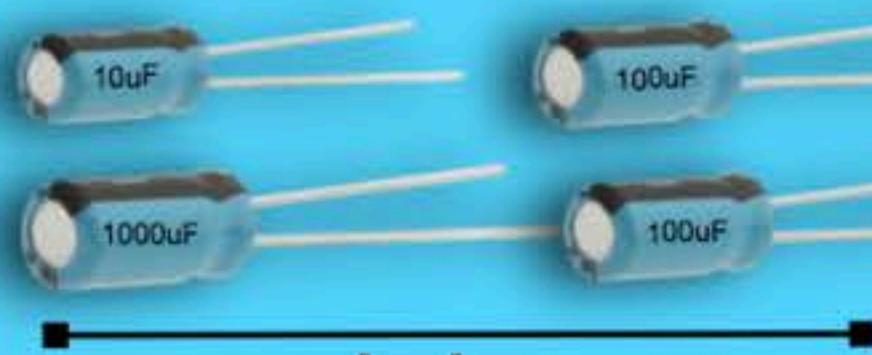
LIGHT EMITTING DIODE (LED)

LEDs are a special kind of diode that emit light when current flows through them. They have two terminals called anode and cathode. The cathode is indicated by a flat side on the case of the LED or by the shorter lead. Identify the two LEDs in your Lab and try to recognize the anode and the cathode leads.



ELECTROLYtic CAPACITOR

Electrolytic capacitors store relatively large amounts of electricity. They have polarity, which means that they have a positive and a negative terminal and, therefore, care must be taken when connecting them to a circuit. They must be installed in the right direction.



BATTERY

A battery stores electrical energy. A battery has polarity which means it has a positive and negative terminal. A battery snap has been provided to connect the battery to the board.



COMPONENTS INVENTORY

Objective:

In this lesson you will have the opportunity to feel, touch and hold all the electronic components needed to complete the labs in this manual.

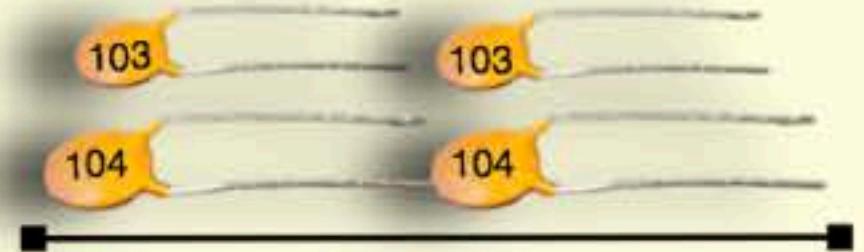
Take the components and match them up with the pictures on this page. After you've matched up all the inventory, take a few minutes to read what each component does and familiarize yourself with the schematic symbol associated with each different style.

You can refer back to this page throughout the manual to help remind and refresh your understanding of the components and why they do what they do.



CERAMIC CAPACITOR

A capacitor acts as a temporary battery by storing electricity. Ceramic capacitors store small amounts of electricity.



Anode Cathode

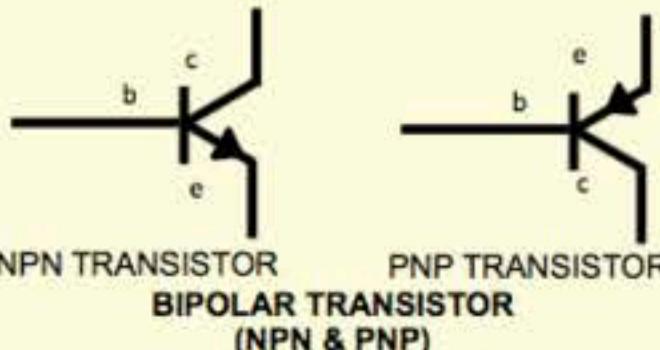
SCR - Silicon Controlled Rectifier

The SCR allows current to flow through it only after a momentary positive voltage is applied to the gate. SCRs have three leads which are called anode, cathode, and gate.



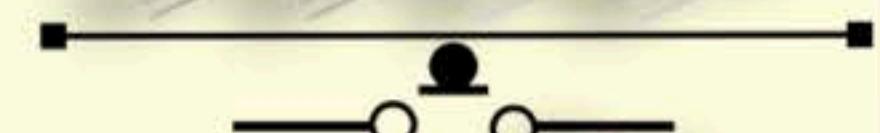
DIODE

A diode is a device that allows current to flow through it in one direction only. You can compare the diode to a "one way street". Diodes have two leads; one is the anode and the other is the cathode. The cathode is indicated by a band around the body of the diode.



NPN TRANSISTOR **PNP TRANSISTOR**
BIPOLAR TRANSISTOR
(NPN & PNP)

A transistor is used to amplify voltage or current. It has 3 terminals: Emitter, Base, and Collector. According to how they are made, they become an NPN or PNP type. Look at the differences in the schematic symbols above. In this lab, the transistor marked 3904 is an NPN and the one marked 3906 is a PNP.



SWITCH

There are several types of switches. Slide Switch and Pushbutton are 2 examples.

A slide switch or a pushbutton switch is a device that opens or closes an electric circuit. In the following Labs you will use a Pushbutton Switch.



Wire X 26

Wires will be used to complete the circuits in the following Labs. In addition, we suggest twisting one end of a wire around each of the terminals on the speaker, switch and potentiometer. As an additional option, you can solder those connections as well.



INTEGRATED CIRCUIT
555 Timer IC

Integrated Circuits (IC's) have several components (transistors, diodes, resistors, capacitors, etc) condensed inside of a very small package. Each type of IC performs a different purpose according to the different components it has inside.



POTENTIOMETER
Variable Value Resistor

A potentiometer is a variable value resistor which means that you can adjust the resistance by twisting the shaft.



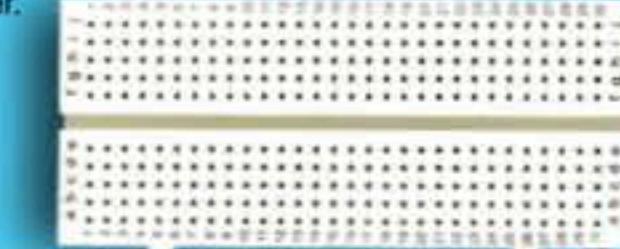
RESISTOR
Fixed Value Resistor

A resistor limits, or controls, the amount of current flowing through a circuit by presenting an opposition or resistance to the current flow.

10 Ohm - (Brown, Black, Black, Gold)	3.3K - (Orange, Orange, Red, Gold)	Qty 1
100 Ohm - (Brown, Black, Brown, Gold)	6.8K - (Blue, Grey, Red, Gold)	Qty 2
220 Ohm - (Red, Red, Brown, Gold)	10K - (Brown, Blue, Orange, Gold)	Qty 2
470 Ohm - (Orange, Orange, Brown, Gold)	13K - (Orange, Orange, Orange, Gold)	Qty 1
1K - (Brown, Black, Red, Gold)	12K - (Brown, Red, Yellow, Gold)	Qty 1
2.2K - (Red, Red, Red, Gold)	470K - (Yellow, Violet, Yellow, Gold)	Qty 1

Solderless Circuit Board

A solderless circuit board is used to connect electronics components and wires without having to use solder.



PHOTOCELL
(Light Dependent Resistor)

A photocell is a special kind of resistor that varies its resistance according to the intensity of the light that hits its surface. It does not generate electric current like a photo-voltaic cell.



The purpose of the speaker is to produce sound waves from a variable electric current that flows through it.

