

What is a Capacitor?

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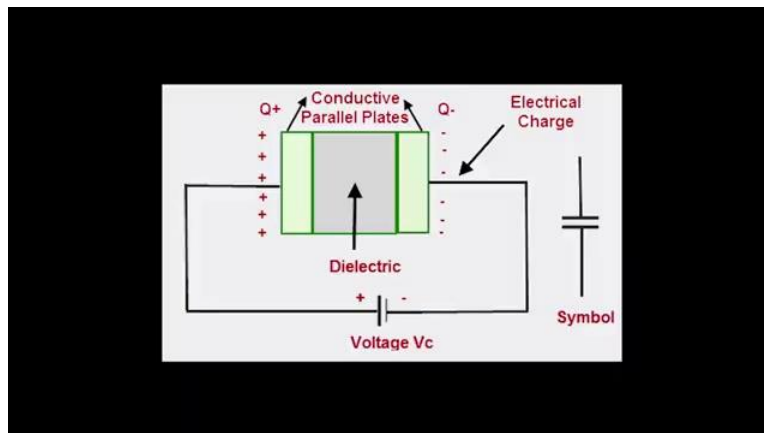
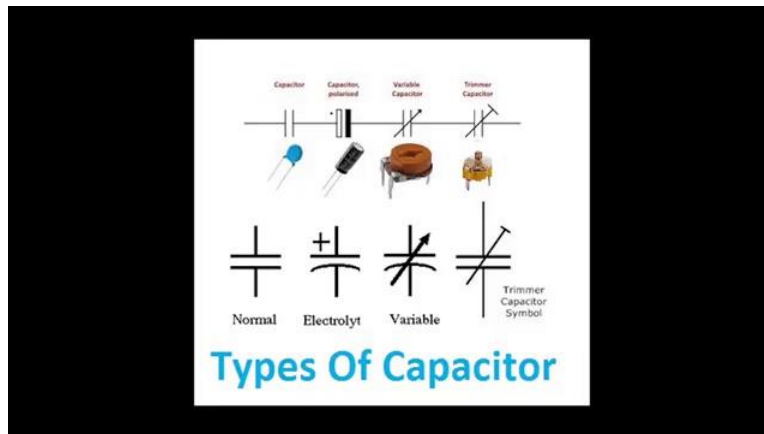


[0m:4s] Hi, I'm Josh Bloom. Welcome to another video in the RSP Supply Education series. If you find that these videos are helpful to you, it certainly helps us out if you could give us a big thumbs up and subscribe to our channel. In today's video, we are going to be talking about a very common component that are used all over the world, ranging from large motor control circuits to small, complex circuit boards. I am referring to a capacitor. For the purpose of today's video, we will talk about the very basics of capacitors and tell you what they are and also provide a basic of explanation of how they function.

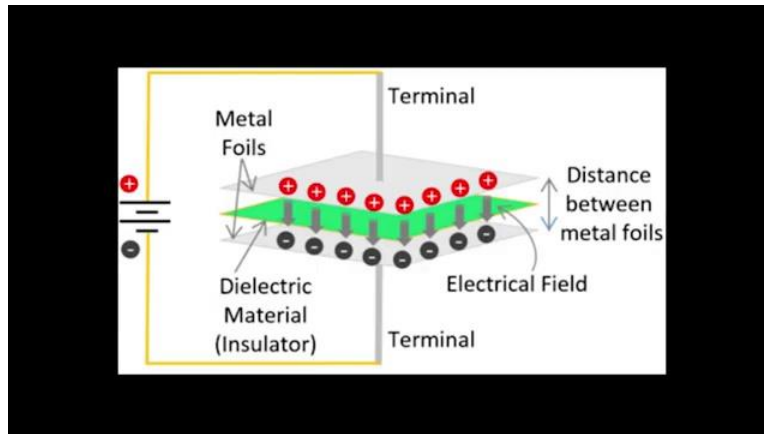


[0m:40s] We will also talk about some different applications where you might see them being used in. And finally, we will talk about some of the similarities and differences that a capacitor has with its closest relative: a battery. As always, the information shared in this video is intended to provide only a basic overview of this topic and should never take the place of proper electrical instruction.

[1m:5s] With that being said, let's take a closer look at these devices and see what they are and why we use them. A capacitor is a passive electrical device that consists of a two terminal component that is used to store energy electrostatically in an electric field. There are many different types of capacitors that can be used, but all capacitors will contain at least two electrical conductors, or plates, which will then be separated by some kind of dielectric material, or insulator. The conductor can range from thin films of metal to foil or any kind of metallic disc.

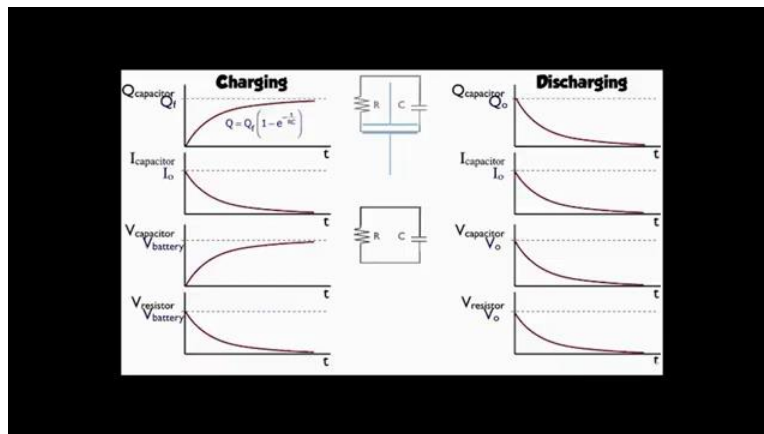


[1m:43s] The dielectric material or nonconducting material will allow for the capacitor to increase its charge potential. The dielectric material can range from things like glass or ceramic to materials such as plastic or even air.



[1m:58s] Unlike a resistor, which its primary function is to dissipate energy, a capacitor will do the opposite, which is to store energy much like a battery. However, the difference between a battery and a capacitor is largely when the capacitance is being dissipated.

[2m:15s] A battery is intended to store energy and dissipate the energy slowly and at a steady pace. With a capacitor, once the energy has been stored and the capacitance is sufficient, the energy can be applied to the load very rapidly, in most cases, in seconds or even fractions of a second. So, how do capacitors charge and dissipate energy?



[2m:40s] When a potential difference exists between two conductors, for instance, when the capacitor is attached to a battery, an electric field will develop, which will then cause a positive charge to occur on one plate and a negative charge to occur on the other plate of the capacitor.

[2m:59s] Once the battery has been attached to the capacitor for a long enough period of time, the voltage will equalize between the two, and no current will flow between them. Once the load is connected to the capacitor and current can flow, the capacitor has the ability to dissipate that energy extremely quickly. So, when and why or capacitors used? It is common to see capacitors being used to block direct current and allow alternating current

to pass in common electronic circuits. They are very commonly used to smooth out the output power that comes from power supplies and in filter circuits.

[3m:39s] In electrical power transmission scenarios that can be used to assist in stabilizing the voltage and power flows. Understanding what capacitors are and how they are used will help you better understand the various types of electrical circuits that you may encounter and will also allow you to utilize this type of electrical hardware in situations where you determine they might be useful. For a full line of industrial electrical hardware, as well as thousands of other products, please go to our website. For more information or other educational videos, go to RSPSupply.com, the Internet's top source for industrial hardware. Also, don't forget,

[4m:21s] like and subscribe.

