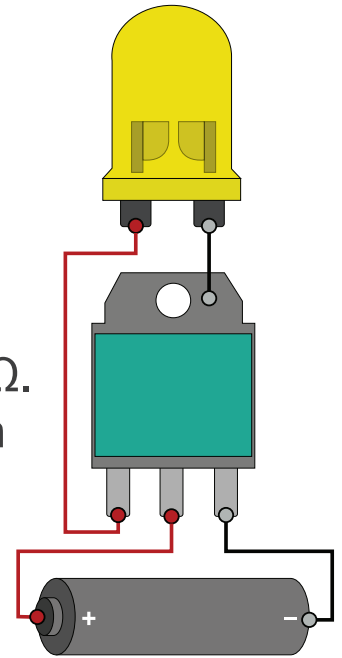


CONCEPT A resistor is an electrical component designed to introduce a specific amount of resistance into a circuit. It can be used to limit the amount of current that flows through a circuit or to divide the voltage in a circuit. The resistance of a resistor is measured in ohms and is represented by the symbol Ω . Ohm's Law and resistors are fundamental concepts in electrical engineering and are used extensively in the design and analysis of electronic circuits.



BACKGROUND

Ohm's Law is a fundamental concept in electrical engineering and is based on three essential components: voltage (V), current (I), and resistance (R). These components were first described by Georg Simon Ohm in 1827, who conducted experiments on the flow of electricity through different materials. Ohm's Law states that the current through a conductor between two points is directly proportional to the voltage across the two points, provided that the temperature and other physical conditions remain constant. This law can be expressed mathematically as $V = IR$, where V is the voltage, I is the current, and R is the resistance. Ohm's Law is used extensively in the design and analysis of electronic circuits, and the resistor is an electronic component designed to introduce a specific amount of resistance into a circuit. The resistance of a resistor is measured in ohms, which is represented by the symbol Ω . The power (P) in a circuit can be calculated using $P = VI$ or $P = I^2R$, where P is the power, V is the voltage, I is the current, and R is the resistance.

REAL WORLD CONNECTIONS

Understanding Ohm's Law and resistors is essential for students who are interested in pursuing careers in electrical engineering or other related fields. Without this basic understanding, our digital world would cease to exist. Resistors are critical for maintaining and repairing electrical equipment and infrastructure to ensure residents have access to reliable and safe electricity. There are many forms of resistors depending on the application. The color and number of bands around the body of a resistor indicates its value.