

## **Types of Resistors**

There are three types of resistors: Fixed value resistor, Carbon composition resistor and Wire wound resistor. Their construction and other features are explained, in detail in this subtopic.

### **Fixed value resistor**

The resistor's function is to reduce the flow of electric current and its ohmic value is fixed. This value cannot be changed by the user. The resistors of standard fixed values are manufactured for use in majority of applications.

### **Types of fixed resistors**

- Based on the resisting material: carbon and metal oxide film, wire-wound, sand filled.
- Based on their power ratings: 1/8; ¼; ½, 20 watts, etc.
- Resistance value: ranges from a few milliohms to a Giga-ohm.
- A tolerance of plus or minus 2 to 10% is usually given.

### **Applications**

Fixed value resistors are universally used in all electrical circuits of devices like TV, radio, refrigerator, all the electronic equipment, microelectronic semiconductor devices, regulators, etc.

### **Carbon composition resistors**

A mixture of finely powdered carbon film is spiraled and a binder is made into rods or extruded into desired shapes. Metal leads made of tinned copper are then attached to the body either by soldering or embedding like the end cap. A protective layer with insulating coating is molded around the assembly. Finally, its resistance value is marked on the body.

When the current flows through a resistor, heat is generated. The generated heat in the resistor is proportional to the product of applied voltage (V) across the resistor and the resultant current (I) through the resistor. This product of VI is known as power. The unit of measurement of power is watts. If the physical size is higher, the heat that a resistor can dissipate is also higher. If the product of V and I exceeds the maximum voltage a resistor can dissipate, the resistor gets charred and loses all its property.