

**Department of Education**  
**SPTVE**  
**Exploratory 7**  
**Electronic Products Assembly and Servicing**  
**Resistors**  
**Quarter 2: Week 7 Module**



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## Expectation

At the end of the module, you should be able to:

1. identify the different types of resistor;
2. enumerate the color coding table of resistors; and
3. read the value of resistors.

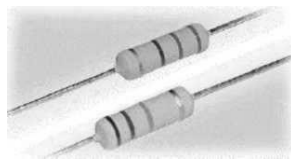


## Pre-Test

**Directions.** Read the questions carefully and choose the correct answer. Write the words of your choice on your answer sheet.

1. Which component resist the flow of current in an electrical circuit?  
A. Capacitor  
B. Inductor  
C. Resistor  
D. Transistor
2. What kind of component is a resistor?  
A. Combined  
B. Discrete  
C. Hybrid  
D. Integrated
3. What color in the color coding scheme has an equivalent of 5 in the 2<sup>nd</sup> band?  
A. Brown  
B. Green  
C. Red  
D. Yellow
4. What is the color of the tolerance representing +/- 10%?  
A. Black  
B. Gold  
C. Silver  
D. Yellow
5. What is the value of a resistor with the following colors? Green – Black – Silver - Gold  
A. 0.5 Ohm  $\pm$  5%  
B. 5.0 Ohms  $\pm$  5%  
C. 50 Ohms  $\pm$  5%  
D. 500 Ohms  $\pm$  5%

6. Which component is a discrete type?
- A. Digital IC  
B. Power IC  
C. Resistor  
D. Regulator IC
7. What color representing the tolerance of 20%?
- A. Gold  
B. Silver  
C. White  
D. No color
8. What color has the multiplier value of 10,000 in the resistor 4 band color code?
- A. Green  
B. Orange  
C. Red  
D. Yellow
9. What is the unit measure of a resistance?
- A. Ampere  
B. Farad  
C. Henry  
D. Ohm
10. What type of resistor is in the picture?



- A. Film  
B. Precision  
C. Wire-wound  
D. Carbon-composition



## LOOKING BACK

### Activity 1 Fill Me

**Direction:** Fill the blanks with the right words.

#### Soldering Technique

1. \_\_\_\_\_ the soldering iron like a pen, near the base of the handle.
2. \_\_\_\_\_ the soldering iron onto the joint to be soldered.
3. \_\_\_\_\_ a small amount of solder onto the joint.
4. \_\_\_\_\_ the solder, then the soldering iron, while keeping the joint in still position.

5. \_\_\_\_\_ the joint closely. It should look shiny and with a volcano shape.



## Brief Introduction

Electronics is a branch of technology that deals with many applications. Audio electronics, video electronics, digital, medical or even weapons and banking are covered by the influence of electronics.

The content of this module will help you identify the most commonly used components known as resistors.

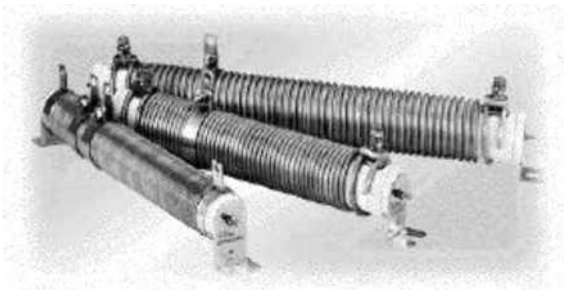


## Activities

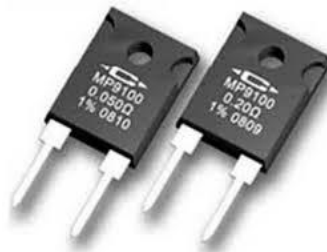
There are quite a number of components used in the application of electronics. To name a few of these electronic components are resistors, capacitors, inductors and semi-conductors.

### TYPES OF RESISTORS

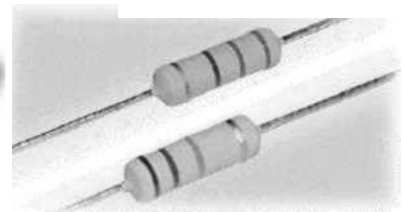
Wire-wound



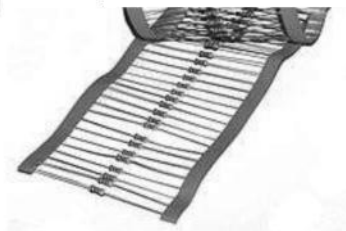
Film



Carbon-composition resistors



Precision



Resistors in band



Metal - film



Variable Resistor (Slide type)



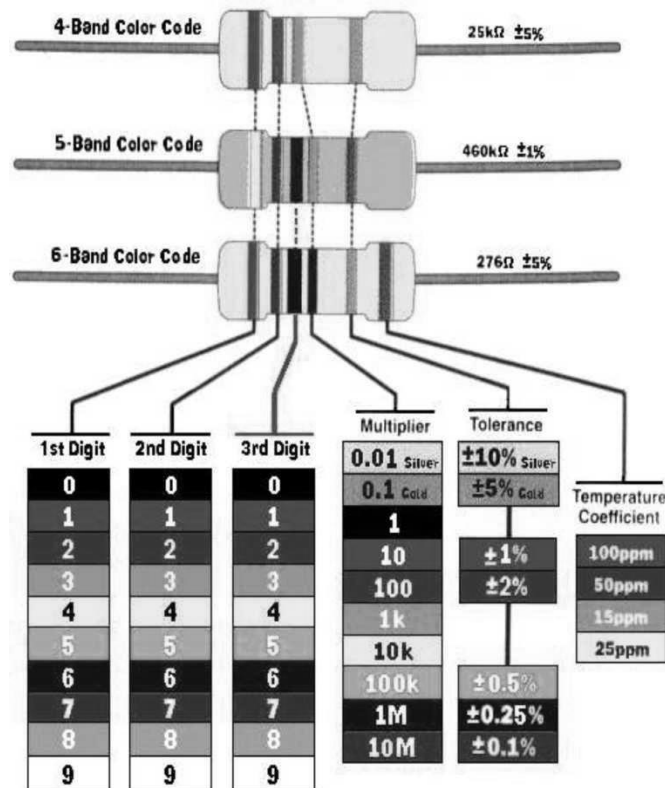
Variable Resistor (Rotary type)



The most commonly used electronic components in the field are known as resistors. Resistor is a discrete component that offers opposition to the flow of current. Resistors have different types in accordance with the material used like carbon-composition and the wire-wound resistor. According to construction, we have the fixed resistor and the variable resistor.

Resistors are very common and are the cheapest electronic components in the market for so many years. Their features are so interesting and are very colorful. That's why resistors are very popular among students studying electronics.

One distinct feature of this resistance - giving component is the way its value is determined. It uses a set of colors which follows a code for its assumed resistance expressed in OHMS.



### RESISTOR COLOR CODING CHART

| COLORS   | 1 <sup>ST</sup> BAND | 2 <sup>ND</sup> BAND | MULTIPLIER      | TOLERANCE |
|----------|----------------------|----------------------|-----------------|-----------|
| BLACK    | ----                 | 0                    | 1               |           |
| BROWN    | 1                    | 1                    | 10              |           |
| RED      | 2                    | 2                    | 10 <sup>2</sup> |           |
| ORANGE   | 3                    | 3                    | 10 <sup>3</sup> |           |
| YELLOW   | 4                    | 4                    | 10 <sup>4</sup> |           |
| GREEN    | 5                    | 5                    | 10 <sup>5</sup> |           |
| BLUE     | 6                    | 6                    | 10 <sup>6</sup> |           |
| VIOLET   | 7                    | 7                    |                 |           |
| GRAY     | 8                    | 8                    |                 |           |
| WH ITE   | 9                    | 9                    |                 |           |
| GOLD     |                      |                      | 0.1             | ± 5%      |
| SILVER   |                      |                      | 0.01            | ± 10 %    |
| NO COLOR |                      |                      |                 | ± 20%     |

Example:

1. BROWN – BLACK – BROWN - GOLD

/        /        /        /

1        0        X 10    ± 5%

10        x 10 = 100 OHMS ± 5%

2. YELLOW – VIOLET– YELLOW - SILVER

/        /        /        /  
4        7        X 10000    ± 10%

$47 \times 10000 = 470,000 \text{ OHMS } +/- 10\% \text{ or } 470\text{K ohms}$



## Remember

- ✓ Resistor is a discrete component and it has different types
- ✓ The value of resistor is expressed in ohms,
- ✓ Its values can be determined using resistor color coding chart



## Checking Your Understanding

### Activity 1. IDENTIFY ME

Direction: Write the type of resistor found on the picture

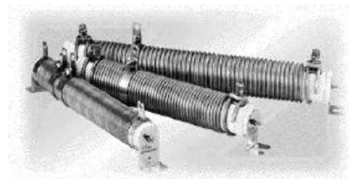
1. \_\_\_\_\_



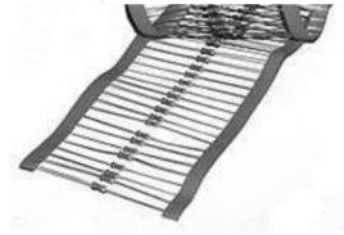
2. \_\_\_\_\_



3. \_\_\_\_\_



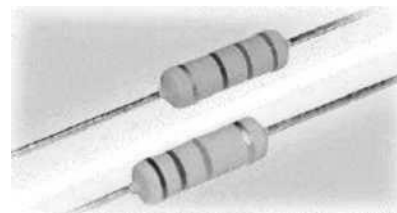
4. \_\_\_\_\_



5. \_\_\_\_\_



6. \_\_\_\_\_



## Activity 2. WHAT IS MY VALUE

**Directions:** Compute the value of the following resistors based on their color orientation. Write on a separate sheet of paper.

- |    |  |                                  |
|----|--|----------------------------------|
| 1. |  | BLUE – RED – BLACK GOLD          |
| 2. |  | YELLOW – VIOLET– RED - SILVER    |
| 3. |  | ORANGE – WHITE – YELLOW - SILVER |
| 4. |  | RED – GREEN – ORANGE - GOLD      |
| 5. |  | RED – VIOLET – BROWN - GOLD      |
| 6. |  | GREEN – BLUE – YELLOW - SILVER   |

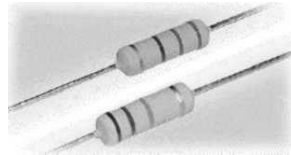




## Post-Test

**Directions:** Read the statement carefully and identify what is being described or defined. Write your answer in words on a separate sheet of paper.

1. What color in the color coding scheme has an equivalent of 5 in the 2nd band?  
A. Brown  
B. Green  
C. Red  
D. Yellow
2. What is the value of a resistor with the following colors? Green – Black – Silver – Gold  
A. 0.5 Ohm  $\pm$  5%  
B. 5.0 Ohms  $\pm$  5%  
C. 50 Ohms  $\pm$  5%  
D. 500 Ohms  $\pm$  5%
3. What color representing the tolerance of 20%?  
A. Gold  
B. Silver  
C. White  
D. No color
4. What type of resistor is in the picture?



- A. Film  
B. Precision  
C. Wire-wound  
D. Carbon-composition
5. Which component resist the flow of current in an electrical circuit?  
A. Capacitor  
B. Inductor  
C. Resistor  
D. Transistor
6. What color has the multiplier value of 10,000 in the resistor 4 band color code?  
A. Green  
B. Orange  
C. Red  
D. Yellow
7. What kind of component is a resistor?  
A. Combined  
B. Discrete  
C. Hybrid  
D. Integrated
8. What is the unit measure of a resistor?  
A. Ampere  
B. Farad  
C. Henry  
D. Ohm
9. What is the color of the tolerance representing  $\pm$  10%?  
A. Black  
B. Gold  
C. Silver  
D. Yellow
10. Which component is a discrete type?  
A. Digital IC  
B. Power IC  
C. Resistor  
D. Regulator IC

## ANSWER KEYS

|                                     |  |
|-------------------------------------|--|
| <b>ANSWER KEY:</b>                  |  |
| <b>Pre Test:</b>                    | 1. Resistor<br>2. Discrite<br>3. Green<br>4. Silver<br>5. 0.5 ohm $\pm 5\%$<br>6. Resistor<br>7. No color<br>8. Yellow<br>9. Ohm<br>10. Carbon-composition |
| <b>Looking Back</b>                 | 1. Hold<br>2. Touch<br>3. Apply<br>4. Remove<br>5. Inspect   |
| <b>Checking Your Understanding:</b> |  |
| <b>Identify Me</b>                  | 1. Variable resistor ( rotary type)<br>2. Resistors in band<br>3. Wire-wound<br>4. Precision<br>5. Metal film<br>6. Carbon composition resistor            |
| <b>Post Test:</b>                   | 1. Green<br>2. 0.5 ohm $\pm 5\%$<br>3. No color<br>4. Carbon-composition<br>5. Resistor<br>6. Yellow<br>7. Discrite<br>8. Ohm<br>9. Silver<br>10. Resistor |
| <b>What is my value</b>             | 1. 62 ohms $\pm 5\%$<br>2. 4.7 kilo ohm $\pm 10\%$<br>3. 390 kilo ohm $\pm 10\%$<br>4. 25 kilo ohm $\pm 5\%$<br>5. 560 kilo ohm $\pm 10\%$                 |

## References

1. Electrical materials and tools, Department of Education, **K to 12 Basic Education Curriculum Technology and Livelihood Education** Learning Module
2. Electronic tools and equipment, retrieved from <https://creativecommons.org>