



PHYS 1444 – Section 02

Lecture #10

Thursday Feb 24, 2011
Dr. **Andrew Brandt**

- **Chapter 25**
 - Ohm's Law: Resistors
 - Resistivity
 - Electric Power
 - Alternating Current

HW4 Ch 24 due Sat Feb. 26th

Mar 3 will be 1/2 period review

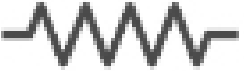
HW5 Ch 25 will be due Fri. Mar. 4

March 4: deadline to receive credit for late HW
so solutions can be posted

Test 1 will be Tues. Mar. 8 on ch 21-25



Ohm's Law: Resistors

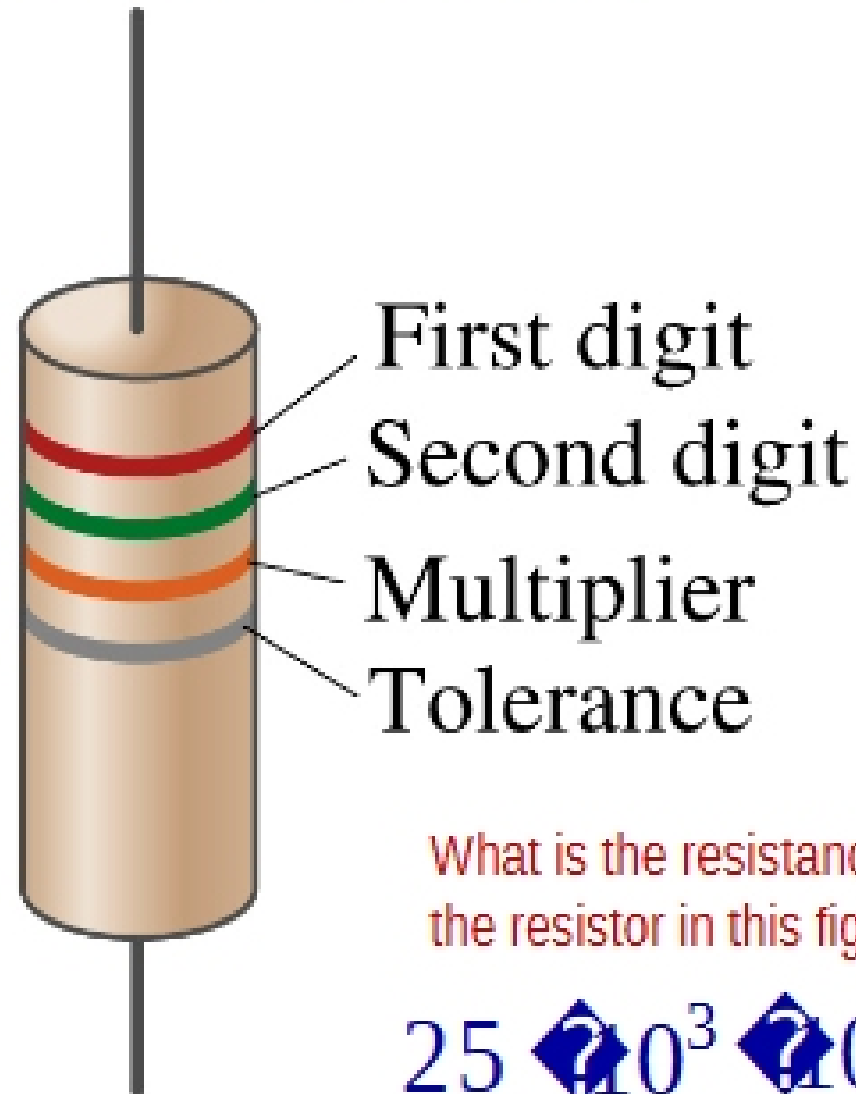
- All electric devices offer resistance to the flow of current.
 - Filaments of light bulbs or heaters are wires with high resistance causing electrons to lose their energy in the wire
 - In general connecting wires have low resistance compared to other devices in the circuit
- In circuits, resistors are used to control the amount of current
 - Resistors offer resistance of less than one ohm to millions of ohms
 - Main types are
 - “wire-wound” resistors which consists of a coil of fine wire
 - “composition” resistors which are usually made of semiconductor carbon
 - thin metal films
- When drawn in the circuit, the symbol for a resistor is: 
- Wires are drawn simply as straight lines



Ohm's Law: Resistor Values

- Resistors have their resistance color-coded on its body
- The color-coding follows the convention below:

Color	Number	Multiplier	Tolerance
Black	0	$1=10^0$	
Brown	1	10^1	
Red	2	10^2	
Orange	3	10^3	
Yellow	4	10^4	
Green	5	10^5	
Blue	6	10^6	
Violet	7	10^7	
Gray	8	10^8	
White	9	10^9	
Gold		10^{-1}	5%
Silver		10^{-2}	10%
None			20%



What is the resistance of the resistor in this figure?

25 $\text{?} \times 10^3$ $\text{?} \%$