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Computer Engineering Technology

Fall 2019

247-105-VA CIRCUIT ANALYSIS AND SIMULATION

.

LABORATORY EXPERIMENT #2

Resistors

Week 2

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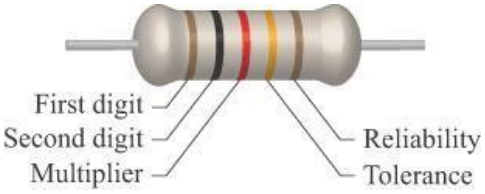
Objective

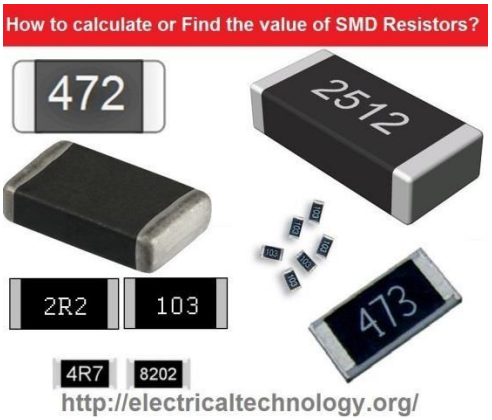
Identify and predict resistors values by using colour code and practice measuring resistance using Ohmmeter

Resistor Color Code

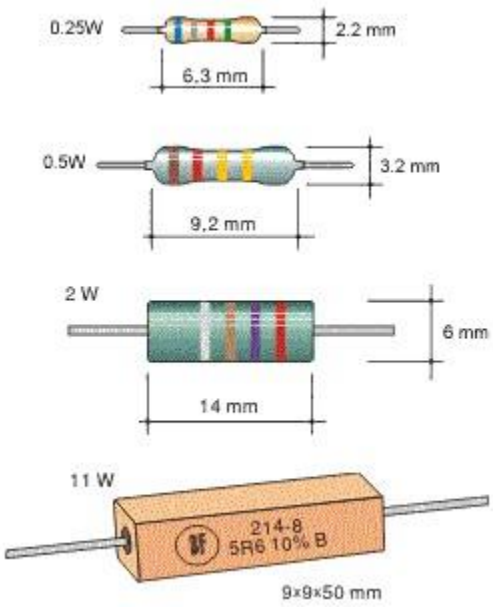
Since resistors are small enough that any printing on them would be hard to read, most are marked with 3 to 5 bands of color:



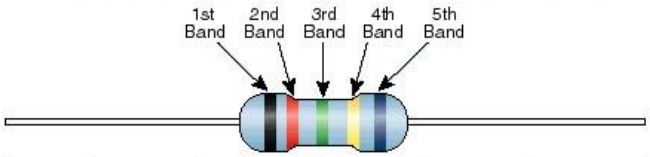
Surface mount resistors



Resistors power



Standard EIA Color Code Table **5 Band**: ±.1%, ±.25%, ±.5%, ±1%



Color	1st Band (1st figure)	2nd Band (2nd figure)	3rd Band (3rd figure)	4th Band (multiplier)	5th Band (tolerance)
Black	0	0	0	10^0	
Brown	1	1	1	10^1	±1%
Red	2	2	2	10^2	
Orange	3	3	3	10^3	
Yellow	4	4	4	10^4	
Green	5	5	5	10^5	±.5%
Blue	6	6	6	10^6	±.25%
Violet	7	7	7	10^7	±.1%
Gray	8	8	8	10^8	
White	9	9	9	10^9	
Gold				10^{-1}	

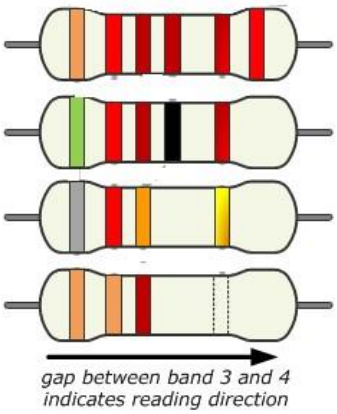
Chart Provided By XICON

Question1 What is the color code for the following resistors? *Assuming all resistors have a +/-1% tolerance.*

(1)220Ω, (2)100Ω, (3)33Ω, (4)1KΩ, (5)4.7KΩ, (6)10KΩ, (7)100KΩ, (8)56KΩ, (9)22MΩ, (10)820KΩ

1(red,red,brown,brown) 2(brown,black,brown,brown) 3(orange,orange,black,brown) 4(brown,black,red,brown) 5(yellow,violet,red,brown) 6(brown,black,orange,brown) 7(brown,black,black,orange,brown) 8(green,blue,orange,brown) 9(red,red,blue,brown) 10(gray,red,black,orange,brown)

Question2 What is the value of the following resistors?



orange,red,brown,brown,brown=3.21KΩ

green,red,brown,black,brown=521Ω

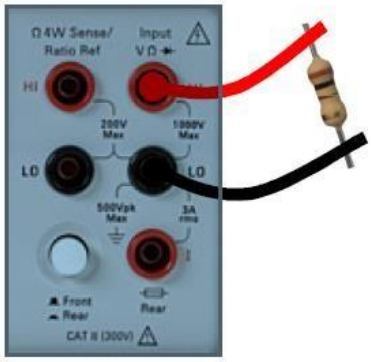
grey,red,orange,gold=82KΩ

orange,orange,brown,N/A=330Ω

Question3 Take 5 resistors and make a table that contains.

Colours					Value	+/- tolerance	Expected range.
blue	grey	orang.	gold	-	68KΩ	5%	64.6KΩ-71.4KΩ
red	red	orang.	gold	-	22KΩ	5%	19’950Ω-22’050Ω
green	blue	red	gold	-	5.6KΩ	5%	4’750KΩ-5’250Ω
brow.	black	red	gold	-	1KΩ	5%	950Ω-1050Ω
yello.	viole.	orang.	gold	-	47KΩ	5%	45’600Ω-50’400Ω

Question4 Learning how to use the Ohmmeter and how to set it to zero how to read the values.



Question5 Measure each resistor that you took it and make a table that contains.

Colors					Value +/- tolerance	Measured Value	%Error
blue	grey	orang.	gold	-	5%	67KΩ	1.5%
red	red	orang.	gold	-	5%	21KΩ	4.5%
green	blue	red	gold	-	5%	5KΩ	10%
brow.	black	red	gold	-	5%	1KΩ	0%
yello.	viole.	orang.	gold	-	5%	48KΩ	2%

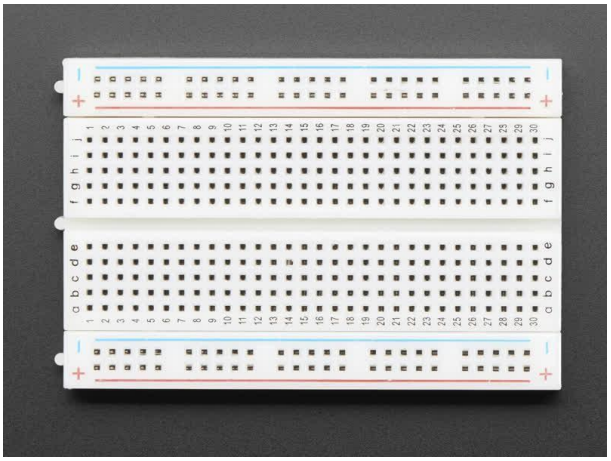
Question6 Connect 2 resistors in series and measure the result compare if $R_{total} = R_1 + R_2$.

R_{total}=89KΩ

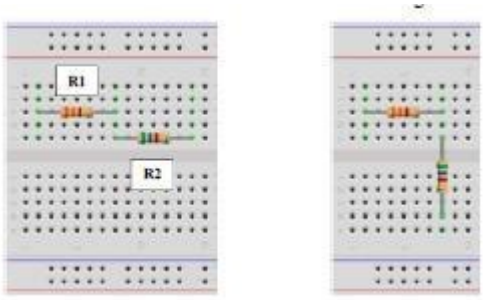
R_1=67KΩ

R_2=21KΩ

Question7 Take a Breadboard and find out the construction of the Breadboard. Check the wholes that are connected together and show in the following Breadboard.



Question8 Put 2 resistors in series on breadboard and repeat Question 6.



Question9 Put 3 resistors in series on breadboard and repeat part 5.

Rtotal=95KΩ
R1=68KΩ
R2=21KΩ
R3=5KΩ