

RESISTOR COMBINATIONS

A.French 15/09/2021

Resistor	Digits	Zeros	Tolerance /%	Colours	Resistance /ohms	Resistance /k ohms	Measured resistance /k ohms	% error
A	33	1	5	Orange Orange Brown Gold	330	0.33	0.334	1.21%
B	15	2	5	Brown Green Red Gold	1500	1.5	1.506	0.40%
C	47	2	5	Yellow Purple Red Gold	4700	4.7	4.63	-1.49%
D	10	3	5	Brown Black Orange Gold	10000	10	9.84	-1.60%
E	56	3	5	Green Blue Orange Gold	56000	56	55.7	-0.54%

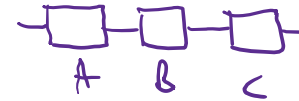
Combination	Calculate d resistance /kohms	Measured resistance /ohms	% error
1 A + B + C	6.53	6.41	-1.84%
2 $1/(1/A + 1/B + 1/C)$	0.26	0.274	7.13%
3 $A + 1/(1/B + 1/C)$	1.47	1.492	1.70%
4 $1/(1/A + 1/(B+C))$	0.31	0.337	7.56%
5 $E + 1/(1/C + 1/D)$	59.20	58.4	-1.35%

POTENTIAL DIVIDER CIRCUIT (three resistors in series)

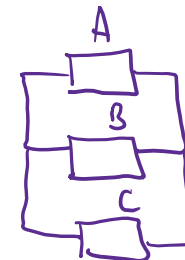
Resistor	Resistance /k ohms	Fraction of total resistance	PD /volts	Fraction of total PD
A	0.334	0.052	0.26	0.051
B	1.506	0.233	1.17	0.229
C	4.63	0.716	3.68	0.720
	6.47		5.11	

C	4.63	0.066	0.34	0.067
D	9.84	0.140	0.73	0.143
E	55.7	0.794	4.1	0.802
	70.17		5.17	

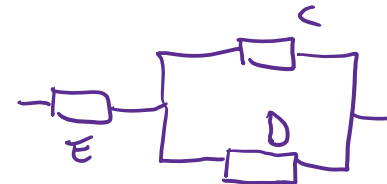
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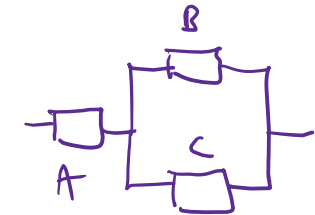
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