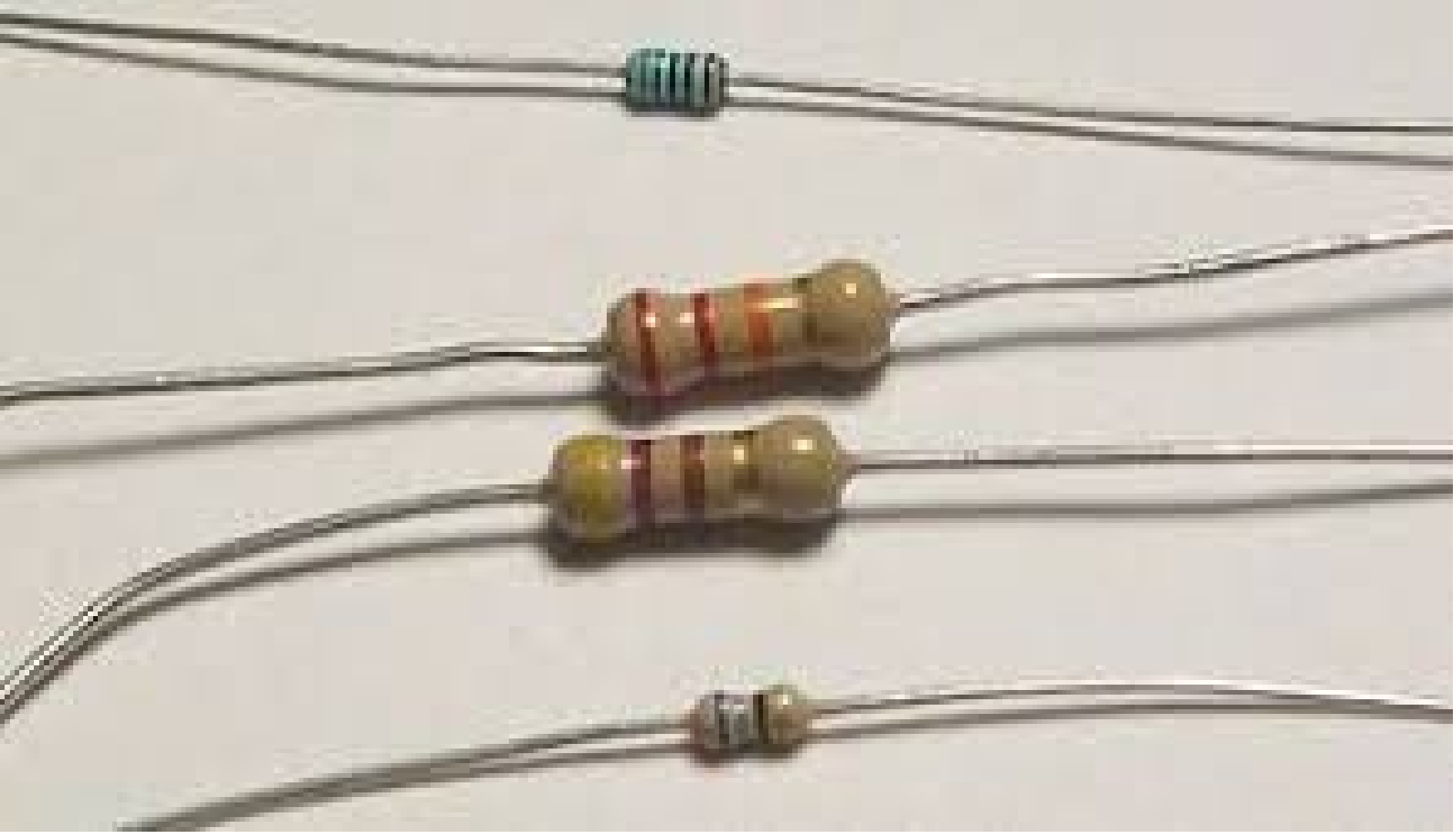

GX3SBL
Stafford and Districts
Amateur Radio Society

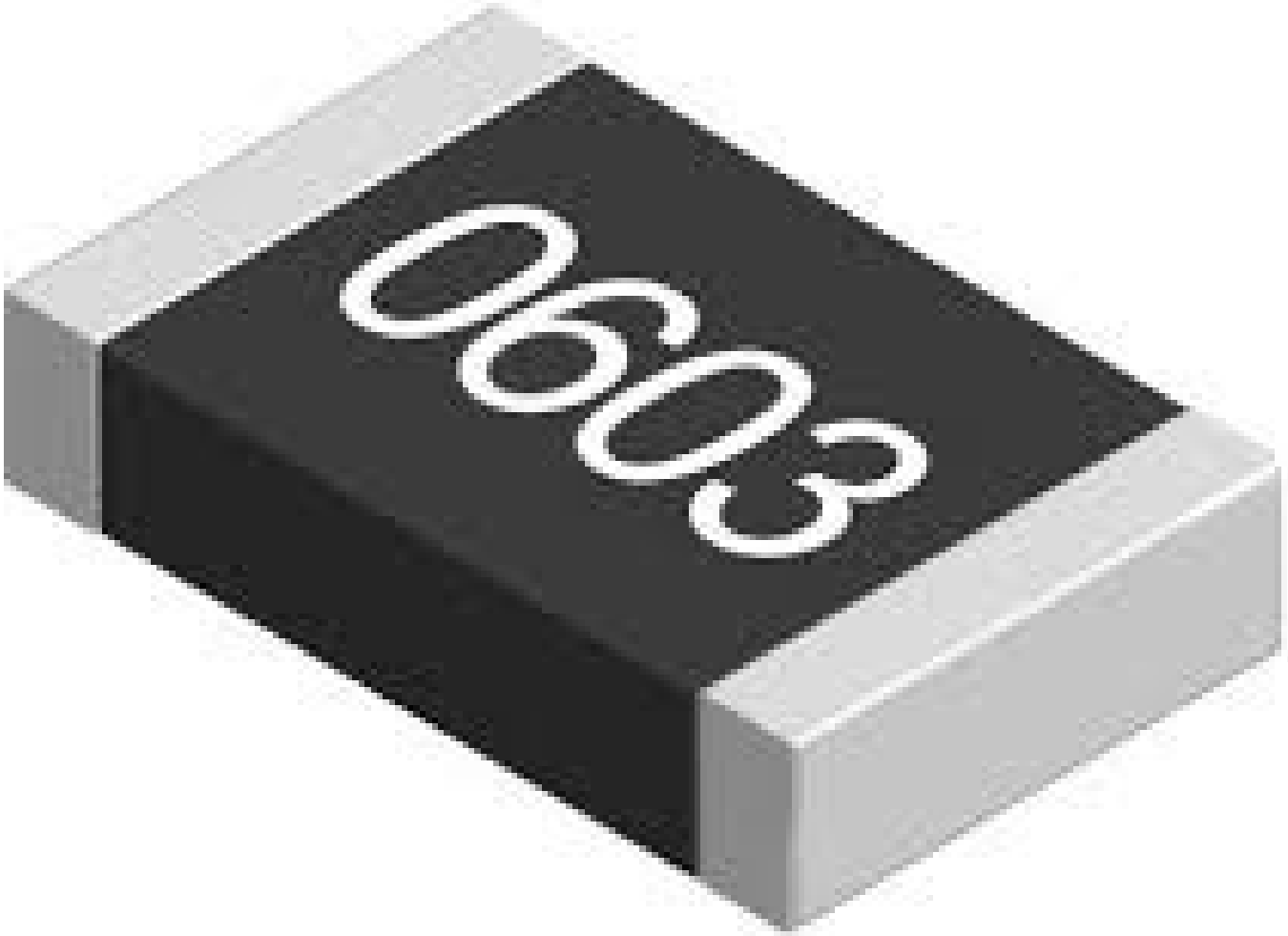
Resistance is ~~Futile~~ Crucial

- What are they?
- What do they do?
- How are they used?
- Types, Values, Tolerance

What are they?




3W 22Ω J
BPR5
0.05ΩK
KOA
ERG
4.705Ω


0603

Package type	Size in inches	Size in mm	Power rating
0201	0.024" × 0.012"	0.6 mm × 0.3 mm	1/20W
0402	0.04" × 0.02"	1.0 mm × 0.5 mm	1/32W 1/16W
0603	0.063" × 0.031"	1.6 mm × 0.8 mm	1/16W
0805	0.08" × 0.05"	2.0 mm × 1.25 mm	1/10W
1206	0.126" × 0.063"	3.2 mm × 1.6 mm	1/8W
1210	0.12" × 0.10"	3.2 mm × 2.6 mm	1/4W
2020	0.20" × 0.20"	5.08 mm × 5.08 mm	1/2W
2512	0.25" × 0.12"	6.35 mm × 3.0 mm	1W

What are they made of?

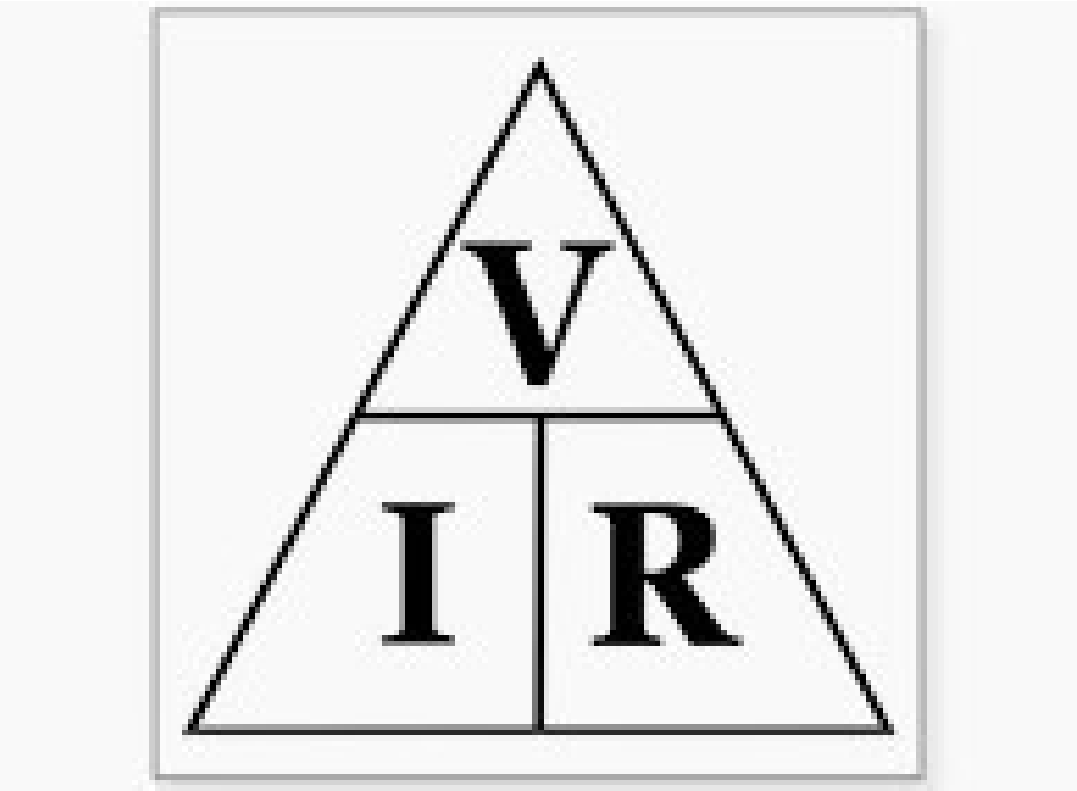
- Carbon
- Metal film
- Metal oxide (MOX)
- Resistance Wire

What do they do?

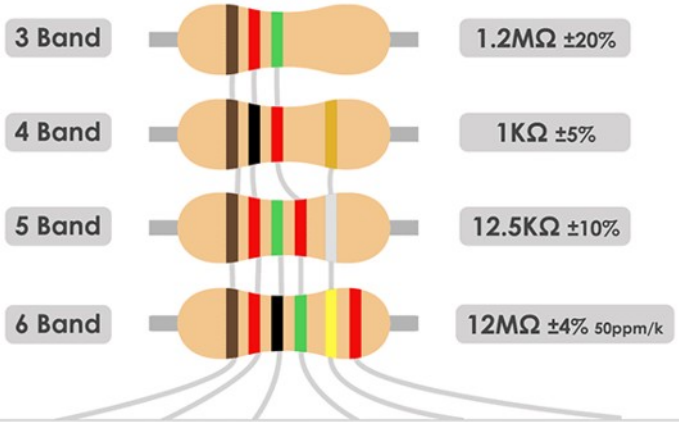
- Pass a current, depending on the voltage applied.
- Define voltage at a point in a circuit.

Ohm's Law

- V=IxR I=V/R R=V/I

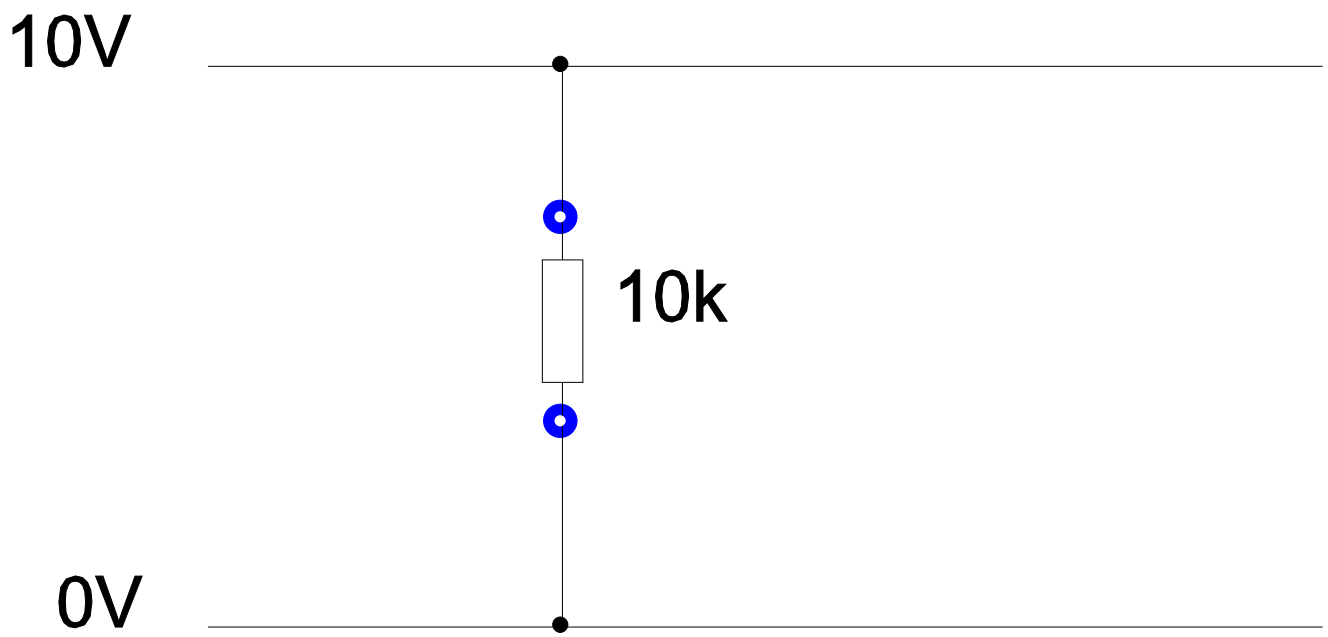


What's with the colours?



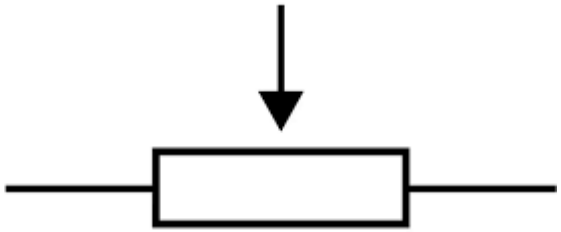
	1st Digit	2nd Digit	3rd Digit	Multiplier	Tolerance	Temp. Coeff.
Black	0	0	0	x 10^0		250 (U)
Brown	1	1	1	x 10^1	±1%	100 (S)
Red	2	2	2	x 10^2	±2%	50 (R)
Orange	3	3	3	x 10^3	±3%	15 (P)
Yellow	4	4	4	x 10^4	±4%	25 (Q)
Green	5	5	5	x 10^5	±0.5%	20 (Z)
Blue	6	6	6	x 10^6	±0.25%	10 (Z)
Violet	7	7	7	x 10^7	±0.1%	5 (M)
Grey	8	8	8	x 10^8	±0.05%	1 (K)
White	9	9	9	x 10^9		
Gold	-	-	-	x 10^{-1}	±5%	
Silver	-	-	-	x 10^{-2}	±10%	

Codrey Electronics

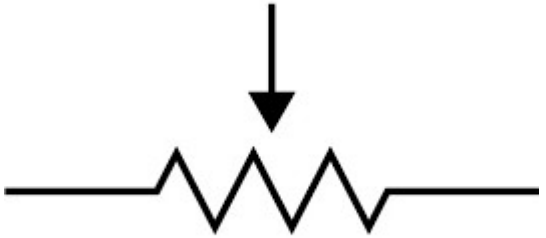


10V/10,000R = 0.001A (1mA)

Potentiometer

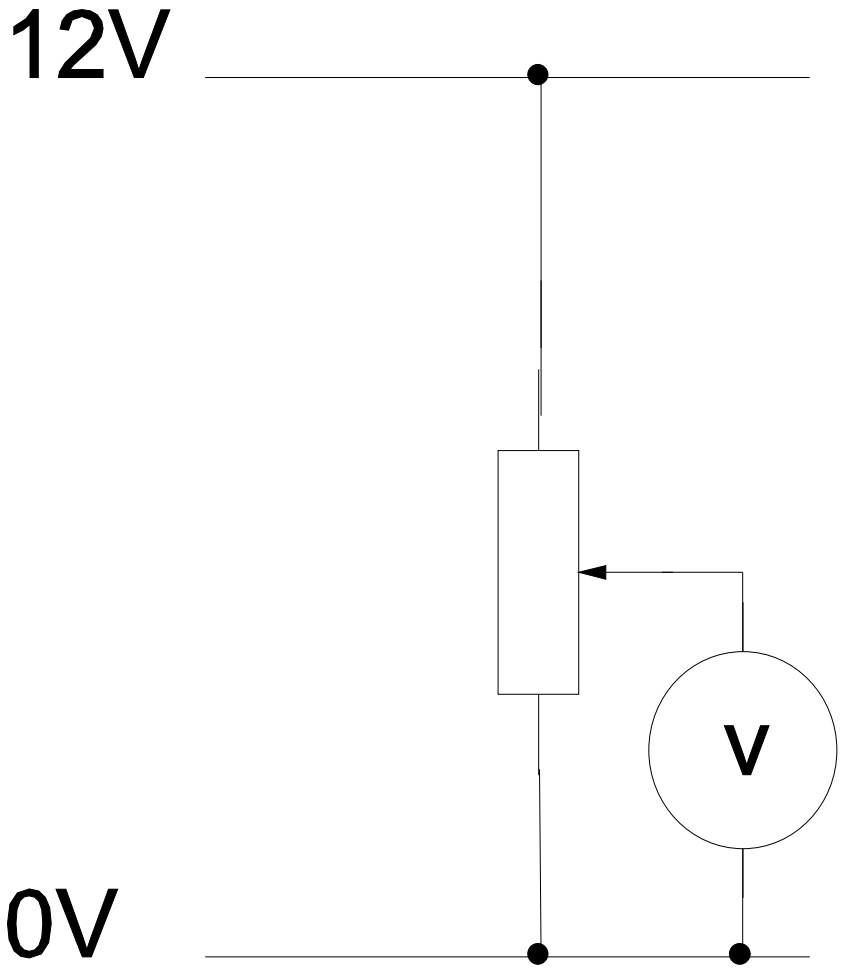


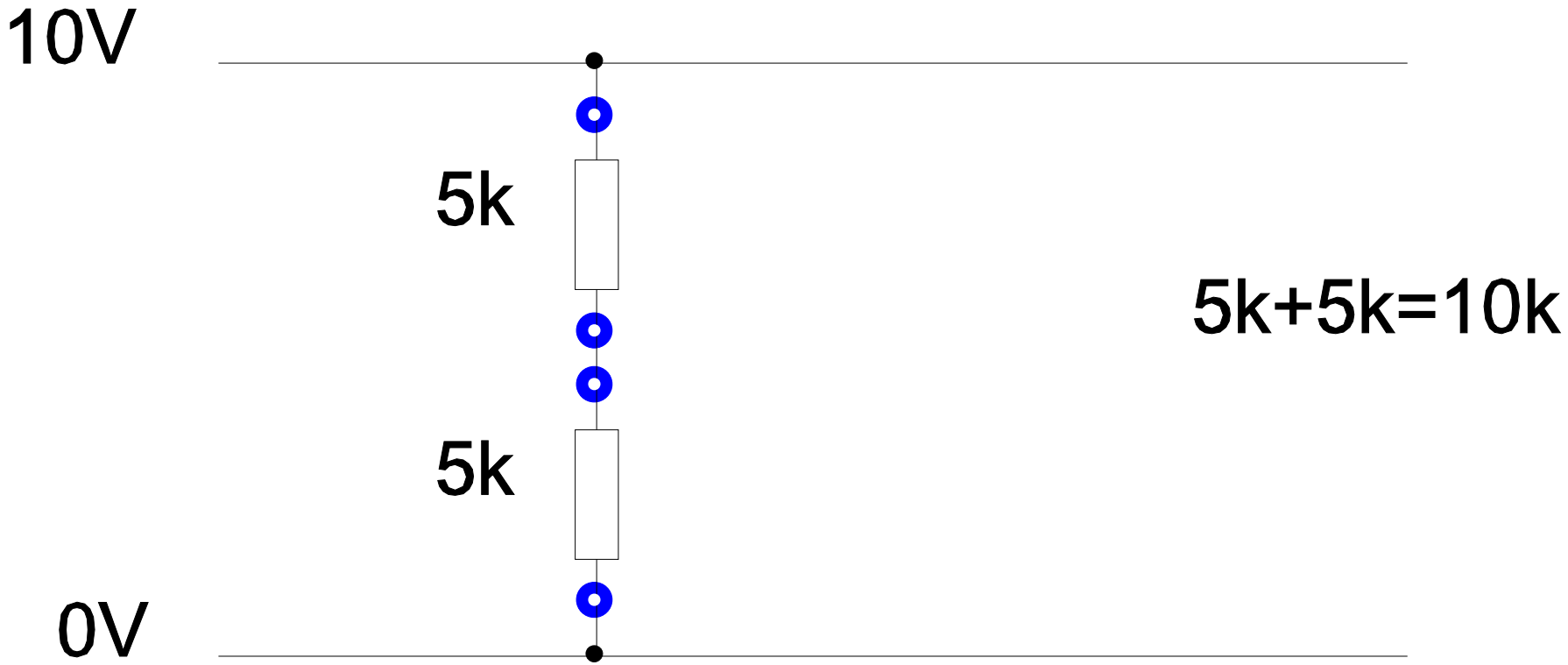
European standard (IEC)



American standard (ANSI)

Potential (Voltage) divider





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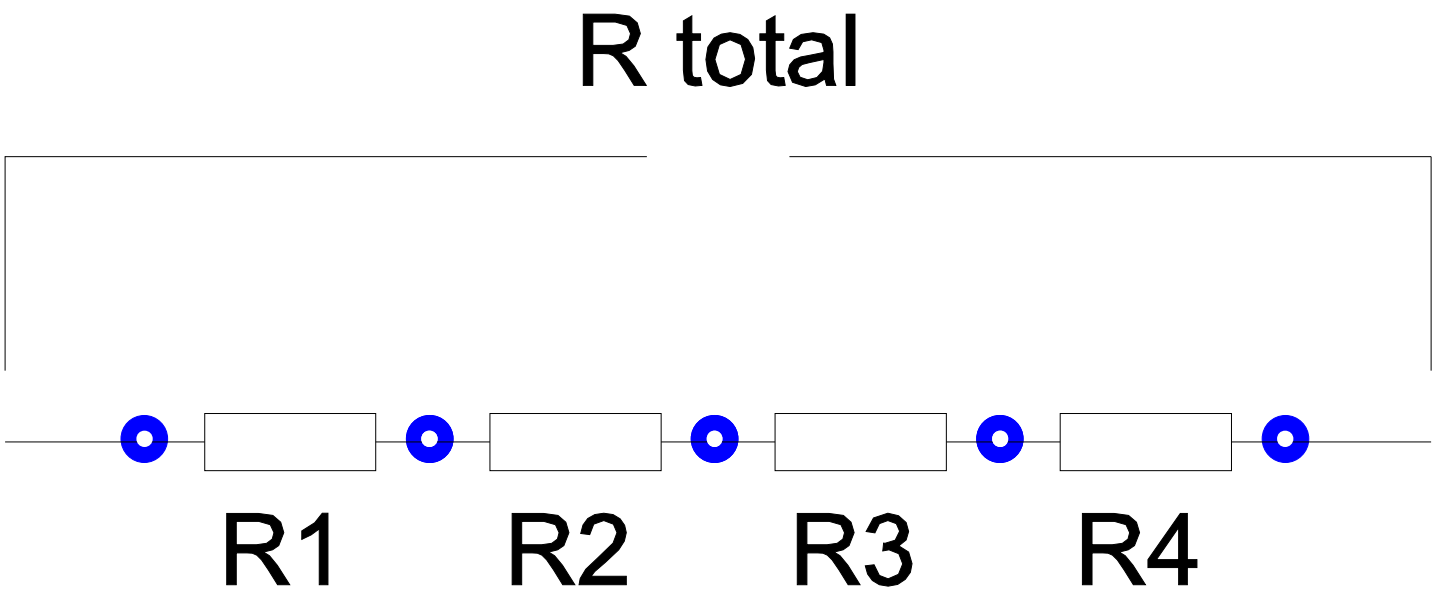
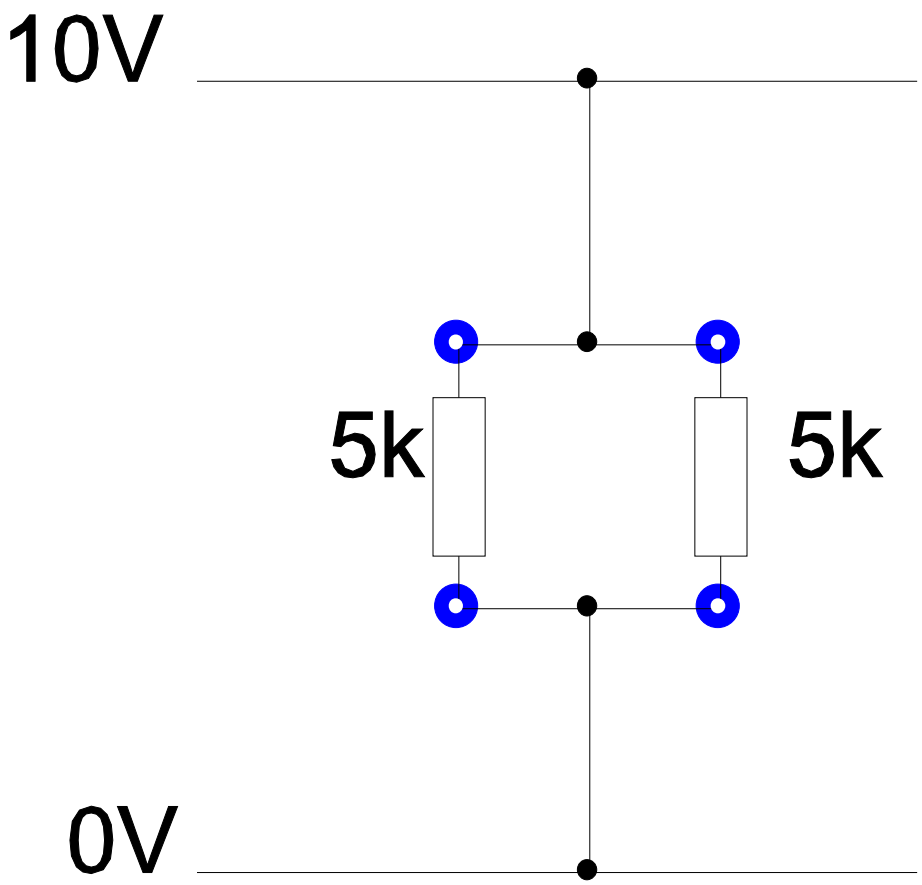
Series connection



R total = R1+R2+R3+R4

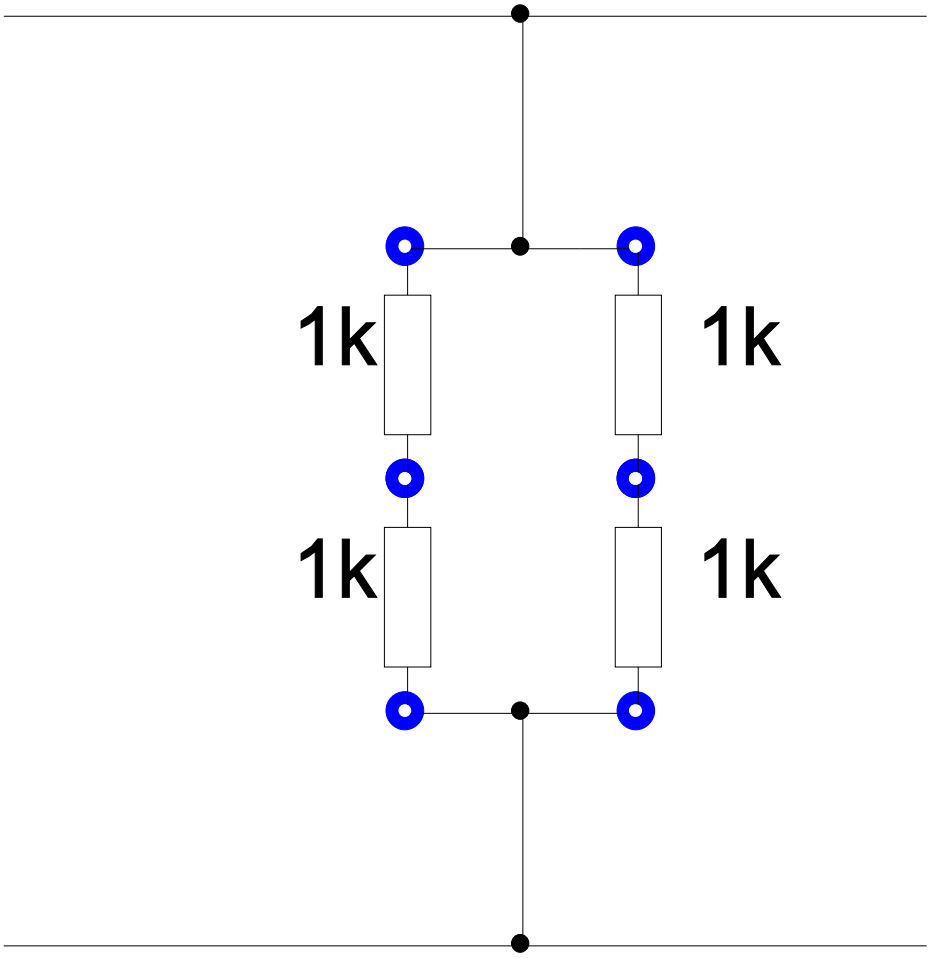
Parallel connection



Parallel conection

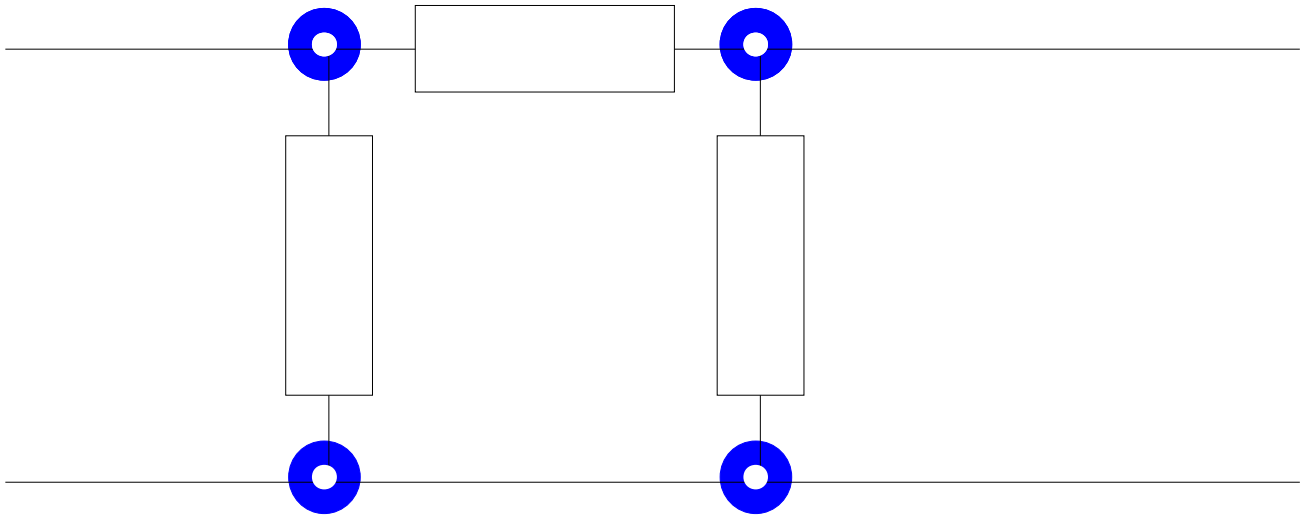
- 1/R total = 1/5k +1/5k

- R total = R1xR2/R1+R2


1k
1k
1k
1k

?

Attenuator



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