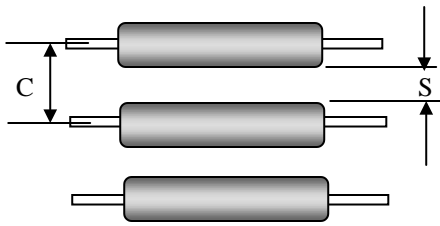
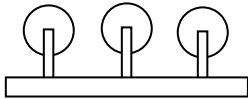


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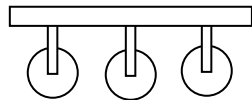
Power Derating Factors for Grouping Resistors



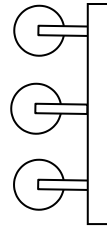
(1) Resistors mounted side by side



a) Horizontal PCB position,
resistors facing up
 $W = 10^{(-0.0032 \times N \times C/S)}$



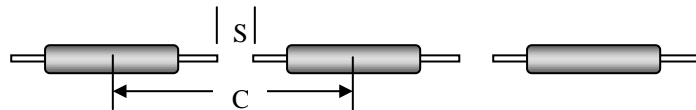
b) Horizontal PCB position,
resistors facing down
 $W = [10^{(-0.0032 \times N \times C/S)}] \div 1.33$



c) Vertical PCB position,
resistors aligned vertically
 $W = [10^{(-0.0032 \times N \times C/S)}] \div 2$



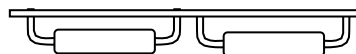
d) Vertical PCB position,
resistors aligned horizontally
 $W = [10^{(-0.0032 \times N \times C/S)}] \div 1.1$



(2) Resistors mounted end to end



a) PCB positioned horizontally,
resistors facing up
 $W = 3.0^{(-0.0032 \times N \times C/S)}$



b) PCB positioned horizontally,
resistors facing down
 $W = [3.0^{(-0.0032 \times N \times C/S)}] \div 1.33$



c) PCB positioned vertically,
resistors aligned vertically
 $W = [3.0^{(-0.0032 \times N \times C/S)}] \div 2$



d) PCB positioned vertically,
resistors aligned horizontally
 $W = [3.0^{(-0.0032 \times N \times C/S)}] \div 1.1$

Note: all formulas are based on resistors being mounted off PCB by amount equivalent to body diameter

W = Wattage derating factor

S = Air space between resistors

N = Number of resistors

C = Center-to-center spacing of resistors

Example: Four pieces of RCD type 185 20W resistors (0.5" dia.) are to be mounted on 1" centers. as in 1.a. The wattage derating factor is determined by $W = 10^{(-0.0032 \times N \times C/S)}$. In this example N= 4, C= 1, S= .5 so according to the formula $W = 10^{(-0.0032 \times 4 \times 1/.5)} = 10^{(-0.0256)} = .94$. Derating factor is .94, so parts should not be used above .94 x 20W = 18.8W.

The same parts mounted vertically as in 1.c would have derating factor of .47. So in this case the parts should not be used above 9.4W. Obviously, it is desirable to use configuration 1.a instead of 1.c whenever conditions permit.

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Factors for Grouping Resistors

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