

# Metal Oxide Resistors, Special Purpose, High Voltage



## FEATURES

- Low TCR;  $\pm 200$  ppm/ $^{\circ}\text{C}$  standard;  $\pm 100$  ppm/ $^{\circ}\text{C}$ ,  $\pm 50$  ppm/ $^{\circ}\text{C}$  available
- Tolerance:  $\pm 1\%$ ;  $\pm 2\%$ ;  $\pm 5\%$ ;  $\pm 10\%$
- High Voltage (up to 45 kV)
- For oil bath or open air operation
- Matched sets available
- Special testing available upon request
- Material categorization:  
For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS\***  
 COMPLIANT

### Note

\* Lead (Pb)-containing terminations are not RoHS-compliant. Exemptions may apply.

| STANDARD ELECTRICAL SPECIFICATIONS |                  |                                   |                                   |                                    |                                  |                                  |                       |  |
|------------------------------------|------------------|-----------------------------------|-----------------------------------|------------------------------------|----------------------------------|----------------------------------|-----------------------|--|
| GLOBAL MODEL                       | HISTORICAL MODEL | POWER RATING                      |                                   |                                    | MAXIMUM WORKING VOLTAGE (2)<br>V | RESISTANCE RANGE (3)<br>$\Omega$ | TOLERANCE<br>$\pm \%$ | TEMPERATURE COEFFICIENT<br>$\pm$ ppm/ $^{\circ}\text{C}$ |
|                                    |                  | $P_{25^{\circ}\text{C}}$<br>W (1) | $P_{70^{\circ}\text{C}}$<br>W (1) | $P_{125^{\circ}\text{C}}$<br>W (1) |                                  |                                  |                       |  |
| ROX050                             | ROX-1/2          | 2.0                               | 1.4                               | 1.0                                | 2K                               | 1M to 100M                       | 1, 2, 5, 10           | 50   |
|                                    |                  |                                   |                                   |                                    |                                  | 1K to 100M                       | 1, 2, 5, 10           | 100  |
|                                    |                  |                                   |                                   |                                    |                                  | 1K to 1G                         | 1, 2, 5, 10           | 200  |
| ROX075                             | ROX-3/4          | 3.0                               | 2.16                              | 1.5                                | 5K                               | 1M to 100M                       | 1, 2, 5, 10           | 50   |
|                                    |                  |                                   |                                   |                                    |                                  | 1K to 500M                       | 1, 2, 5, 10           | 100  |
|                                    |                  |                                   |                                   |                                    |                                  | 1K to 3G                         | 1, 2, 5, 10           | 200  |
| ROX100                             | ROX-1            | 4.0                               | 2.88                              | 2.0                                | 7.5K                             | 100 to 1M                        | 1, 2, 5, 10           | Non-inductive (4)  |
|                                    |                  |                                   |                                   |                                    |                                  | 1M to 100M                       | 1, 2, 5, 10           | 50   |
|                                    |                  |                                   |                                   |                                    |                                  | 1K to 500M                       | 1, 2, 5, 10           | 100  |
| ROX150                             | ROX-1-1/2        | 5.0                               | 3.6                               | 2.5                                | 11K                              | 1K to 3G                         | 1, 2, 5, 10           | 200  |
|                                    |                  |                                   |                                   |                                    |                                  | 100 to 1M                        | 1, 2, 5, 10           | Non-inductive (4)  |
|                                    |                  |                                   |                                   |                                    |                                  | 1M to 100M                       | 1, 2, 5, 10           | 50   |
| ROX200                             | ROX-2            | 6.0                               | 4.32                              | 3.0                                | 15K                              | 1K to 500M                       | 1, 2, 5, 10           | 50   |
|                                    |                  |                                   |                                   |                                    |                                  | 1K to 1G                         | 1, 2, 5, 10           | 100  |
|                                    |                  |                                   |                                   |                                    |                                  | 1K to 3G                         | 1, 2, 5, 10           | 200  |
| ROX300                             | ROX-3            | 10.0                              | 7.2                               | 5.0                                | 22.5K                            | 100 to 1M                        | 1, 2, 5, 10           | Non-inductive (4)  |
|                                    |                  |                                   |                                   |                                    |                                  | 1M to 500M                       | 1, 2, 5, 10           | 50   |
|                                    |                  |                                   |                                   |                                    |                                  | 1K to 1G                         | 1, 2, 5, 10           | 100  |
| ROX400                             | ROX-4            | 12.0                              | 8.64                              | 6.0                                | 30K                              | 1K to 3G                         | 1, 2, 5, 10           | 200  |
|                                    |                  |                                   |                                   |                                    |                                  | 400 to 10M                       | 1, 2, 5, 10           | Non-inductive (4)  |
|                                    |                  |                                   |                                   |                                    |                                  | 1M to 500M                       | 1, 2, 5, 10           | 50   |
| ROX500                             | ROX-5            | 16.0                              | 11.52                             | 8.0                                | 37.5K                            | 1K to 1G                         | 1, 2, 5, 10           | 100  |
|                                    |                  |                                   |                                   |                                    |                                  | 1K to 3G                         | 1, 2, 5, 10           | 200  |
|                                    |                  |                                   |                                   |                                    |                                  | 500 to 10M                       | 1, 2, 5, 10           | Non-inductive (4)  |
| ROX600                             | ROX-6            | 20.0                              | 14.4                              | 10.0                               | 45K                              | 1M to 500M                       | 1, 2, 5, 10           | 50   |
|                                    |                  |                                   |                                   |                                    |                                  | 1K to 1G                         | 1, 2, 5, 10           | 100  |
|                                    |                  |                                   |                                   |                                    |                                  | 1K to 3G                         | 1, 2, 5, 10           | 200  |
|                                    |                  |                                   |                                   |                                    |                                  | 500 to 10M                       | 1, 2, 5, 10           | Non-inductive (4)  |

### Notes

- All resistance values are calibrated at 100 V<sub>DC</sub>. Calibration at other voltages available.
- $\pm 1\%$  not available above 1 G $\Omega$
- Part marking: Print marked - Dale, model, value, tolerance, temperature coefficient, date code
- (1) Increase wattage by 40 % for 0.040" (1.02 mm) diameter leads
- (2) Continuous working voltage shall be  $\sqrt{P \times R}$  or maximum working voltage, whichever is less.
- (3) For resistance values above and below those listed please contact us
- (4) Non-inductive  $\pm 200$  ppm/ $^{\circ}\text{C}$  TCR only

| TECHNICAL SPECIFICATIONS   |                    |   |        |        |        |        |        |        |        |        |
|----------------------------|--------------------|---|--------|--------|--------|--------|--------|--------|--------|--------|
| PARAMETER                  | UNIT               | ROX050  | ROX075 | ROX100 | ROX150 | ROX200 | ROX300 | ROX400 | ROX500 | ROX600 |
| Insulation Resistance      | $\Omega$           | $\geq 10^{11}$  |        |        |        |        |        |        |        |        |
| Category Temperature Range | $^{\circ}\text{C}$ | Epoxy coated = - 55/+ 180; Silicone coated = - 55/+ 230 |        |        |        |        |        |        |        |        |

**GLOBAL PART NUMBER INFORMATION**

New Global Part Numbering: ROX300100MGNF5 (preferred part numbering format)

R O X 3 0 0 1 0 0 M G N F 5

| GLOBAL MODEL<br>(See Electrical Specifications table) | RESISTANCE VALUE<br>R = Ω<br>K = kΩ<br>M = MΩ<br>G = GΩ<br>910R = 910 Ω<br>10M0 = 10 MΩ<br>1G00 = 1.0 GΩ | TOLERANCE CODE<br>F = ± 1 %<br>G = ± 2 %<br>J = ± 5 %<br>K = ± 10 % | TEMP. COEFFICIENT<br>H = 50 ppm<br>K = 100 ppm<br>N = 200 ppm | PACKAGING (1)<br>EL = Lead (Pb)-free, lacer (all, except 3, 4, 5, 6)<br>EE = Lead (Pb)-free, T/R (1/2, 3/4, 1 only)<br>EM = Lead (Pb)-free, foam (3, 4, 5, 6 only)<br>LB = Tin/lead, lacer (all, except 3, 4, 5, 6)<br>RF = Tin/lead, T/R (1/2, 3/4, 1 only)<br>F5 = Tin/lead, foam (3, 4, 5, 6 only) | CONSTRUCTION<br>(Up to 2 digits)<br>Blank = Standard<br>N = Non-inductive<br>P = 0.040 Ø leads<br>S = Solid body, axial<br>T = Threaded terminals<br>Y = One end axial, one threaded terminal | SPECIAL<br>Blank = Standard (Dash number) (Up to 3 digits) From 1 to 999 as applicable |
|---|--|---|---|---|---|--|
|---|--|---|---|---|---|--|

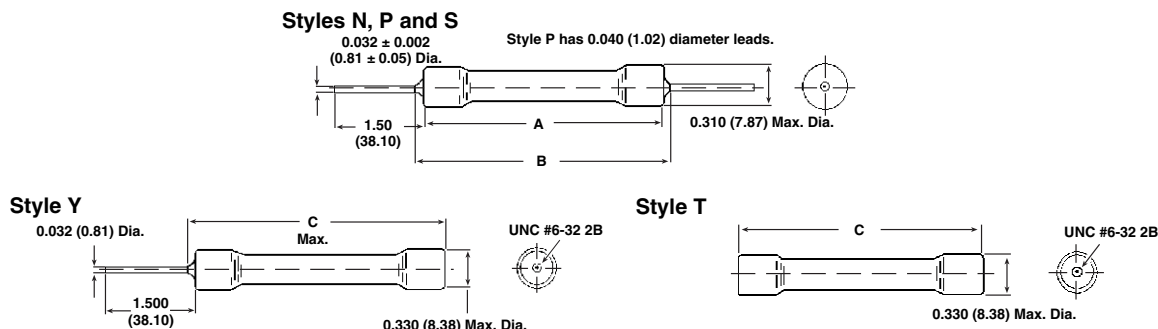
Historical Part Number example: ROX-3100MGN (will continue to be accepted)

|                  |              |                  |                |                   |           |
|------------------|--------------|------------------|----------------|-------------------|-----------|
| ROX-3            |              | 100M             | G              | N                 | F05       |
| HISTORICAL MODEL | CONSTRUCTION | RESISTANCE VALUE | TOLERANCE CODE | TEMP. COEFFICIENT | PACKAGING |

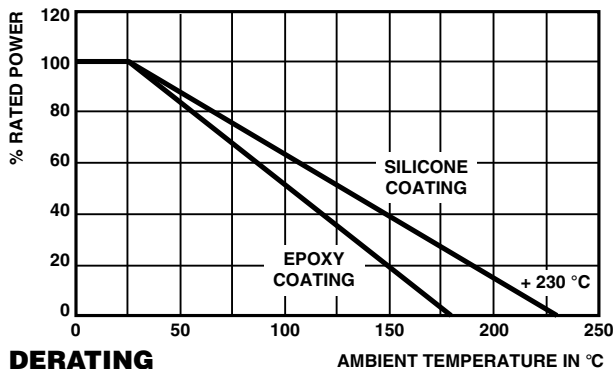
**Notes**

- (1) Some packaging codes are model specific.
- For additional information on packaging, refer to the Through-Hole Resistor Packaging document ([www.vishay.com/doc?31544](http://www.vishay.com/doc?31544)).

**DIMENSIONS** in inches (millimeters)

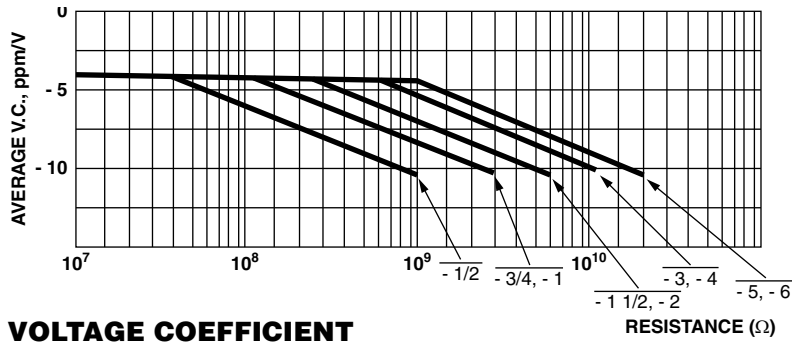


| GLOBAL MODEL | STYLE N, P, S                 |                | STYLE T                       | STYLE Y        |
|--------------|-------------------------------|----------------|-------------------------------|----------------|
|              | A                             | B              | C                             | C MAX.         |
| ROX050       | 0.550 ± 0.032 (13.97 ± 0.81)  | 0.700 (17.78)  | N/A                           | N/A            |
| ROX075       | 0.800 ± 0.032 (20.32 ± 0.81)  | 0.900 (22.86)  | 1.168 ± 0.022 (29.66 ± 0.56)  | 1.050 (26.67)  |
| ROX100       | 0.920 ± 0.032 (23.37 ± 0.81)  | 1.020 (25.91)  | 1.288 ± 0.022 (32.72 ± 0.56)  | 1.170 (29.72)  |
| ROX150       | 1.550 ± 0.032 (39.37 ± 0.81)  | 1.650 (41.91)  | 1.918 ± 0.022 (48.72 ± 0.56)  | 1.800 (45.72)  |
| ROX200       | 2.050 ± 0.032 (52.07 ± 0.81)  | 2.150 (54.61)  | 2.418 ± 0.022 (61.42 ± 0.56)  | 2.300 (58.42)  |
| ROX300       | 3.050 ± 0.032 (77.47 ± 0.81)  | 3.150 (80.01)  | 3.418 ± 0.022 (86.82 ± 0.56)  | 3.300 (83.82)  |
| ROX400       | 4.050 ± 0.032 (102.87 ± 0.81) | 4.150 (105.41) | 4.418 ± 0.022 (112.22 ± 0.56) | 4.300 (109.22) |
| ROX500       | 5.050 ± 0.032 (128.27 ± 0.81) | 5.150 (130.81) | 5.418 ± 0.022 (137.62 ± 0.56) | 5.300 (134.62) |
| ROX600       | 6.050 ± 0.032 (153.67 ± 0.81) | 6.150 (156.21) | 6.418 ± 0.022 (163.02 ± 0.56) | 6.300 (160.02) |



| MECHANICAL SPECIFICATIONS |   |
|---------------------------|---|
| Terminal Strength         | 10 pound pull test  |
| Solderability             | Continuous satisfactory coverage when tested in accordance with MIL-STD-202, Method 208 |

| MATERIAL SPECIFICATIONS |   |
|-------------------------|---|
| Element                 | High temperature fired cermet film  |
| Core                    | High purity 96 % alumina, tubular or solid  |
| Coating                 | Blue flame-retardant epoxy on ROX050 thru ROX200. Black flameproof silicone on ROX300 thru ROX600                             |
| Termination             | Standard lead material is solder-coated copper; solderable and weldable. 0.032" (0.813 mm) style P 0.040" (1.02 mm) available |



**VOLTAGE COEFFICIENT**



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