

# Metal Oxide Resistors, Special Purpose, High Voltage



## FEATURES

- Low TCR:  $\pm 200$  ppm/°C standard;  $\pm 100$  ppm/°C,  $\pm 50$  ppm/°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
- Compliant to RoHS Directive 2002/95/EC


**RoHS\***  
COMPLIANT

## STANDARD ELECTRICAL SPECIFICATIONS

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

### 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/°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 | °C       | Epoxy coated = - 55/+ 180; Silicone coated = - 55/+ 230 |        |        |        |        |        |        |        |        |

\* Pb containing terminations are not RoHS compliant, exemptions may apply

## GLOBAL PART NUMBER INFORMATION

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

|   |  |   |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |
|---|--|---|--|--|--|--|--|---|--|--|--|--|--|--|--|--|--|
| R O X 3 0 1 0 0 M G N F 5                   |  |   |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |
| GLOBAL<br>MODEL                             | RESISTANCE<br>VALUE  | TOLERANCE<br>CODE                                 | TEMP.<br>COEFFICIENT                     | PACKAGING <sup>(1)</sup>   |  | CONSTRUCTION   |  | SPECIAL   |  |  |  |  |  |  |  |  |  |
| (See Electrical<br>Specifications<br>table) | R = Ω<br>K = kΩ<br>M = MΩ<br>G = GΩ<br><br>910R = 910 Ω<br>10M0 = 10 MΩ<br>1G00 = 1.0 GΩ | F = ± 1 %<br>G = ± 2 %<br>J = ± 5 %<br>K = ± 10 % | H = 50 ppm<br>K = 100 ppm<br>N = 200 ppm | EL = Lead (Pb)-free, lacer<br>EE = Lead (Pb)-free,<br>T/R (1000 pieces)<br>EM = Lead (Pb)-free, foam<br>LB = Tin/lead, lacer<br>RF = Tin/lead,<br>T/R (1000 pieces)<br>F5 = Tin/lead, foam |  | (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<br>threaded terminal |  | Blank = Standard<br>(Dash number)<br>(Up to 3 digits)<br>From 1 to 999<br>as applicable |  |  |  |  |  |  |  |  |  |

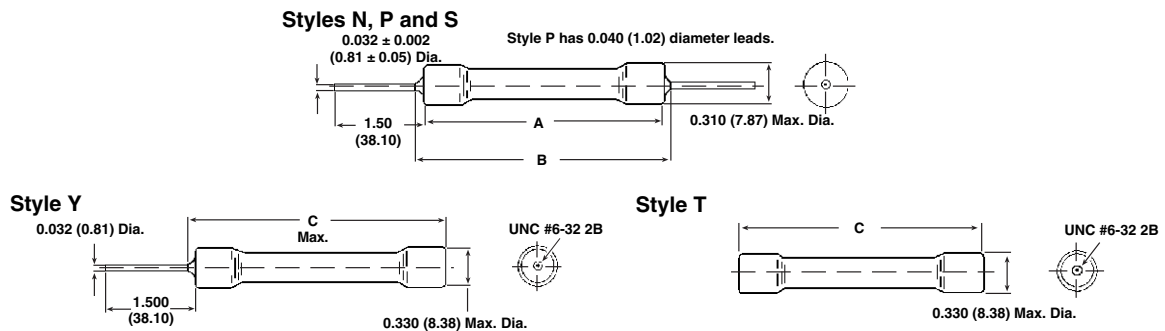
**Historical Part Number example: ROX-3100MGN (will continue to be accepted)**

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

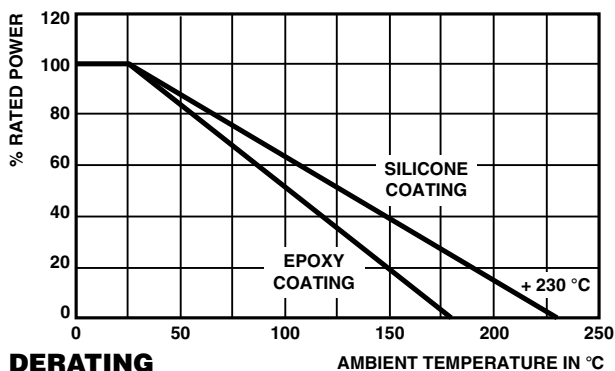
### Note

(1) Some packaging codes are model specific.

**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) |

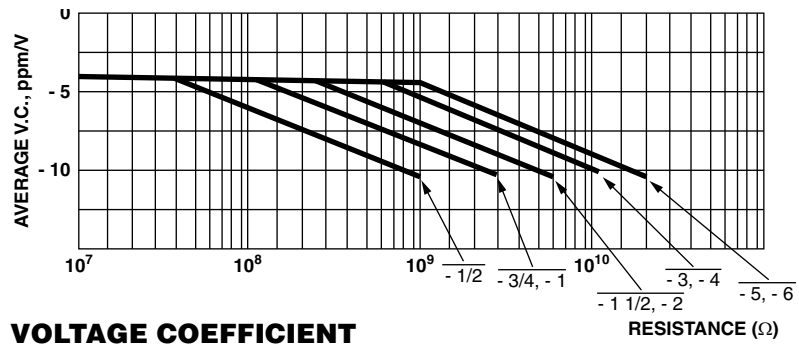


## MECHANICAL SPECIFICATIONS

|                          |   |
|--------------------------|---|
| <b>Terminal Strength</b> | 10 pound pull test  |
| <b>Solderability</b>     | Continuous satisfactory coverage when tested in accordance with MIL-STD-202, Method 208 |

## MATERIAL SPECIFICATIONS

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





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