

# Metal Oxide Resistors, Special Purpose, High Voltage



The ROX is an excellent choice for high voltage systems with the advantage of high wattage and space saving dimensions.

## FEATURES

- Low TCR:  $\pm 200$  ppm/ $^{\circ}\text{C}$  standard;  $\pm 100$  ppm/ $^{\circ}\text{C}$ ,  $\pm 50$  ppm/ $^{\circ}\text{C}$  available; non-inductive only available with TC of  $\pm 200$  ppm/ $^{\circ}\text{C}$
- Tolerance:  $\pm 1\%$ ;  $\pm 2\%$ ;  $\pm 5\%$ ;  $\pm 10\%$
- High Voltage (up to 45 kV)
- For oil bath or open air operation
- Standard ROX product is coated; optional uncoated version of the ROX product is available on request
- Matched sets available
- Special testing available upon request
- Applications: HV power supplies; laboratory equipment; power control; aeronautical
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



RoHS\*  
Available

### Note

\* This datasheet provides information about parts that are RoHS-compliant and/or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

STANDARD ELECTRICAL SPECIFICATIONS								
GLOBAL MODEL	HISTORICAL MODEL	POWER RATING			MAXIMUM WORKING VOLTAGE <sup>(1)</sup> V	RESISTANCE RANGE <sup>(2)</sup> $\Omega$	TOLERANCE $\pm \%$	TEMPERATURE COEFFICIENT <sup>(3)</sup> $\pm$ ppm/ $^{\circ}\text{C}$
		$P_{25^{\circ}\text{C}}$ W	$P_{70^{\circ}\text{C}}$ W	$P_{125^{\circ}\text{C}}$ W				
ROX050	ROX-1/2	2	1.4	1	2K	1M to 100M	1, 2, 5, 10	50
						1k to 100M	1, 2, 5, 10	100
						100 to 1G	1, 2, 5, 10	200
ROX050..P	ROX-1/2P	2.8	1.96	1.4	2K	1M to 100M	1, 2, 5, 10	50
						1k to 100M	1, 2, 5, 10	100
						100 to 1G	1, 2, 5, 10	200
ROX075	ROX-3/4	3	2.16	1.5	5K	1M to 100M	1, 2, 5, 10	50
						1k to 500M	1, 2, 5, 10	100
						100 to 3G	1, 2, 5, 10	200
ROX075..N	ROX-3/4N	3	2.16	1.5	5K	100 to 1M	1, 2, 5, 10	200
ROX075..P	ROX-3/4P	4.2	3.02	2.1	5K	1M to 100M	1, 2, 5, 10	50
						1k to 500M	1, 2, 5, 10	100
						100 to 3G	1, 2, 5, 10	200
ROX075..NP	ROX-3/4NP	4.2	3.02	2.1	5K	100 to 1M	1, 2, 5, 10	200
ROX100	ROX-1	4	2.88	2	7.5K	1M to 100M	1, 2, 5, 10	50
						1k to 500M	1, 2, 5, 10	100
						150 to 3G	1, 2, 5, 10	200
ROX100..N	ROX-1N	4	2.88	2	7.5K	100 to 1M	1, 2, 5, 10	200
ROX100..P	ROX-1P	5.6	4.03	2.8	7.5K	1M to 100M	1, 2, 5, 10	50
						1k to 500M	1, 2, 5, 10	100
						150 to 3G	1, 2, 5, 10	200
ROX100..NP	ROX-1NP	5.6	4.03	2.8	7.5K	100 to 1M	1, 2, 5, 10	200
ROX150	ROX-1-1/2	5	3.6	2.5	11K	1M to 100M	1, 2, 5, 10	50
						1k to 500M	1, 2, 5, 10	100
						200 to 3G	1, 2, 5, 10	200
ROX150..N	ROX-1-1/2N	5	3.6	2.5	11K	100 to 1M	1, 2, 5, 10	200



STANDARD ELECTRICAL SPECIFICATIONS								
GLOBAL MODEL	HISTORICAL MODEL	POWER RATING			MAXIMUM WORKING VOLTAGE <sup>(1)</sup> V	RESISTANCE RANGE <sup>(2)</sup> Ω	TOLERANCE ± %	TEMPERATURE COEFFICIENT <sup>(3)</sup> ± ppm/°C
		P <sub>25 °C</sub> W	P <sub>70 °C</sub> W	P <sub>125 °C</sub> W				
ROX150..P	ROX-1-1/2P	7	5.04	3.5	11K	1M to 100M	1, 2, 5, 10	50
						1k to 500M	1, 2, 5, 10	100
						200 to 3G	1, 2, 5, 10	200
ROX150..NP	ROX-1-1/2NP	7	5.04	3.5	11K	100 to 1M	1, 2, 5, 10	200
ROX200	ROX-2	6	4.32	3	15K	1M to 500M	1, 2, 5, 10	50
						1k to 1G	1, 2, 5, 10	100
						205 to 3G	1, 2, 5, 10	200
ROX200..N	ROX-2N	6	4.32	3	15K	100 to 1M	1, 2, 5, 10	200
ROX200..P	ROX-2P	8.4	6.05	4.2	15K	1M to 500M	1, 2, 5, 10	50
						1k to 1G	1, 2, 5, 10	100
						205 to 3G	1, 2, 5, 10	200
ROX200..NP	ROX-2NP	8.4	6.05	4.2	15K	100 to 1M	1, 2, 5, 10	200
ROX300	ROX-3	10	7.2	5	22.5K	1M to 500M	1, 2, 5, 10	50
						1k to 1G	1, 2, 5, 10	100
						330 to 3G	1, 2, 5, 10	200
ROX300..N	ROX-3N	10	7.2	5	22.5K	400 to 10M	1, 2, 5, 10	200
ROX300..P	ROX-3P	14	10.1	7	22.5K	1M to 500M	1, 2, 5, 10	50
						1k to 1G	1, 2, 5, 10	100
						330 to 3G	1, 2, 5, 10	200
ROX300..NP	ROX-3NP	14	10.1	7	22.5K	400 to 10M	1, 2, 5, 10	200
ROX400	ROX-4	12	8.64	6	30K	1M to 500M	1, 2, 5, 10	50
						1k to 1G	1, 2, 5, 10	100
						600 to 3G	1, 2, 5, 10	200
ROX400..N	ROX-4N	12	8.64	6	30K	500 to 10M	1, 2, 5, 10	200
ROX400..P	ROX-4P	16.8	12.1	8.4	30K	1M to 500M	1, 2, 5, 10	50
						1k to 1G	1, 2, 5, 10	100
						600 to 3G	1, 2, 5, 10	200
ROX400..NP	ROX-4NP	16.8	12.1	8.4	30K	500 to 10M	1, 2, 5, 10	200
ROX500	ROX-5	16	11.5	8	37.5K	1M to 500M	1, 2, 5, 10	50
						1k to 1G	1, 2, 5, 10	100
						750 to 3G	1, 2, 5, 10	200
ROX500..N	ROX-5N	16	11.5	8	37.5K	500 to 10M	1, 2, 5, 10	200
ROX500..P	ROX-5P	22.4	16.1	11.2	37.5K	1M to 500M	1, 2, 5, 10	50
						1k to 1G	1, 2, 5, 10	100
						750 to 3G	1, 2, 5, 10	200
ROX500..NP	ROX-5NP	22.4	16.1	11.2	37.5K	500 to 10M	1, 2, 5, 10	200
ROX600	ROX-6	20	14.4	10	45K	1M to 500M	1, 2, 5, 10	50
						1k to 1G	1, 2, 5, 10	100
						850 to 3G	1, 2, 5, 10	200
ROX600..N	ROX-6N	20	14.4	10	45K	500 to 10M	1, 2, 5, 10	200
ROX600..P	ROX-6P	28	20.2	14	45K	1M to 500M	1, 2, 5, 10	50
						1k to 1G	1, 2, 5, 10	100
						850 to 3G	1, 2, 5, 10	200
ROX600..NP	ROX-6NP	28	20.2	14	45K	500 to 10M	1, 2, 5, 10	200

**Notes**

- Resistance values of 1 kΩ and below are calibrated at 1 V<sub>DC</sub>, values above 1 kΩ up to 100 kΩ are calibrated at 10 V<sub>DC</sub>, and values above 100 kΩ are calibrated at 100 V<sub>DC</sub>. Calibration at other voltages available
  - ± 1 % not available above 1 GΩ
  - Part marking: Print marked - Dale, model, value, tolerance, temperature coefficient, date code
- <sup>(1)</sup> Continuous working voltage shall be  $\sqrt{P \times R}$  or maximum working voltage, whichever is less  
<sup>(2)</sup> For resistance values above and below those listed please contact us  
<sup>(3)</sup> Typical TCR results

**GLOBAL PART NUMBER INFORMATION**

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

<b>R</b>	<b>O</b>	<b>X</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>M</b>	<b>G</b>	<b>N</b>	<b>F</b>	<b>5</b>						
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GLOBAL MODEL <small>(see Electrical Specifications table)</small>	RESISTANCE VALUE	TOLERANCE CODE	TEMP. COEFFICIENT	PACKAGING (1)	CONSTRUCTION	SPECIAL
	<b>R</b> = Ω <b>K</b> = kΩ <b>M</b> = MΩ <b>G</b> = GΩ <b>910R</b> = 910 Ω <b>10M0</b> = 10 MΩ <b>1G00</b> = 1.0 GΩ	<b>F</b> = ± 1 % <b>G</b> = ± 2 % <b>J</b> = ± 5 % <b>K</b> = ± 10 %	<b>H</b> = 50 ppm <b>K</b> = 100 ppm <b>N</b> = 200 ppm	<b>EL</b> = lead (Pb)-free, lacer (all, except 3, 4, 5, 6) <b>EE</b> = lead (Pb)-free, T / R (1/2, 3/4, 1 only) <b>EM</b> = lead (Pb)-free, foam (3, 4, 5, 6 only) <b>LB</b> = tin / lead, lacer (all, except 3, 4, 5, 6) <b>RF</b> = tin / lead, T / R (1/2, 3/4, 1 only) <b>F5</b> = tin / lead, foam (3, 4, 5, 6 only)	(up to 2 digits) blank = standard <b>N</b> = non-inductive <b>P</b> = 0.040 Ø leads <b>S</b> = solid body, axial <b>T</b> = threaded terminals -18 = Uncoated <b>Y</b> = one end axial, one threaded terminal	blank = standard (dash number) (up to 3 digits) from <b>1 to 999</b> 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 MODEL	CONSTRUCTION	RESISTANCE VALUE	TOLERANCE CODE	TEMP. COEFFICIENT	PACKAGING

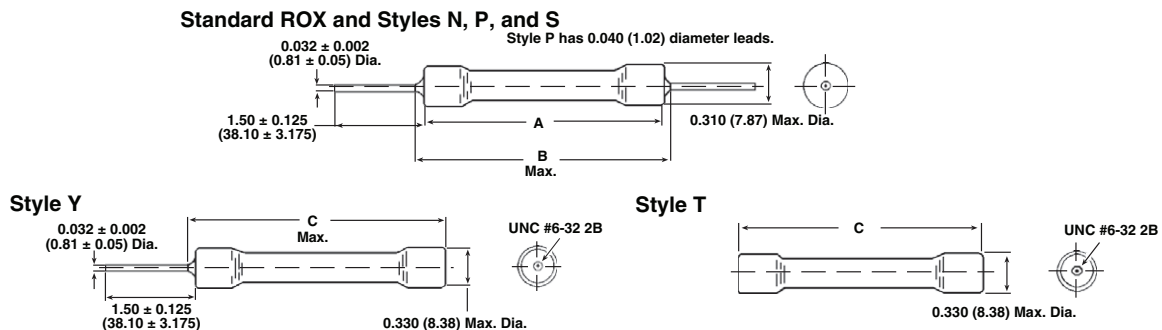
**Notes**

(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)).

**TECHNICAL SPECIFICATIONS**

PARAMETER	UNIT	ROX050	ROX075	ROX100	ROX150	ROX200	ROX300	ROX400	ROX500	ROX600
Insulation Resistance	Ω	≥ 10 <sup>11</sup>								
Category Temperature Range	°C	Epoxy coated = -55 / +180; Silicone coated = -55 / +230								

**DIMENSIONS** in inches (millimeters)


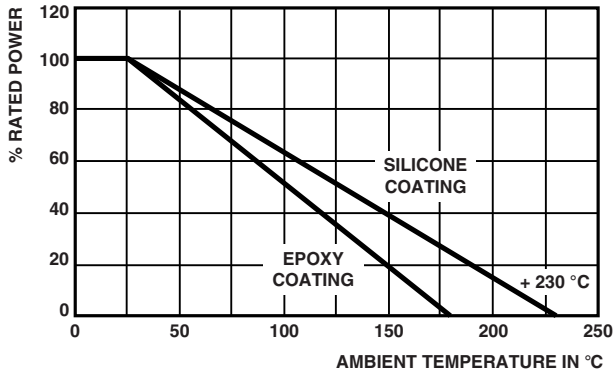
GLOBAL MODEL	STANDARD ROX AND STYLES N, P, S		STYLE T	STYLE Y
	A	B	C	C MAX.
ROX050	0.550 ± 0.032 (13.97 ± 0.81)	0.700 (17.78)	N/A	N/A
ROX075	0.800 ± 0.032 (20.32 ± 0.81)	0.900 (22.86)	1.168 ± 0.022 (29.66 ± 0.56)	1.050 (26.67)
ROX100	0.920 ± 0.032 (23.37 ± 0.81)	1.020 (25.91)	1.288 ± 0.022 (32.72 ± 0.56)	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)

**Note**

- All dimensions given are for the standard coated version of the ROX parts.



**DERATING**



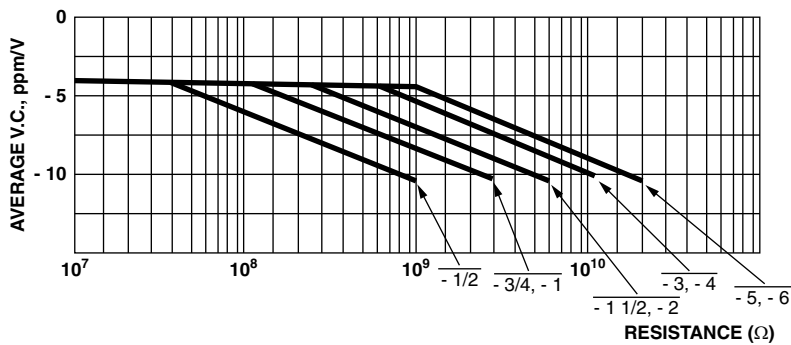
**MECHANICAL SPECIFICATIONS**

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

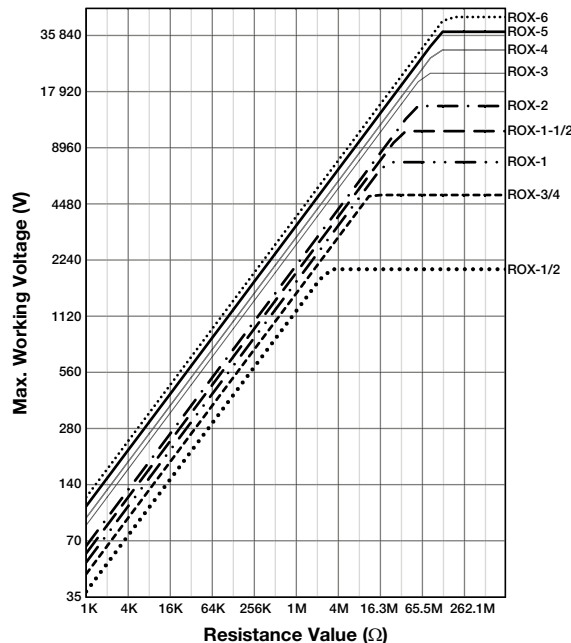
**MATERIAL SPECIFICATIONS**

<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. 0.032" (0.813 mm) style P 0.040" (1.02 mm) available

**VOLTAGE COEFFICIENT**



**ROX MAXIMUM WORKING VOLTAGE**





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