

**reduced size metal oxide power type  
leaded resistor**



**features**

- Small size power type resistor
- Coated with UL94V0 equivalent flameproof material
- Suitable for automatic machine insertion
- Marking: Pink body color with color-coded bands or alpha-numeric black marking
- Products with lead-free terminations meet EU RoHS and China RoHS requirements
- Surface mount style “N” forming is suitable for automatic mounting

**dimensions and construction**



| Type              | Dimensions inches (mm)  |                |                        |                         |                          |
|-------------------|-------------------------|----------------|------------------------|-------------------------|--------------------------|
|                   | L                       | C (max.)       | D                      | d (nom.)                | I*                       |
| MOS1/2<br>MOSX1/2 | .244±.02<br>(6.2±0.5)   | .280<br>(7.1)  | .098±.02<br>(2.5±0.5)  | .024<br>(0.6)           | .945 Min.<br>(24.0 Min.) |
| MOS1<br>MOSX1     | .354±.039<br>(9.0±1.0)  | .437<br>(11.1) | .118±.02<br>(3.0±0.5)  | .031<br>(0.8)           |                          |
| MOS2<br>MOSX2     | .472±.039<br>(12.0±1.0) | .591<br>(15.0) | .157±.02<br>(4.0±0.5)  |                         |                          |
| MOS3<br>MOSX3     | .610±.039<br>(15.5±1.0) | .709<br>(18.0) | .236±.039<br>(6.0±1.0) |                         | 1.18±.118<br>(30.0±3.0)  |
| MOS5<br>MOSX5     | .965±.039<br>(24.5±1.0) | 1.10<br>(28.0) | .354±.039<br>(9.0±1.0) | 1.50±.118<br>(38.0±3.0) |                          |

\* Lead length changes depending on taping and forming type.

**ordering information**

| New Part # | MOS         | 1/2   | C                               | T52  | A  | 103  | J                                       |
|------------|-------------|---|---------------------------------|--|--|--|---|
| Type       | MOS<br>MOSX | Power Rating<br>1/2: 0.5W<br>1: 1W<br>2: 2W<br>3: 3W<br>5: 5W | Termination Material<br>C: SnCu | Taping and Forming<br>Axial: T26, T52, T521, T631<br>Stand-off Axial: L52, L521, L631<br>Radial: VTP, VTE, GT, GT4<br>L, U, M, N Forming | Packaging<br>A: Ammo<br>R: Reel<br>TEB: Plastic embossed (N forming) | Nominal Resistance<br>±2%, ±5%: 2 significant figures + 1 multiplier<br>“R” indicates decimal on value <10Ω<br>±1%: 3 significant figures + 1 multiplier<br>“R” indicates decimal on value <100Ω | Tolerance<br>F: ±1%<br>G: ±2%<br>J: ±5% |

For further information on packaging, please refer to Appendix C.

## reduced size metal oxide power type leaded resistor

### applications and ratings

| Part Designation | Power Rating @ 70°C | Minimum Dielectric Withstanding Voltage | T.C.R. (ppm/°C) Max. | Resistance Range   |              |              | Absolute Maximum Working Voltage | Absolute Maximum Overload Voltage | Operating Temperature Range |
|------------------|---------------------|---|----------------------|--------------------|--------------|--------------|----------------------------------|-----------------------------------|-----------------------------|
|                  |                     |   |                      | E-24, E-96* (F±1%) | E-24* (G±2%) | E-24 (J±5%)  |                                  |                                   |                             |
| MOS1/2           | 0.5W                | 400V                                    | ±300                 | 10Ω - 47kΩ         | 10Ω - 47kΩ   | 10Ω - 47kΩ   | 300V                             | 600V                              | -55°C to +200°C             |
| MOS1             | 1.0W                | 500V                                    |                      | 10Ω - 68kΩ         | 10Ω - 68kΩ   | 10Ω - 100kΩ  | 350V                             |                                   |                             |
| MOS2             | 2.0W                |   |                      | 10Ω - 100kΩ        | 10Ω - 100kΩ  |              |                                  | 500V                              |                             |
| MOS3             | 3.0W                | 700V                                    |                      | —                  | 10Ω - 100kΩ  | 10Ω - 100kΩ  | E = √(P x R)                     |                                   |                             |
| MOS5             | 5.0W                | 800V                                    |                      | —                  | —            | —            |                                  | E = √(P x R)                      |                             |
| MOSX1/2          | 0.5W                | 400V                                    |                      | 1Ω - 9.1Ω          | —            | —            | E = √(P x R)                     |                                   |                             |
| MOSX1            | 1.0W                | 500V                                    |                      | 1Ω - 9.1Ω          | 0.22Ω - 9.1Ω | 0.1Ω - 9.1Ω  |                                  | E = √(P x R)                      |                             |
| MOSX2            | 2.0W                |   |                      | 0.22Ω - 9.1Ω       | 0.1Ω - 9.1Ω  | E = √(P x R) | E x 2.5                          |                                   |                             |
| MOSX3            | 3.0W                | 700V                                    |                      | —                  | —            |              |                                  | —                                 |                             |
| MOSX5            | 5.0W                | 800V                                    |                      | —                  | —            | —            | E = √(P x R)                     | E x 2.5                           |                             |

\* Please consult when there is a demand of the resistance besides the 1% and 2% range.

### environmental applications

#### Derating Curve



#### Surface Temperature Rise



For resistors operated at an ambient temperature of 70°C or above, a power rating shall be derated in accordance with the above derating curve.

### Performance Characteristics

| Parameter                   | Requirement $\Delta R \pm(\% + 0.05\Omega)$                   |         | Test Method   |
|-----------------------------|---|---------|---|
|                             | Limit   | Typical |   |
| Resistance                  | Within specified tolerance                                    | —       | Measuring points are at 10mm ±1mm from the end cap.   |
| T.C.R.                      | Within specified T.C.R.                                       | —       | Room temperature +100°C   |
| Overload (Short time)       | ±(2% +0.1Ω)   | ±1%     | Rated voltage x 2.5 for 5 seconds   |
| Resistance to Solder Heat   | ±1%   | ±0.5%   | 260°C ±5°C, 10 seconds ± 1 second   |
| Terminal Strength           | No lead-coming off and loose terminals                        | —       | Twist 360°C, 5 times  |
| Rapid Change of Temperature | ±1%   | ±0.5%   | -55°C (30 minutes), +155°C (30 minutes), 5 cycles   |
| Moisture Resistance         | ±(5%+0.1Ω)  | ±2.5%   | 40°C ± 2°C, 90 - 95% RH, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle  |
| Endurance at 70°C           | ±(5%+0.1Ω)  | ±2.5%   | 70°C ± 2°C, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle   |
| Resistance to Solvent       | No abnormality in appearance. Marking shall be easily legible | —       | Ultrasonic washing with isopropyl alcohol for 2 minutes. Power: 0.3W/cm <sup>3</sup> , f: 28kHz, Temp: 35°C ±5°C  |
| Flame Retardant             | No evidence of flaming or self-flaming                        | —       | Flame test: the test flame shall be applied and removed for each 15 seconds respectively to repeat the cycle 5 times. Overload flame retardant: power (AC) corresponding to 2, 4, 8, 16 and 32 times the power rating shall be applied for each 1 minute until disconnection occurs. However the applied voltage shall not exceed the value of 4 times of the maximum operating voltage |