

Metal Oxide Film Resistor



RoHS
Compliant



Applicable Scope

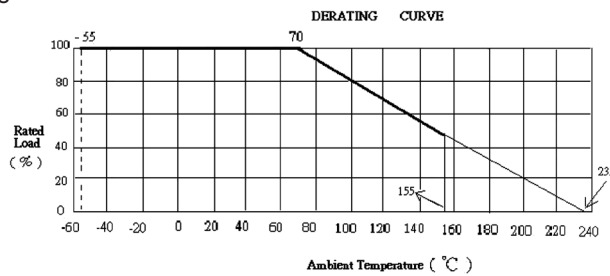
This standard specification is for use in consumer electronics, computers, telecommunications, control instruments etc.

Specifications

Type : Metal Oxide Film Resistors, Flameproof.
 Rated Wattage : 0.5W
 Nominal Resistance : 10kΩ (which be in accordance with JIS-C6409 article 6 (EIA RS-196A) series)
 Tolerance : ±5%

Rated Power

Rated power is the value of Max load voltage specified at the ambient temperature of 70°C, and shall meet the functions of electrical and mechanical performance. When the ambient temperature surpasses above mentioned temperature, the value declines as per following Derating Curve.



Rated Voltage:

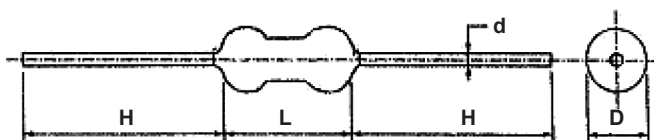
It is calculated through the following formula:

$$E = \sqrt{P \times R}$$

Where E: rated voltage (V)
 P: rated power (W)
 R: nominal resistance value (Ω)

However, in case the voltage calculated exceeds the maximum load voltage, such the maximum load voltage shall be regarded as its rated voltage, means whichever less.

Dimension and structure



Type	D ±1	L ±1	H ±3	d ±0.1	Resistance Range	Max Working Voltage	Max Overload Voltage
0.5W (1/2W)	3	9	28	0.65	0.22Ω ~ 33KΩ	300V	400V

www.element14.com
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 www.mcmelectronics.com



Metal Oxide Film Resistor

Structure

Ceramic Rod

It is made of Forsterite.

Terminal

Terminal is to be firmly connected with resistors element, both electrically and mechanically, and allow easy soldering.

Coating

Coating is done by light grey flameproof paint for this type of resistors, which is solid enough to be free from looseness, crack and easy breakage. It is also resistant to cleaning and industrial solvents, and the paint shall be limited within 2mm of lead wires from resistor body.

Marking

Marking is made on resistors surface, by four colour coding; 1st, 2nd, 3rd: nominal resistance, 4th: tolerance. or marked with type of resistor, rated wattage, nominal resistance, tolerance and maker's trade mark.

Operating Temperature Range : -55°C to +155°C

Mechanical Performance

Terminal Tensile

To fix the resistor body, a static load of 2.5kgs. (under 1/2W:1kg.) is to be gradually applied into the terminal for 10 seconds without causing any looseness and fall.

Twist withstand

To bend the lead wire at the point of about 6mm from resistor body to 90°, then catch the wire at 1.2 ±0.4mm apart from the bent point end and turn it (clockwise) by 360 degrees perpendicular to the resistor axis at speed of 5 seconds per turn, and do the same counterclockwise again which constitute a whole turn. Repeat the turn 2 times without causing any break and looseness.

Electrical Performance

Resistance Temperature Coefficient

It shall be within ±300ppm/°C.

$$T.C \text{ (ppm/°C)} = [(R2-R1) \div R1] \times [1 \div (T2-T1)] \times 10^6$$

Where R1: resistance value at reference temperature

R2: resistance value at test temp.

T1: reference temp. (use. 25°C)

T2: test temp. (about 75°C)

Short Time Over Load

When the resistors are applied 2.5 times as much as rated voltage for 5 seconds continuously, it shows no evidence of arc, flame etc. Removing the voltage and place the resistors to the normal condition for 30 minutes, the resistance value change rate between pre-and-post test shall be within ±1%.

Insulation Character

Resistors are located in a V-shaped metal trough. Using the DC 500V megger instrument 2 poles to clutch either side of lead wires and metal trough, measuring the Insulation Resistance which shall be over 1000MΩ.

Voltage Withstanding

Resistors are located in a V-shaped metal trough. Applying Max Working Voltage for one minute and should find no physical damage to the resistors, such as arc, char etc.



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Load Life

The resistors arrayed are sent into the 70°C oven, applying rated voltage at the cycle of 1.5 hours ON, 0.5 hour OFF for 1000 (+48/-0) hours in total. Then, after removing the voltage, take the resistors out of the oven and left under normal temp. for one hour cooling. The resistance value change rate between pre-and-post test shall be within ±5%.

Moisture-proof Load Life

The resistors arrayed are placed into a constant temp./humidity oven at the temp. of 40 ±2°C and the humidity of 90 ~ 95%, then rated power is applied for 1.5 hours and cut off for 0.5 hour. The similar cycle will be repeated for 500 (+24/-0) hours in total (including cut-off time). Then remove the voltage, taking the resistors out of the oven and leaving them at room temp. for one hour. The resistance value change rate between pre-and-post test shall be within ±5%. There also shall be no evidence of remarkable change on appearance, and the marking shall not be illegible.

Solder-ability

The leads with flux are dipped in a melted solder of 235 ±5°C for 2 seconds, more than 95% of the circumference of the lead wires shall be covered with solder.

Resistance to Soldering Heat

Two leads are together dipped in a melted solder of 270 ±5°C for 10 ±1 seconds, or 350 ±10°C for 3.5 ±0.5 seconds, Then remove the resistors and leaving them at room temp. for one hour. The resistance value change rate between pre-and-post test shall be within ±1%.

Nonflammability

The resistors are applied the power of 16 times the rated wattage for 5 min. and shall not get flame.

Part Number Table

Description	Part Number
Through Hole Resistor, 10Ω, 0.5W, ±5%	37-10K

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