

Metal Oxide Film Resistors Flameproof



RoHS
Compliant

Application

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

Specification

Part Number	Resistance Ω	Rated Power	Tolerance	Maximum Working Voltage	Element Type
37-1	1	1/2W	$\pm 5\%$	300V	Metal oxide resistor
37-100	100				
37-120	120				
37-150	150				
37-1K	1K				
37-220	220				
37-2.2K	2.2K				
37-330	330				
37-3.3K	3.3K	1/4W		250V	
37-47K	47K				
37-6.8K	6.8K				
66-10	10				
66-220	220				
66-2.7M	2.7M				
66-4.7	4.7				
66-470	470	1W		350V	
67-470	470				

Structure

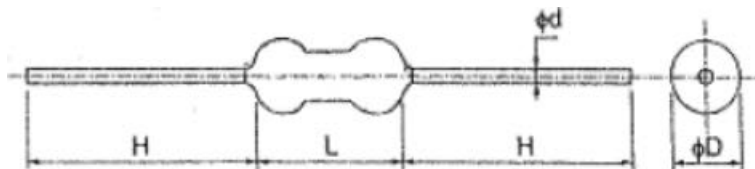
- Ceramic Rod : It is made of Forsterite imported.
- Terminal : Terminal is to be firmly connected with resistors element, both electrically and mechanically, and allow easy soldering.
- Coating : Coating is done by light gray flameproof paint for type and dark gray flameproof for (resistant to 800°C) 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 color coding; 1st, 2nd, 3rd: nominal resistance, 4th: tolerance. or marked with type of resistor, rated wattage, nominal resistance, tolerance and maker's trade mark (TY-OHM).
- Operating Temperature Range : -55°C to 155°C



Metal Oxide Film Resistors Flameproof



Dimension

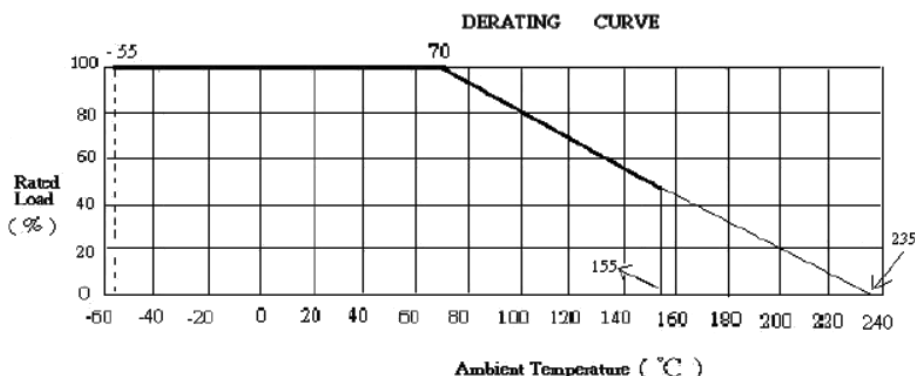


TYPE	D±1	L±1	H±3	d±0.1	Resistance Range	Max Overload Voltage
1/4W	2.6±0.5	6.8	28	0.6	0.22Ω ~33KΩ	400V
1/2W	3	9		0.65		
1W	4.5	11		0.8	0.22Ω ~50KΩ	600V

- Notes: 1. too low or too high ohmic values can be supplied only case by case.
2. 0.22Ω ~9.1Ω are using alloy film.

Rated Power

Rated power is the value of Max load power 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.



Dimensions : Millimetres

Rated Voltage

It is calculated through the following formula:

where E: rated voltage (V)
P: rated power (W)

$$E = \sqrt{PR}$$

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.



Metal Oxide Film Resistors Flameproof



Electrical Performance

Resistance Temperature Coefficient

It shall be within $\pm 300\text{ppm}/^\circ\text{C}$.

$$\text{T.C. (ppm}/^\circ\text{C}) = \frac{R_2 - R_1}{R_1} \times [1 + (T_2 - T_1)] \times 10^6$$

where

R1: resistance value at reference temperature

R2: resistance value at test temp.

T1: reference temp. (usu. 25°C)

T2: test temp. (about 75°C)

Temperature Cycle : Following temp. cycles are to be made 5 times and then put at room temp. for one hour, the resistance value change rate between pre-and-post test shall be within $\pm 1\%$.

Steps	Temperature($^\circ\text{C}$)	Time (minutes)
1 st step	-55 ± 3	30
2 nd step	Room temp.	3
3 rd step	155 ± 3	30
4 th step	Room temp.	3

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 $\pm 1\%$ (= $\pm 2\%$).

Insulation Character : Resistors are located in a V-shaped metal trough. Using the DC 100V or 500V megger instrument 2 poles to clutch either side of lead wires and metal trough, measuring the Insulation Resistance which shall be over $1000\text{M}\Omega$.

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.

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_{-0}^{+48} 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 $\pm 5\%$.

Moisture-proof Load Life : The resistors arrayed are placed into a constant temp./humidity oven at the temp. of $40 \pm 2^\circ\text{C}$ 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_{-0}^{+24} 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 $\pm 5\%$. 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 $235 \pm 5^\circ\text{C}$ 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 $270 \pm 5^\circ\text{C}$ for 10 ± 1 seconds, or $350 \pm 10^\circ\text{C}$ 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 $\pm 1\%$.

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

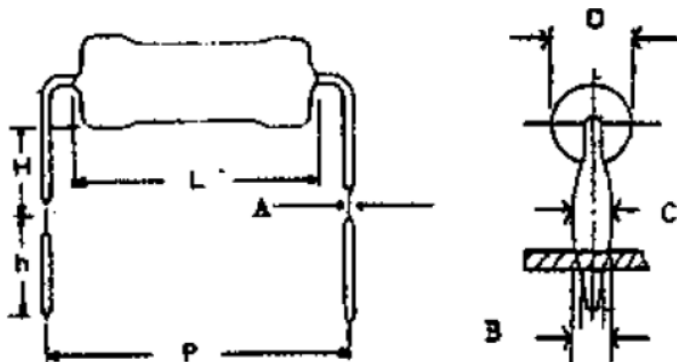


Metal Oxide Film Resistors Flameproof



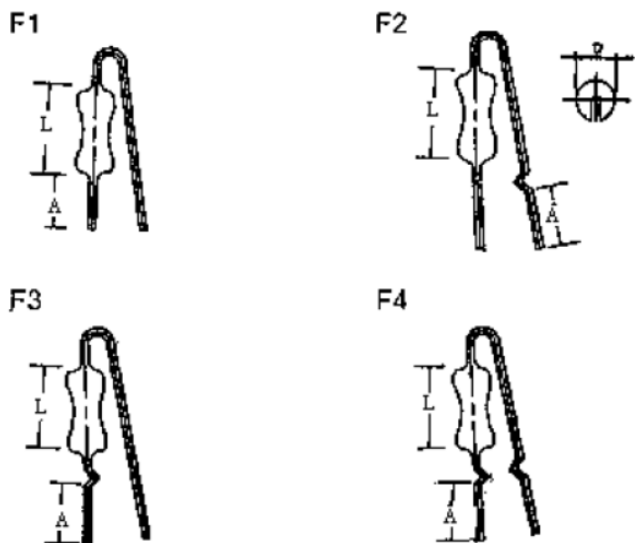
Forming

MG Form



Type	D±1	L±1	P	H	h±1	A±0.1	B±0.05	C±0.2
1/2W	3	9	12.5±1.5	7±1	4.5	0.23	0.8	1.2
1W	4.5	11	15±1.5			0.25	1	1.4

F Form]



Dimensions : Millimetres

Type	D±1	L±1	A+1/-0.5	Applicable
1W	4.5	11	3.5	F1~F4

Important Notice : This data sheet and its contents (the "Information") belong to the members of the AVNET group of companies (the "Group") or are licensed to it. No licence is granted for the use of it other than for information purposes in connection with the products to which it relates. No licence of any intellectual property rights is granted. The Information is subject to change without notice and replaces all data sheets previously supplied. The Information supplied is believed to be accurate but the Group assumes no responsibility for its accuracy or completeness, any error in or omission from it or for any use made of it. Users of this data sheet should check for themselves the Information and the suitability of the products for their purpose and not make any assumptions based on information included or omitted. Liability for loss or damage resulting from any reliance on the Information or use of it (including liability resulting from negligence or where the Group was aware of the possibility of such loss or damage arising) is excluded. This will not operate to limit or restrict the Group's liability for death or personal injury resulting from its negligence. MCM is the registered trademark of Premier Farnell Limited 2019.

Newark.com/exclusive-brands
Farnell.com/exclusive-brands
Element14.com/exclusive-brands

