

# Carbon Film Resistors Flameproof



RoHS  
Compliant



## Application

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

## Specification

Part Number	Resistance $\Omega$	Rated Power	Tolerance	Maximum Working Voltage	Element Type
34-100	100	1/4W	$\pm 5\%$	250V	Carbon Film
34-100K	100K				
34-150	150				
34-1K	1K				
34-1M	1M				
34-22	22				
34-470	470				
34-4.7K	4.7K				
34-560	560				
373-10	10	1/8W	$\pm 5\%$	250V	Carbon Film
373-3.3K	3.3K				
373-4.7K	4.7K				

## Structure

- Ceramic Rod : It is made of Forsterite imported from Japan.
- Carbon Film : Under high vacuum and high temperature to split and oxidize the pure carbon-hydric.
- Terminal : Terminal is to be firmly connected with resistors element, both electrically and mechanically, and allow easy soldering.
- Coating : Coating is done by EPOXY insulating paint which is solid enough to be free from looseness, crack and easy breakage. The paint shall be limited within 1mm of lead wires from resistors body while the rated wattage is 2W the paint is limited within 2mm. these type is coated by flameproof paint which is resistant to 800°C without causing looseness, crack and easy breakage.
- Operating Temperature Range : -55°C to 155°C

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



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## Dimension

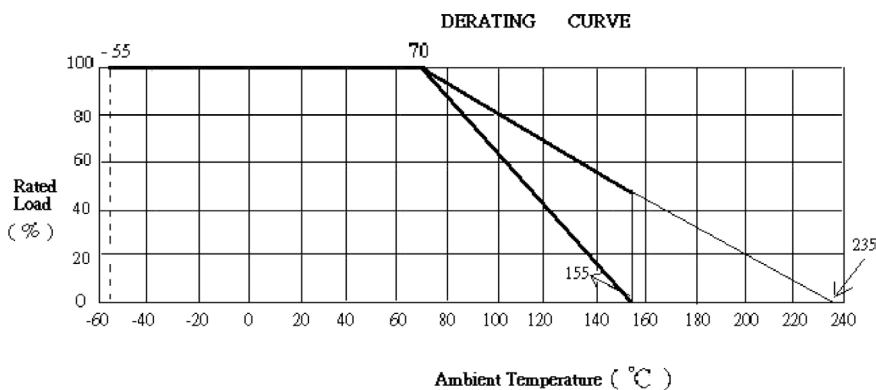


TYPE	D±1	L±1	H±3	d±0.1	Resistance Range
1/8W	1.7±0.2	3.7max	28	0.45	3.9Ω~4.7MΩ
1/4W	2.4±0.5	6.4		0.6	3.9Ω~10MΩ

- Notes:
1. too low or too high ohm value can be supplied only case by case.
  2. Max Overload Voltage is 2 times of Max Working voltage.
  3. Resistance value over 4.7MΩ (≥4.7MΩ), while 1/8W is ≥1MΩ, the tolerance shall be ±10%.
  4. 1/4W can also supply flameproof

## 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



Dimensions : Millimetres

## Rated Voltage

It is calculated through the following formula:

where E: rated voltage (V)

P: rated power (W)

$$E = \sqrt{PXR} \quad R: \text{nominal resistance value } (\Omega)$$

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.



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## Electrical Performance

Resistance Temperature Coefficient

TYPE \ T.C.	0 ~ -450	0 ~ -700	0 ~ -1000	0 ~ -1300
1/8W	≤47KΩ	51KΩ~100KΩ	110KΩ~330KΩ	360KΩ~1MΩ
1/4W	≤100KΩ	110KΩ~1MΩ	1.1MΩ~2.2MΩ	2.4MΩ~4.7MΩ

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

where  
 R1: resistance value at reference temperature  
 R2: resistance value at test temp.  
 T1: reference temp. (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 ±1%.

Steps	Temperature(°C)	Time (minutes)
1 <sup>st</sup> step	-55 ± 3	30
2 <sup>nd</sup> step	Room temp.	3
3 <sup>rd</sup> step	155 ± 3	30
4 <sup>th</sup> 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 ±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 10000MΩ.

Voltage Withstanding : Resistors are located in a V-shaped metal trough. Applying Max overload voltage for one minute applying 350V AC for one minute) and should find no physical damage to the resistors. The resistance value change shall be within ±0.5%.

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 to 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%.

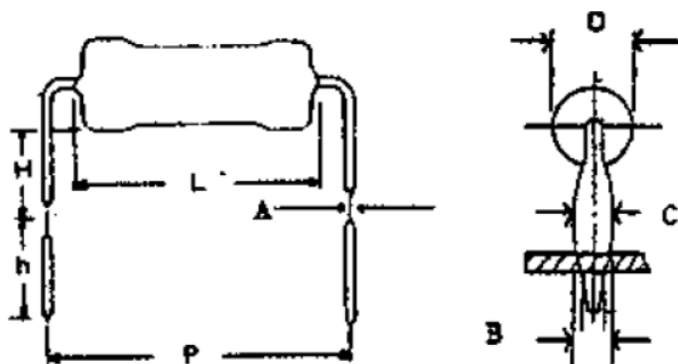


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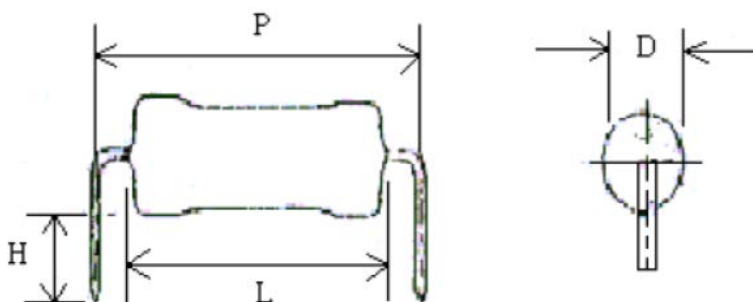
## Forming

### MG Form



Wattage	$L \pm 1$	$D \pm 1$	P	H	$h \pm 1$	$A \pm 0.02$	$B \pm 0.05$	$C \pm 0.2$
1/4W	6.4	$2.4 \pm 0.5$	$10 \pm 1$	$7 \pm 1$	4.5	0.2	0.8	1.2

### M Form



Wattage	$L \pm 1$	$D \pm 1$	P	$H \pm 0.5$
1/8W	3.7max	$1.7 \pm 0.2$	$5 \pm 0.5$	3.5
1/4W	6.4	$2.4 \pm 0.5$	$10 \pm 1$	

Dimensions : Millimetres

