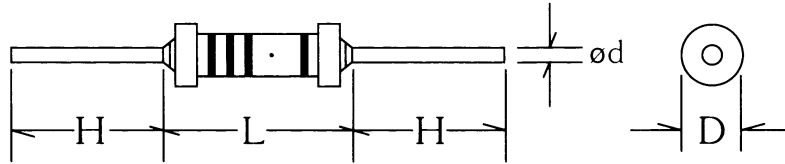


Carbon Film Fixed Resistors

Features

- High quality performance
- Great economy
- Flame retardant type available
- Automatically insertable
- Too low or too high ohmic value can be supplied on a case to case basis

Dimension



Normal Size

	Dimension (mm)				
	Rating	L Max.	D Max.	d $\begin{smallmatrix} +0.02 \\ -0.05 \end{smallmatrix}$	H ± 3
	0.125W	3.5	1.85	0.5	28
1/974	0.25W	6.8	2.50	0.6	28
	0.5W	10.0	3.50	0.6	28
	1W	16.0	5.50	0.8	28
	2W	17.5	6.50	0.8	28

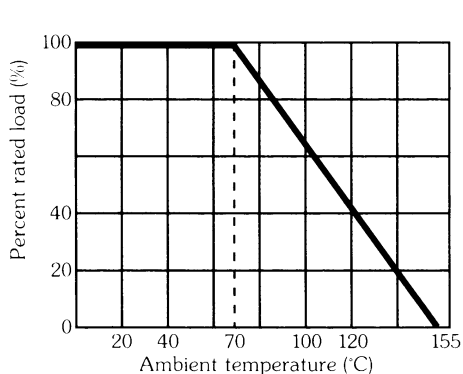
Small Size

	Dimension (mm)				
	Rating	L Max.	D Max.	d $\begin{smallmatrix} +0.02 \\ -0.05 \end{smallmatrix}$	H ± 3
	0.25W	3.5	1.85	0.5	28
1/1462	0.5W	9.0	3.00	0.6	28
	0.5W	6.8	2.50	0.6	28
	1W	12.0	5.00	0.7	28
1/5138	2W	16.0	5.50	0.8	28
	3W	17.5	6.50	0.8	28

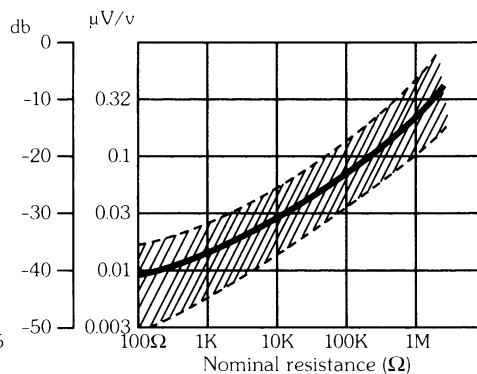
Rating

Rating Wattage	Max. Working V.	Max. Overload V.	Resistance Range
0.125W	200V	400V	1 Ω - 1Meg Ω
0.25W	250V	500V	1 Ω - 10Meg Ω
0.5W	350V	700V	1 Ω - 10Meg Ω
1W	500V	1,000V	1 Ω - 10Meg Ω
2W	500V	1,000V	1 Ω - 10Meg Ω
3W	500V	1,000V	1 Ω - 10Meg Ω

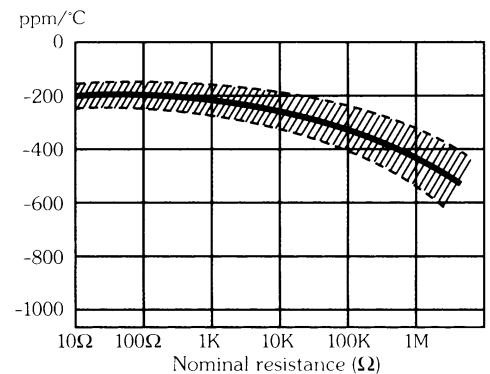
Derating Curve



Current Noise



Temp Coefficient



Performance Specifications

Characteristics	Limits		Test Methods															
Temperature coefficient JIS-C-5202 5.2	RANGE	T.C.R.	Natural resistance change per temp. degree centigrade. $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (ppm/}^\circ\text{C)}$ R ₁ : Resistance value at room temperature (t ₁) R ₂ : Resistance value at room temp. plus 100°C (t ₂) Test Pattern: Room temp., Room temp. + 100°C															
	≤ 10Ω	0 ~ ± 350PPM/°C																
	11Ω~91K	0 ~ ± 450PPM/°C																
	100K~1M	0 ~ ± 700PPM/°C																
	1.1M~10M	0 ~ ±1500PPM/°C																
Dielectric withstanding voltage JIS-C-5202 5.7	No evidence of flashover mechanical damage, arcing or insulation breakdown.		Resistors shall be clamped in the trough of a 90° metallic V-block and shall be tested at AC potential respectively specified in the above list for 60 + 10/-0 seconds.															
Temperature cycling JIS-C-5202 7.4	Resistance change rate is ± (1% + 0.05Ω) Max. with no evidence of mechanical damage.		Resistance change after continuous five cycles for duty cycle specified below.															
			<table><tr><td>Step</td><td>Temperature</td><td>Time</td></tr><tr><td>1</td><td>-55°C±3°C</td><td>30 minutes</td></tr><tr><td>2</td><td>Room temp.</td><td>10-15 minutes</td></tr><tr><td>3</td><td>+155°C±2°C</td><td>30 minutes</td></tr><tr><td>4</td><td>Room temp.</td><td>10-15 minutes</td></tr></table>	Step	Temperature	Time	1	-55°C±3°C	30 minutes	2	Room temp.	10-15 minutes	3	+155°C±2°C	30 minutes	4	Room temp.	10-15 minutes
			Step	Temperature	Time													
			1	-55°C±3°C	30 minutes													
2	Room temp.	10-15 minutes																
3	+155°C±2°C	30 minutes																
4	Room temp.	10-15 minutes																
Short-time overload JIS-C-5202 5.5	Resistance change rate is ± (1% + 0.05Ω) Max. with no evidence of mechanical damage.		Permanent resistance change after the application of a potential of 2.5 times RCWV for 5 seconds.															
Load life in humidity JIS-C-5202 5.9	Resistance value		Resistance change after 1,000 hours operating at RCWV with duty cycle of 1.5 hours "on", 0.5 hour "off" in a humidity test chamber controlled at 40°C ±2°C and 90 to 95% relative humidity.															
	Normal type	Δ R/R																
		Less than 100KΩ		±3%														
	Flame retardant type	100KΩ or more		±5%														
Less than 100KΩ		±5%																
		100KΩ or more	±10%															
Load life JIS-C-5202 7.10	Resistance value		Permanent resistance change after 1,000 hours operating at RCWV with duty cycle of 1.5 hours "on", 0.5 hour "off" at 70°C ±2°C ambient.															
	Normal type	Δ R/R																
		Less than 56KΩ		±2%														
	Flame retardant type	56KΩ or more		±3%														
Less than 100KΩ		±5%																
		100KΩ or more	±10%															
Insulation resistance JIS-C-5202 5.6	Insulation resistance is 10,000 MΩ Min.		Resistors shall be clamped in the trough a 90° metallic V-block and shall be tested at DC. potential respectively specified in the above list for 60 + 10/-0 seconds.															
Terminal strength JIS-C-5202 6.1	No evidence of mechanical damage.		Direct load: Resistance to a 2.5kg direct load for 10 seconds in the direction of the longitudinal axis of the terminal leads. Twist test: Terminal leads shall be bent through 90° at a point of about 6mm from the body of the resistor and shall be rotated through 360° about the original axis of the bent terminal in alternating direction for a total of 3 rotations.															
Resistance to soldering heat JIS-C-5202 6.4	Resistance change rate is ± (1% + 0.05Ω) Max. with no evidence of mechanical damage.		Pemanent resistance change when leads immersed to 3.2-4.8mm from the body in 350°C ±10°C solder for 3 ± 0.5 seconds.															
Solderability JIS-C-5202 6.5	95% coverage Min.		The area covered with a new, smooth, clean, shiny and continuous surface free from concentrated pinholes. Test temp. of solder: 235°C ± 5°C Dwell time in solder: 3 +0.5 / -0 seconds															