

FUSIBLE RESISTOR

Features

- Non-flame coating, raw materials used for fusible resistors are that of metal film resistors
- Ideal circuit opening controller, disconnecting units from overload rating specified
- Too low or too high ohmic value can be supplied on a case-to-case basis



Explanation of Part Number & Ordering Procedure:

B	F	W	4	J	0	2	2	1	A	0	0
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Resistor Type:
Coated Resistors

Power Rating:
W4 ~ 1/4W
W2 ~ 1/2W
1W ~ 1W
2W ~ 2W
3W ~ 3W

Resistance Value:

- **E-6, E-12, E-24 series**
 - Normally for these series, the box No. 6 is "0".
 - Boxes No. 7 & 8 are for the Ohmic Value.
 - Box No. 9 is for the multiplier or indication for no. of zeros.
- **E-96 series**
 - Boxes No. 6 to 8 are for the Ohmic Value.
 - Box No. 9 is for the multiplier or indication for no. of zeros.

Decimal point is expressed by:
"J"- 0.1, "K"- 0.01, "L"- 0.001
Ex. 2Ω26 ~ 226K, 226Ω ~ 2260

Series Code:
F ~ Fusible Resistor

Tolerance:
F = ±1%, G = ±2%,
J = ±5%, K = ±10%

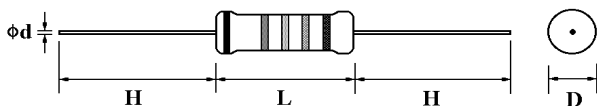
Packing Type:
A = Tape / Box
B = Bulk / Box
T = Tape / Reel

Suffix for Special Features:
F - F Type, M - M Type, T - T Type
0 - PT-52 mm, 1 - PT-26 mm, 8 - PT-58 mm, 9 - PT-64 mm

Assistance Code:
Usually is "0"
As: F(3) Type = 3

Note:
Special T.C.R. requirements can be supplied on a case-to-case basis. Please indicate when ordering.

Dimension (mm)



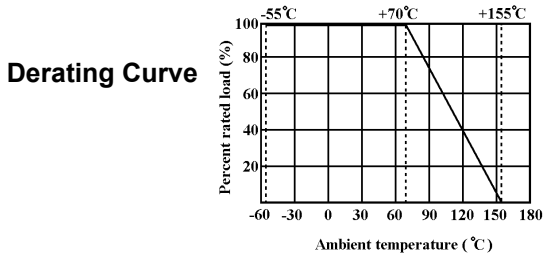
* Color code is the same as 1%

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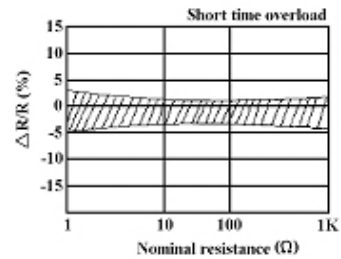
Part No.	Style	Power Rating at 70°C	D Max.	L Max.	H±3	d	+0.02 -0.05	Resistance Range	Dielectric Withstanding Voltage
BFW4	FRN-25	1/4W (0.25W)	2.5	6.8	28	0.6		0.22Ω ~ 10KΩ	300V
BFW2	FRN-50	1/2W (0.5W)	3.0	9.0	28	0.6		0.22Ω ~ 10KΩ	350V
BF1W	FRN-100	1W	4.0	10.0	28	0.8		0.3Ω ~ 10KΩ	350V
BF2W	FRN-200	2W	5.0	12.0	28	0.8		0.3Ω ~ 10KΩ	600V
BF3W	FRN-300	3W	5.5	16.0	28	0.8		0.3Ω ~ 10KΩ	600V

Fusing Characteristics

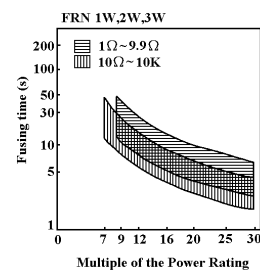
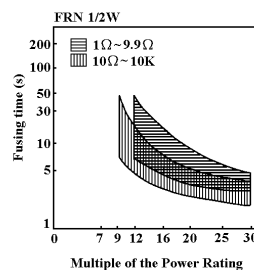
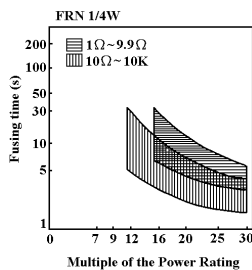
Resistance Range	Magnification of Power Rating	Fusing Time (Maximum time)
0.22Ω ~ 0.99Ω	32	60 Sec.
1Ω ~ 10KΩ	16	60 Sec.
	20	40 Sec.
	24	30 Sec.
	28	20 Sec.
	32	15 Sec.



Overload Curve



Fusing Characteristics Chart



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Performance Specifications:

Characteristics	Test Methods	Limits															
Temperature coefficient JIS – C – 5202 5.2	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)	± 350PPM / °C															
Short – time overload JIS – C – 5202 5.5	Permanent resistance change after the application of a potential of 2.5 times RCWV or the max. overload voltage respectively specified in the above list, whichever less for 5 seconds.	Resistance change rate is ± (2% + 0.05Ω) No evidence of mechanical damage															
Dielectric withstanding voltage JIS – C – 5202 5.7	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.	No evidence of flashover mechanical damage, arcing or insulation break down.															
Terminal strength JIS – C – 5202 6.1	Direct load: Resistance to a 2.5 kgs. 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.	No evidence of mechanical damage.															
Resistance to Soldering Heat JIS – C – 5202 6.4	Permanent resistance change when leads immersed to 3.2 mm to 4.8 mm from the body in 350°C ± 10°C solder for 3 ± 0.5 seconds	Resistance change rate is ± (1.0%+0.05 Ω) No evidence of mechanical damage.															
Solderability JIS – C – 5202 6.5	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	95% coverage Min.															
Temperature cycling JIS – C – 5202 7.4	Resistance change after continuous five cycles for duty cycle specified below: <table border="1" style="margin: 10px auto;"> <thead> <tr> <th>Step</th> <th>Temperature</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55°C±3°C</td> <td>30 mins.</td> </tr> <tr> <td>2</td> <td>Room temp.</td> <td>10 – 15 mins.</td> </tr> <tr> <td>3</td> <td>+155 °C±2 °C</td> <td>30 mins.</td> </tr> <tr> <td>4</td> <td>Room temp.</td> <td>10 – 15 mins.</td> </tr> </tbody> </table>	Step	Temperature	Time	1	-55°C±3°C	30 mins.	2	Room temp.	10 – 15 mins.	3	+155 °C±2 °C	30 mins.	4	Room temp.	10 – 15 mins.	Resistance change rate is ± (2.0%+0.05 Ω) No evidence of mechanical damage.
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* RCWV = Rated Continuous Working Voltage = $\sqrt{\text{Rated Power} \times \text{Resistance Value}}$

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Performance Specifications:

Characteristics	Test Methods	Limits
Load life in humidity JIS - C - 5202 7.9	Resistance change after 1,000 hours (1.5 hours "on", 0.5 hour "off") at RCWV in a humidity test chamber controlled at 40°C ± 2°C and 90 to 95% relative humidity.	Resistance change rate is ± (5% + 0.05Ω) No evidence of mechanical damage
Load life JIS - C - 5202 7.10	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.	Resistance change rate is ± (5% + 0.05Ω) No evidence of mechanical damage
Non-Flame JIS - C - 5202 7.12	The burner is placed remote from resistor ignited and adjusted to produce a blue flame 38mm in height and a top of flame 127mm above the top of burner tube. Resistor is supported from its lead at 45 degree from the horizontal so that the lower end of resistor is the top of blue flame. The test flame is placed to remain for 15 seconds and removed for 15 seconds. The operation is to be repeated until resistor has been subjected to 5 application of test flame.	Do not have any specimen, which burn with flaming combustion after each application of the test flame.

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