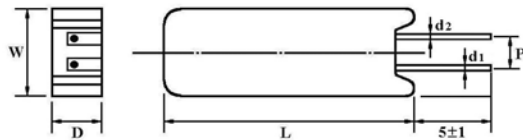


## CEMENT THERMAL FUSIBLE RESISTOR

### Features

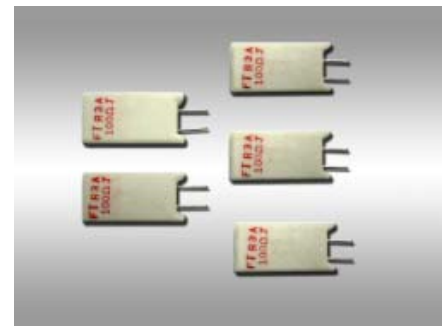
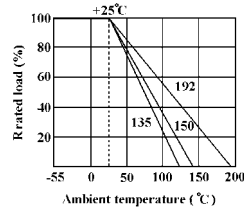
- Self extinguishing
- Excellent flame and moisture resistance
- Extremely small and mechanically safe
- Provides outstanding feature against surges
- Too low or too high ohmic values on Wire-wound & Power Film type can be supplied on a case to case basis

#### Dimension:



\* FTR 7W: Lead not centered

#### Derating Curve:



Type	Dimension (mm) ± 1					
	D ± 1	L ± 1	d <sub>1</sub>	d <sub>2</sub> + 0.02 - 0.05	P ± 1	W ± 1
FTR 3	8.5	25	0.6	0.8	5	12.5
FTR 5	9	25	0.6	0.8	5	12.5
FTR 7	9	38	0.6	0.8	5	12.5
FTR 10C	12	35	1	0.8	7.5	16

Part No.	Type	Rated Temp.	Cut-off Temp.	Power Rating	Current Rating	Voltage Rating	Resistance Range	Tolerance
PF3A15	FTR 3A	135 °C	130 °C ± 4 °C	1.5W	2A	250V	1Ω ~ 100Ω	5%, 10%
PF3B20	FTR 3B	150 °C	145 °C ± 4 °C	2.0W				
PF5A16	FTR 5A	135 °C	130 °C ± 4 °C	1.6W				
PF5B21	FTR 5B	150 °C	145 °C ± 4 °C	2.1W				
PF7A22	FTR 7A	135 °C	130 °C ± 4 °C	2.2W				
PF7B27	FTR 7B	150 °C	145 °C ± 4 °C	2.7W				
PFAC35	FTR 10C	192 °C	188 °C +3 / -1°C	3.5W	10A	250V	1Ω ~ 200Ω	
PF5D38	FTR 5D	229 °C	229°C +0 / -5°C	3.8W	10A	250V	1Ω ~ 200Ω	

## CEMENT THERMAL FUSIBLE RESISTOR

### 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 <sub>1</sub> : Resistance value at room temperature (t <sub>1</sub> ) R <sub>2</sub> : Resistance value at room temp. plus 100°C (t <sub>2</sub> )	≤± 350PPM / °C <20Ω ± 400 PPM / °C															
Short - time overload JIS - C - 5202 5.5	Permanent resistance change after the application of a potential of 2.5 times RCWV for 5 seconds.	Resistance change rate is ± (5% + 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 for 60 + 10 / -0 seconds.	No evidence of flashover mechanical damage, arcing or insulation break down.															
Terminal strength JIS - C - 5202 6.1	<b>Direct load:</b> Resistance to a 2.5 kgs. direct load for 10 seconds in the direction of the longitudinal axis of the terminal leads. <b>Twist test:</b> 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%+0.05Ω) 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="width: 100%; border-collapse: collapse;"> <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%+0.05 Ω) No evidence of mechanical damage.
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.															
Load life in humidity JIS - C - 5202 7.9	Resistance change after 1,000 hours operating at RCWV with duty cycle of (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.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Resistance Value</th> <th>ΔR/R</th> </tr> </thead> <tbody> <tr> <td>Wire-wound</td> <td>± 5%</td> </tr> <tr> <td>Power film: less than 100KΩ 100KΩ or more</td> <td>± 5% ± 10%</td> </tr> </tbody> </table>	Resistance Value	ΔR/R	Wire-wound	± 5%	Power film: less than 100KΩ 100KΩ or more	± 5% ± 10%									
Resistance Value	ΔR/R																
Wire-wound	± 5%																
Power film: less than 100KΩ 100KΩ or more	± 5% ± 10%																
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.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Resistance Value</th> <th>ΔR/R</th> </tr> </thead> <tbody> <tr> <td>Wire-wound</td> <td>± 5%</td> </tr> <tr> <td>Power film: less than 100KΩ 100KΩ or more</td> <td>± 5% ± 10%</td> </tr> </tbody> </table>	Resistance Value	ΔR/R	Wire-wound	± 5%	Power film: less than 100KΩ 100KΩ or more	± 5% ± 10%									
Resistance Value	ΔR/R																
Wire-wound	± 5%																
Power film: less than 100KΩ 100KΩ or more	± 5% ± 10%																

\* RCWV = Rated Continuous Working Voltage =  $\sqrt{\text{Rated Power} \times \text{Resistance Value}}$