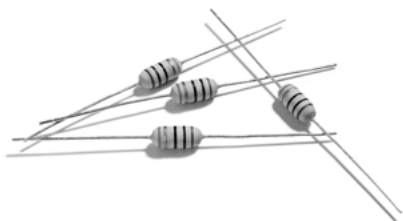


## Wirewound Resistors

# Fusible & Anti-Explosion Type

## Normal & Miniature Style [ FAE Series ]



### INTRODUCTION

FAE series is wirewound resistor capable of acting both as a regular resistor; and as a fuse when an abnormal current is received. There will be no flames, no explosion, no sound and no arc happened when fusing. FAE series offers space saving and a cost advantage, and is specifically designed to meet customer's requirements.

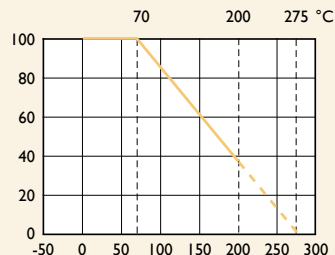
### FEATURES

|  |                                      |
|--|--------------------------------------|
| Power Rating                           | 1/2W, 1W, 2W, 3W                     |
| Resistance Tolerance                   | $\pm 1\%$ , $\pm 5\%$                |
| T.C.R.                                 | $\pm 300\text{ppm}/^{\circ}\text{C}$ |
| Flameproof Multi-layer Coating Meets   | UL-94V-0                             |
| Flameproof Feature Meets Overload Test | UL-1412                              |

### DERATING CURVE

For resistors operated in ambient temperatures above  $70^{\circ}\text{C}$ , power rating must be derated in accordance with the curve below.

Rated Load (%)



Ambient Temperature ( $^{\circ}\text{C}$ )

### FUSING CHARACTERISTICS

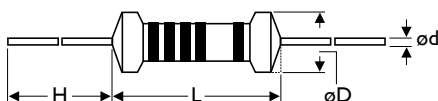
Fuse within 60 seconds when receiving 25 times the power rating.

(Fusing power and time can be designed on customer's request)

Fusing residual resistive value at least 100 times of rated resistance. No flames, no explosion, no sound and no arc occur when fusing.

### DIMENSIONS

Unit: mm



| STYLE  |               | DIMENSION      |               |              |                 |
|--------|---------------|----------------|---------------|--------------|-----------------|
| Normal | Miniature     | L              | øD            | H            | ød              |
| -      | FAE50S/FAE1SS | $6.3 \pm 0.5$  | $3.0 \pm 0.5$ | $28 \pm 2.0$ | $0.55 \pm 0.05$ |
| FAE-50 | FAE1WS        | $9.0 \pm 0.5$  | $3.8 \pm 0.5$ | $26 \pm 2.0$ | $0.55 \pm 0.05$ |
| FAE100 | FAE2WS        | $11.5 \pm 1.0$ | $5.0 \pm 0.5$ | $35 \pm 2.0$ | $0.8 \pm 0.05$  |
| FAE200 | FAE3WS        | $15.5 \pm 1.0$ | $5.5 \pm 0.5$ | $33 \pm 2.0$ | $0.8 \pm 0.05$  |

Note:

## ELECTRICAL CHARACTERISTICS

| STYLE                       | FAE50S                                 | FAE1SS | FAE-50 | FAE1WS | FAE100 | FAE2WS | FAE200 | FAE3WS |
|-----------------------------|--|--------|--------|--------|--------|--------|--------|--------|
| Power Rating at 70°C        | 1/2W                                   | 1W     | 1/2W   | 1W     |        | 2W     |        | 3W     |
| Maximum Working Voltage     | √PxR                                   |        |        |        |        |        |        |        |
| Voltage Proof on Insulation | 300V                                   |        | 400V   | 500V   |        |        |        |        |
| Resistance Range            | 3.3Ω - 100Ω for E24 & E96 series value |        |        |        |        |        |        |        |
| Operating Temp. Range       | -55°C to +200°C                        |        |        |        |        |        |        |        |
| Temperature Coefficient     | ±300ppm/°C                             |        |        |        |        |        |        |        |

Note: Special value is available on request

## ENVIRONMENTAL CHARACTERISTICS

| PERFORMANCE TEST              | TEST METHOD      |  | APPRAISE                                  |
|-------------------------------|------------------|--|---|
| Short Time Overload           | IEC 60115-1 4.13 | 10 times rated power for 5 Sec.                                  | ±2.0%+0.05Ω                               |
| Voltage Proof on Insulation   | IEC 60115-1 4.7  | in V-block for 60 Sec., test voltage by type                     | By type                                   |
| Temperature Coefficient       | IEC 60115-1 4.8  | -55°C to +155°C  | By type                                   |
| Insulation Resistance         | IEC 60115-1 4.6  | in V-block for 60 Sec.   | > 100M                                    |
| Solderability                 | IEC 60115-1 4.17 | 235±5°C for 3±0.5 Sec.   | 95% Min. coverage                         |
| Solvent Resistance of Marking | IEC 60115-1 4.30 | IPA for 5±0.5 Min. with ultrasonic                               | No deterioration of coatings and markings |
| Robustness of Terminations    | IEC 60115-1 4.16 | Direct load for 10 Sec. in the direction of the terminal leads   | ≥2.5kg (24.5N)                            |
| Periodic-pulse Overload       | IEC 60115-1 4.39 | 4 times RCWV 10,000 cycles (1 Sec. on, 25 Sec. off)              | ±1.0%+0.05Ω                               |
| Damp Heat Steady State        | IEC 60115-1 4.24 | 40±2°C, 90-95% RH for 56 days, loaded with 0.1 times RCWV        | ±5.0%+0.05Ω                               |
| Endurance at 70°C             | IEC 60115-1 4.25 | 70±2°C at RCWV for 1,000 Hr. (1.5 Hr. on, 0.5 Hr. off)           | ±5.0%+0.05Ω                               |
| Temperature Cycling           | IEC 60115-1 4.19 | -55°C ⇄ Room Temp. ⇄ +155°C ⇄ Room Temp. (5 cycles)              | ±2.0%+0.05Ω                               |
| Resistance to Soldering Heat  | IEC 60115-1 4.18 | 260±3°C for 10±1 Sec., immersed to a point 3±0.5mm from the body | ±1.0%+0.05Ω                               |
| Accidental overload test      | IEC 60115-1 4.26 | 4 times RCWV for 1 Min.  | No evidence of flaming or arcing          |

Note: RCWV(Rated Continuous Working Voltage) =  $\sqrt{\text{Power Rating} \times \text{Resistance Value}}$  or Max. working voltage listed above, whichever less.

Revision: 201304



## EXPLANATIONS OF ORDERING CODE

| MFR   | -12  | F  | T   | F   | 52-   | 100R   |
|---|--|--|---|---|---|--|
| Code 1 - 3<br><b>Series Name</b><br>See Index | Code 4 - 6<br><b>Power Rating</b><br>-05 = $\varnothing$ d0.5mm<br>-06 = $\varnothing$ d0.6mm<br>-07 = $\varnothing$ d0.7mm<br>-08 = $\varnothing$ d0.8mm<br>-10 = $\varnothing$ d1.0mm<br>-14 = $\varnothing$ d1.4mm<br>-12 = 1/6W<br>-25 = 1/4W<br>25S = 1/4WS<br>-50 = 1/2W<br>50S = 1/2WS<br>100 = 1W<br>1WS = 1WS<br>200 = 2W<br>2WS = 2WS<br>204 = 0.4W<br>207 = 0.6W<br>300 = 3W<br>3WS = 3WS<br>3WM = 3WM<br>400 = 4W<br>500 = 5W<br>5WS = 5WS<br>5SS = 5WSS<br>700 = 7W<br>7WS = 7WS<br>10A = 10W<br>20A = 20W<br>30A = 30W<br>40A = 40W<br>50A = 50W<br>10S = 10WS<br>15A = 15W<br>25A = 25W<br>10B = 100W<br>25B = 250W | Code 7<br><b>Tolerance</b><br>P = $\pm 0.02\%$<br>A = $\pm 0.05\%$<br>B = $\pm 0.1\%$<br>C = $\pm 0.25\%$<br>D = $\pm 0.5\%$<br>F = $\pm 1\%$<br>G = $\pm 2\%$<br>J = $\pm 5\%$<br>K = $\pm 10\%$<br>- = Base on Spec. | Code 8<br><b>Packing Style</b><br>T = Tape/Box<br>R = Tape/Reel<br>B = Bulk | Code 9<br><b>Temperature Coef-<br/>ficient of Resistance</b><br>- = Base on Spec.<br>A = $\pm 5$ ppm/ $^{\circ}$ C<br>B = $\pm 10$ ppm/ $^{\circ}$ C<br>C = $\pm 15$ ppm/ $^{\circ}$ C<br>S = $\pm 20$ ppm/ $^{\circ}$ C<br>D = $\pm 25$ ppm/ $^{\circ}$ C<br>E = $\pm 50$ ppm/ $^{\circ}$ C<br>F = $\pm 100$ ppm/ $^{\circ}$ C<br>G = $\pm 200$ ppm/ $^{\circ}$ C<br>H = $\pm 250$ ppm/ $^{\circ}$ C<br>I = $\pm 300$ ppm/ $^{\circ}$ C<br>J = $\pm 350$ ppm/ $^{\circ}$ C | Code 10 - 12<br><b>Forming Type</b><br>26- = 26mm<br>52- = 52.4mm<br>73- = 73mm<br>81- = 81mm<br>91- = 91mm<br>F = F Type<br>FK = FK Type<br>FKK = FKK Type<br>FFK = F-form Kink<br>M = M-Type Forming<br>MB = M-form W/flat<br>MT = MT Type Forming<br>MR = MR Type<br>AV = AVIsert<br>PN = PANAsert | Code 13 - 17<br><b>Resistance Value</b><br>0R1 = 0.1<br>100R = 100<br>10K = 10,000<br>10M = 10,000,000 |

### EXCEPTION:

#### • Cement series:

<Code 8>: Special packing style code

B: Bulk with wirewound or metal oxide sub-assembly for resistance value

W: Bulk with ceramic based wirewound sub-assembly for resistance value

M: Bulk with metal oxide sub-assembly for resistance value

F: Bulk with Fiberglass based wirewound sub-assembly for resistance value

<Code 10-12>: Without forming code

Example: **SQP500JB-10R**

#### • JPW series:

<Code 13-17>: without resistance value code

Example: **JPW-06-T-52-**