

# Aluminum Housed Resistors

# Power Wirewound Type

## Lug / Threaded Style [ AHA Series ]

## Straight Leadwire Style [ AHP Series ]

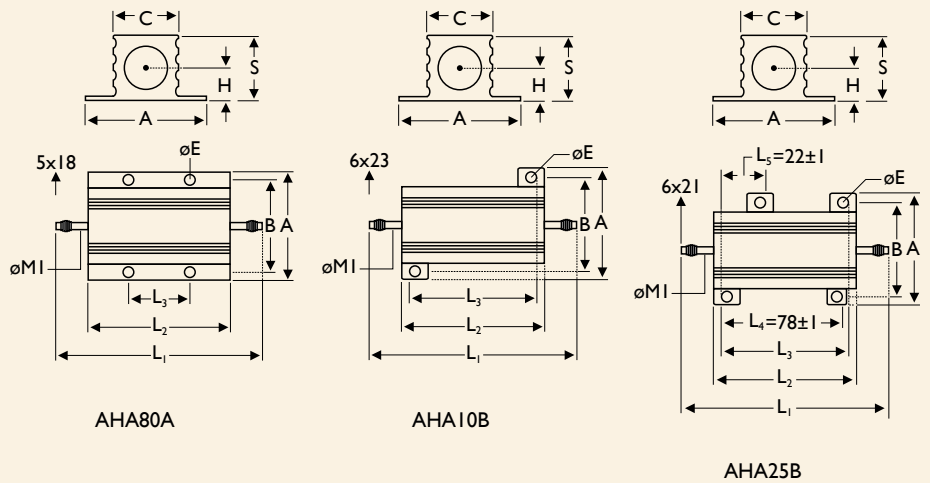


### FEATURES

|                      |                                    |
|----------------------|------------------------------------|
| Power Rating         | 5W, 10W, 25W, 50W, 80W, 100W, 250W |
| Resistance Tolerance | ±0.25%, ±0.5%, ±1%, ±5%, ±10%      |
| T.C.R.               | ±50ppm/°C, ±100ppm/°C, ±200ppm/°C  |

### DIMENSIONS

Unit: mm



| STYLE         | DIMENSION |          |          |           |          |          |          |          |         |          |          |          |          |          |
|---------------|-----------|----------|----------|-----------|----------|----------|----------|----------|---------|----------|----------|----------|----------|----------|
|               | Normal    | L11      | L12      | L2        | L3       | A        | B        | C        | ØE      | S        | H        | P        | M1       | M2       |
| AHA500/AHP500 |           | 28.6±1.5 | 71.2±1.5 | 15.2±0.5  | 11.5±0.5 | 16.4±0.5 | 12.5±0.5 | 8.5±0.5  | 2.4±0.3 | 8.1±1.0  | 3.8±1.0  | 6.7±1.0  | 1.5±0.05 | 0.8±0.05 |
| AHA10A/AHP10A |           | 34.9±1.5 | 75.0±1.5 | 19.0±0.5  | 14.2±0.5 | 20.3±0.5 | 15.9±0.5 | 10.7±0.5 | 2.4±0.3 | 9.9±1.0  | 4.2±1.0  | 7.95±1.0 | 2.0±0.05 | 0.8±0.05 |
| AHA25A/AHP25A |           | 49.2±1.5 | 80.0±1.5 | 27.0±0.5  | 18.2±0.5 | 27.4±0.5 | 19.8±0.5 | 14.0±0.5 | 3.2±0.3 | 13.9±1.0 | 5.9±1.0  | 11.1±1.0 | 2.0±0.05 | 0.8±0.05 |
| AHA50A/AHP50A |           | 70.6±1.5 | 106±1.5  | 50.0±0.5  | 40.0±0.5 | 29.0±0.5 | 21.4±0.5 | 16.0±0.5 | 3.2±0.3 | 15.5±1.0 | 6.6±1.0  | 10.3±1.0 | 2.0±0.05 | 0.8±0.05 |
| AHA80A        |           | 102±2.0  | -        | 66.0±1.0  | 35.0±0.5 | 47.0±0.5 | 37.0±0.5 | 28.0±0.5 | 4.5±0.3 | 25.0±1.0 | 12.0±1.0 | -        | 2.0±0.05 | -        |
| AHA10B        |           | 139±2.0  | -        | 89.0±1.0  | 70.0±0.5 | 71.2±0.5 | 57.2±0.5 | 46.0±0.8 | 4.8±0.3 | 44.6±1.0 | 19.6±1.0 | -        | 5.0±0.05 | -        |
| AHA25B        |           | 177±2.0  | -        | 144.4±1.0 | 76.2±0.5 | 76.0±0.5 | 64.0±0.5 | 54.0±0.8 | 4.8±0.3 | 55.6±1.0 | 24.4±1.0 | -        | 6.0±0.05 | -        |

## TEMPERATURE RISE



## ELECTRICAL CHARACTERISTICS

| STYLE                                 | AHA500<br>AHP500                  | AHA10A<br>AHP10A | AHA25A<br>AHP25A | AHA50A<br>AHP50A | AHA80A      | AHA10B      | AHA25B |
|---------------------------------------|-----------------------------------|------------------|------------------|------------------|-------------|-------------|--------|
| Power Rating on std. heatsink at 25°C | 5W                                | 10W              | 25W              | 50W              | 80W         | 100W        | 250W   |
| Voltage Proof on Insulation           | 1,000V                            |                  |                  | 2,000V           |             | 4,500V      |        |
| Resistance Range                      | 0.1Ω - 1KΩ                        | 0.1Ω - 1.5KΩ     | 0.1Ω - 10KΩ      | 0.1Ω - 33KΩ      | 0.1Ω - 39KΩ | 0.1Ω - 51KΩ |        |
| Operating Temp. Range                 | -55°C to +250°C                   |                  |                  |                  |             |             |        |
| Temperature Coefficient               | ±50ppm/°C, ±100ppm/°C, ±200ppm/°C |                  |                  |                  |             |             |        |

Note: Special value is available on request.

## ENVIRONMENTAL CHARACTERISTICS

| PERFORMANCE TEST              | TEST METHOD      |  | APPRAISE                                  |
|-------------------------------|------------------|--|---|
| Short Time Overload           | IEC 60115-1 4.13 | 5 times of rated power for 5 sec.  | ±1.0%+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 +250°C  | By type                                   |
| Insulation Resistance         | IEC 60115-1 4.6  | in V-block for 60 Sec.   | >100MΩ                                    |
| 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 | Pull test (30 Sec. Min): 5W: 1kg, 10W: 2.3kg, 25 - 50W: 4.5kg<br>Torque test (5 - 15 Sec): 80W: 2N, 100W: 2.7N, 250W: 3.7N | ±0.2%+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)  | ±1.0%+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                               |

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



## EXPLANATIONS OF ORDERING CODE

| <b>MFR</b>                                    | <b>-12</b>   | <b>F</b>   | <b>T</b>  | <b>F</b>  | <b>52-</b>  | <b>100R</b>  |
|---|--|--|---|---|---|--|
| 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 Coefficient 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-**