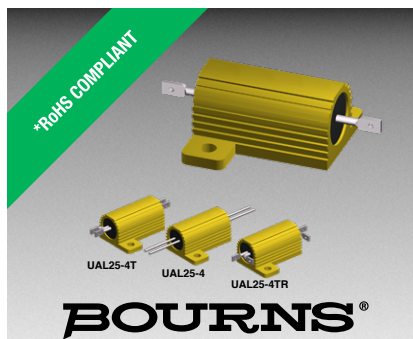




## Features

- Formerly a Riedon™ product
- Resistance range from 0.01 to 250K  $\Omega$
- Resistance tolerances as low as  $\pm 0.01\%$
- Power rating: 5 to 50 watts
- Excellent pulse handling
- Low TCR:  $\pm 20$  PPM/ $^{\circ}\text{C}$  standard

- Various terminal options available
- All-welded construction
- Operating temperature range:  $-55^{\circ}\text{C}$  to  $+275^{\circ}\text{C}$
- Designed to MIL-R-39009 / MIL-R-18546 power ratings
- RoHS compliant\*

## UAL Series – Riedon™ Aluminum Housed Power Wirewound Resistors by Bourns

### Electrical Characteristics

| Bourns Model Number | MIL-R-39009 MIL-R-18546 Style | Power Rating @ 25 $^{\circ}\text{C}$ (W) |                 |          | Resistance Range ( $\Omega$ ) <sup>1 2</sup> |
|---------------------|-------------------------------|------------------------------------------|-----------------|----------|----------------------------------------------|
|                     |                               | Commercial                               | MIL             | Free Air |                                              |
| UAL5                | RER-60 / RE-60                | 7.5 <sup>a</sup>                         | 5 <sup>a</sup>  | 4.5      | 0.01 to 22 K                                 |
| UAL10               | RER-65 / RE-65                | 10 <sup>a</sup>                          | 10 <sup>a</sup> | 7.5      | 0.01 to 47 K                                 |
| UAL25               | RER-70 / RE-70                | 25 <sup>b</sup>                          | 20 <sup>b</sup> | 12       | 0.01 to 90 K                                 |
| UAL50               | RER-75 / RE-75                | 50 <sup>c</sup>                          | 30 <sup>c</sup> | 20       | 0.01 to 250 K                                |

<sup>1</sup> For non-inductive windings, divide maximum resistance by 2

<sup>2</sup> E-24 / E-96, [contact Bourns](#) for availability of other values

<sup>a</sup> Heat Sink Required: 1.0 mm (0.040 in.) Alum. Plate, 832 cm<sup>2</sup> (129 in.<sup>2</sup>) or equiv.

<sup>b</sup> Heat Sink Required: 1.0 mm (0.040 in.) Alum. Plate, 1077 cm<sup>2</sup> (167 in.<sup>2</sup>) or equiv.

<sup>c</sup> Heat Sink Required: 1.5 mm (0.059 in.) Alum. Plate, 1877 cm<sup>2</sup> (291 in.<sup>2</sup>) or equiv.

### Specifications

| Specification           | Value                                                                                                                                                                                         |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tolerances              | $\pm 0.01\%$ to $\pm 10\%$ (1 % Standard)                                                                                                                                                     |
| Temperature Coefficient | >10 $\Omega$ : $\pm 20$ PPM/ $^{\circ}\text{C}$<br>1 $\Omega$ to 10 $\Omega$ : $\pm 50$ PPM/ $^{\circ}\text{C}$<br><1 $\Omega$ : Other TCR values available. <a href="#">Contact Bourns</a> . |
| Temperature Range       | $-55^{\circ}\text{C}$ to $+275^{\circ}\text{C}$                                                                                                                                               |
| Dielectric Strength     | UAL5,10: 1500 VAC; UAL25: 2500 VAC;<br>UAL50: 3500 VAC                                                                                                                                        |
| Construction            | Centerless ground ceramic core<br>Matte tin over copper<br>High-temperature epoxy molding compound,<br>Flame resistant per UL 94V-0<br>Anodized aluminum housing<br>All welded terminations   |

### Environmental Performance

| Specification (MIL-STD 202) | $\Delta R$                                                        |
|-----------------------------|-------------------------------------------------------------------|
| Dielectric                  | $\pm 0.2\% + 0.05\%$                                              |
| Load Life                   | $\pm 1\% + 0.05\%$                                                |
| Storage                     | $\pm 0.2\% + 0.05\%$                                              |
| Moisture Resistance         | $\pm 0.2\% + 0.05\%$                                              |
| Thermal Shock               | $\pm 0.2\% + 0.05\%$                                              |
| 5X Overload (5 s)           | $\pm 0.2\% + 0.05\%$                                              |
| Shock                       | $\pm 0.1\% + 0.05\%$                                              |
| Vibration                   | $\pm 0.1\% + 0.05\%$                                              |
| Optional Lead Configuration | Wire, Flexible, Teflon, Quick Disconnect,<br>Flying Leads, Formed |

### Additional Information

Click these links for more information:



### How To Order

UAL 25 - 10R F 1 -

Model \_\_\_\_\_  
 UAL (standard)  
 UALN (non-inductive)

Power Code \_\_\_\_\_  
 (See Electrical Characteristics table)

Resistance Code \_\_\_\_\_  
 For values  $\leq 10\text{K } \Omega$ ,  
 "R" represents decimal point  
 (Example: 10R = 10  $\Omega$ )  
 For values  $> 10\text{K } \Omega$ ,  
 "K" represents decimal point  
 (Example 1K5 = 1.5K  $\Omega$ )

Tolerance \_\_\_\_\_  
 X\*\* =  $\pm 0.01\%$       D =  $\pm 0.5\%$   
 W\*\* =  $\pm 0.02\%$       F =  $\pm 1\%$   
 V\*\* =  $\pm 0.025\%$       G =  $\pm 2\%$   
 U\*\* =  $\pm 0.05\%$       H =  $\pm 3\%$   
 B =  $\pm 0.1\%$       J =  $\pm 5\%$   
 T =  $\pm 0.2\%$       K =  $\pm 10\%$   
 C =  $\pm 0.25\%$

Internal Use \_\_\_\_\_

Terminal \_\_\_\_\_  
 (Blank) - 2 terminal solder lug  
 4T = 4 terminal solder lug  
 4TR = 4 terminal solder lug  
 (2 terminal at right angle)  
 4 = 4 terminal axial lead

(Specific TCR value available upon request.)

\*\*[Contact Bourns](#) for tolerances  $\leq \pm 0.01\%$ .



**WARNING**  
**Cancer and Reproductive Harm**  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

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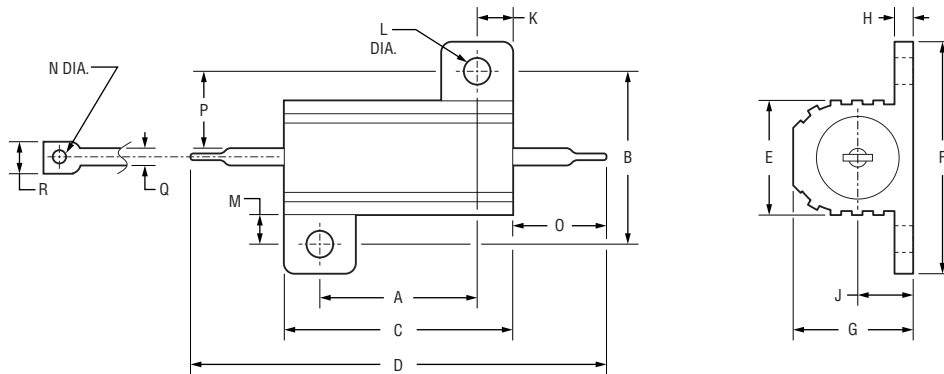
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"Riedon Logo" is a registered trademark of BE Services Company, Inc., in the United States.

"Riedon" is a trademark of BE Services Company, Inc.

# UAL Series – Riedon™ Aluminum Housed Power Wirewound Resistors by Bourns **BOURNS®**

## Product Dimensions



| Bourns Model Number | A                                        | B                                       | C                                       | D                                        | E                                      | F                                       | G                                      | H                                      | J                                      |
|---------------------|------------------------------------------|-----------------------------------------|-----------------------------------------|------------------------------------------|----------------------------------------|-----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|
| UAL5                | $\frac{11.3 \pm 0.13}{(.444 \pm .005)}$  | $\frac{12.4 \pm 0.13}{(.490 \pm .005)}$ | $\frac{15.2 \pm 0.8}{(.600 \pm .031)}$  | $\frac{28.5 \pm 3.10}{(1.125 \pm .120)}$ | $\frac{8.5 \pm 0.4}{(.334 \pm .015)}$  | $\frac{16.4 \pm 0.4}{(.646 \pm .015)}$  | $\frac{8.1 \pm 0.4}{(.320 \pm .015)}$  | $\frac{1.7 \pm 0.25}{(.065 \pm .010)}$ | $\frac{3.6 \pm 0.25}{(.140 \pm .010)}$ |
| UAL10               | $\frac{14.3 \pm 0.13}{(.562 \pm .005)}$  | $\frac{15.9 \pm 0.13}{(.625 \pm .005)}$ | $\frac{19.1 \pm 0.8}{(.750 \pm .031)}$  | $\frac{33.5 \pm 3.10}{(1.320 \pm .120)}$ | $\frac{10.9 \pm 0.4}{(.430 \pm .015)}$ | $\frac{20.3 \pm 0.4}{(.800 \pm .015)}$  | $\frac{10.2 \pm 0.4}{(.400 \pm .015)}$ | $\frac{1.9 \pm 0.25}{(.075 \pm .010)}$ | $\frac{4.8 \pm 0.25}{(.190 \pm .010)}$ |
| UAL25               | $\frac{18.3 \pm 0.13}{(.719 \pm .005)}$  | $\frac{19.8 \pm 0.13}{(.781 \pm .005)}$ | $\frac{27.0 \pm 0.8}{(1.062 \pm .031)}$ | $\frac{47.5 \pm 3.10}{(1.870 \pm .120)}$ | $\frac{13.5 \pm 0.4}{(.530 \pm .015)}$ | $\frac{27.4 \pm 0.4}{(1.080 \pm .015)}$ | $\frac{14.2 \pm 0.4}{(.560 \pm .015)}$ | $\frac{2.2 \pm 0.25}{(.085 \pm .010)}$ | $\frac{6.6 \pm 0.25}{(.260 \pm .010)}$ |
| UAL50               | $\frac{39.7 \pm 0.13}{(1.563 \pm .005)}$ | $\frac{21.4 \pm 0.13}{(.844 \pm .005)}$ | $\frac{50.0 \pm 0.8}{(1.968 \pm .031)}$ | $\frac{70.0 \pm 3.10}{(2.720 \pm .120)}$ | $\frac{15.6 \pm 0.4}{(.615 \pm .015)}$ | $\frac{29.0 \pm 0.4}{(1.140 \pm .015)}$ | $\frac{15.6 \pm 0.4}{(.615 \pm .015)}$ | $\frac{2.2 \pm 0.25}{(.085 \pm .010)}$ | $\frac{7.6 \pm 0.25}{(.300 \pm .010)}$ |

| Bourns Model Number | K                                      | L                                      | M                                     | N                                      | O                                       | P                                      | Q                                       | R                                     |
|---------------------|----------------------------------------|----------------------------------------|---------------------------------------|----------------------------------------|-----------------------------------------|----------------------------------------|-----------------------------------------|---------------------------------------|
| UAL5                | $\frac{2.0 \pm 0.25}{(.078 \pm .010)}$ | $\frac{2.4 \pm 0.13}{(.093 \pm .005)}$ | $\frac{2.0 \pm 0.4}{(.078 \pm .015)}$ | $\frac{1.3 \pm 0.15}{(.050 \pm .006)}$ | $\frac{6.8 \pm 3.10}{(.266 \pm .120)}$  | $\frac{6.2 \pm 0.8}{(.245 \pm .031)}$  | $\frac{1.30 \pm 0.05}{(.051 \pm .002)}$ | $\frac{2.2 \pm 0.8}{(.085 \pm .031)}$ |
| UAL10               | $\frac{2.4 \pm 0.25}{(.093 \pm .010)}$ | $\frac{2.4 \pm 0.13}{(.093 \pm .005)}$ | $\frac{2.6 \pm 0.4}{(.102 \pm .015)}$ | $\frac{2.0 \pm 0.15}{(.080 \pm .006)}$ | $\frac{7.9 \pm 3.10}{(.312 \pm .120)}$  | $\frac{7.9 \pm 0.8}{(.312 \pm .031)}$  | $\frac{2.49 \pm 0.05}{(.098 \pm .002)}$ | $\frac{4.0 \pm 0.8}{(.160 \pm .031)}$ |
| UAL25               | $\frac{4.4 \pm 0.25}{(.172 \pm .010)}$ | $\frac{3.2 \pm 0.13}{(.125 \pm .005)}$ | $\frac{3.2 \pm 0.4}{(.125 \pm .015)}$ | $\frac{2.0 \pm 0.15}{(.080 \pm .006)}$ | $\frac{11.1 \pm 3.10}{(.438 \pm .120)}$ | $\frac{9.9 \pm 0.8}{(.391 \pm .031)}$  | $\frac{2.49 \pm 0.05}{(.098 \pm .002)}$ | $\frac{4.7 \pm 0.8}{(.185 \pm .031)}$ |
| UAL50               | $\frac{5.0 \pm 0.25}{(.196 \pm .010)}$ | $\frac{3.2 \pm 0.13}{(.125 \pm .005)}$ | $\frac{3.2 \pm 0.4}{(.125 \pm .015)}$ | $\frac{2.0 \pm 0.15}{(.080 \pm .006)}$ | $\frac{11.1 \pm 3.10}{(.438 \pm .120)}$ | $\frac{10.7 \pm 0.8}{(.422 \pm .031)}$ | $\frac{2.49 \pm 0.05}{(.098 \pm .002)}$ | $\frac{4.7 \pm 0.8}{(.185 \pm .031)}$ |

DIMENSIONS:  $\frac{\text{MM}}{(\text{INCHES})}$

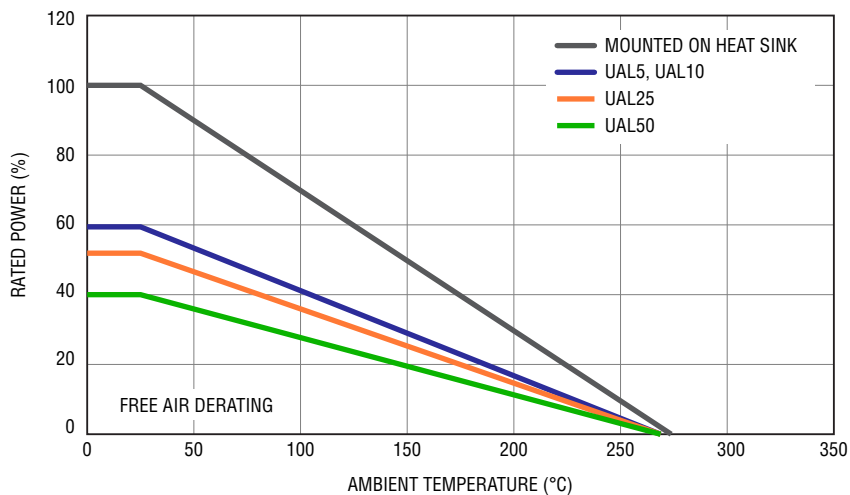
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## UAL Series – Riedon™ Aluminum Housed Power Wirewound Resistors by Bourns **BOURNS®**

### Power Derating Curves



### Packaging Specifications<sup>1</sup>

UAL5 / UAL10 / UAL25  
Bulk ..... 250 pcs. max.

UAL50  
Bulk ..... 100 pcs. max.

Note:

<sup>1</sup> All UAL models are max. 40 lbs. / shipping box

**BOURNS®**

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