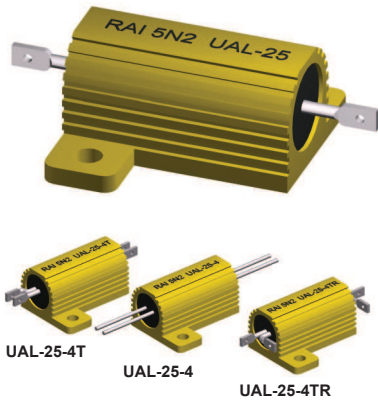


# UAL Series

Aluminum Housed Power Wirewound Resistors



- Power Rating 5 to 300Watts
- High Temperature: -55°C to +275°C
- Excellent Pulse Handling
- Resistances from 0.005 to 250kOhms
- Tolerance to  $\pm 0.01\%$
- Low TCR:  $\pm 20\text{ppm/K}$  Standard
- Various Terminal Option Available
- All Welded Construction

## SPECIFICATIONS

Type	MIL-R-39009 MIL-R-18546 Style	Power Rating ( W @ 25°C )			Resistance Range <sup>1</sup>
		Commercial	MIL	Free Air	
UAL-5	RER-60 / RE-60	7.5 <sup>a</sup>	5 <sup>a</sup>	4.5	0.01 to 22K
UAL-10	RER-65 / RE-65	10 <sup>a</sup>	10 <sup>a</sup>	7.5	0.005 to 10K
UAL-25	RER-70 / RE-70	25 <sup>b</sup>	20 <sup>b</sup>	12	0.005 to 36K
UAL-50	RER-75 / RE-75	50 <sup>c</sup>	30 <sup>c</sup>	20	0.01 to 86K
UAL-100		100 <sup>d</sup>	75 <sup>d</sup>	40	0.01 to 70K
UAL-180	-	180 <sup>d</sup>	-	-	0.01 to 50K
UAL-250	RER-80 / RE-80	250 <sup>d</sup>	120 <sup>d</sup>	100	0.01 to 50K
UAL-300	-	300 <sup>e</sup>	-	75	0.01 to 68K

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

<sup>a</sup> Heatsink Required : 0.040 [1.0] Alum. Plate, 129 in<sup>2</sup> [832 cm<sup>2</sup>] or equiv.

<sup>b</sup> Heatsink Required : 0.040 [1.0] Alum. Plate, 167 in<sup>2</sup> [1077 cm<sup>2</sup>] or equiv.

<sup>c</sup> Heatsink Required : 0.059 [1.5] Alum. Plate, 291 in<sup>2</sup> [1877 cm<sup>2</sup>] or equiv.

<sup>d</sup> Heatsink Required : 0.125 [3.2] Alum. Plate, 294 in<sup>2</sup> [1896 cm<sup>2</sup>] or equiv.

<sup>e</sup> Heatsink Required : 0.125 [3.2] Alum. Plate, 895 in<sup>2</sup> [5780 cm<sup>2</sup>] or equiv.

## Ordering Information

For Non-Inductive Windings / insert the letter "N" ( i.e. UALN-25 )

Part Description: Part Type - Resistance - Tolerance - TCR ( If not standard )

Example: UAL-25 10 Ohm 1%

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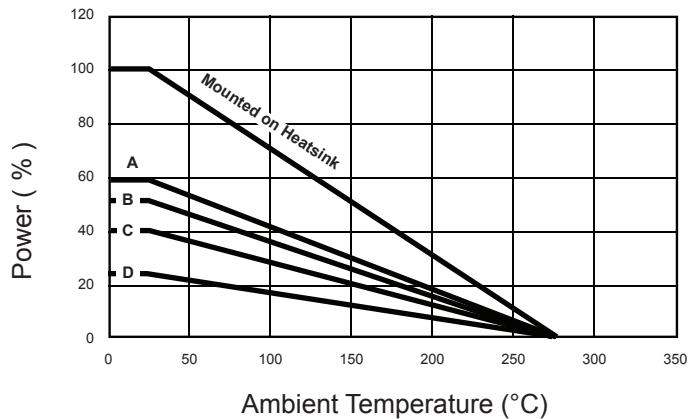


## SPECIFICATIONS (continued)

Specification	Value
Tolerances	$\pm 0.01\%$ to $\pm 10\%$ ( 1% Standard )
Temperature Coefficient	$>10\Omega$ : $\pm 20\text{ppm/K}$ $1\Omega$ to $10\Omega$ : $\pm 50\text{ppm/K}$ $<1\Omega$ : Call Factory
Temperature Range	$-55^\circ\text{C}$ to $+275^\circ\text{C}$
Dielectric Strength	UAL-5,10: 1500 VAC ; UAL-25: 2500 VAC ; UAL-50: 3500VAC ; Others: 5500VAC
Constuction	Centerless ground ceramic core Tinned copper or copperweld leads High-temperature epoxy molding Compound Anodized aluminum housing All welded terminations
Environmental Performance (MIL-STD 202)	$\Delta R$
Dielectric	$\pm 0.2\% + 0.05\Omega$
Load Life	$\pm 1\% + 0.05\Omega$
Storage	$\pm 0.2\% + 0.05\Omega$
Moisture Resistance	$\pm 0.2\% + 0.05\Omega$
Thermal Shock	$\pm 0.2\% + 0.05\Omega$
5X Overload ( 5s )	$\pm 0.2\% + 0.05\Omega$
Shock	$\pm 0.1\% + 0.05\Omega$
Vibration	$\pm 0.1\% + 0.05\Omega$
Optional Lead Configuration	Wire, Flexible, Teflon, Quick Disconnect, Flying Leads, Formed

\*Call factory for quote

Power Derating Curve



**Free-air Derating**

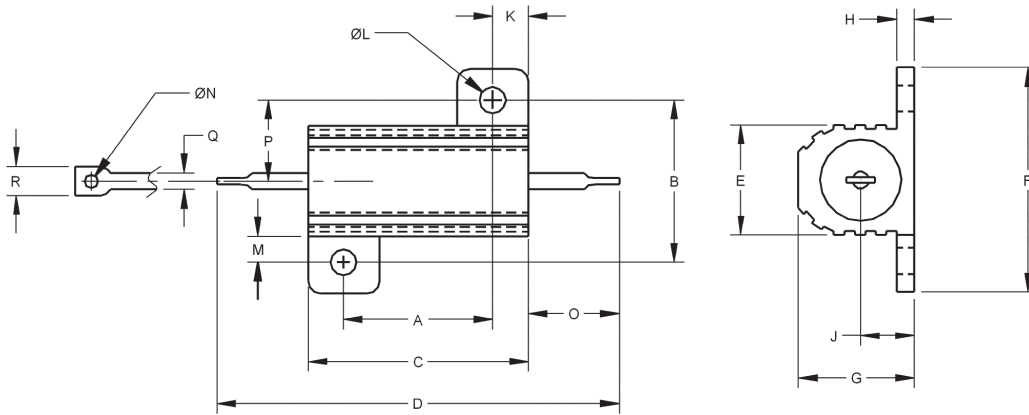
- A : UAL-5, UAL-10
- B : UAL-25
- C : UAL-50, UAL-100, UAL-250
- D : UAL-300

# UAL Series

Aluminum Housed Power Wirewound Resistors



## Dimensions



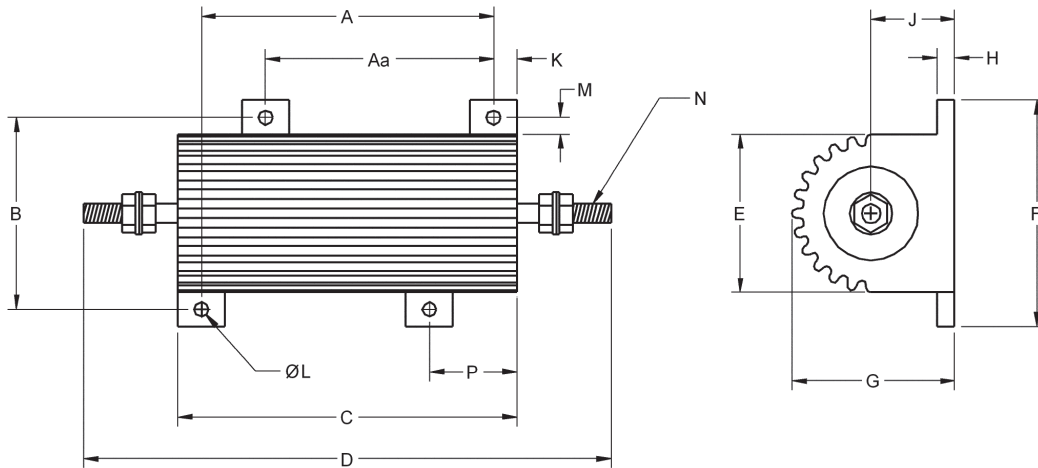
Type	A ±0.005 [±0.13]	B ±0.005 [±0.13]	C ±0.031 [±0.8]	D ±0.062 [±1.6]	E ±0.015 [±0.4]	F ±0.015 [±0.4]	G ±0.015 [±0.4]	H ±0.010 [±0.25]	J ±0.010 [±0.25]	K ±0.010 [±0.25]	L ±0.005 [±0.13]	M ±0.015 [±0.4]	N ±0.006 [±0.15]	O ±0.062 [±1.6]	P ±0.031 [±0.8]	Q ±0.002 [±0.05]	R ±0.031 [±0.8]
UAL-5	0.444 [11.3]	0.490 [12.4]	0.600 [15.2]	1.125 [28.5]	0.334 [8.5]	0.646 [16.4]	0.320 [8.1]	0.065 [1.7]	0.140 [3.6]	0.078 [2.0]	0.093 [2.4]	0.078 [2.0]	0.050 [1.3]	0.266 [6.8]	0.245 [6.2]	0.051 [1.30]	0.085 [2.2]
UAL-10	0.562 [14.3]	0.625 [15.9]	0.750 [19.1]	1.320 [33.5]	0.430 [10.9]	0.800 [20.3]	0.400 [10.2]	0.075 [1.9]	0.190 [4.8]	0.093 [2.4]	0.093 [2.4]	0.102 [2.6]	0.080 [2.0]	0.312 [7.9]	0.312 [7.9]	0.098 [2.49]	0.160 [4.0]
UAL-25	0.719 [18.3]	0.781 [19.8]	1.062 [27.0]	1.870 [47.5]	0.530 [13.5]	1.080 [27.4]	0.560 [14.2]	0.085 [2.2]	0.260 [6.6]	0.172 [4.4]	0.125 [3.2]	0.125 [3.2]	0.080 [2.0]	0.438 [11.1]	0.391 [9.9]	0.098 [2.49]	0.185 [4.7]
UAL-50	1.563 [39.7]	0.844 [21.4]	1.968 [50.0]	2.720 [70.0]	0.615 [15.6]	1.140 [29.0]	0.615 [15.6]	0.085 [2.2]	0.300 [7.6]	0.196 [5.0]	0.125 [3.2]	0.125 [3.2]	0.080 [2.0]	0.438 [11.1]	0.422 [10.7]	0.098 [2.49]	0.185 [4.7]

# UAL Series

Aluminum Housed Power Wirewound Resistors

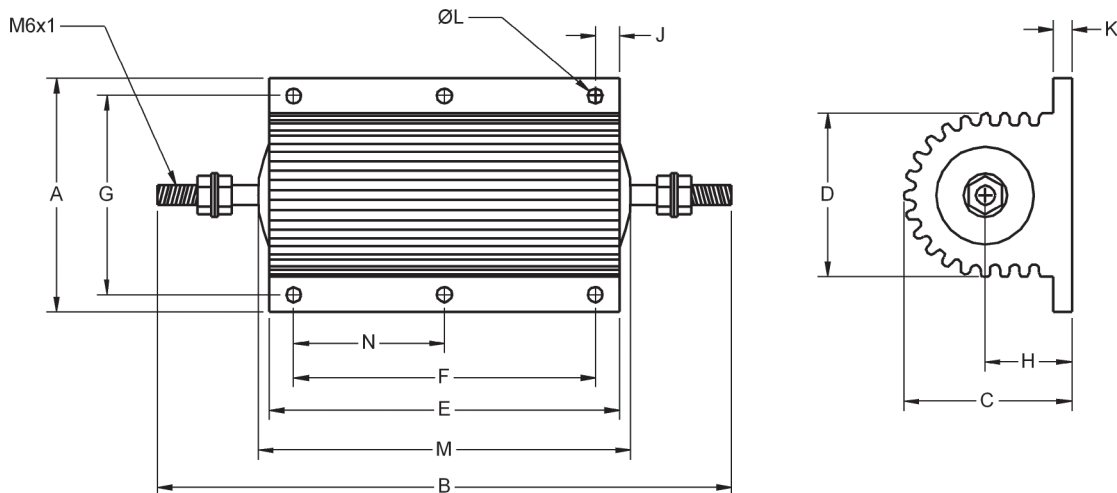


## Dimensions (continued)



Type*	A ±0.005 [±0.13]	Aa ±0.005 [±0.13]	B ±0.005 [±0.13]	C ±0.031 [±0.8]	D ±0.062 [±1.6]	E ±0.015 [±0.4]	F ±0.015 [±0.4]	G ±0.015 [±0.4]	H ±0.010 [±0.25]	J ±0.015 [±0.4]	K ±0.015 [±0.4]	L ±0.005 [±0.13]	M ±0.015 [±0.4]	N	P ±0.015 [±0.4]	Mtg. Screw
UAL-100	1.870 [47.5]	-	3.464 [88.0]	0.949 [24.1]	1.075 [27.3]	2.567 [65.2]	1.378 [35.0]	1.457 [37.0]	0.465 [11.8]	0.606 [15.4]	0.146 [3.7]	0.173 [4.4]	-	12-24	-	(2) #8
UAL-180	2.750 [69.9]	-	2.500 [63.5]	3.500 [88.9]	5.480 [139]	2.125 [54]	3.000 [76.2]	2.190 [55.6]	0.250 [6.4]	0.950 [24.1]	0.375 [9.5]	0.188 [4.8]	0.200 [5.1]	12-24	-	(2) #8
UAL-250	3.875 [98.4]	3.000 [76.2]	2.500 [63.5]	4.500 [114]	7.000 [178]	2.125 [54]	3.00 [76.2]	2.190 [55.6]	0.250 [6.4]	1.000 [25.4]	0.312 [7.9]	0.188 [4.8]	0.200 [5.1]	1/4-20	1.188 [30.7]	(4) #8

\*Built to Mil-Spec standard. Not for new design.



Type*	A MAX	B MAX	C MAX	D MAX	E MAX	F ±0.010 [±0.3]	G ±0.010 [±0.3]	H MAX	J MAX	K MAX	L ±0.010 [±0.3]	M MAX	N ±0.010 [±0.3]
UAL-250A	2.854 [72.5]	6.675 [167.0]	1.646 [41.8]	1.791 [45.5]	4.319 [109.7]	3.504 [89.0]	2.252 [57.2]	0.807 [20.5]	0.409 [10.4]	0.217 [5.5]	0.260 [6.6]	4.819 [122.4]	1.752 [44.5]
UAL-300A	2.854 [72.5]	7.260 [184.4]	1.646 [41.8]	1.791 [45.5]	5.028 [127.7]	4.094 [104.0]	2.323 [59.0]	0.807 [20.5]	0.488 [12.4]	0.217 [5.5]	0.260 [6.6]	5.567 [141.4]	2.047 [52.0]

\*Commercial equivalent for new designs. Cost effective alternative.