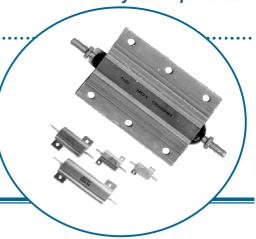
Trelectronics Welwyn Components

WH Series

- High power dissipation up to 300W
- All welded construction
- Suitable for severe environments
- · Designed for excellent thermal conductivity to heatsink
- RoHS compliant



Electrical Data

		WH5	WH10	WH25	WH50	Notes		
Power rating at 25°C	watts	10	15	25	50 *	On standard heatsink		
Resistance range	ohms	0R01 to 10K	0R01 to 20K	0R01 to 44K	0R015 to 120K			
TCR (-55° to 200°C)	ppm/°C	<10R:	<10R: ±75 ≥10R to <100R: ±50 ≥100R: ±25					
Resistance tolerance	%		1(F), 2(G), 5(J) and 10(K)					
Low value limits	ohms	1R at 1%	WH50 0R015 at 10%					
Isolation voltage	volts	1500	1500	3000	3000	DC or AC peak		

^{*} For load at maximum rating mount on aluminium heatsink 30.5 cm x 30.5 cm x 1.5 mm

CECC 40203-006 Requirements *		AA	ВА	CA	DA	Notes		
Power rating at 25°C	watts	10	15	15 25		On standard heatsink		
Resistance range	ohms	0R05 to 3K4	0R05 to 15K	0R05 to 33K	0R05 to 82K			
TCR (-55° to 200°C)	ppm/°C		≥5R to ≤10R: ±100 >10R: ±50					
Resistance tolerance	%		1(F), 2(G), and 5(J)					
Low value limits	ohms	1	1R at 1% 0R5 at 2% 0R05 at 5%					
Isolation voltage	volts	1000	1000	2000	2000	DC or AC peak		

^{*} This table indicates the CECC specification requirements which are met or exceeded by the corresponding WH series products.

Limiting element voltage	volts	150 250 500 1250			DC or AC rms	
Standard values			E24 preferred range			
Thermal impedance	°C/watt	16.0	16.0 10.0 6.0 3.5		On standard heatsink	
Ambient temperature range	°C					

		WH100	WH200	WH300	Notes
Power rating at 25°C	watts	100	200	300	On standard heatsink
Resistance range	ohms	0R01 to 70K	0R01 to 50K	0R01 to 68K	
TCR (-55° to 200°C)	ppm/°C	:	≤1K0: ±100 >1K0: ±2	25	
Resistance tolerance	%	Standard 5(J) ar			
Low value limits	ohms	Typically			
Isolation voltage	volts	6360	7070	7070	DC or AC peak
Limiting element voltage	volts	1900	1900	2500	DC or AC rms
Standard values			E24 preferred range		Other values to order
Thermal impedance	°C/watt	1	0.7	0.6	On standard heatsink
Ambient temperature range	°C		-55 to 200		

General Note

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Physical Data

WH200

WH300

s (mm) &	Weight (g)											
Α	В	C	;	Е	F	G	Н	L	IV	ı	N	Dt	Wt.
Max	±0.3	±0.	.3 N	/lin	Max	Max	Dia ±0.2	Max	±0	.5 N	lax	Min	Nom
30	12.4	11	.3	1.9	17	9	2.4	17.0	4.	3 1	.8	2.5	3.6
36.5	15.9	14	.3	1.9	21	11	2.4	21.0	5.	2 2	2.2	2.9	5.6
51	19.8	18	.3 2	2.8	28	15	3.3	29.0	7.	2 2	2.6	4.3	13
72.5	21.4	39	.7 2	2.8	30	16	3.3	51.0	7.	9 2	2.6	5.1	29
00		***************************************											
A Max	B Max	C Max	D Max	E Max	F ±0.3	G ±0.3	H Max	J Max	K Max	L Nom*	M Max	Dt Min	Wt. Nom
47.5	88	24.1	27.3	65.2	35	37	11.8	15.4	3.7	4.4	-	7.0	115
	A Max 30 36.5 51 72.5 00 A Max	A B Max ±0.3 30 12.4 36.5 15.9 51 19.8 72.5 21.4 00 A B Max Max	Max ±0.3 ±0.3 30 12.4 11 36.5 15.9 14 51 19.8 18 72.5 21.4 39 00 A B C Max Max Max	A B C Max ±0.3 ±0.3 M 30 12.4 11.3 2 36.5 15.9 14.3 2 51 19.8 18.3 2 72.5 21.4 39.7 2 00 A B C D Max Max Max Max	A B C E Max ±0.3 ±0.3 Min 30 12.4 11.3 1.9 36.5 15.9 14.3 1.9 51 19.8 18.3 2.8 72.5 21.4 39.7 2.8 00 A B C D E Max Max Max Max Max	A B C E F Max ±0.3 ±0.3 Min Max 30 12.4 11.3 1.9 17 36.5 15.9 14.3 1.9 21 51 19.8 18.3 2.8 28 72.5 21.4 39.7 2.8 30 00 A B C D E F Max Max Max Max ±0.3	A B C E F G Max ±0.3 ±0.3 Min Max Max 30 12.4 11.3 1.9 17 9 36.5 15.9 14.3 1.9 21 11 51 19.8 18.3 2.8 28 15 72.5 21.4 39.7 2.8 30 16 00 A B C D E F G Max Max Max ±0.3 ±0.3	A B C E F G H Max ±0.3 ±0.3 Min Max Max Dia ±0.2 30 12.4 11.3 1.9 17 9 2.4 36.5 15.9 14.3 1.9 21 11 2.4 51 19.8 18.3 2.8 28 15 3.3 72.5 21.4 39.7 2.8 30 16 3.3 00 A B C D E F G H Max Max Max Max ±0.3 ±0.3 Max	A B C E F G H L Max ±0.3 ±0.3 Min Max Max Dia ±0.2 Max 30 12.4 11.3 1.9 17 9 2.4 17.0 36.5 15.9 14.3 1.9 21 11 2.4 21.0 51 19.8 18.3 2.8 28 15 3.3 29.0 72.5 21.4 39.7 2.8 30 16 3.3 51.0 00 A B C D E F G H J Max Max Max Max Max ±0.3 ±0.3 Max Max	A B C E F G H L N Max ±0.3 ±0.3 Min Max Max Dia ±0.2 Max ±0 30 12.4 11.3 1.9 17 9 2.4 17.0 4.3 36.5 15.9 14.3 1.9 21 11 2.4 21.0 5.3 51 19.8 18.3 2.8 28 15 3.3 29.0 7.3 72.5 21.4 39.7 2.8 30 16 3.3 51.0 7.3 00 A B C D E F G H J K Max Max Max Max ±0.3 ±0.3 Max Max Max	A B C E F G H L M Max ±0.3 ±0.3 Min Max Max Dia ±0.2 Max ±0.5 M 30 12.4 11.3 1.9 17 9 2.4 17.0 4.3 1 36.5 15.9 14.3 1.9 21 11 2.4 21.0 5.2 2 51 19.8 18.3 2.8 28 15 3.3 29.0 7.2 2 72.5 21.4 39.7 2.8 30 16 3.3 51.0 7.9 2 00 A B C D E F G H J K L Nom*	A B C E F G H L M N Max ±0.3 ±0.3 Min Max Max Dia ±0.2 Max ±0.5 Max 30 12.4 11.3 1.9 17 9 2.4 17.0 4.3 1.8 36.5 15.9 14.3 1.9 21 11 2.4 21.0 5.2 2.2 51 19.8 18.3 2.8 28 15 3.3 29.0 7.2 2.6 72.5 21.4 39.7 2.8 30 16 3.3 51.0 7.9 2.6 00 A B C D E F G H J K Nom* Max Max Max Max Max E 10.3 H 10.3 Max Nom* Max	A B C E F G H L M N Dt Max ±0.3 ±0.3 Min Max Max Dia ±0.2 Max ±0.5 Max Min 30 12.4 11.3 1.9 17 9 2.4 17.0 4.3 1.8 2.5 36.5 15.9 14.3 1.9 21 11 2.4 21.0 5.2 2.2 2.9 51 19.8 18.3 2.8 28 15 3.3 29.0 7.2 2.6 4.3 72.5 21.4 39.7 2.8 30 16 3.3 51.0 7.9 2.6 5.1 00 A B C D E F G H J K L Max Min Max Max Max Max ±0.3 Max Max Max Nom* Max <td< td=""></td<>

57.2

59

20.5

20.5

10.4

12.4

5.5

5.5

5.1

6.6

103.4

141.4

15

475

700

145.7

184.4

41.8

41.8

45.5

45.5

89.7

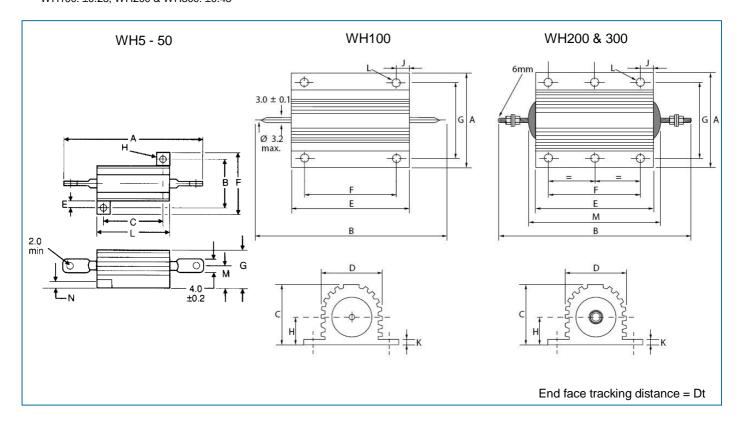
127.7

70

104

72.5

72.5



Construction

Cap and lead assemblies are fitted to a high purity ceramic substrate. The resistive element is wound onto the substrate and welded to the caps. The wound rod is then moulded and fitted into aluminium housing to give optimum stability and reliability.

Marking

The resistors are legend marked with type reference, resistance value and tolerance which will withstand all accepted industrial cleaning fluids. Values are marked in accordance with IEC 62

General Note

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^{*} WH100: ±0.25, WH200 & WH300: ±0.45



Terminations

WH5-100
Material Pb-free solder dipped, copper clad steel

Strength The terminations meet the requirements

of IEC 68.2.21

Solderability The terminations meet the requirements

of IEC 115-1, clause 4.17.3.2

WH200 & 300

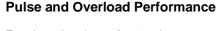
MaterialM6 threaded steel terminalStrengthTermination robustness 50N

Solderability Non-solderable

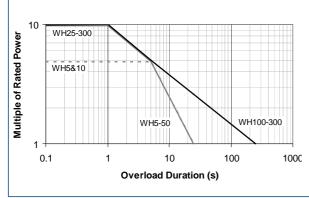
Performance Data

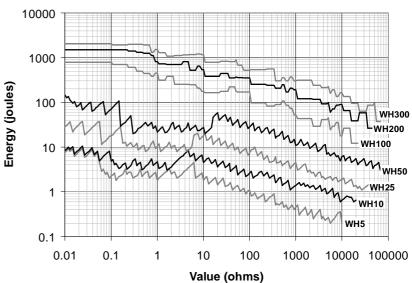
			WH5 - 50		WH100 - 300
		CECC 40203-006	Act	ual	Maximum
		Requirements	Maximum	Typical	IVIAXIIIIUIII
Load at commercial rating: 1000hrs at 25°C	ΔR%	1	1	0.4	2
Load at CECC rating: 1000hrs at 25°C	ΔR%	1	1	0.4	N/A
Dry heat: 1000hrs at 200°C	ΔR%	1	1	0.4	2
Derating from 25°C		Ž	Zero at 200°C, se	ee derating graph	า
Short-term overload	ΔR%	1	1	0.2	
Climatic sequence	ΔR%	1	1	0.4	
Climatic category			55/200/56		
Long-term damp heat	ΔR%	1	0.5	0.2	
Temperature rapid change	ΔR%	0.25	0.25	0.1	0.25
Resistance to solder heat	ΔR%	0.25	0.25	0.05	WH100: 0.5
Vibration and bump	ΔR%	0.25	0.25	0.025	
Noise (in decade of frequency)	μV/V	Not specified	0	0	0
Insulation resistance	ohms	1G min		10G min	
Pulse and overload performance		Not specified		See graphs	

Note: A 0.05 ohm addition is to be added to the performance of all resistors < 10 ohms.



For short durations of ≤0.1s the energy graph should be used. For longer durations the overload graph applies.





Application Notes

After soldering care should be taken to ensure that there are no flux residues on the end faces of the moulding compound, otherwise insulation resistance will be reduced. The minimum surface tracking distances from termination to casing are shown in the Physical Data tables as dimension Dt.

It is recommended that the resistor base should be coated with heatsink compound before mounting to obtain the stated operating characteristics. The heatsink compound increases thermal conductivity to the heatsink.

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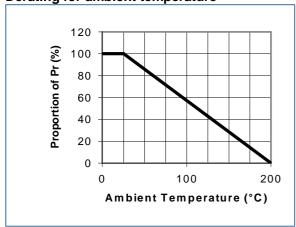


The standard aluminium heatsinks are defined in the table below. If smaller heatsinks are used then derating should be applied as indicated in the graph below.

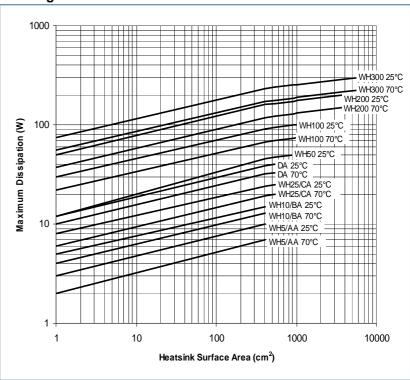
Reference heatsink dimensions

Type (CECC)	Thickness (mm)	Area (cm²)
WH5 (AA)	1	410
WH10 (BA)	1	410
WH25 (CA)	1	544
WH50 (DA)	1	544
WH50 @ 50W	1.5	930
WH100	3	1000
WH200	3	3800
WH300	3	5800

Derating for ambient temperature



Derating for reduced heatsink dimensions



WH200 and WH300 are supplied with a set of four M6 nuts and washers. The screw terminations can support a maximum tightening torque of 5Nm.

Packaging

WH5-100 resistors are packed in plastic bags and boxed. WH200 & 300 are individually boxed.

Ordering Procedure

Example: WH25 at 100 ohms with a 5% tolerance:

				<u>W H 2 5</u> – <u>1 (</u>	<u>) 0 R J</u>
Туре —					
Value (use	e IEC62 cod	e) ——			┙╽
Tolerance F 1% G 2%	(use IEC62 J 5% K 10%	code) —			
Packing -					
I Bulk	All Sizes	Standard]		

The following options apply to WH5 – 50 only:

For CECC released product state on order the CECC number and style. Example: WH25-3K3JI CECC40203-006 CA For SnPb finish instead of Pb-free replace the packing suffix with PB. Example: WH25-3K3JPB

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