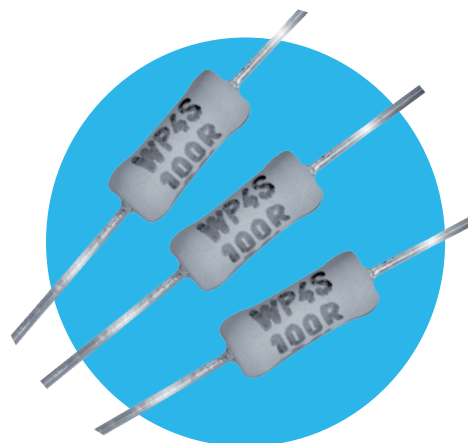


# Compact Flameproof Power Wirewound Resistors

## WP-S Series

- Small size for power rating
- Enhanced pulse handling capability
- Flameproof protection
- Surface mount ZI-form option
- RoHS compliant with Pb-free terminations



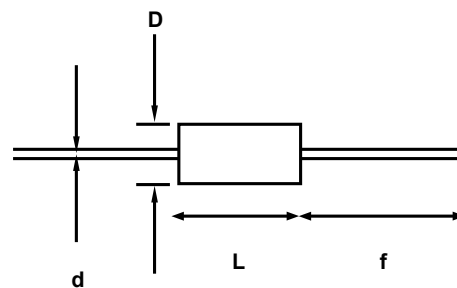
 All Pb-free parts comply with EU Directive 2011/65/EU (RoHS2)

## Electrical Data

		WP1S	WP2S	WP25S	WP3S	WP4S	WP5S
Power rating at 25 °C	watts	1	2	2.5	3	4	5
5s overload rating at 25°C	watts	5	10	12.5	15	20	25
Short pulse performance		See Pulse Performance graphs					
Resistance range	ohms	R068 to 430R	R05 to 900R	R05 to 900R	R01 to 2K2	R01 to 10K	R015 to 6K8
Limiting element voltage	volts	50	50	75	100	100	150
TCR	ppm/°C	<1R: 350    ≥1R: 200					
Isolation Voltage	volts	250			350	500	
Resistance Tolerance	%	<20R: 5    ≥20R: 1, 2, 5				<R10: 5 ≥R10: 1, 2, 5	<20R: 5 ≥20R: 1, 2, 5
Standard Values		E24 preferred					
Thermal Impedance	°C/watt	140	110	90	82	62	54
Ambient temperature range	°C	-55 to +155					

## Physical Data

Dimensions (mm) & Weight (g)							
Type	L max	D max	f min	d nom	PCB mount centres	Min bend radius	Wt. nom
WP1S	6.2	2.8	21.20	0.6	10.20	0.6	0.22
WP2S	9.0	3.6	19.80	0.8	12.70	1.2	0.50
WP25S	12.5	4.5	17.80		18.40		0.50
WP3S	14.5	5.2 (Note 1)	24.55		20.30		1.10
WP4S	13	5.6 (Note 2)	22.75		18.90		1.00
WP5S	16.5	7.0 (Note 3)	23.55		22.86		1.75



Note 1: 5.4 for values ≤0R1    Note 2: 5.8 for values ≤0R1    Note 3: 7.2 for values ≤0R1

## Construction

A high purity ceramic substrate is assembled with interference fit end caps to which are welded the terminations. The resistive element is wound on the substrate and welded to the caps. Flameproof silicone cement coating is applied prior to marking with indelible ink. The components are then leadformed if required and packed.

### General Note

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BI Technologies   IRC   Welwyn

<http://www.ttelectronics.com/resistors>

WP-S Series

Terminations

Material: Hot tin dipped copper wire  
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

Marking

WP1S, WP2S, WP25S and WP3S resistors R10 and above are marked with four or five colour bands in conformance with IEC62. Values below R10 are marked with three bands (two digits indicating value in milliohms, and tolerance); there is no multiplier band. WP4S and WP5S resistors are legend marked with type reference, resistance value and tolerance.

Solvent Resistance

The body protection and marking are resistant to all normal industrial cleaning solvents suitable for printed circuits.

Flammability

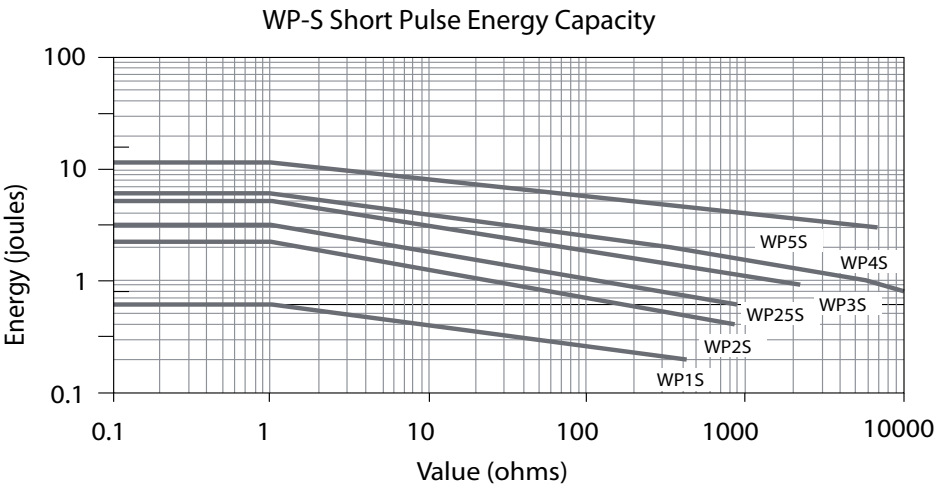
The resistor coating will not burn or emit incandescent particles under any condition of applied temperature or power overload.

Performance Data

		Maximum	Typical Change
Load at rated power: 1000hrs @ 25°C	ΔR%	5 +0.001Ω	3
Dry heat: 1000hrs @ 200°C	ΔR%	5 +0.001Ω	3
Short term overload (5 x Pr for 5s)	ΔR%	5 +0.001Ω	1
Derating from rated power @25°C		Zero at 280°C	
Climatic	ΔR%	5 +0.001Ω	2
Climatic category		55/200/56	
TRC & Vibration	ΔR%	5 +0.001Ω	1
Robustness & solder heat	ΔR%	5 +0.001Ω	1
Long term damp heat (56 days)	ΔR%	5 +0.001Ω	1


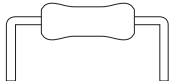
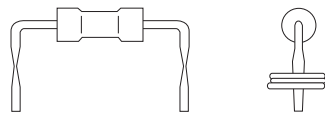
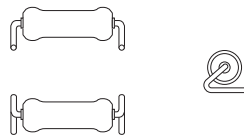
Pulse Performance

The pulse energy capacity limits in the graph below relate to pulses below 100ms duration, low mean power dissipation and at 25°C.



## Application Notes

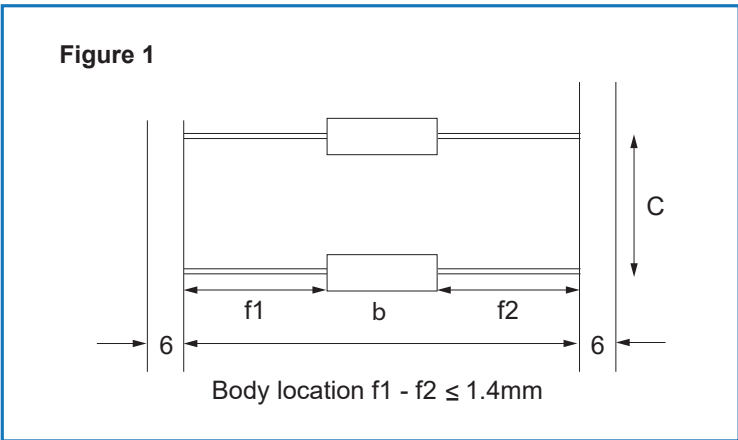
1. If the resistors are to dissipate full rated power, it is recommended that the terminations should not be soldered closer than 4mm from the body.
2. Due to operating temperature limits imposed by some PCB materials, derating may be necessary. An estimate of the temperature rise to be expected at the center of the body can be calculated using the thermal impedance figures given under Electrical Data.
3. WP-S resistors can also be supplied with radial, goalpost or lancet pre-formed leads. In particular, WP2S, WP3S, WP4S and WP5S are available in ZI-form SMD format packed in blister tape - see <http://www.ttelectronicsresistors.com/pdf/datasheet/ZI-form.pdf>

Radial	Goalpost	Lancet	ZI-form
			

## Packaging

The standard packaging for WP-S is taped. The critical dimensions are shown in Figure 1. The component wires will not protrude beyond the outside edge of the tapes. Taped product is then packed into boxes or onto reels; see Ordering Procedure for details. Alternative packaging is available by request. Pre-formed resistors are supplied loose packed in plastic bags or boxes.

Dimensions (mm)	b	c
WP1S	52	5
WP2S	52	5
WP25S	52	5
WP3S	67	10
WP4S	63	10
WP5S	63	10



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## Ordering Procedure

Example: WP2S-680RJA25 (WP2S, 680 ohms  $\pm 5\%$ , Pb-free)

W	P	2	S		-	6	8	0	R	J	A	2	5	
1					2				3	4				

1 Type	2 Value	3 Tolerance	4 Termination & Packing				
WP1S	3/4 characters	F = $\pm 1\%$	A5	WP1S	Pb-free (RoHS)	Ammo pack	5000/box
WP2S	R = ohms	G = $\pm 2\%$	A25	WP2S			2500/box
WP25S	K = kilohms	J = $\pm 5\%$	A15	WP25S			1500/box
WP3S			A1	WP3S, WP4S			1000/box
WP4S			T075	WP5S		Tape & reel	750/reel
WP5S			PB	All sizes	SnPb finish	Packing as for Pb-free	

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