Pulse Withstanding Chip Resistors

TT electronics

PWC SERIES

- Excellent Pulse Withstand Performance
- Improved working voltage
- Improved power rating
- Standard chip sizes (0805 to 2512)

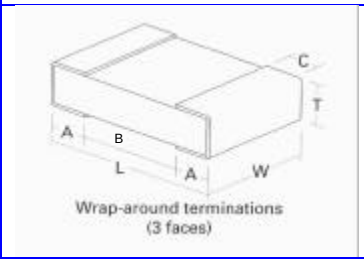
Electrical Data

Size	0805	1206	2010	2512
Power @70°C	0.125W	0.33W	0.75W	1.5W
Resistance range	1R0 to 10M			
Tolerance	0.5*, 1, 5%			
LEV	150V	200V	400V	500V
TCR	<10R:200ppm/°C ≥10R:100ppm/°C			
Operating temperature	-55 to +155°C			
Values	E96 preferred other values to special order			
Pulse Capability	See graphs – full application note available on request			

*0.5% Tolerance only available on values 10R to 1M0

Physical Data

Dimensions of PWC resistors are given below in mm and weight in g

	L	W	T max	A	B*	C	Wt.	
0805	2.0±0.3	1.25±0.2	0.6	0.3±0.15	0.9 min	0.3±0.1	0.009	
1206	3.2±0.4	1.6±0.2	0.7	0.4±0.2	1.7 min	0.4±0.15	0.020	
2010	5.1±0.3	2.5±0.2	0.8	0.6±0.3	3.0 min	N/A	0.036	
2512	6.5±0.3	3.2±0.2	0.8	0.6±0.3	4.4 min	N/A	0.055	

Construction

Thick film resistor material, overglaze and organic protections are screen printed on a 96% alumina substrate. Wrap-around terminations have an electroplated nickel barrier and tin-lead solder coating; this ensures excellent 'leach' resistance properties and solderability. Chips can withstand immersion in solder at 260°C for 30 seconds.

Marking

No marking provided.

Solvent Resistance

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

IRC

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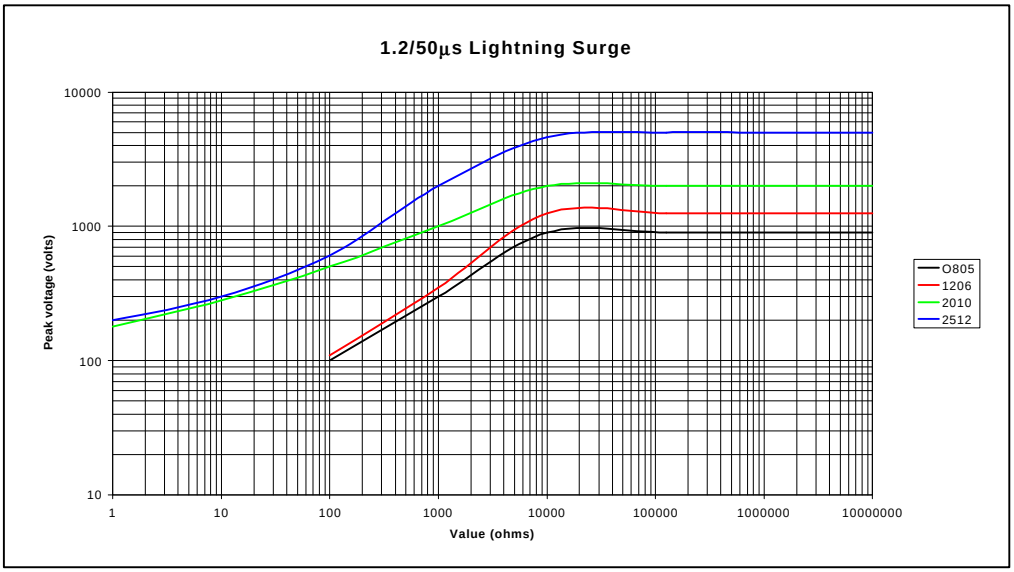
Performance Data

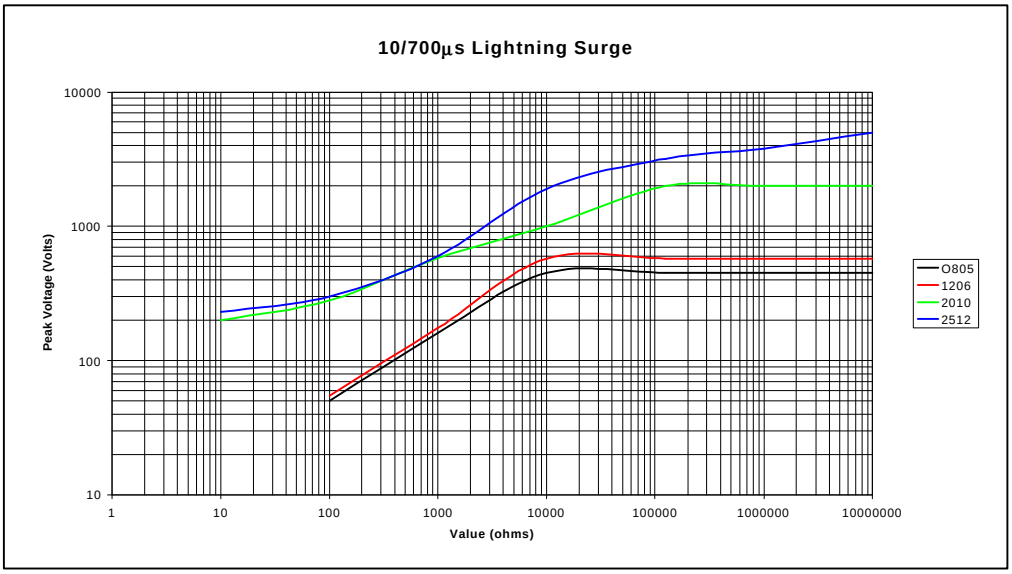
		Maximum	Typical
Load at rated power: 1000 hours at 70°C	ΔR%	1	0.25
Shelf life test: 12 months at room temperature	ΔR%	0.1	0.02
Derating from rated power at 70°C		Zero at 155°C	
Overload: 6.25 x rated power for 5 seconds	ΔR%	1	0.1
Dry heat: 1000 hours at 155°C	ΔR%	1	0.2
Long term damp heat	ΔR%	1	0.25
Temperature rapid change	ΔR%	0.25	0.05
Resistance to solder heat	ΔR%	0.25	0.05
Voltage proof	Volts	500	

Note: An 0.01 ohm addition to be added to the performance of all resistors <10 ohms.

Pulse Performance Data

Lightning Surge
Resistors are tested in accordance with IEC 60 115-1 using both 1.2/50us and 10/700us pulse shapes. The limit of acceptance is a shift in resistance of less than 1% from the initial value.





General Note
IRC, reserves the right to make changes in product specification without notice or liability.
All information is subject to IRC's own test data and is considered accurate at time of print.

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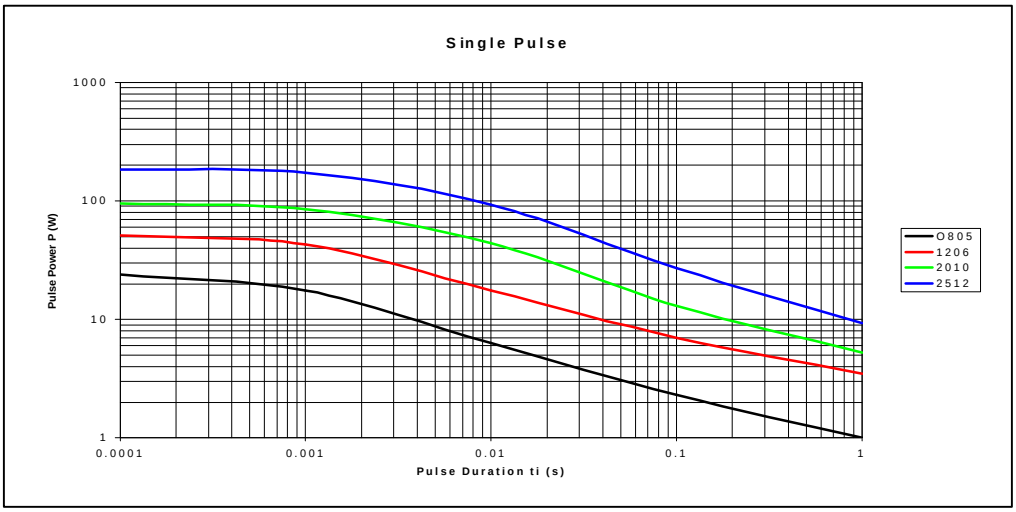
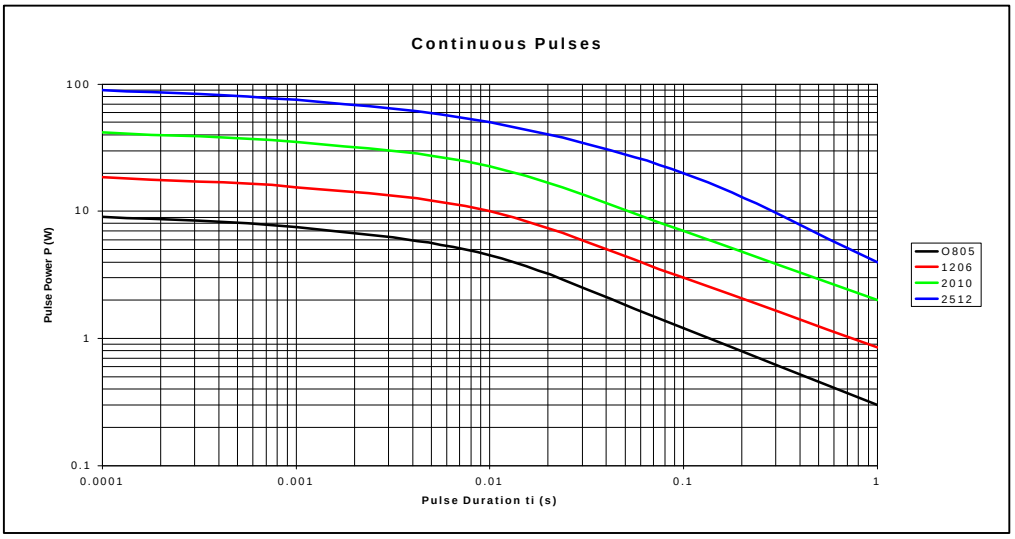
Pulse Performance Data



Single Impulse.
The single impulse graph is the result of 50 impulses of rectangular shape applied at one minute intervals. The limit of acceptance was a shift in resistance of less than 1% from the initial value. The power applied was subject to the restrictions of the maximum permissible impulse voltage graph as shown.



Continuous Load Due to Repetitive Pulses.
The continuous load graph was obtained by applying repetitive rectangular pulses where the pulse period was adjusted so that the average power dissipated in the resistor was equal to its rated power at 70°C. Again the limit of acceptance was a shift in resistance of less than 1% from the initial value.

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Packaging

Resistors are supplied tape and reel as per IEC 286-3.

Type	**1206**	**2010**	**2512**
Reel	3,000	3,000	1,800

Mounting

PWC resistors are ideally suited for handling by automatic methods due to their rectangular shape and the small dimensional tolerances. Electrical connection to a ceramic substrate or to a printed circuit board can be made by reflow soldering of wrap-around terminations.

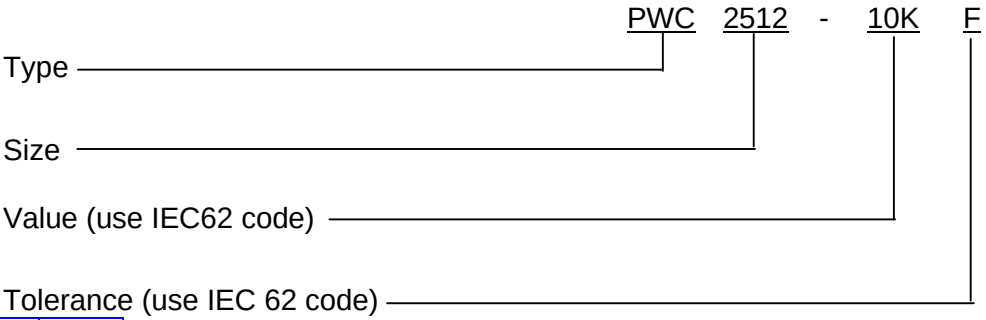
Wrap-around terminations provide good leach properties and ensure reliable contact. Due to the robust construction the PWC can be immersed in the solder bath for 30 seconds at 260°C. This enables the resistor to be mounted on one side of a printed circuit board and wire-leaded components applied on the other side.

Operating Temperature Range

PWC resistors themselves can operate at a maximum temperature of 155°C (see performance above). For soldered resistors, the joint temperature should not exceed 110°C. This condition is met when the stated power levels at 70°C are used.

Ordering Procedure

Specify type reference etc as shown in this example of PWC2512 10K ohms 1%.



D	0.5%
F	1%
J	5%

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