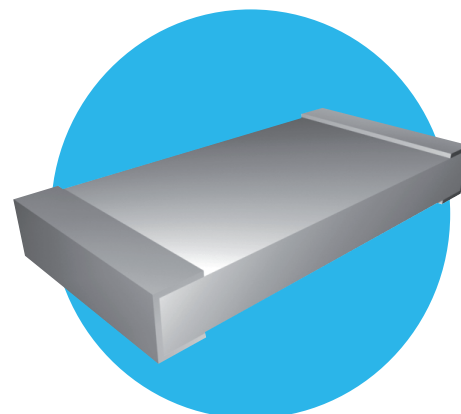


Pulse Withstanding Chip Resistors

PWC Series

- Excellent pulse withstand performance
- Improved working voltage
- Improved power rating
- Standard chip sizes (0805 to 2512)
- Custom designs available
- Anti-sulphur version available



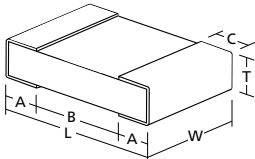
All Pb-free parts comply with EU Directive 2011/65/EU (RoHS2)

Electrical Data

Size		0805	1206		2010		2512	
Power @70°C	W	0.25	0.33	0.5	0.75	1	1.5	2
Resistance range	Ohms	1R0 to 10M						
Tolerance	%	10R to 1M: 0.5, All values: 1, 5						
LEV	V	150	200		400		500	
TCR	ppm/°C	<10R:200 ≥10R:100						
Operating temperature	°C	-55 to +155						
Thermal Impedance	°C/W	220	160	145	80	70	55	40
Pad / trace area *	mm²	40	50	125	60	250	100	500
Values		E96 preferred - other values to special order						
Pulse Capability		See graphs – full application note available on request						

*Recommended minimum pad & adjacent trace area for each termination for rated power dissipation on FR4 PCB

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	0.6±0.25	0.036		
2512	6.5±0.3	3.2±0.2	0.8	0.6±0.3	4.4 min	0.6±0.25	0.055		

Construction

Thick film resistor material, overglaze and organic protection are screen printed on a 96% alumina substrate. Wrap-around terminations have an electroplated nickel barrier and solder coating, this ensures excellent 'leach' resistance properties and solderability.

Note that anti-sulphur version parts below 100R are produced in flip-chip format with the resistor element on the underside.

Marking

Components are not marked. Reels are marked with type, value, tolerance, date code and quantity.

Solvent Resistance

The body protection is resistant to all normal industrial cleaning solvents suitable for printed circuits.

General Note

TT Electronics reserves the right to make changes in product specification without notice or liability.
 All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

Performance Data

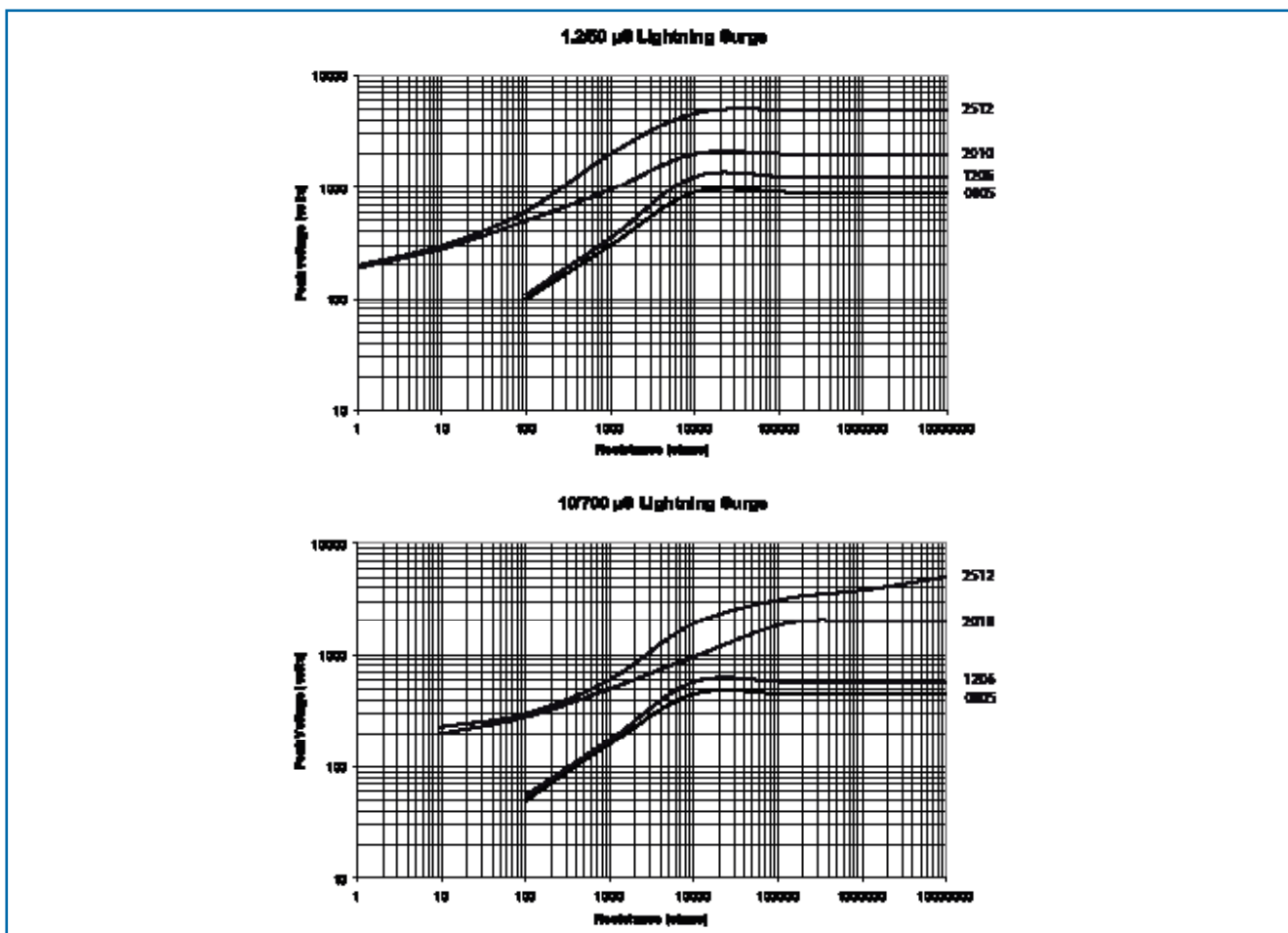
Size		Maximum	Typical
Load at rated power: 1000 hours at 70°C	$\Delta R\%$	1	0.25
Shelf life test: 12 months at room temperature	$\Delta R\%$	0.1	0.02
Derating from rated power at 70°C		Zero at 155°C	
Overload: 6.25 x rated power for 2 seconds	$\Delta R\%$	1	0.1
Dry heat: 1000 hours at 155°C	$\Delta R\%$	1	0.2
Long term damp heat	$\Delta R\%$	1	0.25
Temperature rapid change	$\Delta R\%$	0.25	0.05
Resistance to solder heat	$\Delta R\%$	0.25	0.05
Resistance to sulphur-bearing gas (AS version only): ASTM-B-809		0.25	0.05

Note: A 0.01 Ohm addition to be added to the performance of all resistors <10 Ohms.

Pulse Performance Data

Lightning Surge

lightning surge resistors are tested in accordance with IEC 60 115-1 using both 1.2/50 μ s and 10/700 μ s pulse shapes. 10 pulses are applied. The limit of acceptance is a shift in resistance of less than 1% from the initial value.



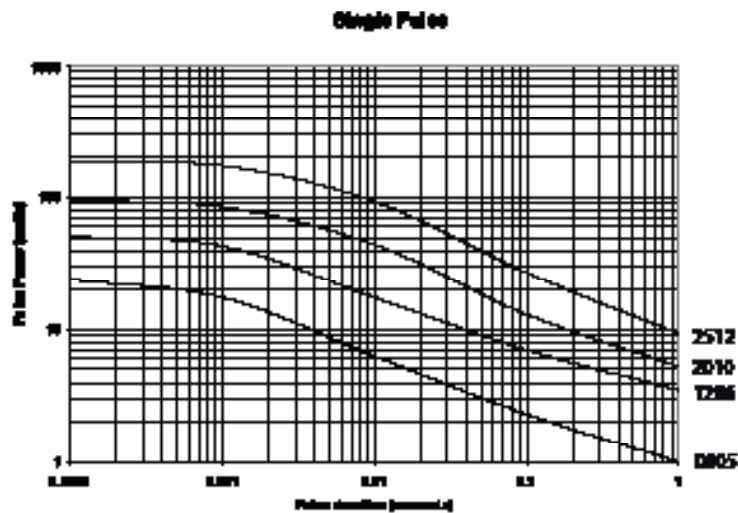
General Note

TT Electronics reserves the right to make changes in product specification without notice or liability.
All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

PWC Series

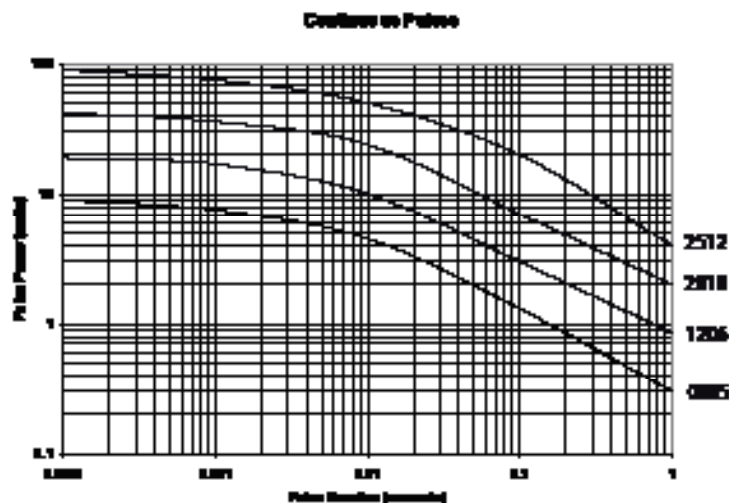
Single Impulse

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.



Continuous Load Due to Repetitive Pulses

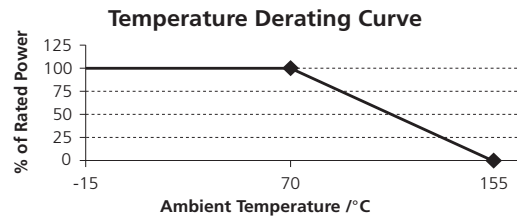
The continuous load graph was obtained by applying repetitive rectangular pulses where the pulse period was adjusted so that the average power dissipated in the resistor was equal to its rated power at 70°C. Again the limit of acceptance was a shift in resistance of less than 1% from the initial value.



General Note

TT Electronics reserves the right to make changes in product specification without notice or liability.
All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

Thermal Performance Data



Packaging

0805 and 1206 resistors are supplied on 8mm carrier tape and 2010 and 2512 resistors are supplied on 12mm carrier tape, all on 7 inch reels as per IEC 286-3.

Application Note

PWC resistors themselves can operate at a maximum temperature of 155°C. For soldered resistors, the joint temperature should not exceed 110°C. This condition is met when the stated power levels at 70°C and recommended pad and trace areas are used. Allowance should be made if smaller areas of copper are used.

A full Application Note on the PWC Series is available.

Ordering Procedure

This product has two valid part numbers:

European (Welwyn) Part Number: PWC2512-2K0JI (2512, 2 kilohms $\pm 5\%$, Pb-free)

P	W	C	2	5	1	2	-	2	K	0	J	I
1	2	3	4	5	6							

1 Type	2 Size	3 Anti-Sulphur	4 Value	5 Tolerance	6 Termination & Packing
PWC	0805	Omit for standard	E24 = 3/4 characters	D = $\pm 0.5\%$	I = RoHS & Standard, PB = SnPb & Standard
	1206	AS = Anti-sulphur	E96 = 3/4 characters	F = $\pm 1\%$	0805, 1206, 2010
	2010		R = ohms	J = $\pm 5\%$	3000/reel
	2512		K = kilohms		2512
			M = megohms		1800/reel
					T1 = RoHS & Non-Standard
					All sizes
					1000/reel

USA (IRC) Part Number: PWC-PWC2512LF-2001JELT (2512, 2 kilohms $\pm 5\%$, Pb-free)

P	W	C	-	P	W	C	2	5	1	2	L	F	2	0	0	1	J	E	L	T
1	2	3	4	5	6	7														

1 Family	2 Model	3 Size	4 Termination	5 Value	6 Tolerance	7 Packing
PWC	PWC	0805	Omit for SnPb	3 digits + multiplier	D = $\pm 0.5\%$	ELT = Plastic tape
		1206	LF = Pb-free	R = ohms for values <100 ohms	F = $\pm 1\%$	0805, 1206, 2010
		2010			J = $\pm 5\%$	3000/reel
		2512				2512
						1800/reel

General Note

TT Electronics reserves the right to make changes in product specification without notice or liability.
All information is subject to TT Electronics' own data and is considered accurate at time of going to print.