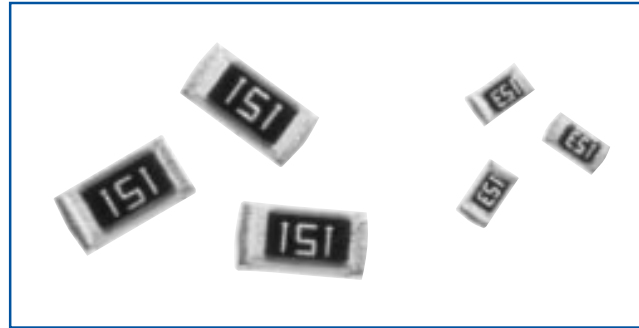


General Purpose Surface Mounted Resistors



WCR SERIES

- **Excellent reliability**
- **Wide range of sizes and ohmic values**
- **Wrap around terminations**
- **Inner electrode protection**



Electrical Data

		0402	0603	0805	1206		2010	2512
Power rating at 70°C	watts	0.063	0.063	0.10	0.125	0.25	0.5	1.0
Resistance range	ohms	4R7 to 2M2	1R to 22M	1R to 22M	1R to 22M	1R to 22M	1R to 10M	1R to 10M
Limiting element voltage	volts	50	50	150	200		200	200
TCR	ppm/°C	see table below						
Resistance tolerance	%	see table below						
Standard values		E24 / E96 preferred. Other values to special order						
Ambient temperature range	°C	-55 to 125						

Tolerance/Resistance/TCR

	WCR 0402			WCR 0603			WCR 0805			WCR 1206@1/8W		WCR 1206@1/4W		WCR 2010		WCR 2512		
	Ohmic Range (Ohms)	TCR ppm /°C		Ohmic Range (Ohms)	TCR ppm /°C*		Ohmic Range (Ohms)	TCR ppm /°C*		Ohmic Range (Ohms)	TCR ppm /°C*		Ohmic Range (Ohms)	TCR ppm /°C*		Ohmic Range (Ohms)	TCR ppm /°C*	
	MIN	MAX		MIN	MAX		MIN	MAX		MIN	MAX		MIN	MAX		MIN	MAX	
± 0.5%	100R	100K	±50	100R	100K	±50	100R	100K	±100	100R	100K	±100						
± 1%	10R	1M0	±100	1R	10M	±100	1R	10M	±100	1R	10M	±100	10R	1M	±100	1R	10M	±300
± 2%	10R	1M	±200	1R	10M	±200	1R	10M	±200	1R	10M	±200	10R	1M	±200	10R	1M	±200
± 5%	4R7	2M2	±300	1R	10M	±200	1R	10M	±200	1R	10M	±200	10R	1M	±200	1R	10M	±300
± 10%				11M	22M	±300	11M	22M	±300	11M	22M	±300						

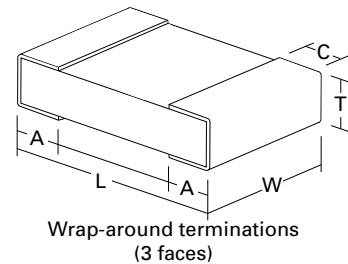
Zero jumper chips also available

*Note: TCR for low values 1R to 4R3 -100 to +600 ppm/°C.

TCR for high values 3M3 to 22M ± 300ppm/°C.

Physical Data

Dimensions (mm)					
Style	L	W	T	C	A
0402	1.0 ± 0.05	0.5 ± 0.03	0.35 ± 0.05	0.20 ± 0.1	0.25 ± 0.1
0603	1.6 ± 0.15	0.8 ± 0.15	0.5 + 0.15 -0.05	0.25 ± 0.2	0.25 ± 0.2
0805	2.0 + 0.2	1.25 + 0.2 -0.1	0.5 + 0.15 -0.10	0.4 ± 0.2	0.4 ± 0.2
1206	3.2 + 0.1 -0.15	1.6 + 0.1 -0.15	0.55 + 0.15 -0.05	0.5 + 0.2 -0.25	0.5 + 0.2 -0.25
2010	5.0 ± 0.15	2.5 ± 0.15	0.56 ± 0.15	0.60 ± 0.25	0.60 ± 0.25
2512	6.3 ± 0.15	3.2 ± 0.15	0.56 ± 0.15	0.60 ± 0.25	0.60 ± 0.25



*N.B. The minimum distance between the underside terminations of the WCR 1206 is 0.2mm.

General Note

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

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CONSTRUCTION

The chips have a high alumina substrate (96% minimum) with a ruthenium oxide resistance element and silver palladium, nickel and solder plated terminations. A glazed protection coat is applied to the resistive element (See Fig. 1)

TERMINATIONS

Solderability The terminations meet the requirements of IEC 115-1, Clause 4.17.3.2.

Strength The terminations meet requirements of IEC 68.2.21.

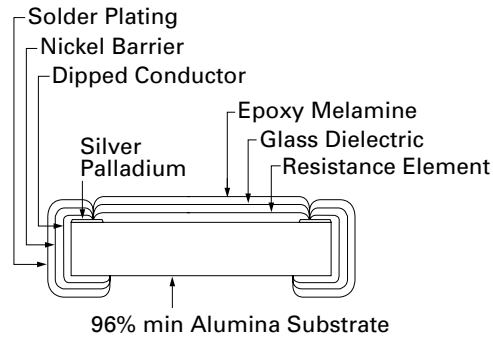
MARKING

All resistors are individually marked with 3 digits. The first two digits are the significant figures and the third defines the number of added zeros. Jumpers are marked 000. Type 0402 have no marking.

E96 1% components that can not be marked with 4 digits will be marked with a standard 3 digit code. Details can be supplied upon request.

SOLVENT RESISTANCE

The protective epoxy lacquer and marking are resistant to all normal industrial cleaning fluids suitable for printed circuits.


Figure 1

Performance Data

		MAXIMUM CHANGE					
		0402	0603	0805	1206	2010	2512
Load: 1000 hrs at 70°C	ΔR%	4R7 - 100K:1 >100K:2	1R - 100K:1 >100K:2	1R - 100K:1 >100K:2	1R - 100K:1 >100K:2	1R - 100K:1 >100K:2	3% + 0.1R
Shelf life: 12 months at room temp.	ΔR%	0.2	0.2	0.2	0.2	0.2	0.2
Derate linearly to zero from 70°C	ΔR%	zero at 125°C					
Short term overload (6.25 x rated power)	ΔR%	2	2.5	2.5	2.5	2.5	5.0
Max voltage	volts	100	100	200	400	200	200
Climatic	ΔR%	3	3	3	3	3	3
Climatic category	ΔR%	55/125/56					
Long term damp heat	ΔR%	3	3	3	3	3	3
Temperature rapid change	ΔR%	1	1	1	1	1	1
Resistance to solder heat	ΔR%	2.5	2.5	2.5	2.5	2.5	2.2
Vibration and bump	ΔR%	1	1	1	1	1	1
Noise		see table 3					
Insulation resistance	ohms	> 1G					
Voltage proof	volts	100	500	500	500	500	500
Pulse Handling		Data available on request					

PACKAGING

All chips are tape mounted and supplied on standard 8mm tape reel, as IEC publication 286-3.

180mm (7 inch) reel carries 5,000 pieces. (Except 0402 carries 10,000 pieces)

250mm (10 inch) reel carrying 10,000 pieces can be supplied by agreement.

Chips are taped element side up as standard.

If chips are to be taped face down please specify.

Type 2010 – 4,000 pcs

Type 2512 – 4,000 pcs

CHIP RESISTOR LAB STOCK FOR DESIGNERS

WCR chip resistors are available in a special package containing 50 each of the E24 values. Please contact the sales desk for full details of this excellent solution for designers and your prototype build requirements.

BULK CASSETTE PACK AVAILABLE