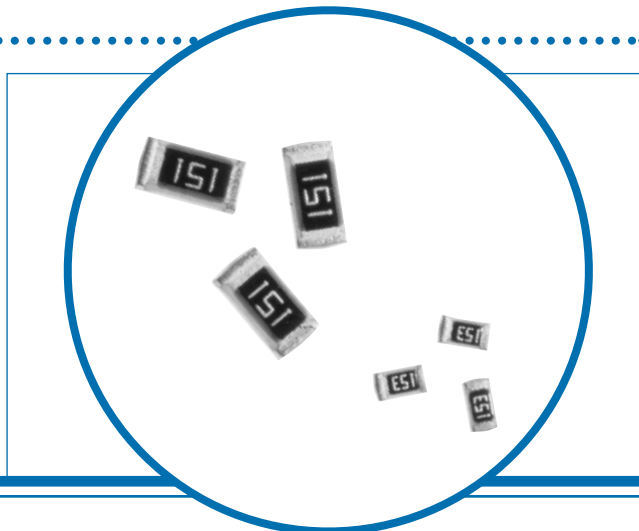


# General Purpose Surface Mounted Resistors

WCR Series

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



## Electrical Data

		0201	0402	0603	0805	1206	1210	2010	2512
Power rating at 70°C	watts	0.05	0.063	0.1	0.125	0.25	0.25	0.5	1.0
Resistance range	ohms	10R to 1M	4R7 to 2M2	1R to 22M	1R to 22M	1R to 22M	1R to 10M	1R to 10M	1R to 10M
Limiting element voltage	volts	25	50	50	150	200	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 155							
Zero Ohm Jumper Chip Rating	A	0.5	1	1	1.5	2	2	2	
Zero Ohm Jumper Chip Resistance	mOhms	<50	<50	<50	<50	<50	<50	<50	<50

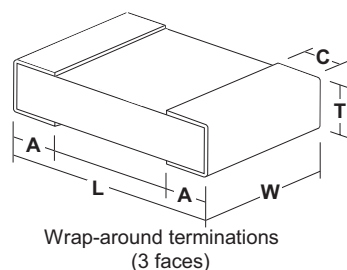
## Tolerance / Resistance / TCR

Tolerance	0201			0402			0603, 0805 & 1206			1210			2010 & 2512		
	Ohmic Range (ohms)	TCR ppm /°C*	MIN MAX	Ohmic Range (ohms)	TCR ppm /°C*	MIN MAX	Ohmic Range (ohms)	TCR ppm /°C*	MIN MAX	Ohmic Range (ohms)	TCR ppm /°C*	MIN MAX	Ohmic Range (ohms)	TCR ppm /°C*	MIN MAX
±0.5 %				100R 100K	±100		100R 100K	±100							
±1 %	10R 1M	±250		10R 1M	±100		1R 10M	±100		1R 10M	±100		1R 10M	±200	
±2 %	10R 1M	±250		10R 1M	±200		1R 10M	±200		10R 1M	±200		10R 1M	±300	
±5 %	10R 1M	±250		4R7 2M2	±300		1R 10M	±200		1R 10M	±200		1R 10M	±500	
±10 %							11M 22M	±300							

\* Notes – TCR for low values 1R to 10R: -400 to +600ppm/°C, 11R to 100R: ±200ppm/°C  
TCR for high values 3M3 to 22M: ±300ppm/°C

## Physical Data

Dimensions (mm)					
Style	L	W	T	C	A
0201	0.6 ± 0.03	0.3 ± 0.03	0.23 ± 0.03	0.12 ± 0.05	0.15 ± 0.05
0402	1.0 ± 0.05	0.5 ± 0.03	0.35 ± 0.05	0.2 ± 0.1	0.25 ± 0.1
0603	1.6 ± 0.15	0.8 ± 0.15	0.5 ± 0.15	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 -0.25	1.6 ± 0.1 -0.15	0.55 ± 0.15 -0.1	0.5 ± 0.2 -0.25	0.5 ± 0.2 -0.25
1210	3.2 ± 0.1 -0.2	2.6 ± 0.15	0.55 ± 0.15 -0.1	0.5 ± 0.25	0.5 ± 0.2
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



### 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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# General Purpose Surface Mounted Resistors

WCR Series



## Construction

The chips have a high alumina substrate (96% minimum) with a ruthenium oxide resistance element and silver palladium, nickel and tin 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. Types 0201 and 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

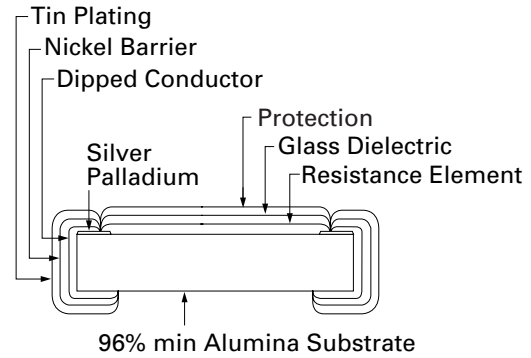


Table 1

Resistance value ohms	Noise dB
≤100R	-10
>100R, ≤10K	0
>10K, ≤100K	+15
>100K, ≤1MΩ	+20
>1MΩ	+30

## Performance Data

	Maximum Change							
	0201	0402	0603	0805	1206	1210	2010	2512
Load: 1000 hrs at 70°C ΔR%	10R-100K : 1 >100K : 2	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	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	0.2	0.2
Derate linearly to zero from 70°C	zero @ 125°C							
Short term overload (6.25 x rated power) ΔR%	2	2	2.5	2.5	2.5	2.5	2.5	5
Max voltage volts	50	100	100	200	400	400	400	400
Climatic ΔR%	3	3	3	3	3	3	3	3
Climatic Category	55/125/56							
Long term damp heat ΔR%	3	3	3	3	3	3	3	3
Temperature rapid change ΔR%	1	1	1	1	1	1	1	1
Resistance to solder heat ΔR%	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Vibration and bump ΔR%	1	1	1	1	1	1	1	1
Noise	see table 1							
Insulation resistance ohms	> 1G							
Voltage proof volts		100	500	500	500	500	500	500

## Packaging

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

180mm (7 inch) reel is standard

250mm (10 inch) reel carrying double the standard quantity can be supplied by agreement.

## Ordering Procedure

Example: WCR1206 at 10 kilohms and 1% tolerance on a reel of 5000 pieces - Packing

I Tape	0201	20000/reel	Standard
	0402	10000/reel	
	0603, 0805, 1206, 1210	5000/reel	
	2010, 2512	4000/reel	

## Chip Resistor Labstock For Designers

WCR chip resistors are available in a special package of the most popular sizes 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.

Type \_\_\_\_\_ WCR 1206 - 10K F I

Size \_\_\_\_\_

Value (use IEC62 code) \_\_\_\_\_

Tolerance (use IEC62 code) \_\_\_\_\_

D	0.5%	J	5%
F	1%	K	10%
G	2%		