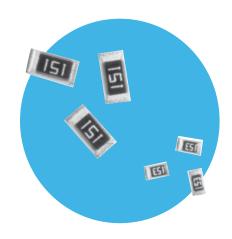
Resistors



WCR Series

- **Excellent reliability**
- Wide range of sizes and ohmic values
- Wrap around terminations
- Inner electrode protection
- AEC-Q200 grade available





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

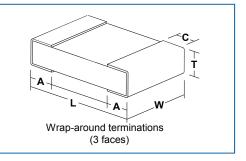
Electrical Data

		0201	0402	0603	0805	1206	1210	2010	2512
Power rating @ 70°C	watts	0.05	0.063	0.1	0.125	0.25	0.25	0.5	1.0
Resistance range	ohms	10R to 1M0	1R0 to 1M0			1R0 to	o 10M		
Limiting element votage	volts	25	50 150 20)0			
TCR*	ppm/°C	250			100			20	00
Resistance Tolerance	%					1			
Standard values	Standard values E24 or E96								
Ambient temperature range	°C				-55 to	o 155			
Zero-ohm Jumper Chip Rating	amps	0.5	1		1.5		2	· 	
Zero-ohm Jumper Chip Resistance				</td <td>50</td> <td></td> <td></td> <td></td>	50				

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

Physical Data

Dimensions (mm)								
Style	L	W	Т	С	Α			
0201	0.6 ± 0.03	0.3 ± 0.03	0.23 ± 0.03	0.12 ± 0.05	0.15 ± 0.05			
0402	1.0 ± 0.1	0.5 ± 0.05	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	1.2 ± 0.85			



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

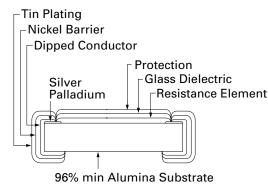
Solderability The terminations meet the requirements of

IEC 115-1, Clause 4.17.3.2.

The terminations meet requirements of Strength

IEC 68.2.21.

Figure 1



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.





www.ttelectronicsresistors.com

General Purpose Surface Mounted Resistors

WCR Series



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.

Table 1

Resistance value ohms	Noise dB
≤100R	-10
>100R, ≤10K	0
>10K, ≤100K	+15
>100K, ≤1M0	+20
>1M0	+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	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) Δ R%		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 Catagory		55/125/56							
Long term damp heat					1				
Temperature rapid change	ΔR%	1	1	1	1	1	1	1	1
Resistance to solder heat	∆R%	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Vibration and bump	∆R%	1	1	1	1	1	1	1	1
Noise		see table 1							
Insulation resistance	ohms	s > 1G							
Voltage proof	volts		100	300	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.

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.

General Purpose Surface Mounted Resistors

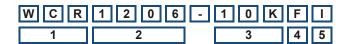




Ordering Procedure

This product has two valid part numbers:

European (Welwyn) Part Number: WCR1206-10KFI (1206, 10 kilohms ±1%, Pb-free)



1	2	3	4	5		
Туре	Size	Value¹	Tolerance ¹	Grade / Packing		
WCR	0201	E24 = 3 characters	F = ±1%	I = Standard		
	0402	E96 = 4 characters		A = AEC-Q200 grade ²		
	0603	R = ohms		Both grades use standard		
	0805	K = kilohms		packing as follows:		
	1206	M = megohms		0201	20000/reel	
	1210			0402	10000/reel	
	2010			0603, 0805,	5000/reel	
	2512			1206, 1210	5000/reei	
		•		2010, 2512	4000/reel	

Note 1: For zero ohm jumper chips use the dummy value & tolerance code R005J

Note 2: AEC-Q200 grade on resistor chips is not available in 0201 size, and on zero ohm jumper chips it is not available in 0201, 0402 or 2512 sizes

USA (IRC) Part Number: WCR-WCR1206LF-1002FPLT (1206, 10 kilohms ±1%, Pb-free)



1	2	3	4	5	6	7	
Family	Model	Size	Termination	Value	Tolerance	Packing	
WCR	WCR	0201	LF = Pb-free	3 digits + multiplier	F = ±1%	PLT = Paper Tape	
		0402		R = ohms for values		0201	20000/reel
		0603		<100 ohms		0402	10000/reel
0805		0805			-	0603, 0805,	5000/reel
		1206				1206, 1210	3000/Teel
		1210				2010	4000/reel
		2010				ELT = Plas	stic Tape
		2512				2512	4000/reel

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