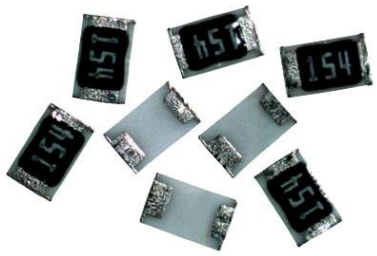
General Purpose Surface Mounted Resistors

WCR Series



Features:

- 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 amended by (EU) 2015/863

Electrical Data

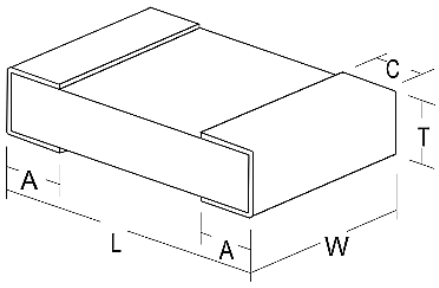
		WCR0201	WCR0402	WCR0603	WCR0805	WCR1206	WCR1210	WCR2010	WCR2512
Power rating @70°C	W	0.05	0.063	0.1	0.125	0.25		0.5	1
Resistance range	ohms	10R – 1M0	1R0 – 1M0	1R0 – 10M					
Resistance range AEC-Q200	ohms	-	10R – 1M0						
Resistance tolerance	%	1							
TCR	ppm/°C	200 [1]	100 [1,2]	100 [1,2,3]				200 [1,3]	
Limiting element voltage	V	25	50	75	150	200			
Standard values		E24 or E96							
Ambient temperature range	°C	-55 to 155							
Zero-ohm jumper rating	A	0.5	1		1.5	2			
Zero-ohm residual resistance	mΩ	<50							

Note 1: ≤10R: +600/-400 Note 2: 11R – 100R: 200 Note 3: ≥3M3: 300

Physical Data

Dimensions in mm and weight in mg Tolerances ±0.1 unless stated

Type	L	W	T	C	A	Wt.
WCR0201	0.6 ±0.03	0.3 ±0.03	0.23 ±0.03	0.1 ±0.05	0.15 ±0.05	0.14
WCR0402	1	0.5 ±0.05	0.35 ±0.05	0.2	0.25	0.53
WCR0603	1.6	0.8	0.45	0.3 ±0.2		2.08
WCR0805	2 ±0.15	1.25 +0.15/-0.1	0.55	0.4 ±0.2		4.74
WCR1206	3.1 ±0.15	1.55 +0.15/-0.1		0.45 ±0.2		8.47
WCR1210	3.1	2.6 ±0.2		0.5 ±0.25	0.5 ±0.2	16.1
WCR2010	5	2.5 ±0.2		0.6 ±0.25		24.8
WCR2512	6.35	3.2 ±0.2				44.4



Construction

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

Terminations

The terminations meet the solderability requirements of IEC 60115-1 clause 11.1 and the strength requirements of IEC 60115-1 clause 9.7.

Solvent resistance

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

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Marking

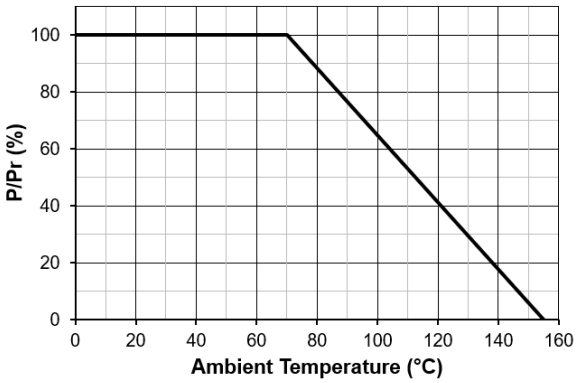
Sizes 0201 and 0402 have no marking. All other resistors are marked as described in Marking Codes used on Chip Resistors: https://www.ttelectronics.com/TTElectronics/media/ProductFiles/Application-Note/TN004-Methods-for-Marking-Values-on-Resistors.pdf. Zero-ohm jumper chips are marked “000”.

Performance Data

		Maximum
Load at rated power: P_r for 1000 hours at 70°C	±ΔR%	2512: 3 [2], Other sizes: ≤100K: 1, >100K: 2
Shelf-life test: 12 months room temperature	±ΔR%	0.2
Short term overload: 6.25xP_r or 2xLEV [1]	±ΔR%	0201 & 0402: 2, 0603 to 2010: 2.5, 2512: 5
Climatic	±ΔR%	3
Climatic category		55/125/56
Long term damp heat	±ΔR%	1
Temperature rapid change	±ΔR%	1
Resistance to solder heat	±ΔR%	2.5
Vibration and bump	±ΔR%	1
Insulation resistance	ohms	>1G0
Voltage proof	V	0201: undefined, 0402: 100, 0603: 300, 0805 to 2512: 500

Note 1: Except 0603: 100V and 0805: 200V Note 2: Plus 0.1Ω

Temperature Derating



Packaging

All chips in 1210 size and smaller are packed in 8mm paper tape, whilst 2010 and 2512 sizes are on 12mm plastic tape, reeled as IEC publication 286-3. The standard reel is 180mm (7 inch) but 250mm (10 inch) reels carrying double the standard quantity can be supplied by agreement. For dimensional details see: https://www.ttelectronics.com/TTElectronics/media/ProductFiles/Application-Note/PS001-Packing-of-General-Purpose-Chip-Resistors.pdf.

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WCR Series

Ordering Procedure

Global Part Number Example: WCR1206-10KFI (1206, 10 kilohms ±1%, standard grade, Pb-free)

W	C	R	1	2	0	6	-	1	0	K		F	I
1			2					3				4	5

1 Series	2 Size	3 Value [1]	4 Tolerance [1]	5 Grade [2] & Packing		
WCR	0201	E24/E96 = 3/4 characters R = ohms K = kilohms M = megohms	F = ±1%	I	All sizes	Standard grade
	0402			A	0402 to 2512	AEC-Q200 grade
	0603			0201		20,000/reel
	0805			0402		10,000/reel
	1206			0603 to 1210		5000/reel
	1210			2010 & 2512		4000/reel
	2010					
	2512					

Note 1: For zero-ohm jumper chips use the dummy value and tolerance code R005J.
Note 2: 0201 size is not available in AEC-Q200 grade.

Legacy Part Numbers

This product has a legacy part number format for standard grade only. This is still available for ordering, but for new designs use of the Global Part Number is recommended.

Legacy Part Number Example: WCR-WCR1206LF-1002-F-P-LT (1206, 10 kilohms ±1%, standard grade, Pb-free)

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

1 Family	2 Model	3 Size	4 Termination	5 Value [1]	6 Tolerance [1]	7 Packing		
WCR	WCR	0201	LF = Pb-free	3 digits + multiplier R = ohms for values <100 ohms	F = ±1%	P-LT = Paper tape	0201	20,000/reel
		0402					0402	10,000/reel
		0603					0603 to 1210	5000/reel
		0805				E-LT = Plastic tape	2010 & 2512	4000/reel
		1206						
		1210						
		2010						
		2512						

Note 1: For zero-ohm jumper chips use the dummy value and tolerance code R000J.

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