

# AR-Series Thin Film Chip Resistors

Sizes: 0201, 0402, 0603, 0805, 1206, 1210, 2010, 2512

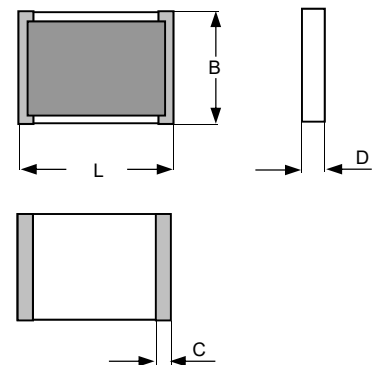
## Features:

- Chip resistors in advanced thin film technology, passivated
- Tight tolerances – down to  $\pm 0.01\%$
- Low TCR values down to  $\pm 1$  ppm/K
- Pb-free terminations - RoHS compliant
- Anti-corrosive version with special passivation available (PR-series)
- Automotive grade version is available (AEC-Q200 compliant: AR ... A)



## Dimensions:

Size	L	B	D	C
0201	0.58 $\pm 0.05$	0.29 $\pm 0.05$	0.23 $\pm 0.05$	0.15 $\pm 0.05$
0402	1.00 $\pm 0.05$	0.50 $\pm 0.05$	0.30 $\pm 0.05$	0.20 $\pm 0.10$
0603	1.55 $\pm 0.10$	0.80 $\pm 0.10$	0.45 $\pm 0.10$	0.30 $\pm 0.20$
0805	2.00 $\pm 0.15$	1.25 $\pm 0.15$	0.55 $\pm 0.10$	0.40 $\pm 0.20$
1206	3.05 $\pm 0.15$	1.55 $\pm 0.15$	0.55 $\pm 0.10$	0.35 $\pm 0.25$
1210	3.10 $\pm 0.15$	2.40 $\pm 0.15$	0.55 $\pm 0.10$	0.55 $\pm 0.25$
2010	4.90 $\pm 0.15$	2.40 $\pm 0.15$	0.55 $\pm 0.10$	0.50 $\pm 0.25$
2512	6.30 $\pm 0.15$	3.10 $\pm 0.15$	0.55 $\pm 0.10$	0.50 $\pm 0.25$



L = length, B = Width, D = Thickness, C = Width wrap around (in mm)

## Packaging:

Reel diameter 7" (178 mm)

Size	0201	0402	0603	0805	1206	1210	2010	2512
Pieces per reel	10000		5000			4000		
Type of tape	8mm, Paper						12mm, Emb. Plastic	

## Ordering Data:

Type – value – tolerance – TK (TCR)  
 Example: AR 2010 2R2  $\pm 0.5\%$  TK 25  
 Minimum order quantity MOQ: 1 Reel

(If no requirements for TCR, the highest value in table will be supplied)

## Technical data - general:

Temperature range	-55°C ... +155°C		
Climatic category acc. to EN 60068-1	55/155/56		
Solderability acc. to MIL-STD-202 Meth. 208H	245°C, 3s		
Max. soldering temperature acc. to MIL-STD-202 Meth. 210E (DIN EN 60068-2-58)	260°C, 10s		
Long term stability	Tol. $\leq 0,05\%$	Tol. $> 0,05\%$	High power rating
Load Life (70°C, power 1.5h on, 0.5h off, 1000h) acc. to MIL-STD-202 Meth. 108A <sup>1)</sup>	$\Delta R < 0.05\%$	$\Delta R < 0.2\%$	$\Delta R < 0.5\%$
Short time overload (2.5x rated power, 5s)	$\Delta R < 0.05\%$	$\Delta R < 0.2\%$	$\Delta R < 0.2\%$
Humidity (40°C, 95%RH, 1.5h on, 0.5h off, 1000h) acc. to MIL-STD-202 Meth. 103B	$\Delta R < 0.05\%$	$\Delta R < 0.3\%$	$\Delta R < 0.5\%$
High temperature (155°C, 1000h) acc. to MIL-STD-202 Meth. 108	$\Delta R < 0.5\%$	$\Delta R < 0.5\%$	$\Delta R < 0.5\%$
Resistance to soldering heat (260°C, 10s) acc. to MIL-STD-202 Meth. 210E	$\Delta R < 0.05\%$	$\Delta R < 0.1\%$	$\Delta R < 0.1\%$

<sup>1)</sup> 0201:  $\Delta R < 0.2\%$  ( $< 7k$ );  $\Delta R < 0.5\%$  ( $> 7k$ )

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## Technical data – depending on size and value:

### Standard Specification

Size	Power rating P <sub>70</sub> (W)	Max. operating Voltage <sup>2)</sup>	Max. overload Voltage <sup>3)</sup>	TK (TCR) (ppm/K)	Resistance range						
					0.01%	0.05%	0.1%	0.25%	0.5%	1%	
Standard Specification	0201	1/32	15 V	30 V	25			49R9 - 4K99			
					50			49R9 - 33K0			
	0402	1/16	25 V	50 V	25 / 50	49R9 - 12k0		4R - 511K			
	0603	1/16	50 V	100 V	25 / 50	4R7 - 332k		1R - 1M			
	0805	1/10	100 V	200 V	25 / 50	4R7 - 1M		1R - 2M			
	1206	1/8	150 V	300 V	25 / 50	4R7 - 1M		1R - 2M5			
	1210	1/4									
	2010	1/4	150 V	300 V	25 / 50	4R7 - 1M		1R - 3M			
2512	1/2										

### Special Specification

Size	Power rating P <sub>70</sub> (W)	Max. operating Voltage <sup>2)</sup>	Max. overload Voltage <sup>3)</sup>	TCR (ppm/K)	Resistance range							
					0.01%	0.05%	0.1%	0.25%	0.5%	1%		
Special Specification	0402	1/16	25 V	50 V	1 / 2 / 3	49R9 - 4K99						
					5	49R9 - 20K						
					10 / 15	49R9-20k		49R9 – 100k				
	0603	1/16	50 V	100 V	100 V	1 / 2 / 3	24R9 - 15k					
						5	24R9-60k					
						10 / 15	24R9-100k	4R7-332k	4R7 ... 511k			
	0805	1/10	100 V	200 V	200 V	1 / 2 / 3	24R9 - 30k					
						5	24R9 - 150k					
						10 / 15	24R9-200k	4R7-1M				
	1206	1/8	150 V	300 V	300 V	1 / 2 / 3	24R9 - 49k9					
						5	24R9 - 300k					
						10 / 15	24R9-499k	4R7 - 1M5				
	1210	1/4	150 V	300 V	300 V	1 / 2 / 3	24R9 - 49k9					
						5	24R9-300k					
						10 / 15	24R9-499k	4R7 - 1M				
	2010	1/4	150 V	300 V	300 V	1 / 2 / 3	24R9 - 100k					
						5	24R9 - 300k					
						10 / 15	24R9-499k	4R7 - 1M				
2512	1/2	150 V	300 V	300 V	1 / 2 / 3	24R9 - 100k						
					5	24R9 - 300k						
					10 / 15	24R9-499k	4R7 - 1M					

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## Higher Power Rating Specification

Size	Power rating P <sub>70</sub> (W)	Max. operating Voltage <sup>2)</sup>	Max. overload Voltage <sup>3)</sup>	TCR (ppm/K)	Resistance range						
					0.01%	0.05%	0.1%	0.25%	0.5%	1%	
Higher Power Rating Specification	0402	1/10	50 V	100 V	1 / 2 / 3	49R9 - 4k99					
					5	49R9 - 20k					
					10 / 15	49R9 - 12k		49R9 - 100k			
					25 / 50	49R9 - 12k		4R7 - 255k			
	0603	1/10	75 V	150 V	1 / 2 / 3	24R9 - 15k					
					5	24R9 - 60k					
					10 / 15	24R9 - 100k	4R7 - 332k	4R7 - 511k			
					25 / 50			1R - 1M			
	0805	1/8	150 V	300 V	1 / 2 / 3	24R9 - 30k					
					5	24R9 - 150k					
					10 / 15	24R9 - 200k	4R7 - 511k	4R7 - 1M			
					25 / 50			4R7 - 1M	1R0 - 1M		
1206	1/4	200 V	400 V	1 / 2 / 3	24R9 - 49k9						
				5	24R9 - 300k						
				10 / 15	24R9-499k	4R7 - 1M					
				25 / 50			1R - 1M				
1210	1/3	200 V	400 V	1 / 2 / 3	24R9 - 49k9						
				5	24R9 - 300k						
				10 / 15	24R9-499k	4R7 - 1M					
				25 / 50			1R - 1M				
2010	1/3	200 V	400 V	1 / 2 / 3	24R9 - 49k9						
				5	24R9 - 300k						
				10 / 15	24R9-499k	4R7 - 1M					
				25 / 50			1R - 1M				
2512	3/4	200 V	400 V	10 / 15 / 25 / 50	24R9-2k	4R7 - 2k		1R - 2k			
	1			25 / 50	4R7 - 100R		1R - 100R				

<sup>2)</sup> Operating voltage:  $U = \sqrt{P \cdot R}$

<sup>3)</sup> Overload voltage:  $U = 2.5 \sqrt{P \cdot R}$