

APC Precision Chip Resistor



- Precision Thin Film Technology
- Wide Resistance Range 1R - 3M
- Precision tolerance down to $\pm 0.01\%$
- TCR as low as $\pm 2\text{ppm}/^\circ\text{C}$
- Tape & Reel packaging



- Standard Electrical Specifications
- Tolerance (Code): $\pm 0.05\%$ (A), $\pm 0.1\%$ (B), $\pm 0.25\%$ (C), $\pm 0.5\%$ (D), $\pm 1\%$ (F)
- TCR (Code): $\pm 25\text{ppm}$ (N), $\pm 50\text{ppm}$ (P)

Type	Power Rating at 70°C	Operating Temp Range	Max Operating Voltage	Max Overload Voltage	Tolerance / Resistance Range					TCR (PPM°C)
					±0.05%	±0.1%	±0.25%	±0.5%	±1%	
APC0201	1/32W	-55 to +155°C	15V	30V	N/A			49.9Ω to 4.99KΩ		±25
								49.9Ω to 33KΩ		±50
APC0402	1/16W	-55 to +155°C	25V	50V	49.9Ω to 12KΩ	10Ω to 255KΩ	4.7Ω to 511KΩ			±25
								±50		
APC0603	1/16W	-55 to +155°C	50V	100V	4.7Ω to 332KΩ	4.7Ω to 1MΩ	1Ω to 1MΩ			±25
								±50		
APC0805	1/10W	-55 to +155°C	100V	200V	4.7Ω to 1MΩ	4.7Ω to 2MΩ	1Ω to 2MΩ			±25
								±50		
APC1206	1/8W	-55 to +155°C	150V	300V	4.7Ω to 1MΩ	4.7Ω to 2.49MΩ	1Ω to 2.49MΩ			±25
APC1210	1/4W									±50
APC2010	1/4W	-55 to +155°C	150V	300V	4.7Ω to 1MΩ	4.7Ω to 3MΩ	1Ω to 3MΩ			±25
APC2512	1/2W									±50

- Special Electrical Specifications
- Tolerance (Code): $\pm 0.01\%$ (T), $\pm 0.05\%$ (A), $\pm 0.1\%$ (B), $\pm 0.25\%$ (C), $\pm 0.5\%$ (D), $\pm 1\%$ (F)
- TCR (Code): $\pm 2\text{ppm}$ (X), $\pm 3\text{ppm}$ (Y), $\pm 5\text{ppm}$ (Z), $\pm 10\text{ppm}$ (W), $\pm 15\text{ppm}$ (V)

Type	Power Rating at 70°C	Operating Temp Range	Max Operating Voltage	Max Overload Voltage	Resistance Range						TCR (PPM°C)
					±0.01%	±0.05%	±0.1%	±0.25%	±0.5%	±1%	
APC0402	1/16W	-55 to +155°C	25V	50V	49.9Ω to 4.99KΩ			N/A			±2, ±3
					49.9Ω to 4.99KΩ						±5
					49.9Ω to 12KΩ		49.9Ω to 60KΩ			±10	
							49.9Ω to 69.8KΩ			±15	
APC0603	1/16W	-55 to +155°C	50V	100V	24.9Ω to 15KΩ			N/A			±2, ±3
					24.9Ω to 15KΩ						±5
					24.9Ω to 100KΩ	4.7Ω to 332KΩ	4.7Ω to 511KΩ			±10, ±15	
APC0805	1/10W	-55 to +155°C	100V	200V	24.9Ω to 30KΩ			N/A			±2, ±3
					24.9Ω to 30KΩ						±5
					24.9Ω to 200KΩ	4.7Ω to 1MΩ			±10, ±15		
APC1206	1/8W	-55 to +155°C	150V	300V	24.9Ω to 49.9KΩ			N/A			±2, ±3
					24.9Ω to 49.9KΩ						±5
					24.9Ω to 499KΩ	4.7Ω to 1MΩ			±10, ±15		
APC1210	1/4W	-55 to +155°C	150V	300V	24.9Ω to 49.9KΩ			N/A			±2, ±3
					24.9Ω to 49.9KΩ						±5
					24.9Ω to 499KΩ	4.7Ω to 1MΩ			±10, ±15		
APC2010	1/4W	-55 to +155°C	150V	300V	24.9Ω to 100KΩ			N/A			±2, ±3
					24.9Ω to 100KΩ						±5
					24.9Ω to 499KΩ	4.7Ω to 1MΩ			±10, ±15		
APC2512	1/2W	-55 to +155°C	150V	300V	24.9Ω to 100KΩ			N/A			±2, ±3
					24.9Ω to 100KΩ						±5
					24.9Ω to 499KΩ	4.7Ω to 1MΩ			±10, ±15		

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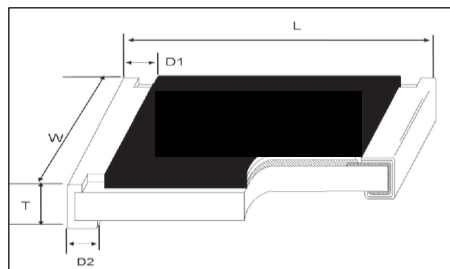
Characteristics

Item	Tol. $\leq 0.05\%$	Tol. $> 0.05\%$	Method
Short Time Overload	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.02\%$	RCWV*2.5 or Max. Overload Voltage - whichever is lower for 5 secs.
Insulation Resistance	$> 1000 \text{ M}\Omega$		Apply 100V dc for 1 minute
Endurance	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.02\%$	70 $\pm 2^\circ\text{C}$ RCWV for 1000 hours with 1.5 hrs ON and 0.5 hrs OFF
Thermal Shock	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.025\%$	-55 to +155 $^\circ\text{C}$, 100 Cycles
Low Temp Operation	$\Delta R \pm 0.05\%$	$\Delta R \pm 0.2\%$	1 hour, -65 $^\circ\text{C}$ followed by 45 mins of RCWV

*RCWV (Rated Continuous Working Voltage) = $V(P \cdot R)$ or Max. Operating Voltage - whichever is lower

Dimensions (mm)

Type	L	W	T	D1	D2
APC0201	0.58 ± 0.05	0.29 ± 0.05	0.23 ± 0.05	0.12 ± 0.05	0.15 ± 0.05
APC0402	1.00 ± 0.05	0.50 ± 0.05	0.30 ± 0.05	0.20 ± 0.05	0.20 ± 0.05
APC0603	1.55 ± 0.10	0.80 ± 0.10	0.45 ± 0.10	0.30 ± 0.20	0.30 ± 0.20
APC0805	2.00 ± 0.15	1.25 ± 0.15	0.55 ± 0.10	0.30 ± 0.20	0.40 ± 0.20
APC1206	3.05 ± 0.15	1.55 ± 0.15	0.55 ± 0.10	0.42 ± 0.20	0.35 ± 0.25
APC1210	3.10 ± 0.15	2.40 ± 0.15	0.55 ± 0.10	0.40 ± 0.20	0.55 ± 0.25
APC2010	4.90 ± 0.15	2.40 ± 0.15	0.55 ± 0.10	0.60 ± 0.30	0.50 ± 0.25
APC2512	6.30 ± 0.15	3.10 ± 0.15	0.55 ± 0.10	0.60 ± 0.30	0.50 ± 0.25

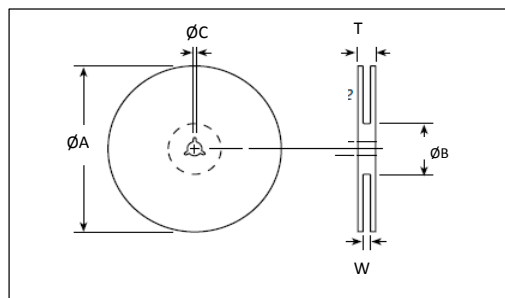


Reel Dimensions (mm)

Size	ϕA	ϕB	ϕC	W	T	Qty Per Reel
0201*	178 ± 1.0	60 ± 1.0	13.5 ± 0.7	9.5 ± 1.0	11.5 ± 1.0	10,000
0402*	178 ± 1.0	60 ± 1.0	13.5 ± 0.7	9.5 ± 1.0	11.5 ± 1.0	10,000
0603*	178 ± 1.0	60 ± 1.0	13.5 ± 0.7	9.5 ± 1.0	11.5 ± 1.0	5,000
0805*	178 ± 1.0	60 ± 1.0	13.5 ± 0.7	9.5 ± 1.0	11.5 ± 1.0	5,000
1206*	178 ± 1.0	60 ± 1.0	13.5 ± 0.7	9.5 ± 1.0	11.5 ± 1.0	5,000
1210*	178 ± 1.0	60 ± 1.0	13.5 ± 0.7	9.5 ± 1.0	11.5 ± 1.0	5,000
2010**	178 ± 1.0	60 ± 1.0	13.5 ± 0.7	13.5 ± 1.0	15.5 ± 1.0	4,000
2512**	178 ± 1.0	60 ± 1.0	13.5 ± 0.7	13.5 ± 1.0	15.5 ± 1.0	4,000

* Paper Tape

** Plastic Embossed Tape



Ordering Procedure

Standard Resistor: Series, Size, Tol Code, Resistance Value, TCR Code

Eg: APC0603A100RW add P suffix for high power version

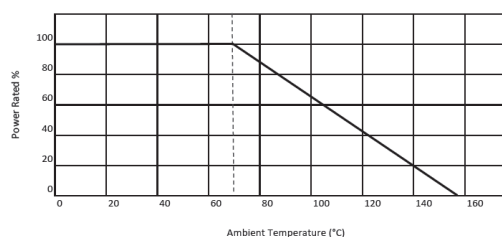
100 Ω
 $\pm 0.05\%$
 1/16 watt
 (0603 size)

Tol: $\pm 0.01\%$ (T), $\pm 0.05\%$ (A), $\pm 0.1\%$ (B), $\pm 0.25\%$ (C), $\pm 0.5\%$ (D), $\pm 1\%$ (F)

TCR: $\pm 2\text{ppm}$ (X), $\pm 3\text{ppm}$ (Y), $\pm 5\text{ppm}$ (Z), $\pm 10\text{ppm}$ (W), $\pm 15\text{ppm}$ (V), $\pm 25\text{ppm}$ (N), $\pm 50\text{ppm}$ (P)

Higher power versions available - see page 3

Derating Curve



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• High Power Electrical Specifications

• Tolerance (Code): $\pm 0.01\%$ (T), $\pm 0.05\%$ (A), $\pm 0.1\%$ (B), $\pm 0.25\%$ (C), $\pm 0.5\%$ (D), $\pm 1\%$ (F)

• TCR (Code): $\pm 2\text{ppm}$ (X), $\pm 3\text{ppm}$ (Y), $\pm 5\text{ppm}$ (Z), $\pm 10\text{ppm}$ (W), $\pm 15\text{ppm}$ (V)

Type	Power Rating at 70°C	Operating Temp Range	Max Operating Voltage	Max Overload Voltage	Resistance Range						TCR (PPM°C)
					±0.01%	±0.05%	±0.1%	±0.25%	±0.5%	±1%	
APC0603	1/10W	-55 to +155°C	75V	150V	24.9Ω to 15KΩ			N/A			±2, ±3
					24.9Ω to 15KΩ						±5
					24.9Ω to 100KΩ	4.7Ω to 332KΩ	4.7Ω to 332KΩ			±10, ±15	
APC0805	1/8W	-55 to +155°C	150V	300V	24.9Ω to 30KΩ			N/A			±2, ±3
					24.9Ω to 30KΩ						±5
					24.9Ω to 200KΩ	4.7Ω to 511KΩ	4.7Ω to 511KΩ			±10	
							4.7Ω to 1MΩ			±15	
							4.7Ω to 1MΩ	1Ω to 1MΩ		±25, ±50	
APC1206	1/4W	-55 to +155°C	200V	400V	24.9Ω to 49.9KΩ			N/A			±2, ±3
					24.9Ω to 49.9KΩ						±5
					24.9Ω to 499KΩ	4.7Ω to 1MΩ			±10, ±15 ±25, ±50		
APC1210	1/3W	-55 to +155°C	200V	400V	24.9Ω to 49.9KΩ			N/A			±2, ±3
					24.9Ω to 49.9KΩ						±5
					24.9Ω to 499KΩ	4.7Ω to 1MΩ			±10, ±15 ±25, ±50		
APC2010	1/3W	-55 to +155°C	200V	400V	24.9Ω to 49.9KΩ			N/A			±2, ±3
					24.9Ω to 49.9KΩ						±5
					24.9Ω to 499KΩ	4.7Ω to 1MΩ			±10, ±15 ±25, ±50		
APC2512	3/4W	-55 to +155°C	200V	400V	24.9Ω to 2KΩ	4.7Ω to 2KΩ		1Ω to 2KΩ			±10, ±15 ±25, ±50

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