

# 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):  $\pm 25\text{ppm}$  (E),  $\pm 50\text{ppm}$  (F)

| 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),  $\pm 10\text{ppm}$  (B),  $\pm 15\text{ppm}$  (A)

| 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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The information contained herein does not form part of a contract and is subject to change without notice. ARCOL operate a policy of continual product development, therefore, specifications may change.

It is the responsibility of the customer to ensure that the component selected from our range is suitable for the intended application. If in doubt please ask ARCOL.

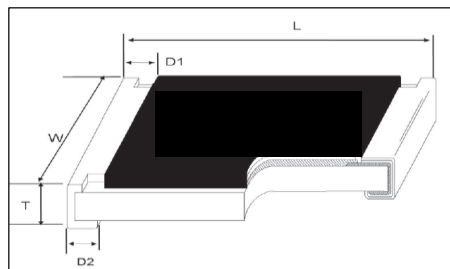
## Characteristics

| Item                  | Tol. ≤ 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 MΩ             |                        | Apply 100V dc for 1 minute                                         |
| Endurance             | $\Delta R \pm 0.05\%$ | $\Delta R \pm 0.02\%$  | 70 ±2°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°C, 100 Cycles                                          |
| Low Temp Operation    | $\Delta R \pm 0.05\%$ | $\Delta R \pm 0.2\%$   | 1 hour, -65°C followed by 45 mins of RCWV                          |

\*RCWV (Rated Continuous Working Voltage) =  $\sqrt{P \cdot R}$  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 |

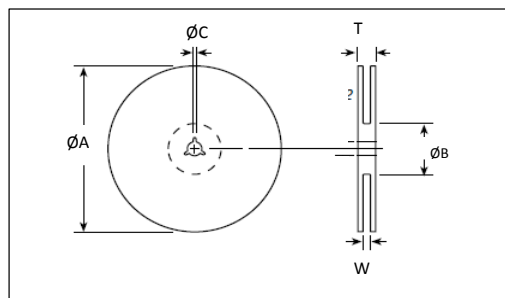


## Reel Dimensions (mm)

| Size   | ØA       | ØB      | ØC        | 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

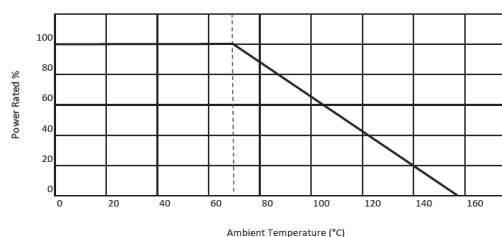
Standard Resistor: Series, Size, Tol Code, Resistance Value, TCR Code

Eg: APC0603A100RB  
 100Ω  
 ±0.05%  
 1/16 watt  
 (0603 size)

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

TCR: ±2ppm (X), ±3ppm (Y), ±5ppm (Z), ±10ppm (B), ±15ppm (A), ±25ppm (E), ±50ppm (F)

## Derating Curve



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## Данный компонент на территории Российской Федерации

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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