



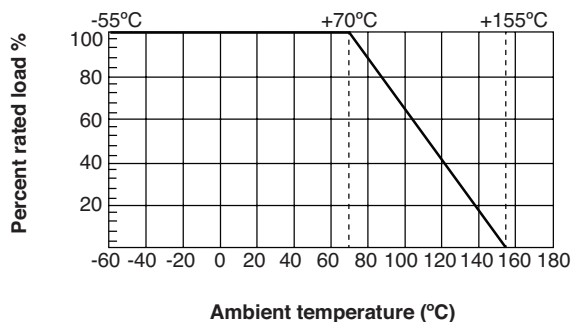
# 5% Anti-Surge Thick Film Chip Resistors (RoHS Compliant)

## AS-RC SERIES

### FEATURES

- Temperature Range:-55°C ~ +155°C (derated over 70°C)
- ±5% tolerance
- Wave or Flow solderable
- Other values may be available on request

### DERATING CURVE



LEAD-FREE

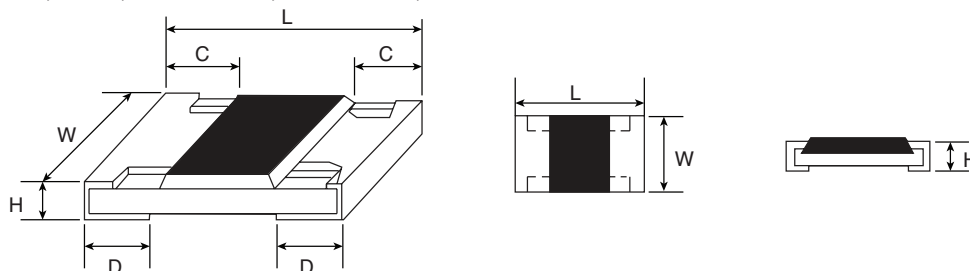


RoHS Compliant

### PART NUMBERING SYSTEM

|        |   |   |   |       |   |   |   |         |   |   |   |   |                         |   |
|--------|---|---|---|-------|---|---|---|---------|---|---|---|---|-------------------------|---|
| 3      | 0 | 3 | - | 1     | 0 | K | / | R       | E | E | L | - | R                       | C |
| Series |   |   |   | Value |   |   |   | Package |   |   |   |   | Suffix (RoHS Compliant) |   |

### SERIES, SIZE, WATTAGE, VOLTAGE, AND DIMENSIONS



| Series | Case Size | Watts (W) | Voltage (Max.) @ 70°C |      | Dimension (mm) |            |           |           |           |
|--------|-----------|-----------|-----------------------|------|----------------|------------|-----------|-----------|-----------|
|        |           |           | W.V.                  | O.V. | L              | W          | H         | C         | D         |
| 303    | 0603      | 1/4       | 50                    | 100  | 1.60 ± .10     | .80 ± .10  | .45 ± .10 | .30 ± .20 | .30 ± .20 |
| 305    | 0805      | 1/2       | 150                   | 300  | 2.00 ± .15     | 1.25 ± .15 | .55 ± .10 | .40 ± .20 | .40 ± .20 |
| 306    | 1206      | 3/5       | 200                   | 400  | 3.10 ± .15     | 1.25 ± .15 | .55 ± .10 | .40 ± .20 | .40 ± .20 |
| 307    | 1206      | 3/4       | 200                   | 500  | 3.10 ± .10     | 2.60 ± .20 | .55 ± .10 | .50 ± .25 | .50 ± .20 |
| 310    | 2010      | 3/4       | 200                   | 500  | 5.00 ± .10     | 2.50 ± .15 | .55 ± .10 | .60 ± .25 | .50 ± .20 |
| 312    | 2512      | 1.5       | 250                   | 500  | 6.35 ± .10     | 3.20 ± .15 | .55 ± .10 | .60 ± .25 | .50 ± .20 |

### STANDARD VALUES (Ω)

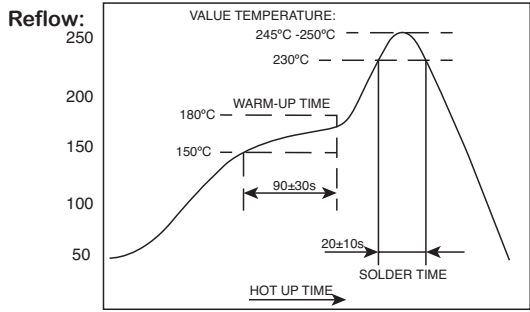
|     |     |     |     |      |      |      |      |      |
|-----|-----|-----|-----|------|------|------|------|------|
| 1.0 | 4.7 | 30  | 270 | 1K   | 5.6K | 30K  | 470K | 200M |
| 2.0 | 5.6 | 47  | 390 | 2K   | 6.8K | 33K  | 20M  | 470M |
| 2.2 | 10  | 56  | 430 | 2.0K | 10K  | 100K | 47M  |      |
| 2.4 | 15  | 100 | 470 | 3.0K | 22K  | 220K | 50M  |      |
| 3.0 | 22  | 220 | 560 | 4.7K | 27K  | 330K | 100M |      |



# 5% Anti-Surge Thick Film Chip Resistors

## (RoHS Compliant)

# AS-RC SERIES

| Characteristics                 | Limits                                                                                                                                                                        | Test Methods<br>(JIS C 5201-1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |      |             |      |   |                 |         |   |            |            |   |                  |         |   |            |            |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------|------|---|-----------------|---------|---|------------|------------|---|------------------|---------|---|------------|------------|
| Dielectric withstanding voltage | No evidence of flashover<br>mechanical damage, arcing or<br>insulation break down                                                                                             | Clamped in the trough of a 90°C metallic v-block<br>and shall be tested at ac potential respectively specified<br>in the type for 60-70 seconds                                                                                                                                                                                                                                                                                                                                                             |      |             |      |   |                 |         |   |            |            |   |                  |         |   |            |            |
| Temperature Coefficient         | 1Ω-10Ω : $\leq \pm 400 \text{ PPM}/^\circ\text{C}$<br>11Ω-10MΩ : $\leq \pm 100 \text{ PPM}/^\circ\text{C}$<br>(2010, 2512) 1Ω-10Ω : $\leq \pm 200 \text{ PPM}/^\circ\text{C}$ | Natural resistance change per temp.<br>degree centigrade.<br>$\frac{R2-R1}{R1(t2-t1)} \times 10 \quad (\text{PPM}/^\circ\text{C})$<br>R1: Resistance value at room temperature (T1)<br>R2: Resistance value at room temp. plus 100 °C(T2)<br>Test Pattern: room temp. (T1), room temp. +100°C(T2)                                                                                                                                                                                                           |      |             |      |   |                 |         |   |            |            |   |                  |         |   |            |            |
| Short Time Overload             | Resistance change rate is<br>$\pm (1.0\% + 0.1\Omega)$ Max.                                                                                                                   | Permanent resistance change after the<br>application of a potential of 2.5 times RCWV<br>for 5 seconds                                                                                                                                                                                                                                                                                                                                                                                                      |      |             |      |   |                 |         |   |            |            |   |                  |         |   |            |            |
| Solderability                   | 95% coverage Min.                                                                                                                                                             | Wave Solder:<br>Test temperature of solder:<br>245°C $\pm$ 3°C dipping time in solder: 2-3 seconds<br><br>Reflow:                                                                                                                                                                                                                                                                                                        |      |             |      |   |                 |         |   |            |            |   |                  |         |   |            |            |
| Soldering Heat                  | Resistance change rate is:<br>$\pm (1\% + 0.05\Omega)$ Max.                                                                                                                   | Dip the resistor into a solder bath having a temperature of<br>260°C $\pm$ 3°C and hold it for 10 $\pm$ 1 seconds.                                                                                                                                                                                                                                                                                                                                                                                          |      |             |      |   |                 |         |   |            |            |   |                  |         |   |            |            |
| Temperature cycling             | Resistance change rate is<br>$\pm (0.5\% + 0.05\Omega)$ Max.                                                                                                                  | Resistance change after continuous<br>5 cycles for duty cycle specified below: <table border="1" data-bbox="954 1306 1435 1488"> <thead> <tr> <th>Step</th><th>Temperature</th><th>Time</th></tr> </thead> <tbody> <tr> <td>1</td><td>-55°C <math>\pm</math> 3°C</td><td>30 mins</td></tr> <tr> <td>2</td><td>Room temp.</td><td>10~15 mins</td></tr> <tr> <td>3</td><td>+155°C <math>\pm</math> 2°C</td><td>30 mins</td></tr> <tr> <td>4</td><td>Room temp.</td><td>10~15 mins</td></tr> </tbody> </table> | Step | Temperature | Time | 1 | -55°C $\pm$ 3°C | 30 mins | 2 | Room temp. | 10~15 mins | 3 | +155°C $\pm$ 2°C | 30 mins | 4 | Room temp. | 10~15 mins |
| Step                            | Temperature                                                                                                                                                                   | Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |             |      |   |                 |         |   |            |            |   |                  |         |   |            |            |
| 1                               | -55°C $\pm$ 3°C                                                                                                                                                               | 30 mins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |             |      |   |                 |         |   |            |            |   |                  |         |   |            |            |
| 2                               | Room temp.                                                                                                                                                                    | 10~15 mins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |             |      |   |                 |         |   |            |            |   |                  |         |   |            |            |
| 3                               | +155°C $\pm$ 2°C                                                                                                                                                              | 30 mins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |             |      |   |                 |         |   |            |            |   |                  |         |   |            |            |
| 4                               | Room temp.                                                                                                                                                                    | 10~15 mins                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |             |      |   |                 |         |   |            |            |   |                  |         |   |            |            |
| Humidity                        | Resistance change rate is<br>$\pm (3.0\% + 0.1\Omega)$ Max.                                                                                                                   | Temporary resistance change after 240 hours<br>exposure in a humidity test chamber controlled at<br>40 $\pm$ 2°C and 90-95% relative humidity                                                                                                                                                                                                                                                                                                                                                               |      |             |      |   |                 |         |   |            |            |   |                  |         |   |            |            |
| Load life in humidity           | Resistance change rate is<br>$\pm (3.0\% + 0.1\Omega)$ Max.                                                                                                                   | Resistance change after 1000 hours<br>(1.5 hours "on", 0.5 hour "off") at RCWV<br>in a humidity controlled at 40°C $\pm$ 2°C<br>and 90 to 95% relative humidity                                                                                                                                                                                                                                                                                                                                             |      |             |      |   |                 |         |   |            |            |   |                  |         |   |            |            |
| Load Life                       | Resistance change rate is<br>$\pm (3.0\% + 0.1\Omega)$ Max.                                                                                                                   | Permanent resistance change after 1,000 hours<br>operating at RCWV, with duty cycle of<br>(1.5 hours "on", 0.5 hour "off") at 70°C + 2°C ambient                                                                                                                                                                                                                                                                                                                                                            |      |             |      |   |                 |         |   |            |            |   |                  |         |   |            |            |
| Terminal bending                | Resistance change rate is<br>$\pm (1.0\% + 0.05\Omega)$ Max.                                                                                                                  | Twist of Test Board:<br>Y/X = 3/90 mm for 60 seconds                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |             |      |   |                 |         |   |            |            |   |                  |         |   |            |            |

## Данный компонент на территории Российской Федерации

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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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