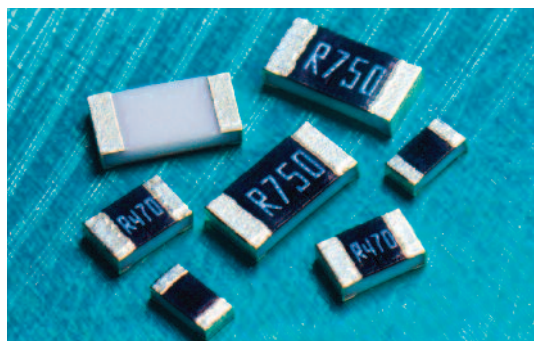


## low resistance flat chip resistors (anti sulfuration)

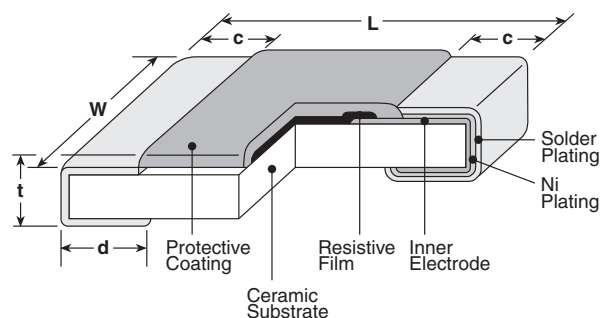


### features

- Excellent anti-sulfuration characteristic due to using high sulfuration-proof inner top electrode material
- Current detecting resistors for power supply, motor circuits, etc
- High reliability and performance with resistance tolerance  $\pm 1.0$ , T.C.R.  $\pm 100 \times 10^{-6}/K$
- Suitable for both reflow and flow solderings
- Products with lead free termination meet EU RoHS requirements. EU RoHS regulation is not intended for Pb-glass contained in electrode, resistor element and glass.
- AEC-Q200 Qualified

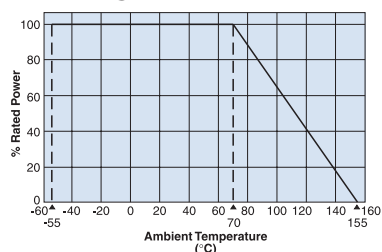


### dimensions and construction



| Type<br>(Inch Size Code) | Resistance<br>Range | Dimensions inches (mm)                                                             |                                                                                    |                                     |                                                                                   |                                      |
|--------------------------|---------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------|
|                          |                     | L                                                                                  | W                                                                                  | c                                   | d                                                                                 | t                                    |
| 1E (0402)                | 1 - 10              | .039 <sup>+0.006</sup> <sub>-.004</sub><br>(1.0 <sup>+0.1</sup> <sub>-0.05</sub> ) | .020 <sup>+0.006</sup> <sub>-.004</sub><br>(0.5 <sup>+0.1</sup> <sub>-0.05</sub> ) | .008 $\pm$ .004<br>(0.2 $\pm$ 0.1)  | .010 $\pm$ .004<br>(0.25 $\pm$ 0.1)                                               | .014 $\pm$ .002<br>(0.35 $\pm$ 0.05) |
| 1J (0603)                | 0.1 - 0.43          | .063 $\pm$ .008<br>(1.6 $\pm$ 0.2)                                                 | .031 <sup>+0.006</sup> <sub>-.004</sub><br>(0.8 <sup>+0.15</sup> <sub>-0.1</sub> ) | .016 $\pm$ .004<br>(0.4 $\pm$ 0.1)  | .018 $\pm$ .004<br>(0.45 $\pm$ 0.1)                                               | .018 $\pm$ .004<br>(0.45 $\pm$ 0.1)  |
|                          | 0.47 - 10           |                                                                                    |                                                                                    | .014 $\pm$ .004<br>(0.35 $\pm$ 0.1) | .014 $\pm$ .004<br>(0.35 $\pm$ 0.1)                                               |                                      |
| 2A (0805)                | 0.1 - 0.43          | .079 $\pm$ .008<br>(2.0 $\pm$ 0.2)                                                 | .049 $\pm$ .004<br>(1.25 $\pm$ 0.1)                                                | .016 $\pm$ .008<br>(0.4 $\pm$ 0.2)  | .016 <sup>+0.008</sup> <sub>-.004</sub><br>(0.4 <sup>+0.2</sup> <sub>-0.1</sub> ) | .02 $\pm$ .004<br>(0.5 $\pm$ 0.1)    |
|                          | 0.47 - 10           |                                                                                    |                                                                                    |                                     | .012 <sup>+0.008</sup> <sub>-.004</sub><br>(0.3 <sup>+0.2</sup> <sub>-0.1</sub> ) |                                      |
| 2B (1206)                | 0.1 - 0.43          | .126 $\pm$ .008<br>(3.2 $\pm$ 0.2)                                                 | .063 $\pm$ .008<br>(1.6 $\pm$ 0.2)                                                 | .02 $\pm$ .012<br>(0.5 $\pm$ 0.3)   | .02 <sup>+0.008</sup> <sub>-.004</sub><br>(0.5 <sup>+0.2</sup> <sub>-0.1</sub> )  | .024 $\pm$ .004<br>(0.6 $\pm$ 0.1)   |
|                          | 0.47 - 10           |                                                                                    |                                                                                    |                                     | .016 <sup>+0.008</sup> <sub>-.004</sub><br>(0.4 <sup>+0.2</sup> <sub>-0.1</sub> ) |                                      |
| 2E (1210)                | 0.1 - 0.39          | .126 $\pm$ .008<br>(3.2 $\pm$ 0.2)                                                 | .102 $\pm$ .008<br>(2.6 $\pm$ 0.2)                                                 | .02 $\pm$ .012<br>(0.5 $\pm$ 0.3)   | .02 <sup>+0.008</sup> <sub>-.004</sub><br>(0.5 <sup>+0.2</sup> <sub>-0.1</sub> )  | .024 $\pm$ .004<br>(0.6 $\pm$ 0.1)   |
|                          | 0.43 - 10           |                                                                                    |                                                                                    |                                     | .016 <sup>+0.008</sup> <sub>-.004</sub><br>(0.4 <sup>+0.2</sup> <sub>-0.1</sub> ) |                                      |

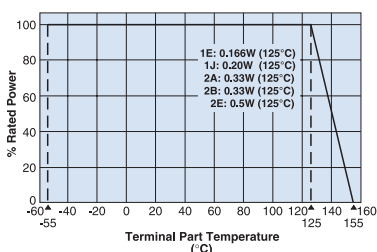
### Derating Curve



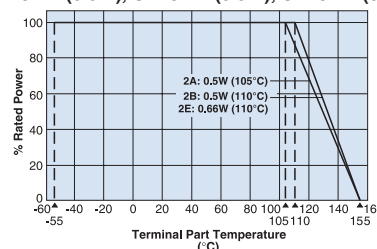
For resistors operated at an ambient temperature of 70°C or above, a power rating shall be derated in accordance with the derating curve.

### ordering information

| SR73 | 2B                                                                              | RT                    | TD                                                                                                                                                                       | R10                                                                                                                                                                                                         | J                                            |
|------|---------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| Type | Size                                                                            | Termination Material  | Packaging                                                                                                                                                                | Nominal Resistance                                                                                                                                                                                          | Tolerance                                    |
|      | 1E: 0.166W<br>1J: 0.2W<br>2A: 0.33W, 0.5W<br>2B: 0.33W, 0.5W<br>2E: 0.5W, 0.66W | RT: Sn<br>Anti-Sulfur | TD: 7" 4mm pitch punch paper<br>TP: 0402 only, 7" 2mm pitch paper<br>TPL: 0402 only, 2mm pitch paper<br>For further information on packaging, please refer to Appendix A | $\pm 2\%$ , $\pm 5\%$ : 2 significant figures + 1 multiplier "R" indicates decimal on values <10 $\Omega$<br>$\pm 1\%$ : 3 significant figures + 1 multiplier "R" indicates decimal on values <100 $\Omega$ | F: $\pm 1\%$<br>G: $\pm 2\%$<br>J: $\pm 5\%$ |



SR73 2A (0.5W), SR73 2B (0.5W), SR73 2E (0.66W)



For resistors operated at a terminal part temperature of described for each size or above, a power rating shall be derated in accordance with the derating curve.

Please refer to "Introduction of the derating curve based on the terminal part temperature" in the beginning of our catalog before use.

### applications and ratings

| Part Designation | Power Rating | Rated Ambient Temperature | Rated Terminal Part Temp. | T.C.R. (ppm/°C) Max. | Resistance Range                |              |              | Operating Temperature Range |
|------------------|--------------|---------------------------|---------------------------|----------------------|---------------------------------|--------------|--------------|-----------------------------|
|                  |              |                           |                           |                      | F (±1%) E-24, E-96 <sup>1</sup> | G (±2%) E-24 | J (±5%) E-24 |                             |
| SR731ERT (0402)  | 0.166W       | 70°C                      | 125°C                     | ±200                 | 1Ω - 10Ω                        | 1Ω - 10Ω     | 1Ω - 10Ω     | -55°C to +155°C             |
| SR731JRT (0603)  | 0.2W         | 70°C                      | 125°C                     | ±200                 | 0.2Ω - 10Ω                      | 0.2Ω - 10Ω   | 0.2Ω - 10Ω   |                             |
|                  |              |                           |                           | ±300                 | 0.1Ω - 0.18Ω                    | 0.1Ω - 0.18Ω | 0.1Ω - 0.18Ω |                             |
| SR732ART (0805)  | 0.33W        | 70°C                      | 125°C                     | ±100                 | 0.47Ω - 10Ω                     | —            | —            |                             |
|                  |              |                           |                           | ±200                 | 0.2Ω - 0.43Ω                    | 0.2Ω - 10Ω   | 0.2Ω - 10Ω   |                             |
|                  |              |                           |                           | ±250                 | 0.1Ω - 0.18Ω                    | 0.1Ω - 0.18Ω | 0.1Ω - 0.18Ω |                             |
|                  | 0.5W*        | —                         | 105°C                     | ±100                 | 0.47Ω - 10Ω                     | —            | —            |                             |
|                  |              |                           |                           | ±200                 | 0.2Ω - 0.43Ω                    | 0.2Ω - 10Ω   | 0.2Ω - 10Ω   |                             |
|                  |              |                           |                           | ±250                 | 0.1Ω - 0.18Ω                    | 0.1Ω - 0.18Ω | 0.1Ω - 0.18Ω |                             |
| SR732BRT (1206)  | 0.33W        | 70°C                      | 125°C                     | ±100                 | 0.47Ω - 10Ω                     | —            | —            |                             |
|                  |              |                           |                           | ±200                 | 0.2Ω - 0.43Ω                    | 0.2Ω - 10Ω   | 0.2Ω - 10Ω   |                             |
|                  |              |                           |                           | ±250                 | 0.1Ω - 0.18Ω                    | 0.1Ω - 0.18Ω | 0.1Ω - 0.18Ω |                             |
|                  | 0.5W*        | —                         | 110°C                     | ±100                 | 0.47Ω - 10Ω                     | —            | —            |                             |
|                  |              |                           |                           | ±200                 | 0.2Ω - 0.43Ω                    | 0.2Ω - 10Ω   | 0.2Ω - 10Ω   |                             |
|                  |              |                           |                           | ±250                 | 0.1Ω - 0.18Ω                    | 0.1Ω - 0.18Ω | 0.1Ω - 0.18Ω |                             |
| SR732ERT (1210)  | 0.5W         | 70°C                      | 125°C                     | ±100                 | 0.43Ω - 10Ω                     | —            | —            |                             |
|                  |              |                           |                           | ±200                 | 0.2Ω - 0.39Ω                    | 0.2Ω - 10Ω   | 0.2Ω - 10Ω   |                             |
|                  |              |                           |                           | ±250                 | —                               | —            | 0.1Ω - 0.18Ω |                             |
|                  | 0.66W*       | —                         | 110°C                     | ±100                 | 0.43Ω - 10Ω                     | —            | —            |                             |
|                  |              |                           |                           | ±200                 | 0.2Ω - 0.39Ω                    | 0.2Ω - 10Ω   | 0.2Ω - 10Ω   |                             |
|                  |              |                           |                           | ±250                 | —                               | —            | 0.1Ω - 0.18Ω |                             |

Rated voltage =  $\sqrt{\text{Power rating} \times \text{resistance value}}$  or max. working voltage, whichever is lower

<sup>1</sup> The nominal resistance for SR731E (F:±1%), SR731J, 2A, 2B (0.1~0.43) and SR732E (0.1~0.39) is E-24 only

\* Please use the derating curve based on the terminal part temperature in graph below.

If any questions should arise whether to use the "Rated Ambient Temperature" or the "Rated Terminal Part Temperature," please give priority to the "Rated Terminal Part Temperature." Prior to use and for more details refer to "Introduction of the derating curves on the terminal part temperature" in the beginning of the catalog.

### environmental applications

#### Performance Characteristics

| Parameter                   | Requirement $\Delta R$ (±0.005Ω) |         | Test Method                                                                           |
|-----------------------------|----------------------------------|---------|---------------------------------------------------------------------------------------|
|                             | Limit                            | Typical |                                                                                       |
| Resistance                  | Within specified tolerance       | —       | 25°C                                                                                  |
| T.C.R.                      | Within specified T.C.R.          | —       | +25°C/-55°C and +25°C/+125°C                                                          |
| Overload (Short time)       | ±2%                              | ±0.5%   | Rated voltage x 2.5 for 5 seconds                                                     |
| Resistance to Solder Heat   | ±1%                              | ±0.3%   | 260°C ± 5°C, 10 seconds ± 1 second                                                    |
| Rapid Change of Temperature | ±1%                              | ±0.3%   | -55°C (30 minutes), +125°C (30 minutes), 100 cycles                                   |
| Moisture Resistance         | ±2%                              | ±1%     | 40°C ± 2°C, 90%-95% RH, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle                       |
| Endurance at 70°C           | ±2%                              | ±1%     | 70°C ± 2°C, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle                                   |
| High Temperature Exposure   | ±1%                              | ±0.3%   | +155°C, 1000 hours                                                                    |
| Sulfuration Test            | ±5%                              | ±0.2%   | Soaked in industrial oil with sulfur substance 3.5% contained, 105°C ± 3°C, 500 hours |

Please refer to conventional products for characteristic data such as temperature rise.