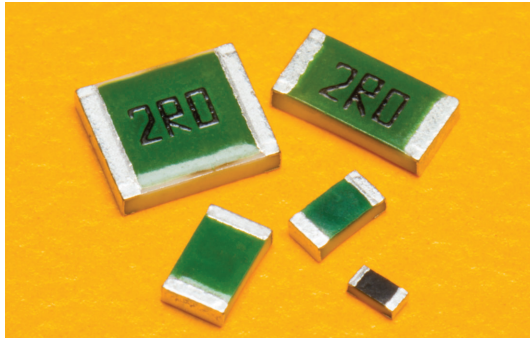




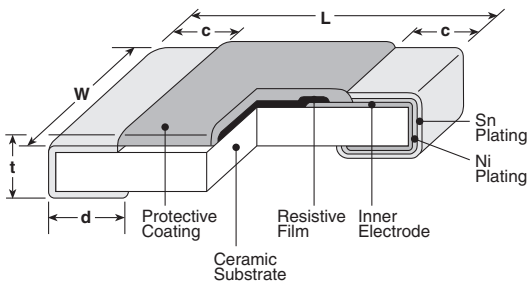
**anti-surge endured pulse power  
thick film chip resistor**



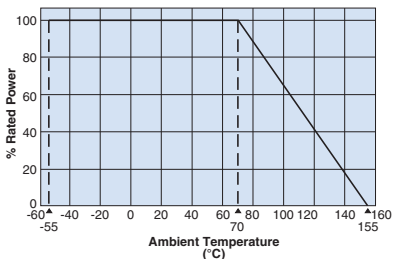
**features**

- Superior to RK73B/RK73H series in pulse withstanding voltage and high power
- Down to  $\pm 0.5\%$  tolerance
- Suitable for both reflow and flow solderings
- Products with lead-free terminations meet EU RoHS requirements. EU RoHS regulation is not intended for Pb-glass contained in electrode, resistor element and glass.
- AEC-Q200 Tested

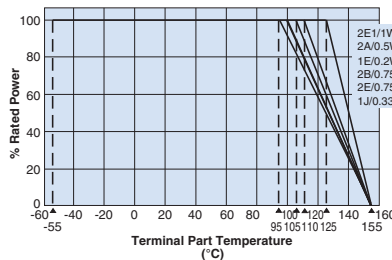
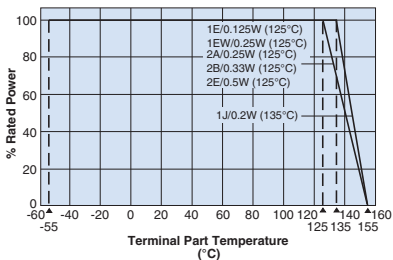
**dimensions and construction**



**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.



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. If you want to use the rated power of \*\*, please use the derating curve based on the terminal part temperature on the right hand side.

| Type<br>(Inch Size Code)      | Dimensions inches (mm)   |                         |  |  |                          |
|-------------------------------|--|-------------------------|--|--|--------------------------|
|                               | L  | W                       | c  | d  | t                        |
| SG73P1E<br>(0402)             | .039 <sup>+0.004</sup> <sub>-.002</sub><br>(1.0 <sup>+0.1</sup> <sub>-0.05</sub> ) | .02±.002<br>(0.5±0.05)  | .006±.004<br>(0.15±0.1)  | .010 <sup>+0.002</sup> <sub>-.004</sub><br>(0.25 <sup>+0.05</sup> <sub>-.1</sub> ) | .014±.002<br>(0.35±0.05) |
| SG73P1EW<br>(0402)            | .039 <sup>+0.004</sup> <sub>-.002</sub><br>(1.0 <sup>+0.1</sup> <sub>-0.05</sub> ) | .02±.002<br>(0.5±0.05)  | .006±.004<br>(0.15±0.1)  | .010 <sup>+0.002</sup> <sub>-.004</sub><br>(0.25 <sup>+0.05</sup> <sub>-.1</sub> ) | .014±.002<br>(0.35±0.05) |
| SG73P1J<br>(0603)             |  |                         | .012±.004<br>(0.3±0.1)   | .012±.004<br>(0.3±0.1)   | .018±.004<br>(0.45±0.1)  |
| SG73P1J AT<br>(0603)          | .063±.008<br>(1.6±0.2)   | .031±.004<br>(0.8±0.1)  | .014±.006<br>(0.35±0.15)   | .02±.008<br>(0.5±0.2)  |                          |
| SG73P2A<br>(0805)             | .079±.008<br>(2.0±0.2)   | .049±.004<br>(1.25±0.1) | .012 <sup>+0.008</sup> <sub>-.004</sub><br>(0.3 <sup>+0.2</sup> <sub>-.1</sub> ) | .012 <sup>+0.008</sup> <sub>-.004</sub><br>(0.3 <sup>+0.2</sup> <sub>-.1</sub> )   | .02±.004<br>(0.5±0.1)    |
| SG73P2A AT<br>(0805)          |  |                         | .018±.010<br>(0.45±0.25)   | .024±.008<br>(0.6±0.2)   | .022±.004<br>(0.55±0.1)  |
| SG73P2B<br>(1206)             |  | .063±.008<br>(1.6±0.2)  | .016 <sup>+0.008</sup> <sub>-.004</sub><br>(0.4 <sup>+0.2</sup> <sub>-.1</sub> ) | .016 <sup>+0.008</sup> <sub>-.004</sub><br>(0.4 <sup>+0.2</sup> <sub>-.1</sub> )   |                          |
| SG73P2B AT<br>(1206)          | .126±.008<br>(3.2±0.2)   |                         | .022±.014<br>(0.55±0.35)   | .031±.008<br>(0.8±0.2)   | .024±.004<br>(0.6±0.1)   |
| SG73P2E<br>SG73P2E1<br>(1210) |  | .102±.008<br>(2.6±0.2)  | .016 <sup>+0.008</sup> <sub>-.004</sub><br>(0.4 <sup>+0.2</sup> <sub>-.1</sub> ) | .016 <sup>+0.008</sup> <sub>-.004</sub><br>(0.4 <sup>+0.2</sup> <sub>-.1</sub> )   |                          |

**ordering information**

| SG73P | 2B                                       |   | T                    | TD  | 1001  | F  |
|-------|--|---|----------------------|---|---|--|
| Type  | Size                                     | Characteristic  | Termination Material | Packaging   | Nominal Resistance  | Tolerance  |
| SG73P | 1E<br>1EW<br>1J<br>2A<br>2B<br>2E<br>2E1 | Nil: Standard<br>A: Heat shock resistance *1<br><br>*1 With type A, only T is available as the terminal surface material.<br>Contact us when you have control request for environmental hazardous material other than the substance specified by EU RoHS.<br>For further information on packaging, please refer to Appendix A | T: Sn                | TP: 0402, 0603, 0805: 7" 2mm pitch punch paper<br>TD: 0603, 0805, 1206, 1210: 7" 4mm pitch punched paper<br>TE: 0805, 1206, 1210: 7" 4mm embossed plastic | $\pm 0.5\%$ , $\pm 1\%$ : 3 significant figures + 1 multiplier "R" indicates decimal on value <100Ω<br><br>$\pm 2\%$ , $\pm 5\%$ : 2 significant figures + 1 multiplier "R" indicates decimal on value <10Ω | D: $\pm 0.5\%$<br>F: $\pm 1\%$<br>G: $\pm 2\%$<br>J: $\pm 5\%$ |

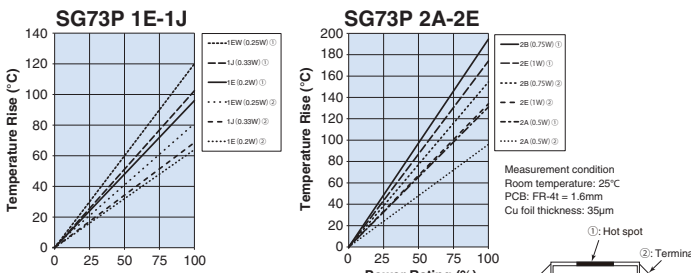
Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

7/08/23

## applications and ratings

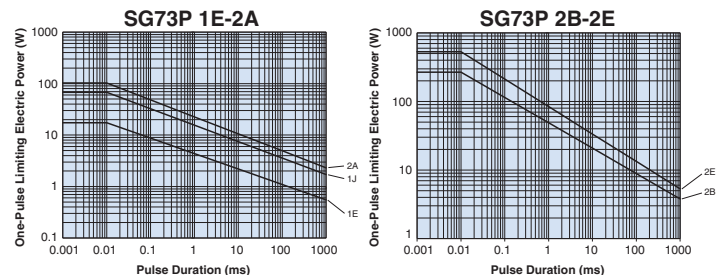
| Part Designation | Power Rating | Rated Ambient Temp. | Rated Terminal Part Temp. | T.C.R. (ppm/°C) Max. | Resistance Range (Ω) |                    |                     | Absolute Maximum Working Voltage | Absolute Maximum Overload Voltage | Operating Temp. Range |
|------------------|--------------|---------------------|---------------------------|----------------------|----------------------|--------------------|---------------------|----------------------------------|-----------------------------------|-----------------------|
|                  |              |                     |                           |                      | (E-24)/E-96 (D±0.5%) | (E-24)/E-96 (F±1%) | (E-24) (G±2%, J±5%) |                                  |                                   |                       |
| SG73P1E (0402)   | 0.125W       | 70°C                | 125°C                     | ±200                 | 10 - 1M              | 1 - 1M             | 1 - 10M             | 75V                              | 100V                              | -55°C to +155°C       |
|                  | 0.2W*2       |                     | 105°C                     | ±100                 | 10 - 1M              | 10 - 1M            | 10 - 1M             |                                  |                                   |                       |
| SG73P1EW (0402)  | 0.25W*2      |                     | 125°C                     | ±200                 | —                    | 1 - 9.76           | 1 - 9.1             | 75V                              | 100V                              |                       |
|                  |              |                     | 135°C                     | ±100                 | 510 - 576k           | 510 - 576k         | 510 - 560k          |                                  |                                   |                       |
| SG73P1J (0603)   | 0.2W         |                     | 135°C                     | ±100**               | 10 - 499             | 1 - 499            | 1 - 470             | 150V                             | 200V                              |                       |
|                  |              |                     | 125°C                     | ±100                 | 590k - 1M            | 590k - 1M          | 620k - 10M          |                                  |                                   |                       |
|                  | 125°C        |                     | ±100                      | 510 - 576k           | 510 - 576k           | 510 - 560k         |                     |                                  |                                   |                       |
|                  |              |                     | ±100**                    | 10 - 499             | 1 - 499              | 1 - 470            |                     |                                  |                                   |                       |
| SG73P2A (0805)   | 0.25W        |                     | 125°C                     | ±100                 | 100 - 100k           | 100 - 100k         | 100 - 100k          | 400V                             | 600V (800V)*3                     |                       |
|                  |              |                     | 100°C                     | ±200                 | 10 - 97.6            | 1 - 97.6           | 1 - 91              |                                  |                                   |                       |
|                  | 100°C        |                     | ±100                      | 102k - 1M            | 102k - 1M            | 110k - 10M         |                     |                                  |                                   |                       |
|                  |              |                     | ±200                      | 10 - 97.6            | 1 - 97.6             | 110k - 10M         |                     |                                  |                                   |                       |
| SG73P2B (1206)   | 0.33W        | 125°C               | ±100                      | 300 - 1M             | 300 - 1M             | 300 - 1.1M         | 200V                | 400V                             |                                   |                       |
|                  |              | 105°C               | ±200                      | 10 - 294             | 1 - 294              | 1 - 270            |                     |                                  |                                   |                       |
|                  | 105°C        | ±100                | 300 - 1M                  | 300 - 1M             | 300 - 1.1M           |                    |                     |                                  |                                   |                       |
|                  |              | ±200                | 10 - 294                  | 1 - 294              | 1 - 270              |                    |                     |                                  |                                   |                       |
| SG73P2E (1210)   | 0.5W         | 125°C               | ±200                      | 10 - 1M              | 1 - 1M               | 1 - 10M            | 200V                | 400V                             |                                   |                       |
|                  | 0.75W*2      | 110°C               | ±200                      | 10 - 1M              | 1 - 1M               | 1 - 10M            |                     |                                  |                                   |                       |
| SG73P2E1 (1210)  | 1.0W*2       | 95°C                | ±200                      | 10 - 1M              | 1 - 1M               | 1 - 10M            | 200V                | 400V                             |                                   |                       |

Parenteses indicate EIA package size codes. \*\* Cold T.C.R. (-55°C ~ +25°C) is  $+150 \times 10^{-6}/K$  Rated voltage =  $\sqrt{\text{Power rating} \times \text{resistance value}}$  or max. working voltage, whichever is lower. Please contact KOA Speer for how to handle a specific surge/pulse. 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. \*2 Rated power derating applies only if permitted Terminal Part Temp is not exceeded. \*3 Applies when power rating is 0.4W or lower.

 environmental applications  
 Temperature Rise


Regarding the temperature rise, the value of the temperature varies per conditions and board for use since the temperature is measured under our measuring conditions.

## One-Pulse Limiting Electric Power



The maximum applicable voltage is equal to the max. overload voltage. Please ask us about the resistance characteristic of continuous applied pulse. The pulse endurance values are not assured values, so be sure to check the products on actual equipment when you use them.

## Performance Characteristics

| Parameter                   | Requirement Δ R ±(%+0.1%)   |   | 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 (1EW: 0.25W; 2A: 0.4W, 0.5W; 2B: 0.75W; 2E: 0.75W; 2E1: 1W rated voltage x 2 for 5 seconds)  |
| Resistance to Solder Heat   | ±1%   | ±0.75%  | 260°C ± 5°C, 10 seconds ± 1 second   |
| Rapid Change of Temperature | ±0.5%: Characteristic (Nil) Standard<br>±1%: Characteristic (A) Heat Shock Resistance | ±0.3%: Characteristic (Nil) Standard<br>±0.5%: Characteristic (A) Heat Shock Resistance | Characteristic (Nil) Standard: -55°C (30 min.)/+125°C (30 min.) 100 cycles<br>Characteristic (A) Heat Shock Resistance: -55°C (30 min.)/+125°C (30 min.) 1000 cycles |
| Moisture Resistance         | ±3%   | ±0.75%  | 40°C ± 2°C, 90%~95%RH, 1000 hours; 1.5 hr ON, 0.5 hr OFF cycle   |
| Endurance at 70°C           | ±3%   | ±0.75%  | 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   |

Additional environmental applications can also be found at [www.koaspeer.com](http://www.koaspeer.com)

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

11/09/23

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