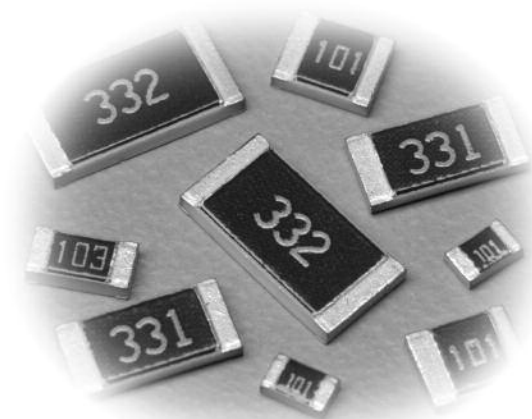
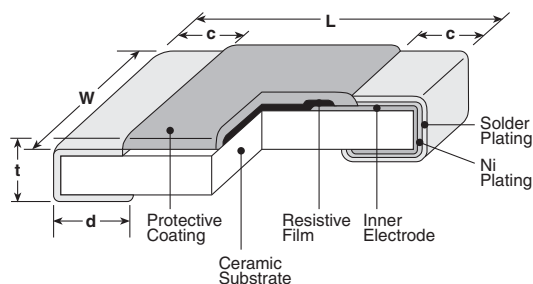




## features

- Superior to RK73B/RK73H series in surge/pulse withstanding voltage
- SG73: Untrimmed, superior surge/pulse and ESD withstanding  
SG73P: Pulse withstanding; down to  $\pm 0.5\%$  tolerance  
SG73S: ESD withstanding; down to  $\pm 0.5\%$  tolerance
- Marking: SG73: White three-digit on wine red protective coat  
SG73P: Black three-digit on green protective coating  
SG73S: White three-digit on green protective coating  
SG73P/S 1E, 1J: no marking  
SG73P/S 1E: Black coating
- 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 Qualified: 0402(1E), 0603(1J), 0805(2A), 1206(2B), 1210(2E), 2010(2H/W2H), 2512(3A/W3A)

## dimensions and construction



| Type<br>(Inch Size Code)            | Dimensions inches (mm)              |                                      |                                      |                                       |                                       |
|-------------------------------------|-------------------------------------|--------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------|
|                                     | L                                   | W                                    | c                                    | d                                     | t                                     |
| SG73P1E,<br>SG73S1E<br>(0402)       | .039 $\pm .004$<br>(1.0 $\pm 0.1$ ) | .02 $\pm .002$<br>(0.5 $\pm 0.05$ )  | .006 $\pm .004$<br>(0.15 $\pm 0.1$ ) | .010 $\pm .002$<br>(0.25 $\pm 0.05$ ) | .014 $\pm .002$<br>(0.35 $\pm 0.05$ ) |
| SG731J,SG73P1J<br>SG73S1J<br>(0603) | .063 $\pm .008$<br>(1.6 $\pm 0.2$ ) | .031 $\pm .004$<br>(0.8 $\pm 0.1$ )  | .012 $\pm .004$<br>(0.3 $\pm 0.1$ )  | .012 $\pm .004$<br>(0.3 $\pm 0.1$ )   | .018 $\pm .004$<br>(0.45 $\pm 0.1$ )  |
| SG732A<br>(0805)                    | .079 $\pm .008$<br>(2.0 $\pm 0.2$ ) | .049 $\pm .004$<br>(1.25 $\pm 0.1$ ) | .016 $\pm .008$<br>(0.4 $\pm 0.2$ )  | .012 $\pm .008$<br>(0.3 $\pm 0.2$ )   | .02 $\pm .004$<br>(0.5 $\pm 0.1$ )    |
| SG73P2A,<br>SG73S2A<br>(0805)       |                                     |                                      | .012 $\pm .008$<br>(0.3 $\pm 0.2$ )  |                                       |                                       |

| Type<br>(Inch Size Code)      | Dimensions inches (mm)              |                                     |                                     |                                       |                                     |
|-------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|---------------------------------------|-------------------------------------|
|                               | L                                   | W                                   | c                                   | d                                     | t                                   |
| SG732B<br>(1206)              | .126 $\pm .008$<br>(3.2 $\pm 0.2$ ) | .063 $\pm .008$<br>(1.6 $\pm 0.2$ ) | .02 $\pm .012$<br>(0.5 $\pm 0.3$ )  | .016 $\pm .008$<br>(0.4 $\pm 0.2$ )   | .024 $\pm .004$<br>(0.6 $\pm 0.1$ ) |
| SG73P2B,<br>SG73S2B<br>(1206) |                                     |                                     | .016 $\pm .008$<br>(0.4 $\pm 0.2$ ) |                                       |                                     |
| SG732E<br>(1210)              |                                     | .102 $\pm .008$<br>(2.6 $\pm 0.2$ ) | .02 $\pm .012$<br>(0.5 $\pm 0.3$ )  |                                       |                                     |
| SG73P2E,<br>SG73S2E<br>(1210) |                                     |                                     | .016 $\pm .008$<br>(0.4 $\pm 0.2$ ) |                                       |                                     |
| SG732H<br>(2010)              | .197 $\pm .008$<br>(5.0 $\pm 0.2$ ) | .098 $\pm .008$<br>(2.5 $\pm 0.2$ ) | .02 $\pm .012$<br>(0.5 $\pm 0.3$ )  | .026 $\pm .006$<br>(0.65 $\pm 0.15$ ) |                                     |
| SG73W2H<br>(2010)             |                                     |                                     |                                     | .016 $\pm .008$<br>(0.4 $\pm 0.2$ )   |                                     |
| SG733A<br>(2512)              | .248 $\pm .008$<br>(6.3 $\pm 0.2$ ) | .122 $\pm .008$<br>(3.1 $\pm 0.2$ ) |                                     | .026 $\pm .006$<br>(0.65 $\pm 0.15$ ) |                                     |
| SG73W3A<br>(2512)             |                                     |                                     |                                     |                                       |                                     |

### New Part #

| SG73                   | 2B                                                      | T                                                                                       | TD                                                                                                                                                                                                                                                                                                                                                | 102                                                                                                                                                                                                                                               | K                                                                                                |
|------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Type                   | Size                                                    | Termination Material                                                                    | Packaging                                                                                                                                                                                                                                                                                                                                         | Nominal Resistance                                                                                                                                                                                                                                | Tolerance                                                                                        |
| SG73<br>SG73P<br>SG73S | NEW1E<br>1J<br>2A<br>2B<br>2E<br>W2H<br>W3A<br>2H<br>3A | T: Sn<br>L: SnPb: (NOT available in SG732H/W2H, SG733A/W3A, SG73P series, SG73S series) | TP: 0402, 0603, 0805: 7" 2mm pitch punch paper<br>TD: 0603, 0805, 1206, 1210: 7" 4mm pitch punched paper<br>TDD: 0603, 0805, 1206, 1210: 10" paper tape<br>TE: 0805, 1206, 1210, 2010 & 2512: 7" embossed plastic<br>TED: 0805, 1206, 1210, 2010 & 2512: 10" embossed plastic<br>For further information on packaging, please refer to Appendix A | $\pm 0.5\%$ , $\pm 1\%$ : 3 significant figures + 1 multiplier "R" indicates decimal on value $< 100\Omega$<br>$\pm 2\%$ , $\pm 5\%$ , $\pm 10\%$ , $\pm 20\%$ : 2 significant figures + 1 multiplier "R" indicates decimal on value $< 10\Omega$ | D: $\pm 0.5\%$<br>F: $\pm 1\%$<br>G: $\pm 2\%$<br>J: $\pm 5\%$<br>K: $\pm 10\%$<br>M: $\pm 20\%$ |

## applications and ratings

| Part Designation          | Power Rating @ 70°C | T.C.R. (ppm/°C) Max. | Resistance Range       |                    |                     |                        | Absolute Maximum Working Voltage | Absolute Maximum Overload Voltage | Rated Terminal Part Temp. | Operating Temp. Range |       |
|---------------------------|---------------------|----------------------|------------------------|--------------------|---------------------|------------------------|----------------------------------|-----------------------------------|---------------------------|-----------------------|-------|
|                           |                     |                      | (E-24)/E-96 (D±0.5%)   | (E-24)/E-96 (F±1%) | (E-24) (G±2%, J±5%) | (E-12) (K±10%, M±20%)  |                                  |                                   |                           |                       |       |
| SG731J (0603)             | 0.1W                | ±400<br>±200         | —                      | —                  | —                   | 1Ω - 8.2Ω<br>10Ω - 1MΩ | 50V                              | 100V                              | 125°C                     | -55°C to +155°C       |       |
| SG732A (0805)             | 0.125W              | ±400<br>±200         |                        |                    |                     | 1Ω - 8.2Ω<br>10Ω - 1MΩ | 150V                             | 200V                              |                           |                       |       |
| SG732B (1206)             | 0.25W<br>.33W***    | ±400<br>±200         | 1Ω - 8.2Ω<br>10Ω - 1MΩ | 200V               | 400V                |                        |                                  |                                   |                           |                       |       |
| SG732E (1210)             | 0.33W               | ±400<br>±200         | 1Ω - 8.2Ω<br>10Ω - 1MΩ |                    |                     |                        |                                  |                                   |                           |                       |       |
| SG732H/W2H (2010)         | 0.75W               | ±400<br>±200         | 1Ω - 8.2Ω<br>10Ω - 1MΩ |                    |                     |                        |                                  |                                   |                           |                       |       |
| SG733A/W3A (2512)         | 1W                  | ±400<br>±200         | 1Ω - 8.2Ω<br>10Ω - 1MΩ |                    |                     |                        |                                  |                                   |                           |                       |       |
| SG73P1E<br>SG73S1E (0402) | 0.125W<br>.2W***    | ±200                 | 10Ω - 1MΩ              | 1Ω - 1MΩ           | 1Ω - 10MΩ           | —                      | 50V                              | 100V                              |                           |                       | 85°C  |
| SG73P1J<br>SG73S1J (0603) | 0.2W<br>.25W***     | ±100**               |                        |                    |                     |                        |                                  |                                   |                           |                       | 95°C  |
| SG73S2A<br>SG73P2A (0805) | 0.25W<br>.5W***     | ±200                 | 10Ω - 1MΩ              | 1Ω - 1MΩ           | 1Ω - 10MΩ           | —                      | 150V<br>200V***                  | 200V<br>400V***                   | 100°C                     |                       |       |
| SG73S2B<br>SG73P2B (1206) | 0.33W<br>.5W***     | ±200                 | 10Ω - 1MΩ              | 1Ω - 1MΩ           | 1Ω - 10MΩ           | —                      | 200V                             | 400V                              |                           |                       |       |
| SG73S2E<br>SG73P2E (1210) | 0.5W                | ±200                 | 10Ω - 1MΩ              | 1Ω - 1MΩ           | 1Ω - 10MΩ           | —                      |                                  |                                   |                           |                       | 110°C |

Parentheses indicate EIA package size codes.

\*\* Cold T.C.R.: +150 x 10<sup>-6</sup>/K

\*\*\* Please refer to the "Higher Power Ratings" statement in the beginning of the catalog.

Also, please contact KOA prior to usage and for the Max. working voltage and Max. overload voltage.

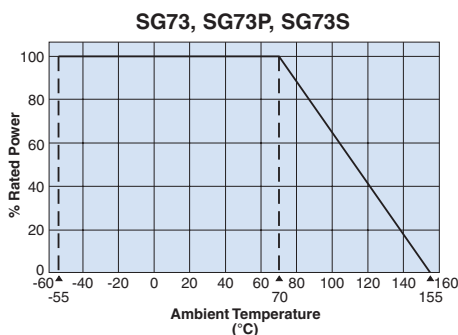
Rated ambient temperature: +70°C

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

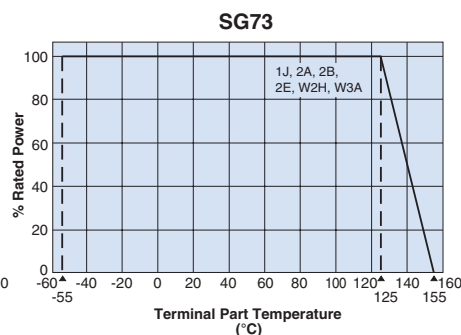
Please contact KOA Speer for how to handle a specific surge/pulse

## environmental applications

### Derating Curve

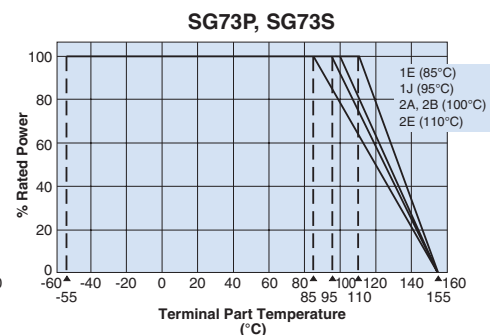


For resistors operated at an ambient temperature of 70°C or above, a power rating shall be derated in accordance with the derating curve.



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" on the beginning of our catalog before use.



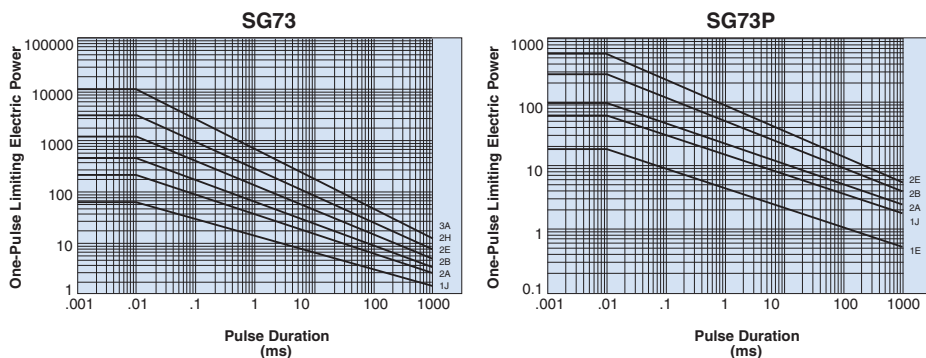
Additional environmental applications can also be found at [www.koaspeer.com](http://www.koaspeer.com)

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

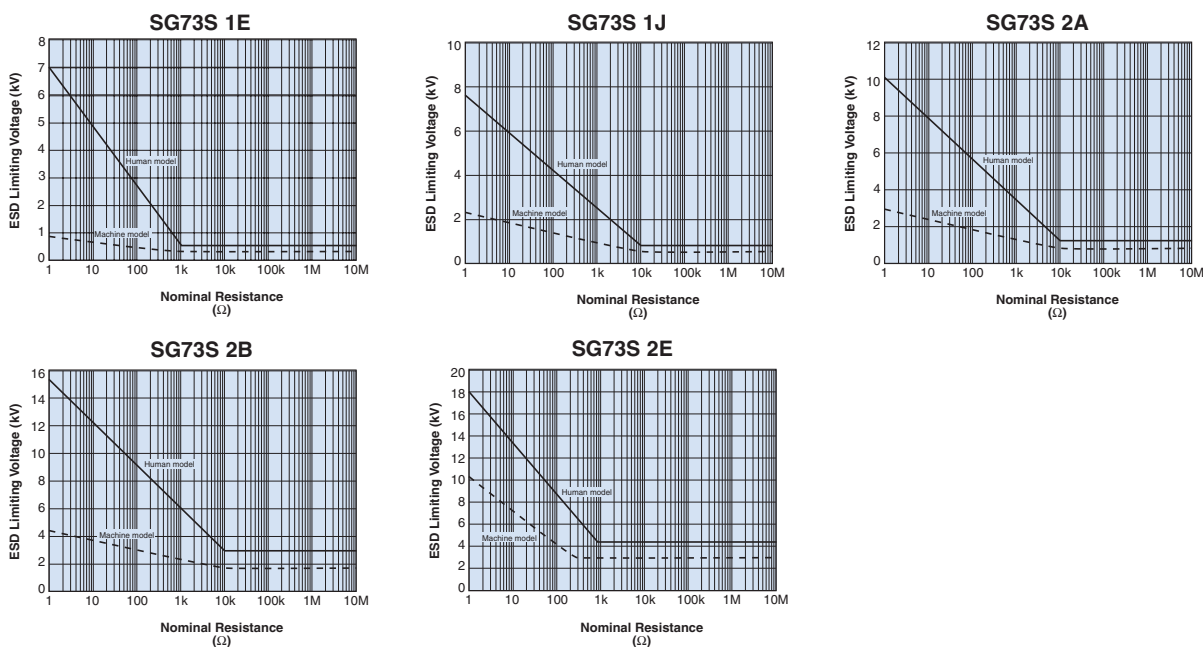
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## environmental applications

### One-Pulse Limiting Electric Power



### ESD Limiting Voltage



### Performance Characteristics

| Parameter                   | Requirement $\Delta R \pm(\%+0.1\Omega)$ |              | 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)       | $\pm 2\%$                                | $\pm 0.5\%$  | Rated Voltage x 2.5 for 5 seconds                                               |
| Resistance to Solder Heat   | $\pm 1\%$                                | $\pm 0.75\%$ | 260°C $\pm 5^\circ\text{C}$ , 10 seconds $\pm 1$ second                         |
| Rapid Change of Temperature | $\pm 0.5\%$                              | $\pm 0.3\%$  | -55°C (30 minutes), +125°C (30 minutes), 100 cycles                             |
| Moisture Resistance         | $\pm 3\%$                                | $\pm 0.75\%$ | 40°C $\pm 2^\circ\text{C}$ , 90%~95%RH, 1000 hours; 1.5 hr ON, 0.5 hr OFF cycle |
| Endurance at 70°C           | $\pm 3\%$                                | $\pm 0.75\%$ | 70°C $\pm 2^\circ\text{C}$ , 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle            |
| High Temperature Exposure   | $\pm 1\%$                                | $\pm 0.3\%$  | +155°C, 1000 hours                                                              |