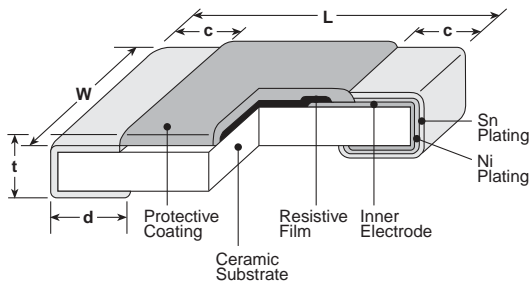


### features

- Excellent anti-sulfuration characteristic due to using high sulfuration-proof inner top electrode material
- Excellent heat resistance and weather resistance are ensured by the use of metal glaze thick film
- High stability and high reliability with the triple-layer structure of electrode
- Suitable for both flow and reflow
- 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: 0201 (1H), 0402 (1E), 0603 (1J), 0805 (2A), 1206 (2B), 1210 (2E), 2010 (W2H), 2512 (W3A)

### dimensions and construction



| Type<br>(Inch Size Code)            | Dimensions inches (mm)  |                         |                         |   |                          |
|-------------------------------------|---|-------------------------|-------------------------|---|--------------------------|
|                                     | L   | W                       | c                       | d   | t                        |
| 1F<br>(01005)                       | .016±.001<br>(0.4±0.02)   | .008±.001<br>(0.2±0.02) | .004±.001<br>(0.1±0.03) | .004±.001<br>(0.11±0.03)  | .005±.001<br>(0.13±0.02) |
| 1H<br>(0201)                        | .024±.001<br>(0.6±0.03)   | .012±.001<br>(0.3±0.03) | .004±.002<br>(0.1±0.05) | .006±.002<br>(0.15±0.05)  | .009±.001<br>(0.23±0.03) |
| 1E<br>(0402)                        | .039 <sup>+0.004</sup> <sub>-0.002</sub><br>(1.0 <sup>+0.1</sup> <sub>-0.05</sub> ) | .02±.002<br>(0.5±0.05)  | .008±.004<br>(0.2±0.1)  | .01 <sup>+0.002</sup> <sub>-0.004</sub><br>(0.25 <sup>+0.05</sup> <sub>-0.1</sub> ) | .014±.002<br>(0.35±0.05) |
| 1J<br>(0603)                        | .063±.008<br>(1.6±0.2)  | .031±.004<br>(0.8±0.1)  | .012±.004<br>(0.3±0.1)  | .012±.004<br>(0.3±0.1)  | .018±.004<br>(0.45±0.1)  |
| 2A<br>(0805)                        | .079±.008<br>(2.0±0.2)  | .049±.004<br>(1.25±0.1) | .016±.008<br>(0.4±0.2)  | .012 <sup>+0.008</sup> <sub>-0.004</sub><br>(0.3 <sup>+0.2</sup> <sub>-0.1</sub> )  | .02±.004<br>(0.5±0.1)    |
| 2B<br>(1206)                        | .126±.008<br>(3.2±0.2)  | .063±.008<br>(1.6±0.2)  | .02±.012<br>(0.5±0.3)   | .016 <sup>+0.008</sup> <sub>-0.004</sub><br>(0.4 <sup>+0.2</sup> <sub>-0.1</sub> )  | .024±.004<br>(0.6±0.1)   |
| 2E<br>(1210)                        |   | .102±.008<br>(2.6±0.2)  |                         |   |                          |
| W2H<br>(2010)                       | .197±.008<br>(5.0±0.2)  | .098±.008<br>(2.5±0.2)  | .02±.012<br>(0.5±0.3)   | .026±.006<br>(0.65±0.15)  | .024±.004<br>(0.6±0.1)   |
| W3A/<br>W3A2 <sup>1</sup><br>(2512) | .248±.008<br>(6.3±0.2)  | .122±.008<br>(3.1±0.2)  |                         |   |                          |

<sup>1</sup> RK73Z exempt

### ordering information

| RK73H                   | 2A   | R              | T                    | TD   | 1002   | F                                      |
|-------------------------|--|----------------|----------------------|--|--|--|
| Type                    | Power Rating   | Characteristic | Termination Material | Packaging  | Nominal Resistance   | Resistance Tolerance                   |
| RK73B<br>RK73H<br>RK73Z | 1F<br>1H<br>1E<br>1J<br>2A<br>2B<br>2E<br>W2H<br>W3A<br>W3A2 | R: Anti-Sulfur | T: Sn                | TX: 4mm width - 1mm pitch plastic embossed<br>TBL - TCM: 2mm pitch press paper <sup>*2</sup><br>TPL - TP: 2mm pitch punch paper<br>TD: 4mm pitch punch paper<br>TE: 4mm pitch plastic embossed<br>For further information on packaging, please refer to Appendix A | RK73B:<br>3 digits<br>RK73H:<br>4 digits<br>RK73Z:<br>None | D: ±0.5%<br>F: ±1%<br>G: ±2%<br>J: ±5% |

<sup>2</sup> Standard taping specification of 1H is TCM. Previously available "TC (10,000pcs/Reel)" is not recommended for new designs.

### applications and ratings RK73B/RK73H

| Part Designation | Power Rating    | Rated Ambient Temp. | Rated Terminal Part Temp. | T.C.R. (ppm/°C) Max. | Resistance Range |                            |             |              | Maximum Working Voltage | Maximum Overload Voltage | Operating Temp. Range |               |                 |                           |               |                 |            |           |                 |                 |      |                 |                 |                 |
|------------------|-----------------|---------------------|---------------------------|----------------------|------------------|----------------------------|-------------|--------------|-------------------------|--------------------------|-----------------------|---------------|-----------------|---------------------------|---------------|-----------------|------------|-----------|-----------------|-----------------|------|-----------------|-----------------|-----------------|
|                  |                 |                     |                           |                      | RK73H            |                            | RK73B       |              |                         |                          |                       |               |                 |                           |               |                 |            |           |                 |                 |      |                 |                 |                 |
|                  |                 |                     |                           |                      | D±0.5% E24, E96  | F±1% E24, E96 <sup>3</sup> | G±2% E24    | J±5% E24     |                         |                          |                       |               |                 |                           |               |                 |            |           |                 |                 |      |                 |                 |                 |
| 1F               | 0.03W           | 70°C                | —                         | ±200                 | —                | 100kΩ - 2MΩ <sup>2</sup>   | 100kΩ - 1MΩ | 100kΩ - 10MΩ | 20V                     | 30V                      | -55°C to +125°C       |               |                 |                           |               |                 |            |           |                 |                 |      |                 |                 |                 |
|                  |                 |                     |                           | ±250                 |                  | 10Ω - 91kΩ <sup>2</sup>    | 10Ω - 91kΩ  | 10Ω - 91kΩ   |                         |                          |                       |               |                 |                           |               |                 |            |           |                 |                 |      |                 |                 |                 |
|                  |                 |                     |                           | 0 - +300             |                  | —                          | 1Ω - 9.1Ω   | 1Ω - 9.1Ω    |                         |                          |                       |               |                 |                           |               |                 |            |           |                 |                 |      |                 |                 |                 |
| 1H               | 0.05W           |                     | 70°C                      | 125°C                | ±200             | 100Ω - 100kΩ               | 100Ω - 1MΩ  | —            | 100 - 1M                | 25V                      |                       | 50V           | -55°C to +155°C |                           |               |                 |            |           |                 |                 |      |                 |                 |                 |
|                  |                 |                     |                           |                      | ±300             | —                          | 10Ω - 97.6Ω |              | 10Ω - 91Ω               |                          |                       |               |                 |                           |               |                 |            |           |                 |                 |      |                 |                 |                 |
| 1E               | 0.1W            |                     |                           |                      | 70°C             | 125°C                      | ±100        | 100Ω - 1MΩ   | 10Ω - 1MΩ               | —                        |                       | —             |                 | 75V                       | 100V          | -55°C to +155°C |            |           |                 |                 |      |                 |                 |                 |
|                  |                 |                     |                           |                      |                  |                            | ±200        | —            | 1.02MΩ - 10MΩ           | 10Ω - 10MΩ               |                       | 1Ω - 10MΩ     |                 |                           |               |                 |            |           |                 |                 |      |                 |                 |                 |
| 1J               | 0.1W            |                     |                           |                      |                  |                            | 70°C        | 125°C        | ±100                    | 1.02kΩ - 1MΩ             |                       | 1.02kΩ - 1MΩ  |                 | —                         | —             |                 | 75V        | 100V      | -55°C to +155°C |                 |      |                 |                 |                 |
|                  |                 |                     |                           |                      |                  |                            |             |              | ±200                    | —                        |                       | 1.02MΩ - 10MΩ |                 | 1.1kΩ - 10MΩ              | 1.1kΩ - 10MΩ  |                 |            |           |                 |                 |      |                 |                 |                 |
|                  | 0.125W          |                     |                           |                      |                  |                            |             |              | ±100                    | 100Ω - 1kΩ               |                       | 10Ω - 1kΩ     |                 | —                         | —             |                 |            |           |                 |                 |      |                 |                 |                 |
|                  |                 |                     |                           |                      |                  |                            |             |              | ±200                    | —                        |                       | —             |                 | 10Ω - 1kΩ                 | 1Ω - 1kΩ      |                 |            |           |                 |                 |      |                 |                 |                 |
| 2A               | 0.25W           |                     |                           |                      |                  |                            |             |              | 70°C                    | 125°C                    |                       | ±100          |                 | 100Ω - 1MΩ                | 10Ω - 1MΩ     |                 | —          | —         |                 | 150V            | 200V | -55°C to +155°C |                 |                 |
|                  |                 | ±200                |                           |                      |                  |                            |             |              |                         |                          | —                     | 1.02MΩ - 10MΩ |                 | 10Ω - 10MΩ                | 1Ω - 10MΩ     |                 |            |           |                 |                 |      |                 |                 |                 |
| 2B               | 0.25W           | 70°C                |                           |                      |                  |                            |             |              |                         |                          | 125°C                 | ±100          |                 | 100Ω - 1MΩ                | 10Ω - 1MΩ     |                 | —          | —         |                 | 200V            | 400V |                 | -55°C to +155°C |                 |
|                  |                 |                     |                           |                      |                  |                            |             |              |                         |                          |                       | ±200          |                 | —                         | 1.02MΩ - 10MΩ |                 | 10Ω - 10MΩ | 1Ω - 10MΩ |                 |                 |      |                 |                 |                 |
| 2E               | 0.5W            |                     | 70°C                      | 125°C                |                  |                            |             |              |                         |                          |                       | ±100          | 100Ω - 1MΩ      | 10Ω - 1MΩ                 | —             |                 | —          |           |                 |                 |      |                 |                 |                 |
|                  |                 |                     |                           |                      |                  |                            |             |              |                         |                          |                       | ±200          | —               | —                         | 10Ω - 1MΩ     |                 | 1Ω - 1MΩ   |           |                 |                 |      |                 |                 |                 |
| W2H              | 0.75W           |                     |                           |                      | 70°C             | 125°C                      |             |              |                         |                          |                       | ±100          | 10Ω - 1MΩ       | 10Ω - 1MΩ                 | —             | —               | 200V       | 400V      |                 | -55°C to +155°C |      |                 |                 |                 |
|                  |                 |                     |                           |                      |                  |                            |             |              |                         |                          |                       | ±200          | —               | 1 - 9.76<br>1.02MΩ - 10MΩ | 1Ω - 10MΩ     | 1Ω - 10MΩ       |            |           |                 |                 |      |                 |                 |                 |
| W3A              | 1W              |                     |                           |                      |                  |                            | 70°C        | 125°C        |                         |                          |                       | ±100          | 10Ω - 1MΩ       | 10Ω - 1MΩ                 | —             | —               |            |           |                 |                 |      |                 |                 |                 |
|                  |                 |                     |                           |                      |                  |                            |             |              |                         |                          |                       | ±200          | —               | 1.02MΩ - 10MΩ             | 10Ω - 10MΩ    | 1Ω - 10MΩ       |            |           |                 |                 |      |                 |                 |                 |
| W3A2             | 2W <sup>4</sup> |                     |                           |                      |                  |                            |             |              |                         |                          |                       | 95°C          | 125°C           | ±100                      | 10Ω - 1MΩ     | 10Ω - 1MΩ       | —          | —         | 200V            |                 | 400V |                 |                 | -55°C to +155°C |
|                  |                 |                     |                           |                      |                  |                            |             |              |                         |                          |                       |               |                 | ±200                      | —             | 1.02MΩ - 10MΩ   | 10Ω - 10MΩ | 1Ω - 10MΩ |                 |                 |      |                 |                 |                 |

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

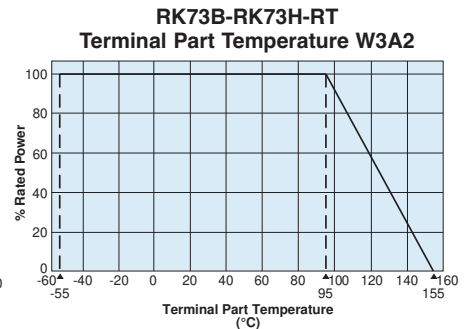
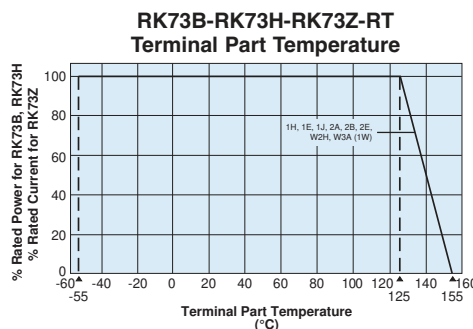
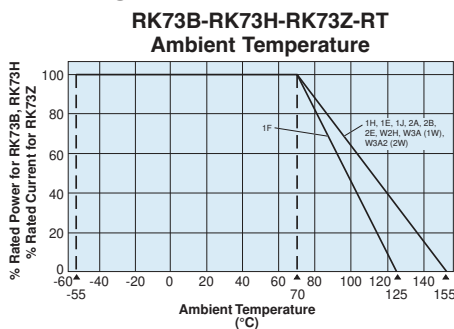
<sup>3</sup>The nominal resistance value for RK73H1F (F:±1%) is E24

<sup>4</sup> If you use at the rated power, please keep the condition that the terminal of the resistor is below the rated terminal part temperature. Please refer to the derating curves based on the terminal temperature.

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

While using under high power, the temperature of the product may increase depending on the condition of heat dissipation from PCB. Be sure to check the terminal part temperature as well as precautions to use on delivery specification before use.

### Derating Curve



For resistors operated at an ambient temperature of 70°C or higher, the power (for RK73B, RK73H) or a current rating (for RK73Z) shall be derated in accordance with the above derating curve.

When the terminal part temperature of the resistor exceeds the rated terminal part temperature shown above, the power shall be derated according to the derating curve.

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

### applications and ratings (continued)

#### RK73Z

| Part Designation | Rated Ambient Temperature | Rated Terminal Part Temperature | Resistance | Current Rating | Maximum Surge Current | Operating Temperature Range |
|------------------|---------------------------|---------------------------------|------------|----------------|-----------------------|-----------------------------|
| 1H               | +70°C                     | +125°C                          | 100mΩ max. | 0.5A           | 1A                    | -55°C to +155°C             |
| 1E               |                           |                                 | 50mΩ max.  | 1A             | 2A                    |                             |
| 1J               |                           |                                 |            | 2A             | 5A                    |                             |
| 2A               |                           |                                 | 10A        |                |                       |                             |
| 2B               |                           |                                 |            |                |                       |                             |
| 2E               |                           |                                 |            |                |                       |                             |
| W2H              |                           |                                 |            |                |                       |                             |
| W3A              |                           |                                 |            |                |                       |                             |

### environmental applications

#### Performance Characteristics

| Parameter                   | RK73H, RK73B Requirement $\Delta R$<br>$\pm(\%+0.1\Omega)$  |   | RK73Z Requirement  |   | Test Method   |
|-----------------------------|---|---|--|---|---|
|                             | Limit   | Typical   | Limit  | Typical   |   |
| Resistance                  | Within specified tolerance  | —   | $R \leq 100\text{m}\Omega$ : 1H<br>$R \leq 50\text{m}\Omega$ : All others  | $R \leq 90\text{m}\Omega$ : 1H<br>$R \leq 40\text{m}\Omega$ : All others  | 25°C  |
| T.C.R.                      | Within specified T.C.R.   | —   | —  | —   | +25°C/-55°C and +25°C/+125°C  |
| Overload (Short time)       | $\pm 2\%$   | $\pm 1\%$ : 1F<br>$\pm 0.8\%$ : All others  | $R \leq 100\text{m}\Omega$ : 1H<br>$R \leq 50\text{m}\Omega$ : All others  | $R \leq 90\text{m}\Omega$ : 1H<br>$R \leq 40\text{m}\Omega$ : All others  | RK73B, RK73H Rated Voltage x 2.5 for 5 seconds<br>(1E, 2B, W3A2: Rated Voltage x 2 for 5 seconds)<br>RK73Z: Max. overload current for 5 seconds |
| Resistance to Solder Heat   | $\pm 1\%$ : $10\Omega \leq R \leq 1\text{M}\Omega$<br>$\pm 3\%$ : $R < 10\Omega$ ,<br>$R > 1\text{M}\Omega$ | $\pm 1\%$ : $R < 10\Omega$ ,<br>$R > 1\text{M}\Omega$<br>$\pm 0.5\%$ : All others | $R \leq 100\text{m}\Omega$ : 1H<br>$R \leq 50\text{m}\Omega$ : All others  | $R \leq 90\text{m}\Omega$ : 1H<br>$R \leq 40\text{m}\Omega$ : All others  | 260°C $\pm$ 5°C, 10 seconds $\pm$ 1 second  |
| Rapid Change of Temperature | $\pm 1\%$ : 1F<br>$\pm 0.5\%$ : All others  | $\pm 0.5\%$ : 1F<br>$\pm 0.3\%$ : All others                                      | $R \leq 100\text{m}\Omega$ : 1H<br>$R \leq 50\text{m}\Omega$ : All others  | $R \leq 90\text{m}\Omega$ : 1H<br>$R \leq 40\text{m}\Omega$ : All others  | -55°C (30 minutes), +125°C (30 minutes), 100 cycles   |
| Moisture Resistance         | $\pm 2\%$ : 1J, 2A, 2B<br>$\pm 3\%$ : All others  | $\pm 0.75\%$ : 1J, 2A, 2B<br>$\pm 1.5\%$ : 1F<br>$\pm 1\%$ : All others           | $R \leq 150\text{m}\Omega$ : 1H<br>$R \leq 100\text{m}\Omega$ : All others | $R \leq 100\text{m}\Omega$ : 1H<br>$R \leq 50\text{m}\Omega$ : All others | 40°C $\pm$ 2°C, 90%-95% RH, 1000 hours,<br>1.5 hr ON, 0.5 hr OFF cycle  |
| Endurance at 70°C           | $\pm 2\%$ : 1J, 2A, 2B<br>$\pm 3\%$ : All others  | $\pm 0.75\%$ : 1J, 2A, 2B<br>$\pm 1\%$ : All others                               | $R \leq 150\text{m}\Omega$ : 1H<br>$R \leq 100\text{m}\Omega$ : All others | $R \leq 100\text{m}\Omega$ : 1H<br>$R \leq 50\text{m}\Omega$ : All others | 70°C $\pm$ 2°C, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle   |
| High Temperature Exposure   | $\pm 1\%$   | $\pm 0.5\%$   | $R \leq 150\text{m}\Omega$ : 1H<br>$R \leq 100\text{m}\Omega$ : All others | $R \leq 100\text{m}\Omega$ : 1H<br>$R \leq 50\text{m}\Omega$ : All others | +125°C, 1000 hours: 1F; +155°C, 1000 hours:<br>1H, 1E, 1J, 2A, 2B, 2E, W2H, W3A   |
| Sulfuration Test            | $\pm 5\%$   | $\pm 0.3\%$ : 1F, 1H<br>$\pm 0.2\%$ : All others                                  | $R \leq 150\text{m}\Omega$ : 1H<br>$R \leq 100\text{m}\Omega$ : All others | $R \leq 100\text{m}\Omega$ : 1H<br>$R \leq 50\text{m}\Omega$ : All others | Soaked in industrial oil with 3.5% sulfur<br>concentration 105°C $\pm$ 3°C, 500 hours   |

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