



**THE DATASHEET OF  
RK73H1ETTP1203F**





## features

- Wide lineup from 01005 to 2512 size
- Excellent heat resistance and weather resistance are ensured by the use of metal glaze thick film
- Suitable for both flow and reflow 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: 0201 (1H), 0402 (1E), 0603 (1J), 0805 (2A), 1206 (2B), 1210 (2E), 2010 (2H/W2H), 2512 (3A/W3A/W3A2)

## dimensions and construction



## Derating Curve



For resistors operated at an ambient temperature of 70°C or higher, the power 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



\*Parentheses indicate EIA package size codes.

\*1 RK73H 2H, 3A and 3A2 are also still available (different "d" dimensions = 0.4 +0.2/-0.1mm)

| Type*<br>(Inch Size Code)    | Dimensions inches (mm)                                                            |                          |                                                                                  |                                                                                   |                           |
|------------------------------|-----------------------------------------------------------------------------------|--------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------|
|                              | L                                                                                 | W                        | c                                                                                | d                                                                                 | t                         |
| <b>1F</b><br>(01005)         | .016±.0008<br>(0.4±0.02)                                                          | .008±.0008<br>(0.2±0.02) | .004±.001<br>(0.1±0.03)                                                          | .004±.001<br>(0.11±0.03)                                                          | .005±.0008<br>(0.13±0.02) |
| <b>1H</b><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)  |
| <b>1E</b><br>(0402)          | .039 <sup>+0.04</sup> <sub>-0.02</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>+0.02</sup> <sub>-0.04</sub><br>(0.25 <sup>+0.05</sup> <sub>-0.1</sub> ) | .014±.002<br>(0.35±0.05)  |
| <b>1E AT</b><br>(0402)       |                                                                                   |                          | .01±.004<br>(0.25±0.1)                                                           | .012±.006<br>(0.3±0.15)                                                           |                           |
| <b>1J</b><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)   |
| <b>1J AT</b><br>(0603)       |                                                                                   |                          | .014±.006<br>(0.35±0.15)                                                         | .02±.008<br>(0.5±0.2)                                                             |                           |
| <b>2A</b><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>+0.08</sup> <sub>-0.04</sub><br>(0.3 <sup>+0.2</sup> <sub>-0.1</sub> )  | .02±.004<br>(0.5±0.1)     |
| <b>2A AT</b><br>(0805)       |                                                                                   |                          | .018±.010<br>(0.45±0.25)                                                         | .024±.008<br>(0.6±0.2)                                                            |                           |
| <b>2B</b><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>+0.08</sup> <sub>-0.04</sub><br>(0.4 <sup>+0.2</sup> <sub>-0.1</sub> )  | .024±.004<br>(0.6±0.1)    |
| <b>2B AT</b><br>(1206)       |                                                                                   |                          | .022±.014<br>(0.55±0.35)                                                         | .031±.008<br>(0.8±0.2)                                                            |                           |
| <b>2E</b><br>(1210)          | .197±.008<br>(5.0±0.2)                                                            | .098±.008<br>(2.5±0.2)   | .102±.008<br>(2.6±0.2)                                                           | .016 <sup>+0.08</sup> <sub>-0.04</sub><br>(0.4 <sup>+0.2</sup> <sub>-0.1</sub> )  | .024±.004<br>(0.6±0.1)    |
| <b>2H</b><br>(2010)          |                                                                                   |                          |                                                                                  |                                                                                   |                           |
| <b>W2H</b> *1<br>(2010)      | .248±.008<br>(6.3±0.2)                                                            | .122±.008<br>(3.1±0.2)   | .016 <sup>+0.08</sup> <sub>-0.04</sub><br>(0.4 <sup>+0.2</sup> <sub>-0.1</sub> ) | .026±.006<br>(0.65±0.15)                                                          |                           |
| <b>3A</b> *1<br>(2512)       |                                                                                   |                          |                                                                                  |                                                                                   | .026±.006<br>(0.65±0.15)  |
| <b>W3A/W3A2</b> *1<br>(2512) |                                                                                   |                          |                                                                                  |                                                                                   |                           |

## ordering information

| RK73H | 2B                                                               |                                              | T                                 | TD                                                                                                                                                                                                                                                                | 1003                                                                         | F                  |
|-------|------------------------------------------------------------------|----------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------|
| Type  | Size                                                             | Characteristics                              | Termination Material              | Packaging                                                                                                                                                                                                                                                         | Nominal Resistance                                                           | Tolerance          |
|       | 1F, 1H<br>1E, 1J<br>2A, 2B<br>2E<br>W2H<br>W3A<br>2H, 3A<br>W3A2 | Nil: Standard<br>A: Heat shock resistance *2 | T: Sn<br>G: Au *3<br>(L: Sn/Pb*4) | TX: 4mm width - 1mm pitch plastic embossed<br>TBL - TCM: 2mm pitch press paper *5<br>TPL - TP: 2mm pitch punch paper<br>TD: 4mm pitch punch paper<br>TE: 4mm pitch plastic embossed<br>Other non-standard reel sizes available, contact factory for other options | 3 significant figures + 1 multiplier<br>"R" indicates decimal on value <100Ω | D: ±0.5%<br>F: ±1% |

\*2 With type A only T is available as the terminal surface material  
\*3 Products with gold plated electrodes are also available with 1E, 1J and 2A types (10Ω~1MΩ), so please consult with us  
\*4 With type 1F, 1H, W2H, W3A, W3A2 only T is available as the terminal surface material  
\*5 Standard taping specification of 1H is TCM. Previously available "TC(10,000pcs/Reel)" is not recommended for new designs.

The terminal surface material lead free is standard.  
For further information on packaging, please refer to Appendix A

## applications and ratings

| Part Designation   | Power Rating | Rated Ambient Temp. | Rated Terminal Part Temp. | T.C.R. (x10 <sup>-6</sup> /K) | Resistance Range  |                  | Maximum Working Voltage     | Maximum Overload Voltage | Operating Temperature Range |      |
|--------------------|--------------|---------------------|---------------------------|-------------------------------|-------------------|------------------|-----------------------------|--------------------------|-----------------------------|------|
|                    |              |                     |                           |                               | D±0.5% E-24, E-96 | F±1% E-24, E-96* |                             |                          |                             |      |
| RK73H1F (01005)    | 0.03W        | 70°C                | 125°C                     | —                             | ±200              | 100kΩ - 2MΩ*     | 20V                         | 30V                      | -55°C to +125°C             |      |
|                    |              |                     |                           |                               | ±250              | 10Ω - 91kΩ*      |                             |                          |                             |      |
| RK73H1H (0201)     | 0.05W        |                     |                           |                               | ±200              | 10Ω - 1MΩ        | 10Ω - 10MΩ*                 | 25V                      |                             | 50V  |
|                    |              |                     |                           |                               | ±400              | —                | 1.0Ω - 9.1Ω*                |                          |                             |      |
| RK73H1E (0402)     | 0.1W         |                     |                           |                               | ±100              | 10Ω - 1MΩ        | 10Ω - 1MΩ                   | 75V                      |                             | 100V |
|                    |              |                     |                           |                               | ±200              | —                | 1.0Ω - 9.76Ω, 1.02MΩ - 10MΩ |                          |                             |      |
| RK73H1J (0603)     | 0.1W         |                     |                           |                               | ±100              | 1.02kΩ - 1MΩ     | 1.02kΩ - 1MΩ                | 75V                      |                             | 100V |
|                    |              |                     |                           |                               |                   | ±200             | —                           |                          |                             |      |
|                    | 0.125W       |                     |                           |                               | ±100              | 10Ω - 1kΩ        | 10Ω - 1kΩ                   | 75V                      |                             | 100V |
|                    |              |                     |                           |                               | ±200              | —                | 1.0Ω - 9.76Ω                |                          |                             |      |
| RK73H2A (0805)     | 0.25W        |                     |                           |                               | ±100              | 10Ω - 1MΩ        | 10Ω - 1MΩ                   | 150V                     |                             | 200V |
|                    |              |                     |                           |                               | ±200              | —                | 1.0Ω - 9.76Ω                |                          |                             |      |
|                    |              |                     |                           |                               | ±400              | —                | 1.02MΩ - 10MΩ               |                          |                             |      |
| RK73H2B (1206)     | 0.25W        |                     |                           |                               | ±100              | 10Ω - 1MΩ        | 10Ω - 1MΩ                   | 200V                     |                             | 400V |
|                    |              | ±200                | —                         | 1.0Ω - 9.76Ω, 1.02MΩ - 5.6MΩ  |                   |                  |                             |                          |                             |      |
|                    |              | ±400                | —                         | 5.62MΩ - 10MΩ                 |                   |                  |                             |                          |                             |      |
| RK73H2E (1210)     | 0.5W         | ±100                | 10Ω - 1MΩ                 | 10Ω - 1MΩ                     | 200V              | 400V             |                             |                          |                             |      |
|                    |              | ±200                | —                         | 1.0Ω - 9.76Ω, 1.02MΩ - 5.6MΩ  |                   |                  |                             |                          |                             |      |
|                    |              | ±400                | —                         | 5.62MΩ - 10MΩ                 |                   |                  |                             |                          |                             |      |
| RK73HW2H/2H (2010) | 0.75W        | ±100                | 10Ω - 1MΩ                 | 10Ω - 1MΩ                     | 200V              | 400V             |                             |                          |                             |      |
|                    |              | ±200                | —                         | 1.0Ω - 9.76Ω, 1.02MΩ - 5.6MΩ  |                   |                  |                             |                          |                             |      |
|                    |              | ±400                | —                         | 5.62MΩ - 10MΩ                 |                   |                  |                             |                          |                             |      |
| RK73HW3A/3A (2512) | 1.0W         | ±100                | 10Ω - 1MΩ                 | 10Ω - 1MΩ                     | 200V              | 400V             |                             |                          |                             |      |
|                    |              | ±200                | —                         | 1.0Ω - 9.76Ω, 1.02MΩ - 5.6MΩ  |                   |                  |                             |                          |                             |      |
|                    |              | ±400                | —                         | 5.62MΩ - 10MΩ                 |                   |                  |                             |                          |                             |      |
| RK73HW3A2 (2512)   | 2.0W         | ±100                | 10Ω - 1MΩ                 | 10Ω - 1MΩ                     | 200V              | 400V             |                             |                          |                             |      |
|                    |              | ±200                | —                         | 1.0Ω - 9.76Ω, 1.02MΩ - 5.6MΩ  |                   |                  |                             |                          |                             |      |
|                    |              | ±400                | —                         | 5.62MΩ - 10MΩ                 |                   |                  |                             |                          |                             |      |

Rated voltage = √Power rating x resistance value or max. working voltage, whichever is lower

\*The nominal resistance value for RK73H1F (10Ω ≤ R ≤ 2MΩ) and RK73H1H (1Ω ≤ R ≤ 9.1Ω, 1MΩ ≤ R ≤ 10MΩ) is E24.

If any questions 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 based on 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.

## 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.

Measurement condition  
Room temperature: 25°C  
PCB: FR-4t = 1.6mm  
Cu foil thickness: 35µm



### 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 ΔR (%+0.1Ω)                                              |                                                                        | 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%                                                                  | ±1%: 1F; ±0.5%: Others                                                 | Rated Voltage x 2.5 for 5 seconds (1E, 2B, W3A2: Rated Voltage x 2 for 5 seconds)                                                                                                    |
| Resistance to Soldering Heat | ±1%: 1F ~ W3A2 (10Ω ≤ R ≤ 1MΩ);<br>±3%: 1H ~ W3A2 (R < 10Ω, R > 1MΩ) | ±0.5%: 1F ~ W3A2 (10Ω < R < 1MΩ);<br>±1%: 1H ~ W3A2 (R < 10Ω, R > 1MΩ) | 260°C ± 5°C, 10 seconds ± 1 second                                                                                                                                                   |
| Rapid Change of Temperature  | ±1%: 1F, Characteristic (A)<br>Heat Shock Resistance<br>±0.5% Others | ±0.5%: 1F, Characteristic (A)<br>Heat Shock Resistance<br>±0.3% Others | Characteristic (Nil) Standard: -55°C (30 minutes), +125°C (30 minutes), 100 cycles<br>Characteristic (A) Heat Shock Resistance: -55°C (30 minutes), +125°C (30 minutes), 1000 cycles |
| Moisture Resistance          | ±2%: 1J, 2A, 2B<br>±3%: Others                                       | ±0.75%: 1J, 2A, 2B; ±1.5%: 1F,<br>±1%: Other                           | 40°C ± 2°C, 90%-95% RH, 1000 hours, 1.5 hr ON,<br>0.5 hr OFF cycle                                                                                                                   |
| Endurance at 70°C            | ±2%: 1J, 2A, 2B; ±3%: Others                                         | ±0.75%: 1J, 2A, 2B; ±1%: Others                                        | 70°C ± 2°C, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle                                                                                                                                  |
| High Temperature Exposure    | ±1%                                                                  | ±0.5%: 1F<br>±0.3%: Others                                             | +125°C, 1000 hours: 1F; +155°C, 1000 hours: 1E, 1H,<br>1J, 2A, 2B, 2E, 2H/W2H, 3A/W3A/W3A2                                                                                           |

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

2/06/24

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