



**THE DATASHEET OF  
RN732BTDD1002D25**





**features**

- Nickel chromium thin film resistor element
- Products with lead-free terminations meet EU RoHS requirements

**dimensions and construction**



| Type<br>(Inch Size Code) | Dimensions inches (mm)                                                             |                         |                        |                                                                                    |                          |
|--------------------------|------------------------------------------------------------------------------------|-------------------------|------------------------|------------------------------------------------------------------------------------|--------------------------|
|                          | L                                                                                  | W                       | c                      | d                                                                                  | t                        |
| RN73 1E<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)  | .008±.004<br>(0.2±0.1) | .01 <sup>+0.002</sup> <sub>-.004</sub><br>(0.25 <sup>+0.05</sup> <sub>-0.1</sub> ) | .014±.002<br>(0.35±0.05) |
| RN73 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)  |
| RN73 2A<br>(0805)        | .079±.008<br>(2.0±0.2)                                                             | .049±.008<br>(1.25±0.2) | .016±.008<br>(0.4±0.2) | .012 <sup>+0.008</sup> <sub>-.004</sub><br>(0.3 <sup>+0.2</sup> <sub>-0.1</sub> )  | .02±.004<br>(0.5±0.1)    |
| RN73 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>-.004</sub><br>(0.4 <sup>+0.2</sup> <sub>-0.1</sub> )  | .024±.004<br>(0.6±0.1)   |
| RN73 2E<br>(1210)        |                                                                                    | .098±.008<br>(2.5±0.2)  |                        |                                                                                    |                          |

**Derating Curve**



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



For resistors operated terminal part temperature of described for each size or above, a power rating shall be derated in accordance with derating curve. Please refer to "Introduction of the derating curves based on the terminal part temperature" in the beginning of our catalog before use.

**ordering information**

|             |                            |                             |                                                                                                                                                                                                                                                                                                                         |                                                                              |                                                            |                             |
|-------------|----------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------|-----------------------------|
| <b>RN73</b> | <b>2B</b>                  | <b>T</b>                    | <b>TE</b>                                                                                                                                                                                                                                                                                                               | <b>1002</b>                                                                  | <b>B</b>                                                   | <b>25</b>                   |
| <b>Type</b> | <b>Size</b>                | <b>Termination Material</b> | <b>Packaging</b>                                                                                                                                                                                                                                                                                                        | <b>Nominal Resistance</b>                                                    | <b>Tolerance</b>                                           | <b>T.C.R. (ppm/°C)</b>      |
|             | 1E<br>1J<br>2A<br>2B<br>2E | T: Sn<br>L: SnPb            | TP: 0402: 7" 2mm pitch punch paper<br>TD: 0603, 0805, 1206, 1210:<br>7" 4mm pitch punched paper<br>TDD: 0603, 0805, 1206, 1210:<br>10" paper tape<br>TE: 0805, 1206, 1210:<br>7" embossed plastic<br>TED: 0805, 1206, 1210:<br>10" embossed plastic<br>For further information on packaging, please refer to Appendix A | 3 significant figures + 1 multiplier<br>"R" indicates decimal on value <100Ω | A: ±0.05%<br>B: ±0.1%<br>C: ±0.25%<br>D: ±0.5%<br>F: ±1.0% | 05<br>10<br>25<br>50<br>100 |

## applications and ratings

| Part Designation | Power Rating <sup>1</sup><br>@ 70°C |            | Rated Ambient Temp. | Rated Terminal Part Temp. | T.C.R.<br>(ppm/°C)<br>Max. | Resistance Range (Ω)<br>E-24, E-96, E-192* |            |            |            |            | Absolute Max. Working Voltage | Absolute Max. Overload Voltage |
|------------------|-------------------------------------|------------|---------------------|---------------------------|----------------------------|--------------------------------------------|------------|------------|------------|------------|-------------------------------|--------------------------------|
|                  | General                             | High Power |                     |                           |                            | (A±0.05%)                                  | (B±0.1%)   | (C±0.25%)  | (D±0.5%)   | (F±1.0%)   |                               |                                |
| RN731E           | .063W                               | —          | 70°C                | 75°C                      | ±25                        | —                                          | 100 - 100k | 100 - 100k | 10 - 120k  | 10 - 120k  | 50V                           | 100V                           |
|                  |                                     |            |                     |                           | ±50                        | —                                          | 100 - 100k | 100 - 100k | 10 - 120k  | 10 - 120k  |                               |                                |
| RN731J           | .063W                               | .1W        | 70°C                | 75°C                      | ±5                         | 1K - 47k                                   | 100 - 47k  | —          | —          | —          | 75V                           | 150V                           |
|                  |                                     |            |                     |                           | ±10                        | 1K - 47k                                   | 100 - 47k  | 100 - 47k  | 100 - 47k  | 100 - 47k  |                               |                                |
|                  |                                     |            |                     |                           | ±25                        | 1K - 47k                                   | 15 - 360k  | 15 - 360k  | 10 - 360k  | 10 - 360k  |                               |                                |
|                  |                                     |            |                     |                           | ±50                        | —                                          | 15 - 360k  | 15 - 360k  | 10 - 360k  | 10Ω - 360k |                               |                                |
|                  |                                     |            |                     |                           | ±100                       | —                                          | —          | —          | 10 - 360k  | 10 - 360k  |                               |                                |
| RN732A           | .1W                                 | .125W      | 70°C                | 80°C                      | ±5                         | 100 - 100k                                 | 100 - 100k | —          | —          | —          | 150V                          | 300V                           |
|                  |                                     |            |                     |                           | ±10                        | 100 - 100k                                 | 100 - 100k | 100 - 100k | 100 - 100k | 100 - 100k |                               |                                |
|                  |                                     |            |                     |                           | ±25                        | 51 - 100k                                  | 15 - 1M    | 15 - 1M    | 10 - 1M    | 10 - 1M    |                               |                                |
|                  |                                     |            |                     |                           | ±50                        | —                                          | 15 - 1M    | 15 - 1M    | 10 - 1M    | 10 - 1M    |                               |                                |
|                  |                                     |            |                     |                           | ±100                       | —                                          | —          | —          | 10 - 1M    | 10 - 1M    |                               |                                |
| RN732B           | .125W                               | .25W       | 70°C                | 85°C                      | ±5                         | 100 - 300k                                 | 100 - 300k | —          | —          | —          | 200V                          | 400V                           |
|                  |                                     |            |                     |                           | ±10                        | 100 - 300k                                 | 100 - 300k | 100 - 300k | 100 - 300k | 100 - 300k |                               |                                |
|                  |                                     |            |                     |                           | ±25                        | 51 - 300k                                  | 15 - 1M    | 15 - 1M    | 10 - 1M    | 10 - 1M    |                               |                                |
|                  |                                     |            |                     |                           | ±50                        | —                                          | 15 - 1M    | 15 - 1M    | 10 - 1M    | 10 - 1M    |                               |                                |
|                  |                                     |            |                     |                           | ±100                       | —                                          | —          | —          | 10 - 1M    | 10 - 1M    |                               |                                |
| RN732E           | .25W                                | —          | 70°C                | 95°C                      | ±10                        | 100 - 510k                                 | 100 - 510k | 100 - 510k | 100 - 510k | 100 - 510k | 200V                          | 400V                           |
|                  |                                     |            |                     |                           | ±25                        | 51 - 510k                                  | 15 - 1M    | 15 - 1M    | 10 - 1M    | 10 - 1M    |                               |                                |
|                  |                                     |            |                     |                           | ±50                        | —                                          | 15 - 1M    | 15 - 1M    | 10 - 1M    | 10 - 1M    |                               |                                |
|                  |                                     |            |                     |                           | ±100                       | —                                          | —          | —          | 10 - 1M    | 10 - 1M    |                               |                                |

\* No marking on E-192 values. Operating Temperature Range: -55°C to +155°C. <sup>1</sup> Reliability performance is different. Please confirm the performance table. 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 ΔR ±(%+0.05Ω)            |                  | Test Method                                                                                  |
|-----------------------------|--------------------------------------|------------------|----------------------------------------------------------------------------------------------|
|                             | Limit                                | Typical          |                                                                                              |
| Resistance                  | Within specified tolerance           | —                | 25°C                                                                                         |
| T.C.R.                      | Within specified T.C.R.              | —                | +25°C/+125°C: T.C.R. = ±5 (X10 <sup>-6</sup> /K)<br>+25°C/-55°C and +25°C/+125°C: all others |
| Overload (Short time)       | General: ±0.1%<br>High Power: ±0.5%  | ±0.01%<br>±0.03% | Rated Voltage x 2.5 or Max. overload voltage, whichever is less for 5 seconds                |
| Resistance to Solder Heat   | ±0.1%                                | ±0.04%           | 260°C ± 5°C, 10 seconds ± 1 second                                                           |
| Rapid Change of Temperature | ±0.25%                               | ±0.03%           | -55°C (30 minutes), +125°C (30 minutes), 300 cycles                                          |
| Moisture Resistance         | General: ±0.5%<br>High Power: ±0.5%  | ±0.06%<br>±0.07% | 40°C ± 2°C, 90%-95% RH, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle                              |
| Endurance at 70°C           | General: ±0.25%<br>High Power: ±0.5% | ±0.02%<br>±0.1%  | 70°C ± 2°C, 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle                                          |
| High Temperature Exposure   | ±0.25%                               | ±0.1%            | +125°C, 1000 hours                                                                           |
|                             | ±0.5%                                | ±0.25%           | +155°C, 1000 hours                                                                           |

## Precautions for Use

- The properly and electrostatically measured taping materials are used for the components, but attention should be paid to the fact that there is some danger the parts absorb on the top tapes to cause a failure in the mounting and the parts are destructed by static electricity (1kV and more: 1J, 2A, 2B, 2E 0.5kV and more: 1E, Human Body Model 100pF 1.5kΩ) to change the resistance in the conditions of an excessive dryness or after the parts are given vibration for a long time as they are packaged on the tapes. Similarly, care should be given not to apply the excessive static electricity when mounting on the boards.
- Ionic impurities such as flux etc. that are attached to these products or those mounted onto a PCB, negatively affect their moisture resistance, corrosion resistance, etc. The flux may contain ionic substances like chlorine, acid, etc. while perspiration and saliva include ionic impurities like sodium (Na), chlorine (Cl-) etc. Therefore these kinds of ionic substances may induce electrical corrosion when they invade into the products. Either thorough washing or using RMA solder and flux are necessary since lead free solder contains ionic substances. Washing process is needed, before putting on moisture proof material in order to prevent electrical corrosion.
- The upper electrodes could be peeled off when a heat-resistant masking tape is attached to the mounted chip resistors and then detached from them. It is confirmed that the adhesiveness gets stronger due to the exposure to heat under mounting. Accordingly, we recommend the use of masking tape be refrained. If the use of heat-resistant masking tape is unavoidable, please make sure that the adhesives on the tape do not directly come in contact with the product.
- When high-pressure shower cleaning is implemented, there is a possibility of exfoliation of the top electrodes caused by the water pressure stress so please avoid the implementation.
- If the implementation is unavoidable, then please evaluate the products beforehand.

For Surface Temperature Rise Graph see Environmental Applications. 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. 10/05/22

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