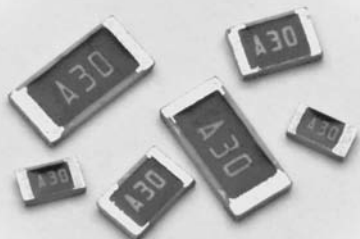
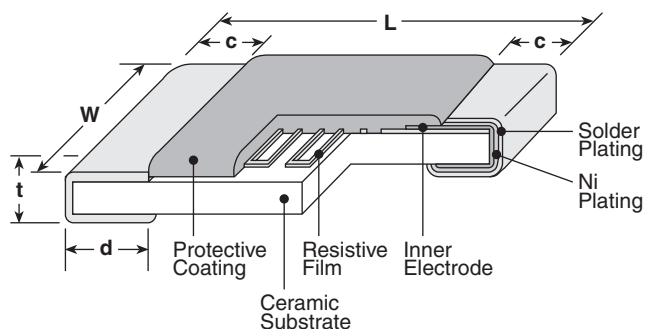


## features

- Thin film thermal sensors of SMD type
- Resistance tolerance  $\pm 1\%$ , a wide range of TCRs  $+3000 \times 10^{-6}/K \sim +5000 \times 10^{-6}/K$  with the standard products
- Suitable for control of temperatures in various industrial equipment
- Suitable for both flow and reflow soldering
- Marking: Black body color
- Products with lead-free terminations meet EU RoHS and China RoHS requirements



## dimensions and construction



| Type<br>(Inch Size Code) | Dimensions inches (mm)             |                                     |                                    |                                    |                                    |
|--------------------------|------------------------------------|-------------------------------------|------------------------------------|------------------------------------|------------------------------------|
|                          | L                                  | W                                   | c                                  | d                                  | t                                  |
| <b>1J<br/>(0603)</b>     | .063 $\pm$ .008<br>(1.6 $\pm$ 0.2) | .031 $\pm$ .008<br>(0.8 $\pm$ 0.2)  | .012 $\pm$ .008<br>(0.3 $\pm$ 0.2) | .012 $\pm$ .008<br>(0.3 $\pm$ 0.2) | .02 $\pm$ .004<br>(0.5 $\pm$ 0.1)  |
| <b>2A<br/>(0805)</b>     | .079 $\pm$ .008<br>(2.0 $\pm$ 0.2) | .049 $\pm$ .008<br>(1.25 $\pm$ 0.2) | .016 $\pm$ .008<br>(0.4 $\pm$ 0.2) | .016 $\pm$ .008<br>(0.4 $\pm$ 0.2) | .02 $\pm$ .006<br>(0.5 $\pm$ 0.15) |
| <b>2B<br/>(1206)</b>     | .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)  | .02 $\pm$ .012<br>(0.5 $\pm$ 0.3)  | .02 $\pm$ .006<br>(0.5 $\pm$ 0.15) |

## ordering information

|            |             |                                  |                      |                                                    |                                                                                                                        |                                              |             |
|------------|-------------|----------------------------------|----------------------|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------|
| New Part # | <b>LP73</b> | <b>2B</b>                        | <b>T</b>             | <b>TE</b>                                          | <b>103</b>                                                                                                             | <b>J</b>                                     | <b>3600</b> |
|            | Type        | Size Code                        | Termination Material | Packaging                                          | Resistance Value                                                                                                       | Tolerance                                    | T.C.R.      |
|            |             | 1J: 0603<br>2A: 0805<br>2B: 1206 | T: Sn                | TE: 4mm embossed pitch plastic (5,000 pieces/reel) | 2 significant figures + 1 multiplier for $\pm 2\%$ and $\pm 5\%$<br>3 significant figures + 1 multiplier for $\pm 1\%$ | F: $\pm 1\%$<br>G: $\pm 2\%$<br>J: $\pm 5\%$ |             |

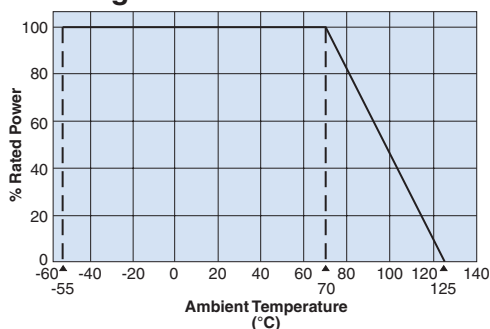
For further information on packaging, please refer to Appendix A.

### applications and ratings

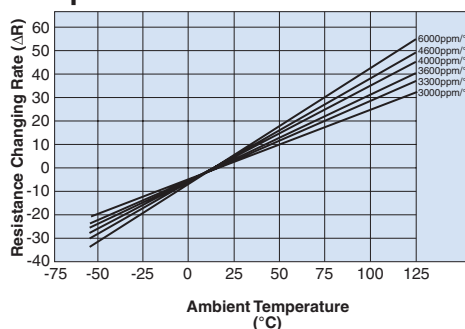
| Part Designation | Power Rating | Thermal Time Constant (sec.) | Thermal Dissipation Constant (mW/°C) | Rated Ambient Temp. | Operating Temp. Range | Resistance Range E-24 |            |             | Resistance Tolerance       | T.C.R. (ppm/°C) Max. | T.C.R. Tolerance |
|------------------|--------------|------------------------------|--------------------------------------|---------------------|-----------------------|-----------------------|------------|-------------|----------------------------|----------------------|------------------|
|                  |              |                              |                                      |                     |                       | LP731J                | LP732A     | LP732B      |                            |                      |                  |
| LP731J           | 0.016W       | 2                            | 1.2                                  | +70°C               | -55°C to +125°C       | 100Ω - 1kΩ            | 100Ω - 2kΩ | 100Ω - 10kΩ | F: ±1%<br>G: ±2%<br>J: ±5% | 3000                 | ±5%              |
| LP732A           | 0.031W       | 4                            | 1.8                                  |                     |                       |                       |            |             |                            | 3300                 |                  |
| LP732B           | 0.063W       | 6.5                          | 2.4                                  |                     |                       |                       |            |             |                            | 3600                 |                  |
|                  |              |                              |                                      |                     |                       |                       |            |             |                            | 4000                 |                  |
|                  |              |                              |                                      |                     |                       |                       |            |             |                            | 4500                 |                  |
|                  |              |                              |                                      |                     |                       |                       |            |             |                            | 5000                 |                  |

### environmental applications

#### Derating Curve



#### Temperature Characteristics



### Approximate Expression for Resistance-Temperature Characteristics

| T.C.R. (x10 <sup>-6</sup> /K) | C <sub>0</sub> | C <sub>1</sub> | C <sub>2</sub>             |
|-------------------------------|----------------|----------------|----------------------------|
| 3000                          | 0.930587       | 0.00265022     | 3.89831 x 10 <sup>-6</sup> |
| 3300                          | 0.924633       | 0.00292657     | 4.00637 x 10 <sup>-6</sup> |
| 3600                          | 0.915818       | 0.003232524    | 4.34173 x 10 <sup>-6</sup> |
| 4000                          | 0.907050       | 0.00361010     | 4.33462 x 10 <sup>-6</sup> |
| 4500                          | 0.897412       | 0.00395222     | 6.05201 x 10 <sup>-6</sup> |
| 5000                          | 0.885114       | 0.00436780     | 7.48048 x 10 <sup>-6</sup> |

(Values are not guaranteed but typical)

$$R_T = R_{25} (C_0 + C_1 T + C_2 T^2)$$

R<sub>T</sub>: Resistance value at T°C

R<sub>25</sub>: Resistance value at 25°C

T: Ambient temperature (°C)

C<sub>0</sub>, C<sub>1</sub>, C<sub>2</sub>: Constants

### Performance Characteristics

| Parameter                   | Requirement Δ R            |               | Test Method                                                                                 |
|-----------------------------|----------------------------|---------------|---------------------------------------------------------------------------------------------|
|                             | Limit                      | Typical       |                                                                                             |
| Resistance                  | Within regulated tolerance | —             | 25°C                                                                                        |
| T.C.R.                      | Within specified T.C.R.    | —             | +25°C/+65°C                                                                                 |
| Overload                    | ±0.5%                      | ±0.3%         | Rated voltage x 2.5 for 5 seconds                                                           |
| Resistance to Solder Heat   | ±0.5%                      | ±0.3%         | 260°C ± 5°C, 10 seconds ± 1 second                                                          |
| Rapid Change of Temperature | ±0.5%                      | ±0.3%         | -55°C (30 minutes), +25°C (2-3 minutes), +125°C (30 minutes), +25°C (2-3 minutes), 5 cycles |
| Moisture Resistance         | ±2.0%                      | ±1.5%         | 40°C ± 2°C, 90 - 95% RH, 1000 hours, 1.5 hours ON, 0.5 hours OFF cycle                      |
| Endurance at 70°C           | ±2.0%                      | ±1.5%         | 70°C ± 2°C, 1000 hours, 1.5 hours ON, 0.5 hours OFF cycle                                   |
| High Temperature Exposure   | —                          | 8 (Reference) | +125°C, 1000 hours                                                                          |

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

11/20/08