



## **NTC thermistors for temperature measurement**

Leaded NTC,  
lead spacing 2.5 mm

**Series/Type:**      **B57891**  
**Date:**              March 2006

## Applications

- Temperature compensation
- Temperature measurement
- Temperature control

## Features

- Wide resistance range
- Cost-effective
- Lacquer-coated thermistor disk
- Leads: copper-clad Fe wire, tinned
- Marked with resistance and tolerance

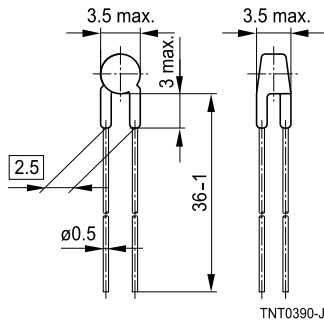
## Options

Lead spacing 5 mm available on request

## Delivery mode

Bulk (standard),  
cardboard tape, reeled or in Ammo pack

## Dimensional drawing



Dimensions in mm

Approx. weight 0.2 g

## General technical data

|                               |               |                  |                 |      |
|-------------------------------|---------------|------------------|-----------------|------|
| Climatic category             | (IEC 60068-1) | $P_{25}$         | 40/125/56       |      |
| Max. power                    | (at 25 °C)    | $\Delta R_R/R_R$ | 200             | mW   |
| Resistance tolerance          |               | $T_R$            | $\pm 5, \pm 10$ | %    |
| Rated temperature             |               | $\delta_{th}$    | 25              | °C   |
| Dissipation factor            | (in air)      | $\tau_c$         | approx. 3.5     | mW/K |
| Thermal cooling time constant | (in air)      | $C_{th}$         | approx. 12      | s    |
| Heat capacity                 |               |                  | approx. 40      | mJ/K |

## Electrical specification and ordering codes

| $R_{25}$<br>Ω | No. of R/T<br>characteristic | $B_{25/100}$<br>K | Ordering code   |
|---------------|------------------------------|-------------------|-----------------|
| 1 k           | 1009                         | 3930 ±3%          | B57891M0102+000 |
| 1.5 k         | 1008                         | 3560 ±3%          | B57891M0152+000 |
| 2.2 k         | 1013                         | 3900 ±3%          | B57891M0222+000 |
| 3.3 k         | 2003                         | 3980 ±3%          | B57891M0332+000 |
| 4.7 k         | 2003                         | 3980 ±3%          | B57891M0472+000 |
| 6.8 k         | 2003                         | 3980 ±3%          | B57891M0682+000 |
| 10 k          | 4901                         | 3950 ±3%          | B57891M0103+000 |
| 15 k          | 2004                         | 4100 ±3%          | B57891M0153+000 |
| 22 k          | 2904                         | 4300 ±3%          | B57891M0223+000 |

+ = Resistance tolerance

J = ±5%

K = ±10%

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| $R_{25}$<br>$\Omega$ | No. of R/T<br>characteristic | $B_{25/100}$<br>K | Ordering code   |
|----------------------|------------------------------|-------------------|-----------------|
| 33 k                 | 2904                         | 4300 $\pm 3\%$    | B57891M0333+000 |
| 47 k                 | 4012                         | 4355 $\pm 3\%$    | B57891M0473+000 |
| 68 k                 | 4012                         | 4355 $\pm 3\%$    | B57891M0683+000 |
| 100 k                | 4003                         | 4450 $\pm 3\%$    | B57891M0104+000 |
| 150 k                | 2005                         | 4600 $\pm 3\%$    | B57891M0154+000 |
| 220 k                | 2005                         | 4600 $\pm 3\%$    | B57891M0224+000 |
| 330 k                | 2007                         | 4830 $\pm 3\%$    | B57891M0334+000 |
| 470 k                | 2006                         | 5000 $\pm 3\%$    | B57891M0474+000 |

+ = Resistance tolerance

J =  $\pm 5\%$

K =  $\pm 10\%$

**Reliability data**

| Test                                     | Standard          | Test conditions                                                                           | $\Delta R_{25}/R_{25}$<br>(typical) | Remarks              |
|------------------------------------------|-------------------|-------------------------------------------------------------------------------------------|-------------------------------------|----------------------|
| Storage in<br>dry heat                   | IEC<br>60068-2-2  | Storage at upper<br>category temperature<br>T: 125 °C<br>t: 1000 h                        | < 3%                                | No visible<br>damage |
| Storage in damp<br>heat, steady state    | IEC<br>60068-2-78 | Temperature of air: 40 °C<br>Relative humidity of air: 93%<br>Duration: 56 days           | < 2%                                | No visible<br>damage |
| Rapid temperature<br>cycling             | IEC<br>60068-2-14 | Lower test temperature: -40 °C<br>Upper test temperature: 125 °C<br>Number of cycles: 100 | < 2%                                | No visible<br>damage |
| Endurance                                |                   | $P_{max}$ : 200 mW<br>t: 1000 h                                                           | < 3%                                | No visible<br>damage |
| Long-term stability<br>(empirical value) |                   | Temperature: 70 °C<br>t: 10000 h                                                          | < 5%                                | No visible<br>damage |

## R/T characteristics

|             | B57891M0102J000                                                                                                        |                       |                       |                                      |            |            |
|-------------|------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|--------------------------------------|------------|------------|
| R/T No.     | 1009                                                                                                                   |                       |                       |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 3930 K, R <sub>25</sub> = 1000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 5% |                       |                       |                                      |            |            |
|             | R <sub>nomL</sub> [Ω]                                                                                                  | R <sub>minL</sub> [Ω] | R <sub>maxL</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 85423                                                                                                                  | 68721                 | 102120                | 19.6                                 | 2.9        | 6.8        |
| -50.0       | 60781                                                                                                                  | 49634                 | 71929                 | 18.3                                 | 2.7        | 6.7        |
| -45.0       | 43650                                                                                                                  | 36150                 | 51150                 | 17.2                                 | 2.6        | 6.5        |
| -40.0       | 31629                                                                                                                  | 26545                 | 36713                 | 16.1                                 | 2.5        | 6.4        |
| -35.0       | 23118                                                                                                                  | 19648                 | 26589                 | 15.0                                 | 2.4        | 6.2        |
| -30.0       | 17040                                                                                                                  | 14656                 | 19425                 | 14.0                                 | 2.3        | 6.0        |
| -25.0       | 12649                                                                                                                  | 11003                 | 14296                 | 13.0                                 | 2.2        | 5.9        |
| -20.0       | 9486                                                                                                                   | 8341                  | 10632                 | 12.1                                 | 2.1        | 5.7        |
| -15.0       | 7154                                                                                                                   | 6355                  | 7954                  | 11.2                                 | 2.0        | 5.5        |
| -10.0       | 5448                                                                                                                   | 4886                  | 6010                  | 10.3                                 | 1.9        | 5.4        |
| -5.0        | 4173                                                                                                                   | 3778                  | 4569                  | 9.5                                  | 1.8        | 5.2        |
| 0.0         | 3226                                                                                                                   | 2946                  | 3505                  | 8.7                                  | 1.7        | 5.1        |
| 5.0         | 2515                                                                                                                   | 2316                  | 2713                  | 7.9                                  | 1.6        | 4.9        |
| 10.0        | 1976                                                                                                                   | 1835                  | 2117                  | 7.1                                  | 1.5        | 4.8        |
| 15.0        | 1565                                                                                                                   | 1464                  | 1665                  | 6.4                                  | 1.4        | 4.6        |
| 20.0        | 1248                                                                                                                   | 1177                  | 1320                  | 5.7                                  | 1.3        | 4.5        |
| <b>25.0</b> | <b>1000.0</b>                                                                                                          | <b>950.0</b>          | <b>1050</b>           | <b>5.0</b>                           | <b>1.2</b> | <b>4.3</b> |
| 30.0        | 809.6                                                                                                                  | 763.4                 | 855.7                 | 5.7                                  | 1.4        | 4.2        |
| 35.0        | 657.3                                                                                                                  | 615.6                 | 698.9                 | 6.3                                  | 1.5        | 4.1        |
| 40.0        | 537.0                                                                                                                  | 499.7                 | 574.3                 | 6.9                                  | 1.7        | 4.0        |
| 45.0        | 441.7                                                                                                                  | 408.4                 | 475.0                 | 7.5                                  | 2.0        | 3.9        |
| 50.0        | 365.3                                                                                                                  | 335.7                 | 395.0                 | 8.1                                  | 2.2        | 3.8        |
| 55.0        | 303.3                                                                                                                  | 277.0                 | 329.6                 | 8.7                                  | 2.4        | 3.7        |
| 60.0        | 253.1                                                                                                                  | 229.8                 | 276.4                 | 9.2                                  | 2.6        | 3.5        |
| 65.0        | 212.7                                                                                                                  | 192.0                 | 233.4                 | 9.7                                  | 2.8        | 3.5        |
| 70.0        | 179.6                                                                                                                  | 161.2                 | 198.0                 | 10.2                                 | 3.0        | 3.4        |
| 75.0        | 152.2                                                                                                                  | 135.9                 | 168.5                 | 10.7                                 | 3.3        | 3.3        |
| 80.0        | 129.5                                                                                                                  | 115.0                 | 144.0                 | 11.2                                 | 3.5        | 3.2        |
| 85.0        | 110.7                                                                                                                  | 97.75                 | 123.6                 | 11.7                                 | 3.8        | 3.1        |
| 90.0        | 94.95                                                                                                                  | 83.44                 | 106.5                 | 12.1                                 | 4.0        | 3.0        |
| 95.0        | 81.78                                                                                                                  | 71.50                 | 92.06                 | 12.6                                 | 4.3        | 2.9        |
| 100.0       | 70.69                                                                                                                  | 61.50                 | 79.88                 | 13.0                                 | 4.5        | 2.9        |
| 105.0       | 61.38                                                                                                                  | 53.15                 | 69.62                 | 13.4                                 | 4.8        | 2.8        |
| 110.0       | 53.49                                                                                                                  | 46.09                 | 60.88                 | 13.8                                 | 5.1        | 2.7        |
| 115.0       | 46.73                                                                                                                  | 40.09                 | 53.37                 | 14.2                                 | 5.3        | 2.7        |
| 120.0       | 40.95                                                                                                                  | 34.97                 | 46.94                 | 14.6                                 | 5.6        | 2.6        |
| 125.0       | 36.01                                                                                                                  | 30.61                 | 41.40                 | 15.0                                 | 5.9        | 2.5        |

**Temperature measurement**
**B57891**
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**M891**

|             | <b>B57891M0102K000</b>                                                                                                  |                      |                      |                                      |            |            |
|-------------|-------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 1009                                                                                                                    |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 3930 K, R <sub>25</sub> = 1000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                    | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 85423                                                                                                                   | 64450                | 106400               | 24.6                                 | 3.6        | 6.8        |
| -50.0       | 60781                                                                                                                   | 46595                | 74968                | 23.3                                 | 3.5        | 6.7        |
| -45.0       | 43650                                                                                                                   | 33967                | 53333                | 22.2                                 | 3.4        | 6.5        |
| -40.0       | 31629                                                                                                                   | 24963                | 38295                | 21.1                                 | 3.3        | 6.4        |
| -35.0       | 23118                                                                                                                   | 18492                | 27745                | 20.0                                 | 3.2        | 6.2        |
| -30.0       | 17040                                                                                                                   | 13804                | 20277                | 19.0                                 | 3.1        | 6.0        |
| -25.0       | 12649                                                                                                                   | 10370                | 14928                | 18.0                                 | 3.1        | 5.9        |
| -20.0       | 9486                                                                                                                    | 7866                 | 11107                | 17.1                                 | 3.0        | 5.7        |
| -15.0       | 7154                                                                                                                    | 5997                 | 8312                 | 16.2                                 | 2.9        | 5.5        |
| -10.0       | 5448                                                                                                                    | 4614                 | 6282                 | 15.3                                 | 2.8        | 5.4        |
| -5.0        | 4173                                                                                                                    | 3569                 | 4777                 | 14.5                                 | 2.8        | 5.2        |
| 0.0         | 3226                                                                                                                    | 2785                 | 3667                 | 13.7                                 | 2.7        | 5.1        |
| 5.0         | 2515                                                                                                                    | 2190                 | 2839                 | 12.9                                 | 2.6        | 4.9        |
| 10.0        | 1976                                                                                                                    | 1736                 | 2216                 | 12.1                                 | 2.6        | 4.8        |
| 15.0        | 1565                                                                                                                    | 1386                 | 1744                 | 11.4                                 | 2.5        | 4.6        |
| 20.0        | 1248                                                                                                                    | 1114                 | 1382                 | 10.7                                 | 2.4        | 4.5        |
| <b>25.0</b> | <b>1000.0</b>                                                                                                           | <b>900.0</b>         | <b>1100</b>          | <b>10.0</b>                          | <b>2.3</b> | <b>4.3</b> |
| 30.0        | 809.6                                                                                                                   | 722.9                | 896.2                | 10.7                                 | 2.5        | 4.2        |
| 35.0        | 657.3                                                                                                                   | 582.8                | 731.7                | 11.3                                 | 2.8        | 4.1        |
| 40.0        | 537.0                                                                                                                   | 472.8                | 601.1                | 11.9                                 | 3.0        | 4.0        |
| 45.0        | 441.7                                                                                                                   | 386.3                | 497.1                | 12.5                                 | 3.2        | 3.9        |
| 50.0        | 365.3                                                                                                                   | 317.4                | 413.2                | 13.1                                 | 3.5        | 3.8        |
| 55.0        | 303.3                                                                                                                   | 261.8                | 344.7                | 13.7                                 | 3.7        | 3.7        |
| 60.0        | 253.1                                                                                                                   | 217.2                | 289.1                | 14.2                                 | 4.0        | 3.5        |
| 65.0        | 212.7                                                                                                                   | 181.4                | 244.0                | 14.7                                 | 4.3        | 3.5        |
| 70.0        | 179.6                                                                                                                   | 152.3                | 207.0                | 15.2                                 | 4.5        | 3.4        |
| 75.0        | 152.2                                                                                                                   | 128.2                | 176.1                | 15.7                                 | 4.8        | 3.3        |
| 80.0        | 129.5                                                                                                                   | 108.5                | 150.5                | 16.2                                 | 5.1        | 3.2        |
| 85.0        | 110.7                                                                                                                   | 92.21                | 129.1                | 16.7                                 | 5.4        | 3.1        |
| 90.0        | 94.95                                                                                                                   | 78.69                | 111.2                | 17.1                                 | 5.7        | 3.0        |
| 95.0        | 81.78                                                                                                                   | 67.41                | 96.15                | 17.6                                 | 6.0        | 2.9        |
| 100.0       | 70.69                                                                                                                   | 57.97                | 83.41                | 18.0                                 | 6.3        | 2.9        |
| 105.0       | 61.38                                                                                                                   | 50.08                | 72.69                | 18.4                                 | 6.6        | 2.8        |
| 110.0       | 53.49                                                                                                                   | 43.42                | 63.55                | 18.8                                 | 6.9        | 2.7        |
| 115.0       | 46.73                                                                                                                   | 37.75                | 55.71                | 19.2                                 | 7.2        | 2.7        |
| 120.0       | 40.95                                                                                                                   | 32.93                | 48.98                | 19.6                                 | 7.5        | 2.6        |
| 125.0       | 36.01                                                                                                                   | 28.81                | 43.20                | 20.0                                 | 7.9        | 2.5        |

|         | B57891M0152J000                                                                                                                   |                          |                          |                         |                               |                 |
|---------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------|-------------------------------|-----------------|
| R/T No. | 1008                                                                                                                              |                          |                          |                         |                               |                 |
| T (°C)  | $B_{25/100} = 3560 \text{ K}$ , $R_{25} = 1500 \text{ } \Omega$ , $T_R = 25 \text{ } ^\circ\text{C}$ , $\Delta R_R/R_R = \pm 5\%$ |                          |                          |                         |                               |                 |
|         | $R_{\text{nom}}[\Omega]$                                                                                                          | $R_{\text{min}}[\Omega]$ | $R_{\text{max}}[\Omega]$ | $\Delta R_R/R_R[\pm\%]$ | $\Delta T[\pm^\circ\text{C}]$ | $\alpha (\%/K)$ |
| -55.0   | 79655                                                                                                                             | 65169                    | 94142                    | 18.2                    | 3.0                           | 6.1             |
| -50.0   | 58976                                                                                                                             | 48898                    | 69055                    | 17.1                    | 2.9                           | 6.0             |
| -45.0   | 43988                                                                                                                             | 36932                    | 51044                    | 16.0                    | 2.7                           | 5.8             |
| -40.0   | 33045                                                                                                                             | 28076                    | 38014                    | 15.0                    | 2.6                           | 5.7             |
| -35.0   | 25000                                                                                                                             | 21481                    | 28518                    | 14.1                    | 2.5                           | 5.5             |
| -30.0   | 19044                                                                                                                             | 16539                    | 21548                    | 13.2                    | 2.4                           | 5.4             |
| -25.0   | 14588                                                                                                                             | 12798                    | 16377                    | 12.3                    | 2.3                           | 5.2             |
| -20.0   | 11276                                                                                                                             | 9988                     | 12563                    | 11.4                    | 2.2                           | 5.1             |
| -15.0   | 8753                                                                                                                              | 7825                     | 9681                     | 10.6                    | 2.1                           | 4.9             |
| -10.0   | 6853                                                                                                                              | 6180                     | 7525                     | 9.8                     | 2.0                           | 4.8             |
| -5.0    | 5407                                                                                                                              | 4918                     | 5897                     | 9.1                     | 1.9                           | 4.7             |
| 0.0     | 4300                                                                                                                              | 3942                     | 4658                     | 8.3                     | 1.8                           | 4.5             |
| 5.0     | 3436                                                                                                                              | 3174                     | 3698                     | 7.6                     | 1.7                           | 4.4             |
| 10.0    | 2766                                                                                                                              | 2573                     | 2958                     | 6.9                     | 1.6                           | 4.3             |
| 15.0    | 2238                                                                                                                              | 2097                     | 2379                     | 6.3                     | 1.5                           | 4.1             |
| 20.0    | 1823                                                                                                                              | 1720                     | 1926                     | 5.7                     | 1.4                           | 4.0             |
| 25.0    | <b>1500</b>                                                                                                                       | <b>1425</b>              | <b>1575</b>              | <b>5.0</b>              | <b>1.3</b>                    | <b>3.9</b>      |
| 30.0    | 1245                                                                                                                              | 1174                     | 1315                     | 5.6                     | 1.5                           | 3.8             |
| 35.0    | 1030                                                                                                                              | 965.6                    | 1093                     | 6.2                     | 1.7                           | 3.7             |
| 40.0    | 856.5                                                                                                                             | 798.6                    | 914.5                    | 6.8                     | 1.9                           | 3.6             |
| 45.0    | 720.2                                                                                                                             | 667.6                    | 772.8                    | 7.3                     | 2.1                           | 3.5             |
| 50.0    | 608.2                                                                                                                             | 560.6                    | 655.7                    | 7.8                     | 2.3                           | 3.4             |
| 55.0    | 512.6                                                                                                                             | 469.9                    | 555.2                    | 8.3                     | 2.5                           | 3.3             |
| 60.0    | 434.3                                                                                                                             | 396.0                    | 472.5                    | 8.8                     | 2.7                           | 3.2             |
| 65.0    | 370.7                                                                                                                             | 336.3                    | 405.1                    | 9.3                     | 3.0                           | 3.1             |
| 70.0    | 317.7                                                                                                                             | 286.8                    | 348.7                    | 9.7                     | 3.2                           | 3.1             |
| 75.0    | 272.9                                                                                                                             | 245.1                    | 300.7                    | 10.2                    | 3.4                           | 3.0             |
| 80.0    | 235.2                                                                                                                             | 210.2                    | 260.2                    | 10.6                    | 3.7                           | 2.9             |
| 85.0    | 203.9                                                                                                                             | 181.3                    | 226.4                    | 11.1                    | 3.9                           | 2.8             |
| 90.0    | 177.3                                                                                                                             | 157.0                    | 197.7                    | 11.5                    | 4.1                           | 2.8             |
| 95.0    | 155.1                                                                                                                             | 136.7                    | 173.5                    | 11.9                    | 4.4                           | 2.7             |
| 100.0   | 136.1                                                                                                                             | 119.4                    | 152.8                    | 12.2                    | 4.7                           | 2.6             |
| 105.0   | 119.5                                                                                                                             | 104.4                    | 134.5                    | 12.6                    | 4.9                           | 2.6             |
| 110.0   | 105.2                                                                                                                             | 91.49                    | 118.8                    | 13.0                    | 5.2                           | 2.5             |
| 115.0   | 92.83                                                                                                                             | 80.43                    | 105.2                    | 13.4                    | 5.5                           | 2.4             |
| 120.0   | 82.18                                                                                                                             | 70.91                    | 93.44                    | 13.7                    | 5.7                           | 2.4             |
| 125.0   | 73.06                                                                                                                             | 62.80                    | 83.32                    | 14.0                    | 6.0                           | 2.3             |

|             | B57891M0152K000                                                                                                         |                      |                      |                                      |            |            |
|-------------|-------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 1008                                                                                                                    |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 3560 K, R <sub>25</sub> = 1500 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                    | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 79655                                                                                                                   | 61186                | 98124                | 23.2                                 | 3.8        | 6.1        |
| -50.0       | 58976                                                                                                                   | 45949                | 72004                | 22.1                                 | 3.7        | 6.0        |
| -45.0       | 43988                                                                                                                   | 34733                | 53243                | 21.0                                 | 3.6        | 5.8        |
| -40.0       | 33045                                                                                                                   | 26424                | 39666                | 20.0                                 | 3.5        | 5.7        |
| -35.0       | 25000                                                                                                                   | 20231                | 29768                | 19.1                                 | 3.4        | 5.5        |
| -30.0       | 19044                                                                                                                   | 15587                | 22501                | 18.2                                 | 3.4        | 5.4        |
| -25.0       | 14588                                                                                                                   | 12069                | 17107                | 17.3                                 | 3.3        | 5.2        |
| -20.0       | 11276                                                                                                                   | 9424                 | 13127                | 16.4                                 | 3.2        | 5.1        |
| -15.0       | 8753                                                                                                                    | 7387                 | 10118                | 15.6                                 | 3.2        | 4.9        |
| -10.0       | 6853                                                                                                                    | 5838                 | 7868                 | 14.8                                 | 3.1        | 4.8        |
| -5.0        | 5407                                                                                                                    | 4647                 | 6168                 | 14.1                                 | 3.0        | 4.7        |
| 0.0         | 4300                                                                                                                    | 3727                 | 4873                 | 13.3                                 | 2.9        | 4.5        |
| 5.0         | 3436                                                                                                                    | 3002                 | 3870                 | 12.6                                 | 2.9        | 4.4        |
| 10.0        | 2766                                                                                                                    | 2435                 | 3096                 | 11.9                                 | 2.8        | 4.3        |
| 15.0        | 2238                                                                                                                    | 1985                 | 2491                 | 11.3                                 | 2.7        | 4.1        |
| 20.0        | 1823                                                                                                                    | 1629                 | 2018                 | 10.7                                 | 2.6        | 4.0        |
| <b>25.0</b> | <b>1500</b>                                                                                                             | <b>1350</b>          | <b>1650</b>          | <b>10.0</b>                          | <b>2.6</b> | <b>3.9</b> |
| 30.0        | 1245                                                                                                                    | 1112                 | 1377                 | 10.6                                 | 2.8        | 3.8        |
| 35.0        | 1030                                                                                                                    | 914.1                | 1145                 | 11.2                                 | 3.0        | 3.7        |
| 40.0        | 856.5                                                                                                                   | 755.8                | 957.3                | 11.8                                 | 3.3        | 3.6        |
| 45.0        | 720.2                                                                                                                   | 631.6                | 808.8                | 12.3                                 | 3.5        | 3.5        |
| 50.0        | 608.2                                                                                                                   | 530.2                | 686.1                | 12.8                                 | 3.8        | 3.4        |
| 55.0        | 512.6                                                                                                                   | 444.3                | 580.9                | 13.3                                 | 4.0        | 3.3        |
| 60.0        | 434.3                                                                                                                   | 374.3                | 494.3                | 13.8                                 | 4.3        | 3.2        |
| 65.0        | 370.7                                                                                                                   | 317.7                | 423.7                | 14.3                                 | 4.5        | 3.1        |
| 70.0        | 317.7                                                                                                                   | 270.9                | 364.6                | 14.7                                 | 4.8        | 3.1        |
| 75.0        | 272.9                                                                                                                   | 231.4                | 314.4                | 15.2                                 | 5.1        | 3.0        |
| 80.0        | 235.2                                                                                                                   | 198.4                | 272.0                | 15.6                                 | 5.4        | 2.9        |
| 85.0        | 203.9                                                                                                                   | 171.2                | 236.6                | 16.1                                 | 5.7        | 2.8        |
| 90.0        | 177.3                                                                                                                   | 148.1                | 206.5                | 16.5                                 | 6.0        | 2.8        |
| 95.0        | 155.1                                                                                                                   | 128.9                | 181.2                | 16.9                                 | 6.3        | 2.7        |
| 100.0       | 136.1                                                                                                                   | 112.6                | 159.6                | 17.2                                 | 6.6        | 2.6        |
| 105.0       | 119.5                                                                                                                   | 98.40                | 140.5                | 17.6                                 | 6.9        | 2.6        |
| 110.0       | 105.2                                                                                                                   | 86.23                | 124.1                | 18.0                                 | 7.2        | 2.5        |
| 115.0       | 92.83                                                                                                                   | 75.79                | 109.9                | 18.4                                 | 7.5        | 2.4        |
| 120.0       | 82.18                                                                                                                   | 66.81                | 97.55                | 18.7                                 | 7.8        | 2.4        |
| 125.0       | 73.06                                                                                                                   | 59.14                | 86.97                | 19.0                                 | 8.2        | 2.3        |

| B57891M0222J000 |                                                                                                             |                           |                           |                         |                          |                 |
|-----------------|-------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------|-------------------------|--------------------------|-----------------|
| R/T No.         | 1013                                                                                                        |                           |                           |                         |                          |                 |
| T (°C)          | $B_{25/100} = 3900 \text{ K}$ , $R_{25} = 2200 \Omega$ , $T_R = 25 \text{ °C}$ , $\Delta R_R/R_R = \pm 5\%$ |                           |                           |                         |                          |                 |
|                 | $R_{\text{nomL}}[\Omega]$                                                                                   | $R_{\text{minL}}[\Omega]$ | $R_{\text{maxL}}[\Omega]$ | $\Delta R_R/R_R[\pm\%]$ | $\Delta T[\pm\text{°C}]$ | $\alpha (\%/K)$ |
| -55.0           | 170030                                                                                                      | 136970                    | 203080                    | 19.4                    | 2.8                      | 6.9             |
| -50.0           | 120860                                                                                                      | 98819                     | 142910                    | 18.2                    | 2.7                      | 6.7             |
| -45.0           | 86914                                                                                                       | 72061                     | 101770                    | 17.1                    | 2.6                      | 6.5             |
| -40.0           | 63188                                                                                                       | 53084                     | 73292                     | 16.0                    | 2.5                      | 6.3             |
| -35.0           | 46417                                                                                                       | 39484                     | 53350                     | 14.9                    | 2.5                      | 6.1             |
| -30.0           | 34434                                                                                                       | 29638                     | 39229                     | 13.9                    | 2.4                      | 5.9             |
| -25.0           | 25772                                                                                                       | 22433                     | 29112                     | 13.0                    | 2.3                      | 5.7             |
| -20.0           | 19479                                                                                                       | 17136                     | 21821                     | 12.0                    | 2.2                      | 5.5             |
| -15.0           | 14835                                                                                                       | 13184                     | 16486                     | 11.1                    | 2.1                      | 5.4             |
| -10.0           | 11399                                                                                                       | 10229                     | 12570                     | 10.3                    | 2.0                      | 5.2             |
| -5.0            | 8822                                                                                                        | 7989                      | 9655                      | 9.4                     | 1.9                      | 5.0             |
| 0.0             | 6882                                                                                                        | 6288                      | 7477                      | 8.6                     | 1.8                      | 4.9             |
| 5.0             | 5405                                                                                                        | 4980                      | 5831                      | 7.9                     | 1.7                      | 4.8             |
| 10.0            | 4276                                                                                                        | 3972                      | 4581                      | 7.1                     | 1.5                      | 4.6             |
| 15.0            | 3404                                                                                                        | 3186                      | 3623                      | 6.4                     | 1.4                      | 4.5             |
| 20.0            | 2729                                                                                                        | 2573                      | 2885                      | 5.7                     | 1.3                      | 4.4             |
| <b>25.0</b>     | <b>2200</b>                                                                                                 | <b>2090</b>               | <b>2310</b>               | <b>5.0</b>              | <b>1.2</b>               | <b>4.3</b>      |
| 30.0            | 1784                                                                                                        | 1683                      | 1886                      | 5.7                     | 1.4                      | 4.1             |
| 35.0            | 1455                                                                                                        | 1363                      | 1547                      | 6.3                     | 1.6                      | 4.0             |
| 40.0            | 1194                                                                                                        | 1111                      | 1276                      | 6.9                     | 1.8                      | 3.9             |
| 45.0            | 984.0                                                                                                       | 910.0                     | 1058                      | 7.5                     | 2.0                      | 3.8             |
| 50.0            | 815.5                                                                                                       | 749.5                     | 881.4                     | 8.1                     | 2.2                      | 3.7             |
| 55.0            | 679.0                                                                                                       | 620.4                     | 737.7                     | 8.6                     | 2.4                      | 3.6             |
| 60.0            | 568.2                                                                                                       | 516.0                     | 620.3                     | 9.2                     | 2.6                      | 3.5             |
| 65.0            | 477.6                                                                                                       | 431.3                     | 523.8                     | 9.7                     | 2.8                      | 3.4             |
| 70.0            | 403.1                                                                                                       | 362.0                     | 444.2                     | 10.2                    | 3.0                      | 3.3             |
| 75.0            | 341.8                                                                                                       | 305.3                     | 378.3                     | 10.7                    | 3.3                      | 3.3             |
| 80.0            | 290.9                                                                                                       | 258.4                     | 323.4                     | 11.2                    | 3.5                      | 3.2             |
| 85.0            | 248.6                                                                                                       | 219.7                     | 277.5                     | 11.6                    | 3.7                      | 3.1             |
| 90.0            | 213.3                                                                                                       | 187.5                     | 239.0                     | 12.1                    | 4.0                      | 3.0             |
| 95.0            | 183.7                                                                                                       | 160.7                     | 206.7                     | 12.5                    | 4.2                      | 3.0             |
| 100.0           | 158.7                                                                                                       | 138.2                     | 179.2                     | 12.9                    | 4.5                      | 2.9             |
| 105.0           | 137.6                                                                                                       | 119.3                     | 156.0                     | 13.4                    | 4.7                      | 2.8             |
| 110.0           | 119.7                                                                                                       | 103.3                     | 136.2                     | 13.8                    | 5.0                      | 2.8             |
| 115.0           | 104.5                                                                                                       | 89.73                     | 119.3                     | 14.1                    | 5.3                      | 2.7             |
| 120.0           | 91.51                                                                                                       | 78.21                     | 104.8                     | 14.5                    | 5.5                      | 2.6             |
| 125.0           | 80.37                                                                                                       | 68.39                     | 92.35                     | 14.9                    | 5.8                      | 2.6             |

|             | <b>B57891M0222K000</b>                                                                                                  |                      |                      |                                      |            |            |
|-------------|-------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 1013                                                                                                                    |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 3900 K, R <sub>25</sub> = 2200 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                    | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 170030                                                                                                                  | 128470               | 211580               | 24.4                                 | 3.5        | 6.9        |
| -50.0       | 120860                                                                                                                  | 92776                | 148950               | 23.2                                 | 3.5        | 6.7        |
| -45.0       | 86914                                                                                                                   | 67715                | 106110               | 22.1                                 | 3.4        | 6.5        |
| -40.0       | 63188                                                                                                                   | 49925                | 76452                | 21.0                                 | 3.3        | 6.3        |
| -35.0       | 46417                                                                                                                   | 37163                | 55671                | 19.9                                 | 3.3        | 6.1        |
| -30.0       | 34434                                                                                                                   | 27917                | 40951                | 18.9                                 | 3.2        | 5.9        |
| -25.0       | 25772                                                                                                                   | 21144                | 30400                | 18.0                                 | 3.1        | 5.7        |
| -20.0       | 19479                                                                                                                   | 16163                | 22795                | 17.0                                 | 3.1        | 5.5        |
| -15.0       | 14835                                                                                                                   | 12442                | 17228                | 16.1                                 | 3.0        | 5.4        |
| -10.0       | 11399                                                                                                                   | 9659                 | 13140                | 15.3                                 | 2.9        | 5.2        |
| -5.0        | 8822                                                                                                                    | 7548                 | 10096                | 14.4                                 | 2.9        | 5.0        |
| 0.0         | 6882                                                                                                                    | 5943                 | 7821                 | 13.6                                 | 2.8        | 4.9        |
| 5.0         | 5405                                                                                                                    | 4709                 | 6101                 | 12.9                                 | 2.7        | 4.8        |
| 10.0        | 4276                                                                                                                    | 3758                 | 4795                 | 12.1                                 | 2.6        | 4.6        |
| 15.0        | 3404                                                                                                                    | 3016                 | 3793                 | 11.4                                 | 2.5        | 4.5        |
| 20.0        | 2729                                                                                                                    | 2436                 | 3021                 | 10.7                                 | 2.5        | 4.4        |
| <b>25.0</b> | <b>2200</b>                                                                                                             | <b>1980</b>          | <b>2420</b>          | <b>10.0</b>                          | <b>2.4</b> | <b>4.3</b> |
| 30.0        | 1784                                                                                                                    | 1593                 | 1975                 | 10.7                                 | 2.6        | 4.1        |
| 35.0        | 1455                                                                                                                    | 1290                 | 1620                 | 11.3                                 | 2.8        | 4.0        |
| 40.0        | 1194                                                                                                                    | 1051                 | 1336                 | 11.9                                 | 3.0        | 3.9        |
| 45.0        | 984.0                                                                                                                   | 860.8                | 1107                 | 12.5                                 | 3.3        | 3.8        |
| 50.0        | 815.5                                                                                                                   | 708.8                | 922.2                | 13.1                                 | 3.5        | 3.7        |
| 55.0        | 679.0                                                                                                                   | 586.4                | 771.6                | 13.6                                 | 3.8        | 3.6        |
| 60.0        | 568.2                                                                                                                   | 487.6                | 648.7                | 14.2                                 | 4.0        | 3.5        |
| 65.0        | 477.6                                                                                                                   | 407.4                | 547.7                | 14.7                                 | 4.3        | 3.4        |
| 70.0        | 403.1                                                                                                                   | 341.9                | 464.4                | 15.2                                 | 4.5        | 3.3        |
| 75.0        | 341.8                                                                                                                   | 288.2                | 395.4                | 15.7                                 | 4.8        | 3.3        |
| 80.0        | 290.9                                                                                                                   | 243.9                | 337.9                | 16.2                                 | 5.1        | 3.2        |
| 85.0        | 248.6                                                                                                                   | 207.3                | 290.0                | 16.6                                 | 5.4        | 3.1        |
| 90.0        | 213.3                                                                                                                   | 176.9                | 249.7                | 17.1                                 | 5.6        | 3.0        |
| 95.0        | 183.7                                                                                                                   | 151.5                | 215.8                | 17.5                                 | 5.9        | 3.0        |
| 100.0       | 158.7                                                                                                                   | 130.2                | 187.2                | 17.9                                 | 6.2        | 2.9        |
| 105.0       | 137.6                                                                                                                   | 112.4                | 162.9                | 18.4                                 | 6.5        | 2.8        |
| 110.0       | 119.7                                                                                                                   | 97.28                | 142.2                | 18.8                                 | 6.8        | 2.8        |
| 115.0       | 104.5                                                                                                                   | 84.50                | 124.5                | 19.1                                 | 7.1        | 2.7        |
| 120.0       | 91.51                                                                                                                   | 73.63                | 109.4                | 19.5                                 | 7.4        | 2.6        |
| 125.0       | 80.37                                                                                                                   | 64.37                | 96.37                | 19.9                                 | 7.7        | 2.6        |

|             | B57891M0332J000                                                                                                                   |                           |                           |                         |                               |                 |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------|-------------------------|-------------------------------|-----------------|
| R/T No.     | 2003                                                                                                                              |                           |                           |                         |                               |                 |
| T (°C)      | $B_{25/100} = 3980 \text{ K}$ , $R_{25} = 3300 \text{ } \Omega$ , $T_R = 25 \text{ } ^\circ\text{C}$ , $\Delta R_R/R_R = \pm 5\%$ |                           |                           |                         |                               |                 |
|             | $R_{\text{nomL}}[\Omega]$                                                                                                         | $R_{\text{minL}}[\Omega]$ | $R_{\text{maxL}}[\Omega]$ | $\Delta R_R/R_R[\pm\%]$ | $\Delta T[\pm^\circ\text{C}]$ | $\alpha (\%/K)$ |
| -55.0       | 322010                                                                                                                            | 258460                    | 385560                    | 19.7                    | 2.6                           | 7.4             |
| -50.0       | 223250                                                                                                                            | 181920                    | 264570                    | 18.5                    | 2.6                           | 7.2             |
| -45.0       | 156870                                                                                                                            | 129680                    | 184070                    | 17.3                    | 2.5                           | 6.9             |
| -40.0       | 111640                                                                                                                            | 93541                     | 129750                    | 16.2                    | 2.4                           | 6.7             |
| -35.0       | 80385                                                                                                                             | 68215                     | 92554                     | 15.1                    | 2.3                           | 6.5             |
| -30.0       | 58585                                                                                                                             | 50320                     | 66851                     | 14.1                    | 2.3                           | 6.2             |
| -25.0       | 43120                                                                                                                             | 37463                     | 48776                     | 13.1                    | 2.2                           | 6.0             |
| -20.0       | 32085                                                                                                                             | 28181                     | 35990                     | 12.2                    | 2.1                           | 5.8             |
| -15.0       | 24092                                                                                                                             | 21380                     | 26803                     | 11.3                    | 2.0                           | 5.6             |
| -10.0       | 18269                                                                                                                             | 16373                     | 20165                     | 10.4                    | 1.9                           | 5.5             |
| -5.0        | 13970                                                                                                                             | 12638                     | 15301                     | 9.5                     | 1.8                           | 5.3             |
| 0.0         | 10778                                                                                                                             | 9838                      | 11717                     | 8.7                     | 1.7                           | 5.1             |
| 5.0         | 8379                                                                                                                              | 7715                      | 9044                      | 7.9                     | 1.6                           | 5.0             |
| 10.0        | 6568                                                                                                                              | 6097                      | 7039                      | 7.2                     | 1.5                           | 4.8             |
| 15.0        | 5184                                                                                                                              | 4850                      | 5518                      | 6.4                     | 1.4                           | 4.7             |
| 20.0        | 4122                                                                                                                              | 3886                      | 4359                      | 5.7                     | 1.3                           | 4.5             |
| <b>25.0</b> | <b>3300</b>                                                                                                                       | <b>3135</b>               | <b>3465</b>               | <b>5.0</b>              | <b>1.1</b>                    | <b>4.4</b>      |
| 30.0        | 2659                                                                                                                              | 2507                      | 2811                      | 5.7                     | 1.3                           | 4.3             |
| 35.0        | 2156                                                                                                                              | 2019                      | 2293                      | 6.3                     | 1.5                           | 4.1             |
| 40.0        | 1759                                                                                                                              | 1636                      | 1881                      | 7.0                     | 1.7                           | 4.0             |
| 45.0        | 1443                                                                                                                              | 1333                      | 1552                      | 7.6                     | 1.9                           | 3.9             |
| 50.0        | 1190                                                                                                                              | 1093                      | 1287                      | 8.1                     | 2.1                           | 3.8             |
| 55.0        | 987.0                                                                                                                             | 901.0                     | 1073                      | 8.7                     | 2.4                           | 3.7             |
| 60.0        | 822.8                                                                                                                             | 746.6                     | 898.9                     | 9.3                     | 2.6                           | 3.6             |
| 65.0        | 689.3                                                                                                                             | 621.8                     | 756.7                     | 9.8                     | 2.8                           | 3.5             |
| 70.0        | 580.1                                                                                                                             | 520.3                     | 639.8                     | 10.3                    | 3.0                           | 3.4             |
| 75.0        | 490.5                                                                                                                             | 437.5                     | 543.5                     | 10.8                    | 3.3                           | 3.3             |
| 80.0        | 416.5                                                                                                                             | 369.5                     | 463.5                     | 11.3                    | 3.5                           | 3.2             |
| 85.0        | 355.2                                                                                                                             | 313.4                     | 397.0                     | 11.8                    | 3.7                           | 3.1             |
| 90.0        | 304.1                                                                                                                             | 267.0                     | 341.3                     | 12.2                    | 4.0                           | 3.1             |
| 95.0        | 261.4                                                                                                                             | 228.3                     | 294.6                     | 12.7                    | 4.2                           | 3.0             |
| 100.0       | 225.6                                                                                                                             | 196.0                     | 255.1                     | 13.1                    | 4.5                           | 2.9             |
| 105.0       | 195.5                                                                                                                             | 169.1                     | 222.0                     | 13.5                    | 4.7                           | 2.9             |
| 110.0       | 170.1                                                                                                                             | 146.4                     | 193.7                     | 13.9                    | 5.0                           | 2.8             |
| 115.0       | 148.2                                                                                                                             | 127.0                     | 169.5                     | 14.3                    | 5.3                           | 2.7             |
| 120.0       | 129.6                                                                                                                             | 110.5                     | 148.7                     | 14.7                    | 5.6                           | 2.7             |
| 125.0       | 113.5                                                                                                                             | 96.33                     | 130.6                     | 15.1                    | 5.8                           | 2.6             |

**Temperature measurement**
**B57891**
**Leaded NTC, lead spacing 2.5 mm**
**M891**

|             | <b>B57891M0332K000</b>                                                                                                  |                      |                      |                                      |            |            |
|-------------|-------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 2003                                                                                                                    |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 3980 K, R <sub>25</sub> = 3300 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                    | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 322010                                                                                                                  | 242360               | 401660               | 24.7                                 | 3.3        | 7.4        |
| -50.0       | 223250                                                                                                                  | 170760               | 275730               | 23.5                                 | 3.3        | 7.2        |
| -45.0       | 156870                                                                                                                  | 121830               | 191920               | 22.3                                 | 3.2        | 6.9        |
| -40.0       | 111640                                                                                                                  | 87959                | 135330               | 21.2                                 | 3.2        | 6.7        |
| -35.0       | 80385                                                                                                                   | 64195                | 96574                | 20.1                                 | 3.1        | 6.5        |
| -30.0       | 58585                                                                                                                   | 47391                | 69780                | 19.1                                 | 3.1        | 6.2        |
| -25.0       | 43120                                                                                                                   | 35307                | 50932                | 18.1                                 | 3.0        | 6.0        |
| -20.0       | 32085                                                                                                                   | 26577                | 37594                | 17.2                                 | 2.9        | 5.8        |
| -15.0       | 24092                                                                                                                   | 20176                | 28008                | 16.3                                 | 2.9        | 5.6        |
| -10.0       | 18269                                                                                                                   | 15460                | 21078                | 15.4                                 | 2.8        | 5.5        |
| -5.0        | 13970                                                                                                                   | 11940                | 15999                | 14.5                                 | 2.8        | 5.3        |
| 0.0         | 10778                                                                                                                   | 9300                 | 12256                | 13.7                                 | 2.7        | 5.1        |
| 5.0         | 8379                                                                                                                    | 7296                 | 9463                 | 12.9                                 | 2.6        | 5.0        |
| 10.0        | 6568                                                                                                                    | 5768                 | 7367                 | 12.2                                 | 2.5        | 4.8        |
| 15.0        | 5184                                                                                                                    | 4591                 | 5777                 | 11.4                                 | 2.5        | 4.7        |
| 20.0        | 4122                                                                                                                    | 3680                 | 4565                 | 10.7                                 | 2.4        | 4.5        |
| <b>25.0</b> | <b>3300</b>                                                                                                             | <b>2970</b>          | <b>3630</b>          | <b>10.0</b>                          | <b>2.3</b> | <b>4.4</b> |
| 30.0        | 2659                                                                                                                    | 2374                 | 2944                 | 10.7                                 | 2.5        | 4.3        |
| 35.0        | 2156                                                                                                                    | 1911                 | 2400                 | 11.3                                 | 2.7        | 4.1        |
| 40.0        | 1759                                                                                                                    | 1548                 | 1969                 | 12.0                                 | 3.0        | 4.0        |
| 45.0        | 1443                                                                                                                    | 1261                 | 1624                 | 12.6                                 | 3.2        | 3.9        |
| 50.0        | 1190                                                                                                                    | 1034                 | 1347                 | 13.1                                 | 3.5        | 3.8        |
| 55.0        | 987.0                                                                                                                   | 851.7                | 1122                 | 13.7                                 | 3.7        | 3.7        |
| 60.0        | 822.8                                                                                                                   | 705.5                | 940.1                | 14.3                                 | 4.0        | 3.6        |
| 65.0        | 689.3                                                                                                                   | 587.3                | 791.2                | 14.8                                 | 4.2        | 3.5        |
| 70.0        | 580.1                                                                                                                   | 491.3                | 668.9                | 15.3                                 | 4.5        | 3.4        |
| 75.0        | 490.5                                                                                                                   | 413.0                | 568.0                | 15.8                                 | 4.8        | 3.3        |
| 80.0        | 416.5                                                                                                                   | 348.7                | 484.3                | 16.3                                 | 5.0        | 3.2        |
| 85.0        | 355.2                                                                                                                   | 295.7                | 414.7                | 16.8                                 | 5.3        | 3.1        |
| 90.0        | 304.1                                                                                                                   | 251.8                | 356.5                | 17.2                                 | 5.6        | 3.1        |
| 95.0        | 261.4                                                                                                                   | 215.3                | 307.6                | 17.7                                 | 5.9        | 3.0        |
| 100.0       | 225.6                                                                                                                   | 184.7                | 266.4                | 18.1                                 | 6.2        | 2.9        |
| 105.0       | 195.5                                                                                                                   | 159.3                | 231.7                | 18.5                                 | 6.5        | 2.9        |
| 110.0       | 170.1                                                                                                                   | 137.9                | 202.3                | 18.9                                 | 6.8        | 2.8        |
| 115.0       | 148.2                                                                                                                   | 119.6                | 176.9                | 19.3                                 | 7.1        | 2.7        |
| 120.0       | 129.6                                                                                                                   | 104.1                | 155.2                | 19.7                                 | 7.4        | 2.7        |
| 125.0       | 113.5                                                                                                                   | 90.66                | 136.3                | 20.1                                 | 7.8        | 2.6        |

|         | B57891M0472J000                                                                                                        |                      |                      |                                      |            |            |
|---------|------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No. | 2003                                                                                                                   |                      |                      |                                      |            |            |
| T (°C)  | B <sub>25/100</sub> = 3980 K, R <sub>25</sub> = 4700 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 5% |                      |                      |                                      |            |            |
|         | R <sub>nom</sub> [Ω]                                                                                                   | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0   | 458620                                                                                                                 | 368100               | 549130               | 19.7                                 | 2.6        | 7.4        |
| -50.0   | 317960                                                                                                                 | 259100               | 376810               | 18.5                                 | 2.6        | 7.2        |
| -45.0   | 223430                                                                                                                 | 184690               | 262160               | 17.3                                 | 2.5        | 6.9        |
| -40.0   | 159010                                                                                                                 | 133230               | 184790               | 16.2                                 | 2.4        | 6.7        |
| -35.0   | 114490                                                                                                                 | 97154                | 131820               | 15.1                                 | 2.3        | 6.5        |
| -30.0   | 83440                                                                                                                  | 71668                | 95212                | 14.1                                 | 2.3        | 6.2        |
| -25.0   | 61413                                                                                                                  | 53356                | 69469                | 13.1                                 | 2.2        | 6.0        |
| -20.0   | 45697                                                                                                                  | 40136                | 51258                | 12.2                                 | 2.1        | 5.8        |
| -15.0   | 34313                                                                                                                  | 30451                | 38175                | 11.3                                 | 2.0        | 5.6        |
| -10.0   | 26020                                                                                                                  | 23320                | 28720                | 10.4                                 | 1.9        | 5.5        |
| -5.0    | 19896                                                                                                                  | 18000                | 21792                | 9.5                                  | 1.8        | 5.3        |
| 0.0     | 15350                                                                                                                  | 14012                | 16688                | 8.7                                  | 1.7        | 5.1        |
| 5.0     | 11934                                                                                                                  | 10988                | 12880                | 7.9                                  | 1.6        | 5.0        |
| 10.0    | 9354                                                                                                                   | 8683                 | 10025                | 7.2                                  | 1.5        | 4.8        |
| 15.0    | 7383                                                                                                                   | 6908                 | 7859                 | 6.4                                  | 1.4        | 4.7        |
| 20.0    | 5871                                                                                                                   | 5535                 | 6208                 | 5.7                                  | 1.3        | 4.5        |
| 25.0    | <b>4700</b>                                                                                                            | <b>4465</b>          | <b>4935</b>          | <b>5.0</b>                           | <b>1.1</b> | <b>4.4</b> |
| 30.0    | 3787                                                                                                                   | 3571                 | 4003                 | 5.7                                  | 1.3        | 4.3        |
| 35.0    | 3070                                                                                                                   | 2875                 | 3265                 | 6.3                                  | 1.5        | 4.1        |
| 40.0    | 2505                                                                                                                   | 2330                 | 2679                 | 7.0                                  | 1.7        | 4.0        |
| 45.0    | 2055                                                                                                                   | 1899                 | 2210                 | 7.6                                  | 1.9        | 3.9        |
| 50.0    | 1695                                                                                                                   | 1557                 | 1833                 | 8.1                                  | 2.1        | 3.8        |
| 55.0    | 1406                                                                                                                   | 1283                 | 1528                 | 8.7                                  | 2.4        | 3.7        |
| 60.0    | 1172                                                                                                                   | 1063                 | 1280                 | 9.3                                  | 2.6        | 3.6        |
| 65.0    | 981.7                                                                                                                  | 885.6                | 1078                 | 9.8                                  | 2.8        | 3.5        |
| 70.0    | 826.2                                                                                                                  | 741.1                | 911.3                | 10.3                                 | 3.0        | 3.4        |
| 75.0    | 698.6                                                                                                                  | 623.1                | 774.0                | 10.8                                 | 3.3        | 3.3        |
| 80.0    | 593.2                                                                                                                  | 526.2                | 660.1                | 11.3                                 | 3.5        | 3.2        |
| 85.0    | 505.9                                                                                                                  | 446.4                | 565.4                | 11.8                                 | 3.7        | 3.1        |
| 90.0    | 433.1                                                                                                                  | 380.2                | 486.1                | 12.2                                 | 4.0        | 3.1        |
| 95.0    | 372.4                                                                                                                  | 325.2                | 419.5                | 12.7                                 | 4.2        | 3.0        |
| 100.0   | 321.3                                                                                                                  | 279.2                | 363.4                | 13.1                                 | 4.5        | 2.9        |
| 105.0   | 278.5                                                                                                                  | 240.8                | 316.1                | 13.5                                 | 4.7        | 2.9        |
| 110.0   | 242.2                                                                                                                  | 208.4                | 275.9                | 13.9                                 | 5.0        | 2.8        |
| 115.0   | 211.1                                                                                                                  | 180.9                | 241.4                | 14.3                                 | 5.3        | 2.7        |
| 120.0   | 184.6                                                                                                                  | 157.4                | 211.8                | 14.7                                 | 5.6        | 2.7        |
| 125.0   | 161.6                                                                                                                  | 137.2                | 186.0                | 15.1                                 | 5.8        | 2.6        |

**Temperature measurement**
**B57891**
**Leaded NTC, lead spacing 2.5 mm**
**M891**

|             | <b>B57891M0472K000</b>                                                                                                  |                      |                      |                                      |            |            |
|-------------|-------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 2003                                                                                                                    |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 3980 K, R <sub>25</sub> = 4700 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                    | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 458620                                                                                                                  | 345170               | 572060               | 24.7                                 | 3.3        | 7.4        |
| -50.0       | 317960                                                                                                                  | 243210               | 392710               | 23.5                                 | 3.3        | 7.2        |
| -45.0       | 223430                                                                                                                  | 173520               | 273330               | 22.3                                 | 3.2        | 6.9        |
| -40.0       | 159010                                                                                                                  | 125270               | 192740               | 21.2                                 | 3.2        | 6.7        |
| -35.0       | 114490                                                                                                                  | 91430                | 137540               | 20.1                                 | 3.1        | 6.5        |
| -30.0       | 83440                                                                                                                   | 67496                | 99384                | 19.1                                 | 3.1        | 6.2        |
| -25.0       | 61413                                                                                                                   | 50285                | 72540                | 18.1                                 | 3.0        | 6.0        |
| -20.0       | 45697                                                                                                                   | 37852                | 53543                | 17.2                                 | 2.9        | 5.8        |
| -15.0       | 34313                                                                                                                   | 28735                | 39890                | 16.3                                 | 2.9        | 5.6        |
| -10.0       | 26020                                                                                                                   | 22019                | 30020                | 15.4                                 | 2.8        | 5.5        |
| -5.0        | 19896                                                                                                                   | 17005                | 22787                | 14.5                                 | 2.8        | 5.3        |
| 0.0         | 15350                                                                                                                   | 13245                | 17455                | 13.7                                 | 2.7        | 5.1        |
| 5.0         | 11934                                                                                                                   | 10391                | 13477                | 12.9                                 | 2.6        | 5.0        |
| 10.0        | 9354                                                                                                                    | 8215                 | 10492                | 12.2                                 | 2.5        | 4.8        |
| 15.0        | 7383                                                                                                                    | 6539                 | 8228                 | 11.4                                 | 2.5        | 4.7        |
| 20.0        | 5871                                                                                                                    | 5241                 | 6501                 | 10.7                                 | 2.4        | 4.5        |
| <b>25.0</b> | <b>4700</b>                                                                                                             | <b>4230</b>          | <b>5170</b>          | <b>10.0</b>                          | <b>2.3</b> | <b>4.4</b> |
| 30.0        | 3787                                                                                                                    | 3381                 | 4193                 | 10.7                                 | 2.5        | 4.3        |
| 35.0        | 3070                                                                                                                    | 2722                 | 3419                 | 11.3                                 | 2.7        | 4.1        |
| 40.0        | 2505                                                                                                                    | 2205                 | 2804                 | 12.0                                 | 3.0        | 4.0        |
| 45.0        | 2055                                                                                                                    | 1796                 | 2313                 | 12.6                                 | 3.2        | 3.9        |
| 50.0        | 1695                                                                                                                    | 1472                 | 1918                 | 13.1                                 | 3.5        | 3.8        |
| 55.0        | 1406                                                                                                                    | 1213                 | 1598                 | 13.7                                 | 3.7        | 3.7        |
| 60.0        | 1172                                                                                                                    | 1005                 | 1339                 | 14.3                                 | 4.0        | 3.6        |
| 65.0        | 981.7                                                                                                                   | 836.5                | 1127                 | 14.8                                 | 4.2        | 3.5        |
| 70.0        | 826.2                                                                                                                   | 699.8                | 952.6                | 15.3                                 | 4.5        | 3.4        |
| 75.0        | 698.6                                                                                                                   | 588.2                | 808.9                | 15.8                                 | 4.8        | 3.3        |
| 80.0        | 593.2                                                                                                                   | 496.6                | 689.8                | 16.3                                 | 5.0        | 3.2        |
| 85.0        | 505.9                                                                                                                   | 421.1                | 590.7                | 16.8                                 | 5.3        | 3.1        |
| 90.0        | 433.1                                                                                                                   | 358.6                | 507.7                | 17.2                                 | 5.6        | 3.1        |
| 95.0        | 372.4                                                                                                                   | 306.6                | 438.1                | 17.7                                 | 5.9        | 3.0        |
| 100.0       | 321.3                                                                                                                   | 263.1                | 379.4                | 18.1                                 | 6.2        | 2.9        |
| 105.0       | 278.5                                                                                                                   | 226.9                | 330.0                | 18.5                                 | 6.5        | 2.9        |
| 110.0       | 242.2                                                                                                                   | 196.3                | 288.1                | 18.9                                 | 6.8        | 2.8        |
| 115.0       | 211.1                                                                                                                   | 170.3                | 252.0                | 19.3                                 | 7.1        | 2.7        |
| 120.0       | 184.6                                                                                                                   | 148.2                | 221.0                | 19.7                                 | 7.4        | 2.7        |
| 125.0       | 161.6                                                                                                                   | 129.1                | 194.1                | 20.1                                 | 7.8        | 2.6        |

| B57891M0682J000 |                                                                                                                        |                       |                       |                                      |            |            |
|-----------------|------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|--------------------------------------|------------|------------|
| R/T No.         | 2003                                                                                                                   |                       |                       |                                      |            |            |
| T (°C)          | B <sub>25/100</sub> = 3980 K, R <sub>25</sub> = 6800 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 5% |                       |                       |                                      |            |            |
|                 | R <sub>nomL</sub> [Ω]                                                                                                  | R <sub>minL</sub> [Ω] | R <sub>maxL</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0           | 663530                                                                                                                 | 532580                | 794480                | 19.7                                 | 2.6        | 7.4        |
| -50.0           | 460020                                                                                                                 | 374870                | 545170                | 18.5                                 | 2.6        | 7.2        |
| -45.0           | 323260                                                                                                                 | 267210                | 379300                | 17.3                                 | 2.5        | 6.9        |
| -40.0           | 230050                                                                                                                 | 192750                | 267360                | 16.2                                 | 2.4        | 6.7        |
| -35.0           | 165640                                                                                                                 | 140560                | 190720                | 15.1                                 | 2.3        | 6.5        |
| -30.0           | 120720                                                                                                                 | 103690                | 137750                | 14.1                                 | 2.3        | 6.2        |
| -25.0           | 88852                                                                                                                  | 77196                 | 100510                | 13.1                                 | 2.2        | 6.0        |
| -20.0           | 66115                                                                                                                  | 58070                 | 74161                 | 12.2                                 | 2.1        | 5.8        |
| -15.0           | 49644                                                                                                                  | 44056                 | 55231                 | 11.3                                 | 2.0        | 5.6        |
| -10.0           | 37645                                                                                                                  | 33739                 | 41552                 | 10.4                                 | 1.9        | 5.5        |
| -5.0            | 28786                                                                                                                  | 26043                 | 31529                 | 9.5                                  | 1.8        | 5.3        |
| 0.0             | 22209                                                                                                                  | 20273                 | 24144                 | 8.7                                  | 1.7        | 5.1        |
| 5.0             | 17266                                                                                                                  | 15897                 | 18636                 | 7.9                                  | 1.6        | 5.0        |
| 10.0            | 13533                                                                                                                  | 12563                 | 14504                 | 7.2                                  | 1.5        | 4.8        |
| 15.0            | 10682                                                                                                                  | 9994                  | 11370                 | 6.4                                  | 1.4        | 4.7        |
| 20.0            | 8495                                                                                                                   | 8008                  | 8982                  | 5.7                                  | 1.3        | 4.5        |
| 25.0            | <b>6800</b>                                                                                                            | <b>6460</b>           | <b>7140</b>           | <b>5.0</b>                           | <b>1.1</b> | <b>4.4</b> |
| 30.0            | 5479                                                                                                                   | 5166                  | 5792                  | 5.7                                  | 1.3        | 4.3        |
| 35.0            | 4442                                                                                                                   | 4160                  | 4724                  | 6.3                                  | 1.5        | 4.1        |
| 40.0            | 3624                                                                                                                   | 3371                  | 3876                  | 7.0                                  | 1.7        | 4.0        |
| 45.0            | 2973                                                                                                                   | 2748                  | 3198                  | 7.6                                  | 1.9        | 3.9        |
| 50.0            | 2452                                                                                                                   | 2253                  | 2652                  | 8.1                                  | 2.1        | 3.8        |
| 55.0            | 2034                                                                                                                   | 1857                  | 2211                  | 8.7                                  | 2.4        | 3.7        |
| 60.0            | 1695                                                                                                                   | 1538                  | 1852                  | 9.3                                  | 2.6        | 3.6        |
| 65.0            | 1420                                                                                                                   | 1281                  | 1559                  | 9.8                                  | 2.8        | 3.5        |
| 70.0            | 1195                                                                                                                   | 1072                  | 1318                  | 10.3                                 | 3.0        | 3.4        |
| 75.0            | 1011                                                                                                                   | 901.5                 | 1120                  | 10.8                                 | 3.3        | 3.3        |
| 80.0            | 858.2                                                                                                                  | 761.4                 | 955.1                 | 11.3                                 | 3.5        | 3.2        |
| 85.0            | 731.9                                                                                                                  | 645.9                 | 818.0                 | 11.8                                 | 3.7        | 3.1        |
| 90.0            | 626.7                                                                                                                  | 550.1                 | 703.2                 | 12.2                                 | 4.0        | 3.1        |
| 95.0            | 538.7                                                                                                                  | 470.5                 | 607.0                 | 12.7                                 | 4.2        | 3.0        |
| 100.0           | 464.8                                                                                                                  | 403.9                 | 525.7                 | 13.1                                 | 4.5        | 2.9        |
| 105.0           | 402.9                                                                                                                  | 348.4                 | 457.4                 | 13.5                                 | 4.7        | 2.9        |
| 110.0           | 350.4                                                                                                                  | 301.6                 | 399.2                 | 13.9                                 | 5.0        | 2.8        |
| 115.0           | 305.5                                                                                                                  | 261.7                 | 349.3                 | 14.3                                 | 5.3        | 2.7        |
| 120.0           | 267.1                                                                                                                  | 227.8                 | 306.5                 | 14.7                                 | 5.6        | 2.7        |
| 125.0           | 233.8                                                                                                                  | 198.5                 | 269.2                 | 15.1                                 | 5.8        | 2.6        |

**Temperature measurement**
**B57891**
**Leaded NTC, lead spacing 2.5 mm**
**M891**

|             | <b>B57891M0682K000</b>                                                                                                  |                      |                      |                                      |            |            |
|-------------|-------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 2003                                                                                                                    |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 3980 K, R <sub>25</sub> = 6800 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                    | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 663530                                                                                                                  | 499400               | 827660               | 24.7                                 | 3.3        | 7.4        |
| -50.0       | 460020                                                                                                                  | 351870               | 568170               | 23.5                                 | 3.3        | 7.2        |
| -45.0       | 323260                                                                                                                  | 251050               | 395460               | 22.3                                 | 3.2        | 6.9        |
| -40.0       | 230050                                                                                                                  | 181250               | 278860               | 21.2                                 | 3.2        | 6.7        |
| -35.0       | 165640                                                                                                                  | 132280               | 199000               | 20.1                                 | 3.1        | 6.5        |
| -30.0       | 120720                                                                                                                  | 97653                | 143790               | 19.1                                 | 3.1        | 6.2        |
| -25.0       | 88852                                                                                                                   | 72753                | 104950               | 18.1                                 | 3.0        | 6.0        |
| -20.0       | 66115                                                                                                                   | 54764                | 77466                | 17.2                                 | 2.9        | 5.8        |
| -15.0       | 49644                                                                                                                   | 41574                | 57714                | 16.3                                 | 2.9        | 5.6        |
| -10.0       | 37645                                                                                                                   | 31857                | 43434                | 15.4                                 | 2.8        | 5.5        |
| -5.0        | 28786                                                                                                                   | 24603                | 32969                | 14.5                                 | 2.8        | 5.3        |
| 0.0         | 22209                                                                                                                   | 19163                | 25255                | 13.7                                 | 2.7        | 5.1        |
| 5.0         | 17266                                                                                                                   | 15034                | 19499                | 12.9                                 | 2.6        | 5.0        |
| 10.0        | 13533                                                                                                                   | 11886                | 15180                | 12.2                                 | 2.5        | 4.8        |
| 15.0        | 10682                                                                                                                   | 9460                 | 11904                | 11.4                                 | 2.5        | 4.7        |
| 20.0        | 8495                                                                                                                    | 7583                 | 9406                 | 10.7                                 | 2.4        | 4.5        |
| <b>25.0</b> | <b>6800</b>                                                                                                             | <b>6120</b>          | <b>7480</b>          | <b>10.0</b>                          | <b>2.3</b> | <b>4.4</b> |
| 30.0        | 5479                                                                                                                    | 4892                 | 6066                 | 10.7                                 | 2.5        | 4.3        |
| 35.0        | 4442                                                                                                                    | 3938                 | 4946                 | 11.3                                 | 2.7        | 4.1        |
| 40.0        | 3624                                                                                                                    | 3190                 | 4057                 | 12.0                                 | 3.0        | 4.0        |
| 45.0        | 2973                                                                                                                    | 2599                 | 3346                 | 12.6                                 | 3.2        | 3.9        |
| 50.0        | 2452                                                                                                                    | 2130                 | 2775                 | 13.1                                 | 3.5        | 3.8        |
| 55.0        | 2034                                                                                                                    | 1755                 | 2313                 | 13.7                                 | 3.7        | 3.7        |
| 60.0        | 1695                                                                                                                    | 1454                 | 1937                 | 14.3                                 | 4.0        | 3.6        |
| 65.0        | 1420                                                                                                                    | 1210                 | 1630                 | 14.8                                 | 4.2        | 3.5        |
| 70.0        | 1195                                                                                                                    | 1012                 | 1378                 | 15.3                                 | 4.5        | 3.4        |
| 75.0        | 1011                                                                                                                    | 851.0                | 1170                 | 15.8                                 | 4.8        | 3.3        |
| 80.0        | 858.2                                                                                                                   | 718.4                | 998.0                | 16.3                                 | 5.0        | 3.2        |
| 85.0        | 731.9                                                                                                                   | 609.3                | 854.6                | 16.8                                 | 5.3        | 3.1        |
| 90.0        | 626.7                                                                                                                   | 518.8                | 734.6                | 17.2                                 | 5.6        | 3.1        |
| 95.0        | 538.7                                                                                                                   | 443.6                | 633.9                | 17.7                                 | 5.9        | 3.0        |
| 100.0       | 464.8                                                                                                                   | 380.7                | 549.0                | 18.1                                 | 6.2        | 2.9        |
| 105.0       | 402.9                                                                                                                   | 328.3                | 477.5                | 18.5                                 | 6.5        | 2.9        |
| 110.0       | 350.4                                                                                                                   | 284.1                | 416.8                | 18.9                                 | 6.8        | 2.8        |
| 115.0       | 305.5                                                                                                                   | 246.4                | 364.5                | 19.3                                 | 7.1        | 2.7        |
| 120.0       | 267.1                                                                                                                   | 214.4                | 319.8                | 19.7                                 | 7.4        | 2.7        |
| 125.0       | 233.8                                                                                                                   | 186.8                | 280.9                | 20.1                                 | 7.8        | 2.6        |

|         | B57891M0103J000                                                                                                         |                      |                      |                                      |         |         |
|---------|-------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|---------|---------|
| R/T No. | 4901                                                                                                                    |                      |                      |                                      |         |         |
| T (°C)  | B <sub>25/100</sub> = 3950 K, R <sub>25</sub> = 10000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 5% |                      |                      |                                      |         |         |
|         | R <sub>nom</sub> [Ω]                                                                                                    | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C] | α (%/K) |
| -55.0   | 878900                                                                                                                  | 706410               | 1051400              | 19.6                                 | 2.8     | 7.1     |
| -50.0   | 617590                                                                                                                  | 503900               | 731280               | 18.4                                 | 2.7     | 6.9     |
| -45.0   | 439340                                                                                                                  | 363580               | 515100               | 17.2                                 | 2.6     | 6.7     |
| -40.0   | 316180                                                                                                                  | 265180               | 367180               | 16.1                                 | 2.5     | 6.5     |
| -35.0   | 230060                                                                                                                  | 195410               | 264720               | 15.1                                 | 2.4     | 6.3     |
| -30.0   | 169150                                                                                                                  | 145400               | 192900               | 14.0                                 | 2.3     | 6.1     |
| -25.0   | 125550                                                                                                                  | 109150               | 141940               | 13.1                                 | 2.2     | 5.9     |
| -20.0   | 94143                                                                                                                   | 82738                | 105550               | 12.1                                 | 2.1     | 5.7     |
| -15.0   | 71172                                                                                                                   | 63195                | 79150                | 11.2                                 | 2.0     | 5.5     |
| -10.0   | 54308                                                                                                                   | 48695                | 59922                | 10.3                                 | 1.9     | 5.4     |
| -5.0    | 41505                                                                                                                   | 37563                | 45446                | 9.5                                  | 1.8     | 5.2     |
| 0.0     | 32014                                                                                                                   | 29233                | 34795                | 8.7                                  | 1.7     | 5.0     |
| 5.0     | 25011                                                                                                                   | 23033                | 26988                | 7.9                                  | 1.6     | 4.9     |
| 10.0    | 19691                                                                                                                   | 18282                | 21100                | 7.2                                  | 1.5     | 4.7     |
| 15.0    | 15618                                                                                                                   | 14614                | 16622                | 6.4                                  | 1.4     | 4.6     |
| 20.0    | 12474                                                                                                                   | 11759                | 13188                | 5.7                                  | 1.3     | 4.5     |
| 25.0    | 10000                                                                                                                   | 9500                 | 10500                | 5.0                                  | 1.2     | 4.3     |
| 30.0    | 8080                                                                                                                    | 7619                 | 8541                 | 5.7                                  | 1.4     | 4.2     |
| 35.0    | 6569                                                                                                                    | 6153                 | 6985                 | 6.3                                  | 1.6     | 4.1     |
| 40.0    | 5372                                                                                                                    | 4998                 | 5746                 | 7.0                                  | 1.8     | 4.0     |
| 45.0    | 4424                                                                                                                    | 4090                 | 4757                 | 7.5                                  | 2.0     | 3.9     |
| 50.0    | 3661                                                                                                                    | 3364                 | 3958                 | 8.1                                  | 2.2     | 3.8     |
| 55.0    | 3039                                                                                                                    | 2775                 | 3303                 | 8.7                                  | 2.4     | 3.7     |
| 60.0    | 2536                                                                                                                    | 2302                 | 2770                 | 9.2                                  | 2.6     | 3.6     |
| 65.0    | 2128                                                                                                                    | 1921                 | 2336                 | 9.8                                  | 2.8     | 3.5     |
| 70.0    | 1794                                                                                                                    | 1610                 | 1978                 | 10.3                                 | 3.0     | 3.4     |
| 75.0    | 1518                                                                                                                    | 1355                 | 1682                 | 10.8                                 | 3.3     | 3.3     |
| 80.0    | 1290                                                                                                                    | 1145                 | 1435                 | 11.2                                 | 3.5     | 3.2     |
| 85.0    | 1100                                                                                                                    | 971.4                | 1229                 | 11.7                                 | 3.7     | 3.1     |
| 90.0    | 941.8                                                                                                                   | 827.2                | 1056                 | 12.2                                 | 4.0     | 3.1     |
| 95.0    | 809.0                                                                                                                   | 707.0                | 910.9                | 12.6                                 | 4.2     | 3.0     |
| 100.0   | 697.2                                                                                                                   | 606.3                | 788.1                | 13.0                                 | 4.5     | 2.9     |
| 105.0   | 604.0                                                                                                                   | 522.7                | 685.3                | 13.5                                 | 4.7     | 2.9     |
| 110.0   | 524.9                                                                                                                   | 452.1                | 597.7                | 13.9                                 | 5.0     | 2.8     |
| 115.0   | 457.3                                                                                                                   | 392.1                | 522.6                | 14.3                                 | 5.2     | 2.7     |
| 120.0   | 399.6                                                                                                                   | 341.1                | 458.2                | 14.7                                 | 5.5     | 2.7     |
| 125.0   | 350.6                                                                                                                   | 297.9                | 403.3                | 15.0                                 | 5.8     | 2.6     |

**Temperature measurement**
**B57891**
**Leaded NTC, lead spacing 2.5 mm**
**M891**

|             | <b>B57891M0103K000</b>                                                                                                   |                      |                      |                                      |            |            |
|-------------|--------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 4901                                                                                                                     |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 3950 K, R <sub>25</sub> = 10000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                     | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 878900                                                                                                                   | 662470               | 1095300              | 24.6                                 | 3.5        | 7.1        |
| -50.0       | 617590                                                                                                                   | 473020               | 762160               | 23.4                                 | 3.4        | 6.9        |
| -45.0       | 439340                                                                                                                   | 341610               | 537060               | 22.2                                 | 3.3        | 6.7        |
| -40.0       | 316180                                                                                                                   | 249370               | 382990               | 21.1                                 | 3.3        | 6.5        |
| -35.0       | 230060                                                                                                                   | 183900               | 276220               | 20.1                                 | 3.2        | 6.3        |
| -30.0       | 169150                                                                                                                   | 136940               | 201360               | 19.0                                 | 3.1        | 6.1        |
| -25.0       | 125550                                                                                                                   | 102880               | 148220               | 18.1                                 | 3.1        | 5.9        |
| -20.0       | 94143                                                                                                                    | 78030                | 110260               | 17.1                                 | 3.0        | 5.7        |
| -15.0       | 71172                                                                                                                    | 59636                | 82708                | 16.2                                 | 2.9        | 5.5        |
| -10.0       | 54308                                                                                                                    | 45980                | 62637                | 15.3                                 | 2.9        | 5.4        |
| -5.0        | 41505                                                                                                                    | 35488                | 47522                | 14.5                                 | 2.8        | 5.2        |
| 0.0         | 32014                                                                                                                    | 27632                | 36396                | 13.7                                 | 2.7        | 5.0        |
| 5.0         | 25011                                                                                                                    | 21782                | 28239                | 12.9                                 | 2.6        | 4.9        |
| 10.0        | 19691                                                                                                                    | 17297                | 22084                | 12.2                                 | 2.6        | 4.7        |
| 15.0        | 15618                                                                                                                    | 13833                | 17403                | 11.4                                 | 2.5        | 4.6        |
| 20.0        | 12474                                                                                                                    | 11136                | 13812                | 10.7                                 | 2.4        | 4.5        |
| <b>25.0</b> | <b>10000</b>                                                                                                             | <b>9000</b>          | <b>11000</b>         | <b>10.0</b>                          | <b>2.3</b> | <b>4.3</b> |
| 30.0        | 8080                                                                                                                     | 7215                 | 8945                 | 10.7                                 | 2.5        | 4.2        |
| 35.0        | 6569                                                                                                                     | 5824                 | 7314                 | 11.3                                 | 2.8        | 4.1        |
| 40.0        | 5372                                                                                                                     | 4730                 | 6014                 | 12.0                                 | 3.0        | 4.0        |
| 45.0        | 4424                                                                                                                     | 3868                 | 4979                 | 12.5                                 | 3.2        | 3.9        |
| 50.0        | 3661                                                                                                                     | 3181                 | 4142                 | 13.1                                 | 3.5        | 3.8        |
| 55.0        | 3039                                                                                                                     | 2623                 | 3455                 | 13.7                                 | 3.7        | 3.7        |
| 60.0        | 2536                                                                                                                     | 2175                 | 2897                 | 14.2                                 | 4.0        | 3.6        |
| 65.0        | 2128                                                                                                                     | 1814                 | 2442                 | 14.8                                 | 4.3        | 3.5        |
| 70.0        | 1794                                                                                                                     | 1520                 | 2068                 | 15.3                                 | 4.5        | 3.4        |
| 75.0        | 1518                                                                                                                     | 1279                 | 1758                 | 15.8                                 | 4.8        | 3.3        |
| 80.0        | 1290                                                                                                                     | 1081                 | 1500                 | 16.2                                 | 5.0        | 3.2        |
| 85.0        | 1100                                                                                                                     | 916.4                | 1284                 | 16.7                                 | 5.3        | 3.1        |
| 90.0        | 941.8                                                                                                                    | 780.1                | 1103                 | 17.2                                 | 5.6        | 3.1        |
| 95.0        | 809.0                                                                                                                    | 666.5                | 951.4                | 17.6                                 | 5.9        | 3.0        |
| 100.0       | 697.2                                                                                                                    | 571.5                | 823.0                | 18.0                                 | 6.2        | 2.9        |
| 105.0       | 604.0                                                                                                                    | 492.5                | 715.5                | 18.5                                 | 6.5        | 2.9        |
| 110.0       | 524.9                                                                                                                    | 425.9                | 624.0                | 18.9                                 | 6.8        | 2.8        |
| 115.0       | 457.3                                                                                                                    | 369.2                | 545.4                | 19.3                                 | 7.1        | 2.7        |
| 120.0       | 399.6                                                                                                                    | 321.1                | 478.2                | 19.7                                 | 7.4        | 2.7        |
| 125.0       | 350.6                                                                                                                    | 280.4                | 420.8                | 20.0                                 | 7.7        | 2.6        |

| B57891M0153J000 |                                                                                                                         |                       |                       |                                      |            |            |
|-----------------|-------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|--------------------------------------|------------|------------|
| R/T No.         | 2004                                                                                                                    |                       |                       |                                      |            |            |
| T (°C)          | B <sub>25/100</sub> = 4100 K, R <sub>25</sub> = 15000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 5% |                       |                       |                                      |            |            |
|                 | R <sub>nomL</sub> [Ω]                                                                                                   | R <sub>minL</sub> [Ω] | R <sub>maxL</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0           | 1493300                                                                                                                 | 1192000               | 1794600               | 20.2                                 | 2.6        | 7.7        |
| -50.0           | 1028700                                                                                                                 | 834140                | 1223300               | 18.9                                 | 2.6        | 7.4        |
| -45.0           | 719450                                                                                                                  | 592050                | 846850                | 17.7                                 | 2.5        | 7.0        |
| -40.0           | 510290                                                                                                                  | 425830                | 594740                | 16.6                                 | 2.5        | 6.7        |
| -35.0           | 366720                                                                                                                  | 310090                | 423360                | 15.4                                 | 2.4        | 6.5        |
| -30.0           | 266810                                                                                                                  | 228440                | 305180                | 14.4                                 | 2.3        | 6.2        |
| -25.0           | 196240                                                                                                                  | 170020                | 222460                | 13.4                                 | 2.2        | 6.0        |
| -20.0           | 145880                                                                                                                  | 127810                | 163940                | 12.4                                 | 2.1        | 5.8        |
| -15.0           | 109740                                                                                                                  | 97183                 | 122300                | 11.4                                 | 2.0        | 5.6        |
| -10.0           | 83317                                                                                                                   | 74538                 | 92096                 | 10.5                                 | 1.9        | 5.4        |
| -5.0            | 63797                                                                                                                   | 57631                 | 69963                 | 9.7                                  | 1.8        | 5.3        |
| 0.0             | 49254                                                                                                                   | 44907                 | 53601                 | 8.8                                  | 1.7        | 5.1        |
| 5.0             | 38268                                                                                                                   | 35200                 | 41336                 | 8.0                                  | 1.6        | 5.0        |
| 10.0            | 29959                                                                                                                   | 27791                 | 32127                 | 7.2                                  | 1.5        | 4.8        |
| 15.0            | 23607                                                                                                                   | 22077                 | 25138                 | 6.5                                  | 1.4        | 4.7        |
| 20.0            | 18732                                                                                                                   | 17654                 | 19809                 | 5.8                                  | 1.3        | 4.5        |
| 25.0            | <b>15000</b>                                                                                                            | <b>14250</b>          | <b>15750</b>          | <b>5.0</b>                           | <b>1.1</b> | <b>4.4</b> |
| 30.0            | 12012                                                                                                                   | 11324                 | 12700                 | 5.7                                  | 1.3        | 4.3        |
| 35.0            | 9710                                                                                                                    | 9090                  | 10330                 | 6.4                                  | 1.5        | 4.2        |
| 40.0            | 7894                                                                                                                    | 7339                  | 8449                  | 7.0                                  | 1.7        | 4.1        |
| 45.0            | 6490                                                                                                                    | 5993                  | 6986                  | 7.6                                  | 1.9        | 4.0        |
| 50.0            | 5356                                                                                                                    | 4915                  | 5798                  | 8.2                                  | 2.1        | 3.9        |
| 55.0            | 4411                                                                                                                    | 4022                  | 4800                  | 8.8                                  | 2.3        | 3.8        |
| 60.0            | 3651                                                                                                                    | 3309                  | 3994                  | 9.4                                  | 2.5        | 3.7        |
| 65.0            | 3042                                                                                                                    | 2740                  | 3344                  | 9.9                                  | 2.7        | 3.6        |
| 70.0            | 2545                                                                                                                    | 2278                  | 2811                  | 10.5                                 | 3.0        | 3.5        |
| 75.0            | 2138                                                                                                                    | 1904                  | 2373                  | 11.0                                 | 3.2        | 3.4        |
| 80.0            | 1804                                                                                                                    | 1597                  | 2011                  | 11.5                                 | 3.4        | 3.4        |
| 85.0            | 1529                                                                                                                    | 1346                  | 1712                  | 12.0                                 | 3.6        | 3.3        |
| 90.0            | 1301                                                                                                                    | 1140                  | 1463                  | 12.4                                 | 3.9        | 3.2        |
| 95.0            | 1107                                                                                                                    | 964.3                 | 1250                  | 12.9                                 | 4.1        | 3.1        |
| 100.0           | 944.6                                                                                                                   | 818.6                 | 1071                  | 13.3                                 | 4.4        | 3.1        |
| 105.0           | 814.1                                                                                                                   | 702.0                 | 926.3                 | 13.8                                 | 4.6        | 3.0        |
| 110.0           | 704.1                                                                                                                   | 604.1                 | 804.1                 | 14.2                                 | 4.9        | 2.9        |
| 115.0           | 608.6                                                                                                                   | 519.7                 | 697.6                 | 14.6                                 | 5.1        | 2.9        |
| 120.0           | 527.6                                                                                                                   | 448.4                 | 606.9                 | 15.0                                 | 5.4        | 2.8        |
| 125.0           | 459.6                                                                                                                   | 388.7                 | 530.4                 | 15.4                                 | 5.6        | 2.7        |

|             | <b>B57891M0153K000</b>                                                                                                   |                      |                      |                                      |            |            |
|-------------|--------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 2004                                                                                                                     |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 4100 K, R <sub>25</sub> = 15000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                     | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 1493300                                                                                                                  | 1117300              | 1869300              | 25.2                                 | 3.3        | 7.7        |
| -50.0       | 1028700                                                                                                                  | 782700               | 1274700              | 23.9                                 | 3.2        | 7.4        |
| -45.0       | 719450                                                                                                                   | 556080               | 882820               | 22.7                                 | 3.2        | 7.0        |
| -40.0       | 510290                                                                                                                   | 400310               | 620260               | 21.6                                 | 3.2        | 6.7        |
| -35.0       | 366720                                                                                                                   | 291750               | 441690               | 20.4                                 | 3.2        | 6.5        |
| -30.0       | 266810                                                                                                                   | 215100               | 318520               | 19.4                                 | 3.1        | 6.2        |
| -25.0       | 196240                                                                                                                   | 160210               | 232270               | 18.4                                 | 3.1        | 6.0        |
| -20.0       | 145880                                                                                                                   | 120520               | 171240               | 17.4                                 | 3.0        | 5.8        |
| -15.0       | 109740                                                                                                                   | 91696                | 127780               | 16.4                                 | 2.9        | 5.6        |
| -10.0       | 83317                                                                                                                    | 70372                | 96262                | 15.5                                 | 2.9        | 5.4        |
| -5.0        | 63797                                                                                                                    | 54441                | 73153                | 14.7                                 | 2.8        | 5.3        |
| 0.0         | 49254                                                                                                                    | 42444                | 56064                | 13.8                                 | 2.7        | 5.1        |
| 5.0         | 38268                                                                                                                    | 33287                | 43249                | 13.0                                 | 2.6        | 5.0        |
| 10.0        | 29959                                                                                                                    | 26293                | 33624                | 12.2                                 | 2.5        | 4.8        |
| 15.0        | 23607                                                                                                                    | 20897                | 26318                | 11.5                                 | 2.5        | 4.7        |
| 20.0        | 18732                                                                                                                    | 16717                | 20746                | 10.8                                 | 2.4        | 4.5        |
| <b>25.0</b> | <b>15000</b>                                                                                                             | <b>13500</b>         | <b>16500</b>         | <b>10.0</b>                          | <b>2.3</b> | <b>4.4</b> |
| 30.0        | 12012                                                                                                                    | 10723                | 13301                | 10.7                                 | 2.5        | 4.3        |
| 35.0        | 9710                                                                                                                     | 8604                 | 10816                | 11.4                                 | 2.7        | 4.2        |
| 40.0        | 7894                                                                                                                     | 6945                 | 8843                 | 12.0                                 | 2.9        | 4.1        |
| 45.0        | 6490                                                                                                                     | 5669                 | 7310                 | 12.6                                 | 3.2        | 4.0        |
| 50.0        | 5356                                                                                                                     | 4647                 | 6065                 | 13.2                                 | 3.4        | 3.9        |
| 55.0        | 4411                                                                                                                     | 3801                 | 5021                 | 13.8                                 | 3.6        | 3.8        |
| 60.0        | 3651                                                                                                                     | 3126                 | 4176                 | 14.4                                 | 3.9        | 3.7        |
| 65.0        | 3042                                                                                                                     | 2588                 | 3496                 | 14.9                                 | 4.1        | 3.6        |
| 70.0        | 2545                                                                                                                     | 2151                 | 2938                 | 15.5                                 | 4.4        | 3.5        |
| 75.0        | 2138                                                                                                                     | 1797                 | 2480                 | 16.0                                 | 4.6        | 3.4        |
| 80.0        | 1804                                                                                                                     | 1507                 | 2101                 | 16.5                                 | 4.9        | 3.4        |
| 85.0        | 1529                                                                                                                     | 1270                 | 1789                 | 17.0                                 | 5.2        | 3.3        |
| 90.0        | 1301                                                                                                                     | 1074                 | 1528                 | 17.4                                 | 5.4        | 3.2        |
| 95.0        | 1107                                                                                                                     | 909.0                | 1305                 | 17.9                                 | 5.7        | 3.1        |
| 100.0       | 944.6                                                                                                                    | 771.3                | 1118                 | 18.3                                 | 6.0        | 3.1        |
| 105.0       | 814.1                                                                                                                    | 661.3                | 967.0                | 18.8                                 | 6.3        | 3.0        |
| 110.0       | 704.1                                                                                                                    | 568.9                | 839.3                | 19.2                                 | 6.6        | 2.9        |
| 115.0       | 608.6                                                                                                                    | 489.3                | 728.0                | 19.6                                 | 6.9        | 2.9        |
| 120.0       | 527.6                                                                                                                    | 422.0                | 633.2                | 20.0                                 | 7.2        | 2.8        |
| 125.0       | 459.6                                                                                                                    | 365.7                | 553.4                | 20.4                                 | 7.5        | 2.7        |

|         | B57891M0223J000                                                                                                                    |                           |                           |                         |                               |                          |
|---------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------|-------------------------|-------------------------------|--------------------------|
| R/T No. | 2904                                                                                                                               |                           |                           |                         |                               |                          |
| T (°C)  | $B_{25/100} = 4300 \text{ K}$ , $R_{25} = 22000 \text{ } \Omega$ , $T_R = 25 \text{ } ^\circ\text{C}$ , $\Delta R_R/R_R = \pm 5\%$ |                           |                           |                         |                               |                          |
|         | $R_{\text{nomL}}[\Omega]$                                                                                                          | $R_{\text{minL}}[\Omega]$ | $R_{\text{maxL}}[\Omega]$ | $\Delta R_R/R_R[\pm\%]$ | $\Delta T[\pm^\circ\text{C}]$ | $\alpha \text{ } (\%/K)$ |
| -55.0   | 2672100                                                                                                                            | 2113200                   | 3231000                   | 20.9                    | 2.9                           | 7.3                      |
| -50.0   | 1857700                                                                                                                            | 1493700                   | 2221600                   | 19.6                    | 2.7                           | 7.1                      |
| -45.0   | 1303400                                                                                                                            | 1064500                   | 1542200                   | 18.3                    | 2.6                           | 7.0                      |
| -40.0   | 922640                                                                                                                             | 764760                    | 1080500                   | 17.1                    | 2.5                           | 6.9                      |
| -35.0   | 658850                                                                                                                             | 553750                    | 763940                    | 16.0                    | 2.4                           | 6.7                      |
| -30.0   | 474480                                                                                                                             | 404080                    | 544880                    | 14.8                    | 2.3                           | 6.5                      |
| -25.0   | 344090                                                                                                                             | 296720                    | 391470                    | 13.8                    | 2.2                           | 6.3                      |
| -20.0   | 252250                                                                                                                             | 220110                    | 284380                    | 12.7                    | 2.1                           | 6.2                      |
| -15.0   | 185920                                                                                                                             | 164070                    | 207780                    | 11.8                    | 2.0                           | 6.0                      |
| -10.0   | 138440                                                                                                                             | 123480                    | 153400                    | 10.8                    | 1.9                           | 5.8                      |
| -5.0    | 103570                                                                                                                             | 93325                     | 113810                    | 9.9                     | 1.8                           | 5.6                      |
| 0.0     | 78239                                                                                                                              | 71189                     | 85288                     | 9.0                     | 1.6                           | 5.5                      |
| 5.0     | 59661                                                                                                                              | 54792                     | 64530                     | 8.2                     | 1.5                           | 5.3                      |
| 10.0    | 45891                                                                                                                              | 42522                     | 49261                     | 7.3                     | 1.4                           | 5.2                      |
| 15.0    | 35650                                                                                                                              | 33314                     | 37985                     | 6.6                     | 1.3                           | 5.0                      |
| 20.0    | 27904                                                                                                                              | 26289                     | 29519                     | 5.8                     | 1.2                           | 4.9                      |
| 25.0    | <b>22000</b>                                                                                                                       | <b>20900</b>              | <b>23100</b>              | <b>5.0</b>              | <b>1.1</b>                    | <b>4.7</b>               |
| 30.0    | 17472                                                                                                                              | 16465                     | 18479                     | 5.8                     | 1.3                           | 4.6                      |
| 35.0    | 13919                                                                                                                              | 13021                     | 14817                     | 6.5                     | 1.4                           | 4.5                      |
| 40.0    | 11163                                                                                                                              | 10368                     | 11958                     | 7.1                     | 1.6                           | 4.3                      |
| 45.0    | 9026                                                                                                                               | 8325                      | 9727                      | 7.8                     | 1.8                           | 4.2                      |
| 50.0    | 7340                                                                                                                               | 6723                      | 7956                      | 8.4                     | 2.0                           | 4.1                      |
| 55.0    | 5993                                                                                                                               | 5454                      | 6533                      | 9.0                     | 2.3                           | 4.0                      |
| 60.0    | 4921                                                                                                                               | 4449                      | 5394                      | 9.6                     | 2.5                           | 3.9                      |
| 65.0    | 4061                                                                                                                               | 3648                      | 4474                      | 10.2                    | 2.7                           | 3.8                      |
| 70.0    | 3367                                                                                                                               | 3006                      | 3728                      | 10.7                    | 2.9                           | 3.7                      |
| 75.0    | 2806                                                                                                                               | 2490                      | 3122                      | 11.3                    | 3.1                           | 3.6                      |
| 80.0    | 2349                                                                                                                               | 2072                      | 2626                      | 11.8                    | 3.4                           | 3.5                      |
| 85.0    | 1978                                                                                                                               | 1735                      | 2222                      | 12.3                    | 3.6                           | 3.4                      |
| 90.0    | 1674                                                                                                                               | 1459                      | 1888                      | 12.8                    | 3.8                           | 3.3                      |
| 95.0    | 1420                                                                                                                               | 1231                      | 1608                      | 13.3                    | 4.1                           | 3.2                      |
| 100.0   | 1209                                                                                                                               | 1043                      | 1375                      | 13.7                    | 4.3                           | 3.2                      |
| 105.0   | 1034                                                                                                                               | 887.2                     | 1181                      | 14.2                    | 4.6                           | 3.1                      |
| 110.0   | 887.9                                                                                                                              | 757.8                     | 1018                      | 14.6                    | 4.8                           | 3.0                      |
| 115.0   | 764.3                                                                                                                              | 649.1                     | 879.6                     | 15.1                    | 5.1                           | 3.0                      |
| 120.0   | 660.1                                                                                                                              | 557.8                     | 762.5                     | 15.5                    | 5.4                           | 2.9                      |
| 125.0   | 572.1                                                                                                                              | 481.1                     | 663.2                     | 15.9                    | 5.6                           | 2.8                      |

**Temperature measurement**
**B57891**
**Leaded NTC, lead spacing 2.5 mm**
**M891**

|             | <b>B57891M0223K000</b>                                                                                                   |                      |                      |                                      |            |            |
|-------------|--------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 2904                                                                                                                     |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 4300 K, R <sub>25</sub> = 22000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                     | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 2672100                                                                                                                  | 1979600              | 3364600              | 25.9                                 | 3.6        | 7.3        |
| -50.0       | 1857700                                                                                                                  | 1400800              | 2314500              | 24.6                                 | 3.4        | 7.1        |
| -45.0       | 1303400                                                                                                                  | 999350               | 1607400              | 23.3                                 | 3.3        | 7.0        |
| -40.0       | 922640                                                                                                                   | 718630               | 1126700              | 22.1                                 | 3.2        | 6.9        |
| -35.0       | 658850                                                                                                                   | 520810               | 796880               | 21.0                                 | 3.1        | 6.7        |
| -30.0       | 474480                                                                                                                   | 380360               | 568600               | 19.8                                 | 3.0        | 6.5        |
| -25.0       | 344090                                                                                                                   | 279510               | 408670               | 18.8                                 | 3.0        | 6.3        |
| -20.0       | 252250                                                                                                                   | 207490               | 297000               | 17.7                                 | 2.9        | 6.2        |
| -15.0       | 185920                                                                                                                   | 154770               | 217070               | 16.8                                 | 2.8        | 6.0        |
| -10.0       | 138440                                                                                                                   | 116560               | 160320               | 15.8                                 | 2.7        | 5.8        |
| -5.0        | 103570                                                                                                                   | 88147                | 118990               | 14.9                                 | 2.6        | 5.6        |
| 0.0         | 78239                                                                                                                    | 67277                | 89200                | 14.0                                 | 2.6        | 5.5        |
| 5.0         | 59661                                                                                                                    | 51809                | 67513                | 13.2                                 | 2.5        | 5.3        |
| 10.0        | 45891                                                                                                                    | 40227                | 51555                | 12.3                                 | 2.4        | 5.2        |
| 15.0        | 35650                                                                                                                    | 31531                | 39768                | 11.6                                 | 2.3        | 5.0        |
| 20.0        | 27904                                                                                                                    | 24893                | 30914                | 10.8                                 | 2.2        | 4.9        |
| <b>25.0</b> | <b>22000</b>                                                                                                             | <b>19800</b>         | <b>24200</b>         | <b>10.0</b>                          | <b>2.1</b> | <b>4.7</b> |
| 30.0        | 17472                                                                                                                    | 15592                | 19353                | 10.8                                 | 2.3        | 4.6        |
| 35.0        | 13919                                                                                                                    | 12325                | 15513                | 11.5                                 | 2.6        | 4.5        |
| 40.0        | 11163                                                                                                                    | 9810                 | 12516                | 12.1                                 | 2.8        | 4.3        |
| 45.0        | 9026                                                                                                                     | 7873                 | 10178                | 12.8                                 | 3.0        | 4.2        |
| 50.0        | 7340                                                                                                                     | 6356                 | 8323                 | 13.4                                 | 3.3        | 4.1        |
| 55.0        | 5993                                                                                                                     | 5154                 | 6833                 | 14.0                                 | 3.5        | 4.0        |
| 60.0        | 4921                                                                                                                     | 4203                 | 5640                 | 14.6                                 | 3.8        | 3.9        |
| 65.0        | 4061                                                                                                                     | 3445                 | 4677                 | 15.2                                 | 4.0        | 3.8        |
| 70.0        | 3367                                                                                                                     | 2838                 | 3896                 | 15.7                                 | 4.3        | 3.7        |
| 75.0        | 2806                                                                                                                     | 2350                 | 3262                 | 16.3                                 | 4.5        | 3.6        |
| 80.0        | 2349                                                                                                                     | 1955                 | 2743                 | 16.8                                 | 4.8        | 3.5        |
| 85.0        | 1978                                                                                                                     | 1636                 | 2321                 | 17.3                                 | 5.1        | 3.4        |
| 90.0        | 1674                                                                                                                     | 1376                 | 1971                 | 17.8                                 | 5.3        | 3.3        |
| 95.0        | 1420                                                                                                                     | 1160                 | 1679                 | 18.3                                 | 5.6        | 3.2        |
| 100.0       | 1209                                                                                                                     | 982.1                | 1435                 | 18.7                                 | 5.9        | 3.2        |
| 105.0       | 1034                                                                                                                     | 835.5                | 1233                 | 19.2                                 | 6.2        | 3.1        |
| 110.0       | 887.9                                                                                                                    | 713.4                | 1062                 | 19.6                                 | 6.5        | 3.0        |
| 115.0       | 764.3                                                                                                                    | 610.8                | 917.8                | 20.1                                 | 6.8        | 3.0        |
| 120.0       | 660.1                                                                                                                    | 524.8                | 795.5                | 20.5                                 | 7.1        | 2.9        |
| 125.0       | 572.1                                                                                                                    | 452.5                | 691.8                | 20.9                                 | 7.4        | 2.8        |

|             | B57891M0333J000                                                                                                         |                      |                      |                                      |            |            |
|-------------|-------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 2904                                                                                                                    |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 4300 K, R <sub>25</sub> = 33000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 5% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                    | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 4008100                                                                                                                 | 3169800              | 4846500              | 20.9                                 | 2.9        | 7.3        |
| -50.0       | 2786500                                                                                                                 | 2240600              | 3332400              | 19.6                                 | 2.7        | 7.1        |
| -45.0       | 1955000                                                                                                                 | 1596800              | 2313300              | 18.3                                 | 2.6        | 7.0        |
| -40.0       | 1384000                                                                                                                 | 1147100              | 1620800              | 17.1                                 | 2.5        | 6.9        |
| -35.0       | 988270                                                                                                                  | 830630               | 1145900              | 16.0                                 | 2.4        | 6.7        |
| -30.0       | 711720                                                                                                                  | 606120               | 817320               | 14.8                                 | 2.3        | 6.5        |
| -25.0       | 516140                                                                                                                  | 445080               | 587200               | 13.8                                 | 2.2        | 6.3        |
| -20.0       | 378370                                                                                                                  | 330160               | 426580               | 12.7                                 | 2.1        | 6.2        |
| -15.0       | 278880                                                                                                                  | 246100               | 311660               | 11.8                                 | 2.0        | 6.0        |
| -10.0       | 207660                                                                                                                  | 185220               | 230090               | 10.8                                 | 1.9        | 5.8        |
| -5.0        | 155350                                                                                                                  | 139990               | 170720               | 9.9                                  | 1.8        | 5.6        |
| 0.0         | 117360                                                                                                                  | 106780               | 127930               | 9.0                                  | 1.6        | 5.5        |
| 5.0         | 89491                                                                                                                   | 82188                | 96795                | 8.2                                  | 1.5        | 5.3        |
| 10.0        | 68837                                                                                                                   | 63783                | 73891                | 7.3                                  | 1.4        | 5.2        |
| 15.0        | 53474                                                                                                                   | 49971                | 56978                | 6.6                                  | 1.3        | 5.0        |
| 20.0        | 41856                                                                                                                   | 39433                | 44278                | 5.8                                  | 1.2        | 4.9        |
| <b>25.0</b> | <b>33000</b>                                                                                                            | <b>31350</b>         | <b>34650</b>         | <b>5.0</b>                           | <b>1.1</b> | <b>4.7</b> |
| 30.0        | 26209                                                                                                                   | 24698                | 27719                | 5.8                                  | 1.3        | 4.6        |
| 35.0        | 20878                                                                                                                   | 19531                | 22226                | 6.5                                  | 1.4        | 4.5        |
| 40.0        | 16744                                                                                                                   | 15551                | 17937                | 7.1                                  | 1.6        | 4.3        |
| 45.0        | 13539                                                                                                                   | 12487                | 14591                | 7.8                                  | 1.8        | 4.2        |
| 50.0        | 11010                                                                                                                   | 10085                | 11934                | 8.4                                  | 2.0        | 4.1        |
| 55.0        | 8990                                                                                                                    | 8181                 | 9800                 | 9.0                                  | 2.3        | 4.0        |
| 60.0        | 7382                                                                                                                    | 6674                 | 8090                 | 9.6                                  | 2.5        | 3.9        |
| 65.0        | 6092                                                                                                                    | 5472                 | 6711                 | 10.2                                 | 2.7        | 3.8        |
| 70.0        | 5051                                                                                                                    | 4509                 | 5592                 | 10.7                                 | 2.9        | 3.7        |
| 75.0        | 4209                                                                                                                    | 3735                 | 4683                 | 11.3                                 | 3.1        | 3.6        |
| 80.0        | 3524                                                                                                                    | 3108                 | 3939                 | 11.8                                 | 3.4        | 3.5        |
| 85.0        | 2968                                                                                                                    | 2603                 | 3333                 | 12.3                                 | 3.6        | 3.4        |
| 90.0        | 2510                                                                                                                    | 2189                 | 2831                 | 12.8                                 | 3.8        | 3.3        |
| 95.0        | 2129                                                                                                                    | 1847                 | 2412                 | 13.3                                 | 4.1        | 3.2        |
| 100.0       | 1813                                                                                                                    | 1564                 | 2062                 | 13.7                                 | 4.3        | 3.2        |
| 105.0       | 1551                                                                                                                    | 1331                 | 1771                 | 14.2                                 | 4.6        | 3.1        |
| 110.0       | 1332                                                                                                                    | 1137                 | 1527                 | 14.6                                 | 4.8        | 3.0        |
| 115.0       | 1147                                                                                                                    | 973.6                | 1319                 | 15.1                                 | 5.1        | 3.0        |
| 120.0       | 990.2                                                                                                                   | 836.7                | 1144                 | 15.5                                 | 5.4        | 2.9        |
| 125.0       | 858.2                                                                                                                   | 721.6                | 994.8                | 15.9                                 | 5.6        | 2.8        |

**Temperature measurement**
**B57891**
**Leaded NTC, lead spacing 2.5 mm**
**M891**

|             | <b>B57891M0333K000</b>                                                                                                   |                      |                      |                                      |            |            |
|-------------|--------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 2904                                                                                                                     |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 4300 K, R <sub>25</sub> = 33000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                     | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 4008100                                                                                                                  | 2969400              | 5046900              | 25.9                                 | 3.6        | 7.3        |
| -50.0       | 2786500                                                                                                                  | 2101200              | 3471700              | 24.6                                 | 3.4        | 7.1        |
| -45.0       | 1955000                                                                                                                  | 1499000              | 2411000              | 23.3                                 | 3.3        | 7.0        |
| -40.0       | 1384000                                                                                                                  | 1077900              | 1690000              | 22.1                                 | 3.2        | 6.9        |
| -35.0       | 988270                                                                                                                   | 781220               | 1195300              | 21.0                                 | 3.1        | 6.7        |
| -30.0       | 711720                                                                                                                   | 570540               | 852900               | 19.8                                 | 3.0        | 6.5        |
| -25.0       | 516140                                                                                                                   | 419270               | 613010               | 18.8                                 | 3.0        | 6.3        |
| -20.0       | 378370                                                                                                                   | 311240               | 445490               | 17.7                                 | 2.9        | 6.2        |
| -15.0       | 278880                                                                                                                   | 232160               | 325610               | 16.8                                 | 2.8        | 6.0        |
| -10.0       | 207660                                                                                                                   | 174840               | 240480               | 15.8                                 | 2.7        | 5.8        |
| -5.0        | 155350                                                                                                                   | 132220               | 178490               | 14.9                                 | 2.6        | 5.6        |
| 0.0         | 117360                                                                                                                   | 100920               | 133800               | 14.0                                 | 2.6        | 5.5        |
| 5.0         | 89491                                                                                                                    | 77713                | 101270               | 13.2                                 | 2.5        | 5.3        |
| 10.0        | 68837                                                                                                                    | 60341                | 77333                | 12.3                                 | 2.4        | 5.2        |
| 15.0        | 53474                                                                                                                    | 47297                | 59651                | 11.6                                 | 2.3        | 5.0        |
| 20.0        | 41856                                                                                                                    | 37340                | 46371                | 10.8                                 | 2.2        | 4.9        |
| <b>25.0</b> | <b>33000</b>                                                                                                             | <b>29700</b>         | <b>36300</b>         | <b>10.0</b>                          | <b>2.1</b> | <b>4.7</b> |
| 30.0        | 26209                                                                                                                    | 23388                | 29030                | 10.8                                 | 2.3        | 4.6        |
| 35.0        | 20878                                                                                                                    | 18487                | 23270                | 11.5                                 | 2.6        | 4.5        |
| 40.0        | 16744                                                                                                                    | 14714                | 18774                | 12.1                                 | 2.8        | 4.3        |
| 45.0        | 13539                                                                                                                    | 11810                | 15268                | 12.8                                 | 3.0        | 4.2        |
| 50.0        | 11010                                                                                                                    | 9535                 | 12485                | 13.4                                 | 3.3        | 4.1        |
| 55.0        | 8990                                                                                                                     | 7731                 | 10249                | 14.0                                 | 3.5        | 4.0        |
| 60.0        | 7382                                                                                                                     | 6305                 | 8459                 | 14.6                                 | 3.8        | 3.9        |
| 65.0        | 6092                                                                                                                     | 5168                 | 7015                 | 15.2                                 | 4.0        | 3.8        |
| 70.0        | 5051                                                                                                                     | 4256                 | 5845                 | 15.7                                 | 4.3        | 3.7        |
| 75.0        | 4209                                                                                                                     | 3525                 | 4894                 | 16.3                                 | 4.5        | 3.6        |
| 80.0        | 3524                                                                                                                     | 2932                 | 4115                 | 16.8                                 | 4.8        | 3.5        |
| 85.0        | 2968                                                                                                                     | 2454                 | 3481                 | 17.3                                 | 5.1        | 3.4        |
| 90.0        | 2510                                                                                                                     | 2064                 | 2957                 | 17.8                                 | 5.3        | 3.3        |
| 95.0        | 2129                                                                                                                     | 1740                 | 2518                 | 18.3                                 | 5.6        | 3.2        |
| 100.0       | 1813                                                                                                                     | 1473                 | 2153                 | 18.7                                 | 5.9        | 3.2        |
| 105.0       | 1551                                                                                                                     | 1253                 | 1849                 | 19.2                                 | 6.2        | 3.1        |
| 110.0       | 1332                                                                                                                     | 1070                 | 1594                 | 19.6                                 | 6.5        | 3.0        |
| 115.0       | 1147                                                                                                                     | 916.3                | 1377                 | 20.1                                 | 6.8        | 3.0        |
| 120.0       | 990.2                                                                                                                    | 787.2                | 1193                 | 20.5                                 | 7.1        | 2.9        |
| 125.0       | 858.2                                                                                                                    | 678.7                | 1038                 | 20.9                                 | 7.4        | 2.8        |

|         | B57891M0473J001                                                                                                         |                      |                      |                                      |            |            |
|---------|-------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No. | 4012                                                                                                                    |                      |                      |                                      |            |            |
| T (°C)  | B <sub>25/100</sub> = 4355 K, R <sub>25</sub> = 47000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 5% |                      |                      |                                      |            |            |
|         | R <sub>nom</sub> [Ω]                                                                                                    | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0   | 5440900                                                                                                                 | 4291800              | 6590000              | 21.1                                 | 2.8        | 7.5        |
| -50.0   | 3764800                                                                                                                 | 3020200              | 4509400              | 19.8                                 | 2.7        | 7.2        |
| -45.0   | 2635100                                                                                                                 | 2147800              | 3122500              | 18.5                                 | 2.6        | 7.0        |
| -40.0   | 1864800                                                                                                                 | 1542800              | 2186800              | 17.3                                 | 2.5        | 6.8        |
| -35.0   | 1333600                                                                                                                 | 1119000              | 1548200              | 16.1                                 | 2.4        | 6.6        |
| -30.0   | 963330                                                                                                                  | 819190               | 1107500              | 15.0                                 | 2.3        | 6.4        |
| -25.0   | 702600                                                                                                                  | 605080               | 800110               | 13.9                                 | 2.2        | 6.2        |
| -20.0   | 517190                                                                                                                  | 450780               | 583590               | 12.8                                 | 2.1        | 6.0        |
| -15.0   | 384090                                                                                                                  | 338610               | 429560               | 11.8                                 | 2.0        | 5.9        |
| -10.0   | 287680                                                                                                                  | 256380               | 318970               | 10.9                                 | 1.9        | 5.7        |
| -5.0    | 217230                                                                                                                  | 195610               | 238850               | 10.0                                 | 1.8        | 5.5        |
| 0.0     | 165330                                                                                                                  | 150350               | 180310               | 9.1                                  | 1.7        | 5.4        |
| 5.0     | 126780                                                                                                                  | 116380               | 137170               | 8.2                                  | 1.6        | 5.2        |
| 10.0    | 97920                                                                                                                   | 90702                | 105140               | 7.4                                  | 1.4        | 5.1        |
| 15.0    | 76162                                                                                                                   | 71158                | 81166                | 6.6                                  | 1.3        | 5.0        |
| 20.0    | 59637                                                                                                                   | 56180                | 63094                | 5.8                                  | 1.2        | 4.8        |
| 25.0    | <b>47000</b>                                                                                                            | <b>44650</b>         | <b>49350</b>         | <b>5.0</b>                           | <b>1.1</b> | <b>4.7</b> |
| 30.0    | 37272                                                                                                                   | 35120                | 39423                | 5.8                                  | 1.3        | 4.6        |
| 35.0    | 29735                                                                                                                   | 27810                | 31659                | 6.5                                  | 1.5        | 4.5        |
| 40.0    | 23859                                                                                                                   | 22154                | 25565                | 7.1                                  | 1.6        | 4.3        |
| 45.0    | 19252                                                                                                                   | 17749                | 20754                | 7.8                                  | 1.8        | 4.2        |
| 50.0    | 15618                                                                                                                   | 14299                | 16936                | 8.4                                  | 2.0        | 4.1        |
| 55.0    | 12735                                                                                                                   | 11582                | 13889                | 9.1                                  | 2.2        | 4.0        |
| 60.0    | 10437                                                                                                                   | 9429                 | 11445                | 9.7                                  | 2.5        | 3.9        |
| 65.0    | 8595                                                                                                                    | 7715                 | 9474                 | 10.2                                 | 2.7        | 3.8        |
| 70.0    | 7111                                                                                                                    | 6343                 | 7879                 | 10.8                                 | 2.9        | 3.7        |
| 75.0    | 5910                                                                                                                    | 5239                 | 6580                 | 11.3                                 | 3.1        | 3.7        |
| 80.0    | 4933                                                                                                                    | 4347                 | 5519                 | 11.9                                 | 3.3        | 3.6        |
| 85.0    | 4135                                                                                                                    | 3623                 | 4647                 | 12.4                                 | 3.6        | 3.5        |
| 90.0    | 3480                                                                                                                    | 3031                 | 3929                 | 12.9                                 | 3.8        | 3.4        |
| 95.0    | 2941                                                                                                                    | 2547                 | 3334                 | 13.4                                 | 4.0        | 3.3        |
| 100.0   | 2494                                                                                                                    | 2149                 | 2840                 | 13.9                                 | 4.3        | 3.3        |
| 105.0   | 2123                                                                                                                    | 1819                 | 2427                 | 14.3                                 | 4.5        | 3.2        |
| 110.0   | 1814                                                                                                                    | 1546                 | 2082                 | 14.8                                 | 4.7        | 3.1        |
| 115.0   | 1555                                                                                                                    | 1319                 | 1792                 | 15.2                                 | 5.0        | 3.0        |
| 120.0   | 1338                                                                                                                    | 1129                 | 1547                 | 15.6                                 | 5.2        | 3.0        |
| 125.0   | 1154                                                                                                                    | 969.1                | 1340                 | 16.1                                 | 5.5        | 2.9        |

**Temperature measurement**
**B57891**
**Leaded NTC, lead spacing 2.5 mm**
**M891**

|             | <b>B57891M0473K001</b>                                                                                                   |                      |                      |                                      |            |            |
|-------------|--------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 4012                                                                                                                     |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 4355 K, R <sub>25</sub> = 47000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                     | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 5440900                                                                                                                  | 4019700              | 6862000              | 26.1                                 | 3.5        | 7.5        |
| -50.0       | 3764800                                                                                                                  | 2831900              | 4697600              | 24.8                                 | 3.4        | 7.2        |
| -45.0       | 2635100                                                                                                                  | 2016000              | 3254200              | 23.5                                 | 3.3        | 7.0        |
| -40.0       | 1864800                                                                                                                  | 1449600              | 2280000              | 22.3                                 | 3.3        | 6.8        |
| -35.0       | 1333600                                                                                                                  | 1052300              | 1614800              | 21.1                                 | 3.2        | 6.6        |
| -30.0       | 963330                                                                                                                   | 771030               | 1155600              | 20.0                                 | 3.1        | 6.4        |
| -25.0       | 702600                                                                                                                   | 569950               | 835240               | 18.9                                 | 3.0        | 6.2        |
| -20.0       | 517190                                                                                                                   | 424920               | 609450               | 17.8                                 | 3.0        | 6.0        |
| -15.0       | 384090                                                                                                                   | 319410               | 448770               | 16.8                                 | 2.9        | 5.9        |
| -10.0       | 287680                                                                                                                   | 242000               | 333360               | 15.9                                 | 2.8        | 5.7        |
| -5.0        | 217230                                                                                                                   | 184750               | 249710               | 15.0                                 | 2.7        | 5.5        |
| 0.0         | 165330                                                                                                                   | 142080               | 188570               | 14.1                                 | 2.6        | 5.4        |
| 5.0         | 126780                                                                                                                   | 110040               | 143510               | 13.2                                 | 2.5        | 5.2        |
| 10.0        | 97920                                                                                                                    | 85806                | 110040               | 12.4                                 | 2.4        | 5.1        |
| 15.0        | 76162                                                                                                                    | 67349                | 84974                | 11.6                                 | 2.3        | 5.0        |
| 20.0        | 59637                                                                                                                    | 53198                | 66076                | 10.8                                 | 2.2        | 4.8        |
| <b>25.0</b> | <b>47000</b>                                                                                                             | <b>42300</b>         | <b>51700</b>         | <b>10.0</b>                          | <b>2.1</b> | <b>4.7</b> |
| 30.0        | 37272                                                                                                                    | 33257                | 41287                | 10.8                                 | 2.4        | 4.6        |
| 35.0        | 29735                                                                                                                    | 26324                | 33146                | 11.5                                 | 2.6        | 4.5        |
| 40.0        | 23859                                                                                                                    | 20961                | 26758                | 12.1                                 | 2.8        | 4.3        |
| 45.0        | 19252                                                                                                                    | 16787                | 21717                | 12.8                                 | 3.0        | 4.2        |
| 50.0        | 15618                                                                                                                    | 13519                | 17717                | 13.4                                 | 3.3        | 4.1        |
| 55.0        | 12735                                                                                                                    | 10945                | 14525                | 14.1                                 | 3.5        | 4.0        |
| 60.0        | 10437                                                                                                                    | 8908                 | 11966                | 14.7                                 | 3.7        | 3.9        |
| 65.0        | 8595                                                                                                                     | 7286                 | 9904                 | 15.2                                 | 4.0        | 3.8        |
| 70.0        | 7111                                                                                                                     | 5988                 | 8234                 | 15.8                                 | 4.2        | 3.7        |
| 75.0        | 5910                                                                                                                     | 4944                 | 6876                 | 16.3                                 | 4.5        | 3.7        |
| 80.0        | 4933                                                                                                                     | 4101                 | 5765                 | 16.9                                 | 4.7        | 3.6        |
| 85.0        | 4135                                                                                                                     | 3416                 | 4854                 | 17.4                                 | 5.0        | 3.5        |
| 90.0        | 3480                                                                                                                     | 2857                 | 4103                 | 17.9                                 | 5.3        | 3.4        |
| 95.0        | 2941                                                                                                                     | 2400                 | 3481                 | 18.4                                 | 5.5        | 3.3        |
| 100.0       | 2494                                                                                                                     | 2024                 | 2964                 | 18.9                                 | 5.8        | 3.3        |
| 105.0       | 2123                                                                                                                     | 1713                 | 2534                 | 19.3                                 | 6.1        | 3.2        |
| 110.0       | 1814                                                                                                                     | 1455                 | 2173                 | 19.8                                 | 6.4        | 3.1        |
| 115.0       | 1555                                                                                                                     | 1241                 | 1870                 | 20.2                                 | 6.6        | 3.0        |
| 120.0       | 1338                                                                                                                     | 1062                 | 1614                 | 20.6                                 | 6.9        | 3.0        |
| 125.0       | 1154                                                                                                                     | 911.4                | 1398                 | 21.1                                 | 7.2        | 2.9        |

|         | B57891M0683J001                                                                                              |                          |                          |                         |                          |                 |
|---------|--------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------|--------------------------|-----------------|
| R/T No. | 4012                                                                                                         |                          |                          |                         |                          |                 |
| T (°C)  | $B_{25/100} = 4355 \text{ K}$ , $R_{25} = 68000 \Omega$ , $T_R = 25 \text{ °C}$ , $\Delta R_R/R_R = \pm 5\%$ |                          |                          |                         |                          |                 |
|         | $R_{\text{nom}}[\Omega]$                                                                                     | $R_{\text{min}}[\Omega]$ | $R_{\text{max}}[\Omega]$ | $\Delta R_R/R_R[\pm\%]$ | $\Delta T[\pm\text{°C}]$ | $\alpha (\%/K)$ |
| -55.0   | 7871900                                                                                                      | 6209400                  | 9534400                  | 21.1                    | 2.8                      | 7.5             |
| -50.0   | 5446900                                                                                                      | 4369600                  | 6524200                  | 19.8                    | 2.7                      | 7.2             |
| -45.0   | 3812500                                                                                                      | 3107400                  | 4517600                  | 18.5                    | 2.6                      | 7.0             |
| -40.0   | 2698000                                                                                                      | 2232200                  | 3163900                  | 17.3                    | 2.5                      | 6.8             |
| -35.0   | 1929400                                                                                                      | 1619000                  | 2239900                  | 16.1                    | 2.4                      | 6.6             |
| -30.0   | 1393700                                                                                                      | 1185200                  | 1602300                  | 15.0                    | 2.3                      | 6.4             |
| -25.0   | 1016500                                                                                                      | 875440                   | 1157600                  | 13.9                    | 2.2                      | 6.2             |
| -20.0   | 748270                                                                                                       | 652200                   | 844340                   | 12.8                    | 2.1                      | 6.0             |
| -15.0   | 555700                                                                                                       | 489910                   | 621500                   | 11.8                    | 2.0                      | 5.9             |
| -10.0   | 416210                                                                                                       | 370940                   | 461490                   | 10.9                    | 1.9                      | 5.7             |
| -5.0    | 314290                                                                                                       | 283010                   | 345570                   | 10.0                    | 1.8                      | 5.5             |
| 0.0     | 239200                                                                                                       | 217520                   | 260870                   | 9.1                     | 1.7                      | 5.4             |
| 5.0     | 183420                                                                                                       | 168380                   | 198460                   | 8.2                     | 1.6                      | 5.2             |
| 10.0    | 141670                                                                                                       | 131230                   | 152120                   | 7.4                     | 1.4                      | 5.1             |
| 15.0    | 110190                                                                                                       | 102950                   | 117430                   | 6.6                     | 1.3                      | 5.0             |
| 20.0    | 86283                                                                                                        | 81281                    | 91286                    | 5.8                     | 1.2                      | 4.8             |
| 25.0    | <b>68000</b>                                                                                                 | <b>64600</b>             | <b>71400</b>             | <b>5.0</b>              | <b>1.1</b>               | <b>4.7</b>      |
| 30.0    | 53925                                                                                                        | 50812                    | 57038                    | 5.8                     | 1.3                      | 4.6             |
| 35.0    | 43021                                                                                                        | 40236                    | 45805                    | 6.5                     | 1.5                      | 4.5             |
| 40.0    | 34520                                                                                                        | 32052                    | 36988                    | 7.1                     | 1.6                      | 4.3             |
| 45.0    | 27854                                                                                                        | 25680                    | 30028                    | 7.8                     | 1.8                      | 4.2             |
| 50.0    | 22596                                                                                                        | 20689                    | 24503                    | 8.4                     | 2.0                      | 4.1             |
| 55.0    | 18426                                                                                                        | 16757                    | 20094                    | 9.1                     | 2.2                      | 4.0             |
| 60.0    | 15100                                                                                                        | 13643                    | 16558                    | 9.7                     | 2.5                      | 3.9             |
| 65.0    | 12435                                                                                                        | 11163                    | 13708                    | 10.2                    | 2.7                      | 3.8             |
| 70.0    | 10288                                                                                                        | 9177                     | 11399                    | 10.8                    | 2.9                      | 3.7             |
| 75.0    | 8550                                                                                                         | 7580                     | 9520                     | 11.3                    | 3.1                      | 3.7             |
| 80.0    | 7137                                                                                                         | 6290                     | 7984                     | 11.9                    | 3.3                      | 3.6             |
| 85.0    | 5982                                                                                                         | 5241                     | 6724                     | 12.4                    | 3.6                      | 3.5             |
| 90.0    | 5035                                                                                                         | 4386                     | 5684                     | 12.9                    | 3.8                      | 3.4             |
| 95.0    | 4254                                                                                                         | 3685                     | 4824                     | 13.4                    | 4.0                      | 3.3             |
| 100.0   | 3609                                                                                                         | 3109                     | 4109                     | 13.9                    | 4.3                      | 3.3             |
| 105.0   | 3072                                                                                                         | 2632                     | 3512                     | 14.3                    | 4.5                      | 3.2             |
| 110.0   | 2625                                                                                                         | 2237                     | 3012                     | 14.8                    | 4.7                      | 3.1             |
| 115.0   | 2250                                                                                                         | 1908                     | 2592                     | 15.2                    | 5.0                      | 3.0             |
| 120.0   | 1936                                                                                                         | 1633                     | 2238                     | 15.6                    | 5.2                      | 3.0             |
| 125.0   | 1670                                                                                                         | 1402                     | 1939                     | 16.1                    | 5.5                      | 2.9             |

**Temperature measurement**
**B57891**
**Leaded NTC, lead spacing 2.5 mm**
**M891**

|             | <b>B57891M0683K001</b>                                                                                                   |                      |                      |                                      |            |            |
|-------------|--------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 4012                                                                                                                     |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 4355 K, R <sub>25</sub> = 68000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                     | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 7871900                                                                                                                  | 5815800              | 9928000              | 26.1                                 | 3.5        | 7.5        |
| -50.0       | 5446900                                                                                                                  | 4097300              | 6796500              | 24.8                                 | 3.4        | 7.2        |
| -45.0       | 3812500                                                                                                                  | 2916800              | 4708300              | 23.5                                 | 3.3        | 7.0        |
| -40.0       | 2698000                                                                                                                  | 2097300              | 3298800              | 22.3                                 | 3.3        | 6.8        |
| -35.0       | 1929400                                                                                                                  | 1522500              | 2336400              | 21.1                                 | 3.2        | 6.6        |
| -30.0       | 1393700                                                                                                                  | 1115500              | 1672000              | 20.0                                 | 3.1        | 6.4        |
| -25.0       | 1016500                                                                                                                  | 824610               | 1208400              | 18.9                                 | 3.0        | 6.2        |
| -20.0       | 748270                                                                                                                   | 614780               | 881760               | 17.8                                 | 3.0        | 6.0        |
| -15.0       | 555700                                                                                                                   | 462120               | 649280               | 16.8                                 | 2.9        | 5.9        |
| -10.0       | 416210                                                                                                                   | 350130               | 482300               | 15.9                                 | 2.8        | 5.7        |
| -5.0        | 314290                                                                                                                   | 267300               | 361290               | 15.0                                 | 2.7        | 5.5        |
| 0.0         | 239200                                                                                                                   | 205560               | 272830               | 14.1                                 | 2.6        | 5.4        |
| 5.0         | 183420                                                                                                                   | 159210               | 207630               | 13.2                                 | 2.5        | 5.2        |
| 10.0        | 141670                                                                                                                   | 124150               | 159200               | 12.4                                 | 2.4        | 5.1        |
| 15.0        | 110190                                                                                                                   | 97442                | 122940               | 11.6                                 | 2.3        | 5.0        |
| 20.0        | 86283                                                                                                                    | 76967                | 95600                | 10.8                                 | 2.2        | 4.8        |
| <b>25.0</b> | <b>68000</b>                                                                                                             | <b>61200</b>         | <b>74800</b>         | <b>10.0</b>                          | <b>2.1</b> | <b>4.7</b> |
| 30.0        | 53925                                                                                                                    | 48116                | 59734                | 10.8                                 | 2.4        | 4.6        |
| 35.0        | 43021                                                                                                                    | 38085                | 47956                | 11.5                                 | 2.6        | 4.5        |
| 40.0        | 34520                                                                                                                    | 30326                | 38714                | 12.1                                 | 2.8        | 4.3        |
| 45.0        | 27854                                                                                                                    | 24287                | 31420                | 12.8                                 | 3.0        | 4.2        |
| 50.0        | 22596                                                                                                                    | 19559                | 25633                | 13.4                                 | 3.3        | 4.1        |
| 55.0        | 18426                                                                                                                    | 15836                | 21015                | 14.1                                 | 3.5        | 4.0        |
| 60.0        | 15100                                                                                                                    | 12888                | 17313                | 14.7                                 | 3.7        | 3.9        |
| 65.0        | 12435                                                                                                                    | 10541                | 14329                | 15.2                                 | 4.0        | 3.8        |
| 70.0        | 10288                                                                                                                    | 8663                 | 11913                | 15.8                                 | 4.2        | 3.7        |
| 75.0        | 8550                                                                                                                     | 7153                 | 9948                 | 16.3                                 | 4.5        | 3.7        |
| 80.0        | 7137                                                                                                                     | 5933                 | 8341                 | 16.9                                 | 4.7        | 3.6        |
| 85.0        | 5982                                                                                                                     | 4942                 | 7023                 | 17.4                                 | 5.0        | 3.5        |
| 90.0        | 5035                                                                                                                     | 4134                 | 5936                 | 17.9                                 | 5.3        | 3.4        |
| 95.0        | 4254                                                                                                                     | 3472                 | 5036                 | 18.4                                 | 5.5        | 3.3        |
| 100.0       | 3609                                                                                                                     | 2928                 | 4289                 | 18.9                                 | 5.8        | 3.3        |
| 105.0       | 3072                                                                                                                     | 2478                 | 3666                 | 19.3                                 | 6.1        | 3.2        |
| 110.0       | 2625                                                                                                                     | 2106                 | 3144                 | 19.8                                 | 6.4        | 3.1        |
| 115.0       | 2250                                                                                                                     | 1795                 | 2705                 | 20.2                                 | 6.6        | 3.0        |
| 120.0       | 1936                                                                                                                     | 1536                 | 2335                 | 20.6                                 | 6.9        | 3.0        |
| 125.0       | 1670                                                                                                                     | 1319                 | 2022                 | 21.1                                 | 7.2        | 2.9        |

|         | B57891M0104J000                                                                                                                     |                          |                          |                         |                               |                 |
|---------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|-------------------------|-------------------------------|-----------------|
| R/T No. | 4003                                                                                                                                |                          |                          |                         |                               |                 |
| T (°C)  | $B_{25/100} = 4450 \text{ K}$ , $R_{25} = 100000 \text{ } \Omega$ , $T_R = 25 \text{ } ^\circ\text{C}$ , $\Delta R_R/R_R = \pm 5\%$ |                          |                          |                         |                               |                 |
|         | $R_{\text{nom}}[\Omega]$                                                                                                            | $R_{\text{min}}[\Omega]$ | $R_{\text{max}}[\Omega]$ | $\Delta R_R/R_R[\pm\%]$ | $\Delta T[\pm^\circ\text{C}]$ | $\alpha (\%/K)$ |
| -55.0   | 10381000                                                                                                                            | 8152300                  | 12610000                 | 21.5                    | 3.1                           | 6.8             |
| -50.0   | 7370700                                                                                                                             | 5889300                  | 8852200                  | 20.1                    | 3.0                           | 6.7             |
| -45.0   | 5272300                                                                                                                             | 4281700                  | 6262900                  | 18.8                    | 2.8                           | 6.6             |
| -40.0   | 3798800                                                                                                                             | 3132700                  | 4464800                  | 17.5                    | 2.7                           | 6.5             |
| -35.0   | 2756500                                                                                                                             | 2306400                  | 3206700                  | 16.3                    | 2.6                           | 6.4             |
| -30.0   | 2014200                                                                                                                             | 1708500                  | 2320000                  | 15.2                    | 2.4                           | 6.2             |
| -25.0   | 1480100                                                                                                                             | 1271800                  | 1688400                  | 14.1                    | 2.3                           | 6.1             |
| -20.0   | 1097600                                                                                                                             | 954790                   | 1240400                  | 13.0                    | 2.2                           | 6.0             |
| -15.0   | 817440                                                                                                                              | 719450                   | 915440                   | 12.0                    | 2.1                           | 5.8             |
| -10.0   | 614070                                                                                                                              | 546490                   | 681650                   | 11.0                    | 1.9                           | 5.7             |
| -5.0    | 463310                                                                                                                              | 416700                   | 509920                   | 10.1                    | 1.8                           | 5.5             |
| 0.0     | 352440                                                                                                                              | 320190                   | 384680                   | 9.1                     | 1.7                           | 5.4             |
| 5.0     | 269950                                                                                                                              | 247620                   | 292270                   | 8.3                     | 1.6                           | 5.3             |
| 10.0    | 208310                                                                                                                              | 192850                   | 223770                   | 7.4                     | 1.4                           | 5.1             |
| 15.0    | 161890                                                                                                                              | 151200                   | 172580                   | 6.6                     | 1.3                           | 5.0             |
| 20.0    | 126660                                                                                                                              | 119300                   | 134030                   | 5.8                     | 1.2                           | 4.9             |
| 25.0    | 100000                                                                                                                              | 95000                    | 105000                   | 5.0                     | 1.1                           | 4.8             |
| 30.0    | 78351                                                                                                                               | 73816                    | 82886                    | 5.8                     | 1.2                           | 4.6             |
| 35.0    | 62372                                                                                                                               | 58316                    | 66428                    | 6.5                     | 1.4                           | 4.5             |
| 40.0    | 49937                                                                                                                               | 46344                    | 53530                    | 7.2                     | 1.6                           | 4.4             |
| 45.0    | 40218                                                                                                                               | 37055                    | 43381                    | 7.9                     | 1.8                           | 4.3             |
| 50.0    | 32557                                                                                                                               | 29785                    | 35329                    | 8.5                     | 2.0                           | 4.2             |
| 55.0    | 26402                                                                                                                               | 23988                    | 28816                    | 9.1                     | 2.2                           | 4.1             |
| 60.0    | 21527                                                                                                                               | 19427                    | 23627                    | 9.8                     | 2.4                           | 4.0             |
| 65.0    | 17693                                                                                                                               | 15863                    | 19524                    | 10.3                    | 2.6                           | 3.9             |
| 70.0    | 14616                                                                                                                               | 13019                    | 16212                    | 10.9                    | 2.8                           | 3.8             |
| 75.0    | 12097                                                                                                                               | 10708                    | 13485                    | 11.5                    | 3.1                           | 3.8             |
| 80.0    | 10053                                                                                                                               | 8845                     | 11262                    | 12.0                    | 3.3                           | 3.7             |
| 85.0    | 8376                                                                                                                                | 7325                     | 9427                     | 12.6                    | 3.5                           | 3.6             |
| 90.0    | 7004                                                                                                                                | 6089                     | 7919                     | 13.1                    | 3.7                           | 3.5             |
| 95.0    | 5894                                                                                                                                | 5094                     | 6693                     | 13.6                    | 3.9                           | 3.4             |
| 100.0   | 4978                                                                                                                                | 4278                     | 5677                     | 14.0                    | 4.2                           | 3.4             |
| 105.0   | 4215                                                                                                                                | 3603                     | 4827                     | 14.5                    | 4.4                           | 3.3             |
| 110.0   | 3580                                                                                                                                | 3044                     | 4117                     | 15.0                    | 4.6                           | 3.2             |
| 115.0   | 3050                                                                                                                                | 2580                     | 3521                     | 15.4                    | 4.9                           | 3.2             |
| 120.0   | 2607                                                                                                                                | 2193                     | 3020                     | 15.9                    | 5.1                           | 3.1             |
| 125.0   | 2233                                                                                                                                | 1869                     | 2597                     | 16.3                    | 5.4                           | 3.0             |

|             | <b>B57891M0104K000</b>                                                                                                    |                      |                      |                                      |            |            |
|-------------|---------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 4003                                                                                                                      |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 4450 K, R <sub>25</sub> = 100000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                      | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 10381000                                                                                                                  | 7633200              | 13129000             | 26.5                                 | 3.9        | 6.8        |
| -50.0       | 7370700                                                                                                                   | 5520700              | 9220700              | 25.1                                 | 3.7        | 6.7        |
| -45.0       | 5272300                                                                                                                   | 4018100              | 6526500              | 23.8                                 | 3.6        | 6.6        |
| -40.0       | 3798800                                                                                                                   | 2942800              | 4654700              | 22.5                                 | 3.5        | 6.5        |
| -35.0       | 2756500                                                                                                                   | 2168500              | 3344500              | 21.3                                 | 3.3        | 6.4        |
| -30.0       | 2014200                                                                                                                   | 1607800              | 2420700              | 20.2                                 | 3.2        | 6.2        |
| -25.0       | 1480100                                                                                                                   | 1197800              | 1762400              | 19.1                                 | 3.1        | 6.1        |
| -20.0       | 1097600                                                                                                                   | 899910               | 1295200              | 18.0                                 | 3.0        | 6.0        |
| -15.0       | 817440                                                                                                                    | 678570               | 956310               | 17.0                                 | 2.9        | 5.8        |
| -10.0       | 614070                                                                                                                    | 515790               | 712350               | 16.0                                 | 2.8        | 5.7        |
| -5.0        | 463310                                                                                                                    | 393540               | 533080               | 15.1                                 | 2.7        | 5.5        |
| 0.0         | 352440                                                                                                                    | 302570               | 402300               | 14.1                                 | 2.6        | 5.4        |
| 5.0         | 269950                                                                                                                    | 234130               | 305770               | 13.3                                 | 2.5        | 5.3        |
| 10.0        | 208310                                                                                                                    | 182430               | 234190               | 12.4                                 | 2.4        | 5.1        |
| 15.0        | 161890                                                                                                                    | 143110               | 180680               | 11.6                                 | 2.3        | 5.0        |
| 20.0        | 126660                                                                                                                    | 112970               | 140360               | 10.8                                 | 2.2        | 4.9        |
| <b>25.0</b> | <b>100000</b>                                                                                                             | <b>90000</b>         | <b>110000</b>        | <b>10.0</b>                          | <b>2.1</b> | <b>4.8</b> |
| 30.0        | 78351                                                                                                                     | 69898                | 86804                | 10.8                                 | 2.3        | 4.6        |
| 35.0        | 62372                                                                                                                     | 55198                | 69547                | 11.5                                 | 2.5        | 4.5        |
| 40.0        | 49937                                                                                                                     | 43847                | 56027                | 12.2                                 | 2.8        | 4.4        |
| 45.0        | 40218                                                                                                                     | 35044                | 45392                | 12.9                                 | 3.0        | 4.3        |
| 50.0        | 32557                                                                                                                     | 28157                | 36956                | 13.5                                 | 3.2        | 4.2        |
| 55.0        | 26402                                                                                                                     | 22668                | 30136                | 14.1                                 | 3.4        | 4.1        |
| 60.0        | 21527                                                                                                                     | 18351                | 24703                | 14.8                                 | 3.7        | 4.0        |
| 65.0        | 17693                                                                                                                     | 14978                | 20408                | 15.3                                 | 3.9        | 3.9        |
| 70.0        | 14616                                                                                                                     | 12289                | 16943                | 15.9                                 | 4.1        | 3.8        |
| 75.0        | 12097                                                                                                                     | 10103                | 14090                | 16.5                                 | 4.4        | 3.8        |
| 80.0        | 10053                                                                                                                     | 8342                 | 11765                | 17.0                                 | 4.6        | 3.7        |
| 85.0        | 8376                                                                                                                      | 6906                 | 9846                 | 17.6                                 | 4.9        | 3.6        |
| 90.0        | 7004                                                                                                                      | 5739                 | 8269                 | 18.1                                 | 5.1        | 3.5        |
| 95.0        | 5894                                                                                                                      | 4800                 | 6988                 | 18.6                                 | 5.4        | 3.4        |
| 100.0       | 4978                                                                                                                      | 4029                 | 5926                 | 19.0                                 | 5.7        | 3.4        |
| 105.0       | 4215                                                                                                                      | 3392                 | 5037                 | 19.5                                 | 5.9        | 3.3        |
| 110.0       | 3580                                                                                                                      | 2865                 | 4296                 | 20.0                                 | 6.2        | 3.2        |
| 115.0       | 3050                                                                                                                      | 2427                 | 3674                 | 20.4                                 | 6.5        | 3.2        |
| 120.0       | 2607                                                                                                                      | 2063                 | 3151                 | 20.9                                 | 6.7        | 3.1        |
| 125.0       | 2233                                                                                                                      | 1758                 | 2709                 | 21.3                                 | 7.0        | 3.0        |

|         | B57891M0154J000                                                                                                          |                      |                      |                                      |            |            |
|---------|--------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No. | 2005                                                                                                                     |                      |                      |                                      |            |            |
| T (°C)  | B <sub>25/100</sub> = 4600 K, R <sub>25</sub> = 150000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 5% |                      |                      |                                      |            |            |
|         | R <sub>nom</sub> [Ω]                                                                                                     | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0   | 18033000                                                                                                                 | 14062000             | 22005000             | 22.0                                 | 3.2        | 6.8        |
| -50.0   | 12822000                                                                                                                 | 10180000             | 15464000             | 20.6                                 | 3.0        | 6.8        |
| -45.0   | 9150500                                                                                                                  | 7389000              | 10912000             | 19.3                                 | 2.8        | 6.8        |
| -40.0   | 6556900                                                                                                                  | 5379600              | 7734100              | 18.0                                 | 2.7        | 6.7        |
| -35.0   | 4718900                                                                                                                  | 3930300              | 5507500              | 16.7                                 | 2.5        | 6.6        |
| -30.0   | 3411900                                                                                                                  | 2882400              | 3941400              | 15.5                                 | 2.4        | 6.4        |
| -25.0   | 2473400                                                                                                                  | 2117900              | 2829000              | 14.4                                 | 2.3        | 6.3        |
| -20.0   | 1810600                                                                                                                  | 1570200              | 2051000              | 13.3                                 | 2.1        | 6.2        |
| -15.0   | 1326800                                                                                                                  | 1164700              | 1489000              | 12.2                                 | 2.0        | 6.0        |
| -10.0   | 981690                                                                                                                   | 871680               | 1091700              | 11.2                                 | 1.9        | 5.9        |
| -5.0    | 732790                                                                                                                   | 657830               | 807740               | 10.2                                 | 1.8        | 5.7        |
| 0.0     | 551710                                                                                                                   | 500480               | 602940               | 9.3                                  | 1.7        | 5.6        |
| 5.0     | 419150                                                                                                                   | 384040               | 454270               | 8.4                                  | 1.5        | 5.5        |
| 10.0    | 320870                                                                                                                   | 296800               | 344940               | 7.5                                  | 1.4        | 5.3        |
| 15.0    | 247600                                                                                                                   | 231120               | 264080               | 6.7                                  | 1.3        | 5.2        |
| 20.0    | 192350                                                                                                                   | 181120               | 203580               | 5.8                                  | 1.2        | 5.1        |
| 25.0    | <b>150000</b>                                                                                                            | <b>142500</b>        | <b>157500</b>        | <b>5.0</b>                           | <b>1.0</b> | <b>4.9</b> |
| 30.0    | 117590                                                                                                                   | 110750               | 124430               | 5.8                                  | 1.2        | 4.8        |
| 35.0    | 92733                                                                                                                    | 86657                | 98809                | 6.6                                  | 1.4        | 4.7        |
| 40.0    | 73580                                                                                                                    | 68233                | 78927                | 7.3                                  | 1.6        | 4.6        |
| 45.0    | 58673                                                                                                                    | 54003                | 63344                | 8.0                                  | 1.8        | 4.5        |
| 50.0    | 47056                                                                                                                    | 42995                | 51117                | 8.6                                  | 2.0        | 4.3        |
| 55.0    | 38008                                                                                                                    | 34480                | 41535                | 9.3                                  | 2.2        | 4.2        |
| 60.0    | 30848                                                                                                                    | 27790                | 33906                | 9.9                                  | 2.4        | 4.1        |
| 65.0    | 25143                                                                                                                    | 22497                | 27790                | 10.5                                 | 2.6        | 4.1        |
| 70.0    | 20589                                                                                                                    | 18300                | 22879                | 11.1                                 | 2.8        | 4.0        |
| 75.0    | 16918                                                                                                                    | 14939                | 18897                | 11.7                                 | 3.0        | 3.9        |
| 80.0    | 13958                                                                                                                    | 12247                | 15669                | 12.3                                 | 3.2        | 3.8        |
| 85.0    | 11577                                                                                                                    | 10094                | 13059                | 12.8                                 | 3.5        | 3.7        |
| 90.0    | 9639                                                                                                                     | 8354                 | 10925                | 13.3                                 | 3.7        | 3.6        |
| 95.0    | 8052                                                                                                                     | 6936                 | 9167                 | 13.9                                 | 3.9        | 3.5        |
| 100.0   | 6749                                                                                                                     | 5781                 | 7718                 | 14.4                                 | 4.1        | 3.5        |
| 105.0   | 5688                                                                                                                     | 4843                 | 6532                 | 14.8                                 | 4.4        | 3.4        |
| 110.0   | 4809                                                                                                                     | 4073                 | 5546                 | 15.3                                 | 4.6        | 3.3        |
| 115.0   | 4074                                                                                                                     | 3431                 | 4717                 | 15.8                                 | 4.8        | 3.3        |
| 120.0   | 3462                                                                                                                     | 2900                 | 4024                 | 16.2                                 | 5.1        | 3.2        |
| 125.0   | 2952                                                                                                                     | 2460                 | 3444                 | 16.7                                 | 5.3        | 3.1        |

|             | <b>B57891M0154K000</b>                                                                                                    |                      |                      |                                      |            |            |
|-------------|---------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 2005                                                                                                                      |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 4600 K, R <sub>25</sub> = 150000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                      | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 18033000                                                                                                                  | 13160000             | 22906000             | 27.0                                 | 4.0        | 6.8        |
| -50.0       | 12822000                                                                                                                  | 9538700              | 16105000             | 25.6                                 | 3.8        | 6.8        |
| -45.0       | 9150500                                                                                                                   | 6931400              | 11370000             | 24.3                                 | 3.6        | 6.8        |
| -40.0       | 6556900                                                                                                                   | 5051800              | 8061900              | 23.0                                 | 3.4        | 6.7        |
| -35.0       | 4718900                                                                                                                   | 3694300              | 5743400              | 21.7                                 | 3.3        | 6.6        |
| -30.0       | 3411900                                                                                                                   | 2711800              | 4112000              | 20.5                                 | 3.2        | 6.4        |
| -25.0       | 2473400                                                                                                                   | 1994200              | 2952700              | 19.4                                 | 3.1        | 6.3        |
| -20.0       | 1810600                                                                                                                   | 1479700              | 2141500              | 18.3                                 | 3.0        | 6.2        |
| -15.0       | 1326800                                                                                                                   | 1098300              | 1555300              | 17.2                                 | 2.9        | 6.0        |
| -10.0       | 981690                                                                                                                    | 822600               | 1140800              | 16.2                                 | 2.8        | 5.9        |
| -5.0        | 732790                                                                                                                    | 621190               | 844380               | 15.2                                 | 2.7        | 5.7        |
| 0.0         | 551710                                                                                                                    | 472890               | 630530               | 14.3                                 | 2.6        | 5.6        |
| 5.0         | 419150                                                                                                                    | 363080               | 475230               | 13.4                                 | 2.5        | 5.5        |
| 10.0        | 320870                                                                                                                    | 280750               | 360980               | 12.5                                 | 2.3        | 5.3        |
| 15.0        | 247600                                                                                                                    | 218740               | 276460               | 11.7                                 | 2.2        | 5.2        |
| 20.0        | 192350                                                                                                                    | 171500               | 213200               | 10.8                                 | 2.1        | 5.1        |
| <b>25.0</b> | <b>150000</b>                                                                                                             | <b>135000</b>        | <b>165000</b>        | <b>10.0</b>                          | <b>2.0</b> | <b>4.9</b> |
| 30.0        | 117590                                                                                                                    | 104870               | 130310               | 10.8                                 | 2.3        | 4.8        |
| 35.0        | 92733                                                                                                                     | 82021                | 103450               | 11.6                                 | 2.5        | 4.7        |
| 40.0        | 73580                                                                                                                     | 64554                | 82606                | 12.3                                 | 2.7        | 4.6        |
| 45.0        | 58673                                                                                                                     | 51070                | 66277                | 13.0                                 | 2.9        | 4.5        |
| 50.0        | 47056                                                                                                                     | 40642                | 53470                | 13.6                                 | 3.1        | 4.3        |
| 55.0        | 38008                                                                                                                     | 32580                | 43436                | 14.3                                 | 3.4        | 4.2        |
| 60.0        | 30848                                                                                                                     | 26247                | 35448                | 14.9                                 | 3.6        | 4.1        |
| 65.0        | 25143                                                                                                                     | 21240                | 29047                | 15.5                                 | 3.8        | 4.1        |
| 70.0        | 20589                                                                                                                     | 17271                | 23908                | 16.1                                 | 4.1        | 4.0        |
| 75.0        | 16918                                                                                                                     | 14093                | 19743                | 16.7                                 | 4.3        | 3.9        |
| 80.0        | 13958                                                                                                                     | 11549                | 16367                | 17.3                                 | 4.6        | 3.8        |
| 85.0        | 11577                                                                                                                     | 9515                 | 13638                | 17.8                                 | 4.8        | 3.7        |
| 90.0        | 9639                                                                                                                      | 7872                 | 11407                | 18.3                                 | 5.1        | 3.6        |
| 95.0        | 8052                                                                                                                      | 6534                 | 9569                 | 18.9                                 | 5.3        | 3.5        |
| 100.0       | 6749                                                                                                                      | 5443                 | 8056                 | 19.4                                 | 5.6        | 3.5        |
| 105.0       | 5688                                                                                                                      | 4559                 | 6816                 | 19.8                                 | 5.8        | 3.4        |
| 110.0       | 4809                                                                                                                      | 3832                 | 5787                 | 20.3                                 | 6.1        | 3.3        |
| 115.0       | 4074                                                                                                                      | 3227                 | 4921                 | 20.8                                 | 6.4        | 3.3        |
| 120.0       | 3462                                                                                                                      | 2727                 | 4197                 | 21.2                                 | 6.6        | 3.2        |
| 125.0       | 2952                                                                                                                      | 2312                 | 3592                 | 21.7                                 | 6.9        | 3.1        |

|         | B57891M0224J000                                                                                                                     |                           |                           |                         |                               |                 |
|---------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------|-------------------------|-------------------------------|-----------------|
| R/T No. | 2005                                                                                                                                |                           |                           |                         |                               |                 |
| T (°C)  | $B_{25/100} = 4600 \text{ K}$ , $R_{25} = 220000 \text{ } \Omega$ , $T_R = 25 \text{ } ^\circ\text{C}$ , $\Delta R_R/R_R = \pm 5\%$ |                           |                           |                         |                               |                 |
|         | $R_{\text{nomL}}[\Omega]$                                                                                                           | $R_{\text{minL}}[\Omega]$ | $R_{\text{maxL}}[\Omega]$ | $\Delta R_R/R_R[\pm\%]$ | $\Delta T[\pm^\circ\text{C}]$ | $\alpha (\%/K)$ |
| -55.0   | 26449000                                                                                                                            | 20624000                  | 32274000                  | 22.0                    | 3.2                           | 6.8             |
| -50.0   | 18806000                                                                                                                            | 14930000                  | 22681000                  | 20.6                    | 3.0                           | 6.8             |
| -45.0   | 13421000                                                                                                                            | 10837000                  | 16004000                  | 19.3                    | 2.8                           | 6.8             |
| -40.0   | 9616700                                                                                                                             | 7890100                   | 11343000                  | 18.0                    | 2.7                           | 6.7             |
| -35.0   | 6921000                                                                                                                             | 5764400                   | 8077600                   | 16.7                    | 2.5                           | 6.6             |
| -30.0   | 5004100                                                                                                                             | 4227500                   | 5780800                   | 15.5                    | 2.4                           | 6.4             |
| -25.0   | 3627700                                                                                                                             | 3106200                   | 4149200                   | 14.4                    | 2.3                           | 6.3             |
| -20.0   | 2655500                                                                                                                             | 2302900                   | 3008100                   | 13.3                    | 2.1                           | 6.2             |
| -15.0   | 1946000                                                                                                                             | 1708200                   | 2183800                   | 12.2                    | 2.0                           | 6.0             |
| -10.0   | 1439800                                                                                                                             | 1278500                   | 1601200                   | 11.2                    | 1.9                           | 5.9             |
| -5.0    | 1074800                                                                                                                             | 964820                    | 1184700                   | 10.2                    | 1.8                           | 5.7             |
| 0.0     | 809170                                                                                                                              | 734030                    | 884320                    | 9.3                     | 1.7                           | 5.6             |
| 5.0     | 614760                                                                                                                              | 563260                    | 666270                    | 8.4                     | 1.5                           | 5.5             |
| 10.0    | 470610                                                                                                                              | 435300                    | 505910                    | 7.5                     | 1.4                           | 5.3             |
| 15.0    | 363150                                                                                                                              | 338980                    | 387320                    | 6.7                     | 1.3                           | 5.2             |
| 20.0    | 282110                                                                                                                              | 265640                    | 298580                    | 5.8                     | 1.2                           | 5.1             |
| 25.0    | <b>220000</b>                                                                                                                       | <b>209000</b>             | <b>231000</b>             | <b>5.0</b>              | <b>1.0</b>                    | <b>4.9</b>      |
| 30.0    | 172460                                                                                                                              | 162440                    | 182490                    | 5.8                     | 1.2                           | 4.8             |
| 35.0    | 136010                                                                                                                              | 127100                    | 144920                    | 6.6                     | 1.4                           | 4.7             |
| 40.0    | 107920                                                                                                                              | 100080                    | 115760                    | 7.3                     | 1.6                           | 4.6             |
| 45.0    | 86054                                                                                                                               | 79205                     | 92904                     | 8.0                     | 1.8                           | 4.5             |
| 50.0    | 69015                                                                                                                               | 63059                     | 74972                     | 8.6                     | 2.0                           | 4.3             |
| 55.0    | 55745                                                                                                                               | 50571                     | 60919                     | 9.3                     | 2.2                           | 4.2             |
| 60.0    | 45243                                                                                                                               | 40758                     | 49728                     | 9.9                     | 2.4                           | 4.1             |
| 65.0    | 36877                                                                                                                               | 32995                     | 40758                     | 10.5                    | 2.6                           | 4.1             |
| 70.0    | 30198                                                                                                                               | 26840                     | 33556                     | 11.1                    | 2.8                           | 4.0             |
| 75.0    | 24813                                                                                                                               | 21910                     | 27715                     | 11.7                    | 3.0                           | 3.9             |
| 80.0    | 20472                                                                                                                               | 17962                     | 22981                     | 12.3                    | 3.2                           | 3.8             |
| 85.0    | 16979                                                                                                                               | 14805                     | 19153                     | 12.8                    | 3.5                           | 3.7             |
| 90.0    | 14138                                                                                                                               | 12253                     | 16023                     | 13.3                    | 3.7                           | 3.6             |
| 95.0    | 11809                                                                                                                               | 10173                     | 13445                     | 13.9                    | 3.9                           | 3.5             |
| 100.0   | 9899                                                                                                                                | 8478                      | 11320                     | 14.4                    | 4.1                           | 3.5             |
| 105.0   | 8342                                                                                                                                | 7104                      | 9580                      | 14.8                    | 4.4                           | 3.4             |
| 110.0   | 7054                                                                                                                                | 5973                      | 8134                      | 15.3                    | 4.6                           | 3.3             |
| 115.0   | 5975                                                                                                                                | 5032                      | 6918                      | 15.8                    | 4.8                           | 3.3             |
| 120.0   | 5077                                                                                                                                | 4253                      | 5902                      | 16.2                    | 5.1                           | 3.2             |
| 125.0   | 4330                                                                                                                                | 3608                      | 5052                      | 16.7                    | 5.3                           | 3.1             |

|             | <b>B57891M0224K000</b>                                                                                                    |                      |                      |                                      |            |            |
|-------------|---------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 2005                                                                                                                      |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 4600 K, R <sub>25</sub> = 220000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                      | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 26449000                                                                                                                  | 19301000             | 33596000             | 27.0                                 | 4.0        | 6.8        |
| -50.0       | 18806000                                                                                                                  | 13990000             | 23621000             | 25.6                                 | 3.8        | 6.8        |
| -45.0       | 13421000                                                                                                                  | 10166000             | 16675000             | 24.3                                 | 3.6        | 6.8        |
| -40.0       | 9616700                                                                                                                   | 7409300              | 11824000             | 23.0                                 | 3.4        | 6.7        |
| -35.0       | 6921000                                                                                                                   | 5418400              | 8423600              | 21.7                                 | 3.3        | 6.6        |
| -30.0       | 5004100                                                                                                                   | 3977300              | 6031000              | 20.5                                 | 3.2        | 6.4        |
| -25.0       | 3627700                                                                                                                   | 2924800              | 4330600              | 19.4                                 | 3.1        | 6.3        |
| -20.0       | 2655500                                                                                                                   | 2170200              | 3140900              | 18.3                                 | 3.0        | 6.2        |
| -15.0       | 1946000                                                                                                                   | 1610900              | 2281100              | 17.2                                 | 2.9        | 6.0        |
| -10.0       | 1439800                                                                                                                   | 1206500              | 1673200              | 16.2                                 | 2.8        | 5.9        |
| -5.0        | 1074800                                                                                                                   | 911080               | 1238400              | 15.2                                 | 2.7        | 5.7        |
| 0.0         | 809170                                                                                                                    | 693570               | 924770               | 14.3                                 | 2.6        | 5.6        |
| 5.0         | 614760                                                                                                                    | 532520               | 697000               | 13.4                                 | 2.5        | 5.5        |
| 10.0        | 470610                                                                                                                    | 411770               | 529440               | 12.5                                 | 2.3        | 5.3        |
| 15.0        | 363150                                                                                                                    | 320820               | 405480               | 11.7                                 | 2.2        | 5.2        |
| 20.0        | 282110                                                                                                                    | 251530               | 312690               | 10.8                                 | 2.1        | 5.1        |
| <b>25.0</b> | <b>220000</b>                                                                                                             | <b>198000</b>        | <b>242000</b>        | <b>10.0</b>                          | <b>2.0</b> | <b>4.9</b> |
| 30.0        | 172460                                                                                                                    | 153820               | 191110               | 10.8                                 | 2.3        | 4.8        |
| 35.0        | 136010                                                                                                                    | 120300               | 151720               | 11.6                                 | 2.5        | 4.7        |
| 40.0        | 107920                                                                                                                    | 94679                | 121160               | 12.3                                 | 2.7        | 4.6        |
| 45.0        | 86054                                                                                                                     | 74902                | 97207                | 13.0                                 | 2.9        | 4.5        |
| 50.0        | 69015                                                                                                                     | 59608                | 78423                | 13.6                                 | 3.1        | 4.3        |
| 55.0        | 55745                                                                                                                     | 47783                | 63706                | 14.3                                 | 3.4        | 4.2        |
| 60.0        | 45243                                                                                                                     | 38496                | 51990                | 14.9                                 | 3.6        | 4.1        |
| 65.0        | 36877                                                                                                                     | 31152                | 42602                | 15.5                                 | 3.8        | 4.1        |
| 70.0        | 30198                                                                                                                     | 25330                | 35066                | 16.1                                 | 4.1        | 4.0        |
| 75.0        | 24813                                                                                                                     | 20670                | 28956                | 16.7                                 | 4.3        | 3.9        |
| 80.0        | 20472                                                                                                                     | 16939                | 24005                | 17.3                                 | 4.6        | 3.8        |
| 85.0        | 16979                                                                                                                     | 13956                | 20002                | 17.8                                 | 4.8        | 3.7        |
| 90.0        | 14138                                                                                                                     | 11546                | 16730                | 18.3                                 | 5.1        | 3.6        |
| 95.0        | 11809                                                                                                                     | 9583                 | 14035                | 18.9                                 | 5.3        | 3.5        |
| 100.0       | 9899                                                                                                                      | 7983                 | 11815                | 19.4                                 | 5.6        | 3.5        |
| 105.0       | 8342                                                                                                                      | 6687                 | 9997                 | 19.8                                 | 5.8        | 3.4        |
| 110.0       | 7054                                                                                                                      | 5621                 | 8487                 | 20.3                                 | 6.1        | 3.3        |
| 115.0       | 5975                                                                                                                      | 4734                 | 7217                 | 20.8                                 | 6.4        | 3.3        |
| 120.0       | 5077                                                                                                                      | 3999                 | 6155                 | 21.2                                 | 6.6        | 3.2        |
| 125.0       | 4330                                                                                                                      | 3391                 | 5268                 | 21.7                                 | 6.9        | 3.1        |

|         | B57891M0334J000                                                                                                          |                      |                      |                                      |            |            |
|---------|--------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No. | 2007                                                                                                                     |                      |                      |                                      |            |            |
| T (°C)  | B <sub>25/100</sub> = 4830 K, R <sub>25</sub> = 330000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 5% |                      |                      |                                      |            |            |
|         | R <sub>nom</sub> [Ω]                                                                                                     | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0   | 61337000                                                                                                                 | 47308000             | 75366000             | 22.9                                 | 2.7        | 8.4        |
| -50.0   | 40665000                                                                                                                 | 31969000             | 49361000             | 21.4                                 | 2.7        | 8.1        |
| -45.0   | 27353000                                                                                                                 | 21893000             | 32813000             | 20.0                                 | 2.6        | 7.8        |
| -40.0   | 18660000                                                                                                                 | 15189000             | 22130000             | 18.6                                 | 2.5        | 7.5        |
| -35.0   | 12890000                                                                                                                 | 10661000             | 15119000             | 17.3                                 | 2.4        | 7.3        |
| -30.0   | 9016100                                                                                                                  | 7569600              | 10463000             | 16.0                                 | 2.3        | 7.0        |
| -25.0   | 6377600                                                                                                                  | 5431000              | 7324200              | 14.8                                 | 2.2        | 6.8        |
| -20.0   | 4561500                                                                                                                  | 3937000              | 5185900              | 13.7                                 | 2.1        | 6.6        |
| -15.0   | 3300400                                                                                                                  | 2885200              | 3715600              | 12.6                                 | 2.0        | 6.4        |
| -10.0   | 2411200                                                                                                                  | 2133600              | 2688800              | 11.5                                 | 1.8        | 6.2        |
| -5.0    | 1764000                                                                                                                  | 1579000              | 1949000              | 10.5                                 | 1.7        | 6.1        |
| 0.0     | 1303000                                                                                                                  | 1179200              | 1426700              | 9.5                                  | 1.6        | 5.9        |
| 5.0     | 976640                                                                                                                   | 893190               | 1060100              | 8.5                                  | 1.5        | 5.7        |
| 10.0    | 737820                                                                                                                   | 681570               | 794080               | 7.6                                  | 1.4        | 5.6        |
| 15.0    | 561020                                                                                                                   | 523230               | 598820               | 6.7                                  | 1.2        | 5.4        |
| 20.0    | 429690                                                                                                                   | 404430               | 454950               | 5.9                                  | 1.1        | 5.3        |
| 25.0    | <b>330000</b>                                                                                                            | <b>313500</b>        | <b>346500</b>        | <b>5.0</b>                           | <b>1.0</b> | <b>5.2</b> |
| 30.0    | 255950                                                                                                                   | 240970               | 270930               | 5.9                                  | 1.2        | 5.0        |
| 35.0    | 199670                                                                                                                   | 186440               | 212910               | 6.6                                  | 1.4        | 4.9        |
| 40.0    | 156740                                                                                                                   | 145180               | 168310               | 7.4                                  | 1.5        | 4.8        |
| 45.0    | 123860                                                                                                                   | 113820               | 133900               | 8.1                                  | 1.7        | 4.7        |
| 50.0    | 98415                                                                                                                    | 89745                | 107090               | 8.8                                  | 1.9        | 4.6        |
| 55.0    | 78419                                                                                                                    | 70974                | 85863                | 9.5                                  | 2.1        | 4.5        |
| 60.0    | 62836                                                                                                                    | 56454                | 69217                | 10.2                                 | 2.3        | 4.4        |
| 65.0    | 50673                                                                                                                    | 45201                | 56145                | 10.8                                 | 2.5        | 4.3        |
| 70.0    | 41059                                                                                                                    | 36368                | 45749                | 11.4                                 | 2.7        | 4.2        |
| 75.0    | 33433                                                                                                                    | 29411                | 37455                | 12.0                                 | 3.0        | 4.1        |
| 80.0    | 27344                                                                                                                    | 23893                | 30794                | 12.6                                 | 3.2        | 4.0        |
| 85.0    | 22441                                                                                                                    | 19481                | 25402                | 13.2                                 | 3.4        | 3.9        |
| 90.0    | 18490                                                                                                                    | 15948                | 21033                | 13.7                                 | 3.6        | 3.8        |
| 95.0    | 15305                                                                                                                    | 13118                | 17492                | 14.3                                 | 3.8        | 3.7        |
| 100.0   | 12716                                                                                                                    | 10832                | 14600                | 14.8                                 | 4.0        | 3.7        |
| 105.0   | 10616                                                                                                                    | 8988                 | 12243                | 15.3                                 | 4.3        | 3.6        |
| 110.0   | 8894                                                                                                                     | 7486                 | 10302                | 15.8                                 | 4.5        | 3.5        |
| 115.0   | 7477                                                                                                                     | 6257                 | 8697                 | 16.3                                 | 4.7        | 3.4        |
| 120.0   | 6307                                                                                                                     | 5248                 | 7366                 | 16.8                                 | 5.0        | 3.4        |
| 125.0   | 5346                                                                                                                     | 4424                 | 6269                 | 17.3                                 | 5.2        | 3.3        |

**Temperature measurement**
**B57891**
**Leaded NTC, lead spacing 2.5 mm**
**M891**

|             | <b>B57891M0334K000</b>                                                                                                    |                      |                      |                                      |            |            |
|-------------|---------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 2007                                                                                                                      |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 4830 K, R <sub>25</sub> = 330000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                      | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 61337000                                                                                                                  | 44241000             | 78433000             | 27.9                                 | 3.3        | 8.4        |
| -50.0       | 40665000                                                                                                                  | 29936000             | 51395000             | 26.4                                 | 3.3        | 8.1        |
| -45.0       | 27353000                                                                                                                  | 20525000             | 34181000             | 25.0                                 | 3.2        | 7.8        |
| -40.0       | 18660000                                                                                                                  | 14256000             | 23063000             | 23.6                                 | 3.1        | 7.5        |
| -35.0       | 12890000                                                                                                                  | 10016000             | 15764000             | 22.3                                 | 3.1        | 7.3        |
| -30.0       | 9016100                                                                                                                   | 7118800              | 10913000             | 21.0                                 | 3.0        | 7.0        |
| -25.0       | 6377600                                                                                                                   | 5112200              | 7643100              | 19.8                                 | 2.9        | 6.8        |
| -20.0       | 4561500                                                                                                                   | 3709000              | 5414000              | 18.7                                 | 2.8        | 6.6        |
| -15.0       | 3300400                                                                                                                   | 2720200              | 3880600              | 17.6                                 | 2.7        | 6.4        |
| -10.0       | 2411200                                                                                                                   | 2013000              | 2809400              | 16.5                                 | 2.6        | 6.2        |
| -5.0        | 1764000                                                                                                                   | 1490800              | 2037200              | 15.5                                 | 2.6        | 6.1        |
| 0.0         | 1303000                                                                                                                   | 1114100              | 1491900              | 14.5                                 | 2.5        | 5.9        |
| 5.0         | 976640                                                                                                                    | 844360               | 1108900              | 13.5                                 | 2.4        | 5.7        |
| 10.0        | 737820                                                                                                                    | 644670               | 830970               | 12.6                                 | 2.3        | 5.6        |
| 15.0        | 561020                                                                                                                    | 495180               | 626870               | 11.7                                 | 2.2        | 5.4        |
| 20.0        | 429690                                                                                                                    | 382940               | 476430               | 10.9                                 | 2.1        | 5.3        |
| <b>25.0</b> | <b>330000</b>                                                                                                             | <b>297000</b>        | <b>363000</b>        | <b>10.0</b>                          | <b>1.9</b> | <b>5.2</b> |
| 30.0        | 255950                                                                                                                    | 228180               | 283720               | 10.9                                 | 2.2        | 5.0        |
| 35.0        | 199670                                                                                                                    | 176460               | 222890               | 11.6                                 | 2.4        | 4.9        |
| 40.0        | 156740                                                                                                                    | 137340               | 176140               | 12.4                                 | 2.6        | 4.8        |
| 45.0        | 123860                                                                                                                    | 107630               | 140090               | 13.1                                 | 2.8        | 4.7        |
| 50.0        | 98415                                                                                                                     | 84824                | 112010               | 13.8                                 | 3.0        | 4.6        |
| 55.0        | 78419                                                                                                                     | 67053                | 89784                | 14.5                                 | 3.3        | 4.5        |
| 60.0        | 62836                                                                                                                     | 53313                | 72359                | 15.2                                 | 3.5        | 4.4        |
| 65.0        | 50673                                                                                                                     | 42667                | 58679                | 15.8                                 | 3.7        | 4.3        |
| 70.0        | 41059                                                                                                                     | 34316                | 47802                | 16.4                                 | 3.9        | 4.2        |
| 75.0        | 33433                                                                                                                     | 27739                | 39126                | 17.0                                 | 4.2        | 4.1        |
| 80.0        | 27344                                                                                                                     | 22526                | 32161                | 17.6                                 | 4.4        | 4.0        |
| 85.0        | 22441                                                                                                                     | 18359                | 26524                | 18.2                                 | 4.7        | 3.9        |
| 90.0        | 18490                                                                                                                     | 15024                | 21957                | 18.7                                 | 4.9        | 3.8        |
| 95.0        | 15305                                                                                                                     | 12353                | 18258                | 19.3                                 | 5.2        | 3.7        |
| 100.0       | 12716                                                                                                                     | 10196                | 15236                | 19.8                                 | 5.4        | 3.7        |
| 105.0       | 10616                                                                                                                     | 8457                 | 12774                | 20.3                                 | 5.7        | 3.6        |
| 110.0       | 8894                                                                                                                      | 7041                 | 10747                | 20.8                                 | 5.9        | 3.5        |
| 115.0       | 7477                                                                                                                      | 5883                 | 9071                 | 21.3                                 | 6.2        | 3.4        |
| 120.0       | 6307                                                                                                                      | 4932                 | 7681                 | 21.8                                 | 6.5        | 3.4        |
| 125.0       | 5346                                                                                                                      | 4157                 | 6536                 | 22.3                                 | 6.7        | 3.3        |

| B57891M0474J000 |                                                                                                                          |                       |                       |                                      |            |            |
|-----------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|--------------------------------------|------------|------------|
| R/T No.         | 2006                                                                                                                     |                       |                       |                                      |            |            |
| T (°C)          | B <sub>25/100</sub> = 5000 K, R <sub>25</sub> = 470000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 5% |                       |                       |                                      |            |            |
|                 | R <sub>nomL</sub> [Ω]                                                                                                    | R <sub>minL</sub> [Ω] | R <sub>maxL</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0           | 94260000                                                                                                                 | 72109000              | 116410000             | 23.5                                 | 2.7        | 8.7        |
| -50.0           | 61577000                                                                                                                 | 48056000              | 75099000              | 22.0                                 | 2.6        | 8.3        |
| -45.0           | 40971000                                                                                                                 | 32577000              | 49364000              | 20.5                                 | 2.6        | 7.9        |
| -40.0           | 27725000                                                                                                                 | 22436000              | 33013000              | 19.1                                 | 2.5        | 7.6        |
| -35.0           | 19056000                                                                                                                 | 15678000              | 22434000              | 17.7                                 | 2.4        | 7.3        |
| -30.0           | 13288000                                                                                                                 | 11105000              | 15471000              | 16.4                                 | 2.3        | 7.1        |
| -25.0           | 9398700                                                                                                                  | 7971300               | 10826000              | 15.2                                 | 2.2        | 6.9        |
| -20.0           | 6717300                                                                                                                  | 5777300               | 7657300               | 14.0                                 | 2.1        | 6.7        |
| -15.0           | 4864500                                                                                                                  | 4239600               | 5489300               | 12.8                                 | 2.0        | 6.5        |
| -10.0           | 3553900                                                                                                                  | 3136600               | 3971100               | 11.7                                 | 1.9        | 6.3        |
| -5.0            | 2601100                                                                                                                  | 2323400               | 2878900               | 10.7                                 | 1.7        | 6.1        |
| 0.0             | 1920400                                                                                                                  | 1735000               | 2105900               | 9.7                                  | 1.6        | 6.0        |
| 5.0             | 1427600                                                                                                                  | 1303800               | 1551300               | 8.7                                  | 1.5        | 5.8        |
| 10.0            | 1069700                                                                                                                  | 987190                | 1152200               | 7.7                                  | 1.4        | 5.7        |
| 15.0            | 807850                                                                                                                   | 752950                | 862750                | 6.8                                  | 1.2        | 5.5        |
| 20.0            | 614470                                                                                                                   | 578170                | 650770                | 5.9                                  | 1.1        | 5.4        |
| 25.0            | <b>470000</b>                                                                                                            | <b>446500</b>         | <b>493500</b>         | <b>5.0</b>                           | <b>0.9</b> | <b>5.3</b> |
| 30.0            | 361840                                                                                                                   | 340570                | 383120                | 5.9                                  | 1.1        | 5.2        |
| 35.0            | 279840                                                                                                                   | 261140                | 298540                | 6.7                                  | 1.3        | 5.1        |
| 40.0            | 217800                                                                                                                   | 201560                | 234050                | 7.5                                  | 1.5        | 4.9        |
| 45.0            | 170740                                                                                                                   | 156710                | 184760                | 8.2                                  | 1.7        | 4.8        |
| 50.0            | 134590                                                                                                                   | 122560                | 146630                | 8.9                                  | 1.9        | 4.7        |
| 55.0            | 106310                                                                                                                   | 96055                 | 116570                | 9.6                                  | 2.1        | 4.6        |
| 60.0            | 84476                                                                                                                    | 75745                 | 93207                 | 10.3                                 | 2.3        | 4.5        |
| 65.0            | 67584                                                                                                                    | 60149                 | 75019                 | 11.0                                 | 2.5        | 4.4        |
| 70.0            | 54330                                                                                                                    | 48002                 | 60658                 | 11.6                                 | 2.7        | 4.3        |
| 75.0            | 43849                                                                                                                    | 38467                 | 49232                 | 12.3                                 | 2.9        | 4.2        |
| 80.0            | 35543                                                                                                                    | 30963                 | 40122                 | 12.9                                 | 3.1        | 4.1        |
| 85.0            | 28961                                                                                                                    | 25057                 | 32864                 | 13.5                                 | 3.3        | 4.1        |
| 90.0            | 23695                                                                                                                    | 20364                 | 27025                 | 14.1                                 | 3.5        | 4.0        |
| 95.0            | 19520                                                                                                                    | 16667                 | 22373                 | 14.6                                 | 3.8        | 3.9        |
| 100.0           | 16147                                                                                                                    | 13699                 | 18595                 | 15.2                                 | 4.0        | 3.8        |
| 105.0           | 13407                                                                                                                    | 11303                 | 15511                 | 15.7                                 | 4.2        | 3.7        |
| 110.0           | 11174                                                                                                                    | 9362                  | 12985                 | 16.2                                 | 4.5        | 3.6        |
| 115.0           | 9330                                                                                                                     | 7771                  | 10890                 | 16.7                                 | 4.7        | 3.6        |
| 120.0           | 7817                                                                                                                     | 6472                  | 9162                  | 17.2                                 | 4.9        | 3.5        |
| 125.0           | 6587                                                                                                                     | 5422                  | 7753                  | 17.7                                 | 5.2        | 3.4        |

**Temperature measurement**
**B57891**
**Leaded NTC, lead spacing 2.5 mm**
**M891**

|             | <b>B57891M0474K000</b>                                                                                                    |                      |                      |                                      |            |            |
|-------------|---------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------------------------------|------------|------------|
| R/T No.     | 2006                                                                                                                      |                      |                      |                                      |            |            |
| T (°C)      | B <sub>25/100</sub> = 5000 K, R <sub>25</sub> = 470000 Ω, T <sub>R</sub> = 25 °C, ΔR <sub>R</sub> /R <sub>R</sub> = ± 10% |                      |                      |                                      |            |            |
|             | R <sub>nom</sub> [Ω]                                                                                                      | R <sub>min</sub> [Ω] | R <sub>max</sub> [Ω] | ΔR <sub>R</sub> /R <sub>R</sub> [±%] | ΔT[±°C]    | α (%/K)    |
| -55.0       | 94260000                                                                                                                  | 67396000             | 121120000            | 28.5                                 | 3.3        | 8.7        |
| -50.0       | 61577000                                                                                                                  | 44977000             | 78178000             | 27.0                                 | 3.3        | 8.3        |
| -45.0       | 40971000                                                                                                                  | 30529000             | 51412000             | 25.5                                 | 3.2        | 7.9        |
| -40.0       | 27725000                                                                                                                  | 21050000             | 34399000             | 24.1                                 | 3.2        | 7.6        |
| -35.0       | 19056000                                                                                                                  | 14725000             | 23387000             | 22.7                                 | 3.1        | 7.3        |
| -30.0       | 13288000                                                                                                                  | 10440000             | 16135000             | 21.4                                 | 3.0        | 7.1        |
| -25.0       | 9398700                                                                                                                   | 7501400              | 11296000             | 20.2                                 | 2.9        | 6.9        |
| -20.0       | 6717300                                                                                                                   | 5441500              | 7993100              | 19.0                                 | 2.9        | 6.7        |
| -15.0       | 4864500                                                                                                                   | 3996400              | 5732600              | 17.8                                 | 2.8        | 6.5        |
| -10.0       | 3553900                                                                                                                   | 2958900              | 4148800              | 16.7                                 | 2.7        | 6.3        |
| -5.0        | 2601100                                                                                                                   | 2193300              | 3008900              | 15.7                                 | 2.6        | 6.1        |
| 0.0         | 1920400                                                                                                                   | 1639000              | 2201900              | 14.7                                 | 2.5        | 6.0        |
| 5.0         | 1427600                                                                                                                   | 1232500              | 1622700              | 13.7                                 | 2.3        | 5.8        |
| 10.0        | 1069700                                                                                                                   | 933700               | 1205700              | 12.7                                 | 2.2        | 5.7        |
| 15.0        | 807850                                                                                                                    | 712560               | 903140               | 11.8                                 | 2.1        | 5.5        |
| 20.0        | 614470                                                                                                                    | 547440               | 681500               | 10.9                                 | 2.0        | 5.4        |
| <b>25.0</b> | <b>470000</b>                                                                                                             | <b>423000</b>        | <b>517000</b>        | <b>10.0</b>                          | <b>1.9</b> | <b>5.3</b> |
| 30.0        | 361840                                                                                                                    | 322480               | 401210               | 10.9                                 | 2.1        | 5.2        |
| 35.0        | 279840                                                                                                                    | 247140               | 312530               | 11.7                                 | 2.3        | 5.1        |
| 40.0        | 217800                                                                                                                    | 190670               | 244940               | 12.5                                 | 2.5        | 4.9        |
| 45.0        | 170740                                                                                                                    | 148180               | 193300               | 13.2                                 | 2.7        | 4.8        |
| 50.0        | 134590                                                                                                                    | 115830               | 153360               | 13.9                                 | 2.9        | 4.7        |
| 55.0        | 106310                                                                                                                    | 90739                | 121890               | 14.6                                 | 3.2        | 4.6        |
| 60.0        | 84476                                                                                                                     | 71521                | 97431                | 15.3                                 | 3.4        | 4.5        |
| 65.0        | 67584                                                                                                                     | 56770                | 78398                | 16.0                                 | 3.6        | 4.4        |
| 70.0        | 54330                                                                                                                     | 45285                | 63375                | 16.6                                 | 3.8        | 4.3        |
| 75.0        | 43849                                                                                                                     | 36274                | 51424                | 17.3                                 | 4.1        | 4.2        |
| 80.0        | 35543                                                                                                                     | 29186                | 41900                | 17.9                                 | 4.3        | 4.1        |
| 85.0        | 28961                                                                                                                     | 23609                | 34312                | 18.5                                 | 4.6        | 4.1        |
| 90.0        | 23695                                                                                                                     | 19180                | 28210                | 19.1                                 | 4.8        | 4.0        |
| 95.0        | 19520                                                                                                                     | 15691                | 23349                | 19.6                                 | 5.1        | 3.9        |
| 100.0       | 16147                                                                                                                     | 12891                | 19402                | 20.2                                 | 5.3        | 3.8        |
| 105.0       | 13407                                                                                                                     | 10632                | 16181                | 20.7                                 | 5.6        | 3.7        |
| 110.0       | 11174                                                                                                                     | 8804                 | 13544                | 21.2                                 | 5.8        | 3.6        |
| 115.0       | 9330                                                                                                                      | 7304                 | 11356                | 21.7                                 | 6.1        | 3.6        |
| 120.0       | 7817                                                                                                                      | 6081                 | 9553                 | 22.2                                 | 6.4        | 3.5        |
| 125.0       | 6587                                                                                                                      | 5093                 | 8082                 | 22.7                                 | 6.6        | 3.4        |

## Cautions and warnings

### General

See "Important notes" at the end of this document.

### Storage

- Store thermistors only in original packaging. Do not open the package before storage.
- Storage conditions in original packaging: storage temperature  $-25\text{ }^{\circ}\text{C} \dots +45\text{ }^{\circ}\text{C}$ , relative humidity  $\leq 75\%$  annual mean, maximum 95%, dew precipitation is inadmissible.
- Do not store SMDs where they are exposed to heat or direct sunlight. Otherwise, the packing material may be deformed or SMDs may stick together, causing problems during mounting.
- Avoid contamination of thermistors surface during storage, handling and processing.
- Avoid storage of thermistor in harmful environments like corrosive gases (SO<sub>x</sub>, Cl etc).
- After opening the factory seals, such as polyvinyl-sealed packages, use the SMDs as soon as possible.
- Solder thermistors after shipment from EPCOS within the time specified:  
SMDs: 12 months  
Leaded components: 24 months

### Handling

- NTC thermistors must not be dropped. Chip-offs must not be caused during handling of NTCs.
- Components must not be touched with bare hands. Gloves are recommended.
- Avoid contamination of thermistor surface during handling.

### Soldering

- Use resin-type flux or non-activated flux.
- Insufficient preheating may cause ceramic cracks.
- Rapid cooling by dipping in solvent is not recommended.
- Complete removal of flux is recommended.

### Mounting

- When NTC thermistors are encapsulated with sealing material or overmolded with plastic material, the precautions given in chapter "Mounting instructions", "Sealing, potting and overmolding" must be observed.
- Electrode must not be scratched before/during/after the mounting process.
- Contacts and housings used for assembly with thermistor have to be clean before mounting.
- During operation, the thermistor's surface temperature can be very high (ICL). Ensure that adjacent components are placed at a sufficient distance from the thermistor to allow for proper cooling of the thermistors.
- Ensure that adjacent materials are designed for operation at temperatures comparable to the surface temperature of the thermistor. Be sure that surrounding parts and materials can withstand this temperature.
- Make sure that thermistors (ICLs) are adequately ventilated to avoid overheating.
- Avoid contamination of thermistor surface during processing.

## Operation

- Use thermistors only within the specified operating temperature range.
- Use thermistors only within the specified voltage and current ranges (ICLs).
- Environmental conditions must not harm the thermistors. Use thermistors only in normal atmospheric conditions.
- Contact of NTC thermistors with any liquids and solvents should be prevented. It must be ensured that no water enters the NTC thermistor (e.g. through plug terminals). For measurement purposes (checking the specified resistance vs. temperature), the component must not be immersed in water but in suitable liquids (e.g. Galden).
- Avoid dewing and condensation.
- Be sure to provide an appropriate fail-safe function to prevent secondary product damage caused by malfunction (e.g. use VDR for limitation of overvoltage condition).

## Important notes

The following applies to all products named in this publication:

1. Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application**. As a rule, EPCOS is either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether an EPCOS product with the properties described in the product specification is suitable for use in a particular customer application.
2. We also point out that **in individual cases, a malfunction of passive electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified**. In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of a passive electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of a passive electronic component.
3. **The warnings, cautions and product-specific notes must be observed.**
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