

# NDBG

## Glass-sealed axial lead NTC thermistor



### Product features

- Highly heat-resistant
- Glass-sealed, high-reliability, axial lead thermistor
- Faster thermal response
- Non-linear change in resistance vs temperature

### Packaging information

- Bulk: 500 parts per poly bag

### Applications

- Industrial process control
- Commercial appliances
- Battery, supercapacitor and energy storage systems
- Uninterruptible power supplies
- Consumer appliances
- Medical devices
- Heating, ventilation and air conditioning, refrigeration (HVACR)
- Food service equipment
- IoT

### Environmental compliance and general specifications

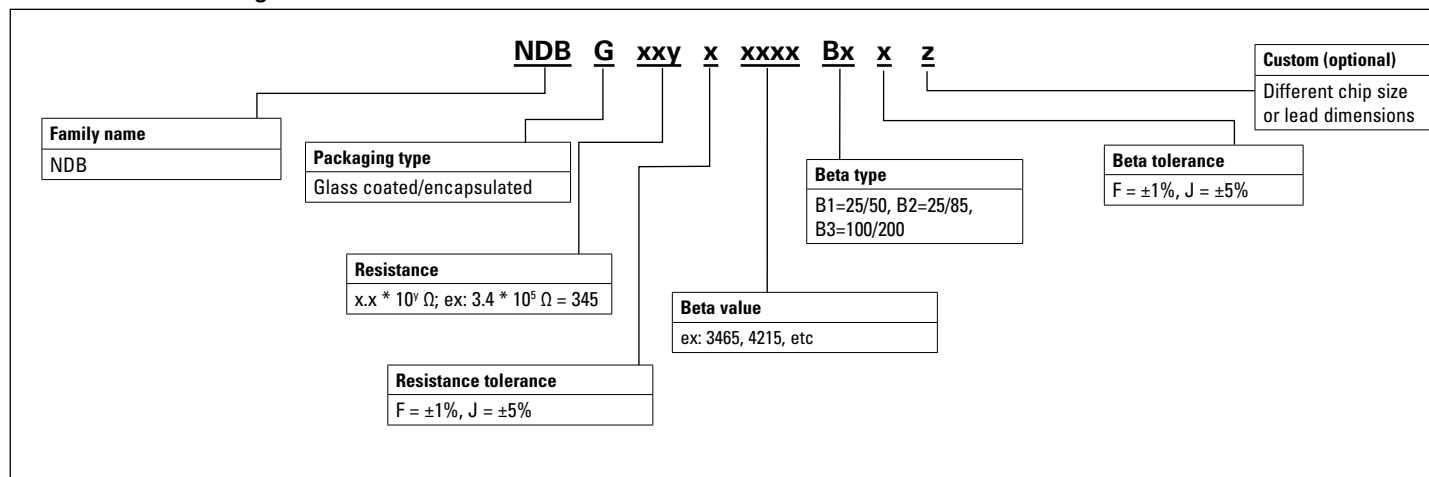


### Agency information

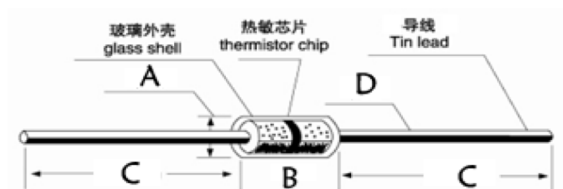
- cURus recognition file: E343021



Table 1. Part numbering



## Mechanical parameters- mm/inches



| Dimension | Millimeters |         | Inches  |         |
|-----------|-------------|---------|---------|---------|
|           | Minimum     | Maximum | Minimum | Maximum |
| A         | 1.6         | 2.0     | 0.063   | 0.079   |
| B         | 3.3         | 4.3     | 0.130   | 0.169   |
| C         | 26          | 30      | 1.024   | 1.181   |
| D         | 0.45        | 0.55    | 0.018   | 0.022   |

## Electrical specifications

| Part number     | Rated temperature | Resistance (kΩ) | Beta value (K) | Beta type | UL |
|-----------------|-------------------|-----------------|----------------|-----------|----|
| NDBG503?3440B1* | +25°C             | 5               | 3440           | B25/50    |    |
| NDBG104?3380B1* | +25°C             | 10              | 3380           | B25/50    |    |
| NDBG104?3435B2* | +25°C             | 10              | 3435           | B25/85    |    |
| NDBG104?3470B1* | +25°C             | 10              | 3470           | B25/50    |    |
| NDBG104?3950B1* | +25°C             | 10              | 3950           | B25/50    |    |
| NDBG504?3820B2* | +25°C             | 50              | 3820           | B25/85    |    |
| NDBG504?3950B1* | +25°C             | 50              | 3950           | B25/50    |    |
| NDBG105?3950B1* | +25°C             | 100             | 3950           | B25/50    | x  |
| NDBG105?3990B1* | +25°C             | 100             | 3990           | B25/50    | x  |
| NDBG105?4150B1* | +25°C             | 100             | 4150           | B25/50    | x  |
| NDBG105?4200B1* | +25°C             | 100             | 4200           | B25/50    | x  |
| NDBG205?4325B2* | +25°C             | 200             | 4325           | B25/85    |    |
| NDBG265?4250B1* | +25°C             | 260             | 4250           | B25/50    |    |
| NDBG593?3820B2* | +85°C             | 5.91            | 3820           | B25/85    |    |
| NDBG663?4025B2* | +100°C            | 6.6             | 4025           | B25/85    |    |
| NDBG553?3950B1* | +106°C            | 5.49            | 3950           | B25/50    |    |
| NDBG353?4300B2* | +114°C            | 3.4513          | 4300           | B25/85    |    |
| NDBG103?4595B3* | +200°C            | 1               | 4595           | B100/200  |    |

?= Enter resistance tolerance codes (F = ±1%, J = ±5%)

\*= Enter Beta tolerance codes (F = ±1%, J = ±5%)

Dissipation coefficient: ≈0.9 mW/ °C

Thermal time constant: ≤10 s

Withstand voltage: 300 Vac/1 mA/60 s

Operation temperature: -40 °C to +250 °C

# Temperature characteristics

| Part number         | NDBG503?3440B1*    | NDBG104?3380B1<br>NDBG104?3435B2* | NDBG104?3470B1*    | NDBG104?3950B1*    | NDBG504?3820B2*    |
|---------------------|--------------------|-----------------------------------|--------------------|--------------------|--------------------|
| Resistance          | 5K(25 °C)          | 10K(25 °C)                        | 10K(25 °C)         | 10K(25 °C)         | 50K(25 °C)         |
| Beta Value          | B25/50=3440        | B25/50=3380<br>B25/85=3435        | B25/50=3470        | B25/50=3950        | B25/85=3820        |
| Temperature<br>(°C) | Resistance<br>(kΩ) | Resistance<br>(kΩ)                | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) |
| -40                 | 83.93              | 206.24                            | 222.88             | 308.14             | 1368.58            |
| -39                 | 79.7               | 194.75                            | 210.15             | 289.29             | 1286.81            |
| -38                 | 75.71              | 183.98                            | 198.23             | 271.7              | 1210.44            |
| -37                 | 71.95              | 173.88                            | 187.06             | 255.29             | 1139.08            |
| -36                 | 68.39              | 164.4                             | 176.61             | 239.97             | 1072.37            |
| -35                 | 65.03              | 155.5                             | 166.8              | 225.65             | 1009.98            |
| -34                 | 61.86              | 147.15                            | 157.61             | 212.27             | 951.6              |
| -33                 | 58.85              | 139.3                             | 148.98             | 199.76             | 896.95             |
| -32                 | 56.01              | 131.92                            | 140.89             | 188.07             | 845.77             |
| -31                 | 53.33              | 124.98                            | 133.28             | 177.12             | 797.82             |
| -30                 | 50.78              | 118.45                            | 126.14             | 166.87             | 752.88             |
| -29                 | 48.41              | 112.3                             | 119.44             | 157.36             | 710.73             |
| -28                 | 46.16              | 106.52                            | 113.14             | 148.44             | 671.2              |
| -27                 | 44.03              | 101.07                            | 107.21             | 140.07             | 634.1              |
| -26                 | 42                 | 95.93                             | 101.63             | 132.22             | 599.27             |
| -25                 | 40.08              | 91.09                             | 96.37              | 124.85             | 566.56             |
| -24                 | 38.25              | 86.52                             | 91.42              | 117.92             | 535.82             |
| -23                 | 36.52              | 82.21                             | 86.76              | 111.42             | 506.93             |
| -22                 | 34.87              | 78.14                             | 82.36              | 105.31             | 479.76             |
| -21                 | 33.31              | 74.3                              | 78.21              | 99.56              | 454.2              |
| -20                 | 31.82              | 70.68                             | 74.3               | 94.16              | 430.16             |
| -19                 | 30.46              | 67.26                             | 70.61              | 89.12              | 407.45             |
| -18                 | 29.16              | 64.04                             | 67.12              | 84.36              | 386.07             |
| -17                 | 27.92              | 60.98                             | 63.82              | 79.89              | 365.93             |
| -16                 | 26.74              | 58.1                              | 60.71              | 75.67              | 346.97             |
| -15                 | 25.61              | 55.36                             | 57.77              | 71.69              | 329.09             |
| -14                 | 24.53              | 52.77                             | 54.99              | 67.94              | 312.23             |
| -13                 | 23.5               | 50.32                             | 52.36              | 64.41              | 296.34             |
| -12                 | 22.51              | 47.99                             | 49.87              | 61.07              | 281.34             |
| -11                 | 21.57              | 45.79                             | 47.51              | 57.92              | 267.19             |
| -10                 | 20.67              | 43.7                              | 45.28              | 54.95              | 253.82             |
| -9                  | 19.82              | 41.71                             | 43.17              | 52.11              | 241.12             |
| -8                  | 19.01              | 39.82                             | 41.16              | 49.43              | 229.13             |
| -7                  | 18.23              | 38.03                             | 39.26              | 46.9               | 217.81             |
| -6                  | 17.48              | 36.33                             | 37.46              | 44.52              | 207.11             |
| -5                  | 16.77              | 34.71                             | 35.75              | 42.27              | 197                |
| -4                  | 16.09              | 33.18                             | 34.13              | 40.14              | 187.44             |
| -3                  | 15.43              | 31.72                             | 32.59              | 38.13              | 178.4              |
| -2                  | 14.81              | 30.34                             | 31.13              | 36.23              | 169.85             |
| -1                  | 14.21              | 29.02                             | 29.75              | 34.43              | 161.76             |
| 0                   | 13.64              | 27.77                             | 28.43              | 32.74              | 154.09             |
| 1                   | 13.07              | 26.58                             | 27.18              | 31.11              | 146.82             |
| 2                   | 12.53              | 25.44                             | 25.99              | 29.57              | 139.93             |
| 3                   | 12.01              | 24.36                             | 24.86              | 28.11              | 133.41             |
| 4                   | 11.51              | 23.33                             | 23.79              | 26.74              | 127.22             |
| 5                   | 11.04              | 22.35                             | 22.77              | 25.44              | 121.36             |
| 6                   | 10.59              | 21.41                             | 21.79              | 24.21              | 115.8              |
| 7                   | 10.17              | 20.52                             | 20.87              | 23.05              | 110.53             |
| 8                   | 9.76               | 19.68                             | 19.99              | 21.95              | 105.53             |
| 9                   | 9.37               | 18.87                             | 19.15              | 20.91              | 100.78             |
| 10                  | 8.99               | 18.1                              | 18.36              | 19.93              | 96.27              |
| 11                  | 8.63               | 17.37                             | 17.6               | 18.99              | 91.99              |
| 12                  | 8.29               | 16.67                             | 16.87              | 18.11              | 87.93              |
| 13                  | 7.97               | 16.01                             | 16.18              | 17.27              | 84.06              |
| 14                  | 7.66               | 15.37                             | 15.53              | 16.48              | 80.39              |
| 15                  | 7.36               | 14.76                             | 14.9               | 15.73              | 76.9               |
| 16                  | 7.07               | 14.18                             | 14.3               | 15.01              | 73.57              |
| 17                  | 6.8                | 13.63                             | 13.73              | 14.33              | 70.41              |
| 18                  | 6.54               | 13.1                              | 13.19              | 13.69              | 67.4               |
| 19                  | 6.29               | 12.6                              | 12.67              | 13.08              | 64.54              |

**Temperature characteristics, cont.**

|    |        |        |        |        |       |
|----|--------|--------|--------|--------|-------|
| 20 | 6.05   | 12.11  | 12.17  | 12.5   | 61.82 |
| 21 | 5.82   | 11.65  | 11.7   | 11.95  | 59.22 |
| 22 | 5.6    | 11.21  | 11.24  | 11.42  | 56.75 |
| 23 | 5.39   | 10.79  | 10.81  | 10.92  | 54.39 |
| 24 | 5.19   | 10.39  | 10.4   | 10.45  | 52.14 |
| 25 | 5      | 10     | 10     | 10     | 50    |
| 26 | 4.8151 | 9.63   | 9.62   | 9.57   | 47.96 |
| 27 | 4.6338 | 9.28   | 9.26   | 9.16   | 45.98 |
| 28 | 4.4605 | 8.94   | 8.91   | 8.77   | 44.1  |
| 29 | 4.2945 | 8.62   | 8.58   | 8.39   | 42.31 |
| 30 | 4.136  | 8.31   | 8.26   | 8.04   | 40.6  |
| 31 | 3.9842 | 8.01   | 7.96   | 7.7    | 38.97 |
| 32 | 3.839  | 7.73   | 7.67   | 7.38   | 37.42 |
| 33 | 3.7    | 7.45   | 7.39   | 7.08   | 35.94 |
| 34 | 3.5668 | 7.19   | 7.12   | 6.78   | 34.52 |
| 35 | 3.4394 | 6.94   | 6.87   | 6.51   | 33.18 |
| 36 | 3.3172 | 6.7    | 6.62   | 6.24   | 31.89 |
| 37 | 3.2002 | 6.47   | 6.39   | 5.99   | 30.66 |
| 38 | 3.088  | 6.24   | 6.16   | 5.75   | 29.48 |
| 39 | 2.9804 | 6.03   | 5.94   | 5.52   | 28.36 |
| 40 | 2.8772 | 5.82   | 5.74   | 5.3    | 27.28 |
| 41 | 2.7783 | 5.63   | 5.54   | 5.09   | 26.26 |
| 42 | 2.6833 | 5.44   | 5.34   | 4.894  | 25.28 |
| 43 | 2.5922 | 5.26   | 5.16   | 4.7037 | 24.34 |
| 44 | 2.5047 | 5.08   | 4.9842 | 4.522  | 23.44 |
| 45 | 2.4207 | 4.9117 | 4.8145 | 4.3484 | 22.58 |
| 46 | 2.34   | 4.7495 | 4.6514 | 4.1825 | 21.76 |
| 47 | 2.2625 | 4.5936 | 4.4947 | 4.0238 | 20.97 |
| 48 | 2.1881 | 4.4436 | 4.3441 | 3.8722 | 20.21 |
| 49 | 2.1165 | 4.2991 | 4.1992 | 3.7271 | 19.49 |
| 50 | 2.0477 | 4.1601 | 4.0599 | 3.5883 | 18.79 |
| 51 | 1.9804 | 4.0263 | 3.9263 | 3.4542 | 18.12 |
| 52 | 1.9157 | 3.8974 | 3.7978 | 3.3257 | 17.48 |
| 53 | 1.8534 | 3.7733 | 3.6741 | 3.2027 | 16.86 |
| 54 | 1.7934 | 3.6537 | 3.5552 | 3.0848 | 16.27 |
| 55 | 1.7356 | 3.5384 | 3.4407 | 2.9718 | 15.7  |
| 56 | 1.68   | 3.4274 | 3.3305 | 2.8636 | 15.15 |
| 57 | 1.6264 | 3.3204 | 3.2243 | 2.7598 | 14.63 |
| 58 | 1.5748 | 3.2173 | 3.1222 | 2.6603 | 14.12 |
| 59 | 1.525  | 3.1178 | 3.0236 | 2.5649 | 13.64 |
| 60 | 1.477  | 3.022  | 2.9288 | 2.4733 | 13.17 |
| 61 | 1.4308 | 2.9295 | 2.8374 | 2.3855 | 12.73 |
| 62 | 1.3861 | 2.8403 | 2.7493 | 2.3013 | 12.3  |
| 63 | 1.3431 | 2.7541 | 2.6644 | 2.2203 | 11.88 |
| 64 | 1.3016 | 2.6711 | 2.5825 | 2.1427 | 11.49 |
| 65 | 1.2616 | 2.5908 | 2.5036 | 2.0681 | 11.1  |
| 66 | 1.223  | 2.5135 | 2.4275 | 1.9966 | 10.74 |
| 67 | 1.1858 | 2.4387 | 2.354  | 1.9277 | 10.38 |
| 68 | 1.1498 | 2.3666 | 2.2832 | 1.8617 | 10.04 |
| 69 | 1.1151 | 2.2968 | 2.2148 | 1.7981 | 9.71  |
| 70 | 1.0816 | 2.2294 | 2.1488 | 1.7371 | 9.4   |
| 71 | 1.0492 | 2.1644 | 2.0851 | 1.6784 | 9.1   |
| 72 | 1.0179 | 2.1016 | 2.0236 | 1.622  | 8.8   |
| 73 | 0.9877 | 2.0408 | 1.9642 | 1.5677 | 8.52  |
| 74 | 0.9586 | 1.9821 | 1.9068 | 1.5156 | 8.25  |
| 75 | 0.9304 | 1.9253 | 1.8514 | 1.4653 | 7.99  |
| 76 | 0.9031 | 1.8704 | 1.7979 | 1.417  | 7.74  |
| 77 | 0.8768 | 1.8173 | 1.7461 | 1.3705 | 7.49  |
| 78 | 0.8515 | 1.766  | 1.6962 | 1.3257 | 7.26  |
| 79 | 0.8268 | 1.7163 | 1.6478 | 1.2826 | 7.03  |

Temperature characteristics, cont.

|     |        |        |        |        |        |
|-----|--------|--------|--------|--------|--------|
| 80  | 0.803  | 1.6683 | 1.601  | 1.2411 | 6.82   |
| 81  | 0.78   | 1.6218 | 1.5559 | 1.2012 | 6.61   |
| 82  | 0.7578 | 1.5768 | 1.5122 | 1.1627 | 6.4    |
| 83  | 0.7362 | 1.5333 | 1.4699 | 1.1256 | 6.21   |
| 84  | 0.7154 | 1.4911 | 1.429  | 1.0899 | 6.02   |
| 85  | 0.6953 | 1.4503 | 1.3895 | 1.0555 | 5.84   |
| 86  | 0.6761 | 1.4099 | 1.3495 | 1.0231 | 5.66   |
| 87  | 0.6575 | 1.3708 | 1.3108 | 0.9918 | 5.48   |
| 88  | 0.6396 | 1.3329 | 1.2734 | 0.9617 | 5.31   |
| 89  | 0.6221 | 1.2963 | 1.2371 | 0.9327 | 5.15   |
| 90  | 0.6053 | 1.2607 | 1.202  | 0.9047 | 4.9915 |
| 91  | 0.589  | 1.2263 | 1.1679 | 0.8777 | 4.8391 |
| 92  | 0.5731 | 1.1929 | 1.135  | 0.8516 | 4.6918 |
| 93  | 0.5579 | 1.1606 | 1.1032 | 0.8265 | 4.5495 |
| 94  | 0.543  | 1.1291 | 1.0722 | 0.8022 | 4.4119 |
| 95  | 0.5287 | 1.0988 | 1.0422 | 0.7787 | 4.2791 |
| 96  | 0.5148 | 1.0693 | 1.0133 | 0.756  | 4.1506 |
| 97  | 0.5012 | 1.0407 | 0.9851 | 0.7342 | 4.0265 |
| 98  | 0.4881 | 1.0131 | 0.9579 | 0.7131 | 3.9064 |
| 99  | 0.4754 | 0.9861 | 0.9315 | 0.6927 | 3.7903 |
| 100 | 0.4632 | 0.9601 | 0.9059 | 0.6729 | 3.678  |
| 101 | 0.4509 | 0.9348 | 0.8814 | 0.6536 | 3.5695 |
| 102 | 0.439  | 0.9102 | 0.8576 | 0.635  | 3.4645 |
| 103 | 0.4276 | 0.8864 | 0.8346 | 0.6169 | 3.3629 |
| 104 | 0.4164 | 0.8633 | 0.8122 | 0.5995 | 3.2646 |
| 105 | 0.4056 | 0.8408 | 0.7906 | 0.5826 | 3.1695 |
| 106 | 0.3951 | 0.8191 | 0.7695 | 0.5663 | 3.0775 |
| 107 | 0.3853 | 0.7989 | 0.7491 | 0.5505 | 2.9903 |
| 108 | 0.3757 | 0.7794 | 0.7293 | 0.5352 | 2.9058 |
| 109 | 0.3664 | 0.7604 | 0.7101 | 0.5204 | 2.824  |
| 110 | 0.3574 | 0.742  | 0.6914 | 0.5062 | 2.7448 |
| 111 | 0.3487 | 0.7241 | 0.6733 | 0.4923 | 2.6682 |
| 112 | 0.3402 | 0.7067 | 0.6558 | 0.4789 | 2.5939 |
| 113 | 0.332  | 0.6898 | 0.6387 | 0.4659 | 2.522  |
| 114 | 0.3239 | 0.6733 | 0.6223 | 0.4533 | 2.4523 |
| 115 | 0.3161 | 0.6556 | 0.6062 | 0.4412 | 2.3855 |
| 116 | 0.3084 | 0.6384 | 0.5906 | 0.4294 | 2.3209 |
| 117 | 0.301  | 0.6217 | 0.5754 | 0.4179 | 2.2583 |
| 118 | 0.2938 | 0.6053 | 0.5607 | 0.4069 | 2.1976 |
| 119 | 0.2868 | 0.5895 | 0.5465 | 0.3962 | 2.1387 |
| 120 | 0.28   | 0.5742 | 0.5326 | 0.3858 | 2.0817 |
| 121 | 0.2734 | 0.5593 | 0.519  | 0.3756 | 2.0263 |
| 122 | 0.267  | 0.5447 | 0.5059 | 0.3659 | 1.9727 |
| 123 | 0.2607 | 0.5307 | 0.4932 | 0.3564 | 1.9205 |
| 124 | 0.2546 | 0.5169 | 0.4808 | 0.3472 | 1.8701 |
| 125 | 0.2487 | 0.5036 | 0.4688 | 0.3383 | 1.8212 |
| 126 | 0.2429 | 0.4913 | 0.4572 | 0.3297 | 1.7736 |
| 127 | 0.2374 | 0.4795 | 0.4458 | 0.3213 | 1.7274 |
| 128 | 0.2319 | 0.4679 | 0.4347 | 0.3131 | 1.6827 |
| 129 | 0.2266 | 0.4566 | 0.424  | 0.3052 | 1.6393 |
| 130 | 0.2215 | 0.4457 | 0.4135 | 0.2976 | 1.5972 |
| 131 | 0.2164 | 0.4351 | 0.4035 | 0.2901 | 1.5562 |
| 132 | 0.2115 | 0.4248 | 0.3937 | 0.2829 | 1.5165 |
| 133 | 0.2067 | 0.4149 | 0.3842 | 0.276  | 1.4779 |
| 134 | 0.2021 | 0.4052 | 0.3749 | 0.2692 | 1.4405 |
| 135 | 0.1976 | 0.3958 | 0.3659 | 0.2625 | 1.4041 |
| 136 | 0.1932 | 0.3865 | 0.3571 | 0.2561 | 1.3688 |
| 137 | 0.189  | 0.3775 | 0.3486 | 0.2498 | 1.3345 |
| 138 | 0.1848 | 0.3688 | 0.3403 | 0.2438 | 1.3012 |
| 139 | 0.1807 | 0.3603 | 0.3323 | 0.2379 | 1.2687 |

**Temperature characteristics, cont.**

|     |        |        |        |        |        |
|-----|--------|--------|--------|--------|--------|
| 140 | 0.1768 | 0.3521 | 0.3245 | 0.2322 | 1.2373 |
| 141 | 0.1729 | 0.344  | 0.3167 | 0.2267 | 1.2067 |
| 142 | 0.1692 | 0.3361 | 0.3093 | 0.2213 | 1.177  |
| 143 | 0.1655 | 0.3285 | 0.302  | 0.216  | 1.1481 |
| 144 | 0.162  | 0.321  | 0.295  | 0.2109 | 1.12   |
| 145 | 0.1584 | 0.3138 | 0.2882 | 0.2059 | 1.0927 |
| 146 | 0.155  | 0.3067 | 0.2814 | 0.2012 | 1.0661 |
| 147 | 0.1517 | 0.2998 | 0.2749 | 0.1965 | 1.0403 |
| 148 | 0.1485 | 0.2931 | 0.2686 | 0.1919 | 1.0152 |
| 149 | 0.1455 | 0.2865 | 0.2624 | 0.1875 | 0.9908 |
| 150 | 0.1424 | 0.2802 | 0.2564 | 0.1832 | 0.967  |
| 151 | 0.1394 | 0.274  | 0.2507 | 0.1789 | 0.9439 |
| 152 | 0.1365 | 0.268  | 0.245  | 0.1749 | 0.9215 |
| 153 | 0.1337 | 0.2623 | 0.2396 | 0.1709 | 0.8996 |
| 154 | 0.131  | 0.2566 | 0.2343 | 0.167  | 0.8783 |
| 155 | 0.1283 | 0.2511 | 0.229  | 0.1632 | 0.8576 |
| 156 | 0.1256 | 0.2457 | 0.224  | 0.1596 | 0.8375 |
| 157 | 0.1232 | 0.2405 | 0.2191 | 0.1559 | 0.8178 |
| 158 | 0.1207 | 0.2353 | 0.2143 | 0.1525 | 0.7987 |
| 159 | 0.1182 | 0.2303 | 0.2096 | 0.1491 | 0.7802 |
| 160 | 0.1158 | 0.2254 | 0.205  | 0.1458 | 0.7621 |
| 161 | 0.1136 | 0.2207 | 0.2006 | 0.1426 | 0.7445 |
| 162 | 0.1113 | 0.216  | 0.1963 | 0.1394 | 0.7273 |
| 163 | 0.109  | 0.2115 | 0.192  | 0.1364 | 0.7106 |
| 164 | 0.1069 | 0.2071 | 0.1879 | 0.1334 | 0.6943 |
| 165 | 0.1048 | 0.2027 | 0.1838 | 0.1305 | 0.6785 |
| 166 | 0.1027 | 0.1985 | 0.1799 | 0.1277 | 0.6631 |
| 167 | 0.1008 | 0.1943 | 0.1761 | 0.125  | 0.6481 |
| 168 | 0.0988 | 0.1903 | 0.1723 | 0.1222 | 0.6334 |
| 169 | 0.0969 | 0.1865 | 0.1687 | 0.1196 | 0.6192 |
| 170 | 0.095  | 0.1826 | 0.1651 | 0.1171 | 0.6052 |
| 171 | 0.0932 | 0.1789 | 0.1617 | 0.1147 | 0.5917 |
| 172 | 0.0914 | 0.1753 | 0.1583 | 0.1122 | 0.5785 |
| 173 | 0.0896 | 0.1716 | 0.1549 | 0.1098 | 0.5657 |
| 174 | 0.088  | 0.1682 | 0.1517 | 0.1076 | 0.5531 |
| 175 | 0.0862 | 0.1648 | 0.1485 | 0.1053 | 0.5408 |
| 176 | 0.0847 | 0.1615 | 0.1455 | 0.1031 | 0.5289 |
| 177 | 0.083  | 0.1582 | 0.1425 | 0.101  | 0.5173 |
| 178 | 0.0815 | 0.155  | 0.1395 | 0.0989 | 0.506  |
| 179 | 0.0799 | 0.152  | 0.1366 | 0.0968 | 0.495  |
| 180 | 0.0785 | 0.1489 | 0.1338 | 0.0949 | 0.4842 |
| 181 | 0.0771 | 0.1461 | 0.1311 | 0.0929 | 0.4736 |
| 182 | 0.0756 | 0.1433 | 0.1284 | 0.0911 | 0.4635 |
| 183 | 0.0743 | 0.1404 | 0.1258 | 0.0893 | 0.4534 |
| 184 | 0.0728 | 0.1377 | 0.1233 | 0.0874 | 0.4437 |
| 185 | 0.0715 | 0.1351 | 0.1208 | 0.0856 | 0.4341 |
| 186 | 0.0702 | 0.1325 | 0.1183 | 0.084  | 0.4248 |
| 187 | 0.069  | 0.1301 | 0.1159 | 0.0823 | 0.4158 |
| 188 | 0.0677 | 0.1276 | 0.1136 | 0.0807 | 0.407  |
| 189 | 0.0665 | 0.1251 | 0.1113 | 0.079  | 0.3983 |
| 190 | 0.0653 | 0.1229 | 0.1091 | 0.0775 | 0.3899 |
| 191 | 0.0642 | 0.1205 | 0.107  | 0.076  | 0.3817 |
| 192 | 0.063  | 0.1183 | 0.1049 | 0.0745 | 0.3737 |
| 193 | 0.0619 | 0.1161 | 0.1028 | 0.0731 | 0.3659 |
| 194 | 0.0608 | 0.1139 | 0.1007 | 0.0716 | 0.3582 |
| 195 | 0.0597 | 0.1118 | 0.0987 | 0.0702 | 0.3508 |
| 196 | 0.0587 | 0.1097 | 0.0968 | 0.0689 | 0.3435 |
| 197 | 0.0577 | 0.1077 | 0.0949 | 0.0675 | 0.3363 |
| 198 | 0.0566 | 0.1057 | 0.0931 | 0.0663 | 0.3294 |
| 199 | 0.0556 | 0.1038 | 0.0913 | 0.065  | 0.3226 |

Temperature characteristics, cont.

|     |        |        |        |        |        |
|-----|--------|--------|--------|--------|--------|
| 200 | 0.0547 | 0.1019 | 0.0895 | 0.0638 | 0.316  |
| 201 | 0.0537 | 0.1001 | 0.088  | 0.0625 | 0.3095 |
| 202 | 0.0528 | 0.0983 | 0.0864 | 0.0613 | 0.3032 |
| 203 | 0.0519 | 0.0965 | 0.085  | 0.0602 | 0.2971 |
| 204 | 0.0511 | 0.0948 | 0.0835 | 0.0591 | 0.291  |
| 205 | 0.0501 | 0.0931 | 0.082  | 0.058  | 0.2851 |
| 206 | 0.0493 | 0.0913 | 0.0806 | 0.0569 | 0.2794 |
| 207 | 0.0485 | 0.0898 | 0.0793 | 0.0559 | 0.2737 |
| 208 | 0.0477 | 0.0882 | 0.0779 | 0.0548 | 0.2683 |
| 209 | 0.0468 | 0.0866 | 0.0766 | 0.0538 | 0.2629 |
| 210 | 0.0461 | 0.0851 | 0.0753 | 0.0528 | 0.2577 |
| 211 | 0.0453 | 0.0836 | 0.0741 | 0.0518 | 0.2526 |
| 212 | 0.0446 | 0.082  | 0.0729 | 0.0509 | 0.2475 |
| 213 | 0.0438 | 0.0806 | 0.0717 | 0.05   | 0.2426 |
| 214 | 0.0431 | 0.0792 | 0.0705 | 0.0491 | 0.2378 |
| 215 | 0.0424 | 0.0778 | 0.0693 | 0.0482 | 0.2332 |
| 216 | 0.0417 | 0.0765 | 0.0682 | 0.0474 | 0.2286 |
| 217 | 0.041  | 0.0752 | 0.0671 | 0.0464 | 0.2241 |
| 218 | 0.0403 | 0.0739 | 0.066  | 0.0456 | 0.2197 |
| 219 | 0.0397 | 0.0726 | 0.0649 | 0.0448 | 0.2154 |
| 220 | 0.039  | 0.0713 | 0.0638 | 0.044  | 0.2112 |
| 221 | 0.0384 | 0.0702 | 0.0628 | 0.0433 | 0.2071 |
| 222 | 0.0378 | 0.069  | 0.0618 | 0.0425 | 0.2031 |
| 223 | 0.0371 | 0.0678 | 0.0608 | 0.0418 | 0.1993 |
| 224 | 0.0366 | 0.0666 | 0.0598 | 0.0411 | 0.1954 |
| 225 | 0.036  | 0.0655 | 0.0589 | 0.0404 | 0.1916 |
| 226 | 0.0354 | 0.0644 | 0.058  | 0.0397 | 0.188  |
| 227 | 0.0349 | 0.0633 | 0.0571 | 0.039  | 0.1844 |
| 228 | 0.0344 | 0.0623 | 0.0562 | 0.0383 | 0.1809 |
| 229 | 0.0337 | 0.0612 | 0.0553 | 0.0376 | 0.1775 |
| 230 | 0.0332 | 0.0602 | 0.0544 | 0.0369 | 0.1741 |
| 231 | 0.0327 | 0.0592 | 0.0536 | 0.0363 | 0.1708 |
| 232 | 0.0322 | 0.0582 | 0.0528 | 0.0357 | 0.1676 |
| 233 | 0.0317 | 0.0572 | 0.052  | 0.0351 | 0.1645 |
| 234 | 0.0313 | 0.0563 | 0.0512 | 0.0345 | 0.1614 |
| 235 | 0.0307 | 0.0553 | 0.0504 | 0.0339 | 0.1583 |
| 236 | 0.0302 | 0.0544 | 0.0496 | 0.0334 | 0.1554 |
| 237 | 0.0298 | 0.0536 | 0.0489 | 0.0328 | 0.1526 |
| 238 | 0.0294 | 0.0526 | 0.0481 | 0.0323 | 0.1496 |
| 239 | 0.0289 | 0.0518 | 0.0474 | 0.0318 | 0.1469 |
| 240 | 0.0285 | 0.051  | 0.0467 | 0.0312 | 0.1442 |
| 241 | 0.0281 | 0.0501 | 0.0459 | 0.0307 | 0.1416 |
| 242 | 0.0276 | 0.0493 | 0.0452 | 0.0302 | 0.139  |
| 243 | 0.0272 | 0.0485 | 0.0446 | 0.0296 | 0.1364 |
| 244 | 0.0268 | 0.0478 | 0.0439 | 0.0292 | 0.1339 |
| 245 | 0.0264 | 0.047  | 0.0433 | 0.0287 | 0.1315 |
| 246 | 0.026  | 0.0463 | 0.0426 | 0.0282 | 0.1291 |
| 247 | 0.0256 | 0.0454 | 0.042  | 0.0278 | 0.1267 |
| 248 | 0.0253 | 0.0447 | 0.0414 | 0.0273 | 0.1244 |
| 249 | 0.0249 | 0.044  | 0.0408 | 0.0269 | 0.1222 |
| 250 | 0.0244 | 0.0433 | 0.0402 | 0.0265 | 0.12   |

**Temperature characteristics**

| Part number      | NDBG504?3950B1* | NDBG105?3950B1* | NDBG105?3990B1* | NDBG105?4150B1* | NDBG105?4200B1* |
|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Resistance       | 50K(25 °C)      | 100K(25 °C)     | 100K(25 °C)     | 100K(25 °C)     | 100K(25 °C)     |
| Beta Value       | B25/50=3950     | B25/50=3950     | B25/50=3990     | B25/50=4150     | B25/50=4200     |
| Temperature (°C) | Resistance (kΩ) | Resistance (kΩ) | Resistance (kΩ) | Resistance (kΩ) | Resistance (kΩ) |
| -40              | 1538.63         | 3208.26         | 3331.43         | 3530.37         | 3674.54         |
| -39              | 1444.17         | 3006.06         | 3121            | 3303.46         | 3435.11         |
| -38              | 1356.08         | 2817.91         | 2925.17         | 3092.56         | 3212.81         |
| -37              | 1273.9          | 2642.75         | 2742.85         | 2896.44         | 3006.29         |
| -36              | 1197.19         | 2479.61         | 2573.01         | 2713.97         | 2814.35         |
| -35              | 1125.55         | 2327.57         | 2414.72         | 2544.13         | 2635.86         |
| -34              | 1058.63         | 2185.83         | 2267.15         | 2385.95         | 2469.8          |
| -33              | 996.07          | 2053.61         | 2129.48         | 2238.57         | 2315.22         |
| -32              | 937.58          | 1930.22         | 2001.01         | 2101.19         | 2171.28         |
| -31              | 882.87          | 1815.02         | 1881.06         | 1973.08         | 2037.16         |
| -30              | 831.66          | 1707.42         | 1769.01         | 1853.54         | 1912.15         |
| -29              | 777.19          | 1607.01         | 1663.38         | 1741.36         | 1795.86         |
| -28              | 726.84          | 1513.12         | 1564.71         | 1636.66         | 1687.33         |
| -27              | 680.24          | 1425.29         | 1472.5          | 1538.9          | 1586            |
| -26              | 637.1           | 1343.09         | 1386.3          | 1447.56         | 1491.35         |
| -25              | 597.13          | 1266.12         | 1305.67         | 1362.21         | 1402.91         |
| -24              | 560.06          | 1194.03         | 1230.22         | 1282.39         | 1320.22         |
| -23              | 525.67          | 1126.47         | 1159.6          | 1207.74         | 1242.89         |
| -22              | 493.73          | 1063.14         | 1093.45         | 1137.87         | 1170.54         |
| -21              | 464.05          | 1003.74         | 1031.48         | 1072.46         | 1102.81         |
| -20              | 436.45          | 948.01          | 973.39          | 1011.2          | 1039.38         |
| -19              | 416.1           | 895.47          | 918.95          | 953.76          | 980.18          |
| -18              | 396.7           | 846.16          | 867.87          | 899.92          | 924.67          |
| -17              | 378.19          | 799.86          | 819.93          | 849.43          | 872.61          |
| -16              | 360.53          | 756.37          | 774.93          | 802.08          | 823.77          |
| -15              | 343.7           | 715.5           | 732.65          | 757.63          | 777.92          |
| -14              | 327.64          | 677.09          | 692.93          | 715.9           | 734.87          |
| -13              | 312.33          | 640.96          | 655.59          | 676.72          | 694.43          |
| -12              | 297.72          | 606.96          | 620.48          | 639.9           | 656.43          |
| -11              | 283.8           | 574.97          | 587.44          | 605.29          | 620.72          |
| -10              | 270.52          | 544.86          | 556.36          | 572.75          | 587.13          |
| -9               | 255.52          | 516.59          | 527.05          | 542.21          | 555.5           |
| -8               | 241.5           | 489.94          | 499.45          | 513.46          | 525.73          |
| -7               | 228.38          | 464.82          | 473.46          | 486.4           | 497.72          |
| -6               | 216.09          | 441.12          | 448.97          | 460.91          | 471.35          |
| -5               | 204.58          | 418.76          | 425.88          | 436.89          | 446.51          |
| -4               | 193.79          | 397.66          | 404.11          | 414.25          | 423.11          |
| -3               | 183.67          | 377.73          | 383.57          | 392.91          | 401.06          |
| -2               | 174.17          | 358.91          | 364.19          | 372.78          | 380.27          |
| -1               | 165.26          | 341.13          | 345.9           | 353.79          | 360.66          |
| 0                | 156.88          | 324.32          | 328.63          | 335.87          | 342.16          |
| 1                | 149.48          | 308.34          | 312.28          | 319             | 324.71          |
| 2                | 142.46          | 293.24          | 296.84          | 303.06          | 308.24          |
| 3                | 135.8           | 278.96          | 282.25          | 288             | 292.68          |
| 4                | 129.49          | 265.47          | 268.46          | 273.76          | 277.99          |
| 5                | 123.49          | 252.7           | 255.42          | 260.29          | 264.11          |
| 6                | 117.8           | 240.61          | 243.09          | 247.56          | 250.99          |
| 7                | 112.4           | 229.18          | 231.41          | 235.5           | 238.58          |
| 8                | 107.26          | 218.35          | 220.37          | 224.1           | 226.85          |
| 9                | 102.39          | 208.09          | 209.91          | 213.3           | 215.75          |
| 10               | 97.76           | 198.37          | 200             | 203.07          | 205.25          |
| 11               | 93.35           | 189.16          | 190.61          | 193.38          | 195.31          |
| 12               | 89.16           | 180.43          | 181.72          | 184.2           | 185.9           |
| 13               | 85.18           | 172.15          | 173.28          | 175.5           | 176.98          |
| 14               | 81.4            | 164.29          | 165.29          | 167.25          | 168.54          |
| 15               | 77.79           | 156.84          | 157.7           | 159.42          | 160.54          |
| 16               | 74.36           | 149.76          | 150.51          | 152             | 152.95          |
| 17               | 71.1            | 143.04          | 143.68          | 144.96          | 145.76          |
| 18               | 67.99           | 136.66          | 137.19          | 138.28          | 138.94          |
| 19               | 65.04           | 130.6           | 131.03          | 131.93          | 132.47          |
| 20               | 62.22           | 124.83          | 125.18          | 125.91          | 126.34          |



**Temperature characteristics, cont.**

|    |       |        |        |        |        |
|----|-------|--------|--------|--------|--------|
| 21 | 59.53 | 119.36 | 119.63 | 120.18 | 120.51 |
| 22 | 56.98 | 114.15 | 114.34 | 114.75 | 114.98 |
| 23 | 54.54 | 109.2  | 109.32 | 109.58 | 109.73 |
| 24 | 52.22 | 104.48 | 104.54 | 104.67 | 104.74 |
| 25 | 50    | 100    | 100    | 100    | 100    |
| 26 | 47.88 | 95.74  | 95.67  | 95.56  | 95.49  |
| 27 | 45.81 | 91.69  | 91.5   | 91.23  | 91.11  |
| 28 | 43.84 | 87.82  | 87.53  | 87.14  | 86.97  |
| 29 | 41.96 | 84.14  | 83.76  | 83.25  | 83.03  |
| 30 | 40.18 | 80.63  | 80.18  | 79.56  | 79.3   |
| 31 | 38.49 | 77.29  | 76.77  | 76.05  | 75.76  |
| 32 | 36.87 | 74.1   | 73.52  | 72.72  | 72.4   |
| 33 | 35.34 | 71.06  | 70.44  | 69.56  | 69.21  |
| 34 | 33.88 | 68.16  | 67.5   | 66.56  | 66.18  |
| 35 | 32.48 | 65.39  | 64.7   | 63.7   | 63.3   |
| 36 | 31.16 | 62.75  | 62.04  | 60.98  | 60.56  |
| 37 | 29.89 | 60.22  | 59.5   | 58.4   | 57.96  |
| 38 | 28.69 | 57.81  | 57.08  | 55.94  | 55.48  |
| 39 | 27.54 | 55.51  | 54.78  | 53.6   | 53.13  |
| 40 | 26.44 | 53.31  | 52.58  | 51.37  | 50.89  |
| 41 | 25.4  | 51.21  | 50.48  | 49.25  | 48.76  |
| 42 | 24.4  | 49.2   | 48.48  | 47.23  | 46.73  |
| 43 | 23.44 | 47.28  | 46.57  | 45.3   | 44.8   |
| 44 | 22.53 | 45.45  | 44.75  | 43.47  | 42.96  |
| 45 | 21.66 | 43.69  | 43.01  | 41.72  | 41.2   |
| 46 | 20.83 | 42.01  | 41.34  | 40.05  | 39.53  |
| 47 | 20.04 | 40.41  | 39.76  | 38.45  | 37.94  |
| 48 | 19.28 | 38.87  | 38.24  | 36.93  | 36.42  |
| 49 | 18.56 | 37.39  | 36.79  | 35.48  | 34.97  |
| 50 | 17.86 | 35.98  | 35.4   | 34.1   | 33.58  |
| 51 | 17.18 | 34.63  | 34.04  | 32.75  | 32.24  |
| 52 | 16.53 | 33.34  | 32.74  | 31.46  | 30.95  |
| 53 | 15.91 | 32.1   | 31.49  | 30.23  | 29.73  |
| 54 | 15.31 | 30.91  | 30.29  | 29.05  | 28.55  |
| 55 | 14.74 | 29.78  | 29.15  | 27.92  | 27.43  |
| 56 | 14.19 | 28.68  | 28.05  | 26.85  | 26.36  |
| 57 | 13.67 | 27.64  | 27     | 25.82  | 25.34  |
| 58 | 13.16 | 26.63  | 25.99  | 24.83  | 24.36  |
| 59 | 12.68 | 25.67  | 25.03  | 23.88  | 23.42  |
| 60 | 12.21 | 24.75  | 24.1   | 22.98  | 22.52  |
| 61 | 11.77 | 23.86  | 23.21  | 22.11  | 21.66  |
| 62 | 11.34 | 23.01  | 22.36  | 21.28  | 20.84  |
| 63 | 10.93 | 22.2   | 21.54  | 20.48  | 20.05  |
| 64 | 10.54 | 21.41  | 20.76  | 19.72  | 19.29  |
| 65 | 10.16 | 20.66  | 20     | 18.99  | 18.57  |
| 66 | 9.8   | 19.94  | 19.28  | 18.29  | 17.88  |
| 67 | 9.45  | 19.24  | 18.58  | 17.62  | 17.21  |
| 68 | 9.11  | 18.57  | 17.92  | 16.97  | 16.58  |
| 69 | 8.79  | 17.93  | 17.28  | 16.36  | 15.97  |
| 70 | 8.48  | 17.32  | 16.66  | 15.76  | 15.38  |
| 71 | 8.18  | 16.72  | 16.07  | 15.19  | 14.82  |
| 72 | 7.9   | 16.15  | 15.5   | 14.65  | 14.28  |
| 73 | 7.62  | 15.6   | 14.96  | 14.12  | 13.76  |
| 74 | 7.36  | 15.08  | 14.43  | 13.62  | 13.27  |
| 75 | 7.11  | 14.57  | 13.93  | 13.14  | 12.79  |
| 76 | 6.86  | 14.08  | 13.44  | 12.67  | 12.33  |
| 77 | 6.63  | 13.61  | 12.98  | 12.23  | 11.9   |
| 78 | 6.4   | 13.16  | 12.53  | 11.8   | 11.47  |
| 79 | 6.18  | 12.72  | 12.1   | 11.39  | 11.07  |
| 80 | 5.97  | 12.31  | 11.68  | 10.99  | 10.68  |
| 81 | 5.77  | 11.9   | 11.28  | 10.61  | 10.31  |

**Temperature characteristics, cont.**

|     |        |        |        |        |        |
|-----|--------|--------|--------|--------|--------|
| 82  | 5.58   | 11.51  | 10.9   | 10.24  | 9.95   |
| 83  | 5.39   | 11.14  | 10.53  | 9.89   | 9.6    |
| 84  | 5.21   | 10.78  | 10.17  | 9.55   | 9.27   |
| 85  | 5.04   | 10.43  | 9.83   | 9.23   | 8.95   |
| 86  | 4.8731 | 10.09  | 9.5    | 8.92   | 8.65   |
| 87  | 4.7131 | 9.77   | 9.19   | 8.62   | 8.36   |
| 88  | 4.559  | 9.45   | 8.89   | 8.34   | 8.08   |
| 89  | 4.4104 | 9.15   | 8.6    | 8.06   | 7.81   |
| 90  | 4.2672 | 8.86   | 8.32   | 7.8    | 7.55   |
| 91  | 4.1292 | 8.58   | 8.05   | 7.54   | 7.31   |
| 92  | 3.9961 | 8.31   | 7.79   | 7.3    | 7.07   |
| 93  | 3.8678 | 8.05   | 7.54   | 7.06   | 6.83   |
| 94  | 3.744  | 7.79   | 7.3    | 6.83   | 6.61   |
| 95  | 3.6247 | 7.55   | 7.06   | 6.61   | 6.4    |
| 96  | 3.5096 | 7.31   | 6.84   | 6.4    | 6.19   |
| 97  | 3.3985 | 7.09   | 6.62   | 6.2    | 5.99   |
| 98  | 3.2913 | 6.87   | 6.41   | 6      | 5.8    |
| 99  | 3.1879 | 6.66   | 6.21   | 5.81   | 5.62   |
| 100 | 3.0881 | 6.45   | 6.02   | 5.63   | 5.44   |
| 101 | 2.9918 | 6.25   | 5.83   | 5.45   | 5.27   |
| 102 | 2.8988 | 6.06   | 5.65   | 5.28   | 5.1    |
| 103 | 2.809  | 5.88   | 5.47   | 5.12   | 4.9439 |
| 104 | 2.7223 | 5.7    | 5.3    | 4.959  | 4.79   |
| 105 | 2.6385 | 5.53   | 5.14   | 4.8063 | 4.6418 |
| 106 | 2.5576 | 5.36   | 4.9841 | 4.6589 | 4.4987 |
| 107 | 2.4824 | 5.2    | 4.8341 | 4.5167 | 4.3606 |
| 108 | 2.4098 | 5.05   | 4.689  | 4.3793 | 4.2273 |
| 109 | 2.3396 | 4.8963 | 4.5489 | 4.2467 | 4.0987 |
| 110 | 2.2717 | 4.751  | 4.4135 | 4.1187 | 3.9745 |
| 111 | 2.206  | 4.6105 | 4.2826 | 3.995  | 3.8545 |
| 112 | 2.1426 | 4.4747 | 4.1561 | 3.8755 | 3.7388 |
| 113 | 2.0812 | 4.3433 | 4.0338 | 3.7601 | 3.6269 |
| 114 | 2.0218 | 4.2161 | 3.9156 | 3.6485 | 3.5188 |
| 115 | 1.9648 | 4.0931 | 3.801  | 3.5407 | 3.4139 |
| 116 | 1.9096 | 3.974  | 3.6902 | 3.4365 | 3.3125 |
| 117 | 1.8562 | 3.8587 | 3.583  | 3.3358 | 3.2145 |
| 118 | 1.8045 | 3.7472 | 3.4793 | 3.2384 | 3.1199 |
| 119 | 1.7545 | 3.6393 | 3.379  | 3.1443 | 3.0284 |
| 120 | 1.7061 | 3.5348 | 3.2819 | 3.0532 | 2.9399 |
| 121 | 1.6592 | 3.4337 | 3.188  | 2.966  | 2.8543 |
| 122 | 1.6138 | 3.3357 | 3.0971 | 2.8817 | 2.7716 |
| 123 | 1.5698 | 3.2409 | 3.0091 | 2.8    | 2.6916 |
| 124 | 1.5272 | 3.1491 | 2.9239 | 2.721  | 2.6142 |
| 125 | 1.4859 | 3.0602 | 2.8415 | 2.6446 | 2.5393 |
| 126 | 1.4459 | 2.974  | 2.7616 | 2.5706 | 2.4669 |
| 127 | 1.4072 | 2.8905 | 2.6843 | 2.499  | 2.3968 |
| 128 | 1.3696 | 2.8097 | 2.6094 | 2.4296 | 2.329  |
| 129 | 1.3333 | 2.7314 | 2.5369 | 2.3625 | 2.2633 |
| 130 | 1.298  | 2.6554 | 2.4666 | 2.2975 | 2.1997 |
| 131 | 1.2638 | 2.5819 | 2.3986 | 2.2345 | 2.1382 |
| 132 | 1.2306 | 2.5105 | 2.3327 | 2.1735 | 2.0785 |
| 133 | 1.1985 | 2.4414 | 2.2687 | 2.1143 | 2.0209 |
| 134 | 1.1673 | 2.3744 | 2.2068 | 2.0571 | 1.965  |
| 135 | 1.137  | 2.3095 | 2.1467 | 2.0016 | 1.9108 |
| 136 | 1.1077 | 2.2465 | 2.0885 | 1.9478 | 1.8584 |
| 137 | 1.0792 | 2.1854 | 2.0321 | 1.8956 | 1.8076 |
| 138 | 1.0516 | 2.1261 | 1.9774 | 1.8451 | 1.7583 |
| 139 | 1.0247 | 2.0687 | 1.9244 | 1.7961 | 1.7106 |
| 140 | 0.9987 | 2.013  | 1.8729 | 1.7486 | 1.6644 |
| 141 | 0.9735 | 1.9589 | 1.823  | 1.7025 | 1.6196 |
| 142 | 0.9489 | 1.9064 | 1.7746 | 1.6578 | 1.5761 |

Temperature characteristics, cont.

|     |        |        |        |        |        |
|-----|--------|--------|--------|--------|--------|
| 143 | 0.9251 | 1.8555 | 1.7276 | 1.6145 | 1.534  |
| 144 | 0.902  | 1.8061 | 1.682  | 1.5724 | 1.4931 |
| 145 | 0.8796 | 1.7582 | 1.6378 | 1.5316 | 1.4534 |
| 146 | 0.8577 | 1.7116 | 1.595  | 1.492  | 1.4151 |
| 147 | 0.8366 | 1.6665 | 1.5533 | 1.4536 | 1.3778 |
| 148 | 0.816  | 1.6227 | 1.5129 | 1.4163 | 1.3416 |
| 149 | 0.796  | 1.5801 | 1.4736 | 1.3801 | 1.3065 |
| 150 | 0.7766 | 1.5388 | 1.4356 | 1.345  | 1.2724 |
| 151 | 0.7577 | 1.5002 | 1.4    | 1.3114 | 1.2401 |
| 152 | 0.7393 | 1.4628 | 1.3654 | 1.2787 | 1.2088 |
| 153 | 0.7215 | 1.4264 | 1.3319 | 1.247  | 1.1783 |
| 154 | 0.7042 | 1.3911 | 1.2992 | 1.2162 | 1.1488 |
| 155 | 0.6873 | 1.3568 | 1.2676 | 1.1862 | 1.1201 |
| 156 | 0.6709 | 1.3234 | 1.2368 | 1.1571 | 1.0921 |
| 157 | 0.655  | 1.2909 | 1.2068 | 1.1289 | 1.0651 |
| 158 | 0.6395 | 1.2594 | 1.1777 | 1.1014 | 1.0388 |
| 159 | 0.6244 | 1.2287 | 1.1494 | 1.0747 | 1.0132 |
| 160 | 0.6098 | 1.1989 | 1.1219 | 1.0488 | 0.9884 |
| 161 | 0.5955 | 1.1699 | 1.0951 | 1.0236 | 0.9642 |
| 162 | 0.5816 | 1.1417 | 1.0692 | 0.9991 | 0.9408 |
| 163 | 0.5681 | 1.1143 | 1.0438 | 0.9752 | 0.918  |
| 164 | 0.555  | 1.0876 | 1.0192 | 0.952  | 0.8959 |
| 165 | 0.5422 | 1.0617 | 0.9953 | 0.9295 | 0.8742 |
| 166 | 0.5297 | 1.0364 | 0.972  | 0.9076 | 0.8533 |
| 167 | 0.5176 | 1.0118 | 0.9494 | 0.8863 | 0.833  |
| 168 | 0.5058 | 0.9879 | 0.9273 | 0.8655 | 0.8132 |
| 169 | 0.4943 | 0.9647 | 0.9058 | 0.8453 | 0.7939 |
| 170 | 0.4832 | 0.942  | 0.885  | 0.8257 | 0.7752 |
| 171 | 0.4723 | 0.92   | 0.8646 | 0.8066 | 0.7569 |
| 172 | 0.4617 | 0.8985 | 0.8448 | 0.788  | 0.7392 |
| 173 | 0.4513 | 0.8776 | 0.8255 | 0.7699 | 0.7219 |
| 174 | 0.4413 | 0.8573 | 0.8068 | 0.7523 | 0.7051 |
| 175 | 0.4315 | 0.8374 | 0.7885 | 0.7351 | 0.6888 |
| 176 | 0.4219 | 0.8182 | 0.7707 | 0.7184 | 0.6729 |
| 177 | 0.4126 | 0.7994 | 0.7534 | 0.7021 | 0.6574 |
| 178 | 0.4036 | 0.7812 | 0.7365 | 0.6863 | 0.6424 |
| 179 | 0.3947 | 0.7633 | 0.7201 | 0.6709 | 0.6277 |
| 180 | 0.3861 | 0.7459 | 0.704  | 0.6559 | 0.6134 |
| 181 | 0.3777 | 0.7291 | 0.6885 | 0.6412 | 0.5995 |
| 182 | 0.3695 | 0.7126 | 0.6733 | 0.627  | 0.5859 |
| 183 | 0.3616 | 0.6965 | 0.6585 | 0.6131 | 0.5727 |
| 184 | 0.3538 | 0.6809 | 0.644  | 0.5996 | 0.56   |
| 185 | 0.3462 | 0.6657 | 0.63   | 0.5864 | 0.5475 |
| 186 | 0.3388 | 0.6508 | 0.6162 | 0.5736 | 0.5353 |
| 187 | 0.3316 | 0.6364 | 0.6029 | 0.561  | 0.5234 |
| 188 | 0.3246 | 0.6222 | 0.5898 | 0.5488 | 0.5118 |
| 189 | 0.3177 | 0.6085 | 0.5771 | 0.5369 | 0.5005 |
| 190 | 0.311  | 0.5951 | 0.5647 | 0.5254 | 0.4895 |
| 191 | 0.3045 | 0.582  | 0.5527 | 0.5141 | 0.4788 |
| 192 | 0.2981 | 0.5693 | 0.5409 | 0.503  | 0.4684 |
| 193 | 0.2919 | 0.5568 | 0.5294 | 0.4923 | 0.4582 |
| 194 | 0.2859 | 0.5448 | 0.5182 | 0.4818 | 0.4483 |
| 195 | 0.2799 | 0.5329 | 0.5073 | 0.4716 | 0.4386 |
| 196 | 0.2742 | 0.5214 | 0.4966 | 0.4616 | 0.4291 |
| 197 | 0.2685 | 0.5101 | 0.4861 | 0.4519 | 0.42   |
| 198 | 0.263  | 0.4992 | 0.476  | 0.4424 | 0.411  |
| 199 | 0.2577 | 0.4885 | 0.4661 | 0.4331 | 0.4023 |
| 200 | 0.2524 | 0.478  | 0.4564 | 0.4241 | 0.3937 |
| 201 | 0.2473 | 0.4678 | 0.447  | 0.4153 | 0.3854 |
| 202 | 0.2423 | 0.4578 | 0.4378 | 0.4067 | 0.3773 |
| 203 | 0.2374 | 0.4482 | 0.4287 | 0.3983 | 0.3693 |

**Temperature characteristics, cont.**

|     |        |        |        |        |        |
|-----|--------|--------|--------|--------|--------|
| 204 | 0.2327 | 0.4387 | 0.42   | 0.3901 | 0.3616 |
| 205 | 0.228  | 0.4294 | 0.4115 | 0.3821 | 0.3541 |
| 206 | 0.2235 | 0.4204 | 0.4031 | 0.3743 | 0.3467 |
| 207 | 0.219  | 0.4116 | 0.3949 | 0.3667 | 0.3396 |
| 208 | 0.2147 | 0.4031 | 0.387  | 0.3593 | 0.3325 |
| 209 | 0.2105 | 0.3946 | 0.3791 | 0.352  | 0.3257 |
| 210 | 0.2063 | 0.3864 | 0.3715 | 0.3449 | 0.3191 |
| 211 | 0.2023 | 0.3784 | 0.3641 | 0.338  | 0.3125 |
| 212 | 0.1983 | 0.3706 | 0.3568 | 0.3312 | 0.3062 |
| 213 | 0.1945 | 0.3629 | 0.3497 | 0.3246 | 0.2999 |
| 214 | 0.1907 | 0.3556 | 0.3428 | 0.3181 | 0.2939 |
| 215 | 0.187  | 0.3483 | 0.336  | 0.3118 | 0.2879 |
| 216 | 0.1834 | 0.3411 | 0.3294 | 0.3057 | 0.2822 |
| 217 | 0.1799 | 0.3342 | 0.323  | 0.2997 | 0.2765 |
| 218 | 0.1764 | 0.3274 | 0.3166 | 0.2938 | 0.271  |
| 219 | 0.173  | 0.3207 | 0.3105 | 0.288  | 0.2656 |
| 220 | 0.1698 | 0.3142 | 0.3044 | 0.2824 | 0.2602 |
| 221 | 0.1665 | 0.308  | 0.2985 | 0.2769 | 0.2551 |
| 222 | 0.1634 | 0.3018 | 0.2928 | 0.2716 | 0.2501 |
| 223 | 0.1603 | 0.2958 | 0.2871 | 0.2663 | 0.2452 |
| 224 | 0.1573 | 0.2898 | 0.2816 | 0.2612 | 0.2404 |
| 225 | 0.1543 | 0.284  | 0.2762 | 0.2562 | 0.2356 |
| 226 | 0.1515 | 0.2784 | 0.271  | 0.2513 | 0.2311 |
| 227 | 0.1486 | 0.2729 | 0.2658 | 0.2465 | 0.2266 |
| 228 | 0.1459 | 0.2675 | 0.2608 | 0.2418 | 0.2223 |
| 229 | 0.1432 | 0.2622 | 0.2558 | 0.2372 | 0.2179 |
| 230 | 0.1405 | 0.2571 | 0.251  | 0.2327 | 0.2137 |
| 231 | 0.1379 | 0.2521 | 0.2463 | 0.2284 | 0.2097 |
| 232 | 0.1354 | 0.2471 | 0.2417 | 0.2241 | 0.2056 |
| 233 | 0.1329 | 0.2423 | 0.2371 | 0.2199 | 0.2017 |
| 234 | 0.1305 | 0.2376 | 0.2327 | 0.2158 | 0.1979 |
| 235 | 0.1282 | 0.233  | 0.2284 | 0.2118 | 0.1942 |
| 236 | 0.1258 | 0.2285 | 0.2242 | 0.2079 | 0.1905 |
| 237 | 0.1236 | 0.224  | 0.22   | 0.204  | 0.1868 |
| 238 | 0.1213 | 0.2197 | 0.216  | 0.2003 | 0.1834 |
| 239 | 0.1192 | 0.2155 | 0.2121 | 0.1966 | 0.18   |
| 240 | 0.117  | 0.2115 | 0.2082 | 0.193  | 0.1766 |
| 241 | 0.1149 | 0.2074 | 0.2044 | 0.1895 | 0.1734 |
| 242 | 0.1129 | 0.2035 | 0.2007 | 0.186  | 0.1701 |
| 243 | 0.1109 | 0.1996 | 0.1971 | 0.1827 | 0.167  |
| 244 | 0.1089 | 0.1958 | 0.1935 | 0.1794 | 0.1639 |
| 245 | 0.107  | 0.1921 | 0.19   | 0.1761 | 0.1609 |
| 246 | 0.1051 | 0.1885 | 0.1866 | 0.173  | 0.1579 |
| 247 | 0.1033 | 0.1849 | 0.1832 | 0.1699 | 0.155  |
| 248 | 0.1015 | 0.1814 | 0.18   | 0.1668 | 0.1522 |
| 249 | 0.0997 | 0.178  | 0.1768 | 0.1639 | 0.1495 |
| 250 | 0.098  | 0.1747 | 0.1736 | 0.161  | 0.1468 |

# Temperature characteristics

| Part number      | NDBG205?4325B2* | NDBG265?4250B1* | NDBG593?3820B2* | NDBG663?4025B2* | NDBG553?3950B1* |
|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Resistance       | 200K(25 °C)     | 260K(25 °C)     | 5.91K(85 °C)    | 6.6K(100 °C)    | 5.49K(106 °C)   |
| Beta Value       | B25/85=4325     | B25/50=4250     | B25/85=3820     | B25/85=4025     | B25/50=3950     |
| Temperature (°C) | Resistance (kΩ) | Resistance (kΩ) | Resistance (kΩ) | Resistance (kΩ) | Resistance (kΩ) |
| -40              | 8018.03         | 10423.43        | 1385.32         | 3281.53         | 3284.37         |
| -39              | 7493.28         | 9741.25         | 1302.55         | 3074.71         | 3077.37         |
| -38              | 7005.9          | 9107.66         | 1225.24         | 2882.27         | 2884.76         |
| -37              | 6553.01         | 8518.9          | 1153.01         | 2703.11         | 2705.45         |
| -36              | 6131.97         | 7971.56         | 1085.48         | 2536.24         | 2538.43         |
| -35              | 5740.38         | 7462.49         | 1022.32         | 2380.73         | 2382.79         |
| -34              | 5376            | 6988.79         | 963.23          | 2235.75         | 2237.68         |
| -33              | 5036.79         | 6547.82         | 907.91          | 2100.51         | 2102.33         |
| -32              | 4720.87         | 6137.13         | 856.11          | 1974.31         | 1976.01         |
| -31              | 4426.52         | 5754.47         | 807.57          | 1856.47         | 1858.08         |
| -30              | 4152.14         | 5397.78         | 762.08          | 1746.41         | 1747.92         |
| -29              | 3893.33         | 5061.33         | 719.42          | 1643.71         | 1645.13         |
| -28              | 3652.17         | 4747.82         | 679.41          | 1547.68         | 1549.01         |
| -27              | 3427.36         | 4455.56         | 641.85          | 1457.84         | 1459.1          |
| -26              | 3217.68         | 4182.98         | 606.6           | 1373.76         | 1374.95         |
| -25              | 3022.04         | 3928.65         | 573.48          | 1295.04         | 1296.16         |
| -24              | 2839.42         | 3691.24         | 542.37          | 1221.3          | 1222.36         |
| -23              | 2668.87         | 3469.53         | 513.12          | 1152.2          | 1153.2          |
| -22              | 2509.54         | 3262.4          | 485.62          | 1087.42         | 1088.36         |
| -21              | 2360.62         | 3068.8          | 459.76          | 1026.66         | 1027.55         |
| -20              | 2221.37         | 2887.78         | 435.42          | 969.66          | 970.5           |
| -19              | 2092.82         | 2720.66         | 412.43          | 915.92          | 916.71          |
| -18              | 1972.34         | 2564.04         | 390.79          | 865.49          | 866.23          |
| -17              | 1859.4          | 2417.21         | 370.41          | 818.13          | 818.84          |
| -16              | 1753.48         | 2279.52         | 351.21          | 773.65          | 774.31          |
| -15              | 1654.11         | 2150.34         | 333.11          | 731.84          | 732.48          |
| -14              | 1560.85         | 2029.11         | 316.05          | 692.55          | 693.15          |
| -13              | 1473.31         | 1915.3          | 299.96          | 655.59          | 656.16          |
| -12              | 1391.1          | 1808.42         | 284.78          | 620.83          | 621.36          |
| -11              | 1313.86         | 1708.02         | 270.45          | 588.11          | 588.61          |
| -10              | 1241.29         | 1613.67         | 256.92          | 557.3           | 557.78          |
| -9               | 1172.59         | 1524.36         | 244.07          | 528.38          | 528.84          |
| -8               | 1108.04         | 1440.45         | 231.94          | 501.13          | 501.56          |
| -7               | 1047.38         | 1361.59         | 220.47          | 475.43          | 475.84          |
| -6               | 990.34          | 1287.44         | 209.65          | 451.19          | 451.58          |
| -5               | 936.69          | 1217.7          | 199.41          | 428.32          | 428.69          |
| -4               | 886.22          | 1152.08         | 189.74          | 406.74          | 407.09          |
| -3               | 838.71          | 1090.33         | 180.58          | 386.36          | 386.69          |
| -2               | 793.99          | 1032.19         | 171.93          | 367.1           | 367.42          |
| -1               | 751.87          | 977.43          | 163.73          | 348.92          | 349.22          |
| 0                | 712.2           | 925.85          | 155.98          | 331.73          | 332.01          |
| 1                | 674.37          | 876.68          | 148.62          | 315.37          | 315.64          |
| 2                | 638.77          | 830.41          | 141.64          | 299.92          | 300.18          |
| 3                | 605.26          | 786.84          | 135.04          | 285.31          | 285.56          |
| 4                | 573.69          | 745.8           | 128.78          | 271.5           | 271.73          |
| 5                | 543.95          | 707.14          | 122.85          | 258.43          | 258.66          |
| 6                | 515.92          | 670.7           | 117.22          | 246.07          | 246.29          |
| 7                | 489.5           | 636.34          | 111.88          | 234.37          | 234.58          |
| 8                | 464.57          | 603.94          | 106.82          | 223.29          | 223.49          |
| 9                | 441.05          | 573.37          | 102.01          | 212.8           | 212.99          |
| 10               | 418.86          | 544.51          | 97.45           | 202.86          | 203.04          |
| 11               | 397.9           | 517.27          | 93.12           | 193.44          | 193.61          |
| 12               | 378.11          | 491.54          | 89              | 184.51          | 184.67          |
| 13               | 359.41          | 467.23          | 85.09           | 176.04          | 176.2           |
| 14               | 341.74          | 444.26          | 81.37           | 168.01          | 168.15          |
| 15               | 325.03          | 422.54          | 77.84           | 160.39          | 160.53          |
| 16               | 309.23          | 402             | 74.47           | 153.15          | 153.28          |
| 17               | 294.28          | 382.57          | 71.27           | 146.28          | 146.41          |
| 18               | 280.14          | 364.18          | 68.23           | 139.76          | 139.88          |
| 19               | 266.75          | 346.78          | 65.33           | 133.56          | 133.67          |
| 20               | 254.08          | 330.3           | 62.57           | 127.67          | 127.78          |

**Temperature characteristics, cont.**

|    |        |        |       |        |        |
|----|--------|--------|-------|--------|--------|
| 21 | 242.07 | 314.69 | 59.94 | 122.07 | 122.18 |
| 22 | 230.69 | 299.9  | 57.44 | 116.75 | 116.85 |
| 23 | 219.91 | 285.89 | 55.05 | 111.68 | 111.78 |
| 24 | 209.69 | 272.6  | 52.78 | 106.87 | 106.96 |
| 25 | 200    | 260    | 50.61 | 102.28 | 102.37 |
| 26 | 190.8  | 248.04 | 48.54 | 97.92  | 98     |
| 27 | 181.97 | 236.56 | 46.54 | 93.71  | 93.79  |
| 28 | 173.6  | 225.67 | 44.64 | 89.71  | 89.79  |
| 29 | 165.66 | 215.36 | 42.83 | 85.91  | 85.98  |
| 30 | 158.14 | 205.58 | 41.1  | 82.29  | 82.36  |
| 31 | 151    | 196.31 | 39.45 | 78.84  | 78.91  |
| 32 | 144.24 | 187.51 | 37.88 | 75.56  | 75.63  |
| 33 | 137.81 | 179.16 | 36.38 | 72.44  | 72.51  |
| 34 | 131.71 | 171.23 | 34.95 | 69.47  | 69.53  |
| 35 | 125.92 | 163.7  | 33.58 | 66.63  | 66.69  |
| 36 | 120.42 | 156.55 | 32.28 | 63.93  | 63.99  |
| 37 | 115.19 | 149.75 | 31.03 | 61.36  | 61.41  |
| 38 | 110.22 | 143.29 | 29.84 | 58.9   | 58.95  |
| 39 | 105.5  | 137.15 | 28.7  | 56.56  | 56.61  |
| 40 | 101.01 | 131.31 | 27.62 | 54.33  | 54.37  |
| 41 | 96.73  | 125.75 | 26.58 | 52.19  | 52.24  |
| 42 | 92.66  | 120.46 | 25.58 | 50.16  | 50.2   |
| 43 | 88.79  | 115.43 | 24.63 | 48.21  | 48.25  |
| 44 | 85.1   | 110.63 | 23.72 | 46.35  | 46.39  |
| 45 | 81.59  | 106.06 | 22.85 | 44.58  | 44.62  |
| 46 | 78.24  | 101.71 | 22.02 | 42.88  | 42.92  |
| 47 | 75.05  | 97.57  | 21.22 | 41.26  | 41.3   |
| 48 | 72.01  | 93.61  | 20.46 | 39.71  | 39.74  |
| 49 | 69.11  | 89.84  | 19.73 | 38.23  | 38.26  |
| 50 | 66.34  | 86.25  | 19.02 | 36.81  | 36.84  |
| 51 | 63.67  | 82.77  | 18.34 | 35.43  | 35.46  |
| 52 | 61.12  | 79.45  | 17.69 | 34.1   | 34.13  |
| 53 | 58.68  | 76.28  | 17.07 | 32.83  | 32.86  |
| 54 | 56.35  | 73.25  | 16.47 | 31.62  | 31.65  |
| 55 | 54.12  | 70.36  | 15.89 | 30.46  | 30.48  |
| 56 | 52     | 67.59  | 15.34 | 29.34  | 29.36  |
| 57 | 49.96  | 64.95  | 14.81 | 28.27  | 28.29  |
| 58 | 48.02  | 62.42  | 14.3  | 27.24  | 27.27  |
| 59 | 46.16  | 60.01  | 13.81 | 26.26  | 26.28  |
| 60 | 44.38  | 57.69  | 13.33 | 25.31  | 25.34  |
| 61 | 42.68  | 55.48  | 12.88 | 24.41  | 24.43  |
| 62 | 41.05  | 53.36  | 12.45 | 23.54  | 23.56  |
| 63 | 39.49  | 51.34  | 12.03 | 22.7   | 22.72  |
| 64 | 38     | 49.4   | 11.63 | 21.9   | 21.92  |
| 65 | 36.57  | 47.54  | 11.24 | 21.13  | 21.15  |
| 66 | 35.2   | 45.76  | 10.87 | 20.39  | 20.41  |
| 67 | 33.89  | 44.05  | 10.51 | 19.68  | 19.7   |
| 68 | 32.63  | 42.42  | 10.16 | 19     | 19.01  |
| 69 | 31.43  | 40.85  | 9.83  | 18.34  | 18.36  |
| 70 | 30.27  | 39.35  | 9.51  | 17.71  | 17.73  |
| 71 | 29.17  | 37.91  | 9.21  | 17.1   | 17.12  |
| 72 | 28.1   | 36.53  | 8.91  | 16.52  | 16.54  |
| 73 | 27.09  | 35.21  | 8.63  | 15.96  | 15.97  |
| 74 | 26.11  | 33.94  | 8.35  | 15.42  | 15.43  |
| 75 | 25.17  | 32.72  | 8.09  | 14.9   | 14.92  |
| 76 | 24.27  | 31.55  | 7.83  | 14.4   | 14.42  |
| 77 | 23.41  | 30.43  | 7.59  | 13.92  | 13.94  |
| 78 | 22.58  | 29.36  | 7.35  | 13.46  | 13.47  |
| 79 | 21.79  | 28.32  | 7.12  | 13.02  | 13.03  |
| 80 | 21.02  | 27.33  | 6.9   | 12.59  | 12.6   |
| 81 | 20.29  | 26.37  | 6.69  | 12.17  | 12.18  |
| 82 | 19.58  | 25.46  | 6.48  | 11.78  | 11.79  |

Temperature characteristics, cont.

|     |        |        |        |        |        |
|-----|--------|--------|--------|--------|--------|
| 83  | 18.9   | 24.58  | 6.29   | 11.39  | 11.4   |
| 84  | 18.25  | 23.73  | 6.09   | 11.02  | 11.03  |
| 85  | 17.63  | 22.91  | 5.91   | 10.67  | 10.68  |
| 86  | 17.03  | 22.14  | 5.73   | 10.32  | 10.33  |
| 87  | 16.45  | 21.39  | 5.55   | 9.99   | 10     |
| 88  | 15.9   | 20.67  | 5.38   | 9.67   | 9.68   |
| 89  | 15.37  | 19.98  | 5.21   | 9.36   | 9.37   |
| 90  | 14.86  | 19.31  | 5.05   | 9.06   | 9.07   |
| 91  | 14.36  | 18.67  | 4.898  | 8.78   | 8.78   |
| 92  | 13.89  | 18.06  | 4.749  | 8.5    | 8.5    |
| 93  | 13.43  | 17.46  | 4.605  | 8.23   | 8.24   |
| 94  | 12.99  | 16.89  | 4.4657 | 7.97   | 7.98   |
| 95  | 12.57  | 16.34  | 4.3312 | 7.72   | 7.73   |
| 96  | 12.16  | 15.81  | 4.2011 | 7.48   | 7.49   |
| 97  | 11.77  | 15.3   | 4.0755 | 7.25   | 7.26   |
| 98  | 11.39  | 14.81  | 3.954  | 7.03   | 7.03   |
| 99  | 11.03  | 14.34  | 3.8364 | 6.81   | 6.81   |
| 100 | 10.68  | 13.88  | 3.7228 | 6.6    | 6.61   |
| 101 | 10.34  | 13.44  | 3.613  | 6.4    | 6.4    |
| 102 | 10.01  | 13.01  | 3.5067 | 6.2    | 6.21   |
| 103 | 9.7    | 12.61  | 3.4039 | 6.01   | 6.02   |
| 104 | 9.39   | 12.21  | 3.3043 | 5.83   | 5.84   |
| 105 | 9.1    | 11.83  | 3.2081 | 5.66   | 5.66   |
| 106 | 8.82   | 11.46  | 3.1149 | 5.49   | 5.49   |
| 107 | 8.54   | 11.11  | 3.0267 | 5.32   | 5.33   |
| 108 | 8.28   | 10.77  | 2.9411 | 5.16   | 5.17   |
| 109 | 8.03   | 10.44  | 2.8583 | 5.01   | 5.01   |
| 110 | 7.78   | 10.12  | 2.7782 | 4.8597 | 4.8637 |
| 111 | 7.55   | 9.81   | 2.7006 | 4.7161 | 4.7199 |
| 112 | 7.32   | 9.51   | 2.6256 | 4.5771 | 4.5808 |
| 113 | 7.1    | 9.23   | 2.5528 | 4.4427 | 4.4463 |
| 114 | 6.88   | 8.95   | 2.4822 | 4.3127 | 4.3162 |
| 115 | 6.68   | 8.68   | 2.4147 | 4.1868 | 4.1902 |
| 116 | 6.48   | 8.43   | 2.3493 | 4.065  | 4.0683 |
| 117 | 6.3    | 8.18   | 2.2859 | 3.9471 | 3.9503 |
| 118 | 6.11   | 7.95   | 2.2244 | 3.833  | 3.8361 |
| 119 | 5.94   | 7.72   | 2.1648 | 3.7226 | 3.7256 |
| 120 | 5.76   | 7.49   | 2.1071 | 3.6157 | 3.6187 |
| 121 | 5.6    | 7.28   | 2.051  | 3.5123 | 3.5151 |
| 122 | 5.44   | 7.07   | 1.9967 | 3.4121 | 3.4149 |
| 123 | 5.28   | 6.87   | 1.944  | 3.3151 | 3.3178 |
| 124 | 5.14   | 6.68   | 1.8929 | 3.2212 | 3.2238 |
| 125 | 4.9907 | 6.49   | 1.8434 | 3.1302 | 3.1327 |
| 126 | 4.8507 | 6.31   | 1.7953 | 3.0421 | 3.0445 |
| 127 | 4.7152 | 6.13   | 1.7485 | 2.9567 | 2.9591 |
| 128 | 4.5841 | 5.96   | 1.7033 | 2.874  | 2.8763 |
| 129 | 4.4571 | 5.79   | 1.6593 | 2.7939 | 2.7961 |
| 130 | 4.3342 | 5.63   | 1.6167 | 2.7163 | 2.7184 |
| 131 | 4.2152 | 5.48   | 1.5752 | 2.641  | 2.6431 |
| 132 | 4.1    | 5.33   | 1.5351 | 2.5681 | 2.5701 |
| 133 | 3.9883 | 5.18   | 1.4959 | 2.4974 | 2.4994 |
| 134 | 3.8803 | 5.04   | 1.4581 | 2.4288 | 2.4308 |
| 135 | 3.7755 | 4.9082 | 1.4212 | 2.3624 | 2.3643 |
| 136 | 3.674  | 4.7762 | 1.3855 | 2.2979 | 2.2998 |
| 137 | 3.5757 | 4.6484 | 1.3507 | 2.2354 | 2.2372 |
| 138 | 3.4804 | 4.5245 | 1.317  | 2.1748 | 2.1766 |
| 139 | 3.388  | 4.4044 | 1.2842 | 2.1161 | 2.1178 |
| 140 | 3.2985 | 4.288  | 1.2524 | 2.0591 | 2.0607 |
| 141 | 3.2116 | 4.175  | 1.2214 | 2.0038 | 2.0053 |
| 142 | 3.1274 | 4.0656 | 1.1913 | 1.9501 | 1.9516 |
| 143 | 3.0457 | 3.9595 | 1.1621 | 1.898  | 1.8995 |

**Temperature characteristics, cont.**

|     |        |        |        |        |        |
|-----|--------|--------|--------|--------|--------|
| 144 | 2.9666 | 3.8565 | 1.1337 | 1.8475 | 1.849  |
| 145 | 2.8898 | 3.7567 | 1.106  | 1.7985 | 1.7999 |
| 146 | 2.8153 | 3.6598 | 1.0791 | 1.7508 | 1.7523 |
| 147 | 2.7429 | 3.5658 | 1.053  | 1.7046 | 1.706  |
| 148 | 2.6728 | 3.4746 | 1.0276 | 1.6598 | 1.6612 |
| 149 | 2.6047 | 3.3861 | 1.0029 | 1.6162 | 1.6176 |
| 150 | 2.5386 | 3.3002 | 0.9788 | 1.574  | 1.5753 |
| 151 | 2.4744 | 3.2167 | 0.9554 | 1.5346 | 1.5359 |
| 152 | 2.4122 | 3.1358 | 0.9327 | 1.4963 | 1.4975 |
| 153 | 2.3517 | 3.0572 | 0.9106 | 1.4591 | 1.4603 |
| 154 | 2.2929 | 2.9808 | 0.889  | 1.4229 | 1.4241 |
| 155 | 2.2359 | 2.9067 | 0.8681 | 1.3878 | 1.389  |
| 156 | 2.1805 | 2.8347 | 0.8477 | 1.3537 | 1.3548 |
| 157 | 2.1267 | 2.7647 | 0.8278 | 1.3205 | 1.3216 |
| 158 | 2.0744 | 2.6968 | 0.8085 | 1.2882 | 1.2893 |
| 159 | 2.0237 | 2.6308 | 0.7897 | 1.2568 | 1.2579 |
| 160 | 1.9743 | 2.5666 | 0.7714 | 1.2263 | 1.2274 |
| 161 | 1.9264 | 2.5043 | 0.7536 | 1.1967 | 1.1977 |
| 162 | 1.8797 | 2.4437 | 0.7362 | 1.1678 | 1.1688 |
| 163 | 1.8345 | 2.3848 | 0.7192 | 1.1398 | 1.1407 |
| 164 | 1.7904 | 2.3276 | 0.7028 | 1.1125 | 1.1134 |
| 165 | 1.7476 | 2.2719 | 0.6868 | 1.0859 | 1.0868 |
| 166 | 1.706  | 2.2178 | 0.6712 | 1.0601 | 1.061  |
| 167 | 1.6655 | 2.1652 | 0.656  | 1.0349 | 1.0358 |
| 168 | 1.6262 | 2.114  | 0.6411 | 1.0105 | 1.0113 |
| 169 | 1.5878 | 2.0642 | 0.6267 | 0.9867 | 0.9875 |
| 170 | 1.5506 | 2.0157 | 0.6126 | 0.9635 | 0.9643 |
| 171 | 1.5143 | 1.9686 | 0.5989 | 0.941  | 0.9418 |
| 172 | 1.4791 | 1.9228 | 0.5856 | 0.919  | 0.9198 |
| 173 | 1.4448 | 1.8782 | 0.5726 | 0.8977 | 0.8984 |
| 174 | 1.4114 | 1.8348 | 0.5598 | 0.8769 | 0.8776 |
| 175 | 1.3789 | 1.7926 | 0.5474 | 0.8566 | 0.8573 |
| 176 | 1.3473 | 1.7515 | 0.5354 | 0.8369 | 0.8376 |
| 177 | 1.3165 | 1.7115 | 0.5236 | 0.8177 | 0.8184 |
| 178 | 1.2866 | 1.6725 | 0.5121 | 0.799  | 0.7997 |
| 179 | 1.2573 | 1.6345 | 0.501  | 0.7808 | 0.7814 |
| 180 | 1.2289 | 1.5976 | 0.4901 | 0.763  | 0.7637 |
| 181 | 1.2013 | 1.5617 | 0.4794 | 0.7457 | 0.7464 |
| 182 | 1.1743 | 1.5266 | 0.4691 | 0.7289 | 0.7295 |
| 183 | 1.1481 | 1.4925 | 0.4589 | 0.7125 | 0.7131 |
| 184 | 1.1225 | 1.4593 | 0.4491 | 0.6965 | 0.6971 |
| 185 | 1.0976 | 1.4269 | 0.4394 | 0.6809 | 0.6815 |
| 186 | 1.0734 | 1.3954 | 0.43   | 0.6657 | 0.6663 |
| 187 | 1.0497 | 1.3646 | 0.4209 | 0.6509 | 0.6515 |
| 188 | 1.0267 | 1.3347 | 0.412  | 0.6365 | 0.637  |
| 189 | 1.0042 | 1.3055 | 0.4032 | 0.6224 | 0.6229 |
| 190 | 0.9823 | 1.277  | 0.3947 | 0.6087 | 0.6092 |
| 191 | 0.961  | 1.2493 | 0.3863 | 0.5953 | 0.5958 |
| 192 | 0.9403 | 1.2223 | 0.3783 | 0.5823 | 0.5828 |
| 193 | 0.92   | 1.1959 | 0.3703 | 0.5696 | 0.57   |
| 194 | 0.9002 | 1.1703 | 0.3626 | 0.5572 | 0.5576 |
| 195 | 0.8809 | 1.1452 | 0.3551 | 0.5451 | 0.5455 |
| 196 | 0.8622 | 1.1208 | 0.3476 | 0.5333 | 0.5337 |
| 197 | 0.8438 | 1.097  | 0.3404 | 0.5218 | 0.5222 |
| 198 | 0.826  | 1.0738 | 0.3334 | 0.5106 | 0.511  |
| 199 | 0.8086 | 1.0511 | 0.3266 | 0.4996 | 0.5    |
| 200 | 0.7915 | 1.029  | 0.3199 | 0.4889 | 0.4893 |
| 201 | 0.7749 | 1.0075 | 0.3133 | 0.4785 | 0.4789 |
| 202 | 0.7587 | 0.9864 | 0.3069 | 0.4683 | 0.4687 |
| 203 | 0.7429 | 0.9659 | 0.3007 | 0.4584 | 0.4588 |
| 204 | 0.7274 | 0.9459 | 0.2945 | 0.4487 | 0.4491 |



Temperature characteristics, cont.

|     |        |        |        |        |        |
|-----|--------|--------|--------|--------|--------|
| 205 | 0.7124 | 0.9263 | 0.2886 | 0.4393 | 0.4396 |
| 206 | 0.6977 | 0.9072 | 0.2828 | 0.43   | 0.4304 |
| 207 | 0.6833 | 0.8885 | 0.2772 | 0.421  | 0.4214 |
| 208 | 0.6693 | 0.8704 | 0.2715 | 0.4122 | 0.4126 |
| 209 | 0.6556 | 0.8526 | 0.2661 | 0.4036 | 0.404  |
| 210 | 0.6423 | 0.8354 | 0.2608 | 0.3952 | 0.3956 |
| 211 | 0.6293 | 0.8185 | 0.2556 | 0.387  | 0.3874 |
| 212 | 0.6166 | 0.8019 | 0.2506 | 0.3791 | 0.3794 |
| 213 | 0.6042 | 0.7858 | 0.2456 | 0.3712 | 0.3716 |
| 214 | 0.592  | 0.77   | 0.2407 | 0.3636 | 0.3639 |
| 215 | 0.5802 | 0.7547 | 0.236  | 0.3562 | 0.3565 |
| 216 | 0.5686 | 0.7396 | 0.2314 | 0.3489 | 0.3492 |
| 217 | 0.5572 | 0.7249 | 0.2268 | 0.3418 | 0.3421 |
| 218 | 0.5462 | 0.7106 | 0.2224 | 0.3348 | 0.3351 |
| 219 | 0.5355 | 0.6966 | 0.218  | 0.3281 | 0.3283 |
| 220 | 0.5249 | 0.683  | 0.2138 | 0.3214 | 0.3217 |
| 221 | 0.5146 | 0.6695 | 0.2096 | 0.3149 | 0.3152 |
| 222 | 0.5045 | 0.6565 | 0.2056 | 0.3086 | 0.3089 |
| 223 | 0.4947 | 0.6437 | 0.2017 | 0.3024 | 0.3027 |
| 224 | 0.4851 | 0.6312 | 0.1978 | 0.2964 | 0.2967 |
| 225 | 0.4757 | 0.6191 | 0.194  | 0.2905 | 0.2907 |
| 226 | 0.4665 | 0.6071 | 0.1903 | 0.2847 | 0.285  |
| 227 | 0.4575 | 0.5955 | 0.1866 | 0.2791 | 0.2793 |
| 228 | 0.4487 | 0.5841 | 0.1832 | 0.2736 | 0.2738 |
| 229 | 0.4402 | 0.5729 | 0.1797 | 0.2682 | 0.2684 |
| 230 | 0.4318 | 0.562  | 0.1763 | 0.2629 | 0.2631 |
| 231 | 0.4236 | 0.5514 | 0.1729 | 0.2577 | 0.258  |
| 232 | 0.4156 | 0.541  | 0.1697 | 0.2527 | 0.2529 |
| 233 | 0.4077 | 0.5308 | 0.1665 | 0.2478 | 0.248  |
| 234 | 0.4    | 0.5208 | 0.1633 | 0.243  | 0.2432 |
| 235 | 0.3926 | 0.5111 | 0.1603 | 0.2382 | 0.2385 |
| 236 | 0.3852 | 0.5016 | 0.1573 | 0.2336 | 0.2338 |
| 237 | 0.378  | 0.4922 | 0.1544 | 0.2291 | 0.2293 |
| 238 | 0.371  | 0.4831 | 0.1516 | 0.2247 | 0.2249 |
| 239 | 0.3641 | 0.4742 | 0.1487 | 0.2204 | 0.2206 |
| 240 | 0.3574 | 0.4655 | 0.1459 | 0.2162 | 0.2164 |
| 241 | 0.3508 | 0.4569 | 0.1433 | 0.2121 | 0.2122 |
| 242 | 0.3444 | 0.4485 | 0.1406 | 0.208  | 0.2082 |
| 243 | 0.3381 | 0.4403 | 0.1381 | 0.2041 | 0.2042 |
| 244 | 0.3319 | 0.4323 | 0.1356 | 0.2002 | 0.2004 |
| 245 | 0.3259 | 0.4245 | 0.1331 | 0.1964 | 0.1966 |
| 246 | 0.32   | 0.4168 | 0.1307 | 0.1927 | 0.1929 |
| 247 | 0.3142 | 0.4092 | 0.1282 | 0.1891 | 0.1893 |
| 248 | 0.3086 | 0.402  | 0.1259 | 0.1855 | 0.1857 |
| 249 | 0.303  | 0.3948 | 0.1237 | 0.1821 | 0.1822 |
| 250 | 0.2976 | 0.3877 | 0.1215 | 0.1787 | 0.1788 |

### Temperature characteristics

| Part number         | NDBG353?4300B2*    | NDBG103?4595B3*    |
|---------------------|--------------------|--------------------|
| Resistance          | 3.4513K(114 °C)    | 1K(200 °C)         |
| Beta Value          | B25/85=4300        | B100/200=4595      |
| Temperature<br>(°C) | Resistance<br>(kΩ) | Resistance<br>(kΩ) |
| -40                 | 3603.93            | 10129.74           |
| -39                 | 3369.11            | 9466.78            |
| -38                 | 3151.07            | 8851.04            |
| -37                 | 2948.53            | 8278.87            |
| -36                 | 2760.27            | 7746.95            |
| -35                 | 2585.21            | 7252.22            |
| -34                 | 2422.34            | 6791.87            |
| -33                 | 2270.74            | 6363.33            |
| -32                 | 2129.56            | 5964.21            |
| -31                 | 1998.02            | 5592.33            |
| -30                 | 1875.41            | 5245.69            |
| -29                 | 1761.35            | 4918.72            |
| -28                 | 1654.91            | 4614.05            |
| -27                 | 1555.53            | 4330.02            |
| -26                 | 1462.7             | 4065.12            |
| -25                 | 1375.95            | 3817.96            |
| -24                 | 1294.86            | 3587.24            |
| -23                 | 1219.01            | 3371.77            |
| -22                 | 1148.04            | 3170.48            |
| -21                 | 1081.62            | 2982.33            |
| -20                 | 1019.41            | 2806.41            |
| -19                 | 961.34             | 2644               |
| -18                 | 906.9              | 2491.79            |
| -17                 | 855.84             | 2349.11            |
| -16                 | 807.94             | 2215.29            |
| -15                 | 762.97             | 2089.75            |
| -14                 | 720.75             | 1971.94            |
| -13                 | 681.09             | 1861.34            |
| -12                 | 643.82             | 1757.47            |
| -11                 | 608.79             | 1659.9             |
| -10                 | 575.85             | 1568.2             |
| -9                  | 544.82             | 1481.41            |
| -8                  | 515.63             | 1399.87            |
| -7                  | 488.16             | 1323.22            |
| -6                  | 462.29             | 1251.16            |
| -5                  | 437.93             | 1183.39            |
| -4                  | 414.98             | 1119.62            |
| -3                  | 393.35             | 1059.61            |
| -2                  | 372.96             | 1003.11            |
| -1                  | 353.73             | 949.89             |
| 0                   | 335.59             | 899.77             |
| 1                   | 318.47             | 851.98             |
| 2                   | 302.32             | 807.01             |
| 3                   | 287.06             | 764.67             |
| 4                   | 272.65             | 724.79             |
| 5                   | 259.03             | 687.22             |
| 6                   | 246.16             | 651.8              |
| 7                   | 234                | 618.41             |
| 8                   | 222.49             | 586.92             |
| 9                   | 211.6              | 557.21             |
| 10                  | 201.3              | 529.17             |
| 11                  | 191.56             | 502.69             |
| 12                  | 182.32             | 477.69             |
| 13                  | 173.58             | 454.07             |
| 14                  | 165.3              | 431.74             |
| 15                  | 157.45             | 410.63             |
| 16                  | 150.01             | 390.67             |
| 17                  | 142.96             | 371.79             |
| 18                  | 136.27             | 353.92             |
| 19                  | 129.93             | 337.01             |
| 20                  | 123.91             | 320.99             |

**Temperature characteristics, cont.**

|    |        |        |
|----|--------|--------|
| 21 | 118.2  | 305.82 |
| 22 | 112.77 | 291.45 |
| 23 | 107.62 | 277.83 |
| 24 | 102.73 | 264.92 |
| 25 | 98.08  | 252.67 |
| 26 | 93.66  | 241.05 |
| 27 | 89.37  | 229.89 |
| 28 | 85.3   | 219.31 |
| 29 | 81.44  | 209.29 |
| 30 | 77.78  | 199.79 |
| 31 | 74.3   | 190.77 |
| 32 | 71.01  | 182.22 |
| 33 | 67.88  | 174.11 |
| 34 | 64.91  | 166.4  |
| 35 | 62.08  | 159.09 |
| 36 | 59.4   | 152.14 |
| 37 | 56.85  | 145.53 |
| 38 | 54.42  | 139.25 |
| 39 | 52.11  | 133.29 |
| 40 | 49.91  | 127.61 |
| 41 | 47.82  | 122.21 |
| 42 | 45.83  | 117.07 |
| 43 | 43.94  | 112.17 |
| 44 | 42.13  | 107.51 |
| 45 | 40.41  | 103.08 |
| 46 | 38.77  | 98.85  |
| 47 | 37.21  | 94.82  |
| 48 | 35.72  | 90.97  |
| 49 | 34.29  | 87.31  |
| 50 | 32.94  | 83.82  |
| 51 | 31.62  | 80.44  |
| 52 | 30.36  | 77.21  |
| 53 | 29.16  | 74.13  |
| 54 | 28.01  | 71.19  |
| 55 | 26.91  | 68.38  |
| 56 | 25.86  | 65.69  |
| 57 | 24.85  | 63.12  |
| 58 | 23.89  | 60.66  |
| 59 | 22.97  | 58.31  |
| 60 | 22.09  | 56.07  |
| 61 | 21.24  | 53.92  |
| 62 | 20.44  | 51.86  |
| 63 | 19.66  | 49.89  |
| 64 | 18.92  | 48     |
| 65 | 18.21  | 46.2   |
| 66 | 17.53  | 44.47  |
| 67 | 16.88  | 42.81  |
| 68 | 16.26  | 41.22  |
| 69 | 15.66  | 39.7   |
| 70 | 15.08  | 38.24  |
| 71 | 14.53  | 36.85  |
| 72 | 14.01  | 35.51  |
| 73 | 13.5   | 34.22  |
| 74 | 13.01  | 32.99  |
| 75 | 12.55  | 31.8   |
| 76 | 12.1   | 30.67  |
| 77 | 11.67  | 29.58  |
| 78 | 11.25  | 28.53  |
| 79 | 10.86  | 27.52  |
| 80 | 10.48  | 26.56  |
| 81 | 10.11  | 25.63  |

**Temperature characteristics, cont.**

|     |        |        |
|-----|--------|--------|
| 82  | 9.76   | 24.74  |
| 83  | 9.42   | 23.88  |
| 84  | 9.09   | 23.06  |
| 85  | 8.78   | 22.27  |
| 86  | 8.49   | 21.51  |
| 87  | 8.2    | 20.79  |
| 88  | 7.93   | 20.09  |
| 89  | 7.66   | 19.42  |
| 90  | 7.41   | 18.77  |
| 91  | 7.17   | 18.15  |
| 92  | 6.93   | 17.55  |
| 93  | 6.7    | 16.97  |
| 94  | 6.49   | 16.42  |
| 95  | 6.28   | 15.88  |
| 96  | 6.07   | 15.37  |
| 97  | 5.88   | 14.87  |
| 98  | 5.69   | 14.39  |
| 99  | 5.51   | 13.93  |
| 100 | 5.34   | 13.49  |
| 101 | 5.17   | 13.06  |
| 102 | 5.01   | 12.65  |
| 103 | 4.8489 | 12.25  |
| 104 | 4.6981 | 11.87  |
| 105 | 4.5527 | 11.5   |
| 106 | 4.4123 | 11.14  |
| 107 | 4.2769 | 10.8   |
| 108 | 4.1461 | 10.46  |
| 109 | 4.02   | 10.14  |
| 110 | 3.8981 | 9.83   |
| 111 | 3.7805 | 9.53   |
| 112 | 3.6669 | 9.24   |
| 113 | 3.5572 | 8.97   |
| 114 | 3.4513 | 8.7    |
| 115 | 3.3485 | 8.44   |
| 116 | 3.2491 | 8.19   |
| 117 | 3.153  | 7.95   |
| 118 | 3.0602 | 7.72   |
| 119 | 2.9704 | 7.5    |
| 120 | 2.8836 | 7.28   |
| 121 | 2.7997 | 7.07   |
| 122 | 2.7186 | 6.87   |
| 123 | 2.6401 | 6.68   |
| 124 | 2.5642 | 6.49   |
| 125 | 2.4907 | 6.31   |
| 126 | 2.4197 | 6.13   |
| 127 | 2.3509 | 5.96   |
| 128 | 2.2844 | 5.79   |
| 129 | 2.22   | 5.63   |
| 130 | 2.1576 | 5.48   |
| 131 | 2.0973 | 5.33   |
| 132 | 2.0388 | 5.18   |
| 133 | 1.9821 | 5.04   |
| 134 | 1.9273 | 4.9022 |
| 135 | 1.8742 | 4.7699 |
| 136 | 1.8228 | 4.6416 |
| 137 | 1.7729 | 4.5174 |
| 138 | 1.7246 | 4.397  |
| 139 | 1.6778 | 4.2803 |
| 140 | 1.6325 | 4.1671 |
| 141 | 1.5885 | 4.0574 |
| 142 | 1.5459 | 3.9511 |
| 143 | 1.5045 | 3.8479 |
| 144 | 1.4644 | 3.7479 |
| 145 | 1.4256 | 3.6508 |

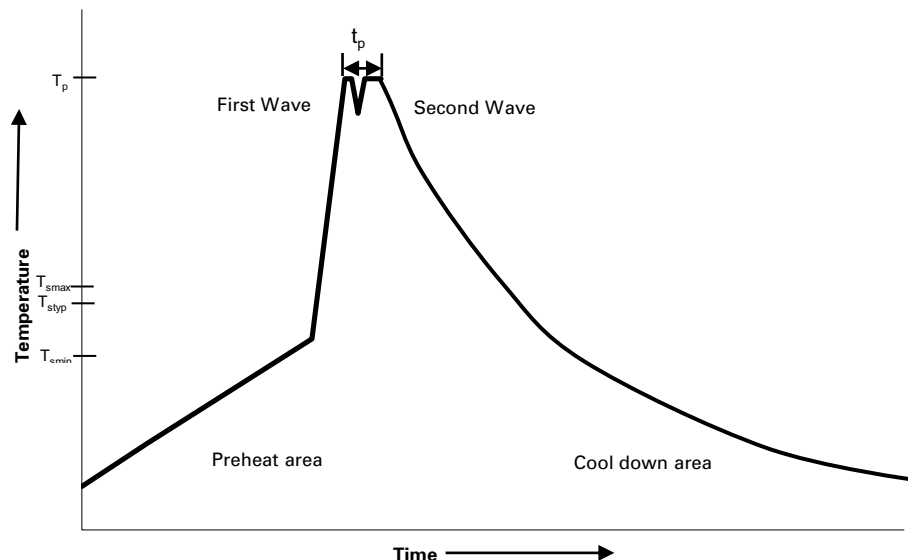
**Temperature characteristics, cont.**

|     |        |        |
|-----|--------|--------|
| 146 | 1.3879 | 3.5567 |
| 147 | 1.3513 | 3.4653 |
| 148 | 1.3158 | 3.3767 |
| 149 | 1.2814 | 3.2906 |
| 150 | 1.248  | 3.2072 |
| 151 | 1.2164 | 3.1261 |
| 152 | 1.1856 | 3.0474 |
| 153 | 1.1557 | 2.971  |
| 154 | 1.1267 | 2.8968 |
| 155 | 1.0986 | 2.8248 |
| 156 | 1.0712 | 2.7548 |
| 157 | 1.0447 | 2.6869 |
| 158 | 1.0189 | 2.6208 |
| 159 | 0.9938 | 2.5567 |
| 160 | 0.9694 | 2.4943 |
| 161 | 0.9458 | 2.4337 |
| 162 | 0.9228 | 2.3749 |
| 163 | 0.9004 | 2.3176 |
| 164 | 0.8786 | 2.262  |
| 165 | 0.8575 | 2.2079 |
| 166 | 0.837  | 2.1553 |
| 167 | 0.817  | 2.1041 |
| 168 | 0.7976 | 2.0544 |
| 169 | 0.7787 | 2.006  |
| 170 | 0.7603 | 1.959  |
| 171 | 0.7424 | 1.9132 |
| 172 | 0.725  | 1.8686 |
| 173 | 0.7081 | 1.8253 |
| 174 | 0.6916 | 1.7831 |
| 175 | 0.6756 | 1.7421 |
| 176 | 0.66   | 1.7021 |
| 177 | 0.6448 | 1.6632 |
| 178 | 0.6301 | 1.6254 |
| 179 | 0.6157 | 1.5885 |
| 180 | 0.6017 | 1.5526 |
| 181 | 0.588  | 1.5176 |
| 182 | 0.5747 | 1.4836 |
| 183 | 0.5618 | 1.4504 |
| 184 | 0.5492 | 1.4182 |
| 185 | 0.5369 | 1.3867 |
| 186 | 0.525  | 1.356  |
| 187 | 0.5133 | 1.3262 |
| 188 | 0.502  | 1.2971 |
| 189 | 0.4909 | 1.2687 |
| 190 | 0.4801 | 1.2411 |
| 191 | 0.4696 | 1.2141 |
| 192 | 0.4594 | 1.1879 |
| 193 | 0.4494 | 1.1623 |
| 194 | 0.4397 | 1.1373 |
| 195 | 0.4302 | 1.113  |
| 196 | 0.4209 | 1.0892 |
| 197 | 0.4119 | 1.0661 |
| 198 | 0.4031 | 1.0435 |
| 199 | 0.3946 | 1.0215 |
| 200 | 0.3862 | 1      |
| 201 | 0.378  | 0.979  |
| 202 | 0.3701 | 0.9586 |
| 203 | 0.3623 | 0.9387 |
| 204 | 0.3547 | 0.9192 |
| 205 | 0.3473 | 0.9002 |
| 206 | 0.3401 | 0.8816 |

**Temperature characteristics, cont.**

|     |        |        |
|-----|--------|--------|
| 207 | 0.3331 | 0.8635 |
| 208 | 0.3262 | 0.8459 |
| 209 | 0.3195 | 0.8286 |
| 210 | 0.3129 | 0.8118 |
| 211 | 0.3065 | 0.7954 |
| 212 | 0.3003 | 0.7793 |
| 213 | 0.2942 | 0.7636 |
| 214 | 0.2882 | 0.7483 |
| 215 | 0.2824 | 0.7334 |
| 216 | 0.2768 | 0.7188 |
| 217 | 0.2712 | 0.7045 |
| 218 | 0.2658 | 0.6906 |
| 219 | 0.2605 | 0.677  |
| 220 | 0.2553 | 0.6637 |
| 221 | 0.2503 | 0.6507 |
| 222 | 0.2454 | 0.638  |
| 223 | 0.2405 | 0.6256 |
| 224 | 0.2358 | 0.6134 |
| 225 | 0.2312 | 0.6016 |
| 226 | 0.2267 | 0.59   |
| 227 | 0.2223 | 0.5787 |
| 228 | 0.218  | 0.5676 |
| 229 | 0.2138 | 0.5568 |
| 230 | 0.2097 | 0.5462 |
| 231 | 0.2057 | 0.5358 |
| 232 | 0.2018 | 0.5257 |
| 233 | 0.1979 | 0.5158 |
| 234 | 0.1942 | 0.5061 |
| 235 | 0.1905 | 0.4966 |
| 236 | 0.1869 | 0.4874 |
| 237 | 0.1834 | 0.4783 |
| 238 | 0.18   | 0.4695 |
| 239 | 0.1766 | 0.4608 |
| 240 | 0.1733 | 0.4523 |
| 241 | 0.1701 | 0.444  |
| 242 | 0.1669 | 0.4359 |
| 243 | 0.1639 | 0.4279 |
| 244 | 0.1608 | 0.4201 |
| 245 | 0.1579 | 0.4125 |
| 246 | 0.155  | 0.405  |
| 247 | 0.1522 | 0.3977 |
| 248 | 0.1494 | 0.3906 |
| 249 | 0.1467 | 0.3836 |
| 250 | 0.144  | 0.3767 |

## Wave solder profile



## Reference EN 61760-1:2006

| Profile feature                               | Standard SnPb solder                      | Lead (Pb) free solder                     |
|-----------------------------------------------|-------------------------------------------|-------------------------------------------|
| Preheat                                       |                                           |                                           |
| • Temperature min. ( $T_{smin}$ )             | 100 °C                                    | 100 °C                                    |
| • Temperature typ. ( $T_{styp}$ )             | 120 °C                                    | 120 °C                                    |
| • Temperature max. ( $T_{smax}$ )             | 130 °C                                    | 130 °C                                    |
| • Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ ) | 70 seconds                                | 70 seconds                                |
| $\Delta$ preheat to max Temperature           | 150 °C max.                               | 150 °C max.                               |
| Peak temperature ( $T_p$ )*                   | 235 °C – 260 °C                           | 250 °C – 260 °C                           |
| Time at peak temperature ( $t_p$ )            | 10 seconds max<br>5 seconds max each wave | 10 seconds max<br>5 seconds max each wave |
| Ramp-down rate                                | ~ 2 K/s min<br>~3.5 K/s typ<br>~5 K/s max | ~ 2 K/s min<br>~3.5 K/s typ<br>~5 K/s max |
| Time 25 °C to 25 °C                           | 4 minutes                                 | 4 minutes                                 |

## Manual solder

+280 °C  $\pm$ 20 °C (less than 2 seconds by soldering iron at  $\geq$ 9 mm distance from the thermistor head), generally manual/hand soldering is not recommended

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