

# NRNE

## Epoxy sealed radial lead NTC thermistor



### Product features

- Epoxy sealed radial NTC thermistor
- Temperature compensation
- 3 millimeter disk type
- Wide resistance range 0.9 kΩ to 470 kΩ
- Non-linear change in resistance vs temperature

### Packaging information

- Bulk: 500 parts per poly bag

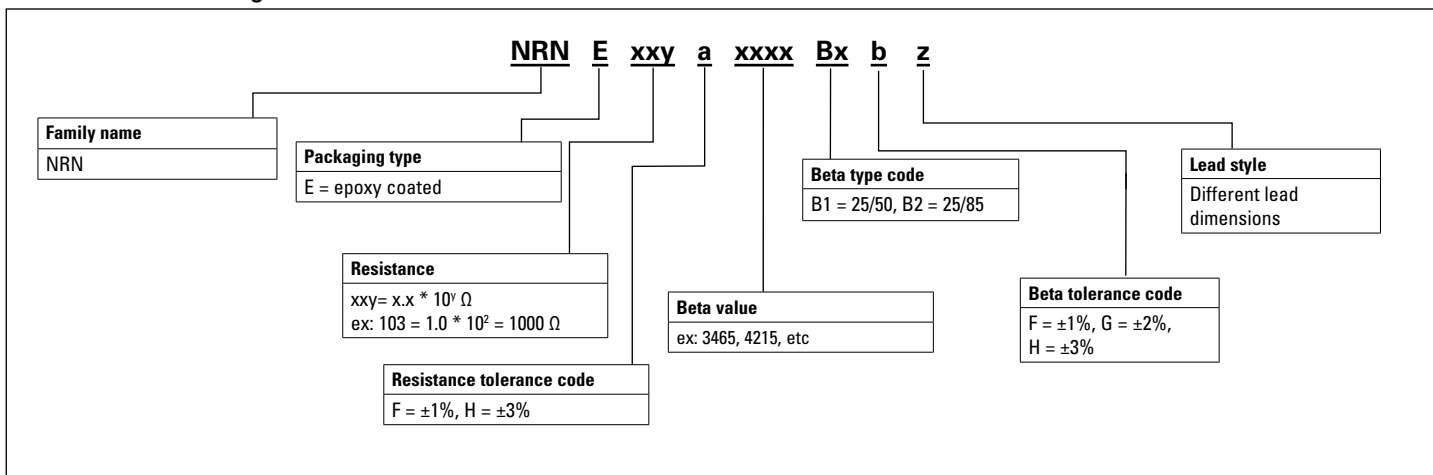
### Applications

- 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
- White goods/household appliances
- Computer and peripheral products

### Environmental compliance and general specifications



Table 1. Part numbering

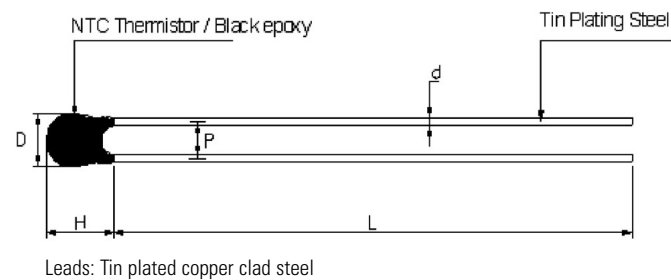


See electrical specification table for option details



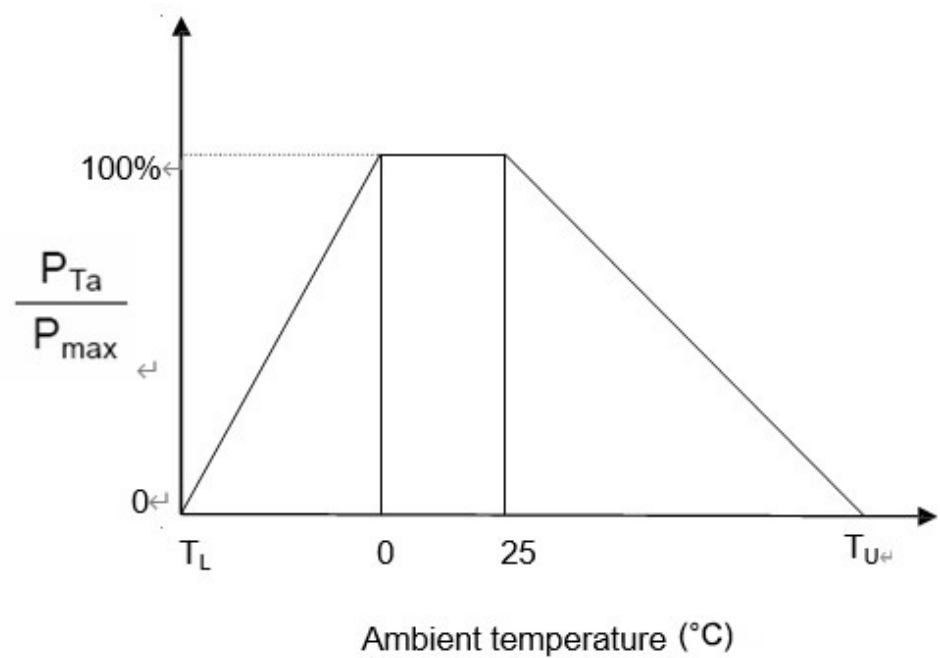
Powering Business Worldwide

Mechanical parameters- mm



| Millimeters |             |
|-------------|-------------|
| Dimension   | Value       |
| P           | 2.0 ± 0.7   |
| D maximum   | 2.6         |
| H maximum   | 5           |
| d           | 0.35 ± 0.05 |
| L minimum   | 6.5         |

Power derating curve



$T_U$ : Upper limit of working temperature (°C)  
 $T_L$ : Lower limit of working temperature (°C)  
Example:  
Ambient temperature ( $T_a$ )= 55 °C  
Upper limit of working temperature  $T_U$ =125 °C  
 $P_{Ta} = (T_U - T_a) / (T_U - 25) \times P_{max} = 70\% P_{max}$   
Note:  $P_{Ta}$  calculation for temperatures > 25 °C

## Electrical specifications

| Part number     | Zero power resistance<br>@ 25°C<br>R <sub>25</sub> (kΩ) | R <sub>25</sub><br>Tolerance<br>(Part number<br>code) | Beta type<br>(Part number<br>code) | Beta<br>value<br>(K) | Beta<br>tolerance<br>(Part number<br>code) | Maximum<br>power<br>@ +25°C<br>P <sub>max</sub> (mW) | Dissipation<br>factor<br>(mW/°C) | Thermal time<br>constant<br>T (second) | Operation<br>temperature<br>TL~TU(°C) |
|-----------------|---------------------------------------------------------|-------------------------------------------------------|------------------------------------|----------------------|--------------------------------------------|------------------------------------------------------|----------------------------------|----------------------------------------|---------------------------------------|
| NRNE902axxxxBxb | 0.9                                                     | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 3930                 | ±2% (G), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE103axxxxBxb | 1                                                       | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 3935                 | ±2% (G), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE153axxxxBxb | 1.5                                                     | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 3935                 | ±2% (G), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE203axxxxBxb | 2.0                                                     | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 3500                 | ±2% (G), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE223axxxxBxb | 2.2                                                     | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 3950                 | ±2% (G), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE273axxxxBxb | 2.7                                                     | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 3950                 | ±2% (G), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE303axxxxBxb | 3.0                                                     | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 3950                 | ±2% (G), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE333axxxxBxb | 3.3                                                     | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 3950                 | ±2% (G), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE473axxxxBxb | 4.7                                                     | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 3950                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE483axxxxBxb | 4.8                                                     | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 3950                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE503axxxxBxb | 5.0                                                     | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 3950                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE683axxxxBxb | 6.8                                                     | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 3950                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE104axxxxBxb | 10                                                      | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 3435                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE104axxxxBxb | 10                                                      | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 3720                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE104axxxxBxb | 10                                                      | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 3950                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE124axxxxBxb | 12                                                      | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 3720                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE154axxxxBxb | 15                                                      | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 3720                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE204axxxxBxb | 20                                                      | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 3740                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE204axxxxBxb | 20                                                      | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 4260                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE224axxxxBxb | 22                                                      | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 3740                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE334axxxxBxb | 33                                                      | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 4090                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE474axxxxBxb | 47                                                      | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 4090                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE474axxxxBxb | 47                                                      | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 3950                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE504axxxxBxb | 50                                                      | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 3975                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE504axxxxBxb | 50                                                      | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 4050                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE504axxxxBxb | 50                                                      | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 4400                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE684axxxxBxb | 68                                                      | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 4190                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE105axxxxBxb | 100                                                     | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 4100                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE105axxxxBxb | 100                                                     | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 4360                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE155axxxxBxb | 150                                                     | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 4370                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE205axxxxBxb | 200                                                     | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 3900                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE225axxxxBxb | 220                                                     | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 4370                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE335axxxxBxb | 330                                                     | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 4570                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE475axxxxBxb | 470                                                     | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 4570                 | ±1% (F), ±3% (H)                           | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE475axxxxBxb | 470                                                     | ±1% (F), ±3% (H)                                      | 25/85 (B2)                         | 5200                 | ±2% (G)                                    | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE435axxxxBxb | 430                                                     | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 5070                 | ±2% (G)                                    | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |
| NRNE475axxxxBxb | 470                                                     | ±1% (F), ±3% (H)                                      | 25/50 (B1)                         | 5200                 | ±2% (G)                                    | 150                                                  | ≥ 3.5                            | ≤ 8                                    | -40 to +125                           |

a= Enter resistance tolerance code from table above (F = ±1%, H = ±3%)

Bx= Enter Beta code from table above (B1 = 25/50, B2 = 25/85)

b= Enter Beta tolerance code from table above (F = ±1%, G = ±2%, H = ±3%)

## Temperature characteristics

| Part number         | NRNE902<br>3930    | NRNE103<br>3935    | NRNE153<br>3935    | NRNE203<br>3500    | NRNE223<br>3950    | NRNE273<br>3950    | NRNE303<br>3950    | NRNE333<br>3950    | NRNE473<br>3950    | NRNE483<br>3950    |
|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| B type              | B25/85             | B25/85             | B25/85             | B25/50             | B25/50             | B25/50             | B25/50             | B25/50             | B25/50             | B25/50             |
| Temperature<br>(°C) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) |
| -40                 | 31                 | 33                 | 50                 | 44                 | 75                 | 90                 | 100                | 110                | 170                | 160                |
| -39                 | 29.18              | 31.11              | 46.95              | 41.6               | 70.29              | 84.4               | 93.77              | 103.14             | 158.84             | 149.98             |
| -38                 | 27.47              | 29.33              | 44.1               | 39.35              | 65.89              | 79.18              | 87.96              | 96.74              | 148.49             | 140.64             |
| -37                 | 25.87              | 27.66              | 41.44              | 37.22              | 61.79              | 74.31              | 82.54              | 90.77              | 138.87             | 131.93             |
| -36                 | 24.36              | 26.09              | 38.94              | 35.23              | 57.97              | 69.76              | 77.48              | 85.2               | 129.93             | 123.81             |
| -35                 | 22.94              | 24.6               | 36.61              | 33.34              | 54.41              | 65.51              | 72.75              | 80                 | 121.63             | 116.23             |
| -34                 | 21.61              | 23.2               | 34.42              | 31.57              | 51.08              | 61.54              | 68.34              | 75.14              | 113.91             | 109.15             |
| -33                 | 20.36              | 21.89              | 32.38              | 29.9               | 47.97              | 57.83              | 64.22              | 70.6               | 106.72             | 102.54             |
| -32                 | 19.18              | 20.65              | 30.46              | 28.32              | 45.06              | 54.36              | 60.36              | 66.36              | 100.03             | 96.36              |
| -31                 | 18.07              | 19.48              | 28.66              | 26.84              | 42.35              | 51.12              | 56.76              | 62.39              | 93.8               | 90.59              |
| -30                 | 17.03              | 18.38              | 26.98              | 25.43              | 39.81              | 48.08              | 53.38              | 58.69              | 88                 | 85.19              |
| -29                 | 16.05              | 17.35              | 25.4               | 24.11              | 37.44              | 45.24              | 50.23              | 55.22              | 82.6               | 80.15              |
| -28                 | 15.13              | 16.37              | 23.93              | 22.87              | 35.22              | 42.59              | 47.28              | 51.97              | 77.55              | 75.43              |
| -27                 | 14.26              | 15.45              | 22.54              | 21.69              | 33.14              | 40.1               | 44.52              | 48.93              | 72.85              | 71.01              |
| -26                 | 13.45              | 14.59              | 21.24              | 20.58              | 31.2               | 37.77              | 41.93              | 46.08              | 68.46              | 66.87              |
| -25                 | 12.68              | 13.77              | 20.02              | 19.53              | 29.38              | 35.59              | 39.5               | 43.42              | 64.36              | 63                 |
| -24                 | 11.96              | 13.01              | 18.88              | 18.54              | 27.68              | 33.54              | 37.23              | 40.92              | 60.54              | 59.37              |
| -23                 | 11.29              | 12.28              | 17.8               | 17.61              | 26.08              | 31.62              | 35.1               | 38.58              | 56.96              | 55.97              |
| -22                 | 10.65              | 11.6               | 16.8               | 16.72              | 24.59              | 29.82              | 33.1               | 36.38              | 53.62              | 52.79              |
| -21                 | 10.05              | 10.96              | 15.85              | 15.89              | 23.19              | 28.14              | 31.23              | 34.33              | 50.49              | 49.8               |
| -20                 | 9.49               | 10.35              | 14.96              | 15.1               | 21.87              | 26.55              | 29.47              | 32.39              | 47.57              | 46.99              |
| -19                 | 8.95               | 9.78               | 14.12              | 14.35              | 20.64              | 25.07              | 27.83              | 30.58              | 44.83              | 44.36              |
| -18                 | 8.45               | 9.25               | 13.34              | 13.65              | 19.48              | 23.67              | 26.28              | 28.88              | 42.27              | 41.9               |
| -17                 | 7.98               | 8.74               | 12.6               | 12.98              | 18.39              | 22.36              | 24.82              | 27.28              | 39.87              | 39.58              |
| -16                 | 7.54               | 8.26               | 11.91              | 12.35              | 17.37              | 21.13              | 23.46              | 25.78              | 37.62              | 37.4               |
| -15                 | 7.12               | 7.81               | 11.26              | 11.75              | 16.42              | 19.97              | 22.17              | 24.37              | 35.51              | 35.35              |
| -14                 | 6.73               | 7.39               | 10.64              | 11.19              | 15.52              | 18.89              | 20.97              | 23.04              | 33.53              | 33.43              |
| -13                 | 6.36               | 6.99               | 10.07              | 10.65              | 14.67              | 17.86              | 19.83              | 21.8               | 31.67              | 31.62              |
| -12                 | 6.01               | 6.61               | 9.52               | 10.14              | 13.88              | 16.9               | 18.76              | 20.62              | 29.93              | 29.92              |
| -11                 | 5.69               | 6.25               | 9.01               | 9.66               | 13.13              | 16                 | 17.76              | 19.52              | 28.3               | 28.32              |
| -10                 | 5.38               | 5.92               | 8.53               | 9.21               | 12.43              | 15.15              | 16.81              | 18.48              | 26.76              | 26.81              |
| -9                  | 5.09               | 5.6                | 8.08               | 8.77               | 11.76              | 14.34              | 15.92              | 17.5               | 25.32              | 25.4               |
| -8                  | 4.81               | 5.3                | 7.65               | 8.37               | 11.14              | 13.59              | 15.09              | 16.58              | 23.96              | 24.06              |
| -7                  | 4.56               | 5.02               | 7.25               | 7.98               | 10.55              | 12.88              | 14.3               | 15.71              | 22.69              | 22.81              |
| -6                  | 4.31               | 4.76               | 6.87               | 7.61               | 10                 | 12.21              | 13.55              | 14.9               | 21.49              | 21.62              |
| -5                  | 4.08               | 4.51               | 6.51               | 7.26               | 9.48               | 11.58              | 12.85              | 14.13              | 20.36              | 20.5               |
| -4                  | 3.87               | 4.27               | 6.17               | 6.93               | 8.99               | 10.98              | 12.19              | 13.4               | 19.29              | 19.45              |
| -3                  | 3.66               | 4.05               | 5.86               | 6.61               | 8.53               | 10.42              | 11.57              | 12.72              | 18.29              | 18.46              |
| -2                  | 3.47               | 3.84               | 5.56               | 6.32               | 8.09               | 9.89               | 10.98              | 12.07              | 17.35              | 17.52              |
| -1                  | 3.29               | 3.64               | 5.27               | 6.03               | 7.68               | 9.39               | 10.42              | 11.46              | 16.46              | 16.64              |
| 0                   | 3.12               | 3.45               | 5.01               | 5.76               | 7.29               | 8.92               | 9.9                | 10.88              | 15.62              | 15.8               |
| 1                   | 2.96               | 3.27               | 4.75               | 5.51               | 6.93               | 8.47               | 9.4                | 10.34              | 14.83              | 15.01              |
| 2                   | 2.8                | 3.11               | 4.52               | 5.26               | 6.58               | 8.05               | 8.94               | 9.83               | 14.09              | 14.27              |
| 3                   | 2.66               | 2.95               | 4.29               | 5.03               | 6.25               | 7.65               | 8.5                | 9.34               | 13.38              | 13.57              |
| 4                   | 2.52               | 2.8                | 4.08               | 4.81               | 5.94               | 7.27               | 8.08               | 8.88               | 12.72              | 12.9               |
| 5                   | 2.4                | 2.66               | 3.88               | 4.61               | 5.65               | 6.92               | 7.68               | 8.45               | 12.09              | 12.27              |
| 6                   | 2.28               | 2.52               | 3.69               | 4.41               | 5.38               | 6.58               | 7.31               | 8.04               | 11.5               | 11.68              |
| 7                   | 2.16               | 2.4                | 3.51               | 4.22               | 5.12               | 6.27               | 6.96               | 7.65               | 10.94              | 11.11              |
| 8                   | 2.05               | 2.28               | 3.34               | 4.04               | 4.87               | 5.96               | 6.62               | 7.28               | 10.41              | 10.58              |
| 9                   | 1.95               | 2.17               | 3.18               | 3.87               | 4.64               | 5.68               | 6.31               | 6.94               | 9.91               | 10.08              |
| 10                  | 1.86               | 2.06               | 3.02               | 3.7                | 4.42               | 5.41               | 6.01               | 6.61               | 9.44               | 9.6                |
| 11                  | 1.76               | 1.96               | 2.88               | 3.55               | 4.21               | 5.15               | 5.73               | 6.3                | 8.99               | 9.15               |
| 12                  | 1.68               | 1.86               | 2.74               | 3.4                | 4.01               | 4.91               | 5.46               | 6                  | 8.57               | 8.72               |
| 13                  | 1.6                | 1.77               | 2.62               | 3.26               | 3.82               | 4.68               | 5.2                | 5.72               | 8.17               | 8.32               |
| 14                  | 1.52               | 1.69               | 2.49               | 3.13               | 3.64               | 4.47               | 4.96               | 5.46               | 7.79               | 7.93               |
| 15                  | 1.45               | 1.61               | 2.38               | 3                  | 3.48               | 4.26               | 4.73               | 5.21               | 7.43               | 7.57               |
| 16                  | 1.38               | 1.53               | 2.27               | 2.88               | 3.32               | 4.07               | 4.52               | 4.97               | 7.08               | 7.22               |
| 17                  | 1.31               | 1.46               | 2.16               | 2.76               | 3.16               | 3.88               | 4.31               | 4.74               | 6.76               | 6.89               |
| 18                  | 1.25               | 1.39               | 2.06               | 2.65               | 3.02               | 3.71               | 4.12               | 4.53               | 6.45               | 6.58               |

Temperature characteristics, cont.

| Part number         | NRNE902<br>3930    | NRNE103<br>3935    | NRNE153<br>3935    | NRNE203<br>3500    | NRNE223<br>3950    | NRNE273<br>3950    | NRNE303<br>3950    | NRNE333<br>3950    | NRNE473<br>3950    | NRNE483<br>3950    |
|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| B type              | B25/85             | B25/85             | B25/85             | B25/50             | B25/50             | B25/50             | B25/50             | B25/50             | B25/50             | B25/50             |
| Temperature<br>(°C) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) |
| 19                  | 1.19               | 1.32               | 1.97               | 2.54               | 2.88               | 3.54               | 3.93               | 4.32               | 6.16               | 6.29               |
| 20                  | 1.14               | 1.26               | 1.88               | 2.44               | 2.76               | 3.38               | 3.76               | 4.13               | 5.89               | 6.01               |
| 21                  | 1.08               | 1.2                | 1.8                | 2.34               | 2.63               | 3.23               | 3.59               | 3.95               | 5.62               | 5.74               |
| 22                  | 1.03               | 1.15               | 1.72               | 2.25               | 2.52               | 3.09               | 3.43               | 3.77               | 5.37               | 5.49               |
| 23                  | 0.9871             | 1.1                | 1.64               | 2.16               | 2.41               | 2.95               | 3.28               | 3.61               | 5.14               | 5.25               |
| 24                  | 0.9424             | 1.05               | 1.57               | 2.08               | 2.3                | 2.82               | 3.14               | 3.45               | 4.91               | 5.02               |
| 25                  | 0.9                | 1                  | 1.5                | 2                  | 2.2                | 2.7                | 3                  | 3.3                | 4.7                | 4.8                |
| 26                  | 0.8598             | 0.9553             | 1.43               | 1.92               | 2.1                | 2.58               | 2.87               | 3.16               | 4.5                | 4.59               |
| 27                  | 0.8216             | 0.9129             | 1.37               | 1.85               | 2.01               | 2.47               | 2.75               | 3.02               | 4.3                | 4.4                |
| 28                  | 0.7854             | 0.8726             | 1.31               | 1.78               | 1.93               | 2.37               | 2.63               | 2.89               | 4.12               | 4.21               |
| 29                  | 0.751              | 0.8343             | 1.26               | 1.71               | 1.85               | 2.27               | 2.52               | 2.77               | 3.95               | 4.03               |
| 30                  | 0.7183             | 0.798              | 1.2                | 1.65               | 1.77               | 2.17               | 2.41               | 2.65               | 3.78               | 3.86               |
| 31                  | 0.6873             | 0.7635             | 1.15               | 1.59               | 1.69               | 2.08               | 2.31               | 2.54               | 3.62               | 3.7                |
| 32                  | 0.6578             | 0.7308             | 1.11               | 1.53               | 1.62               | 1.99               | 2.22               | 2.44               | 3.47               | 3.55               |
| 33                  | 0.6298             | 0.6996             | 1.06               | 1.47               | 1.56               | 1.91               | 2.12               | 2.34               | 3.33               | 3.4                |
| 34                  | 0.6032             | 0.67               | 1.02               | 1.42               | 1.49               | 1.83               | 2.04               | 2.24               | 3.19               | 3.26               |
| 35                  | 0.5779             | 0.6418             | 0.9736             | 1.37               | 1.43               | 1.76               | 1.95               | 2.15               | 3.06               | 3.13               |
| 36                  | 0.5538             | 0.6151             | 0.9339             | 1.32               | 1.37               | 1.69               | 1.87               | 2.06               | 2.94               | 3                  |
| 37                  | 0.5309             | 0.5896             | 0.896              | 1.27               | 1.32               | 1.62               | 1.8                | 1.98               | 2.82               | 2.88               |
| 38                  | 0.5091             | 0.5653             | 0.8598             | 1.23               | 1.27               | 1.55               | 1.73               | 1.9                | 2.7                | 2.76               |
| 39                  | 0.4884             | 0.5423             | 0.8254             | 1.18               | 1.21               | 1.49               | 1.66               | 1.82               | 2.6                | 2.65               |
| 40                  | 0.4686             | 0.5203             | 0.7925             | 1.14               | 1.17               | 1.43               | 1.59               | 1.75               | 2.49               | 2.55               |
| 41                  | 0.4498             | 0.4994             | 0.7612             | 1.1                | 1.12               | 1.38               | 1.53               | 1.68               | 2.4                | 2.45               |
| 42                  | 0.4319             | 0.4794             | 0.7313             | 1.06               | 1.08               | 1.32               | 1.47               | 1.62               | 2.3                | 2.35               |
| 43                  | 0.4148             | 0.4604             | 0.7027             | 1.03               | 1.04               | 1.27               | 1.41               | 1.55               | 2.21               | 2.26               |
| 44                  | 0.3985             | 0.4423             | 0.6755             | 0.9901             | 0.995              | 1.22               | 1.36               | 1.49               | 2.13               | 2.17               |
| 45                  | 0.383              | 0.425              | 0.6494             | 0.9563             | 0.9568             | 1.17               | 1.31               | 1.44               | 2.04               | 2.09               |
| 46                  | 0.3682             | 0.4086             | 0.6246             | 0.9239             | 0.9202             | 1.13               | 1.26               | 1.38               | 1.97               | 2.01               |
| 47                  | 0.3541             | 0.3929             | 0.6008             | 0.8927             | 0.8853             | 1.09               | 1.21               | 1.33               | 1.89               | 1.93               |
| 48                  | 0.3406             | 0.3779             | 0.5781             | 0.8628             | 0.8519             | 1.05               | 1.16               | 1.28               | 1.82               | 1.86               |
| 49                  | 0.3278             | 0.3636             | 0.5564             | 0.8341             | 0.82               | 1.01               | 1.12               | 1.23               | 1.75               | 1.79               |
| 50                  | 0.3155             | 0.3499             | 0.5356             | 0.8065             | 0.7894             | 0.9688             | 1.08               | 1.18               | 1.69               | 1.72               |
| 51                  | 0.3038             | 0.3369             | 0.5158             | 0.78               | 0.7602             | 0.9329             | 1.04               | 1.14               | 1.62               | 1.66               |
| 52                  | 0.2925             | 0.3244             | 0.4968             | 0.7545             | 0.7322             | 0.8985             | 0.9982             | 1.1                | 1.56               | 1.6                |
| 53                  | 0.2818             | 0.3125             | 0.4786             | 0.73               | 0.7054             | 0.8656             | 0.9616             | 1.06               | 1.51               | 1.54               |
| 54                  | 0.2716             | 0.3012             | 0.4612             | 0.7064             | 0.6798             | 0.8341             | 0.9266             | 1.02               | 1.45               | 1.48               |
| 55                  | 0.2618             | 0.2903             | 0.4446             | 0.6838             | 0.6552             | 0.8039             | 0.893              | 0.9823             | 1.4                | 1.43               |
| 56                  | 0.2525             | 0.2799             | 0.4286             | 0.662              | 0.6317             | 0.775              | 0.8609             | 0.9469             | 1.35               | 1.38               |
| 57                  | 0.2435             | 0.2699             | 0.4134             | 0.641              | 0.6092             | 0.7473             | 0.8301             | 0.913              | 1.3                | 1.33               |
| 58                  | 0.2349             | 0.2604             | 0.3987             | 0.6208             | 0.5875             | 0.7207             | 0.8006             | 0.8805             | 1.25               | 1.28               |
| 59                  | 0.2267             | 0.2513             | 0.3847             | 0.6014             | 0.5668             | 0.6952             | 0.7723             | 0.8494             | 1.21               | 1.23               |
| 60                  | 0.2189             | 0.2426             | 0.3713             | 0.5827             | 0.547              | 0.6708             | 0.7451             | 0.8195             | 1.17               | 1.19               |
| 61                  | 0.2114             | 0.2342             | 0.3584             | 0.5647             | 0.5279             | 0.6474             | 0.7191             | 0.7908             | 1.13               | 1.15               |
| 62                  | 0.2042             | 0.2262             | 0.346              | 0.5474             | 0.5097             | 0.625              | 0.6941             | 0.7634             | 1.09               | 1.11               |
| 63                  | 0.1972             | 0.2186             | 0.3342             | 0.5307             | 0.4922             | 0.6034             | 0.6702             | 0.737              | 1.05               | 1.07               |
| 64                  | 0.1906             | 0.2112             | 0.3228             | 0.5146             | 0.4753             | 0.5828             | 0.6472             | 0.7117             | 1.01               | 1.03               |
| 65                  | 0.1843             | 0.2042             | 0.3119             | 0.4991             | 0.4592             | 0.5629             | 0.6251             | 0.6874             | 0.979              | 0.9985             |
| 66                  | 0.1782             | 0.1974             | 0.3015             | 0.4841             | 0.4437             | 0.5439             | 0.6039             | 0.6641             | 0.9458             | 0.9645             |
| 67                  | 0.1724             | 0.1909             | 0.2914             | 0.4697             | 0.4288             | 0.5256             | 0.5836             | 0.6417             | 0.9139             | 0.9318             |
| 68                  | 0.1668             | 0.1847             | 0.2817             | 0.4558             | 0.4145             | 0.508              | 0.564              | 0.6201             | 0.8832             | 0.9005             |
| 69                  | 0.1614             | 0.1788             | 0.2725             | 0.4424             | 0.4008             | 0.4911             | 0.5452             | 0.5995             | 0.8537             | 0.8703             |
| 70                  | 0.1562             | 0.173              | 0.2636             | 0.4295             | 0.3876             | 0.4749             | 0.5272             | 0.5796             | 0.8254             | 0.8414             |
| 71                  | 0.1513             | 0.1675             | 0.255              | 0.417              | 0.3749             | 0.4593             | 0.5099             | 0.5605             | 0.7982             | 0.8135             |
| 72                  | 0.1465             | 0.1623             | 0.2468             | 0.405              | 0.3627             | 0.4443             | 0.4932             | 0.5422             | 0.772              | 0.7868             |
| 73                  | 0.1419             | 0.1572             | 0.2389             | 0.3934             | 0.3509             | 0.4299             | 0.4772             | 0.5245             | 0.7468             | 0.761              |
| 74                  | 0.1375             | 0.1523             | 0.2313             | 0.3822             | 0.3397             | 0.416              | 0.4617             | 0.5075             | 0.7226             | 0.7363             |
| 75                  | 0.1333             | 0.1476             | 0.224              | 0.3714             | 0.3288             | 0.4027             | 0.4469             | 0.4912             | 0.6993             | 0.7125             |
| 76                  | 0.1292             | 0.1431             | 0.2169             | 0.3609             | 0.3184             | 0.3898             | 0.4326             | 0.4755             | 0.6769             | 0.6896             |
| 77                  | 0.1253             | 0.1388             | 0.2102             | 0.3509             | 0.3083             | 0.3775             | 0.4189             | 0.4604             | 0.6553             | 0.6676             |

Temperature characteristics, cont.

| Part number         | NRNE902<br>3930    | NRNE103<br>3935    | NRNE153<br>3935    | NRNE203<br>3500    | NRNE223<br>3950    | NRNE273<br>3950    | NRNE303<br>3950    | NRNE333<br>3950    | NRNE473<br>3950    | NRNE483<br>3950    |
|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| B type              | B25/85             | B25/85             | B25/85             | B25/50             | B25/50             | B25/50             | B25/50             | B25/50             | B25/50             | B25/50             |
| Temperature<br>(°C) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) |
| 78                  | 0.1216             | 0.1346             | 0.2036             | 0.3411             | 0.2987             | 0.3656             | 0.4057             | 0.4458             | 0.6345             | 0.6463             |
| 79                  | 0.118              | 0.1306             | 0.1974             | 0.3317             | 0.2893             | 0.3542             | 0.393              | 0.4318             | 0.6145             | 0.6259             |
| 80                  | 0.1145             | 0.1268             | 0.1913             | 0.3226             | 0.2804             | 0.3432             | 0.3807             | 0.4183             | 0.5953             | 0.6063             |
| 81                  | 0.1111             | 0.123              | 0.1855             | 0.3138             | 0.2717             | 0.3325             | 0.3689             | 0.4054             | 0.5767             | 0.5873             |
| 82                  | 0.1079             | 0.1195             | 0.1799             | 0.3053             | 0.2634             | 0.3223             | 0.3575             | 0.3928             | 0.5588             | 0.5691             |
| 83                  | 0.1048             | 0.116              | 0.1745             | 0.2971             | 0.2554             | 0.3125             | 0.3466             | 0.3808             | 0.5416             | 0.5515             |
| 84                  | 0.1018             | 0.1127             | 0.1693             | 0.2891             | 0.2477             | 0.303              | 0.336              | 0.3692             | 0.525              | 0.5346             |
| 85                  | 0.0989             | 0.1095             | 0.1643             | 0.2814             | 0.2402             | 0.2938             | 0.3259             | 0.358              | 0.509              | 0.5183             |
| 86                  | 0.0961             | 0.1064             | 0.1595             | 0.274              | 0.233              | 0.285              | 0.3161             | 0.3472             | 0.4936             | 0.5025             |
| 87                  | 0.0934             | 0.1034             | 0.1548             | 0.2668             | 0.2261             | 0.2765             | 0.3066             | 0.3368             | 0.4787             | 0.4874             |
| 88                  | 0.0908             | 0.1006             | 0.1503             | 0.2598             | 0.2194             | 0.2683             | 0.2975             | 0.3267             | 0.4644             | 0.4727             |
| 89                  | 0.0883             | 0.0978             | 0.146              | 0.2531             | 0.213              | 0.2604             | 0.2887             | 0.3171             | 0.4506             | 0.4586             |
| 90                  | 0.0859             | 0.0951             | 0.1418             | 0.2466             | 0.2068             | 0.2528             | 0.2802             | 0.3077             | 0.4372             | 0.445              |
| 91                  | 0.0836             | 0.0926             | 0.1378             | 0.2402             | 0.2008             | 0.2454             | 0.272              | 0.2987             | 0.4243             | 0.4319             |
| 92                  | 0.0814             | 0.0901             | 0.1339             | 0.2341             | 0.195              | 0.2383             | 0.2641             | 0.29               | 0.4119             | 0.4192             |
| 93                  | 0.0792             | 0.0877             | 0.1301             | 0.2282             | 0.1894             | 0.2314             | 0.2565             | 0.2816             | 0.3999             | 0.407              |
| 94                  | 0.0771             | 0.0854             | 0.1265             | 0.2224             | 0.184              | 0.2248             | 0.2491             | 0.2735             | 0.3883             | 0.3952             |
| 95                  | 0.0751             | 0.0831             | 0.123              | 0.2169             | 0.1788             | 0.2184             | 0.242              | 0.2657             | 0.3771             | 0.3838             |
| 96                  | 0.0731             | 0.081              | 0.1196             | 0.2115             | 0.1738             | 0.2123             | 0.2352             | 0.2581             | 0.3663             | 0.3728             |
| 97                  | 0.0712             | 0.0789             | 0.1163             | 0.2063             | 0.1689             | 0.2063             | 0.2285             | 0.2508             | 0.3559             | 0.3622             |
| 98                  | 0.0694             | 0.0769             | 0.1131             | 0.2012             | 0.1642             | 0.2005             | 0.2221             | 0.2438             | 0.3458             | 0.3519             |
| 99                  | 0.0676             | 0.0749             | 0.1101             | 0.1963             | 0.1597             | 0.1949             | 0.2159             | 0.237              | 0.336              | 0.342              |
| 100                 | 0.0659             | 0.073              | 0.1071             | 0.1915             | 0.1553             | 0.1896             | 0.21               | 0.2304             | 0.3266             | 0.3324             |
| 101                 | 0.0643             | 0.0712             | 0.1043             | 0.1869             | 0.151              | 0.1844             | 0.2042             | 0.224              | 0.3175             | 0.3231             |
| 102                 | 0.0627             | 0.0694             | 0.1015             | 0.1824             | 0.1469             | 0.1793             | 0.1986             | 0.2179             | 0.3087             | 0.3141             |
| 103                 | 0.0611             | 0.0677             | 0.0988             | 0.1781             | 0.143              | 0.1745             | 0.1932             | 0.2119             | 0.3002             | 0.3055             |
| 104                 | 0.0596             | 0.0661             | 0.0963             | 0.1739             | 0.1391             | 0.1698             | 0.1879             | 0.2062             | 0.2919             | 0.2971             |
| 105                 | 0.0582             | 0.0645             | 0.0938             | 0.1698             | 0.1354             | 0.1652             | 0.1829             | 0.2006             | 0.284              | 0.289              |
| 106                 | 0.0568             | 0.0629             | 0.0913             | 0.1658             | 0.1318             | 0.1608             | 0.178              | 0.1952             | 0.2763             | 0.2812             |
| 107                 | 0.0554             | 0.0614             | 0.089              | 0.162              | 0.1284             | 0.1565             | 0.1732             | 0.19               | 0.2688             | 0.2736             |
| 108                 | 0.0541             | 0.06               | 0.0867             | 0.1582             | 0.125              | 0.1524             | 0.1687             | 0.1849             | 0.2616             | 0.2662             |
| 109                 | 0.0529             | 0.0586             | 0.0845             | 0.1546             | 0.1217             | 0.1484             | 0.1642             | 0.1801             | 0.2546             | 0.2591             |
| 110                 | 0.0516             | 0.0572             | 0.0824             | 0.1511             | 0.1186             | 0.1445             | 0.1599             | 0.1753             | 0.2478             | 0.2523             |
| 111                 | 0.0504             | 0.0559             | 0.0803             | 0.1476             | 0.1155             | 0.1408             | 0.1558             | 0.1708             | 0.2413             | 0.2456             |
| 112                 | 0.0493             | 0.0546             | 0.0783             | 0.1443             | 0.1126             | 0.1372             | 0.1517             | 0.1663             | 0.235              | 0.2392             |
| 113                 | 0.0481             | 0.0533             | 0.0764             | 0.1411             | 0.1097             | 0.1337             | 0.1478             | 0.162              | 0.2288             | 0.2329             |
| 114                 | 0.047              | 0.0521             | 0.0745             | 0.1379             | 0.1069             | 0.1303             | 0.144              | 0.1579             | 0.2229             | 0.2269             |
| 115                 | 0.046              | 0.051              | 0.0727             | 0.1349             | 0.1042             | 0.127              | 0.1404             | 0.1538             | 0.2171             | 0.221              |
| 116                 | 0.045              | 0.0498             | 0.071              | 0.1319             | 0.1016             | 0.1238             | 0.1368             | 0.1499             | 0.2115             | 0.2153             |
| 117                 | 0.044              | 0.0487             | 0.0692             | 0.129              | 0.0991             | 0.1207             | 0.1334             | 0.1462             | 0.2061             | 0.2098             |
| 118                 | 0.043              | 0.0477             | 0.0676             | 0.1262             | 0.0966             | 0.1177             | 0.1301             | 0.1425             | 0.2008             | 0.2045             |
| 119                 | 0.042              | 0.0466             | 0.066              | 0.1235             | 0.0943             | 0.1148             | 0.1268             | 0.1389             | 0.1958             | 0.1993             |
| 120                 | 0.0411             | 0.0456             | 0.0644             | 0.1208             | 0.0919             | 0.1119             | 0.1237             | 0.1355             | 0.1908             | 0.1943             |
| 121                 | 0.0403             | 0.0446             | 0.0629             | 0.1182             | 0.0897             | 0.1092             | 0.1207             | 0.1321             | 0.186              | 0.1895             |
| 122                 | 0.0394             | 0.0437             | 0.0614             | 0.1157             | 0.0875             | 0.1065             | 0.1177             | 0.1289             | 0.1814             | 0.1848             |
| 123                 | 0.0386             | 0.0428             | 0.06               | 0.1133             | 0.0854             | 0.104              | 0.1148             | 0.1258             | 0.1769             | 0.1802             |
| 124                 | 0.0377             | 0.0419             | 0.0586             | 0.1109             | 0.0834             | 0.1015             | 0.1121             | 0.1227             | 0.1725             | 0.1758             |
| 125                 | 0.037              | 0.041              | 0.0573             | 0.1086             | 0.0814             | 0.099              | 0.1094             | 0.1197             | 0.1683             | 0.1715             |

Temperature characteristics

| Part number         | NRNE503<br>3950    | NRNE683<br>3950    | NRNE104<br>3435    | NRNE104<br>3720    | NRNE104<br>3950    | NRNE124<br>3720    | NRNE154<br>3720    | NRNE204<br>3740    | NRNE204<br>4260    | NRNE224<br>3740    |
|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| B type              | B25/50             | B25/50             | B25/85             | B25/50             | B25/50             | B25/50             | B25/50             | B25/85             | B25/85             | B25/85             |
| Temperature<br>(°C) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) |
| -40                 | 175                | 210                | 190                | 255                | 320                | 300                | 400                | 500                | 840                | 550                |
| -39                 | 163.73             | 197.37             | 180.11             | 240.39             | 300.31             | 282.99             | 376.44             | 471.43             | 783.86             | 518.56             |
| -38                 | 153.25             | 185.55             | 170.79             | 226.7              | 281.92             | 267.03             | 354.4              | 444.65             | 731.78             | 489.07             |
| -37                 | 143.5              | 174.49             | 161.99             | 213.85             | 264.76             | 252.04             | 333.76             | 419.51             | 683.44             | 461.42             |
| -36                 | 134.42             | 164.15             | 153.69             | 201.79             | 248.73             | 237.96             | 314.45             | 395.93             | 638.55             | 435.47             |
| -35                 | 125.97             | 154.46             | 145.86             | 190.47             | 233.75             | 224.74             | 296.35             | 373.79             | 596.85             | 411.1              |
| -34                 | 118.11             | 145.39             | 138.46             | 179.84             | 219.74             | 212.32             | 279.39             | 353                | 558.1              | 388.23             |
| -33                 | 110.78             | 136.89             | 131.47             | 169.85             | 206.65             | 200.64             | 263.5              | 333.48             | 522.08             | 366.75             |
| -32                 | 103.94             | 128.93             | 124.87             | 160.47             | 194.4              | 189.66             | 248.6              | 315.13             | 488.58             | 346.56             |
| -31                 | 97.57              | 121.47             | 118.63             | 151.65             | 182.95             | 179.33             | 234.62             | 297.89             | 457.4              | 327.59             |
| -30                 | 91.62              | 114.48             | 112.74             | 143.36             | 172.22             | 169.61             | 221.5              | 281.67             | 428.39             | 309.75             |
| -29                 | 86.08              | 107.92             | 107.16             | 135.57             | 162.18             | 160.47             | 209.19             | 266.43             | 401.37             | 292.98             |
| -28                 | 80.9               | 101.77             | 101.89             | 128.24             | 152.78             | 151.87             | 197.63             | 252.08             | 376.21             | 277.2              |
| -27                 | 76.06              | 95.99              | 96.9               | 121.33             | 143.96             | 143.76             | 186.77             | 238.58             | 352.75             | 262.35             |
| -26                 | 71.54              | 90.57              | 92.19              | 114.84             | 135.71             | 136.13             | 176.57             | 225.87             | 330.89             | 248.37             |
| -25                 | 67.31              | 85.48              | 87.72              | 108.72             | 127.96             | 128.94             | 166.98             | 213.91             | 310.5              | 235.21             |
| -24                 | 63.36              | 80.71              | 83.49              | 102.97             | 120.7              | 122.17             | 157.96             | 202.63             | 291.48             | 222.82             |
| -23                 | 59.66              | 76.22              | 79.49              | 97.54              | 113.89             | 115.78             | 149.48             | 192.01             | 273.72             | 211.14             |
| -22                 | 56.2               | 72                 | 75.7               | 92.43              | 107.5              | 109.76             | 141.5              | 182                | 257.15             | 200.13             |
| -21                 | 52.96              | 68.04              | 72.11              | 87.61              | 101.5              | 104.08             | 133.99             | 172.57             | 241.66             | 189.75             |
| -20                 | 49.93              | 64.31              | 68.7               | 83.06              | 95.87              | 98.72              | 126.92             | 163.67             | 227.2              | 179.97             |
| -19                 | 47.09              | 60.8               | 65.48              | 78.78              | 90.57              | 93.67              | 120.26             | 155.27             | 213.67             | 170.73             |
| -18                 | 44.43              | 57.51              | 62.42              | 74.74              | 85.6               | 88.89              | 113.99             | 147.35             | 201.03             | 162.02             |
| -17                 | 41.93              | 54.4               | 59.52              | 70.92              | 80.93              | 84.39              | 108.08             | 139.88             | 189.2              | 153.8              |
| -16                 | 39.59              | 51.48              | 56.77              | 67.32              | 76.53              | 80.13              | 102.51             | 132.82             | 178.14             | 146.04             |
| -15                 | 37.39              | 48.73              | 54.16              | 63.92              | 72.4               | 76.11              | 97.25              | 126.15             | 167.78             | 138.71             |
| -14                 | 35.32              | 46.14              | 51.68              | 60.71              | 68.51              | 72.31              | 92.29              | 119.85             | 158.08             | 131.79             |
| -13                 | 33.39              | 43.7               | 49.33              | 57.67              | 64.85              | 68.72              | 87.62              | 113.9              | 148.99             | 125.24             |
| -12                 | 31.57              | 41.4               | 47.09              | 54.81              | 61.41              | 65.33              | 83.2               | 108.28             | 140.48             | 119.06             |
| -11                 | 29.86              | 39.24              | 44.97              | 52.1               | 58.16              | 62.12              | 79.04              | 102.96             | 132.49             | 113.21             |
| -10                 | 28.25              | 37.2               | 42.96              | 49.54              | 55.11              | 59.08              | 75.1               | 97.93              | 125.01             | 107.68             |
| -9                  | 26.74              | 35.27              | 41.04              | 47.11              | 52.23              | 56.21              | 71.38              | 93.17              | 117.99             | 102.45             |
| -8                  | 25.32              | 33.45              | 39.22              | 44.82              | 49.52              | 53.49              | 67.87              | 88.67              | 111.4              | 97.5               |
| -7                  | 23.98              | 31.74              | 37.49              | 42.65              | 46.96              | 50.92              | 64.55              | 84.41              | 105.21             | 92.82              |
| -6                  | 22.72              | 30.12              | 35.85              | 40.6               | 44.54              | 48.48              | 61.4               | 80.37              | 99.4               | 88.38              |
| -5                  | 21.53              | 28.59              | 34.28              | 38.65              | 42.27              | 46.17              | 58.43              | 76.55              | 93.95              | 84.18              |
| -4                  | 20.42              | 27.15              | 32.79              | 36.81              | 40.12              | 43.98              | 55.62              | 72.93              | 88.82              | 80.2               |
| -3                  | 19.36              | 25.79              | 31.38              | 35.07              | 38.09              | 41.91              | 52.96              | 69.5               | 84                 | 76.43              |
| -2                  | 18.37              | 24.5               | 30.03              | 33.42              | 36.18              | 39.94              | 50.44              | 66.25              | 79.47              | 72.85              |
| -1                  | 17.44              | 23.28              | 28.75              | 31.85              | 34.37              | 38.08              | 48.06              | 63.17              | 75.21              | 69.46              |
| 0                   | 16.56              | 22.13              | 27.52              | 30.37              | 32.66              | 36.32              | 45.8               | 60.25              | 71.2               | 66.25              |
| 1                   | 15.72              | 21.04              | 26.36              | 28.96              | 31.05              | 34.64              | 43.66              | 57.47              | 67.43              | 63.2               |
| 2                   | 14.94              | 20.02              | 25.25              | 27.62              | 29.52              | 33.05              | 41.63              | 54.84              | 63.87              | 60.31              |
| 3                   | 14.19              | 19.04              | 24.2               | 26.36              | 28.08              | 31.54              | 39.71              | 52.35              | 60.52              | 57.56              |
| 4                   | 13.49              | 18.12              | 23.19              | 25.15              | 26.72              | 30.11              | 37.88              | 49.98              | 57.37              | 54.96              |
| 5                   | 12.83              | 17.25              | 22.23              | 24.01              | 25.42              | 28.75              | 36.15              | 47.73              | 54.4               | 52.48              |
| 6                   | 12.21              | 16.42              | 21.31              | 22.93              | 24.2               | 27.46              | 34.51              | 45.59              | 51.6               | 50.13              |
| 7                   | 11.61              | 15.64              | 20.44              | 21.9               | 23.05              | 26.23              | 32.95              | 43.56              | 48.95              | 47.9               |
| 8                   | 11.06              | 14.9               | 19.61              | 20.92              | 21.95              | 25.06              | 31.47              | 41.63              | 46.46              | 45.78              |
| 9                   | 10.53              | 14.2               | 18.81              | 20                 | 20.91              | 23.95              | 30.07              | 39.79              | 44.11              | 43.76              |
| 10                  | 10.03              | 13.54              | 18.05              | 19.11              | 19.93              | 22.9               | 28.73              | 38.05              | 41.89              | 41.85              |
| 11                  | 9.55               | 12.9               | 17.33              | 18.27              | 19                 | 21.9               | 27.47              | 36.39              | 39.79              | 40.02              |
| 12                  | 9.1                | 12.31              | 16.64              | 17.48              | 18.12              | 20.94              | 26.26              | 34.81              | 37.81              | 38.29              |
| 13                  | 8.68               | 11.74              | 15.98              | 16.72              | 17.28              | 20.04              | 25.11              | 33.31              | 35.94              | 36.64              |
| 14                  | 8.27               | 11.2               | 15.35              | 15.99              | 16.49              | 19.17              | 24.03              | 31.88              | 34.17              | 35.07              |
| 15                  | 7.89               | 10.69              | 14.75              | 15.31              | 15.73              | 18.35              | 22.99              | 30.52              | 32.5               | 33.57              |
| 16                  | 7.53               | 10.21              | 14.17              | 14.65              | 15.02              | 17.57              | 22                 | 29.23              | 30.92              | 32.15              |
| 17                  | 7.19               | 9.75               | 13.62              | 14.03              | 14.34              | 16.83              | 21.07              | 28                 | 29.43              | 30.79              |
| 18                  | 6.86               | 9.31               | 13.1               | 13.44              | 13.69              | 16.12              | 20.17              | 26.82              | 28.01              | 29.5               |

Temperature characteristics, cont.

| Part number         | NRNE503<br>3950    | NRNE683<br>3950    | NRNE104<br>3435    | NRNE104<br>3720    | NRNE104<br>3950    | NRNE124<br>3720    | NRNE154<br>3720    | NRNE204<br>3740    | NRNE204<br>4260    | NRNE224<br>3740    |
|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| B type              | B25/50             | B25/50             | B25/85             | B25/50             | B25/50             | B25/50             | B25/50             | B25/85             | B25/85             | B25/85             |
| Temperature<br>(°C) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) |
| 19                  | 6.55               | 8.89               | 12.59              | 12.87              | 13.08              | 15.44              | 19.32              | 25.7               | 26.67              | 28.27              |
| 20                  | 6.26               | 8.5                | 12.11              | 12.34              | 12.5               | 14.8               | 18.51              | 24.64              | 25.41              | 27.1               |
| 21                  | 5.98               | 8.12               | 11.65              | 11.82              | 11.95              | 14.18              | 17.74              | 23.62              | 24.2               | 25.98              |
| 22                  | 5.72               | 7.77               | 11.21              | 11.33              | 11.42              | 13.6               | 17.01              | 22.65              | 23.07              | 24.91              |
| 23                  | 5.47               | 7.43               | 10.79              | 10.87              | 10.93              | 13.04              | 16.3               | 21.72              | 21.99              | 23.9               |
| 24                  | 5.23               | 7.11               | 10.39              | 10.42              | 10.45              | 12.51              | 15.64              | 20.84              | 20.97              | 22.93              |
| 25                  | 5                  | 6.8                | 10                 | 10                 | 10                 | 12                 | 15                 | 20                 | 20                 | 22                 |
| 26                  | 4.78               | 6.51               | 9.63               | 9.6                | 9.57               | 11.52              | 14.39              | 19.2               | 19.08              | 21.12              |
| 27                  | 4.58               | 6.23               | 9.28               | 9.21               | 9.16               | 11.05              | 13.81              | 18.43              | 18.21              | 20.27              |
| 28                  | 4.38               | 5.97               | 8.94               | 8.84               | 8.77               | 10.61              | 13.26              | 17.7               | 17.38              | 19.47              |
| 29                  | 4.2                | 5.71               | 8.61               | 8.49               | 8.4                | 10.19              | 12.73              | 17                 | 16.6               | 18.7               |
| 30                  | 4.02               | 5.47               | 8.3                | 8.15               | 8.05               | 9.79               | 12.23              | 16.33              | 15.85              | 17.96              |
| 31                  | 3.85               | 5.25               | 8                  | 7.83               | 7.71               | 9.4                | 11.75              | 15.69              | 15.15              | 17.26              |
| 32                  | 3.69               | 5.03               | 7.71               | 7.53               | 7.39               | 9.03               | 11.29              | 15.08              | 14.47              | 16.59              |
| 33                  | 3.54               | 4.82               | 7.44               | 7.23               | 7.09               | 8.68               | 10.85              | 14.5               | 13.83              | 15.95              |
| 34                  | 3.39               | 4.62               | 7.18               | 6.95               | 6.8                | 8.35               | 10.43              | 13.94              | 13.23              | 15.34              |
| 35                  | 3.26               | 4.43               | 6.92               | 6.69               | 6.52               | 8.03               | 10.03              | 13.41              | 12.65              | 14.75              |
| 36                  | 3.12               | 4.25               | 6.68               | 6.43               | 6.26               | 7.72               | 9.64               | 12.9               | 12.1               | 14.19              |
| 37                  | 3                  | 4.08               | 6.45               | 6.19               | 6                  | 7.43               | 9.28               | 12.41              | 11.58              | 13.65              |
| 38                  | 2.88               | 3.92               | 6.22               | 5.95               | 5.76               | 7.14               | 8.92               | 11.94              | 11.08              | 13.14              |
| 39                  | 2.76               | 3.76               | 6.01               | 5.73               | 5.53               | 6.88               | 8.59               | 11.49              | 10.61              | 12.65              |
| 40                  | 2.65               | 3.61               | 5.8                | 5.51               | 5.31               | 6.62               | 8.27               | 11.07              | 10.16              | 12.17              |
| 41                  | 2.55               | 3.47               | 5.61               | 5.31               | 5.1                | 6.37               | 7.96               | 10.66              | 9.73               | 11.72              |
| 42                  | 2.45               | 3.33               | 5.42               | 5.11               | 4.9                | 6.14               | 7.67               | 10.26              | 9.32               | 11.29              |
| 43                  | 2.35               | 3.2                | 5.23               | 4.92               | 4.71               | 5.91               | 7.38               | 9.89               | 8.93               | 10.88              |
| 44                  | 2.26               | 3.08               | 5.06               | 4.74               | 4.53               | 5.69               | 7.11               | 9.53               | 8.56               | 10.48              |
| 45                  | 2.18               | 2.96               | 4.89               | 4.57               | 4.35               | 5.49               | 6.85               | 9.18               | 8.21               | 10.1               |
| 46                  | 2.09               | 2.85               | 4.73               | 4.41               | 4.19               | 5.29               | 6.61               | 8.85               | 7.87               | 9.74               |
| 47                  | 2.01               | 2.74               | 4.57               | 4.25               | 4.03               | 5.1                | 6.37               | 8.53               | 7.55               | 9.39               |
| 48                  | 1.94               | 2.63               | 4.42               | 4.09               | 3.87               | 4.91               | 6.14               | 8.23               | 7.25               | 9.05               |
| 49                  | 1.86               | 2.54               | 4.28               | 3.95               | 3.73               | 4.74               | 5.92               | 7.94               | 6.95               | 8.73               |
| 50                  | 1.79               | 2.44               | 4.14               | 3.81               | 3.59               | 4.57               | 5.71               | 7.66               | 6.68               | 8.43               |
| 51                  | 1.73               | 2.35               | 4                  | 3.67               | 3.45               | 4.41               | 5.51               | 7.39               | 6.41               | 8.13               |
| 52                  | 1.66               | 2.26               | 3.88               | 3.55               | 3.33               | 4.25               | 5.32               | 7.13               | 6.16               | 7.85               |
| 53                  | 1.6                | 2.18               | 3.75               | 3.42               | 3.2                | 4.11               | 5.13               | 6.88               | 5.91               | 7.57               |
| 54                  | 1.54               | 2.1                | 3.63               | 3.3                | 3.09               | 3.96               | 4.96               | 6.65               | 5.68               | 7.31               |
| 55                  | 1.49               | 2.02               | 3.52               | 3.19               | 2.97               | 3.83               | 4.79               | 6.42               | 5.46               | 7.06               |
| 56                  | 1.43               | 1.95               | 3.41               | 3.08               | 2.87               | 3.7                | 4.62               | 6.2                | 5.25               | 6.82               |
| 57                  | 1.38               | 1.88               | 3.3                | 2.98               | 2.76               | 3.57               | 4.47               | 5.99               | 5.05               | 6.59               |
| 58                  | 1.33               | 1.81               | 3.2                | 2.87               | 2.66               | 3.45               | 4.31               | 5.79               | 4.85               | 6.37               |
| 59                  | 1.29               | 1.75               | 3.1                | 2.78               | 2.57               | 3.33               | 4.17               | 5.59               | 4.67               | 6.15               |
| 60                  | 1.24               | 1.68               | 3                  | 2.69               | 2.48               | 3.22               | 4.03               | 5.4                | 4.49               | 5.95               |
| 61                  | 1.2                | 1.63               | 2.91               | 2.6                | 2.39               | 3.11               | 3.9                | 5.22               | 4.32               | 5.75               |
| 62                  | 1.16               | 1.57               | 2.82               | 2.51               | 2.31               | 3.01               | 3.77               | 5.05               | 4.16               | 5.56               |
| 63                  | 1.12               | 1.51               | 2.74               | 2.43               | 2.23               | 2.91               | 3.64               | 4.89               | 4                  | 5.38               |
| 64                  | 1.08               | 1.46               | 2.66               | 2.35               | 2.15               | 2.81               | 3.52               | 4.73               | 3.85               | 5.2                |
| 65                  | 1.04               | 1.41               | 2.58               | 2.27               | 2.07               | 2.72               | 3.41               | 4.57               | 3.71               | 5.03               |
| 66                  | 1.01               | 1.36               | 2.5                | 2.2                | 2                  | 2.63               | 3.3                | 4.42               | 3.58               | 4.87               |
| 67                  | 0.9714             | 1.32               | 2.43               | 2.13               | 1.93               | 2.55               | 3.19               | 4.28               | 3.45               | 4.71               |
| 68                  | 0.9388             | 1.27               | 2.35               | 2.06               | 1.87               | 2.47               | 3.09               | 4.14               | 3.32               | 4.56               |
| 69                  | 0.9074             | 1.23               | 2.29               | 1.99               | 1.81               | 2.39               | 2.99               | 4.01               | 3.2                | 4.41               |
| 70                  | 0.8772             | 1.19               | 2.22               | 1.93               | 1.75               | 2.31               | 2.9                | 3.89               | 3.09               | 4.27               |
| 71                  | 0.8483             | 1.15               | 2.15               | 1.87               | 1.69               | 2.24               | 2.81               | 3.76               | 2.98               | 4.14               |
| 72                  | 0.8204             | 1.11               | 2.09               | 1.81               | 1.63               | 2.17               | 2.72               | 3.64               | 2.87               | 4.01               |
| 73                  | 0.7936             | 1.07               | 2.03               | 1.75               | 1.58               | 2.1                | 2.63               | 3.53               | 2.77               | 3.88               |
| 74                  | 0.7678             | 1.04               | 1.97               | 1.7                | 1.53               | 2.03               | 2.55               | 3.42               | 2.67               | 3.76               |
| 75                  | 0.743              | 1                  | 1.92               | 1.65               | 1.48               | 1.97               | 2.47               | 3.32               | 2.58               | 3.65               |
| 76                  | 0.7192             | 0.9716             | 1.86               | 1.6                | 1.43               | 1.91               | 2.4                | 3.21               | 2.49               | 3.54               |
| 77                  | 0.6962             | 0.9403             | 1.81               | 1.55               | 1.38               | 1.85               | 2.32               | 3.12               | 2.4                | 3.43               |

Temperature characteristics, cont.

| Part number         | NRNE503<br>3950    | NRNE683<br>3950    | NRNE104<br>3435    | NRNE104<br>3720    | NRNE104<br>3950    | NRNE124<br>3720    | NRNE154<br>3720    | NRNE204<br>3740    | NRNE204<br>4260    | NRNE224<br>3740    |
|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| B type              | B25/50             | B25/50             | B25/85             | B25/50             | B25/50             | B25/50             | B25/50             | B25/85             | B25/85             | B25/85             |
| Temperature<br>(°C) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) |
| 78                  | 0.6741             | 0.9102             | 1.76               | 1.5                | 1.34               | 1.8                | 2.25               | 3.02               | 2.32               | 3.32               |
| 79                  | 0.6528             | 0.8812             | 1.71               | 1.46               | 1.29               | 1.74               | 2.19               | 2.93               | 2.24               | 3.22               |
| 80                  | 0.6324             | 0.8533             | 1.67               | 1.41               | 1.25               | 1.69               | 2.12               | 2.84               | 2.16               | 3.13               |
| 81                  | 0.6126             | 0.8264             | 1.62               | 1.37               | 1.21               | 1.64               | 2.06               | 2.76               | 2.09               | 3.03               |
| 82                  | 0.5936             | 0.8005             | 1.58               | 1.33               | 1.18               | 1.59               | 2                  | 2.67               | 2.02               | 2.94               |
| 83                  | 0.5753             | 0.7756             | 1.53               | 1.29               | 1.14               | 1.54               | 1.94               | 2.6                | 1.95               | 2.86               |
| 84                  | 0.5577             | 0.7516             | 1.49               | 1.25               | 1.1                | 1.5                | 1.88               | 2.52               | 1.89               | 2.77               |
| 85                  | 0.5406             | 0.7285             | 1.45               | 1.21               | 1.07               | 1.45               | 1.82               | 2.45               | 1.83               | 2.69               |
| 86                  | 0.5242             | 0.7062             | 1.41               | 1.18               | 1.04               | 1.41               | 1.77               | 2.37               | 1.77               | 2.61               |
| 87                  | 0.5084             | 0.6847             | 1.37               | 1.15               | 1.01               | 1.37               | 1.72               | 2.31               | 1.71               | 2.54               |
| 88                  | 0.4932             | 0.6639             | 1.34               | 1.11               | 0.9749             | 1.33               | 1.67               | 2.24               | 1.65               | 2.46               |
| 89                  | 0.4785             | 0.6439             | 1.3                | 1.08               | 0.9454             | 1.29               | 1.62               | 2.17               | 1.6                | 2.39               |
| 90                  | 0.4643             | 0.6247             | 1.27               | 1.05               | 0.917              | 1.26               | 1.58               | 2.11               | 1.55               | 2.32               |
| 91                  | 0.4506             | 0.6061             | 1.24               | 1.02               | 0.8896             | 1.22               | 1.53               | 2.05               | 1.5                | 2.26               |
| 92                  | 0.4374             | 0.5881             | 1.2                | 0.9916             | 0.8632             | 1.18               | 1.49               | 1.99               | 1.45               | 2.19               |
| 93                  | 0.4246             | 0.5708             | 1.17               | 0.9638             | 0.8377             | 1.15               | 1.45               | 1.94               | 1.4                | 2.13               |
| 94                  | 0.4123             | 0.5541             | 1.14               | 0.937              | 0.813              | 1.12               | 1.41               | 1.88               | 1.36               | 2.07               |
| 95                  | 0.4004             | 0.538              | 1.11               | 0.9111             | 0.7893             | 1.09               | 1.37               | 1.83               | 1.32               | 2.02               |
| 96                  | 0.3889             | 0.5224             | 1.09               | 0.886              | 0.7663             | 1.06               | 1.33               | 1.78               | 1.28               | 1.96               |
| 97                  | 0.3778             | 0.5074             | 1.06               | 0.8617             | 0.7441             | 1.03               | 1.29               | 1.73               | 1.24               | 1.91               |
| 98                  | 0.3671             | 0.4928             | 1.03               | 0.8383             | 0.7227             | 1                  | 1.26               | 1.69               | 1.2                | 1.85               |
| 99                  | 0.3567             | 0.4788             | 1.01               | 0.8156             | 0.7021             | 0.9736             | 1.23               | 1.64               | 1.16               | 1.8                |
| 100                 | 0.3467             | 0.4653             | 0.9814             | 0.7936             | 0.6821             | 0.9472             | 1.19               | 1.6                | 1.13               | 1.75               |
| 101                 | 0.337              | 0.4522             | 0.9572             | 0.7723             | 0.6628             | 0.9217             | 1.16               | 1.55               | 1.09               | 1.71               |
| 102                 | 0.3277             | 0.4395             | 0.9337             | 0.7517             | 0.6441             | 0.897              | 1.13               | 1.51               | 1.06               | 1.66               |
| 103                 | 0.3186             | 0.4273             | 0.9109             | 0.7318             | 0.6261             | 0.8731             | 1.1                | 1.47               | 1.03               | 1.62               |
| 104                 | 0.3099             | 0.4154             | 0.8888             | 0.7125             | 0.6086             | 0.85               | 1.07               | 1.43               | 0.9961             | 1.57               |
| 105                 | 0.3014             | 0.404              | 0.8674             | 0.6938             | 0.5918             | 0.8275             | 1.04               | 1.39               | 0.9664             | 1.53               |
| 106                 | 0.2932             | 0.3929             | 0.8465             | 0.6757             | 0.5755             | 0.8058             | 1.01               | 1.36               | 0.9378             | 1.49               |
| 107                 | 0.2853             | 0.3822             | 0.8263             | 0.6582             | 0.5597             | 0.7848             | 0.9884             | 1.32               | 0.9102             | 1.45               |
| 108                 | 0.2777             | 0.3719             | 0.8067             | 0.6412             | 0.5444             | 0.7644             | 0.9628             | 1.29               | 0.8835             | 1.42               |
| 109                 | 0.2702             | 0.3619             | 0.7876             | 0.6247             | 0.5297             | 0.7447             | 0.9381             | 1.25               | 0.8578             | 1.38               |
| 110                 | 0.2631             | 0.3522             | 0.7691             | 0.6087             | 0.5154             | 0.7256             | 0.914              | 1.22               | 0.8329             | 1.34               |
| 111                 | 0.2561             | 0.3428             | 0.7511             | 0.5933             | 0.5015             | 0.707              | 0.8908             | 1.19               | 0.8088             | 1.31               |
| 112                 | 0.2494             | 0.3337             | 0.7336             | 0.5783             | 0.4882             | 0.689              | 0.8682             | 1.16               | 0.7856             | 1.28               |
| 113                 | 0.2428             | 0.3249             | 0.7166             | 0.5637             | 0.4752             | 0.6716             | 0.8463             | 1.13               | 0.7632             | 1.24               |
| 114                 | 0.2365             | 0.3164             | 0.7001             | 0.5496             | 0.4627             | 0.6547             | 0.8251             | 1.1                | 0.7415             | 1.21               |
| 115                 | 0.2304             | 0.3082             | 0.684              | 0.536              | 0.4505             | 0.6383             | 0.8045             | 1.07               | 0.7206             | 1.18               |
| 116                 | 0.2245             | 0.3002             | 0.6685             | 0.5227             | 0.4387             | 0.6224             | 0.7845             | 1.05               | 0.7003             | 1.15               |
| 117                 | 0.2187             | 0.2924             | 0.6533             | 0.5098             | 0.4273             | 0.607              | 0.7652             | 1.02               | 0.6807             | 1.12               |
| 118                 | 0.2132             | 0.2849             | 0.6386             | 0.4974             | 0.4163             | 0.5921             | 0.7464             | 0.9964             | 0.6618             | 1.1                |
| 119                 | 0.2078             | 0.2777             | 0.6242             | 0.4852             | 0.4056             | 0.5776             | 0.7281             | 0.9719             | 0.6434             | 1.07               |
| 120                 | 0.2025             | 0.2706             | 0.6103             | 0.4735             | 0.3952             | 0.5635             | 0.7104             | 0.9482             | 0.6257             | 1.04               |
| 121                 | 0.1975             | 0.2638             | 0.5967             | 0.4621             | 0.3851             | 0.5498             | 0.6932             | 0.9251             | 0.6086             | 1.02               |
| 122                 | 0.1925             | 0.2572             | 0.5836             | 0.451              | 0.3754             | 0.5366             | 0.6766             | 0.9027             | 0.592              | 0.9921             |
| 123                 | 0.1878             | 0.2508             | 0.5707             | 0.4402             | 0.3659             | 0.5237             | 0.6604             | 0.881              | 0.5759             | 0.9681             |
| 124                 | 0.1831             | 0.2446             | 0.5582             | 0.4298             | 0.3568             | 0.5112             | 0.6446             | 0.8599             | 0.5604             | 0.9449             |
| 125                 | 0.1786             | 0.2385             | 0.5461             | 0.4196             | 0.3479             | 0.499              | 0.6293             | 0.8394             | 0.5453             | 0.9224             |

Temperature characteristics

| Part number         | NRNE334<br>4090    | NRNE474<br>3950    | NRNE474<br>4090    | NRNE504<br>3975    | NRNE504<br>4050    | NRNE504<br>4400    | NRNE684<br>4190    | NRNE105<br>4100    | NRNE105<br>4360    | NRNE155<br>4370    |
|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| B type              | B25/85             | B25/50             | B25/85             | B25/85             | B25/85             | B25/50             | B25/85             | B25/50             | B25/85             | B25/85             |
| Temperature<br>(°C) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) |
| -40                 | 1000               | 1500               | 1500               | 1550               | 1600               | 2550               | 2100               | 3000               | 4000               | 5500               |
| -39                 | 940.76             | 1407.2             | 1408.74            | 1455.11            | 1501.84            | 2368.87            | 1975.85            | 2824.83            | 3740.84            | 5156.73            |
| -38                 | 885.29             | 1320.63            | 1323.47            | 1366.54            | 1410.2             | 2201.67            | 1859.57            | 2660.61            | 3499.72            | 4836.41            |
| -37                 | 833.33             | 1239.86            | 1243.77            | 1283.82            | 1324.62            | 2047.25            | 1750.61            | 2506.6             | 3275.32            | 4537.4             |
| -36                 | 784.64             | 1164.46            | 1169.25            | 1206.56            | 1244.66            | 1904.56            | 1648.5             | 2362.14            | 3066.4             | 4258.21            |
| -35                 | 739.02             | 1094.06            | 1099.55            | 1134.35            | 1169.94            | 1772.65            | 1552.77            | 2226.6             | 2871.82            | 3997.43            |
| -34                 | 696.25             | 1028.29            | 1034.34            | 1066.85            | 1100.08            | 1650.65            | 1463               | 2099.39            | 2690.53            | 3753.77            |
| -33                 | 656.14             | 966.83             | 973.32             | 1003.72            | 1034.74            | 1537.76            | 1378.79            | 1979.96            | 2521.57            | 3526.04            |
| -32                 | 618.52             | 909.37             | 916.18             | 944.66             | 973.62             | 1433.25            | 1299.79            | 1867.82            | 2364.04            | 3313.13            |
| -31                 | 583.22             | 855.63             | 862.68             | 889.39             | 916.42             | 1336.45            | 1225.64            | 1762.49            | 2217.11            | 3114.02            |
| -30                 | 550.09             | 805.36             | 812.56             | 837.65             | 862.86             | 1246.76            | 1156.03            | 1663.52            | 2080.03            | 2927.76            |
| -29                 | 518.99             | 758.32             | 765.59             | 789.19             | 812.71             | 1163.6             | 1090.67            | 1570.52            | 1952.09            | 2753.46            |
| -28                 | 489.78             | 714.27             | 721.56             | 743.79             | 765.73             | 1086.48            | 1029.28            | 1483.1             | 1832.64            | 2590.31            |
| -27                 | 462.35             | 673.02             | 680.27             | 701.24             | 721.7              | 1014.92            | 971.6              | 1400.9             | 1721.08            | 2437.54            |
| -26                 | 436.57             | 634.37             | 641.55             | 661.36             | 680.42             | 948.49             | 917.4              | 1323.59            | 1616.86            | 2294.46            |
| -25                 | 412.35             | 598.15             | 605.22             | 623.95             | 641.72             | 886.79             | 866.45             | 1250.87            | 1519.45            | 2160.41            |
| -24                 | 389.57             | 564.19             | 571.12             | 588.86             | 605.41             | 829.46             | 818.54             | 1182.43            | 1428.38            | 2034.79            |
| -23                 | 368.16             | 532.35             | 539.1              | 555.92             | 571.34             | 776.17             | 773.48             | 1118.02            | 1343.22            | 1917.02            |
| -22                 | 348.02             | 502.47             | 509.04             | 525                | 539.36             | 726.62             | 731.09             | 1057.39            | 1263.54            | 1806.59            |
| -21                 | 329.06             | 474.43             | 480.79             | 495.97             | 509.34             | 680.51             | 691.21             | 1000.28            | 1188.98            | 1703.01            |
| -20                 | 311.23             | 448.1              | 454.25             | 468.69             | 481.13             | 637.6              | 653.66             | 946.5              | 1119.18            | 1605.83            |
| -19                 | 294.44             | 423.38             | 429.31             | 443.06             | 454.63             | 597.64             | 618.32             | 895.83             | 1053.82            | 1514.62            |
| -18                 | 278.63             | 400.15             | 405.85             | 418.97             | 429.73             | 560.42             | 585.03             | 848.08             | 992.59             | 1428.99            |
| -17                 | 263.74             | 378.32             | 383.79             | 396.31             | 406.32             | 525.73             | 553.68             | 803.06             | 935.22             | 1348.59            |
| -16                 | 249.72             | 357.8              | 363.03             | 375                | 384.3              | 493.39             | 524.14             | 760.63             | 881.44             | 1273.06            |
| -15                 | 236.5              | 338.5              | 343.5              | 354.95             | 363.58             | 463.22             | 496.3              | 720.61             | 831.02             | 1202.1             |
| -14                 | 224.04             | 320.35             | 325.11             | 336.07             | 344.09             | 435.08             | 470.06             | 682.85             | 783.72             | 1135.41            |
| -13                 | 212.29             | 303.26             | 307.8              | 318.3              | 325.74             | 408.8              | 445.32             | 647.24             | 739.35             | 1072.71            |
| -12                 | 201.21             | 287.18             | 291.49             | 301.57             | 308.46             | 384.27             | 421.98             | 613.62             | 697.7              | 1013.75            |
| -11                 | 190.76             | 272.04             | 276.13             | 285.8              | 292.19             | 361.34             | 399.97             | 581.89             | 658.61             | 958.29             |
| -10                 | 180.9              | 257.78             | 261.65             | 270.94             | 276.85             | 339.92             | 379.19             | 551.93             | 621.89             | 906.12             |
| -9                  | 171.6              | 244.34             | 248                | 256.93             | 262.4              | 319.89             | 359.59             | 523.64             | 587.4              | 857.01             |
| -8                  | 162.81             | 231.68             | 235.12             | 243.71             | 248.78             | 301.15             | 341.08             | 496.91             | 554.99             | 810.78             |
| -7                  | 154.51             | 219.73             | 222.98             | 231.25             | 235.94             | 283.62             | 323.6              | 471.66             | 524.53             | 767.25             |
| -6                  | 146.68             | 208.47             | 211.53             | 219.49             | 223.82             | 267.21             | 307.1              | 447.79             | 495.89             | 726.26             |
| -5                  | 139.28             | 197.85             | 200.71             | 208.39             | 212.39             | 251.85             | 291.5              | 425.23             | 468.95             | 687.63             |
| -4                  | 132.28             | 187.82             | 190.51             | 197.91             | 201.59             | 237.45             | 276.77             | 403.9              | 443.6              | 651.23             |
| -3                  | 125.67             | 178.35             | 180.87             | 188.02             | 191.41             | 223.96             | 262.84             | 383.73             | 419.75             | 616.92             |
| -2                  | 119.41             | 169.42             | 171.77             | 178.67             | 181.78             | 211.31             | 249.67             | 364.65             | 397.3              | 584.57             |
| -1                  | 113.5              | 160.97             | 163.17             | 169.83             | 172.69             | 199.45             | 237.22             | 346.6              | 376.16             | 554.06             |
| 0                   | 107.91             | 153                | 155.04             | 161.48             | 164.11             | 188.33             | 225.44             | 329.51             | 356.24             | 525.27             |
| 1                   | 102.62             | 145.46             | 147.36             | 153.58             | 155.99             | 177.88             | 214.3              | 313.34             | 337.48             | 498.11             |
| 2                   | 97.61              | 138.33             | 140.09             | 146.11             | 148.31             | 168.08             | 203.76             | 298.03             | 319.8              | 472.48             |
| 3                   | 92.87              | 131.59             | 133.22             | 139.04             | 141.05             | 158.87             | 193.78             | 283.53             | 303.12             | 448.28             |
| 4                   | 88.38              | 125.22             | 126.72             | 132.35             | 134.19             | 150.22             | 184.33             | 269.8              | 287.4              | 425.42             |
| 5                   | 84.13              | 119.18             | 120.57             | 126.02             | 127.69             | 142.09             | 175.39             | 256.79             | 272.58             | 403.83             |
| 6                   | 80.1               | 113.47             | 114.74             | 120.03             | 121.54             | 134.44             | 166.91             | 244.46             | 258.58             | 383.44             |
| 7                   | 76.29              | 108.07             | 109.23             | 114.35             | 115.72             | 127.25             | 158.89             | 232.77             | 245.38             | 364.16             |
| 8                   | 72.67              | 102.95             | 104.01             | 108.97             | 110.21             | 120.49             | 151.28             | 221.69             | 232.91             | 345.94             |
| 9                   | 69.24              | 98.1               | 99.06              | 103.87             | 104.98             | 114.12             | 144.07             | 211.19             | 221.14             | 328.72             |
| 10                  | 65.99              | 93.5               | 94.37              | 99.04              | 100.03             | 108.12             | 137.24             | 201.22             | 210.02             | 312.43             |
| 11                  | 62.91              | 89.15              | 89.93              | 94.45              | 95.34              | 102.48             | 130.76             | 191.77             | 199.52             | 297.01             |
| 12                  | 59.99              | 85.02              | 85.72              | 90.11              | 90.9               | 97.16              | 124.61             | 182.8              | 189.59             | 282.43             |
| 13                  | 57.21              | 81.1               | 81.73              | 85.98              | 86.68              | 92.14              | 118.78             | 174.29             | 180.2              | 268.63             |
| 14                  | 54.58              | 77.38              | 77.94              | 82.07              | 82.68              | 87.42              | 113.25             | 166.21             | 171.33             | 255.56             |
| 15                  | 52.08              | 73.86              | 74.35              | 78.35              | 78.89              | 82.96              | 108                | 158.54             | 162.93             | 243.19             |
| 16                  | 49.7               | 70.51              | 70.94              | 74.83              | 75.29              | 78.75              | 103.01             | 151.26             | 154.99             | 231.47             |
| 17                  | 47.45              | 67.34              | 67.7               | 71.48              | 71.87              | 74.79              | 98.28              | 144.34             | 147.47             | 220.37             |
| 18                  | 45.31              | 64.32              | 64.63              | 68.29              | 68.62              | 71.04              | 93.79              | 137.77             | 140.35             | 209.86             |

Temperature characteristics, cont.

| Part number         | NRNE334<br>4090    | NRNE474<br>3950    | NRNE474<br>4090    | NRNE504<br>3975    | NRNE504<br>4050    | NRNE504<br>4400    | NRNE684<br>4190    | NRNE105<br>4100    | NRNE105<br>4360    | NRNE155<br>4370    |
|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| B type              | B25/85             | B25/50             | B25/85             | B25/85             | B25/85             | B25/50             | B25/85             | B25/50             | B25/85             | B25/85             |
| Temperature<br>(°C) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) |
| 19                  | 43.27              | 61.45              | 61.71              | 65.27              | 65.54              | 67.5               | 89.52              | 131.52             | 133.62             | 199.89             |
| 20                  | 41.34              | 58.73              | 58.93              | 62.39              | 62.61              | 64.16              | 85.46              | 125.58             | 127.23             | 190.44             |
| 21                  | 39.5               | 56.14              | 56.3               | 59.66              | 59.83              | 61                 | 81.61              | 119.94             | 121.19             | 181.48             |
| 22                  | 37.75              | 53.68              | 53.8               | 57.06              | 57.18              | 58.02              | 77.94              | 114.58             | 115.46             | 172.98             |
| 23                  | 36.09              | 51.34              | 51.42              | 54.59              | 54.67              | 55.19              | 74.46              | 109.47             | 110.03             | 164.91             |
| 24                  | 34.5               | 49.12              | 49.15              | 52.24              | 52.27              | 52.53              | 71.15              | 104.62             | 104.88             | 157.26             |
| 25                  | 33                 | 47                 | 47                 | 50                 | 50                 | 50                 | 68                 | 100                | 100                | 150                |
| 26                  | 31.57              | 44.99              | 44.95              | 47.87              | 47.84              | 47.61              | 65                 | 95.61              | 95.37              | 143.11             |
| 27                  | 30.2               | 43.07              | 43                 | 45.84              | 45.78              | 45.35              | 62.15              | 91.42              | 90.98              | 136.56             |
| 28                  | 28.91              | 41.24              | 41.15              | 43.91              | 43.82              | 43.21              | 59.44              | 87.44              | 86.81              | 130.34             |
| 29                  | 27.67              | 39.5               | 39.39              | 42.07              | 41.95              | 41.18              | 56.86              | 83.65              | 82.85              | 124.44             |
| 30                  | 26.49              | 37.85              | 37.7               | 40.31              | 40.17              | 39.25              | 54.4               | 80.04              | 79.09              | 118.83             |
| 31                  | 25.37              | 36.27              | 36.1               | 38.64              | 38.48              | 37.43              | 52.05              | 76.6               | 75.52              | 113.49             |
| 32                  | 24.3               | 34.76              | 34.58              | 37.05              | 36.87              | 35.7               | 49.82              | 73.32              | 72.13              | 108.42             |
| 33                  | 23.28              | 33.33              | 33.13              | 35.53              | 35.33              | 34.06              | 47.7               | 70.2               | 68.9               | 103.6              |
| 34                  | 22.31              | 31.96              | 31.74              | 34.08              | 33.86              | 32.51              | 45.67              | 67.22              | 65.84              | 99.02              |
| 35                  | 21.39              | 30.66              | 30.42              | 32.69              | 32.47              | 31.03              | 43.74              | 64.38              | 62.93              | 94.66              |
| 36                  | 20.5               | 29.42              | 29.16              | 31.37              | 31.13              | 29.64              | 41.9               | 61.68              | 60.16              | 90.51              |
| 37                  | 19.66              | 28.23              | 27.96              | 30.12              | 29.86              | 28.31              | 40.15              | 59.1               | 57.53              | 86.56              |
| 38                  | 18.86              | 27.1               | 26.82              | 28.91              | 28.65              | 27.04              | 38.48              | 56.64              | 55.02              | 82.8               |
| 39                  | 18.09              | 26.01              | 25.73              | 27.76              | 27.49              | 25.84              | 36.88              | 54.29              | 52.64              | 79.22              |
| 40                  | 17.36              | 24.98              | 24.68              | 26.67              | 26.39              | 24.71              | 35.36              | 52.05              | 50.37              | 75.81              |
| 41                  | 16.66              | 24                 | 23.69              | 25.62              | 25.33              | 23.62              | 33.91              | 49.91              | 48.21              | 72.57              |
| 42                  | 15.99              | 23.05              | 22.74              | 24.62              | 24.33              | 22.59              | 32.52              | 47.87              | 46.15              | 69.48              |
| 43                  | 15.35              | 22.15              | 21.83              | 23.66              | 23.36              | 21.61              | 31.2               | 45.92              | 44.19              | 66.53              |
| 44                  | 14.75              | 21.29              | 20.96              | 22.75              | 22.44              | 20.68              | 29.93              | 44.06              | 42.33              | 63.72              |
| 45                  | 14.16              | 20.47              | 20.14              | 21.87              | 21.57              | 19.8               | 28.73              | 42.28              | 40.55              | 61.05              |
| 46                  | 13.61              | 19.68              | 19.34              | 21.04              | 20.73              | 18.95              | 27.57              | 40.58              | 38.85              | 58.5               |
| 47                  | 13.08              | 18.93              | 18.59              | 20.24              | 19.92              | 18.15              | 26.47              | 38.96              | 37.24              | 56.06              |
| 48                  | 12.57              | 18.21              | 17.87              | 19.47              | 19.16              | 17.39              | 25.42              | 37.41              | 35.7               | 53.74              |
| 49                  | 12.08              | 17.52              | 17.17              | 18.74              | 18.42              | 16.66              | 24.41              | 35.93              | 34.23              | 51.53              |
| 50                  | 11.62              | 16.86              | 16.51              | 18.04              | 17.72              | 15.96              | 23.45              | 34.51              | 32.83              | 49.41              |
| 51                  | 11.17              | 16.23              | 15.88              | 17.36              | 17.05              | 15.3               | 22.53              | 33.16              | 31.49              | 47.4               |
| 52                  | 10.75              | 15.63              | 15.28              | 16.72              | 16.4               | 14.67              | 21.65              | 31.86              | 30.21              | 45.47              |
| 53                  | 10.34              | 15.05              | 14.7               | 16.11              | 15.79              | 14.07              | 20.81              | 30.62              | 28.99              | 43.63              |
| 54                  | 9.95               | 14.5               | 14.14              | 15.52              | 15.2               | 13.5               | 20.01              | 29.44              | 27.83              | 41.88              |
| 55                  | 9.57               | 13.97              | 13.61              | 14.95              | 14.63              | 12.95              | 19.24              | 28.3               | 26.72              | 40.2               |
| 56                  | 9.22               | 13.46              | 13.1               | 14.41              | 14.09              | 12.43              | 18.5               | 27.22              | 25.66              | 38.6               |
| 57                  | 8.87               | 12.97              | 12.62              | 13.89              | 13.58              | 11.93              | 17.8               | 26.18              | 24.64              | 37.06              |
| 58                  | 8.55               | 12.5               | 12.15              | 13.39              | 13.08              | 11.46              | 17.12              | 25.18              | 23.67              | 35.6               |
| 59                  | 8.23               | 12.06              | 11.71              | 12.91              | 12.6               | 11                 | 16.48              | 24.23              | 22.75              | 34.2               |
| 60                  | 7.93               | 11.63              | 11.28              | 12.45              | 12.15              | 10.57              | 15.86              | 23.31              | 21.86              | 32.86              |
| 61                  | 7.64               | 11.21              | 10.87              | 12.01              | 11.71              | 10.15              | 15.27              | 22.44              | 21.01              | 31.58              |
| 62                  | 7.36               | 10.82              | 10.47              | 11.59              | 11.29              | 9.76               | 14.7               | 21.6               | 20.2               | 30.36              |
| 63                  | 7.1                | 10.44              | 10.1               | 11.19              | 10.89              | 9.38               | 14.16              | 20.8               | 19.43              | 29.19              |
| 64                  | 6.84               | 10.07              | 9.74               | 10.8               | 10.5               | 9.02               | 13.63              | 20.03              | 18.69              | 28.07              |
| 65                  | 6.6                | 9.73               | 9.39               | 10.43              | 10.13              | 8.67               | 13.13              | 19.29              | 17.98              | 27                 |
| 66                  | 6.37               | 9.39               | 9.06               | 10.07              | 9.78               | 8.34               | 12.65              | 18.59              | 17.3               | 25.97              |
| 67                  | 6.14               | 9.07               | 8.74               | 9.72               | 9.44               | 8.03               | 12.2               | 17.91              | 16.65              | 24.99              |
| 68                  | 5.93               | 8.76               | 8.43               | 9.39               | 9.11               | 7.72               | 11.75              | 17.26              | 16.03              | 24.05              |
| 69                  | 5.72               | 8.46               | 8.14               | 9.07               | 8.79               | 7.43               | 11.33              | 16.63              | 15.43              | 23.15              |
| 70                  | 5.52               | 8.17               | 7.85               | 8.77               | 8.49               | 7.16               | 10.93              | 16.04              | 14.86              | 22.28              |
| 71                  | 5.33               | 7.9                | 7.58               | 8.47               | 8.2                | 6.89               | 10.54              | 15.46              | 14.31              | 21.46              |
| 72                  | 5.14               | 7.63               | 7.32               | 8.19               | 7.92               | 6.64               | 10.16              | 14.91              | 13.79              | 20.66              |
| 73                  | 4.97               | 7.38               | 7.07               | 7.92               | 7.66               | 6.39               | 9.8                | 14.38              | 13.28              | 19.9               |
| 74                  | 4.8                | 7.14               | 6.83               | 7.66               | 7.4                | 6.16               | 9.46               | 13.87              | 12.8               | 19.17              |
| 75                  | 4.64               | 6.9                | 6.6                | 7.41               | 7.15               | 5.94               | 9.13               | 13.39              | 12.34              | 18.48              |
| 76                  | 4.48               | 6.68               | 6.38               | 7.17               | 6.91               | 5.72               | 8.81               | 12.92              | 11.9               | 17.81              |
| 77                  | 4.33               | 6.46               | 6.16               | 6.93               | 6.68               | 5.52               | 8.51               | 12.47              | 11.47              | 17.16              |

Temperature characteristics, cont.

| Part number         | NRNE334<br>4090    | NRNE474<br>3950    | NRNE474<br>4090    | NRNE504<br>3975    | NRNE504<br>4050    | NRNE504<br>4400    | NRNE684<br>4190    | NRNE105<br>4100    | NRNE105<br>4360    | NRNE155<br>4370    |
|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| B type              | B25/85             | B25/50             | B25/85             | B25/85             | B25/85             | B25/50             | B25/85             | B25/50             | B25/85             | B25/85             |
| Temperature<br>(°C) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) |
| 78                  | 4.18               | 6.25               | 5.96               | 6.71               | 6.46               | 5.32               | 8.21               | 12.03              | 11.06              | 16.55              |
| 79                  | 4.05               | 6.05               | 5.76               | 6.49               | 6.25               | 5.13               | 7.93               | 11.62              | 10.67              | 15.96              |
| 80                  | 3.91               | 5.85               | 5.57               | 6.29               | 6.05               | 4.95               | 7.66               | 11.22              | 10.3               | 15.39              |
| 81                  | 3.78               | 5.67               | 5.39               | 6.09               | 5.85               | 4.78               | 7.4                | 10.84              | 9.94               | 14.84              |
| 82                  | 3.66               | 5.49               | 5.21               | 5.89               | 5.66               | 4.61               | 7.15               | 10.47              | 9.59               | 14.32              |
| 83                  | 3.54               | 5.31               | 5.04               | 5.71               | 5.48               | 4.45               | 6.91               | 10.11              | 9.26               | 13.82              |
| 84                  | 3.43               | 5.15               | 4.88               | 5.53               | 5.31               | 4.3                | 6.68               | 9.77               | 8.94               | 13.34              |
| 85                  | 3.31               | 4.99               | 4.72               | 5.36               | 5.14               | 4.15               | 6.46               | 9.44               | 8.63               | 12.87              |
| 86                  | 3.21               | 4.83               | 4.57               | 5.19               | 4.97               | 4.01               | 6.24               | 9.13               | 8.34               | 12.43              |
| 87                  | 3.11               | 4.68               | 4.42               | 5.03               | 4.82               | 3.87               | 6.04               | 8.82               | 8.05               | 12                 |
| 88                  | 3.01               | 4.54               | 4.28               | 4.88               | 4.67               | 3.74               | 5.84               | 8.53               | 7.78               | 11.59              |
| 89                  | 2.91               | 4.4                | 4.15               | 4.73               | 4.52               | 3.61               | 5.65               | 8.25               | 7.52               | 11.19              |
| 90                  | 2.82               | 4.26               | 4.02               | 4.58               | 4.38               | 3.49               | 5.46               | 7.98               | 7.27               | 10.81              |
| 91                  | 2.73               | 4.14               | 3.89               | 4.45               | 4.25               | 3.37               | 5.29               | 7.72               | 7.02               | 10.45              |
| 92                  | 2.65               | 4.01               | 3.77               | 4.31               | 4.12               | 3.26               | 5.12               | 7.47               | 6.79               | 10.1               |
| 93                  | 2.57               | 3.89               | 3.66               | 4.18               | 3.99               | 3.16               | 4.95               | 7.23               | 6.57               | 9.76               |
| 94                  | 2.49               | 3.77               | 3.54               | 4.06               | 3.87               | 3.05               | 4.8                | 7                  | 6.35               | 9.44               |
| 95                  | 2.41               | 3.66               | 3.43               | 3.94               | 3.75               | 2.95               | 4.64               | 6.77               | 6.14               | 9.12               |
| 96                  | 2.34               | 3.55               | 3.33               | 3.82               | 3.64               | 2.86               | 4.5                | 6.56               | 5.94               | 8.82               |
| 97                  | 2.27               | 3.45               | 3.23               | 3.71               | 3.53               | 2.76               | 4.35               | 6.35               | 5.75               | 8.53               |
| 98                  | 2.2                | 3.35               | 3.13               | 3.6                | 3.42               | 2.68               | 4.22               | 6.15               | 5.57               | 8.25               |
| 99                  | 2.13               | 3.25               | 3.04               | 3.5                | 3.32               | 2.59               | 4.09               | 5.95               | 5.39               | 7.99               |
| 100                 | 2.07               | 3.16               | 2.95               | 3.4                | 3.23               | 2.51               | 3.96               | 5.77               | 5.22               | 7.73               |
| 101                 | 2.01               | 3.07               | 2.86               | 3.3                | 3.13               | 2.43               | 3.84               | 5.59               | 5.05               | 7.48               |
| 102                 | 1.95               | 2.98               | 2.78               | 3.21               | 3.04               | 2.35               | 3.72               | 5.41               | 4.89               | 7.24               |
| 103                 | 1.89               | 2.89               | 2.69               | 3.11               | 2.95               | 2.28               | 3.61               | 5.25               | 4.74               | 7.01               |
| 104                 | 1.83               | 2.81               | 2.61               | 3.03               | 2.87               | 2.21               | 3.5                | 5.09               | 4.59               | 6.78               |
| 105                 | 1.78               | 2.73               | 2.54               | 2.94               | 2.78               | 2.14               | 3.39               | 4.93               | 4.45               | 6.57               |
| 106                 | 1.73               | 2.66               | 2.47               | 2.86               | 2.7                | 2.07               | 3.29               | 4.78               | 4.31               | 6.36               |
| 107                 | 1.68               | 2.58               | 2.39               | 2.78               | 2.63               | 2.01               | 3.19               | 4.64               | 4.18               | 6.16               |
| 108                 | 1.63               | 2.51               | 2.33               | 2.7                | 2.55               | 1.95               | 3.1                | 4.5                | 4.05               | 5.97               |
| 109                 | 1.58               | 2.44               | 2.26               | 2.63               | 2.48               | 1.89               | 3                  | 4.36               | 3.92               | 5.79               |
| 110                 | 1.54               | 2.37               | 2.2                | 2.56               | 2.41               | 1.83               | 2.91               | 4.23               | 3.81               | 5.61               |
| 111                 | 1.5                | 2.31               | 2.13               | 2.49               | 2.34               | 1.78               | 2.83               | 4.1                | 3.69               | 5.44               |
| 112                 | 1.45               | 2.25               | 2.07               | 2.42               | 2.28               | 1.72               | 2.75               | 3.98               | 3.58               | 5.27               |
| 113                 | 1.41               | 2.18               | 2.02               | 2.35               | 2.22               | 1.67               | 2.67               | 3.87               | 3.47               | 5.11               |
| 114                 | 1.37               | 2.13               | 1.96               | 2.29               | 2.15               | 1.62               | 2.59               | 3.75               | 3.37               | 4.95               |
| 115                 | 1.34               | 2.07               | 1.9                | 2.23               | 2.1                | 1.57               | 2.51               | 3.64               | 3.27               | 4.8                |
| 116                 | 1.3                | 2.01               | 1.85               | 2.17               | 2.04               | 1.53               | 2.44               | 3.54               | 3.17               | 4.66               |
| 117                 | 1.26               | 1.96               | 1.8                | 2.11               | 1.98               | 1.48               | 2.37               | 3.43               | 3.08               | 4.52               |
| 118                 | 1.23               | 1.91               | 1.75               | 2.06               | 1.93               | 1.44               | 2.3                | 3.34               | 2.99               | 4.39               |
| 119                 | 1.19               | 1.86               | 1.7                | 2                  | 1.88               | 1.4                | 2.24               | 3.24               | 2.9                | 4.26               |
| 120                 | 1.16               | 1.81               | 1.66               | 1.95               | 1.83               | 1.36               | 2.18               | 3.15               | 2.82               | 4.13               |
| 121                 | 1.13               | 1.76               | 1.61               | 1.9                | 1.78               | 1.32               | 2.12               | 3.06               | 2.74               | 4.01               |
| 122                 | 1.1                | 1.72               | 1.57               | 1.85               | 1.73               | 1.28               | 2.06               | 2.97               | 2.66               | 3.89               |
| 123                 | 1.07               | 1.67               | 1.53               | 1.8                | 1.69               | 1.25               | 2                  | 2.89               | 2.58               | 3.78               |
| 124                 | 1.04               | 1.63               | 1.49               | 1.76               | 1.64               | 1.21               | 1.94               | 2.81               | 2.51               | 3.67               |
| 125                 | 1.02               | 1.59               | 1.45               | 1.71               | 1.6                | 1.18               | 1.89               | 2.73               | 2.44               | 3.56               |

Temperature characteristics

| Part number         | NRNE205<br>3900    | NRNE225<br>4370    | NRNE335<br>4570    | NRNE435<br>5070    | NRNE475<br>4570    | NRNE475<br>5200    | NRNE475<br>5200    |
|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| B type              | B25/85             | B25/85             | B25/85             | B25/50             | B25/85             | B25/50             | B25/85             |
| Temperature<br>(°C) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) |
| -40                 | 5100               | 8000               | 18000              | 30000              | 23000              | 35000              | 33000              |
| -39                 | 4810.68            | 7501.72            | 16707.78           | 27813.28           | 21418.85           | 32429.84           | 30592.32           |
| -38                 | 4539.15            | 7036.69            | 15515.7            | 25795.25           | 19954.54           | 30058.74           | 28370.52           |
| -37                 | 4284.23            | 6602.57            | 14415.47           | 23932.22           | 18597.89           | 27870.55           | 26319.49           |
| -36                 | 4044.85            | 6197.16            | 13399.53           | 22211.67           | 17340.45           | 25850.43           | 24425.44           |
| -35                 | 3819.98            | 5818.45            | 12460.96           | 20622.12           | 16174.5            | 23984.86           | 22675.71           |
| -34                 | 3608.68            | 5464.57            | 11593.47           | 19153.07           | 15092.94           | 22261.41           | 21058.74           |
| -33                 | 3410.07            | 5133.78            | 10791.29           | 17794.91           | 14089.25           | 20668.71           | 19563.91           |
| -32                 | 3223.34            | 4824.49            | 10049.17           | 16538.83           | 13157.46           | 19196.35           | 18181.51           |
| -31                 | 3047.71            | 4535.2             | 9362.29            | 15376.74           | 12292.07           | 17834.79           | 16902.65           |
| -30                 | 2882.49            | 4264.55            | 8726.25            | 14301.23           | 11488.03           | 16575.25           | 15719.14           |
| -29                 | 2727               | 4011.25            | 8137.02            | 13305.51           | 10740.7            | 15409.72           | 14623.51           |
| -28                 | 2580.64            | 3774.12            | 7590.9             | 12383.34           | 10045.81           | 14330.82           | 13608.88           |
| -27                 | 2442.82            | 3552.06            | 7084.51            | 11528.99           | 9399.43            | 13331.78           | 12668.93           |
| -26                 | 2313.02            | 3344.05            | 6614.76            | 10737.22           | 8797.94            | 12406.38           | 11797.88           |
| -25                 | 2190.72            | 3149.14            | 6178.81            | 10003.17           | 8238.02            | 11548.94           | 10990.4            |
| -24                 | 2075.47            | 2966.46            | 5774.04            | 9322.42            | 7716.58            | 10754.19           | 10241.6            |
| -23                 | 1966.82            | 2795.18            | 5398.06            | 8690.89            | 7230.81            | 10017.31           | 9546.98            |
| -22                 | 1864.38            | 2634.55            | 5048.67            | 8104.82            | 6778.09            | 9333.89            | 8902.41            |
| -21                 | 1767.75            | 2483.86            | 4723.86            | 7560.75            | 6356.02            | 8699.82            | 8304.08            |
| -20                 | 1676.58            | 2342.46            | 4421.77            | 7055.52            | 5962.38            | 8111.38            | 7748.49            |
| -19                 | 1590.55            | 2209.74            | 4140.68            | 6586.19            | 5595.12            | 7565.09            | 7232.42            |
| -18                 | 1509.33            | 2085.12            | 3879.04            | 6150.07            | 5252.35            | 7057.79            | 6752.91            |
| -17                 | 1432.64            | 1968.08            | 3635.39            | 5744.68            | 4932.32            | 6586.55            | 6307.22            |
| -16                 | 1360.21            | 1858.13            | 3408.4             | 5367.74            | 4633.41            | 6148.66            | 5892.82            |
| -15                 | 1291.78            | 1754.81            | 3196.85            | 5017.13            | 4354.13            | 5741.64            | 5507.41            |
| -14                 | 1227.12            | 1657.69            | 2999.61            | 4690.91            | 4093.1             | 5363.2             | 5148.83            |
| -13                 | 1165.99            | 1566.38            | 2815.64            | 4387.28            | 3849.04            | 5011.22            | 4815.12            |
| -12                 | 1108.2             | 1480.5             | 2643.97            | 4104.6             | 3620.77            | 4683.76            | 4504.45            |
| -11                 | 1053.54            | 1399.71            | 2483.72            | 3841.34            | 3407.19            | 4379.02            | 4215.14            |
| -10                 | 1001.83            | 1323.68            | 2334.08            | 3596.08            | 3207.29            | 4095.33            | 3945.64            |
| -9                  | 952.9              | 1252.12            | 2194.27            | 3367.52            | 3020.12            | 3831.16            | 3694.51            |
| -8                  | 906.59             | 1184.75            | 2063.62            | 3154.47            | 2844.83            | 3585.09            | 3460.43            |
| -7                  | 862.75             | 1121.3             | 1941.47            | 2955.8             | 2680.59            | 3355.82            | 3242.17            |
| -6                  | 821.24             | 1061.53            | 1827.22            | 2770.48            | 2526.66            | 3142.14            | 3038.61            |
| -5                  | 781.91             | 1005.21            | 1720.32            | 2597.58            | 2382.34            | 2942.93            | 2848.69            |
| -4                  | 744.65             | 952.12             | 1620.27            | 2436.21            | 2247               | 2757.15            | 2671.45            |
| -3                  | 709.34             | 902.08             | 1526.59            | 2285.54            | 2120.03            | 2583.85            | 2505.98            |
| -2                  | 675.87             | 854.89             | 1438.84            | 2144.84            | 2000.86            | 2422.15            | 2351.47            |
| -1                  | 644.14             | 810.37             | 1356.62            | 2013.4             | 1889               | 2271.22            | 2207.14            |
| 0                   | 614.04             | 768.37             | 1279.54            | 1890.58            | 1783.95            | 2130.3             | 2072.29            |
| 1                   | 585.49             | 728.74             | 1207.27            | 1775.78            | 1685.27            | 1998.7             | 1946.25            |
| 2                   | 558.4              | 691.32             | 1139.47            | 1668.44            | 1592.55            | 1875.77            | 1828.41            |
| 3                   | 532.69             | 655.99             | 1075.85            | 1568.04            | 1505.39            | 1760.89            | 1718.21            |
| 4                   | 508.29             | 622.62             | 1016.14            | 1474.12            | 1423.43            | 1653.52            | 1615.12            |
| 5                   | 485.11             | 591.1              | 960.06             | 1386.22            | 1346.35            | 1553.13            | 1518.65            |
| 6                   | 463.1              | 561.31             | 907.38             | 1303.95            | 1273.83            | 1459.25            | 1428.36            |
| 7                   | 442.19             | 533.16             | 857.88             | 1226.9             | 1205.58            | 1371.42            | 1343.82            |
| 8                   | 422.33             | 506.54             | 811.35             | 1154.75            | 1141.32            | 1289.23            | 1264.65            |
| 9                   | 403.44             | 481.38             | 767.59             | 1087.14            | 1080.82            | 1212.31            | 1190.48            |
| 10                  | 385.49             | 457.57             | 726.44             | 1023.78            | 1023.82            | 1140.29            | 1120.98            |
| 11                  | 368.43             | 435.04             | 687.71             | 964.39             | 970.11             | 1072.85            | 1055.83            |
| 12                  | 352.19             | 413.73             | 651.26             | 908.7              | 919.48             | 1009.67            | 994.75             |
| 13                  | 336.75             | 393.55             | 616.93             | 856.47             | 871.75             | 950.46             | 937.46             |
| 14                  | 322.06             | 374.45             | 584.6              | 807.46             | 826.74             | 894.98             | 883.72             |
| 15                  | 308.07             | 356.36             | 554.14             | 761.47             | 784.27             | 842.96             | 833.29             |
| 16                  | 294.76             | 339.23             | 525.43             | 718.29             | 744.2              | 794.18             | 785.95             |
| 17                  | 282.08             | 322.99             | 498.36             | 677.75             | 706.37             | 748.42             | 741.51             |
| 18                  | 270.01             | 307.6              | 472.83             | 639.68             | 670.65             | 705.48             | 699.77             |

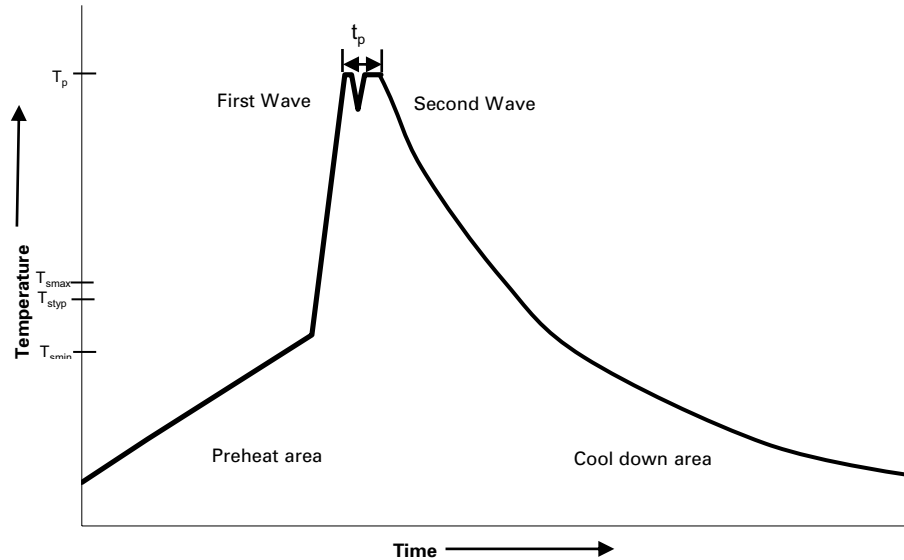
## Temperature characteristics, cont.

| Part number         | NRNE205<br>3900    | NRNE225<br>4370    | NRNE335<br>4570    | NRNE435<br>5070    | NRNE475<br>4570    | NRNE475<br>5200    | NRNE475<br>5200    |
|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| B type              | B25/85             | B25/85             | B25/85             | B25/50             | B25/85             | B25/50             | B25/85             |
| Temperature<br>(°C) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) |
| 19                  | 258.51             | 293.02             | 448.75             | 603.91             | 636.92             | 665.19             | 660.56             |
| 20                  | 247.56             | 279.19             | 426.02             | 570.29             | 605.05             | 627.36             | 623.71             |
| 21                  | 237.12             | 266.08             | 404.57             | 538.69             | 574.93             | 591.84             | 589.08             |
| 22                  | 227.17             | 253.64             | 384.31             | 508.97             | 546.46             | 558.48             | 556.52             |
| 23                  | 217.68             | 241.83             | 365.17             | 481.03             | 519.55             | 527.14             | 525.9              |
| 24                  | 208.63             | 230.63             | 347.09             | 454.74             | 494.09             | 497.69             | 497.1              |
| 25                  | 200                | 220                | 330                | 430                | 470                | 470                | 470                |
| 26                  | 191.77             | 209.91             | 313.84             | 406.71             | 447.21             | 443.97             | 444.49             |
| 27                  | 183.91             | 200.32             | 298.56             | 384.79             | 425.63             | 419.49             | 420.48             |
| 28                  | 176.41             | 191.21             | 284.11             | 364.14             | 405.2              | 396.46             | 397.87             |
| 29                  | 169.26             | 182.56             | 270.43             | 344.7              | 385.86             | 374.79             | 376.57             |
| 30                  | 162.42             | 174.34             | 257.48             | 326.37             | 367.53             | 354.39             | 356.51             |
| 31                  | 155.9              | 166.53             | 245.22             | 309.1              | 350.16             | 335.2              | 337.6              |
| 32                  | 149.66             | 159.1              | 233.61             | 292.82             | 333.7              | 317.12             | 319.78             |
| 33                  | 143.71             | 152.03             | 222.61             | 277.46             | 318.09             | 300.09             | 302.97             |
| 34                  | 138.01             | 145.31             | 212.18             | 262.98             | 303.29             | 284.04             | 287.12             |
| 35                  | 132.58             | 138.92             | 202.3              | 249.32             | 289.25             | 268.93             | 272.17             |
| 36                  | 127.37             | 132.84             | 192.93             | 236.43             | 275.93             | 254.68             | 258.06             |
| 37                  | 122.4              | 127.05             | 184.05             | 224.26             | 263.29             | 241.24             | 244.75             |
| 38                  | 117.65             | 121.54             | 175.62             | 212.77             | 251.29             | 228.57             | 232.18             |
| 39                  | 113.1              | 116.29             | 167.62             | 201.92             | 239.9              | 216.62             | 220.31             |
| 40                  | 108.75             | 111.29             | 160.02             | 191.66             | 229.07             | 205.34             | 209.1              |
| 41                  | 104.58             | 106.53             | 152.81             | 181.98             | 218.79             | 194.7              | 198.51             |
| 42                  | 100.6              | 102                | 145.97             | 172.83             | 209.02             | 184.66             | 188.5              |
| 43                  | 96.78              | 97.68              | 139.46             | 164.17             | 199.74             | 175.17             | 179.04             |
| 44                  | 93.13              | 93.56              | 133.28             | 155.99             | 190.91             | 166.22             | 170.09             |
| 45                  | 89.63              | 89.63              | 127.4              | 148.25             | 182.51             | 157.75             | 161.63             |
| 46                  | 86.28              | 85.89              | 121.82             | 140.93             | 174.53             | 149.76             | 153.63             |
| 47                  | 83.07              | 82.32              | 116.51             | 134.01             | 166.93             | 142.2              | 146.06             |
| 48                  | 80                 | 78.91              | 111.45             | 127.45             | 159.7              | 135.06             | 138.9              |
| 49                  | 77.05              | 75.66              | 106.65             | 121.25             | 152.82             | 128.31             | 132.12             |
| 50                  | 74.22              | 72.56              | 102.07             | 115.37             | 146.27             | 121.92             | 125.7              |
| 51                  | 71.51              | 69.59              | 97.71              | 109.8              | 140.03             | 115.88             | 119.62             |
| 52                  | 68.91              | 66.77              | 93.57              | 104.53             | 134.09             | 110.16             | 113.86             |
| 53                  | 66.42              | 64.07              | 89.62              | 99.54              | 128.43             | 104.75             | 108.4              |
| 54                  | 64.03              | 61.49              | 85.85              | 94.8               | 123.03             | 99.63              | 103.23             |
| 55                  | 61.74              | 59.03              | 82.27              | 90.31              | 117.89             | 94.78              | 98.33              |
| 56                  | 59.54              | 56.67              | 78.85              | 86.05              | 112.99             | 90.19              | 93.68              |
| 57                  | 57.43              | 54.43              | 75.59              | 82.02              | 108.31             | 85.84              | 89.27              |
| 58                  | 55.4               | 52.28              | 72.49              | 78.19              | 103.85             | 81.71              | 85.09              |
| 59                  | 53.45              | 50.22              | 69.52              | 74.55              | 99.6               | 77.81              | 81.12              |
| 60                  | 51.59              | 48.26              | 66.7               | 71.1               | 95.54              | 74.11              | 77.36              |
| 61                  | 49.79              | 46.38              | 64                 | 67.83              | 91.66              | 70.59              | 73.79              |
| 62                  | 48.07              | 44.58              | 61.42              | 64.72              | 87.96              | 67.27              | 70.39              |
| 63                  | 46.41              | 42.86              | 58.96              | 61.77              | 84.43              | 64.11              | 67.17              |
| 64                  | 44.82              | 41.21              | 56.62              | 58.96              | 81.06              | 61.11              | 64.11              |
| 65                  | 43.29              | 39.64              | 54.37              | 56.29              | 77.84              | 58.27              | 61.2               |
| 66                  | 41.82              | 38.13              | 52.23              | 53.76              | 74.76              | 55.57              | 58.44              |
| 67                  | 40.4               | 36.69              | 50.19              | 51.35              | 71.81              | 53.01              | 55.82              |
| 68                  | 39.04              | 35.3               | 48.23              | 49.06              | 69                 | 50.57              | 53.32              |
| 69                  | 37.73              | 33.98              | 46.36              | 46.89              | 66.31              | 48.26              | 50.95              |
| 70                  | 36.47              | 32.71              | 44.57              | 44.82              | 63.74              | 46.07              | 48.69              |
| 71                  | 35.26              | 31.5               | 42.86              | 42.85              | 61.28              | 43.98              | 46.54              |
| 72                  | 34.1               | 30.33              | 41.22              | 40.97              | 58.93              | 42                 | 44.5               |
| 73                  | 32.98              | 29.21              | 39.66              | 39.19              | 56.68              | 40.11              | 42.56              |
| 74                  | 31.9               | 28.14              | 38.16              | 37.49              | 54.52              | 38.32              | 40.71              |
| 75                  | 30.86              | 27.12              | 36.73              | 35.87              | 52.46              | 36.62              | 38.94              |
| 76                  | 29.86              | 26.13              | 35.35              | 34.33              | 50.49              | 35                 | 37.27              |
| 77                  | 28.9               | 25.19              | 34.04              | 32.86              | 48.6               | 33.46              | 35.67              |

Temperature characteristics, cont.

| Part number         | NRNE205<br>3900    | NRNE225<br>4370    | NRNE335<br>4570    | NRNE435<br>5070    | NRNE475<br>4570    | NRNE475<br>5200    | NRNE475<br>5200    |
|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| B type              | B25/85             | B25/85             | B25/85             | B25/50             | B25/85             | B25/50             | B25/85             |
| Temperature<br>(°C) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) | Resistance<br>(kΩ) |
| 78                  | 27.97              | 24.28              | 32.78              | 31.46              | 46.78              | 31.99              | 34.14              |
| 79                  | 27.07              | 23.41              | 31.57              | 30.13              | 45.05              | 30.59              | 32.69              |
| 80                  | 26.21              | 22.58              | 30.41              | 28.86              | 43.39              | 29.26              | 31.31              |
| 81                  | 25.38              | 21.78              | 29.31              | 27.65              | 41.79              | 28                 | 29.99              |
| 82                  | 24.58              | 21.01              | 28.24              | 26.49              | 40.26              | 26.79              | 28.73              |
| 83                  | 23.81              | 20.27              | 27.23              | 25.39              | 38.8               | 25.64              | 27.54              |
| 84                  | 23.07              | 19.56              | 26.25              | 24.34              | 37.4               | 24.55              | 26.39              |
| 85                  | 22.35              | 18.88              | 25.31              | 23.34              | 36.05              | 23.5               | 25.3               |
| 86                  | 21.66              | 18.23              | 24.41              | 22.38              | 34.76              | 22.51              | 24.26              |
| 87                  | 20.99              | 17.6               | 23.55              | 21.47              | 33.52              | 21.56              | 23.27              |
| 88                  | 20.35              | 16.99              | 22.72              | 20.6               | 32.33              | 20.66              | 22.32              |
| 89                  | 19.73              | 16.41              | 21.93              | 19.76              | 31.19              | 19.8               | 21.41              |
| 90                  | 19.13              | 15.86              | 21.16              | 18.97              | 30.09              | 18.97              | 20.55              |
| 91                  | 18.55              | 15.32              | 20.43              | 18.21              | 29.04              | 18.19              | 19.72              |
| 92                  | 17.99              | 14.8               | 19.73              | 17.48              | 28.03              | 17.44              | 18.93              |
| 93                  | 17.46              | 14.31              | 19.05              | 16.79              | 27.05              | 16.73              | 18.18              |
| 94                  | 16.94              | 13.83              | 18.4               | 16.13              | 26.12              | 16.05              | 17.46              |
| 95                  | 16.43              | 13.37              | 17.78              | 15.49              | 25.23              | 15.39              | 16.77              |
| 96                  | 15.95              | 12.93              | 17.18              | 14.89              | 24.36              | 14.77              | 16.11              |
| 97                  | 15.48              | 12.5               | 16.6               | 14.31              | 23.54              | 14.18              | 15.48              |
| 98                  | 15.03              | 12.09              | 16.04              | 13.75              | 22.74              | 13.61              | 14.88              |
| 99                  | 14.59              | 11.7               | 15.51              | 13.22              | 21.97              | 13.07              | 14.3               |
| 100                 | 14.17              | 11.32              | 15                 | 12.71              | 21.24              | 12.55              | 13.75              |
| 101                 | 13.76              | 10.95              | 14.5               | 12.23              | 20.53              | 12.05              | 13.22              |
| 102                 | 13.36              | 10.6               | 14.03              | 11.76              | 19.85              | 11.58              | 12.72              |
| 103                 | 12.98              | 10.26              | 13.57              | 11.32              | 19.19              | 11.13              | 12.23              |
| 104                 | 12.61              | 9.93               | 13.13              | 10.89              | 18.56              | 10.69              | 11.77              |
| 105                 | 12.25              | 9.62               | 12.7               | 10.48              | 17.96              | 10.28              | 11.33              |
| 106                 | 11.91              | 9.31               | 12.3               | 10.09              | 17.37              | 9.88               | 10.9               |
| 107                 | 11.57              | 9.02               | 11.9               | 9.71               | 16.81              | 9.5                | 10.49              |
| 108                 | 11.25              | 8.74               | 11.52              | 9.35               | 16.27              | 9.14               | 10.1               |
| 109                 | 10.94              | 8.47               | 11.16              | 9.01               | 15.74              | 8.79               | 9.73               |
| 110                 | 10.64              | 8.2                | 10.81              | 8.68               | 15.24              | 8.46               | 9.37               |
| 111                 | 10.34              | 7.95               | 10.47              | 8.36               | 14.76              | 8.14               | 9.03               |
| 112                 | 10.06              | 7.71               | 10.14              | 8.06               | 14.29              | 7.83               | 8.7                |
| 113                 | 9.78               | 7.47               | 9.83               | 7.77               | 13.84              | 7.54               | 8.38               |
| 114                 | 9.52               | 7.24               | 9.52               | 7.49               | 13.41              | 7.26               | 8.08               |
| 115                 | 9.26               | 7.02               | 9.23               | 7.22               | 12.99              | 6.99               | 7.79               |
| 116                 | 9.01               | 6.81               | 8.95               | 6.96               | 12.58              | 6.73               | 7.51               |
| 117                 | 8.77               | 6.61               | 8.68               | 6.71               | 12.19              | 6.48               | 7.24               |
| 118                 | 8.54               | 6.41               | 8.41               | 6.48               | 11.82              | 6.25               | 6.99               |
| 119                 | 8.31               | 6.22               | 8.16               | 6.25               | 11.46              | 6.02               | 6.74               |
| 120                 | 8.09               | 6.03               | 7.91               | 6.03               | 11.11              | 5.8                | 6.5                |
| 121                 | 7.88               | 5.86               | 7.68               | 5.82               | 10.77              | 5.59               | 6.27               |
| 122                 | 7.67               | 5.68               | 7.45               | 5.62               | 10.45              | 5.39               | 6.06               |
| 123                 | 7.47               | 5.52               | 7.23               | 5.42               | 10.13              | 5.2                | 5.85               |
| 124                 | 7.28               | 5.36               | 7.02               | 5.24               | 9.83               | 5.01               | 5.64               |
| 125                 | 7.09               | 5.2                | 6.81               | 5.06               | 9.54               | 4.84               | 5.45               |

## 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                                 |

**Note:** PCB surface should be at least 6 mm distance from the thermistor body to prevent parts damage.

## Manual solder

+360 °C (2.5 seconds maximum by soldering iron, distance between soldering position and coating 2.5 mm minimum), generally manual/hand soldering is not recommended.

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