



## NTC THERMISTOR R-T CHARACTERISTICS

|      |              |
|------|--------------|
| TYPE | GR15-7C993F* |
|------|--------------|

|         |         |         |
|---------|---------|---------|
| T0 (°C) | T1 (°C) | T2 (°C) |
| 25      | 25      | 50      |

|               |         |                 |       |                 |       |
|---------------|---------|-----------------|-------|-----------------|-------|
| R at T0°C     | 98630 Ω | R+TOLERANCE (%) | 1     | R-TOLERANCE (%) | 1     |
| B (T1°C/T2°C) | 4036 K  | B+TOLERANCE (K) | 40.36 | B-TOLERANCE (K) | 40.36 |

| T (°C) | Rmin (Ω)  | Rnom (Ω)  | Rmax (Ω)  |
|--------|-----------|-----------|-----------|
| 50     | 3.391E+04 | 3.461E+04 | 3.532E+04 |
| 51     | 3.260E+04 | 3.329E+04 | 3.399E+04 |
| 52     | 3.136E+04 | 3.203E+04 | 3.272E+04 |
| 53     | 3.016E+04 | 3.082E+04 | 3.150E+04 |
| 54     | 2.902E+04 | 2.967E+04 | 3.033E+04 |
| 55     | 2.793E+04 | 2.856E+04 | 2.921E+04 |
| 56     | 2.688E+04 | 2.750E+04 | 2.814E+04 |
| 57     | 2.588E+04 | 2.649E+04 | 2.711E+04 |
| 58     | 2.493E+04 | 2.552E+04 | 2.613E+04 |
| 59     | 2.401E+04 | 2.459E+04 | 2.518E+04 |
| 60     | 2.313E+04 | 2.370E+04 | 2.428E+04 |
| 61     | 2.229E+04 | 2.284E+04 | 2.341E+04 |
| 62     | 2.148E+04 | 2.202E+04 | 2.258E+04 |
| 63     | 2.070E+04 | 2.124E+04 | 2.178E+04 |
| 64     | 1.996E+04 | 2.048E+04 | 2.101E+04 |
| 65     | 1.925E+04 | 1.976E+04 | 2.028E+04 |
| 66     | 1.857E+04 | 1.906E+04 | 1.957E+04 |
| 67     | 1.791E+04 | 1.840E+04 | 1.889E+04 |
| 68     | 1.728E+04 | 1.776E+04 | 1.824E+04 |
| 69     | 1.668E+04 | 1.714E+04 | 1.762E+04 |
| 70     | 1.610E+04 | 1.655E+04 | 1.702E+04 |
| 71     | 1.554E+04 | 1.598E+04 | 1.644E+04 |
| 72     | 1.501E+04 | 1.544E+04 | 1.588E+04 |
| 73     | 1.449E+04 | 1.492E+04 | 1.535E+04 |
| 74     | 1.400E+04 | 1.441E+04 | 1.484E+04 |
| 75     | 1.352E+04 | 1.393E+04 | 1.434E+04 |
| 76     | 1.307E+04 | 1.346E+04 | 1.387E+04 |
| 77     | 1.263E+04 | 1.302E+04 | 1.341E+04 |
| 78     | 1.221E+04 | 1.259E+04 | 1.297E+04 |
| 79     | 1.180E+04 | 1.217E+04 | 1.255E+04 |
| 80     | 1.141E+04 | 1.177E+04 | 1.215E+04 |
| 81     | 1.104E+04 | 1.139E+04 | 1.175E+04 |
| 82     | 1.068E+04 | 1.102E+04 | 1.138E+04 |
| 83     | 1.033E+04 | 1.067E+04 | 1.101E+04 |
| 84     | 9.996E+03 | 1.033E+04 | 1.066E+04 |
| 85     | 9.675E+03 | 9.996E+03 | 1.033E+04 |
| 86     | 9.365E+03 | 9.679E+03 | 1.000E+04 |
| 87     | 9.066E+03 | 9.374E+03 | 9.691E+03 |
| 88     | 8.779E+03 | 9.079E+03 | 9.389E+03 |
| 89     | 8.502E+03 | 8.795E+03 | 9.098E+03 |
| 90     | 8.235E+03 | 8.522E+03 | 8.818E+03 |
| 91     | 7.977E+03 | 8.258E+03 | 8.548E+03 |
| 92     | 7.729E+03 | 8.003E+03 | 8.287E+03 |
| 93     | 7.490E+03 | 7.758E+03 | 8.035E+03 |
| 94     | 7.259E+03 | 7.521E+03 | 7.792E+03 |
| 95     | 7.036E+03 | 7.293E+03 | 7.558E+03 |
| 96     | 6.822E+03 | 7.072E+03 | 7.331E+03 |
| 97     | 6.614E+03 | 6.859E+03 | 7.113E+03 |
| 98     | 6.414E+03 | 6.654E+03 | 6.902E+03 |
| 99     | 6.221E+03 | 6.456E+03 | 6.698E+03 |
| 100    | 6.035E+03 | 6.264E+03 | 6.501E+03 |

| T (°C) | Rmin (Ω)  | Rnom (Ω)  | Rmax (Ω)  |
|--------|-----------|-----------|-----------|
| 100    | 6.035E+03 | 6.264E+03 | 6.501E+03 |
| 101    | 5.855E+03 | 6.079E+03 | 6.311E+03 |
| 102    | 5.681E+03 | 5.900E+03 | 6.127E+03 |
| 103    | 5.513E+03 | 5.728E+03 | 5.950E+03 |
| 104    | 5.351E+03 | 5.561E+03 | 5.778E+03 |
| 105    | 5.195E+03 | 5.400E+03 | 5.612E+03 |
| 106    | 5.043E+03 | 5.244E+03 | 5.452E+03 |
| 107    | 4.897E+03 | 5.093E+03 | 5.297E+03 |
| 108    | 4.756E+03 | 4.948E+03 | 5.147E+03 |
| 109    | 4.620E+03 | 4.807E+03 | 5.002E+03 |
| 110    | 4.488E+03 | 4.671E+03 | 4.862E+03 |
| 111    | 4.360E+03 | 4.540E+03 | 4.726E+03 |
| 112    | 4.237E+03 | 4.413E+03 | 4.595E+03 |
| 113    | 4.118E+03 | 4.289E+03 | 4.468E+03 |
| 114    | 4.002E+03 | 4.170E+03 | 4.345E+03 |
| 115    | 3.891E+03 | 4.055E+03 | 4.226E+03 |
| 116    | 3.783E+03 | 3.944E+03 | 4.111E+03 |
| 117    | 3.678E+03 | 3.836E+03 | 4.000E+03 |
| 118    | 3.577E+03 | 3.732E+03 | 3.892E+03 |
| 119    | 3.479E+03 | 3.630E+03 | 3.788E+03 |
| 120    | 3.385E+03 | 3.533E+03 | 3.686E+03 |
| 121    | 3.293E+03 | 3.438E+03 | 3.589E+03 |
| 122    | 3.204E+03 | 3.346E+03 | 3.494E+03 |
| 123    | 3.119E+03 | 3.257E+03 | 3.402E+03 |
| 124    | 3.035E+03 | 3.171E+03 | 3.313E+03 |
| 125    | 2.955E+03 | 3.088E+03 | 3.226E+03 |
| 126    | 2.876E+03 | 3.007E+03 | 3.143E+03 |
| 127    | 2.801E+03 | 2.928E+03 | 3.061E+03 |
| 128    | 2.727E+03 | 2.852E+03 | 2.983E+03 |
| 129    | 2.656E+03 | 2.779E+03 | 2.906E+03 |
| 130    | 2.587E+03 | 2.707E+03 | 2.832E+03 |
| 131    | 2.520E+03 | 2.638E+03 | 2.760E+03 |
| 132    | 2.455E+03 | 2.570E+03 | 2.690E+03 |
| 133    | 2.392E+03 | 2.505E+03 | 2.623E+03 |
| 134    | 2.331E+03 | 2.441E+03 | 2.557E+03 |
| 135    | 2.272E+03 | 2.380E+03 | 2.493E+03 |
| 136    | 2.214E+03 | 2.320E+03 | 2.431E+03 |
| 137    | 2.158E+03 | 2.262E+03 | 2.371E+03 |
| 138    | 2.104E+03 | 2.206E+03 | 2.313E+03 |
| 139    | 2.052E+03 | 2.152E+03 | 2.256E+03 |
| 140    | 2.001E+03 | 2.099E+03 | 2.201E+03 |
| 141    | 1.951E+03 | 2.047E+03 | 2.148E+03 |
| 142    | 1.903E+03 | 1.997E+03 | 2.096E+03 |
| 143    | 1.857E+03 | 1.949E+03 | 2.045E+03 |
| 144    | 1.812E+03 | 1.902E+03 | 1.997E+03 |
| 145    | 1.768E+03 | 1.856E+03 | 1.949E+03 |
| 146    | 1.725E+03 | 1.812E+03 | 1.903E+03 |
| 147    | 1.683E+03 | 1.769E+03 | 1.858E+03 |
| 148    | 1.643E+03 | 1.727E+03 | 1.814E+03 |
| 149    | 1.604E+03 | 1.686E+03 | 1.772E+03 |
| 150    | 1.566E+03 | 1.646E+03 | 1.730E+03 |

## NTC THERMISTOR R-T CHARACTERISTICS

|      |              |
|------|--------------|
| TYPE | GR15-7C993F* |
|------|--------------|

|         |         |         |
|---------|---------|---------|
| T0 (°C) | T1 (°C) | T2 (°C) |
| 25      | 25      | 50      |

|              |         |                 |       |                 |       |
|--------------|---------|-----------------|-------|-----------------|-------|
| R at T0°C    | 98630 Ω | R+TOLERANCE (%) | 1     | R-TOLERANCE (%) | 1     |
| B(T1°C/T2°C) | 4036 K  | B+TOLERANCE (K) | 40.36 | B-TOLERANCE (K) | 40.36 |

| T (°C) | Rmin (Ω)  | Rnom (Ω)  | Rmax (Ω)  |
|--------|-----------|-----------|-----------|
| 150    | 1.566E+03 | 1.646E+03 | 1.730E+03 |
| 151    | 1.529E+03 | 1.607E+03 | 1.690E+03 |
| 152    | 1.493E+03 | 1.570E+03 | 1.651E+03 |
| 153    | 1.458E+03 | 1.533E+03 | 1.613E+03 |
| 154    | 1.424E+03 | 1.498E+03 | 1.576E+03 |
| 155    | 1.390E+03 | 1.463E+03 | 1.540E+03 |
| 156    | 1.358E+03 | 1.430E+03 | 1.505E+03 |
| 157    | 1.327E+03 | 1.397E+03 | 1.471E+03 |
| 158    | 1.296E+03 | 1.365E+03 | 1.438E+03 |
| 159    | 1.267E+03 | 1.334E+03 | 1.406E+03 |
| 160    | 1.238E+03 | 1.304E+03 | 1.374E+03 |
| 161    | 1.210E+03 | 1.275E+03 | 1.344E+03 |
| 162    | 1.183E+03 | 1.247E+03 | 1.314E+03 |
| 163    | 1.156E+03 | 1.219E+03 | 1.285E+03 |
| 164    | 1.131E+03 | 1.192E+03 | 1.257E+03 |
| 165    | 1.105E+03 | 1.166E+03 | 1.230E+03 |
| 166    | 1.081E+03 | 1.140E+03 | 1.203E+03 |
| 167    | 1.057E+03 | 1.115E+03 | 1.177E+03 |
| 168    | 1.034E+03 | 1.091E+03 | 1.152E+03 |
| 169    | 1.011E+03 | 1.068E+03 | 1.127E+03 |
| 170    | 9.893E+02 | 1.045E+03 | 1.103E+03 |
| 171    | 9.678E+02 | 1.022E+03 | 1.079E+03 |
| 172    | 9.468E+02 | 1.000E+03 | 1.056E+03 |
| 173    | 9.265E+02 | 9.788E+02 | 1.034E+03 |
| 174    | 9.066E+02 | 9.580E+02 | 1.012E+03 |
| 175    | 8.872E+02 | 9.377E+02 | 9.910E+02 |
| 176    | 8.684E+02 | 9.180E+02 | 9.704E+02 |
| 177    | 8.500E+02 | 8.988E+02 | 9.502E+02 |
| 178    | 8.321E+02 | 8.800E+02 | 9.306E+02 |
| 179    | 8.147E+02 | 8.618E+02 | 9.114E+02 |
| 180    | 7.977E+02 | 8.439E+02 | 8.928E+02 |
| 181    | 7.812E+02 | 8.266E+02 | 8.746E+02 |
| 182    | 7.650E+02 | 8.097E+02 | 8.569E+02 |
| 183    | 7.493E+02 | 7.932E+02 | 8.396E+02 |
| 184    | 7.340E+02 | 7.771E+02 | 8.227E+02 |
| 185    | 7.190E+02 | 7.614E+02 | 8.063E+02 |
| 186    | 7.044E+02 | 7.461E+02 | 7.902E+02 |
| 187    | 6.902E+02 | 7.312E+02 | 7.745E+02 |
| 188    | 6.763E+02 | 7.166E+02 | 7.592E+02 |
| 189    | 6.627E+02 | 7.023E+02 | 7.442E+02 |
| 190    | 6.494E+02 | 6.884E+02 | 7.296E+02 |
| 191    | 6.365E+02 | 6.748E+02 | 7.154E+02 |
| 192    | 6.239E+02 | 6.616E+02 | 7.014E+02 |
| 193    | 6.115E+02 | 6.486E+02 | 6.878E+02 |
| 194    | 5.995E+02 | 6.360E+02 | 6.746E+02 |
| 195    | 5.877E+02 | 6.236E+02 | 6.616E+02 |
| 196    | 5.763E+02 | 6.115E+02 | 6.489E+02 |
| 197    | 5.651E+02 | 5.997E+02 | 6.365E+02 |
| 198    | 5.541E+02 | 5.882E+02 | 6.244E+02 |
| 199    | 5.434E+02 | 5.770E+02 | 6.126E+02 |
| 200    | 5.330E+02 | 5.660E+02 | 6.010E+02 |

| T (°C) | Rmin (Ω)  | Rnom (Ω)  | Rmax (Ω)  |
|--------|-----------|-----------|-----------|
| 200    | 5.330E+02 | 5.660E+02 | 6.010E+02 |
| 201    | 5.227E+02 | 5.552E+02 | 5.897E+02 |
| 202    | 5.127E+02 | 5.447E+02 | 5.786E+02 |
| 203    | 5.030E+02 | 5.344E+02 | 5.678E+02 |
| 204    | 4.934E+02 | 5.244E+02 | 5.572E+02 |
| 205    | 4.841E+02 | 5.146E+02 | 5.469E+02 |
| 206    | 4.750E+02 | 5.050E+02 | 5.368E+02 |
| 207    | 4.661E+02 | 4.956E+02 | 5.269E+02 |
| 208    | 4.574E+02 | 4.865E+02 | 5.173E+02 |
| 209    | 4.490E+02 | 4.775E+02 | 5.079E+02 |
| 210    | 4.407E+02 | 4.688E+02 | 4.987E+02 |
| 211    | 4.326E+02 | 4.603E+02 | 4.897E+02 |
| 212    | 4.247E+02 | 4.520E+02 | 4.809E+02 |
| 213    | 4.170E+02 | 4.438E+02 | 4.723E+02 |
| 214    | 4.094E+02 | 4.359E+02 | 4.639E+02 |
| 215    | 4.020E+02 | 4.281E+02 | 4.557E+02 |
| 216    | 3.948E+02 | 4.204E+02 | 4.477E+02 |
| 217    | 3.877E+02 | 4.130E+02 | 4.398E+02 |
| 218    | 3.808E+02 | 4.057E+02 | 4.321E+02 |
| 219    | 3.740E+02 | 3.985E+02 | 4.246E+02 |
| 220    | 3.674E+02 | 3.915E+02 | 4.172E+02 |
| 221    | 3.609E+02 | 3.847E+02 | 4.100E+02 |
| 222    | 3.546E+02 | 3.780E+02 | 4.029E+02 |
| 223    | 3.484E+02 | 3.714E+02 | 3.960E+02 |
| 224    | 3.423E+02 | 3.650E+02 | 3.892E+02 |
| 225    | 3.363E+02 | 3.587E+02 | 3.825E+02 |
| 226    | 3.305E+02 | 3.526E+02 | 3.760E+02 |
| 227    | 3.248E+02 | 3.465E+02 | 3.697E+02 |
| 228    | 3.192E+02 | 3.406E+02 | 3.634E+02 |
| 229    | 3.137E+02 | 3.348E+02 | 3.573E+02 |
| 230    | 3.084E+02 | 3.292E+02 | 3.513E+02 |
| 231    | 3.031E+02 | 3.236E+02 | 3.454E+02 |
| 232    | 2.980E+02 | 3.182E+02 | 3.397E+02 |
| 233    | 2.930E+02 | 3.129E+02 | 3.341E+02 |
| 234    | 2.880E+02 | 3.076E+02 | 3.285E+02 |
| 235    | 2.832E+02 | 3.025E+02 | 3.231E+02 |
| 236    | 2.785E+02 | 2.975E+02 | 3.178E+02 |
| 237    | 2.738E+02 | 2.926E+02 | 3.126E+02 |
| 238    | 2.693E+02 | 2.878E+02 | 3.076E+02 |
| 239    | 2.649E+02 | 2.831E+02 | 3.026E+02 |
| 240    | 2.605E+02 | 2.785E+02 | 2.977E+02 |
| 241    | 2.562E+02 | 2.739E+02 | 2.929E+02 |
| 242    | 2.520E+02 | 2.695E+02 | 2.882E+02 |
| 243    | 2.479E+02 | 2.652E+02 | 2.836E+02 |
| 244    | 2.439E+02 | 2.609E+02 | 2.790E+02 |
| 245    | 2.399E+02 | 2.567E+02 | 2.746E+02 |
| 246    | 2.361E+02 | 2.526E+02 | 2.703E+02 |
| 247    | 2.323E+02 | 2.486E+02 | 2.660E+02 |
| 248    | 2.286E+02 | 2.446E+02 | 2.618E+02 |
| 249    | 2.249E+02 | 2.408E+02 | 2.577E+02 |
| 250    | 2.213E+02 | 2.370E+02 | 2.537E+02 |

