

# NTC Diode

## Thermometrics Thermistors



A range of NTC chip thermistors in DO-35 style glass package (diode outline) with axial solder-coated copper-clad steel wires.

- Designed for accurate temperature measurement, control and compensation
- Tight tolerances on resistance and B value
- Operation up to 482°F (250°C) with excellent stability
- Glass body provides hermetic seal and voltage insulation and excellent stability
- Designed for cost effective solid state sensor
- Lead-wires metallurgically bonded to thermistor element for improved reliability (Type GE only)
- Resistant to corrosive atmospheres and harsh environments
- Available on axial bandolier to IEC-286-1/ EIA-468A and packet taped to EIA RS-481 for MELF.
- Also available loose-packed with axial, radial and SMD wire forms
- Suitable for automotive, telecom (battery packs), HVAC and white goods applications
- Temperature sensing for household appliances such as rice cookers, electronic ranges, ovens, etc.
- Temperature sensing for industrial products such as pharmaceuticals, chemicals, food, etc.components.



# Type DK Specifications

Chip thermistor in DO-35 glass package

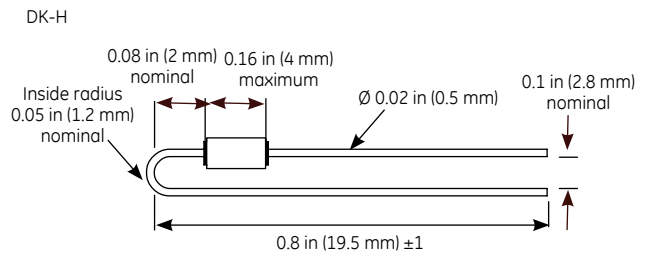
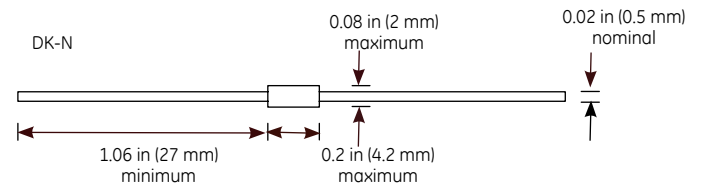
## Options

- Other resistance values within the ranges shown; e.g. code DKA302\*2 for 3000 Ω ±2% at 77°F (25°C)
- Reference temperatures in the range 0°F to 302°F (-18°C to 150°C)
- Operation to 572°F (300°C) (no solder coating on wires)
- Wire lengths 0.16 in to 1.26 in (4 mm to 32 mm) ±0.04 in (±1 mm) for DK-N; up to 1.02 in (26 mm) for DK-H

## Coding

Replace \* in the codes shown below as follows:

- Axial, loose-packed: N
- Axial, banded: B
- Radial, loose-packed: H
- Surface mount, loose-packed: M



NTC Type DK wires should not be bent within 0.08 in (2 mm) of glass body

## Data

- Operating temperature: -40°F to 482°F (-40°C to 250°C)
- Thermal time constant: 7 seconds (cooling in air)
- Dissipation factor: 3.0 mW/K
- Mass: 0.2 g
- Packing/MOQ: 1000/box (loose), 5000/reel (banded)

| R25 Ω     | Material system | B 25/85 K | Code R25 ±2% | Code R25 ±3% | Code R25 ±5% | Code R25 ±10% |
|-----------|-----------------|-----------|--------------|--------------|--------------|---------------|
| 2000      | 2               | 3540 ±1%  | DKA202*2     | DKA202*3     | DKA202*5     | DKA202*10     |
| 5000      | 2               | 3540 ±1%  | DKA502*2     | DKA502*3     | DKA502*5     | DKA502*10     |
| 10,000    | 2               | 3540 ±1%  | DKA103*2     | DKA103*3     | DKA103*5     | DKA103*10     |
| 10,000    | 5A              | 3730 ±2%  |              | DKC103*3     | DKC103*5     | DKC103*10     |
| 12,000    | 5A              | 3730 ±2%  | DKC123*2     | DKC123*3     | DKC123*5     | DKC123*10     |
| 10,000    | 3               | 3960 ±1%  | DKF103*2     | DKF103*3     | DKF103*5     | DKF103*10     |
| 20,000    | 3               | 3960 ±1%  | DKF203*2     | DKF203*3     | DKF203*5     | DKF203*10     |
| 30,000    | 3               | 3960 ±1%  | DKF303*2     | DKF303*3     | DKF303*5     | DKF303*10     |
| 50,000    | 3               | 3960 ±1%  | DKF503*2     | DKF503*3     | DKF503*5     | DKF503*10     |
| 100,000   | 3               | 3960 ±1%  | DKF104*2     | DKF104*3     | DKF104*5     | DKF104*10     |
| 200,000   | G               | 4263 ±2%  |              |              | DKG204*5     | DKG204*10     |
| 500,000   | D               | 4573 ±2%  |              |              | DKD504*5     | DKD504*10     |
| 1,000,000 | D               | 4573 ±2%  |              |              | DKD105*5     | DKD105*10     |

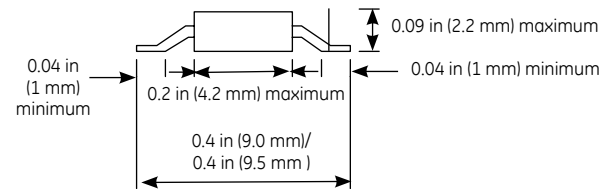
See separate tables for resistance-temperature data.  
Consult factory for additional tolerance requirements.

# Type DKM Specifications

Glass encapsulated SMD thermistor

## Description

A range of thermistors in DO-35 style glass package (diode outline formed for surface lead-wires and applications) with solder-coated copper-clad steel lead-wires.



*NTC Type DKM wires should not be bent within 0.08 in (2 mm) of glass body*

## Options

- Other resistance values within the ranges shown; e.g. code DKA302M2 for 3000  $\Omega \pm 2\%$  at 77°F (25°C)
- Reference temperatures in the range 32°F to 302°F (0°C to 150°C)
- For tape and reel, add suffix "AB"
- Operation to 572°F (300°C); no solder coating on lead-wires

## Data

- Operating temperature: -40°F to 482°F (-40°C to 250°C)
- Thermal time constant: 7 seconds (cooling in air)
- Dissipation factor: 3.0 mW/K
- Mass: 0.2 g
- Packing/MOQ: 1000/box (loose)

| R25 $\Omega$ | Material System | B 25/85 K      | Code R25 $\pm 2\%$ | Code R25 $\pm 3\%$ | Code R25 $\pm 5\%$ | Code R25 $\pm 10\%$ |
|--------------|-----------------|----------------|--------------------|--------------------|--------------------|---------------------|
| 2000         | 2               | 3540 $\pm 1\%$ | DKA202M2           | DKA202M3           | DKA202M*5          | DKA202M10           |
| 5000         | 2               | 3540 $\pm 1\%$ | DKA502M*2          | DKA502M3           | DKA502M5           | DKA502M10           |
| 10,000       | 2               | 3540 $\pm 1\%$ | DKA103M2           | DKA103M3           | DKA103M5           | DKA103M10           |
| 10,000       | 5A              | 3730 $\pm 2\%$ |                    | DKC103M3           | DKC103M5           | DKC103M10           |
| 10,000       | 3               | 3960 $\pm 1\%$ | DKF103M2           | DKF103M3           | DKF103M5           | DKF103M10           |
| 20,000       | 3               | 3960 $\pm 1\%$ | DKF203M2           | DKF203M3           | DKF203M5           | DKF203M10           |
| 30,000       | 3               | 3960 $\pm 1\%$ | DKF303M2           | DKF303M3           | DKF303M5           | DKF303M10           |
| 50,000       | 3               | 3960 $\pm 1\%$ | DKF503M2           | DKF503M3           | DKF503M5           | DKF503M10           |
| 100,000      | 3               | 3960 $\pm 1\%$ | DKF104M2           | DKF104M3           | DKF104M5           | DKF104M10           |
| 200,000      | G               | 4263 $\pm 2\%$ |                    |                    | DKG204M5           | DKG204M10           |
| 500,000      | D               | 4573 $\pm 2\%$ |                    |                    | DKD504M5           | DKD504M10           |
|              | D               | 4573 $\pm 2\%$ |                    |                    | DKD105M5           | DKD105M10           |

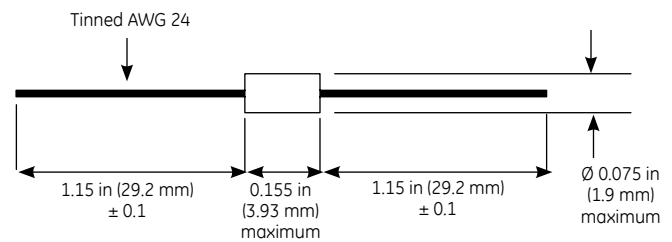
See separate tables for resistance-temperature data.  
Consult factory for additional tolerance requirements.

# Type GE Specifications

Glass encapsulated DO-35 package

## Options

- For reel taping "R" suffix
- Nickel leads for welding
- Other resistances in the range 250  $\Omega$  to 5 M $\Omega$
- Other tolerances, tolerances at other temperatures
- Alternative leads lengths, lead materials
- Can be expanded to 572°F (300°C) with nickel leads



NTC Type GE dimensions

## Data

- Standard resistance tolerance:  $\pm 10\%$  @ 77°F (25°C)
- Dissipation constant: 3.0 mW/K
- Time constant: 7 seconds
- Operating range: -58°F to 400°F (-50°C to 204°C)

| R <sub>0</sub> @25° C ( $\Omega$ ) | Material System | Beta 25/85 | Type Number          |
|------------------------------------|-----------------|------------|----------------------|
| 250                                | GE5.5*          | 2983       | AL03006-165.9-55-K   |
| 500                                | GE5.5*          | 2983       | AL03006-331.8-55-K   |
| 1K                                 | GE7.3           | 3499       | AL03006-624-73-K     |
| 2K                                 | GE7.3           | 3499       | AL03006-1248-73-K    |
| 2786                               | GE10.1          | 4102       | AL03006-1576-101-K   |
| 3K                                 | GE7.6           | 3553       | AL03006-1847-76-K    |
| 4K                                 | GE7.6           | 3553       | AL03006-2463-76-K    |
| 5K                                 | GE7.6           | 3553       | AL03006-3079-76-K    |
| 10K                                | GE9.7A          | 3992       | AL03006-5818-97-K    |
| 20K                                | GE9.8           | 3974       | AL03006-11.7K-98-K   |
| 30K                                | GE9.8           | 3974       | AL03006-17.53K-98-K  |
| 50K                                | GE9.7B          | 3952       | AL03006-29.1K-97-K   |
| 100K                               | GE9.7B          | 3952       | AL03006-58.2K-97-K   |
| 200K                               | GE12.3          | 4365       | AL03006-111.3K-123-K |
| 500K                               | GE13.8          | 4567       | AL03006-269.8K-138-K |
| 1M                                 | GE14.5          | 4661       | AL03006-535K-145-K   |
| 5M                                 | GE16.4          | 4848       | AL03006-2.6M-164-K   |

\*maximum operating temperature 302°F (150°C)

# Type MELF Specifications

Glass encapsulated SMD thermistor

## Description

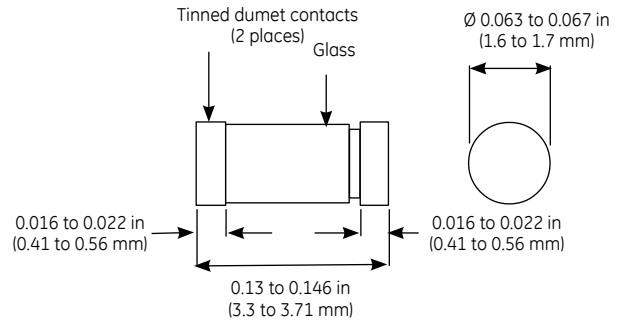
Hermetically sealed, glass encapsulated thermistor in SOD-80 SMD package.

## Options

- For  $\pm 5\%$  @ 77°F (25°C), replace "K" with "J"
- For  $\pm 3\%$  @ 77°F (25°C), replace "K" with "H"
- For  $\pm 2\%$  @ 77°F (25°C), replace "K" with "G"
- For reel taping add "R" suffix
- Other resistances in the range 250  $\Omega$  to 5 M $\Omega$  available
- Other tolerances, tolerances at other temperatures

| Ro@25° C ( $\Omega$ ) | Material System | Beta 25/85 | Type Number        |
|-----------------------|-----------------|------------|--------------------|
| 250                   | GE5.5*          | 2983       | 03006-165.9-55-K   |
| 500                   | GE5.5*          | 2983       | 03006-331.8-55-K   |
| 1K                    | GE7.3           | 3499       | 03006-624-73-K     |
| 2K                    | GE7.3           | 3499       | 03006-1248-73-K    |
| 2786                  | GE10.1          | 4102       | 03006-1576-101-K   |
| 3K                    | GE7.6           | 3553       | 03006-1847-76-K    |
| 4K                    | GE7.6           | 3553       | 03006-2463-76-K    |
| 5K                    | GE7.6           | 3553       | 03006-3079-76-K    |
| 10K                   | GE9.7A          | 3992       | 03006-5818-97-K    |
| 20K                   | GE9.8           | 3974       | 03006-11.7K-98-K   |
| 30K                   | GE9.8           | 3974       | 03006-17.53K-98-K  |
| 50K                   | GE9.7B          | 3952       | 03006-29.1K-97-K   |
| 100K                  | GE9.7B          | 3952       | 03006-58.2-97-K    |
| 200K                  | GE12.3          | 4365       | 03006-111.3K-123-K |
| 500K                  | GE13.8          | 4567       | 03006-269.8K-138-K |
| 1M                    | GE14.5          | 4661       | 03006-535K-145-K   |
| 5M                    | GE16.4          | 4848       | 03006-2.6M-164-K   |

\*maximum operating temperature 302°F (150°C)



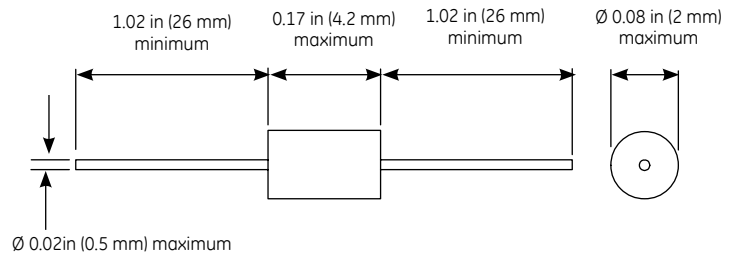
NTC Type MELF dimensions

## Data

- Standard resistance tolerance:  $\pm 10\%$  @ 77°F (25°C)
- Dissipation constant: 3.0 mW/°C
- Time constant: 7 seconds
- Operating range: -58°F to 400°F (-50°C to 204°C)

# Type TH Specifications

Glass encapsulated radial lead thermistor



NTC Type TH dimensions

| Part Number | Resistance (25 Ω) | β Constant (25/50) | Recommended Maximum Operating Current at 77°F (25°C) | Maximum Permissible Current at 77°F (25°C) |
|-------------|-------------------|--------------------|------------------------------------------------------|--------------------------------------------|
| TH220J33G   | 2.0 K             | 3375 K             | 0.22 mA                                              | 30.0 mA                                    |
| TH225J13G   | 2.545 K           | 3745 K             | 0.22 mA                                              | 30.0 mA                                    |
| TH238J34G   | 3.896 K           | 3434 K             | 0.20 mA                                              | 26.5 mA                                    |
| TH253J34G   | 5.369 K           | 3434 K             | 0.16 mA                                              | 24.0 mA                                    |
| TH310J34G   | 10.74 K           | 3434 K             | 0.13 mA                                              | 20.0 mA                                    |
| TH310J36G   | 10.0 K            | 3684 K             | 0.14 mA                                              | 20.0 mA                                    |
| TH310J39G   | 10.0 K            | 3933 K             | 0.14 mA                                              | 20.0 mA                                    |
| TH315J39G   | 15.0 K            | 3933 K             | 0.12 mA                                              | 17.0 mA                                    |
| TH320J39G   | 20.0 K            | 3952 K             | 0.10 mA                                              | 15.0 mA                                    |
| TH349J39G   | 49.12 K           | 3952 K             | 0.06 mA                                              | 10.0 mA                                    |
| TH350J39G   | 50.0 K            | 3952 K             | 0.06 mA                                              | 10.0 mA                                    |
| TH398J40G   | 98.63 K           | 4014 K             | 0.045 mA                                             | 5.0 mA                                     |
| TH410J40G   | 100.0 K           | 4014 K             | 0.045 mA                                             | 5.0 mA                                     |
| TH420J34G   | 200.0 K           | 3450 K             | 0.015 mA                                             | 3.5 mA                                     |
| TH423J41G   | 231.4 K           | 4176 K             | 0.015 mA                                             | 3.5 mA                                     |
| TH510J44G   | 1,000 K           | 4491 K             | 0.007 mA                                             | 1.5 mA                                     |
| TH513J44G   | 1,388 K           | 4491 K             | 0.005 mA                                             | 1.0 mA                                     |

- The tolerance of resistance is  $\pm 5\%$  for standard device.
- The tolerance of B constant is  $\pm 2\%$  for standard device.  
The constant is determined by the equation:  
 $B = 3853.9 \ln (R_{25}/R_{50})$   
R25 and R50 represent the thermistor resistance at 77°F and 122°F (25°C and 50°C) respectively.
- Others: For non-standard devices, consult GE.

| Dissipation Factor (in still air) | Time Constant (in still air) | Operating Temperature Range        | Rated Power at 77°F (25°C) |
|-----------------------------------|------------------------------|------------------------------------|----------------------------|
| 2.0 (mW/°C)                       | 25 (seconds)                 | -40°F to 482°F<br>(-40°C to 250°C) | 25 mW                      |





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920-320C