

T H E R M O M E T R I C S  
A C O M M I T M E N T T O E X C E L L E N C E

# 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.

# Amphenol

## Advanced Sensors

# Type DK Specifications

Chip thermistor in DO-35 glass package

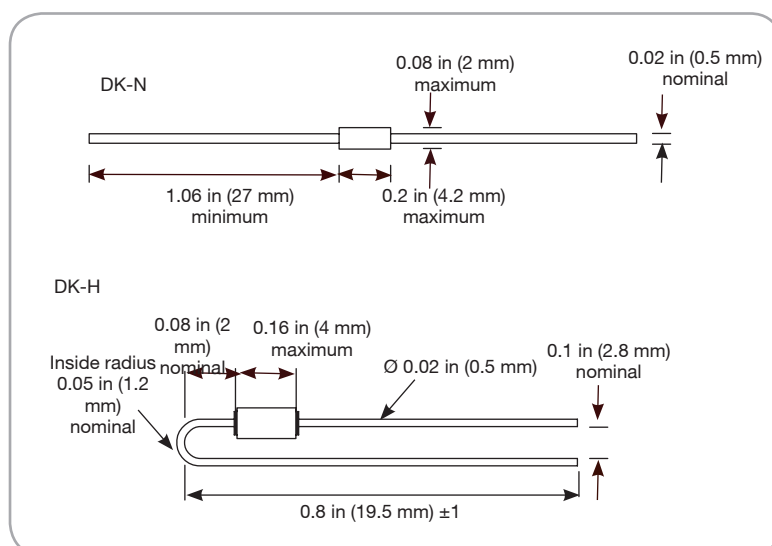
## Options

- Other resistance values within the ranges shown; e.g. code DKA302\*2 for 3000  $\Omega$   $\pm 2\%$  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)  
 $\pm 0.04$  in ( $\pm 1$  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, bandoliered: 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 (bandoliered)

| 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 $\pm 1\%$ | DKA202*2           | DKA202*3           | DKA202*5           | DKA202*10           |
| 5000         | 2               | 3540 $\pm 1\%$ | DKA502*2           | DKA502*3           | DKA502*5           | DKA502*10           |
| 10,000       | 2               | 3540 $\pm 1\%$ | DKA103*2           | DKA103*3           | DKA103*5           | DKA103*10           |
| 10,000       | 5A              | 3730 $\pm 2\%$ |                    | DKC103*3           | DKC103*5           | DKC103*10           |
| 12,000       | 5A              | 3730 $\pm 2\%$ | DKC123*2           | DKC123*3           | DKC123*5           | DKC123*10           |
| 10,000       | 3               | 3960 $\pm 1\%$ | DKF103*2           | DKF103*3           | DKF103*5           | DKF103*10           |
| 20,000       | 3               | 3960 $\pm 1\%$ | DKF203*2           | DKF203*3           | DKF203*5           | DKF203*10           |
| 30,000       | 3               | 3960 $\pm 1\%$ | DKF303*2           | DKF303*3           | DKF303*5           | DKF303*10           |
| 50,000       | 3               | 3960 $\pm 1\%$ | DKF503*2           | DKF503*3           | DKF503*5           | DKF503*10           |
| 100,000      | 3               | 3960 $\pm 1\%$ | DKF104*2           | DKF104*3           | DKF104*5           | DKF104*10           |
| 200,000      | G               | 4263 $\pm 2\%$ |                    |                    | DKG204*5           | DKG204*10           |
| 500,000      | D               | 4573 $\pm 2\%$ |                    |                    | DKD504*5           | DKD504*10           |
| 1,000,000    | D               | 4573 $\pm 2\%$ |                    |                    | DKD105*5           | DKD105*10           |

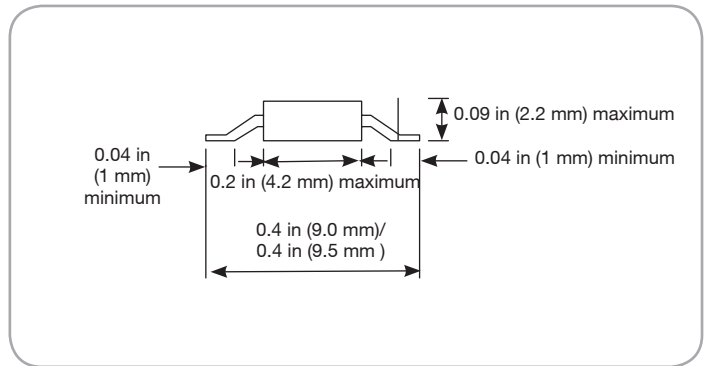
See separate tables for resistance-temperature data..  
Consult factory for additional tolerance requirements.

# 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           | DKA202M5           | DKA202M10           |
| 5000         | 2               | 3540 $\pm 1\%$ | DKA502M2           | 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           |
| 1,000,000    | D               | 4573 $\pm 2\%$ |                    |                    | DKD105M5           | DKD105M10           |

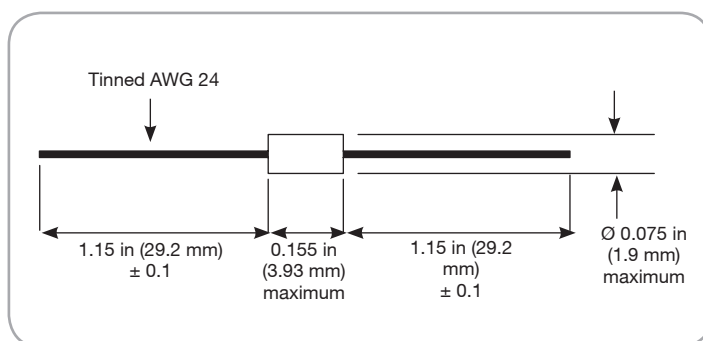
See separate tables for resistance-temperature data.  
Consult factory for additional tolerance requirements.

# Type GE Specifications

Glass encapsulated DO-35 package

## Options

- For reel taping
- 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)
- Lead Wires metallurgically bonded to thermistor element for improved reliability

| R <sub>0</sub> @25°C ( $\Omega$ ) | Material System | Beta 25/85 | Type Number           |
|-----------------------------------|-----------------|------------|-----------------------|
| 250                               | GE5.5*          | 2983       | AL03006-165.9-55-G1   |
| 500                               | GE5.5*          | 2983       | AL03006-331.8-55-G1   |
| 1K                                | GE7.3           | 3499       | AL03006-624-73-G1     |
| 2K                                | GE7.3           | 3499       | AL03006-1248-73-G1    |
| 2786                              | GE10.1          | 4102       | AL03006-1576-101-G1   |
| 3K                                | GE7.6           | 3553       | AL03006-1847-76-G1    |
| 4K                                | GE7.6           | 3553       | AL03006-2463-76-G1    |
| 5K                                | GE7.6           | 3553       | AL03006-3079-76-G1    |
| 10K                               | GE9.7A          | 3992       | AL03006-5818-97-G1    |
| 20K                               | GE9.8           | 3974       | AL03006-11.7K-98-G1   |
| 30K                               | GE9.8           | 3974       | AL03006-17.53K-98-G1  |
| 50K                               | GE9.7B          | 3952       | AL03006-29.1K-97-G1   |
| 100K                              | GE9.7B          | 3952       | AL03006-58.2K-97-G1   |
| 200K                              | GE12.3          | 4365       | AL03006-111.3K-123-G1 |
| 500K                              | GE13.8          | 4567       | AL03006-269.8K-138-G1 |
| 1M                                | GE14.5          | 4661       | AL03006-535K-145-G1   |
| 5M                                | GE16.4          | 4848       | AL03006-2.6M-164-G1   |

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

# Type MELF Specifications

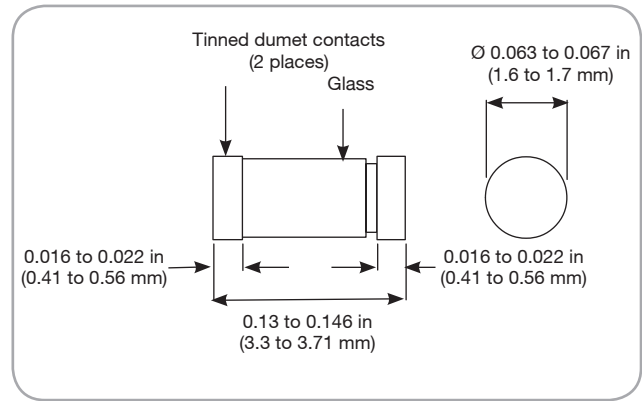
Glass encapsulated SMD thermistor

## Description

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

## Options

- Pocket Taping
- Other resistances in the range 250  $\Omega$  to 5 M $\Omega$  available
- Other tolerances, tolerances at other temperatures



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)

| R <sub>0</sub> @25° C<br>( $\Omega$ ) | Material System | Beta 25/85 | Type Number           |
|---------------------------------------|-----------------|------------|-----------------------|
| 250                                   | GE5.5*          | 2983       | 03006-165.9-55-G100   |
| 500                                   | GE5.5*          | 2983       | 03006-331.8-55-G100   |
| 1K                                    | GE7.3           | 3499       | 03006-624-73-G100     |
| 2K                                    | GE7.3           | 3499       | 03006-1248-73-G100    |
| 2786                                  | GE10.1          | 4102       | 03006-1576-101-G100   |
| 3K                                    | GE7.6           | 3553       | 03006-1847-76-G100    |
| 4K                                    | GE7.6           | 3553       | 03006-2463-76-G100    |
| 5K                                    | GE7.6           | 3553       | 03006-3079-76-G100    |
| 10K                                   | GE9.7A          | 3992       | 03006-5818-97-G100    |
| 20K                                   | GE9.8           | 3974       | 03006-11.7K-98-G100   |
| 30K                                   | GE9.8           | 3974       | 03006-17.53K-98-G100  |
| 50K                                   | GE9.7B          | 3952       | 03006-29.1K-97-G100   |
| 100K                                  | GE9.7B          | 3952       | 03006-58.2-97-G100    |
| 200K                                  | GE12.3          | 4365       | 03006-111.3K-123-G100 |
| 500K                                  | GE13.8          | 4567       | 03006-269.8K-138-G100 |
| 1M                                    | GE14.5          | 4661       | 03006-535K-145-G100   |
| 5M                                    | GE16.4          | 4848       | 03006-2.6M-164-G100   |

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

# Type TH Specifications

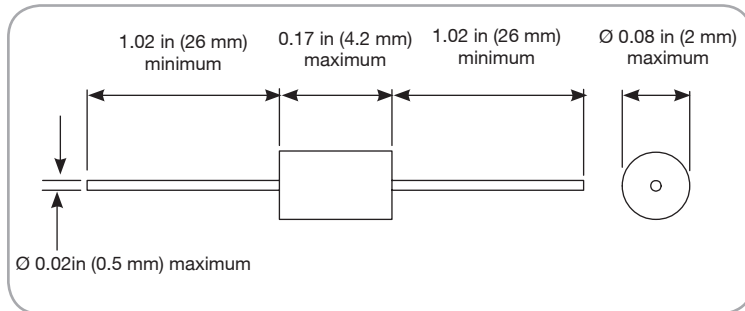
Glass encapsulated radial lead thermistor

| 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 Thermometrics

| 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                      |



NTC Type TH dimensions

## Explanation of Part Number

| TH                       | 410                               | S                                    | 40               | F   | D                       | SN             | - | T5                                |
|--------------------------|-----------------------------------|--------------------------------------|------------------|-----|-------------------------|----------------|---|-----------------------------------|
| (1)                      | (2)                               | (3)                                  | (4)              | (5) | (6)                     | (7)            |   | (8)                               |
| 1                        | 2                                 | 3 / 5                                | 4                |     | 6                       | 7              |   | 8                                 |
| Type                     | Resistance<br>R(25°C)             | Resistance /<br>B Value<br>Tolerance | B Value<br>Range |     | Standard<br>Temperature | Lead Wire Type |   | Packing<br>& Other<br>Description |
| Diode Type<br>Thermistor | 225:25x10 <sup>2</sup><br>= 2.5kΩ | F : ± 1%                             | 33:3300k         |     | J : -18°C               | NR : CP wire   |   | T5 : Taping                       |
|                          | 310:10x103<br>=10kΩ               | G : ± 2%                             | ~3399k           |     | A : 0°C                 | NI : Ni plated |   | (52mm,<br>Ammo)                   |
|                          | 410:10x10 <sup>4</sup><br>=100kΩ  | H : ± 3%                             | 40:4000k         |     | B : 25°C                |                |   | -----                             |
|                          |                                   | J : ± 5%                             | ~4099k           |     | C : 50°C                | Sn : Sn plated |   | R3 : Reel                         |
|                          |                                   | K : ± 10%                            |                  |     | D : 75°C                |                |   | (52mm, 3KP)                       |
|                          |                                   | L : ± 15%                            | 42:4200k         |     | E : 85°C                | :              |   | -----                             |
|                          |                                   | M : ± 20%                            | ~4299k           |     | F : 100°C               | :              |   | C11 : 11mm                        |
|                          |                                   | :                                    |                  |     | G : 150°C               | :              |   | (Wire cutting)                    |
|                          |                                   | :                                    |                  |     | H : 200°C               | :              |   | -----                             |
|                          |                                   | <div>S : others</div>                |                  |     | :                       |                |   | Other Special                     |
|                          |                                   | S : ± 1.5%                           |                  |     | :                       |                |   | Shape or Dim                      |
|                          |                                   |                                      |                  |     | S : others              | S : others     |   |                                   |



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