THERMOMETRICS
A COMMITMENT TO EXCELLENCE

# 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

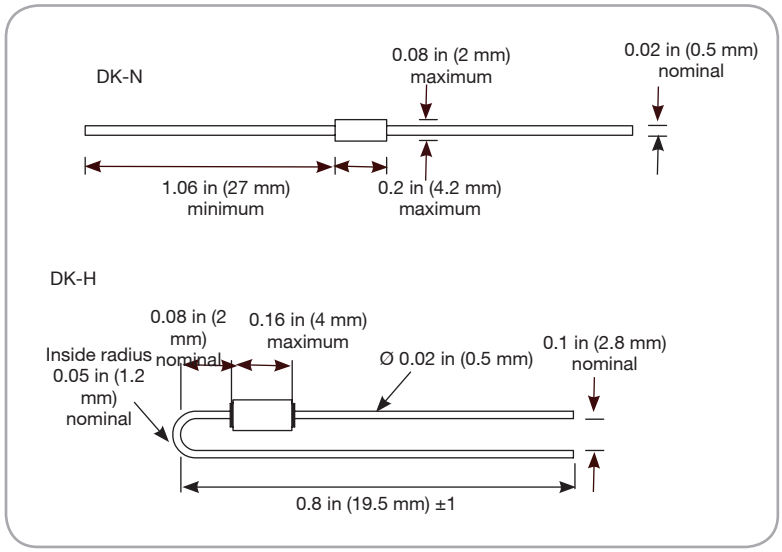
## Options

- Other resistance values within the ranges shown; e.g. code DKA302*2 for 3000 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, 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 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 |

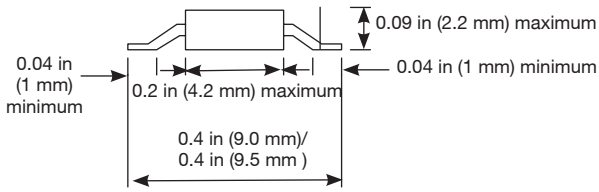
*See separate tables for resistance-temperature data..*
*Consult factory for additional tolerance requirements.*

# 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 Ω ±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 Ω | Material System | B 25/85 K | Code R25 ±2% | Code R25 ±3% | Code R25 ±5% | Code R25 ±10% |
|---|---|---|---|---|---|---|
| 2000 | 2 | 3540 ±1% | DKA202M2 | DKA202M3 | DKA202M5 | DKA202M10 |
| 5000 | 2 | 3540 ±1% | DKA502M2 | DKA502M3 | DKA502M5 | DKA502M10 |
| 10,000 | 2 | 3540 ±1% | DKA103M2 | DKA103M3 | DKA103M5 | DKA103M10 |
| 10,000 | 5A | 3730 ±2% | | DKC103M3 | DKC103M5 | DKC103M10 |
| 10,000 | 3 | 3960 ±1% | DKF103M2 | DKF103M3 | DKF103M5 | DKF103M10 |
| 20,000 | 3 | 3960 ±1% | DKF203M2 | DKF203M3 | DKF203M5 | DKF203M10 |
| 30,000 | 3 | 3960 ±1% | DKF303M2 | DKF303M3 | DKF303M5 | DKF303M10 |
| 50,000 | 3 | 3960 ±1% | DKF503M2 | DKF503M3 | DKF503M5 | DKF503M10 |
| 100,000 | 3 | 3960 ±1% | DKF104M2 | DKF104M3 | DKF104M5 | DKF104M10 |
| 200,000 | G | 4263 ±2% | | | DKG204M5 | DKG204M10 |
| 500,000 | D | 4573 ±2% | | | DKD504M5 | DKD504M10 |
| 1,000,000 | D | 4573 ±2% | | | DKD105M5 | DKD105M10 |

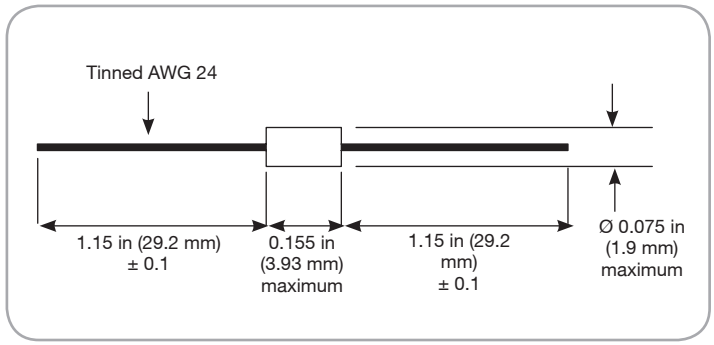
*See separate tables for resistance-temperature data.*
*Consult factory for additional tolerance requirements.*

# Type GE Specifications

Glass encapsulated DO-35 package

## Options

- For reel taping
- Nickel leads for welding
- Other resistances in the range 250 Ω to 5 MΩ
- 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: ±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

| Ro@25°C (Ω ) | 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

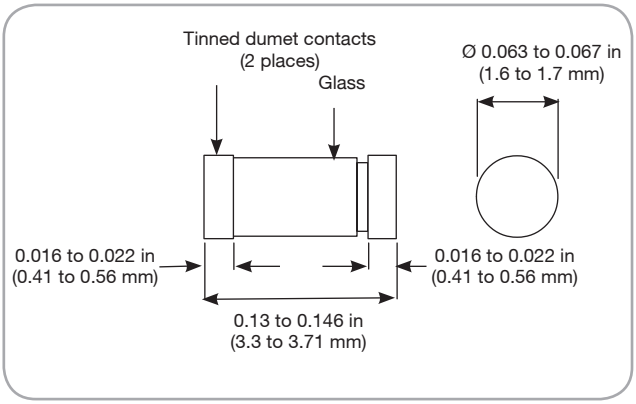
Glass encapsulated SMD thermistor

## Description

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

## Options

- Pocket Taping
- Other resistances in the range 250 Ω to 5 MΩ available
- Other tolerances, tolerances at other temperatures




*NTC Type MELF dimensions*

## Data

- Standard resistance tolerance: ±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)

| Ro@25° C (Ω ) | 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)*

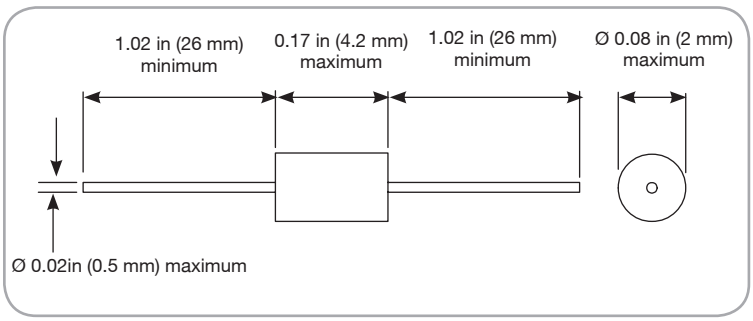
# Type TH Specifications

Glass encapsulated radial lead thermistor

| Part Number | Resistance (25 Ω) | ß 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 ±5% for standard device
- The tolerance of B constant is ±2% for standard device The constant is determined by the equation:
  B = 3853.9 ln (R25/R50)
  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 (-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 R(25°C) | Resistance / B Value Tolerance | B Value Range | Standard Temperature | Lead Wire Type | Packing & Other Description |
| Diode Type Thermistor | 225:25x10$^2$ = 2.5kΩ<br>310:10x103 =10kΩ<br>410:10x10$^4$ =100kΩ | F : ± 1%<br>G : ± 2%<br>H : ± 3%<br>J : ± 5%<br>K : ± 10%<br>L : ± 15%<br>M : ± 20%<br>:<br>:<br>S : others<br>S : ± 1.5% | 33:3300k ~3399k<br>40:4000k ~4099k<br>42:4200k ~4299k | J : -18°C<br>A : 0°C<br>B : 25°C<br>C : 50°C<br>D : 75°C<br>E : 85°C<br>F : 100°C<br>G : 150°C<br>H : 200°C<br>:<br>:<br>S : others | NR : CP wire<br>NI : Ni plated<br>Sn : Sn plated<br>:<br>:<br>:<br>:<br>S : others | T5 : Taping (52mm, Ammo)<br>----------<br>R3 : Reel (52mm, 3KP)<br>----------<br>C11 : 11mm (Wire cutting)<br>----------<br>Other Special Shape or Dim |

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DKA502H10 DKA502B10 DKA502N10 DKA502N3 DKA502B3 DKA502N5 DKA502B5 TH420J34GBNI TH410J42GBSN-T5 TH450J44GBSN TH349G39GDSN TH248G39GSSN TH297G39FSSN TH248S39GSNI TH250H39GBSN TH310F39FBSN-T5 TH310J37GBSN TH350H39GBSN TH420J34GDNI TH420J41GBSN-T5 TH420H34GBNI TH423J41GBNI TH513J45GBSN TH350J39GBPS TH513F45GBSN TH310J32GBSN TH238J34GBSN TH310H36GBSN-T5 TH410H40GDNI TH310H39GBSN TH350J39GBNI TH410J34HBSN TH422H41GHNI TH310H39FBSN-T5 TH310H41GBSN TH310J34GBNI TH310F39FBSN TH310H34GBNR TH410H40GSNI-C16 TH423H41GGNI TH320H35GBSN TH349G39GFNI TH410J40GDNI TH510J44GBSN TH423H41GBNI TH423H41GGNI-B TH423J41GGNI-B TH452J44HSSN TH310J39GBSN(25/85) TH410F39GBSN TH320J39GBSN TH330H39GBSN TH349H39GFSN TH253J34GBSN-T5 TH310H39GASN TH423H41GHNI TH420H34GDNI TH420J41GBNI TH410H40GBNI TH410J40GBSN-T5 TH420H34GBNI(25/85) TH423J41GHNI TH253J34GBSN TH320S39GSSN TH350H39GBPS TH410J40GBNI TH349J39GSNI TH410J40GBPS TH349G39GBSN TH333J40GBPS-T5 TH250F34GBSN TH253G34GAPS TH310H36GBSN TH316S42GBNR TH349G39GBPS TH349H39GFNI TH349J39GSSN TH330J39GBSN TH350H39GBNI TH358S39FFNI TH310G39GBSN TH420J34GBPS TH450J44HBSN TH310H34GBSN TH349J39GBSN TH220J33GBSN TH310J34GBSN TH310J39GBSN TH250J34GBSN TH310J34GBSN-T5 TH225J37GBSN TH410J40GBSN TH349H39GSSN TH320H39GBSN TH248H39GSSN TH297G39FSSN-C11.5 TH310H34GASN TH350G39GBPS-T5 TH315J39GBSN TH350J39GBSN

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