THERMOMETRICS
A COMMITMENT TO EXCELLENCE

NTC Type B Series

Glass Coated Bead Thermistors

Features

Type B05/07/10/14

Small glass coated bead thermistors on fine diameter platinum alloy lead-wires.

- Extremely small sizes
- Very fast thermal response times
- Low heat capacity and high power sensitivity
- Special thin glass coatings provide hermetic seal
- Suitable for self-heated applications such as: gas chromatography, thermal conductivity analysis or gas flow measurement
- Normal operating/storage temperatures range from
- -112°F (-80°C) to: 221°F (105°C) for Material system E0, 392°F (200°C) for Material systems A1 through A4, 572°F (300°C) for Material systems A5 through D17
- Unaffected by severe environmental exposures, including nuclear radiation
- Intermittent operation to 1112°F (600°C) is permissible, however, stability will be degraded

Type B35/43

Large glass coated bead thermistors on fine diameter platinum alloy lead-wires.

- Suitable for most low cost temperature measurement, control or compensation applications.
- Special thin glass coatings provide hermetic seal
- Suitable for self-heated applications such as liquid level sensing or gas flow measurement
- Normal operating/storage temperatures range from
- -112°F (-80°C) to: 221°F (105°C) for Material system E0, 392°F (200°C) for Material systems A1 through A4, 572°F (300°C) for Material systems A5 through D17
- Unaffected by severe environmental exposures, including nuclear radiation
- Intermittent operation to 1112°F (600°C) is permissible, however, stability will be degraded

Amphenol

Advanced Sensors

Type B Series Specifications

Type B05/07/10/14

Thermal and Electrical Properties

The following lists the thermal and electrical properties for all small glass coated thermistors. All definitions and test methods per MIL-PRF-23648.

Body Dimensions

B05

- Nominal diameter: 0.005 in (0.13 mm)
- Maximum diameter: 0.0065 in (0.17 mm)
- Maximum length: 0.012 in (0.30 mm)

B07

- Nominal diameter: 0.007 in (0.18 mm)
- Maximum diameter: 0.00850 in (0.22 mm)
- Maximum length: 0.014 in (0.36 mm)

B10

- Nominal diameter: 0.010 in (0.25 mm)
- Maximum diameter: 0.0115 in (0.29 mm)
- Maximum length: 0.020 in (0.510 mm)

B14

- Nominal diameter: 0.014 in (0.36 mm)
- Maximum diameter: 0.016 in (0.417 mm)
- Maximum length: 0.030 in (0.76 mm)

Lead-Wires

B05

- Nominal diameter: 0.0007 in (0.02 mm)
- Maximum lead length: 0.312 in (7.9 mm)
- Lead material: platinum alloy
- Available cuts: “J” adjacent (stubs), “K” adjacent or “P” opposite

B07

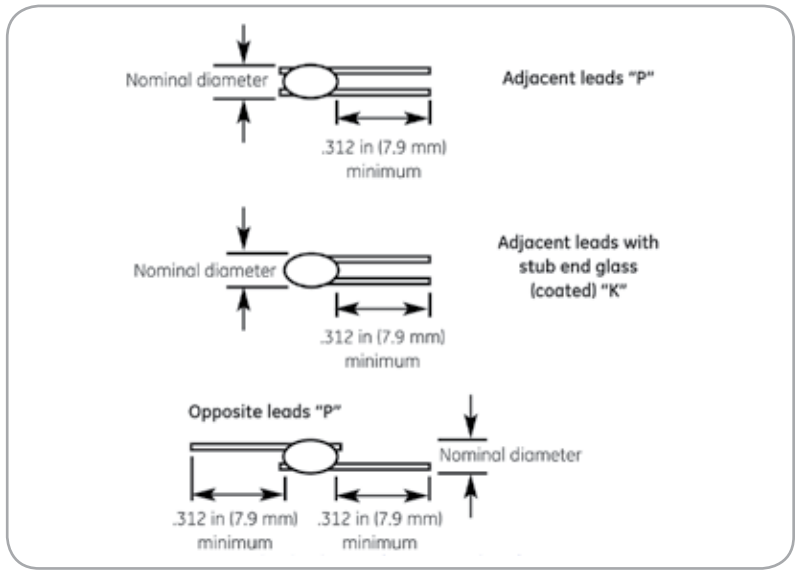
- Nominal diameter: 0.0007 in (0.02 mm)
- Maximum lead length: 0.312 in (7.9 mm)
- Lead material: platinum alloy
- Available cuts: “J” adjacent (stubs), “K” adjacent or “P” opposite

B10

- Nominal diameter: 0.0011 in (0.03 mm)
- Maximum lead length: 0.312 in (7.9 mm)
- Lead material: platinum alloy
- Available cuts: “J” adjacent (stubs), “K” adjacent or “P” opposite

B14

- Nominal diameter: 0.0011 in (0.03 mm)
- Maximum lead length: 0.312 in (7.9 mm)
- Lead material: platinum alloy
- Available cuts: “J” adjacent (stubs), “K” adjacent or “P” opposite



Type B05/07/10/14 and Type B35/43 dimensions

Material System (Table A)

Code Letter	R vs T Curve	25/125 Ratio	Nominal Resistance Range at 77°F (25°C)			
			B05	B07	B10	B14
E	0	5.0	–	–	–	–
A	1	11.8	1 to 1.5 kΩ	1 to 1.5 kΩ	300 to 680 Ω	300 to 680 Ω
A	2	12.5	1.5 to 3.6 kΩ	1.5 to 3.6 kΩ	680 to 1.6 kΩ	680 to 1.6 kΩ
A	3	14	3.6 to 7.5 kΩ	3.6 to 7.5 kΩ	1.6 to 3.6 kΩ	1.6 to 3.6 kΩ
A	4	16.9	7.5 to 15 kΩ	7.5 to 15 kΩ	3.6 to 6.8 kΩ	3.6 to 6.8 kΩ
A	5	19.8	15 to 3.6 kΩ	15 to 51 kΩ	6.8 to 27 kΩ	6.8 to 27 kΩ
A	6	22.1	–	–	–	–
A	7	22.7	51 to 150 kΩ	51 to 150 kΩ	27 to 75 kΩ	27 to 75 kΩ
B	8	29.4	150 to 270 kΩ	150 to 270 kΩ	75 to 130 kΩ	75 to 130 kΩ
B	9	30.8	270 to 470 kΩ	270 to 470 kΩ	130 to 240 kΩ	130 to 240 kΩ
B	10	32.3	470 to 750 kΩ	470 to 750 kΩ	240 to 360 kΩ	240 to 360 kΩ
B	11	35.7	750 to 1.6 MΩ	750 to 1.6 MΩ	360 to 820 kΩ	360 to 820 kΩ
B	12	38.1	1.6 to 2.7 MΩ	1.6 to 2.7 MΩ	820 to 1.3 MΩ	820 to 1.3 MΩ
B	13	45	2.7 to 6.8 MΩ	2.7 to 6.8 MΩ	1.3 to 3.36 MΩ	1.3 to 3.36 MΩ
B	14	48.1	6.8 to 10 MΩ	6.8 to 10 MΩ	3.3 to 6.86 MΩ	3.3 to 6.86 MΩ
B	15	56.5	–	–	6.8 to 10 MΩ	6.8 to 10 MΩ
D	16	75.6	–	–	–	–
D	17	81	–	–	–	–

Type B Series Specifications

Thermal Time Constant

B05
- Still air at 77°F (25°C): 0.12 second
- Plunge into water: 5.0 msec

B07
- Still air at 77°F (25°C): 0.23 second
- Plunge into water: 7.0 msec

B10
- Still air at 77°F (25°C): 0.5 second
- Plunge into water: 10 msec

B14
- Still air at 77°F (25°C): 1 second
- Plunge into water: 15 msec

Dissipation Constant

B05
- Still air at 77°F (25°C): 0.045 mW/°C
- Still water at 77°F (25°C): 0.23 mW/°C

B07
- Still air at 77°F (25°C): 0.06 mW/°C
- Still water at 77°F (25°C): 0.3 mW/°C

B10
- Still air at 77°F (25°C): 0.09 mW/°C
- Plunge into water: 0.45 mW/°C

B14
- Still air at 77°F (25°C): 0.10 mW/°C
- Plunge into water: 0.50 mW/°C

Power Rating (In Air)

B05
- Maximum Power Rating: 0.006 W
- 100% Maximum Power To: 77°F (25°C)
- Derated to 0% at: 392°F (200°C)

B07
- Maximum Power Rating: 0.008 W
- 100% Maximum Power To: 77°F (25°C)
- Derated to 0% at: 392°F (200°C

B10
- Maximum Power Rating: 0.010 W
- 100% Maximum Power To: 77°F (25°C)
- Derated to 0% at: 392°F (200°C)

B14
- Maximum Power Rating: 0.014 W
- 100% Maximum Power To: 77°F (25°C)
- Derated to 0% at: 392°F (200°C)

Options

- Non-standard resistance tolerances
- Non-standard resistance values
- Reference temperature(s) other than 77°F (25°C)-specify
- Mounting in special housings or enclosures
- Longer continuous leads
- Welded or soldered extension leads-specify lead material, diameter, length, and insulation, if any
- Solderable or weldable/solderable leads
- Calibration-specify temperature(s)
- Interchangeable pairs or sets, R-vs-T curve matching-specify temperature range(s) and tolerance(s)
- Special aging and conditioning for high reliability applications

Type B35/43

Thermal and Electrical Properties

The following lists the thermal and electrical properties for all large glass coated thermistors. All definitions and test methods per MIL-PRF-23648.

Body Dimensions

B35
- Nominal diameter: 0.035 in (0.893 mm)
- Maximum diameter: 0.043 in (1.1 mm)
- Maximum length: 0.075 in (1.9 mm)

B43
- Nominal diameter: 0.043 in (1.1 mm)
- Maximum diameter: 0.050 in (1.32 mm)
- Maximum length: 0.100 in (2.5 mm)

Lead-Wires

B35
- Nominal diameter: 0.004 in (0.10 mm)
- Maximum lead length: 0.312 in (7.9 mm)
- Lead material: platinum alloy
- Available cuts: “J” adjacent (stubs), “K” adjacent or “P” opposite

B43
- Nominal diameter: 0.004 in (0.102 mm)
- Maximum lead length: 0.312 in (7.9 mm)
- Lead material: platinum alloy
- Available cuts: “J” adjacent (stubs), “K” adjacent or “P” opposite

Material System (Table B)

Code Letter	R vs T Curve	25/125 Ratio	Nominal Resistance Range at 77°F (25°C) B35	B43
E	0	5.0	30 to 51 Ω	30 to 51 Ω
A	1	11.8	51 to 150 Ω	51 to 150 Ω
A	2	12.5	150 to 360 Ω	150 to 360 Ω
A	3	14	360 to 750 Ω	360 to 750 Ω
A	4	16.9	750 to 1.5 kΩ	750 to 1.5 kΩ
A	5	19.8	1.5 to 3.6 kΩ	1.5 to 3.6 kΩ
A	6	22.1	3.6 to 6.2 kΩ	3.6 to 6.2 kΩ
A	7	22.7	6.2 to 9.1 kΩ	6.2 to 9.1 kΩ
B	8	29.4	9.1 to 27 kΩ	9.1 to 27 kΩ
B	9	30.8	27 to 43 kΩ	27 to 43 kΩ
B	10	32.3	43 to 75 kΩ	43 to 75 kΩ
B	11	35.7	75 to 160 kΩ	75 to 160 kΩ
B	12	38.1	160 to 360 kΩ	160 to 360 kΩ
B	13	45	360 to 750 kΩ	360 to 750 kΩ
B	14	48.1	750 to 1.5 MΩ	750 to 1.5 MΩ
B	15	56.5	1.5 to 3.0 MΩ	1.5 to 3.0 MΩ
D	16	75.6	3.0 to 8.2 MΩ	3.0 to 8.2 MΩ
D	17	81	8.2 to 20 MΩ	8.2 to 20 MΩ

Thermal Time Constant

B35

- Still air at 77°F (25°C): 4.5 second
- Plunge into water: 100 msec

B43

- Still air at 77°F (25°C): 5.5 second
- Plunge into water: 140 msec

Dissipation Constant

B35

- Still air at 77°F (25°C): 0.30 mW/°C
- Still water at 77°F (25°C): 1.50 mW/°C

B43

- Still air at 77°F (25°C): 0.35 mW/°C
- Still water at 77°F (25°C): 2.00 mW/°C

Power Rating (In Air)

B35

- Maximum Power Rating: 0.035 W
- 100% Maximum Power To: 302°F (150°C)

B43

- Maximum Power Rating: 0.035 W
- 100% Maximum Power To: 302°F (150°C)
- Derated to 0% at: 572°F (300°C)

Options

- Non-standard resistance tolerances
- Non-standard resistance values
- Reference temperature(s) other than 77°F (25°C) - specify
- Mounting in special housings or enclosures
- Longer continuous leads
- Welded or soldered extension leads - specify lead material, diameter, length, and insulation, if any
- Solderable or weldable/solderable leads
- Calibration - specify temperature(s)
- Interchangeable pairs or sets, R-vs-T curve matching; specify temperature range(s) and tolerance(s)
- Special aging and conditioning for high reliability applications

Ordering Information

The code number to be ordered may be specified as follows:

Code **Type**

B Glass coated bead structure

Code	Diameter
05	05 mils
07	07 mils
10	10 mils
14	14 mils
35	35 mils
43	43 mils

Code	Lead Configuration
J	Adjacent leads
K	Adjacent leads with stub ends glass coated
P	Opposite leads

Code	Material System Code
X	See table A or table B for code number

Code	Power
X	Zero-power resistance as 77°F (25°C) (see note 2 for code number)

Code	Tolerance*
F	1
G	2
J	5
K	10
L	15
M	20
N	25
P	30
Q	40
R	50
S	Non-standard (consult factory)

B - ___ - ___ - ___ - ___ - ___ Typical model number

Special tolerances are available upon request. Consult factory for special resistance tolerances, non-standard resistances and/or non-standard temperatures.

*The zero-power resistance at 77°F (25°C), expressed in Ω, is identified by a three digit code number. The first two digits represent significant figures, and the last digit specifies the number of zeros to follow. Example: 10k Ω = "103". The standard resistance values are from the 24-Value series decade as specified in Military Standard MS90178.
1.0 / 1.1 / 1.2 / 1.3 / 1.5 / 1.6 / 1.8 / 2.0 / 2.2 / 2.4 / 2.7 / 3.0
3.3 / 3.6 / 3.9 / 4.3 / 4.7 / 5.1 / 5.6 / 6.2 / 6.8 / 7.5 / 8.2 / 9.1

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