THERMODISC

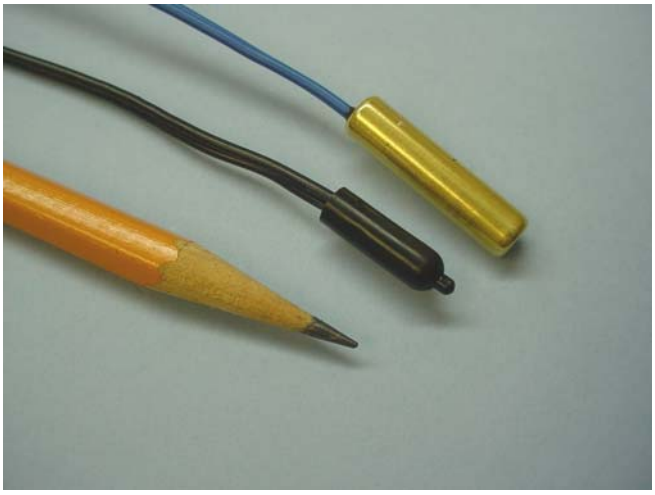
EMERSON

PRODUCT DATA SPECIFICATIONS

NTC THERMISTORS SERIES 10J / 11J

OPERATING TEMP RANGE:
-40 TO 80°C
-40 TO 105°C with optional UL2722 lead wires

CONSTRUCTION:
10J: Fully molded polypropylene or PBT plastic
11J: Brass shell
Wire: UL 2468 and UL 2722 24 AWG
Connectors: Optional
Mounting: 10J- optional molded insert
11J - optional mounting clip – various clip sizes available



INSULATION STRENGTH:
10J ≥ 500V
11J ≥ 1500V

THERMAL TIME CONSTANT:
10 Seconds typical (liquid)
25°C/50°C

APPLICATIONS:
Ambient air temperature sensing
Condenser coil sensing
Other remote sensing applications

VALUES AVAILABLE:

RT Curve 1	RT Curve 9
10KΩ, 50KΩ 100KΩ @ 25° C	10KΩ @ 25° C

10JH INSERT OPTION

This design eliminates the additional mounting bracket used in most designs. This reduces the parts count, assembly cost, and overall material cost.

11JH CLIP OPTION:

Various clip sizes available

RT Curve 1
B25/85 = 3977 ±1.5%

Temp °C	Multiplier
-40	33.600
-35	24.270
-30	17.700
-25	13.040
-20	9.7060
-15	7.2940
-10	5.5319
-5	4.2324
0	3.2654
+5	2.5396
10	1.9903
15	1.5714
20	1.2493
25	1.0000
30	0.8056
35	0.6530
40	0.5327
45	0.4370
50	0.3603
55	0.2986
60	0.2488
65	0.2083
70	0.1752
75	0.1480
80	0.1255
85	0.1070
90	0.09150
95	0.07870
100	0.06800
105	0.05920

RT Curve 9
B25/85 = 3435 ± 1.5%

Temp °C	Multiplier
-40	20.744
-35	15.641
-30	11.921
-25	9.162
-20	7.104
-15	5.552
-10	4.374
-5	3.473
0	2.7772
+5	2.2358
10	1.8127
15	1.4778
20	1.2122
25	1.0000
30	0.8300
35	0.6925
40	0.5807
45	0.4895
50	0.4145
55	0.3525
60	0.3011
65	0.2583
70	0.2224
75	0.1922
80	0.1667
85	0.1451
90	0.1269
95	0.1112
100	0.0978
105	0.0863

RELIABILITY DATA:

High Temperature Exposure:
1000 hours / 80°C
Typical <1% ΔR

Low Temperature Exposure:
1000 hours / -20°C
Typical <1% ΔR

Thermal Shock Testing:
200 cycles, -20°C 5 minutes / room temperature water 30 seconds / 80°C water 5 minutes
Typical <1% ΔR

PART NUMBER DESIGNATION:

10JXHxxxx

10J = Appliance Probe Series, all-plastic body version
11J = metal body version
X = Therm-o-disc RT Curve
H = Therm-o-disc H-series thermistor inside
xxxx = sequentially assigned part number

RESISTANCE VS. TEMPERATURE MULTIPLIER VALUES

To use, multiply the resistance at 25°C by the given multiplier at the desired temperature.
Example: What would be the nominal resistance of a 10J1H that is 10K ohms at 25°C be at 75°C?

Resistance at 25°C is 10,000Ω
Multiplier at 75°C is 0.1480
10,000 x 0.1480 = 1480Ω

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PRODUCT DATA SPECIFICATIONS

NTC THERMISTORS 12J PACKAGE

OPERATING TEMP RANGE:
-40 TO 80 °C
-40 TO 105°C

CONSTRUCTION:
Shell: PBT plastic, epoxy filled. Various shapes and size
Wire: UL2464, UL2468
Connectors: Optional

VALUES AVAILABLE:

RT Curve 1	RT Curve 9
10KΩ, 50KΩ, 100KΩ @ 25°C	10KΩ @ 25°C

(also custom values)

THERMAL TIME CONSTANT:
5mm x 24mm size, <10 seconds
(in water 25°C / 50°C)

INSULATION STRENGTH: 3750V

HIGH TEMPERATURE EXPOSURE:
1000 hours / 80°C Typical <1%ΔR

LOW TEMPERATURE EXPOSURE:
1000 hours / -20°C Typical <1%ΔR

APPLICATIONS:
Refrigeration Systems
Freezer Compartments
HVAC Systems
General Purpose Applications

AGENCY APPROVALS:
UL/CUL Recognized
VDE Recognized

PART NUMBER DESIGNATION:

12J1HExxxx

12J = Package Series
1 = Therm-o-disc R-T Curve (1 or 9)
H = H-Series thermistor inside
E = Epoxy filled
xxxx = sequentially assigned number

RT Curve 1
Beta 25/85°C
3977 Nominal

Temp °C	Multiplier
-40	33.600
-35	24.270
-30	17.700
-25	13.040
-20	9.7060
-15	7.2940
-10	5.5319
-5	4.2324
0	3.2654
+5	2.5396
10	1.9903
15	1.5714
20	1.2493
25	1.0000
30	0.8056
35	0.6530
40	0.5327
45	0.4370
50	0.3603
55	0.2986
60	0.2488
65	0.2083
70	0.1752
75	0.1480
80	0.1255
85	0.1070
90	0.09150
95	0.07870
100	0.06800
105	0.05920

RT Curve 9
Beta 25/85°C
3435 Nominal

Temp °C	Multiplier
-40	20.744
-35	15.641
-30	11.921
-25	9.162
-20	7.104
-15	5.552
-10	4.374
-5	3.473
0	2.7772
+5	2.2358
10	1.8127
15	1.4778
20	1.2122
25	1.0000
30	0.8300
35	0.6925
40	0.5807
45	0.4895
50	0.4145
55	0.3525
60	0.3011
65	0.2583
70	0.2224
75	0.1922
80	0.1667
85	0.1451
90	0.1269
95	0.1112
100	0.0978
105	0.0863

RESISTANCE VS. TEMPERATURE MULTIPLIER VALUES

To use, multiply the resistance at 25°C by the given multiplier at the desired temperature.

Example: What would be the nominal resistance of a 12J1H that is 10K ohms at 25°C be at 75°C?

Resistance at 25°C is 10,000Ω
Multiplier at 75°C is 0.1480
10,000 x 0.1480 = 1480Ω

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PRODUCT DATA SPECIFICATIONS

NTC THERMISTORS 36JB PACKAGE

OPERATING TEMP RANGE:
-40 TO 180 °C (Limited exposure to 220° C Max.)

CONSTRUCTION:
Case: PPS Plastic, black and brown color standard (other colors optional)
Cap: Aluminum, Brass Stud Mount
Terminals: 6.35 x 0.8mm, 2.8 x 0.5mm Tin-plated Brass
Mounting Options: Surface Mount, Tube Mount with Clip, Stud Mount, and Air Stream
Clip and Cup Radius Sizes:
13mm, 15mm, 18mm, and 22mm pipe diameter standard (other sizes optional)

VALUES AVAILABLE:

RT Curve	*Resistance At 25°C*	*Resistance At 85°C*	*Resistance At 100°C*
1	10KΩ	1070Ω	690Ω
9	10KΩ	1451Ω	950Ω

(also custom values)

THERMAL TIME CONSTANT:
3 seconds typical (25°C air to 85°C hot plate)

INSULATION STRENGTH:
1500VDC/1 Seconds Min. Rating

APPLICATIONS:
Boiler Heating Systems
Fast Response Applications
Storage Water Heaters
Appliances

PART NUMBER DESIGNATION:

36J1BMxxxx

36J = Package Series
1 = Therm-o-disc RT Curve (1, 9 or 15)
B = Bead thermistor inside
M = Metal cover
xxxx = sequentially assigned number

MARKING:
TODS, Part Number, Date Code

RT Curve 1
Beta 25/85°C
3977 ± 1.5%

Temp °C	Multiplier
-40	33.600
-35	24.270
-30	17.700
-25	13.040
-20	9.7060
-15	7.2940
-10	5.5319
-5	4.2324
0	3.2654
5	2.5396
10	1.9903
15	1.5714
20	1.2493
25	1.0000
30	0.8056
35	0.6530
40	0.5327
45	0.4370
50	0.3603
55	0.2986
60	0.2488
65	0.2083
70	0.1752
75	0.1480
80	0.1255
85	0.1070
90	0.0915
95	0.0787
100	0.0680
105	0.0592
110	0.0517
115	0.0450
120	0.0390
125	0.0340
130	0.0300
135	0.0265
140	0.0235
145	0.0209
150	0.0185
155	0.0162
160	0.0145
165	0.0130
170	0.0118
175	0.0107
180	0.0097

RT Curve 9
Beta 25/85°C
3435 ± 1.5%

Temp °C	Multiplier
-40	20.148
-35	15.268
-30	11.675
-25	9.0050
-20	7.0030
-15	5.4891
-10	4.3351
-5	3.4484
0	2.7620
5	2.2269
10	1.8069
15	1.4750
20	1.2111
25	1.0000
30	0.8302
35	0.6928
40	0.5810
45	0.4897
50	0.4145
55	0.3525
60	0.3011
65	0.2582
70	0.2223
75	0.1921
80	0.1668
85	0.1451
90	0.1268
95	0.1112
100	0.0978
105	0.0863
110	0.0763
115	0.0677
120	0.0603
125	0.0538
130	0.0481
135	0.0431
140	0.0388
145	0.0349
150	0.0315
155	0.0285
160	0.0259
165	0.0235
170	0.0214
175	0.0196
180	0.0179

RESISTANCE VS. TEMPERATURE MULTIPLIER VALUES:

To use, multiply the resistance at 25°C by the given multiplier at the desired temperature.

Example: What would be the nominal resistance of a 36J1BM at 75°C?
Resistance at 25°C is 10,000Ω
Multiplier at 75°C is 0.1480
10,000 x 0.1480 = 1480Ω

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PRODUCT DATA SPECIFICATIONS

NTC THERMISTORS IMMERSION SENSOR 74J

OPERATING TEMP RANGE:
-20 TO 130 °C

CONSTRUCTION:
304 Stainless Steel for Traditional and Stepped Models. PBT plastic for All-Plastic Model. All connectors are PBT.
Terminals: 4.8 X 0.8mm and 6.3 X 0.8mm

THERMAL TIME CONSTANT:
Traditional Model: 19 seconds
Stepped Model: 11 seconds
All-plastic Model: 10 seconds
(25°C Air to 85°C stirred water)

INSULATION STRENGTH:
3750VAC/0.5mA/1S Min. Rating

VALUES AVAILABLE:

RT Curve	*Resistance At 25°C*	*Resistance At 60°C*
1	4.8 KΩ	1204Ω
1	20 KΩ	4976Ω
15	12 KΩ	3243Ω

ACCURACIES AVAILABLE:
± 0.6° C at 60°C
(Custom values also available)

APPLICATIONS:
Clothes Washing Machines
Dish Washing Machines
Water heaters

UL/CUL Recognized: File E179543
VDE Recognized

All-Plastic, Traditional, Stepped Models

PART NUMBER DESIGNATION:

74J1HMxxxx

74J = Package Series
1 = Therm-o-disc R-T Curve Number (1 or 15)
H= Therm-o-disc H-series thermistor inside
M= Traditional and Stepped, R= All-Plastic
xxxx = sequentially assigned number

R-T CURVE INFORMATION:
Beta Value 15:
25/85°C=3740±1.5%,
25/100°C = 3760 ±1.5%
Beta Value 1:
25/85°C = 3977±1.5%,
25/100°C = 3980 ±1.5%

1. RESISTANCE VS. TEMPERATURE VALUES:

	Grade 1			Grade 1			Grade 15		
Temp. (°C)	R nom (Ohms)	R Tol.	Alpha (%/K)	R nom (Ohms)	R Tol.	Alpha (%/K)	R nom (Ohms)	R Tol.	Alpha (%/K)
-20	46967		-5.8	194120		-5.8	98515		-5.4
-15	35296		-5.6	145880		-5.6	75702		-5.2
-10	26769		-5.4	110638		-5.4	58643		-5.0
-5	20481		-5.3	84648		-5.3	45770		-4.9
0	15801	±5.9%	-5.2	65308		-5.2	35985	±5.7%	-4.7
5	12289		-5.1	50792		-5.1	28508		-4.6
10	9631		-4.8	39806		-4.8	22718		-4.5
15	7604		-4.7	31428		-4.7	18232		-4.3
20	6045		-4.5	24986		-4.5	14726		-4.2
25	4839	±4.1%	-4.4	20000	±2.0%	-4.4	11963	±4.0%	-4.1
30	3898	±3.8%	-4.3	16112	±2.3%	-4.3	9775	±3.7%	-4.0
35	3160		-4.2	13060		-4.2	8031		-3.9
40	2578	±3.1%	-4.0	10654		-4.0	6632	±3.1%	-3.8
45	2115		-3.9	8740		-3.9	5507		-3.7
50	1743	±2.6%	-3.8	7206		-3.8	4595		-3.6
55	1445		-3.6	5972		-3.6	3851		-3.5
60	1204	±2.0%	-3.6	4976	±4.1%	-3.6	3243	±2.0%	-3.4
65	1008		-3.5	4166		-3.5	2743		-3.3
70	848	±2.5%	-3.4	3504		-3.4	2330	±2.5%	-3.2
75	716		-3.3	2960		-3.3	1988		-3.1
80	607		-3.3	2510	±5.1%	-3.3	1702		-3.1
85	518		-3.3	2140		-3.3	1463		-3.0
90	443		-3.2	1830	±5.6%	-3.2	1262		-2.9
95	381	±3.7%	-3.1	1574		-3.1	1093	±3.6%	-2.9
100	329		-3.0	1360	±6.0%	-3.0	949		-2.8
105	286		-2.9	1184		-2.9	827		-2.7
110	250		-2.8	1034		-2.8	724		-2.7
115	218		-2.7	900		-2.7	635		-2.6
120	189		-2.6	780		-2.6	558		-2.5
125	165		-2.6	680		-2.6	493		-2.5
130	145		-2.5	600		-2.5	436		-2.4

Note: only actual specified tolerances are shown. Points in-between can be interpolated but are implied only. If you have different specification requirements, please contact your local Thermodisc sales representative.

4.Reliability Data:

Test	*Test Conditions*	*ΔR25/R25 (typical)*	*Comments*
Dry Heat Storage	1000 hours 100°C	<2%	No visible damage
Damp Heat Storage	1344 hours, 40°C, 93%rH	<1%	No visible damage
Thermal Shock	10 cycles of –10 / 100°C	<1%	No visible damage
Hi-pot	3750 VAC / 50Hz/ 1sec.	(no flashover allowed)	No visible damage
Terminal Strength	50N	N/A	No visible damage

THERMODISC

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PRODUCT DATA SPECIFICATIONS

NTC THERMISTORS IMMERSION SENSOR 93JB

OPERATING TEMP RANGE:
-40 TO 150 °C

CONSTRUCTION:
Shell: Tin-plated Copper or Stainless Steel (316L)
Plastic: PPS or PBT
Wire: 26AWG twin lead,150°C
"O" Ring: Available, EPDM or Silicone
Connectors: Optional

THERMAL TIME CONSTANT:
0.5 seconds typical (25°C Air to 85°C stirred water)

INSULATION STRENGTH:
1500VAC/0.5mA/2Seconds Min. Rating

APPLICATIONS:
Boiler Heating Systems
Fast Response in liquid applications
Shower
Dryer
Coffee Pots

UL/CUL Recognized: File E179543

VALUES AVAILABLE:

RT Curve	Resistance At 25°C	Resistance At 85°C	Resistance At 100°C
1	10,000Ω	1070Ω	680Ω
9	10,000Ω	1452Ω	978Ω

(inquire for other values)

ACCURACIES AVAILABLE:
± 1° C and ± 0.5° C
(custom values also available)

PART NUMBER DESIGNATION:

93JXBMxxxxx

93J = Package Series
X = Therm-o-disc RT curve (1,9 or 20)
B = Bead thermistor inside
M = Metal cover
xxxxx = sequentially assigned number

R-T Curve 1

B25/85=3977K ±1.5%

Temp °C	Multiplier
-40	33.600
-35	24.270
-30	17.700
-25	13.040
-20	9.7060
-15	7.2940
-10	5.5319
-5	4.2324
0	3.2654
5	2.5396
10	1.9903
15	1.5714
20	1.2493
25	1.0000
30	0.8056
35	0.6530
40	0.5327
45	0.4370
50	0.3603
55	0.2986
60	0.2488
65	0.2083
70	0.1752
75	0.1480
80	0.1255
85	0.1070
90	0.0915
95	0.0787
100	0.0680
105	0.0592
110	0.0517
115	0.0450
120	0.0390
125	0.0340
130	0.0300
135	0.0265
140	0.0235
145	0.0209
150	0.0185

R-T Curve 9

B25/85=3435K ± 1.5%

Temp °C	Multiplier
-40	20.148
-35	15.268
-30	11.675
-25	9.0050
-20	7.0030
-15	5.4891
-10	4.3351
-5	3.4484
0	2.7620
5	2.2269
10	1.8069
15	1.4750
20	1.2111
25	1.0000
30	0.8302
35	0.6928
40	0.5811
45	0.4897
50	0.4146
55	0.3526
60	0.3012
65	0.2583
70	0.2224
75	0.1923
80	0.1668
85	0.1452
90	0.1269
95	0.1112
100	0.0978
105	0.0863
110	0.0763
115	0.0677
120	0.0603
125	0.0538
130	0.0481
135	0.0431
140	0.0388
145	0.0349
150	0.0315

RESISTANCE VS. TEMPERATURE MULTIPLIER VALUES:

To use, multiply the resistance at 25°C by the given multiplier at the desired temperature.
Example: What would be the nominal resistance of a 93J1BMxxxxx at 75°C?
Resistance at 25°C Multiplier at 75°C is 0.1480
10,000 x 0.1480 = 1480Ω

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PRODUCT DATA SPECIFICATIONS

NTC THERMISTORS IMMERSION SENSOR 95JB

OPERATING TEMP RANGE:
-40 TO 125 °C

CONSTRUCTION:
Connectors- Lumberg, AMP, Molex and Others Material PBT Plastic (Blue, Black, Brown etc.)
Metal Shell- ADZ Brass(with or without Nickel Plating), Stainless Steel. Various Shapes.
Sealing "O" Rings- Available

VALUES AVAILABLE:

RT Curve	*Resistance At 25°C*	*Resistance At 85°C*	*Resistance At 100°C*
1	10KΩ	1070Ω	690Ω
9	10KΩ	1451Ω	950Ω
15	12KΩ	1467.6Ω	952Ω

(also custom values)

INSULATION STRENGTH:
1500VDC/1 Seconds Min. Rating

THERMAL TIME CONSTANT:
1.5 seconds typical
(25°C Air to 85°C stirred water)

ACCURACIES AVAILABLE*:*
±1°C @80 - 100°C
(also custom values)

APPLICATIONS:
Boiler Heating Systems
Fast response in liquid applications

AGENCY APPROVALS:
Many products are agency Recognized
UL/CUL, ACS, WRAS

PART NUMBER DESIGNATION:

95J1BMxxxxx

95J = Package Series
1 = Therm-o-disc RT curve (1,9,or 15)
B = bead thermistor inside
M = Metal Cover
xxxxx = sequentially assigned number

MARKING:
T-O-D, Date Code

RT Curve 1
Beta 25/85°C
3977 ± 1.5%

Temp °C	Multiplier
-40	33.600
-35	24.270
-30	17.700
-25	13.040
-20	9.7060
-15	7.2940
-10	5.5319
-5	4.2324
0	3.2654
5	2.5396
10	1.9903
15	1.5714
20	1.2493
25	1.0000
30	0.8056
35	0.6530
40	0.5327
45	0.4370
50	0.3603
55	0.2986
60	0.2488
65	0.2083
70	0.1752
75	0.1480
80	0.1255
85	0.1070
90	0.09150
95	0.07870
100	0.06900
105	0.05920
110	0.05170
115	0.04500
120	0.03900
125	0.03400

RT Curve 9
Beta 25/85°C
3435 ± 1.5%

Temp °C	Multiplier
-40	20.148
-35	15.268
-30	11.675
-25	9.0050
-20	7.0030
-15	5.4891
-10	4.3351
-5	3.4484
0	2.7620
5	2.2279
10	1.8069
15	1.4750
20	1.2111
25	1.0000
30	0.8302
35	0.6928
40	0.5810
45	0.4897
50	0.4145
55	0.3525
60	0.3011
65	0.2582
70	0.2223
75	0.1921
80	0.1668
85	0.1451
90	0.1268
95	0.1112
100	0.09500
105	0.08626
110	0.07634
115	0.06776
120	0.06032
125	0.05384

RT Curve 15
Beta 25/85°C
3740 ± 1.5%

Temp °C	Multiplier
-40	25.792
-35	19.117
-30	14.308
-25	10.808
-20	8.235
-15	6.328
-10	4.902
-5	3.826
0	3.008
5	2.383
10	1.899
15	1.524
20	1.231
25	1.0000
30	0.8171
35	0.6713
40	0.5544
45	0.4603
50	0.3841
55	0.3219
60	0.2711
65	0.2293
70	0.1948
75	0.1662
80	0.1423
85	0.1223
90	0.1055
95	0.09133
100	0.07935
105	0.06917
110	0.06048
115	0.05305
120	0.04668
125	0.04119

RESISTANCE VS. TEMPERATURE MULTIPLIER VALUES:

To use, multiply the resistance at 25°C by the given multiplier at the desired temperature.

Example: What would be the nominal resistance of a 95J1Bxxxxx at 75°C?
Resistance at 25°C Multiplier at 75°C is 0.1480
10,000 x 0.1480 = 1480Ω