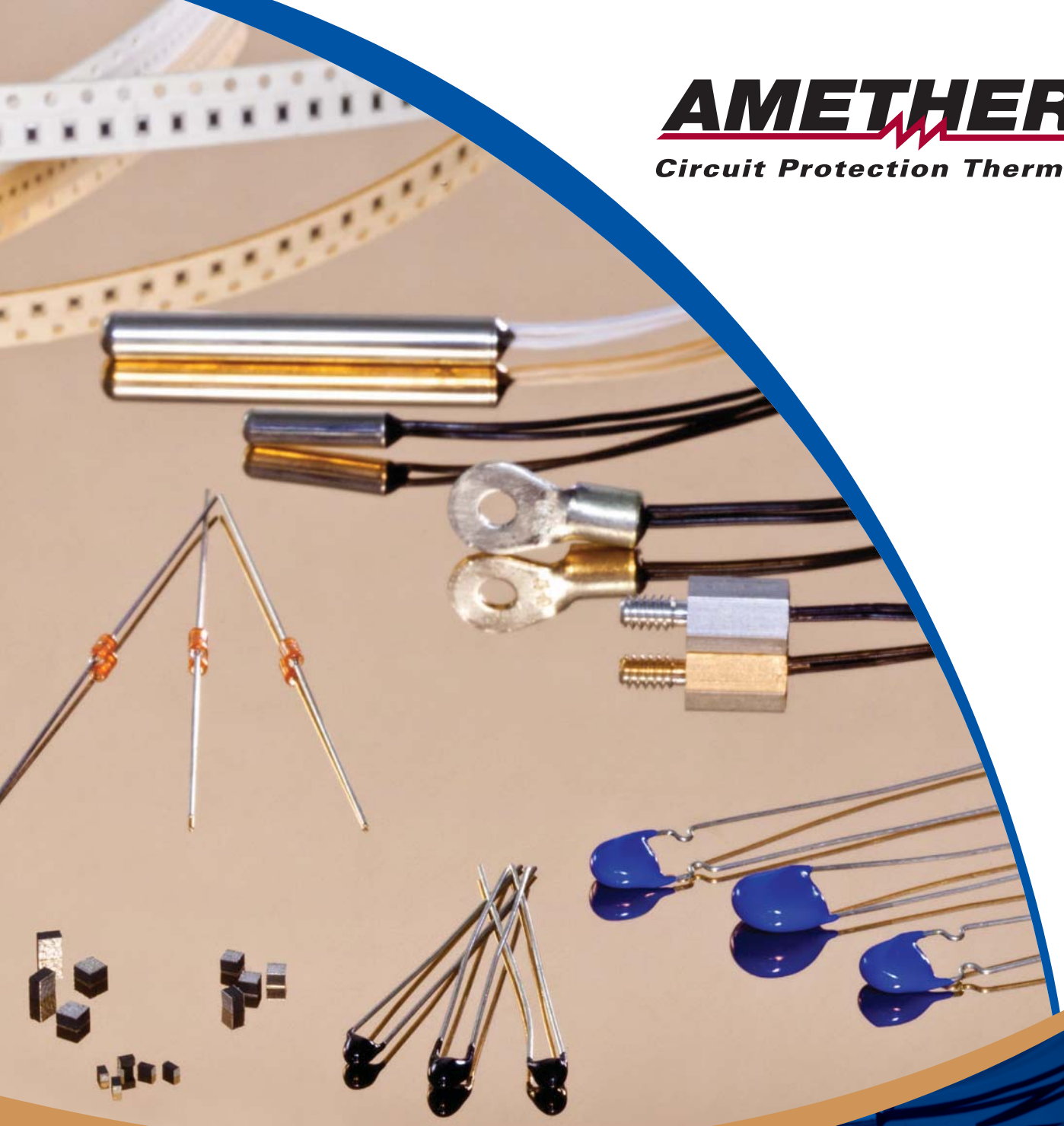
AMETHERM

Circuit Protection Thermistors



ACCURATE AND CUSTOMIZABLE NTC THERMISTORS

For temperature control, sensing and compensation

800-808-2434 • www.ametherm.com

Precision.

TEMPERATURE SENSING, COMPENSATION AND CONTROL WITH AMETHERM NTC THERMISTORS

Ametherm NTC thermistors are manufactured from a specially-formulated metal oxide ceramic material that is extremely accurate in sensing temperature. Same high quality material is used in wide variety of housings and leaded parts for various applications such as:

HVAC • Refrigeration • Floor Heating • Surface Temperature Measurement • Corrosive Environments

PART NUMBERING SYSTEM

P	A	N	E	1	0	3	3	9	5	J	X	X	X

PART LETTERING	PROBE ASSEMBLY
PANE	Epoxy
PANR	Ring Lug
PANH	Steel Tube
PANT	Threaded
PANW	Threaded with tip

PART LETTERING	LEADED NTC
NT03	Disc (3mm dia)
NT05	Disc (5mm dia)
CT02	Chip (2mm width)

R_{25}	
202	$20x10^2 = 2$ KΩ
103	$10x10^3 = 10$ KΩ
253	$25x10^3 = 25$ KΩ
254	$25x10^4 = 250$ KΩ

$B_{0/50}$	
350	3500°K
375	3750°K
395	3950°K
410	4110°K
450	4500°K

R_{25} TOLERANCE	
None	10%
J	5%
H	3%
G	2%
F	1%

CUSTOM PART

PANE Series - Probe Assembly / Epoxy

DESCRIPTION

• Epoxy dip coated NTC thermistor, soldered between jacketed Teflon / PVC wires

FEATURES

- Fast response, with high accuracy (to ±1%) for temperature sensing
- Small dimensions allow easy installation
- Point or Curve matched
- Customizable for your needs
- Cost effective

APPLICATIONS

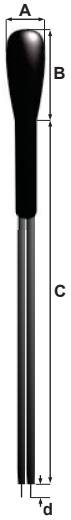
- Motors
- Air Sensors / HVAC
- Transformers
- Heat Sinks
- Automotive

ELECTRICAL SPECS

PANE Part Number	R_{25} KΩ	R-T Curve	Beta (K)	Dissipation Constant (mW/°C)	Thermal Time Constant (sec)	Max Power (mW)
PANE501350	0.5	M	3500	3.0	10.0	125
PANE102350	1.0	M	3500	3.0	10.0	125
PANE202395	2.0	L	3950	3.0	10.0	125
PANE302395	3.0	L	3950	3.0	10.0	125
PANE502395	5.0	L	3950	3.0	10.0	125
PANE103395	10.0	L	3950	3.0	10.0	125
PANE253410	25.0	R	4111	3.0	10.0	125
PANE503410	50.0	R	4111	3.0	10.0	125
PANE104450	100.0	S	4500	3.0	10.0	125
PANE254450	250.0	S	4500	3.0	10.0	125

MECHANICAL SPECS

Letter / Dimensions	Std. Part (mm)
A / Dia. of part	3.0 ± 0.5
B / Length of tip	5.5 ± 0.5
C / Length of leads	152.4 ± 7.0
d / Length of strip	5.0 ± 0.5
28AWG Teflon wire	
-55°C – 150°C Operating Temp	



PANR Series - Probe Assembly / Ring Lug

DESCRIPTION

- Epoxy coated NTC thermistor, potted in tinned copper ring lug

FEATURES

- Ideal for surface temperature sensing
- Rugged
- Point or Curve matched
- Customizable for your needs
- Cost effective

APPLICATIONS

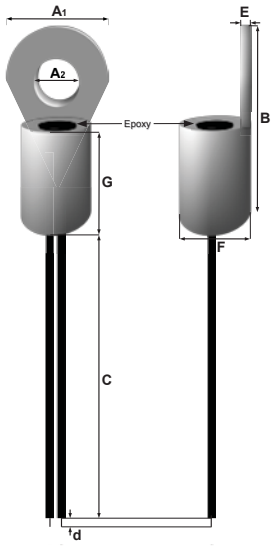
- Surface Temperature Sensing
- Heat Sinks
- Pipes
- Refrigeration

ELECTRICAL SPECS

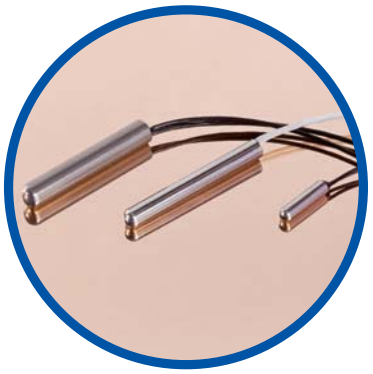
PANR Part Number	R_{25} KΩ	R-T Curve	Beta (K)	Dissipation Constant (mW/°C)	Thermal Time Constant (sec)	Max Power (mW)
PANR501350	0.5	M	3500	3.0	40	125
PANR102350	1.0	M	3500	3.0	40	125
PANR202395	2.0	L	3950	3.0	40	125
PANR302395	3.0	L	3950	3.0	40	125
PANR502395	5.0	L	3950	3.0	40	125
PANR103395	10.0	L	3950	3.0	40	125
PANR253410	25.0	R	4111	3.0	40	125
PANR503410	50.0	R	4111	3.0	40	125
PANR104450	100.0	S	4500	3.0	40	125
PANR254450	250.0	S	4500	3.0	40	125

MECHANICAL SPECS

Letter / Dimensions	Std. Part (mm)
A1 / Outer Dia. of lug	9.5 ± 0.3
A2 / Inner Dia. of lug	4.4 ± 0.3
B / Length of lug	18.6 ± 0.5
C / Length of leads	152.4 ± 7.0
d / Length of strip	5.0 ± 0.5
E / Thickness of Lug	1.0 ± 0.2
F /Outer Dia. of barrel	5.5 ± 0.2
G / Length of barrel	6.5 ± 0.3
28AWG Teflon wire / #6 Lug	
-55°C – 150°C Operating Temp	



PANH Series - Probe Assembly / closed end metal tubing



DESCRIPTION

- NTC thermistor inside durable stainless steel alloy tube, epoxy filled

FEATURES

- Environmental protection
- Humidity resistant
- Fast response, with high accuracy (to ±1%) for temperature sensing
- Rugged construction
- Cost effective

APPLICATIONS

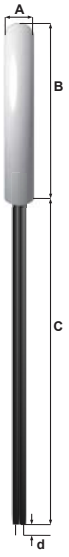
- Floor Heating
- HVAC
- Industrial
- Evaporator
- Refrigeration

ELECTRICAL SPECS

PANH Part Number	R_{25} KΩ	R-T Curve	Beta (K)	Dissipation Constant (mW/°C)	Thermal Time Constant (sec)	Max Power (mW)
PANH501350	0.5	M	3500	5.0-10.0	10.0	125
PANH102350	1.0	M	3500	5.0-10.0	10.0	125
PANH202395	2.0	L	3950	5.0-10.0	10.0	125
PANH302395	3.0	L	3950	5.0-10.0	10.0	125
PANH502395	5.0	L	3950	5.0-10.0	10.0	125
PANH103395	10.0	L	3950	5.0-10.0	10.0	125
PANH253410	25.0	R	4111	5.0-10.0	10.0	125
PANH503410	50.0	R	4111	5.0-10.0	10.0	125
PANH104450	100.0	S	4500	5.0-10.0	10.0	125
PANH254450	250.0	S	4500	5.0-10.0	10.0	125

MECHANICAL SPECS

Letter / Dimensions	Std. Part (mm) PANH1	PANH2
A / Dia. of part	3.7 ± 0.5	6.3 ± 0.5
B / Length of tip	15.0 ± 2.0	30.0 ± 4.0
C / Length of leads	152.4 ± 7.0	
d / Length of strip	5.0 ± 7.0	
28AWG Teflon wire		
-55°C – 150°C Operating Temp		



PANT Series - Probe Assembly / threaded tip & hex

DESCRIPTION

- NTC thermistor potted inside aluminum hex screw with straight threads

FEATURES

- Ideal for temperature sensing, measurement and compensation where screwing is necessary
- Fast response, with high accuracy (to ±1%)
- Rugged construction
- Cost effective

APPLICATIONS

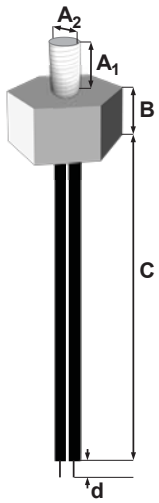
- Heating & Cooling systems
- HVAC
- Industrial
- Laboratory
- Heat Sinks
- Chassis mounting

ELECTRICAL SPECS

PANT Part Number	R_{25} KΩ	R-T Curve	Beta (K)	Dissipation Constant (mW/°C)	Thermal Time Constant (sec)	Max Power (mW)
PANT501350	0.5	M	3500	6.0	70.0	125
PANT102350	1.0	M	3500	6.0	70.0	125
PANT202395	2.0	L	3950	6.0	70.0	125
PANT302395	3.0	L	3950	6.0	70.0	125
PANT502395	5.0	L	3950	6.0	70.0	125
PANT103395	10.0	L	3950	6.0	70.0	125
PANT253410	25.0	R	4111	6.0	70.0	125
PANT503410	50.0	R	4111	6.0	70.0	125
PANT104450	100.0	S	4500	6.0	70.0	125
PANT254450	250.0	S	4500	6.0	70.0	125

MECHANICAL SPECS

Letter / Dimensions	Std. Part (mm)
A1 / Length of thread	6.0 ± 0.5
A2 / Dia. of thread	3.2 ± 0.5
B / Hex nut thickness	9.3 ± 0.5
C / Length of leads	152.4 ± 7.0
d / Length of strip	5.0 ± 0.5
28AWG Teflon wire	
-55°C – 150°C Operating Temp	



PANW Series - Probe Assembly / threaded metal tubing & hex

DESCRIPTION

- NTC thermistor potted at the tip of durable stainless steel alloy tube, with tapered thread hex screw

FEATURES

- Tapered threads will pull tight for a fluid-tight seal
- Ideal for extreme conditions such as corrosive environments
- Fast response, with high accuracy (to ±1%) due to the potting of thermistor at the very tip of the assembly

APPLICATIONS

- Appliance temp measurements such as conventional ovens and microwaves
- Spas, hot tub

ELECTRICAL SPECS

PANW Part Number	R_{25} KΩ	R-T Curve	Beta (K)	Dissipation Constant (mW/°C)	Thermal Time Constant (sec)	Max Power (mW)
PANW501350	0.5	M	3500	10.0	25.0	6.5
PANW102350	1.0	M	3500	10.0	25.0	6.5
PANW202395	2.0	L	3950	10.0	25.0	6.5
PANW302395	3.0	L	3950	10.0	25.0	6.5
PANW502395	5.0	L	3950	10.0	25.0	6.5
PANW103395	10.0	L	3950	10.0	25.0	6.5
PANW253410	25.0	R	4111	10.0	25.0	6.5
PANW503410	50.0	R	4111	10.0	25.0	6.5
PANW104450	100.0	S	4500	10.0	25.0	6.5
PANW254450	250.0	S	4500	10.0	25.0	6.5

MECHANICAL SPECS

Letter / Dimensions	Std. Part (mm)
A1 / Length of tip	37.0 ± 0.5
A2 / Dia. of tip	5.0 ± 0.5
A3 / Length of thread	10.0 ± 0.25
A4 / Dia. of thread	9.5 ± 0.5
B / Hex nut thickness	6.0 ± 0.5
C / Length of leads	152.4 ± 7.0
d / Length of strip	5.0 ± 0.5
28AWG Teflon wire	
-55°C – 150°C Operating Temp	

CT Series - NTC Thermistor with chip

DESCRIPTION

• NTC chip thermistor with or without coating with tinned copper leads

FEATURES

• Wide resistance selection
• Cost effective
• Fast response, with high accuracy (to ±1%)

APPLICATIONS

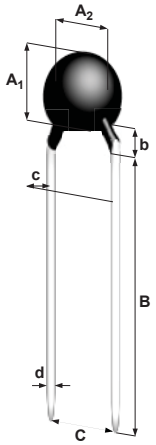
• Refrigeration
• Battery pack
• Amplifier circuits

ELECTRICAL SPECS

NT03 Part Number	R_{25} KΩ	R-T Curve	Beta (K)	Dissipation Constant (mW/°C)	Thermal Time Constant (sec)	Max Power (mW)
CT02501350	0.5	M	3500	1.7	10.0	120
CT02102350	1.0	M	3500	1.7	10.0	120
CT02202395	2.0	L	3950	1.7	10.0	120
CT02302395	3.0	L	3950	1.7	10.0	120
CT02502395	5.0	L	3950	1.7	10.0	120
CT02103395	10.0	L	3950	1.7	10.0	120
CT02253410	25.0	R	4111	1.7	10.0	120
CT02503410	50.0	R	4111	1.7	10.0	120
CT02104450	100.0	S	4500	1.7	10.0	120
CT02254450	250.0	S	4500	1.7	10.0	120

MECHANICAL SPECS

Letter / Dimensions	Std. Part (mm)
A1 / Length of part	5.0 ± 0.5
A2 / Dia. of part	2.5 ± 0.5
C / Length of leads	38.0 ± 2.0
S / Lead spacing	3.2 ± 0.5
d / Lead diameter	0.5 ± 0.1
e / Lead spacing	0.5 ± 0.1
b / Coat rundown	2.5 ± 0.3



NT Series - NTC Thermistor with disc

DESCRIPTION

• NTC disc thermistor with or without coating with tinned copper leads

FEATURES

• Wide resistance selection
• Cost effective
• Fast response, with high accuracy (to ±1%)
• Point or curve matched with interchangeable thermistors

APPLICATIONS

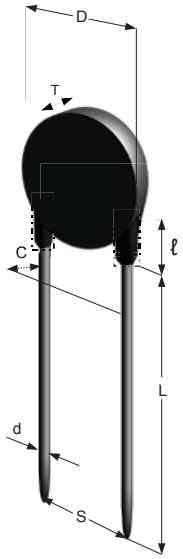
• Automotive electronic
• Industrial electronic
• Heating Systems

ELECTRICAL SPECS

NT03 Part Number	R_{25} KΩ	R-T Curve	Beta (K)	Dissipation Constant (mW/°C)	Thermal Time Constant (sec)	Max Power (mW)
NT03501350	0.5	M	3500	3.5	15.0	250
NT03102350	1.0	M	3500	3.5	15.0	250
NT03302395	3.0	L	3950	3.5	15.0	250
NT03502395	5.0	L	3950	3.5	15.0	250
NT03103395	10.0	L	3950	3.5	15.0	250
NT03153395	15.0	L	3950	3.5	15.0	250
NT03203410	20.0	R	4111	3.5	15.0	250
NT03203410	50.0	R	4111	3.5	15.0	250
NT03503410	100.0	S	4500	3.5	15.0	250
NT05201350	0.2	M	3500	7.5	20.0	450
NT05301350	0.3	M	3500	7.5	20.0	450
NT05501350	0.5	M	3500	7.5	20.0	450
NT05102375	1.0	N	3750	7.5	20.0	450
NT05202395	2.0	L	3950	7.5	20.0	450
NT05502395	5.0	L	3950	7.5	20.0	450
NT05103410	10.0	R	4111	7.5	20.0	450
NT05253410	25.0	R	4111	7.5	20.0	450
NT05503450	50.0	S	4500	7.5	20.0	450
NT05104450	100.0	S	4500	7.5	20.0	450

MECHANICAL SPECS

Letter / Dimensions	Std. Part (mm) NT03	Std. Part (mm) NT05
A / Dia. of part	3.0 ± 0.5	6.0 ± 1.0
t / Thickness	3.0 ± 0.5	3.5 ± 0.5
C / Length of leads	38.0 ± 2.0	38.0 ± 2.0
S / Lead spacing	3.0 ± 0.5	5.0 ± 1.0
e / Lead spacing	0.5 ± 0.1	2.0 ± 0.4
d / Lead diameter	0.5 ± 0.1	0.5 ± 0.1
B / Coat rundown	2.5 ± 0.5	2.5 ± 0.5



Temperature Coefficients

Temp °C	Material "M"	Material "N"	Material "L"	Material "R"	Material "S"
-40	21.3900	30.7500	33.7400	36.0900	63.2900
-30	12.2200	16.4300	17.8000	18.8200	30.0300
-20	7.2680	9.1450	9.7760	10.2300	14.8700
-10	4.4550	5.2750	5.5700	5.7670	7.6420
0	2.8190	3.1500	3.2790	3.3630	4.0660
10	1.8200	1.9440	1.9980	2.2040	2.2650
20	1.2100	1.2380	1.2520	1.2560	1.3030
25	1.0000	1.0000	1.0000	1.0000	1.0000
30	0.8290	0.8120	0.8038	0.8013	0.7726
35	0.6900	0.6630	0.6499	0.6461	0.6009
40	0.5790	0.5460	0.5282	0.5241	0.4704
45	0.4880	0.4530	0.4316	0.4276	0.3705
50	0.4030	0.3760	0.3545	0.3507	0.2936
55	0.3510	0.3150	0.2949	0.2894	0.2341
60	0.2978	0.2650	0.2465	0.2400	0.1878
65	0.2551	0.2241	0.2070	0.2001	0.1516
70	0.2195	0.1906	0.1747	0.1677	0.1231
75	0.1912	0.1631	0.1481	0.1412	0.1005
80	0.1645	0.1401	0.1261	0.1194	0.0825
85	0.1430	0.1208	0.1077	0.1014	0.0681
90	0.1251	0.1047	0.0924	0.0865	0.0564
95	0.1093	0.0907	0.0796	0.0741	0.0470
100	0.0957	0.0789	0.0688	0.0637	0.0393
105	0.0843	0.0695	0.0597	0.0550	0.0330
110	0.0743	0.0609	0.0521	0.0477	0.0279
115	0.0658	0.054	0.0456	0.0414	0.02362
120	0.0588	0.0479	0.0392	0.0361	0.02009
125	0.0522	0.0428	0.0345	0.0317	0.01715
130	0.0469	0.0381	0.0308	0.0277	0.01469
135	0.042	0.034	0.0268	0.0244	0.01262
140	0.0379	0.0307	0.0236	0.0216	0.01089
145	0.0339	0.0274	0.0209	0.0192	0.009416
150	0.0309	0.0251	0.0186	0.017	0.00817
p	300Ωcm	900Ωcm	2100Ωcm	3000Ωcm	33000Ωcm
Beta	3500 °K	3750 °K	3950 °K	4111 °K	4500 °K

Contact us today for more information or to order your free samples.

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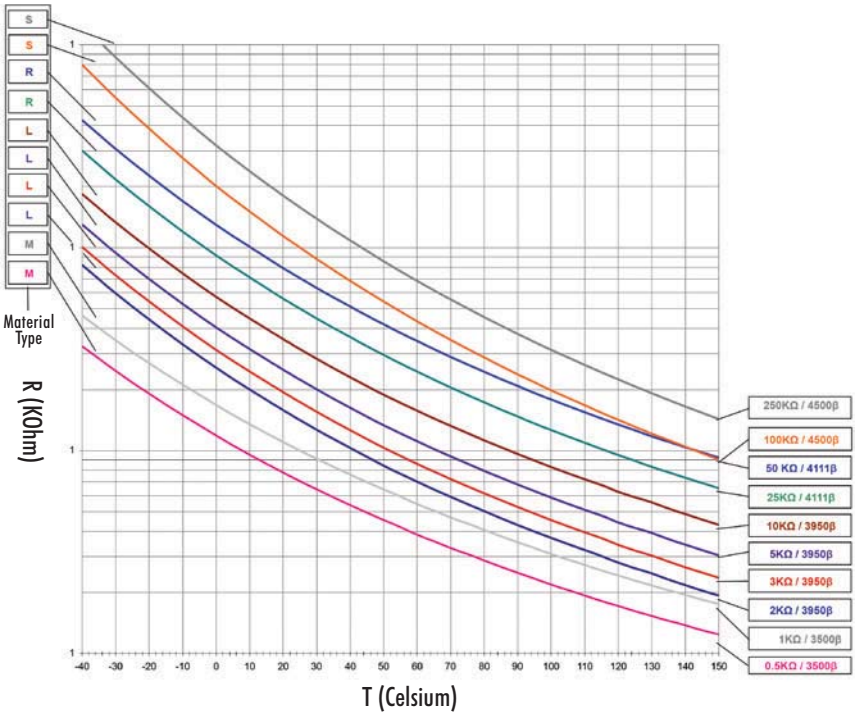
Ametherm Probe Assembly and NTC C/T Curve



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