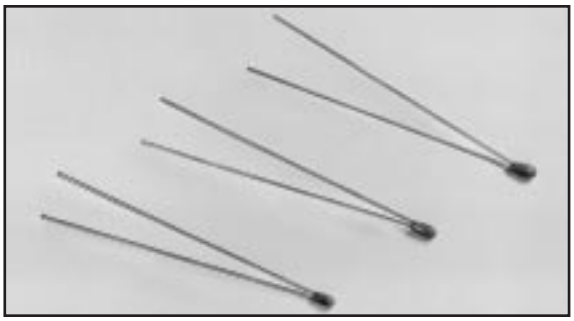
NTC THERMISTORS: TYPE EC95

INTERCHANGEABLE CHIP THERMISTOR

DESCRIPTION:

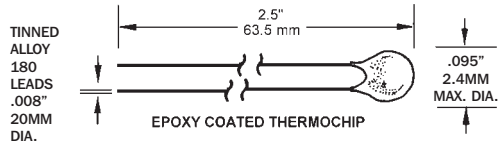
Epoxy Coated interchangeable chip thermistors with bare tinned 180 alloy lead-wires.



FEATURES:

- Precision, solid state temperature sensor
- Interchangeability down to ±0.1 °C
- Suitable for use over range of –80°C to +150°C
- High sensitivity greater than –4%/°C at 25°C
- Suitable for temperature measurement, control and compensation
- High reliability and stability over interchangeable range
- Most popular R-vs-T curves are available
- Resin coated for good mechanical strength and resistance to solvents
- .008" (.2 mm) dia. bare tinned 180 alloy lead-wires

DIMENSIONS:



Select appropriate part number below for resistance and temperature tolerance desired

$R_{25°C}$	MATERIAL SYSTEM	± .2°C –20°C to +50°C	± .1°C 0°C to 70°C	± .2°C 0°C to 70°C
100	Q	EC95Q101U		
300	Q	EC95Q301U		
1000	R	EC95R102U		EC95R102W
1000	S	EC95S102U		EC95S102W
2252	F	EC95F232U	EC95F232V	EC95F232W
3000	F	EC95F302U	EC95F302V	EC95F302W
5000	F	EC95F502U	EC95F502V	EC95F502W
10000	F	EC95F103U	EC95F103V	EC95F103W
10000	Y	EC95Y103U	EC95Y103V	EC95Y103W
30000	H	EC95H303U	EC95H303V	EC95H303W
50000	G	EC95G503U	EC95G503V	EC95G503W
100000	G		EC95G104V	EC95G104W

RS 151-215 = EC95F302W
RS 151-221 = EC95F502W
RS 151-237 = EC95F103W
RS 151-243 = EC95G104W

OPTIONS:

Consult factory for availability of options:

- Other resistance values in the range of 100Ω - 100kΩ
- Other tolerances or ranges
- Alternative lead-wires or lengths
- Non standard R-vs-T curves
- Controlled dimensions

DATA:

THERMAL AND ELECTRICAL PROPERTIES:

Dissipation constant:.....(still air) 1 mW/°C
(stirred oil) 8 mW/°C

Thermal time constant:.....(still air) 10 sec.
(stirred oil) 1 sec.

Maximum power at 25°C 75mW
(derated from 100% at 25°C to 0% at 100°C)

MATERIAL TYPE: F

AVAILABLE PRODUCTS:

HM, C100, EC95, DC95, MC65, MF65, SC30, SC50

Data for material type : F

Temp Range (°C)	Ratio	Beta
0 to 50	9.08	3895
0 to 70	18.64	3917
25 to 50	2.78	3933
25 to 85	9.30	3969
25 to 100	14.64	3981
25 to 125	29.05	3999
37.8 to 104.4	9.67	4000

To calculate Rt/R25 at temperatures other than those listed in the table, use the following equation:

$Rt/R25 = \exp\{A + B/T + C/T^2 + D/T^3\}$

where T = temperature in K

where K = °C + 273.15

Temp Range (°C)	A	B	C	D
-50 to 0	-1.4122478E+01	4.4136033E+03	-2.9034189E+04	-9.3875035E+06
0 to 50	-1.4141963E+01	4.4307830E+03	-3.4078983E+04	-8.8941929E+06
50 to 100	-1.4202172E+01	4.4975256E+03	-5.8421357E+04	-5.9658796E+06
100 to 150	-1.6154078E+01	6.8483992E+03	-1.0004049E+06	1.1961431E+08

To calculate the actual thermistor temperature as a function of the thermistor resistance, use the following equation:

$1/T = a + b(\ln Rt/R25) + c(\ln Rt/R25)^2 + d(\ln Rt/R25)^3$

Rt/R25 range	a	b	c	d
68.600 to 3.274	3.3538646E-03	2.5654090E-04	1.9243889E-06	1.0969244E-07
3.274 to 0.36036	3.3540154E-03	2.5627725E-04	2.0829210E-06	7.3003206E-08
0.36036 to 0.06831	3.3539264E-03	2.5609446E-04	1.9621987E-06	4.6045930E-08
0.06831 to 0.01872	3.3368620E-03	2.4057263E-04	-2.6687093E-06	-4.0719355E-07

†The deviation resulting from the tolerance on the material constant, Beta. The deviation must be added to the resistance tolerance of the part as specified at 25°C.

Temperature (°C)	Rt/R25 nominal	Temp Coef α (%/°C)	β Deviation† (±%)
-50	68.60	7.21%	2.30%
-45	48.16	6.96%	2.68%
-40	34.23	6.71%	2.87%
-35	24.62	6.48%	2.92%
-30	17.91	6.26%	2.86%
-25	13.17	6.05%	2.71%
-20	9.782	5.85%	2.50%
-15	7.339	5.66%	2.25%
-10	5.558	5.47%	1.97%
-5	4.247	5.30%	1.68%
0	3.274	5.13%	1.37%
5	2.544	4.97%	1.07%
10	1.992	4.81%	0.78%
15	1.572	4.67%	0.50%
20	1.250	4.53%	0.24%
25	1.000	4.39%	0.00%
30	0.8056	4.26%	0.21%
35	0.6530	4.14%	0.40%
40	0.5326	4.02%	0.56%
45	0.4369	3.91%	0.69%
50	0.3604	3.80%	0.80%
55	0.2989	3.69%	0.87%
60	0.2491	3.59%	0.92%
65	0.2087	3.49%	0.93%
70	0.1756	3.40%	0.92%
75	0.1485	3.31%	0.88%
80	0.1261	3.23%	0.81%
85	0.1075	3.14%	0.72%
90	0.09209	3.06%	0.59%
95	0.07916	2.99%	0.45%
100	0.06831	2.91%	0.28%
105	0.05916	2.85%	0.08%
110	0.05141	2.77%	0.12%
115	0.04483	2.70%	0.36%
120	0.03922	2.64%	0.61%
125	0.03442	2.57%	0.87%
130	0.03030	2.51%	1.16%
135	0.02675	2.47%	1.46%
140	0.02369	2.41%	1.82%
145	0.02103	2.35%	2.14%
150	0.01872	2.35%	2.46%

MATERIAL TYPE: G

AVAILABLE PRODUCTS:

HM, C100, EC95, DC95, MC65, MF65, SC30, SC50

Data for material type : G

Temp Range (°C)	Ratio	Beta
0 to 50	10.48	4147
0 to 70	22.65	4178
25 to 50	2.97	4201
25 to 85	10.91	4252
25 to 100	17.80	4271
25 to 125	37.37	4298
37.8 to 104.4	11.46	4299

To calculate Rt/R25 at temperatures other than those listed in the table, use the following equation:

$Rt/R25 = \exp\{A + B/T + C/T^2 + D/T^3\}$

where T = temperature in K

where K = °C + 273.15

Temp Range (°C)	A	B	C	D
-50 to 0	-1.5617550E+01	5.0690086E+03	-9.6895494E+04	-7.7906095E+06
0 to 50	-1.5573783E+01	5.0310600E+03	-8.5956133E+04	-8.8392667E+06
50 to 100	-1.5358271E+01	4.7986321E+03	-3.1012401E+03	-1.8614924E+07
100 to 150	-1.8012530E+01	7.9402031E+03	-1.2428041E+06	1.4445457E+08

To calculate the actual thermistor temperature as a function of the thermistor resistance, use the following equation:

$1/T = a + b(\ln Rt/R25) + c(\ln Rt/R25)^2 + d(\ln Rt/R25)^3$

Rt/R25 range	a	b	c	d
85.730 to 3.5223	3.3537950E-03	2.4096581E-04	2.2453225E-06	1.1817106E-07
3.5223 to 0.33620	3.3540142E-03	2.4060636E-04	2.4402986E-06	8.0075806E-08
0.33620 to 0.05619	3.3541651E-03	2.4087966E-04	2.5742490E-06	8.8745970E-08
0.05619 to 0.01381	3.3357228E-03	2.2502940E-04	-1.9459544E-06	-3.4181652E-07

†The deviation resulting from the tolerance on the material constant, Beta. The deviation must be added to the resistance tolerance of the part as specified at 25°C.

Temperature (°C)	Rt/R25 nominal	Temp Coef α (%/°C)	β Deviation† (±%)
-50	85.73	7.50%	3.48%
-45	59.31	7.25%	3.27%
-40	41.54	7.01%	3.03%
-35	29.43	6.78%	2.77%
-30	21.09	6.56%	2.50%
-25	15.28	6.35%	2.23%
-20	11.18	6.15%	1.96%
-15	8.261	5.96%	1.70%
-10	6.162	5.77%	1.44%
-5	4.639	5.60%	1.19
0	3.522	5.43%	0.95%
5	2.697	5.26%	0.73%
10	2.081	5.11%	0.53%
15	1.618	4.96%	0.34%
20	1.268	4.82%	0.16%
25	1.000	4.68%	0.00%
30	0.7942	4.55%	0.14%
35	0.6348	4.42%	0.26%
40	0.5106	4.30%	0.37%
45	0.4131	4.18%	0.46%
50	0.3362	4.07%	0.54%
55	0.2751	3.96%	0.60%
60	0.2263	3.86%	0.65%
65	0.1871	3.75%	0.68%
70	0.1555	3.66%	0.70%
75	0.1298	3.56%	0.71%
80	0.1089	3.48%	0.71%
85	0.09170	3.39%	0.69%
90	0.07757	3.31%	0.66%
95	0.06589	3.23%	0.62%
100	0.05619	3.15%	0.57%
105	0.04810	3.07%	0.50
110	0.04133	3.00%	0.41%
115	0.03563	2.92%	0.36%
120	0.03083	2.87%	0.26%
125	0.02676	2.80%	0.15%
130	0.02330	2.73%	0.09%
135	0.02036	2.68%	0.05%
140	0.01784	2.61%	0.17%
145	0.01567	2.55%	0.26%
150	0.01381	2.50%	0.43%