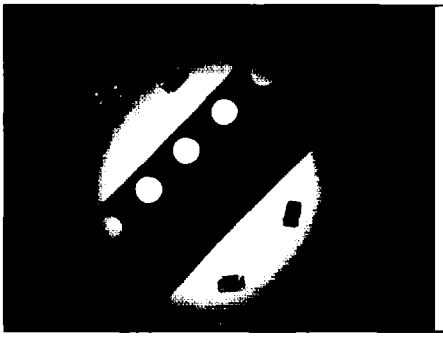
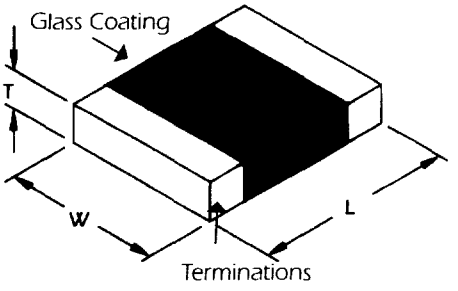
SURFACE MOUNTED, END-BANDED CHIPS

NTC THERMISTORS
DATA SHEET: SME-130A/7-96





FEATURES

- Surface mountable for automated pick and place
- Glass coated ceramic for long term reliability
- Solder plated-Nickel barrier terminations
- Offered in tape and reel packaging for automated assembly
- Rated to 150°C operating temperature

All illustration dimensions are in inches

SURFACE MOUNTED, END-BANDED NTC THERMISTORS are designed to be mounted onto rigid or flexible PC boards using robotic technology. They are particularly well suited for PC boards with a high density of discrete components. The solder-plated Ni-barrier terminations are easily soldered and meet ANSI/J-STD-002 Method B. The thermistor is designed to withstand solder temperatures of 260°C for 30 seconds.

SURFACE MOUNTED, END-BANDED CHIPS

Parameter	Specifications		
EIA Package Destination	0603	0805	1206
Part Number	172-XXXXXX-301	173-XXXXXX-301	175-XXXXXX-301
Length (L) Width (W) Thickness (T)	.063±.006 .031±.006 .038 MAX	.079 ± .008 .049 ± .008 .051 MAX	.126 ± .008 .063 ± .008 .059 MAX
Termination Width	.015±.010	.020 ± .010	.025 ± .015

ELECTRICAL CHARACTERISTICS ** 5% Tolerance @ 25° C

Resis. at @ 25° C (Ohms)	R-T Curve	Part Number 0603 Package	Part Number 0805 Package	Part Number 1206 Package
500	8	172-501AAF-301	173-501AAF-301 Ⓓ	175-501AAF-301
5K	10	172-502FAF-301	173-502FAF-301 Ⓓ	175-502FAF-301
10K	16	172-103LAF-301	173-103LAF-301 Ⓓ	175-103LAF-301
15K	16	172-153LAF-301	173-153LAF-301 Ⓓ	175-153LAF-301
33K	16	172-333LAF-301	173-333LAF-301 Ⓓ	175-333LAF-301
50K	16	172-503LAF-301	173-503LAF-301 Ⓓ	175-503LAF-301
100K	18	172-104LAF-301	173-104LAF-301 Ⓓ	175-104LAF-301
500K	1	172-504-QAF-301	173-504QAF-301 Ⓓ	175-504QAF-301

2%, 3% and 10% tolerance units are also available.

Ⓓ = Distributor item

FENWS003

FENWAL ELECTRONICS

450 Fortune Boulevard, Milford, Massachusetts 01757 U.S.A.
Telephone: (508) 478-6000 • FAX: (508) 473-6035

Unit 381D Jedburgh Court, 11th Avenue
Gateshead, Tyne&Wear, UK, NE11 0BQ
Telephone: 44-191-482-1422 • FAX: 44-191-482-2090

Resistance - Temperature Conversion Tables

R-T CURVE NO.	1			8			10			16			18		
MAT'L	TYPE Q			TYPE B OR A			TYPE F			TYPE L			TYPE K		
ß0/50 in °K	4144 ± 86			2758 ± 175			3420 ± 80			3890 ± 51			3800 ± 75		
RES. RATIO @ 0/50°C	10.45			4.80			6.95			9.06			8.72		
RES. RATIO @25/125°C	38.07			10.30			18.78			29.27			29.15		
TEMP. COEF. (α)@25°C	-4.7%/°C			-3.1%/°C			-3.9%/°C			-4.4%/°C			-4.2%/°C		
*AVAILABLE R_o	200K - 500K			.2K - .5K			3K - 10K			10K - 60K			100K		
°F °C	R-T CURVE COEF.	ALPHA TEMP. COEF.	RESIS. DEV.	R-T CURVE COEF.	ALPHA TEMP. COEF.	RESIS. DEV.	R-T CURVE COEF.	ALPHA TEMP. COEF.	RESIS. DEV.	R-T CURVE COEF.	ALPHA TEMP. COEF.	RESIS. DEV.	R-T CURVE COEF.	ALPHA TEMP. COEF.	RESIS. DEV.
-76 -60	—	—	—	39.32	5.8	22.6	81.67	6.5	9.7	140.5	7.7	6.6	—	—	—
-58 -50	—	—	—	22.21	5.4	19.1	42.12	6.1	8.2	67.01	7.2	5.6	—	—	—
-40 -40	40.70	6.9	7.6	13.15	5.0	15.8	22.66	5.8	6.8	33.65	6.7	4.7	30.24	6.2	5.3
-22 -30	20.78	6.5	6.2	8.113	4.6	12.8	12.73	5.4	5.6	17.70	6.2	3.8	16.32	5.9	4.3
-04 -20	11.08	6.1	5.0	5.193	4.3	10.0	7.4399	5.1	4.4	9.707	5.8	3.0	9.153	5.6	3.4
14 -10	6.119	5.7	3.7	3.435	4.0	7.3	4.5097	4.8	3.3	5.533	5.5	2.2	5.313	5.2	2.6
32 0	3.510	5.4	2.5	2.340	3.7	5.0	2.8250	4.5	2.3	3.265	5.1	1.5	3.183	4.9	1.8
50 10	2.078	5.1	1.4	1.637	3.5	2.7	1.8361	4.2	1.2	1.990	4.8	0.8	1.963	4.7	1.0
68 20	1.267	4.8	0.3	1.172	3.3	0.5	1.2161	4.0	0.3	1.249	4.5	0.2	1.244	4.4	0.3
77 25	1.000	4.7	0.0	1.000	3.1	0.0	1.0000	3.9	0.0	1.000	4.4	0.0	1.000	4.3	0.0
86 30	.7942	4.6	0.6	.8570	3.0	1.4	.8276	3.8	0.6	.8057	4.3	0.4	.8083	4.2	0.4
104 40	.5105	4.3	1.6	.6400	2.8	3.3	.5736	3.6	1.4	.5327	4.0	1.0	.5373	4.0	1.1
122 50	.3359	4.1	2.5	.4860	2.7	5.0	.4067	3.4	2.2	.3603	3.8	1.5	.3650	3.7	1.7
140 60	.2259	3.9	3.4	.3752	2.5	6.7	.2949	3.2	3.0	.2488	3.6	2.0	.2527	3.6	2.3
158 70	.1550	3.7	4.2	.2939	2.4	8.2	.2177	3.0	3.6	.1752	3.4	2.5	.1783	3.4	2.8
176 80	.1084	3.5	4.9	.2334	2.2	9.6	.1634	2.8	4.3	.1258	3.3	3.0	.1280	3.2	3.3
194 90	.07708	3.3	5.6	.1877	2.1	11.0	.1245	2.7	4.9	.09177	3.1	3.4	.09330	3.1	3.8
212 100	.05569	3.2	6.3	.1527	2.0	12.3	.09614	2.5	5.5	.06800	2.9	3.8	.06910	2.9	4.2
230 110	.04090	3.0	7.0	.1255	1.9	13.4	.07523	2.4	6.1	.05112	2.8	4.2	.05183	2.8	4.7
248 120	.03045	2.9	7.6	.1042	1.8	14.6	.05958	2.3	6.7	.03893	2.7	4.6	.03940	2.7	5.1
257 125	.02640	2.9	7.9	.09528	1.8	15.2	.05325	2.2	6.9	.03417	2.6	4.7	.03450	2.6	5.3
266 130	.02297	2.8	8.2	.08731	1.7	15.8	.04772	2.1	7.1	.03009	2.5	4.9	.03032	2.6	5.5
284 140	.01754	2.7	8.6	.07377	1.6	16.8	.03862	2.0	7.6	.02348	2.4	5.3	.02361	2.5	5.9
302 150	.01355	2.5	9.3	.06282	1.5	17.8	.03155	1.9	8.0	.01853	2.3	5.5	.01857	2.4	6.2
320 160	.01059	2.4	9.8	—	—	—	.02602	1.8	8.5	.01479	2.2	5.8	—	—	—
356 180	.006659	2.3	10.8	—	—	—	.01814	1.7	9.3	.009680	2.0	6.5	—	—	—
392 200	.004344	2.1	11.8	—	—	—	.01302	1.5	10.0	.006559	1.8	7.0	—	—	—
428 220	.002927	1.9	12.6	—	—	—	.009602	1.3	10.7	.004581	1.6	7.4	—	—	—
464 240	.002030	1.8	13.4	—	—	—	.007246	1.2	11.3	.003286	1.5	7.8	—	—	—
500 260	.001445	1.7	14.1	—	—	—	.005583	1.1	11.9	.002415	1.3	8.3	—	—	—
538 280	.001053	1.6	14.8	—	—	—	.004383	1.0	12.4	.001814	1.1	8.6	—	—	—
572 300	.0007840	1.5	15.4	—	—	—	.003499	1.0	12.9	.001390	1.0	8.9	—	—	—

*R_o = RESISTANCE @ 25°, zero power applied.

RESISTANCE-TEMPERATURE – To determine resistance of a Thermistor at specified temperature, first determine R-T Curve number, and then select appropriate vertical column. Multiply resistance of Thermistor at 25° C by appropriate horizontal value in line with the specified temperature to obtain resistance value at that temperature.

Note: Fenwal Electronics' R-T tables were established prior to the widespread use of computers and do vary slightly from the Steinhart-Hart equation.

ALPHA TEMPERATURE COEFFICIENT – The Alpha temperature coefficient denotes the percent resistance change per °C at a specific temperature.

RESISTANCE-DEVIATION – The Ro deviation must be added to the resistance tolerance at the reference temperature to give the complete percentage of resistance deviation. This reference point for standard catalog thermistors is 25° C. As an example: at 25° C, a thermistor is selected having ± 10% resistance tolerance with R-T characteristics per curve 1 (Type Q).

The total resistance deviation from a normal R-T curve will therefore be ± 10% @ 25° plus 2.5 at 0° C and will have a total deviation of 12.5% maximum at 0° C.