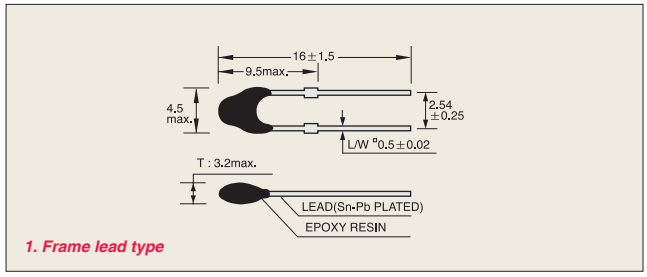
NTC CHIP THERMISTOR

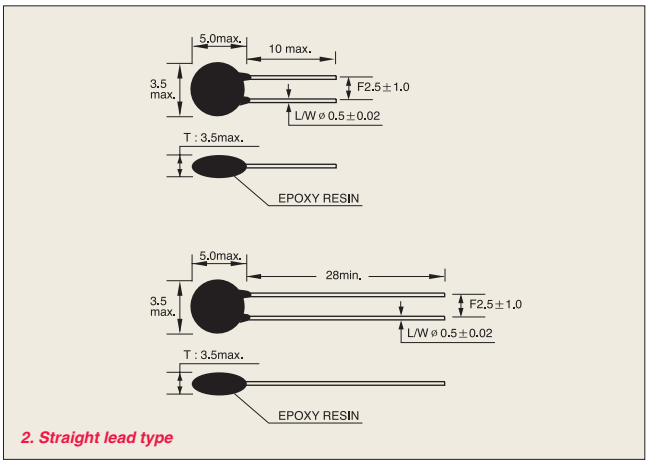
Chip thermistor is a high-precision thermal sensing device featuring an extremely small B-value tolerance and resistance.
When used as a temperature gauge, thermistor requires no adjustment between the control circuit and the sensor. This insures a temperature precision ±0.3℃. Temperature indicator and control instruments are now available for use with the thermistor.

NTC - 103 F 343 F □
① ② ③ ④ ⑤ ⑥

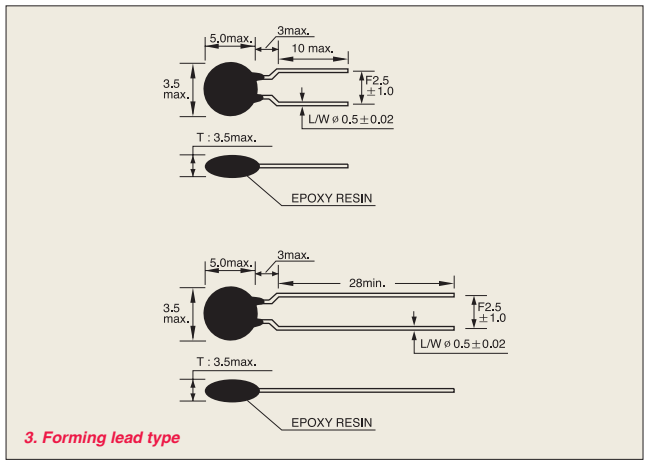
① SYMBOL
② RESISTANCE AT 25℃ [202 : 2,000Ω(2kΩ),
103 : 10,000Ω(10kΩ), 104 : 100,000Ω(100kΩ)]
③ RESISTANCE TOLERANCE
(F:±1%, G:±2%, H:±3%, J:±5%, K:±10%)
④ B VALUE (25℃ / 85℃)
⑤ B VALUE TOLERANCE (F:±1%, G:±2%, H:±3%)
⑥ TYPE (□ : Straight C : Frame)



1. Frame lead type



2. Straight lead type



3. Forming lead type

SPECIFICATION

PART No.	Resistance (25℃)*1	B Value (25℃/85℃)*2	Dissipation Constant	Thermal time*3 Constant	Rated power at 25℃	Operating Temp. range
502F332F	5 kΩ±1%	3324±1%	3.5 mW/℃	15 sec max.	45 mW	-50~120℃
502F347F	5 kΩ±1%	3470±1% (25℃/50℃)				
502F397F	5 kΩ±1%	3970±1%				
103F343F	10 kΩ±1%	3435±1%				
103F345F	10 kΩ±1%	3450±1% (25℃/50℃)				
103F397F	10 kΩ±1%	3970±1%				
303F410F	30 kΩ±1%	4100±1%				
403F400F	40 kΩ±1%	4000±1%				
503F400F	50 kΩ±1%	4000±1%				
503F408F	50 kΩ±1%	4080±1%				
104F400F	100 kΩ±1%	4000±1%				

*1. R_{25} : Rated zero-power resistance value at 25℃
*2. B Value : determined by rated zero-power resistance at 25℃ and 85℃
*3. Time when thermistor temperature reaches 63.2% of the temperature difference. The value is measured in the air.

TEMP. (℃)	NTC 502 F 332 F RESISTANCE (kΩ) min.	center	max.	NTC 502 F 347 F RESISTANCE (kΩ) min.	center	max.	NTC 502 F 397 F RESISTANCE (kΩ) min.	center	max.	NTC 103 F 343 F RESISTANCE (kΩ) min.	center	max.	TEMP. (℃)
-40	84.730	88.077	91.547	107.621	112.143	116.843	164.762	172.424	180.425	179.593	186.796	194.269	-40
-35	65.405	67.811	70.298	80.809	83.961	87.227	118.797	123.912	129.234	138.240	143.405	148.748	-35
-30	50.869	52.607	54.398	61.265	63.477	65.762	86.622	900.464	93.633	107.162	110.881	114.717	-30
-25	39.855	41.114	42.410	46.879	48.440	50.048	63.842	66.174	68.585	83.648	86.334	89.098	-25
-20	31.447	32.364	33.304	36.189	37.297	38.434	47.537	49.127	50.765	65.737	67.683	69.680	-20
-15	24.985	25.653	26.337	28.174	28.963	29.771	35.744	36.833	37.952	52.003	53.416	54.862	-15
-10	19.983	20.471	20.969	22.112	22.676	23.251	27.128	27.877	28.644	41.403	42.431	43.479	-10
-5	16.085	16.442	16.806	17.489	17.893	18.304	20.774	21.290	21.817	33.171	33.918	34.678	-5
0	13.029	13.290	13.554	13.936	14.225	14.518	16.045	16.401	16.763	26.737	27.280	27.830	0
5	10.616	10.807	10.999	11.183	11.390	11.599	12.494	12.738	12.987	21.678	22.071	22.469	5
10	8.701	8.839	8.979	9.035	9.182	9.331	9.805	9.972	10.142	17.677	17.960	18.246	10
15	7.171	7.271	7.371	7.348	7.452	7.556	7.752	7.866	7.981	14.494	14.697	14.901	15
20	5.942	6.013	6.085	6.013	6.085	6.158	6.173	6.249	6.326	11.947	12.091	12.235	20
25	4.950	5.000	5.050	4.950	5.000	5.050	4.950	5.000	5.050	9.900	10.000	10.100	25
30	4.128	4.178	4.227	4.082	4.131	4.181	3.977	4.026	4.075	8.213	8.312	8.410	30
35	3.461	3.508	3.556	3.386	3.433	3.480	3.217	3.263	3.310	6.848	6.942	7.037	35
40	2.915	2.960	3.005	2.823	2.868	2.912	2.617	2.661	2.704	5.737	5.326	5.916	40
45	2.466	2.508	2.551	2.366	2.408	2.450	2.142	2.182	2.222	4.828	4.911	4.996	45
50	2.096	2.135	2.175	1.993	2.031	2.070	1.764	1.800	1.836	4.081	4.159	4.237	50
55	1.789	1.825	1.862	1.687	1.722	1.758	1.460	1.492	1.526	3.465	3.536	3.609	55
60	1.533	1.566	1.601	1.434	1.466	1.499	1.214	1.244	1.274	2.954	3.019	3.086	60
65	1.319	1.350	1.381	1.225	1.254	1.284	1.015	1.042	1.069	2.528	2.588	2.650	65
70	1.139	1.167	1.196	1.050	1.077	1.105	0.853	0.877	0.901	2.172	2.227	2.284	70
75	0.987	1.013	1.040	0.904	0.929	0.954	0.720	0.741	0.763	1.873	1.924	1.975	75
80	0.859	0.883	0.907	0.781	0.804	0.827	0.610	0.630	0.649	1.622	1.668	1.715	80
85	0.750	0.772	0.794	0.678	0.699	0.720	0.520	0.537	0.555	1.409	1.451	1.494	85
90	0.657	0.677	0.697	0.590	0.609	0.628	0.444	0.460	0.476	1.228	1.266	1.305	90
95	0.577	0.595	0.614	0.516	0.533	0.550	0.381	0.395	0.409	1.073	1.108	1.144	95
100	0.509	0.525	0.543	0.452	0.468	0.484	0.329	0.341	0.354	0.942	0.973	1.006	100
105	0.450	0.465	0.481	0.398	0.412	0.427	0.284	0.295	0.307	0.828	0.858	0.888	105
110	0.399	0.413	0.427	0.351	0.364	0.377	0.247	0.257	0.276	0.731	0.758	0.785	110
115	0.354	0.367	0.381	0.311	0.322	0.335	0.215	0.224	0.233	0.647	0.671	0.697	115
120	0.316	0.328	0.340	0.276	0.287	0.298	0.188	0.196	0.204	0.574	0.597	0.620	120
	β(25/85) = 3324°k±1%			β(25/50) = 3470°k±1%			β(25/85) = 3970°k±1%			β(25/85) = 3435°k±1%			

TEMP. (℃)	NTC 103 F 345 F RESISTANCE (kΩ) min.	center	max.	NTC 103 F 397 F RESISTANCE (kΩ) min.	center	max.	NTC 303 F 410 F RESISTANCE (kΩ) min.	center	max.	NTC 503 F 400 F RESISTANCE (kΩ) min.	center	max.	TEMP. (℃)
-40	169.631	176.333	183.282	318.580	333.282	348.627	1,213.700	1,272.777	1,334.597	1,725.952	1,807.065	1,891.800	-40
-35	132.926	137.838	142.917	230.926	240.799	251.068	853.509	891.887	931.876	1,237.474	1,291.283	1,347.297	-35
-30	104.548	108.148	111.862	169.167	175.846	182.770	608.288	633.461	659.610	897.685	933.686	971.035	-30
-25	82.544	85.194	87.909	125.187	129.735	134.434	439.036	455.702	472.953	658.495	682.763	707.855	-25
-20	65.459	67.394	69.379	93.546	96.659	99.866	320.694	331.813	343.283	488.196	504.660	521.628	-20
-15	52.129	53.546	54.997	70.557	72.697	74.895	236.923	244.389	252.065	365.624	376.852	388.387	-15
-10	41.696	42.733	43.792	53.695	55.171	56.683	176.928	181.966	187.129	276.483	284.171	292.043	-10
-5	33.501	34.259	35.030	41.214	42.234	43.275	133.481	136.892	140.375	211.011	216.287	221.673	-5
0	27.038	27.590	28.150	31.894	32.600	33.317	101.684	103.996	106.350	162.465	166.088	169.775	0
5	21.920	22.320	22.725	24.877	25.364	25.857	78.179	79.745	81.334	126.143	128.627	131.146	5
10	17.851	18.139	18.430	19.551	19.885	20.222	60.637	61.693	62.761	98.730	100.425	102.139	10
15	14.602	14.807	15.014	15.477	15.704	15.933	47.425	48.131	48.843	77.869	79.016	80.172	15
20	11.997	12.142	12.287	12.337	12.489	12.642	37.388	37.854	38.321	61.867	62.633	63.402	20
25	9.900	10.000	10.100	9.900	10.000	10.100	29.700	30.000	30.300	49.500	50.000	50.500	25
30	8.173	8.271	8.369	7.960	8.058	8.156	23.656	23.949	24.243	39.697	40.186	40.676	30
35	6.776	6.870	6.965	6.441	6.534	6.627	18.976	19.253	19.532	32.045	32.508	32.975	35
40	5.641	5.730	5.820	5.243	5.329	5.417	15.324	15.581	15.840	26.031	26.462	26.897	40
45	4.716	4.799	4.883	4.293	4.372	4.453	12.455	12.690	12.927	21.273	21.668	22.069	45
50	3.959	4.035	4.113	3.534	3.606	3.680	10.185	10.398	10.614	17.485	17.845	18.210	50
55	3.336	3.406	3.477	2.925	2.991	3.057	8.379	8.570	8.765	14.452	14.777	15.108	55
60	2.822	2.886	2.951	2.433	2.492	2.553	6.931	7.103	7.278	12.008	12.301	12.599	60
65	2.396	2.454	2.514	2.034	2.087	2.142	5.765	5.918	6.075	10.029	10.291	10.560	65
70	2.042	2.095	2.149	1.709	1.756	1.805	4.819	4.957	5.097	8.417	8.652	8.893	70
75	1.746	1.794	1.843	1.442	1.485	1.528	4.049	4.172	4.297	7.097	7.308	7.524	75
80	1.498	1.542	1.587	1.222	1.260	1.300	3.418	3.528	3.640	6.011	6.200	6.394	80
85	1.290	1.330	1.370	1.040	1.075	1.110	2.899	2.996	3.097	5.114	5.283	5.457	85
90	1.114	1.150	1.187	0.889	0.920	0.951	2.469	2.556	2.646	4.369	4.520	4.677	90
95	0.966	0.998	1.032	0.763	0.790	0.819	2.112	2.190	2.271	3.747	3.883	4.024	95
100	0.839	0.869	0.899	0.657	0.682	0.707	1.814	1.884	1.956	3.227	3.349	3.475	100
105	0.732	0.758	0.786	0.568	0.590	0.613	1.564	1.627	1.691	2.789	2.898	3.012	105
110	0.640	0.664	0.689	0.493	0.513	0.533	1.354	1.410	1.468	2.419	2.518	2.620	110
115	0.561	0.583	0.606	0.429	0.447	0.465	1.176	1.226	1.279	2.106	2.194	2.287	115
120	0.493	0.513	0.534	0.374	0.391	0.408	1.025	1.070	1.118	1.839	1.919	2.003	120
	β(25/50) = 3450°k±1%			β(25/85) = 3970°k±1%			β(25/85) = 4100°k±1%			β(25/85) = 4000°k±1%			

NTC DISC THERMISTOR

FOR TEMPERATURE SENSING / FOR TEMPERATURE COMPENSATION

NTC - 10K D-5 J

① ② ③ ④

① SYMBOL
② RESISTANCE AT 25℃ (10K : 10kΩ)
③ NOMINAL DIA. OF DISC (D-2: 2mm, D-5: 5mm)
④ RESISTANCE TOLERANCE
(F:±1%, G:±2%, H:±3%, J:±5%, K:±10%, L:±15%)

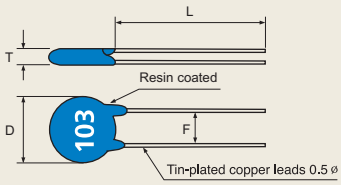
RATINGS

PART No.	Rtaed power at 25℃	Dissipation constant	Time constant	Operating temp. range
D - 2	100 mW	2.0mW/℃	10 sec	-40℃~120℃
D - 3	250 mW	3.0mW/℃	15 sec	
D - 5	500 mW	7.5mW/℃	20 sec	

DIMENSIONS

PART No.	D	T	L	F
D - 2	3.0 max.	2.0 max.	25 min.	2.0/5.0±0.5
D - 3	3.5 max.	3.0 max.	25 min.	2.0/5.0±0.5
D - 5	5.5 max.	4.0 max.	25 min.	2.5/5.0±0.5

Outline drawing



SPECIFICATION

D-2

PART No.	Resistance (25℃)	B Value (25℃/85℃)
100D - 2	100 Ω	3000
1KD - 2	1 kΩ	3100/3200
2KD - 2	2 kΩ	3200
5KD - 2	5 kΩ	3300
10KD - 2	10 kΩ	3300/3435/3970
20KD - 2	20 kΩ	3300
30KD - 2	30 kΩ	3300
50KD - 2	50 kΩ	4000/4400
100KD - 2	100 kΩ	4400/4700
150KD - 2	150 kΩ	4400/4700
500KD - 2	500 kΩ	4700
1MD - 2	1 MΩ	5000

D-3

PART No.	Resistance (25℃)	B Value (25℃/85℃)
100D - 3	100 Ω	3200
500D - 3	500 Ω	3400
1KD - 3	1 kΩ	3650
2KD - 3	2 kΩ	3650
3KD - 3	3 kΩ	3800
5KD - 3	5 kΩ	3800/3970
10KD - 3	10 kΩ	3700/3970
20KD - 3	20 kΩ	4000/4200
30KD - 3	30 kΩ	4000/4200
40KD - 3	40 kΩ	4000/4400
50KD - 3	50 kΩ	4000/4400
100KD - 3	100 kΩ	4400/4700
150KD - 3	150 kΩ	4400/4700
200KD - 3	200 kΩ	4400/4700
500KD - 3	500 kΩ	4850
1MD - 3	1 MΩ	4850

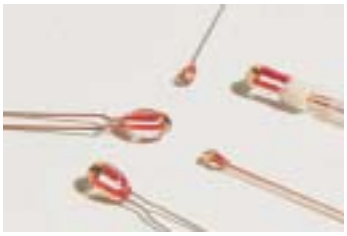
D-5

PART No.	Resistance (25℃)	B Value (25℃/85℃)
10D - 5	10 Ω	2800
20D - 5	20 Ω	3000
50D - 5	50 Ω	3100/3250
80D - 5	80 Ω	3300
100D - 5	100 Ω	3200/3300
200D - 5	200 Ω	3200/3400
250D - 5	250 Ω	3200/3400
300D - 5	300 Ω	3200/3500
360D - 5	360 Ω	3500
500D - 5	500 Ω	3200/3650
650D - 5	650 Ω	3200/3650
800D - 5	800 Ω	3650/3850
1KD - 5	1 kΩ	3650/3850/3950
1.2KD - 5	1.2 kΩ	3650/3850/3950
1.5KD - 5	1.5 kΩ	3650/3850/3950
2KD - 5	2 kΩ	4000
3KD - 5	3 kΩ	4000
5KD - 5	5 kΩ	4100
6.8KD - 5	6.8 kΩ	4100
8KD - 5	8 kΩ	4200
10KD - 5	10 kΩ	4200
15KD - 5	15 kΩ	4200/4300
20KD - 5	20 kΩ	4200/4400
30KD - 5	30 kΩ	4200/4400
50KD - 5	50 kΩ	4100/4400/4650
100KD - 5	100 kΩ	4100/4650/4850
150KD - 5	150 kΩ	4100/4850
200KD - 5	200 kΩ	4100/4850
250KD - 5	250 kΩ	4850
330KD - 5	330 kΩ	5000
400KD - 5	400 kΩ	5000
470KD - 5	470 kΩ	5000/5500
680KD - 5	680 kΩ	5000/5500
1MD - 5	1 MΩ	5000/5500

TEMP. (℃)	NTC 5 KD - 2J RESISTANCE (kΩ) min.	center	max.	NTC 20 KD - 2J RESISTANCE (kΩ) min.	center	max.	NTC 10 KD - 3J RESISTANCE (kΩ) min.	center	max.	NTC 100 KD - 3J RESISTANCE (kΩ) min.	center	max.	TEMP. (℃)
-40	76.765	88.067	100.781	725.850	855.174	1,005.019	314.377	368.748	431.440	4,350.999	5,155.043	6,092.402	-40
-35	59.587	67.827	77.013	516.348	601.971	700.037	225.592	261.906	303.305	3,041.577	3,563.964	4,165.629	-35
-30	46.592	52.632	59.308	371.682	428.932	493.764	163.927	188.444	216.087	2,153.051	2,496.021	2,886.390	-30
-25	36.690	41.142	46.019	270.582	309.208	352.466	120.542	137.259	155.904	1,542.412	1,769.760	2,025.541	-25
-20	29.093	32.389	35.969	199.112	225.388	254.494	89.642	101.143	113.835	1,117.623	1,269.645	1,438.739	-20
-15	23.223	25.675	28.315	148.032	166.039	185.769	67.378	75.354	84.064	818.671	921.118	1,033.795	-15
-10	18.658	20.489	22.443	111.141	123.559	137.022	51.158	56.729	62.750	605.934	675.445	751.047	-10
-5	15.085	16.456	17.908	84.228	92.839	102.076	39.218	43.133	47.620	452.937	500.372	551.393	-5
0	12.270	13.300	14.381	64.405	70.403	76.768	30.340	33.105	36.032	341.784	374.305	408.894	0
5	10.038	10.814	11.621	49.670	53.861	58.260	23.677	25.637	27.690	260.245	282.615	306.140	5
10	8.260	8.844	9.447	38.620	41.554	44.600	18.630	20.023	21.467	199.874	215.290	231.315	10
15	6.833	7.274	7.724	30.264	32.319	34.427	14.774	15.766	16.782	154.777	165.401	176.313	15
20	5.683	6.015	6.351	23.894	25.330	26.786	11.805	12.510	13.224	120.803	128.110	135.518	20
25	4.750	5.000	5.250	19.000	20.000	21.000	9.500	10.000	10.500	95.000	100.000	105.000	25
30	3.947	4.177	4.410	15.004	15.903	16.813	7.597	8.049	8.507	74.171	78.640	83.169	30
35	3.296	3.507	3.722	11.931	12.731	13.550	6.118	6.523	6.937	58.336	62.285	66.335	35
40	2.766	2.958	3.155	9.552	10.258	10.989	4.959	5.320	5.693	46.205	49.669	53.259	40
45	2.332	2.506	2.687	7.695	8.317	8.965	4.045	4.365	4.699	36.844	39.868	43.032	45
50	1.975	2.133	2.298	6.238	6.783	7.357	3.320	3.603	3.901	29.570	32.202	34.982	50
55	1.680	1.823	1.973	5.087	5.564	6.071	2.740	2.991	3.256	23.879	26.167	28.603	55
60	1.435	1.564	1.701	4.171	4.589	5.036	2.274	2.496	2.732	19.398	21.387	23.519	60
65	1.231	1.348	1.472	3.439	3.805	4.199	1.898	2.093	2.304	15.849	17.576	19.443	65
70	1.060	1.165	1.278	2.856	3.171	3.519	1.591	1.765	1.952	13.020	14.522	16.157	70
75	0.915	1.011	1.114	2.374	2.656	2.963	1.341	1.494	1.661	10.753	12.060	13.493	75
80	0.794	0.881	0.974	1.987	2.234	2.506	1.135	1.271	1.420	8.925	10.065	11.322	80
85	0.691	0.770	0.855	1.671	1.888	2.128	0.965	1.086	1.219	7.445	8.440	9.544	85
90	0.604	0.675	0.753	1.412	1.603	1.815	0.825	0.932	1.051	6.239	7.109	8.081	90
95	0.529	0.594	0.665	1.197	1.366	1.555	0.707	0.803	0.909	5.252	6.015	6.871	95
100	0.465	0.524	0.589	1.020	1.169	1.337	0.609	0.694	0.790	4.440	5.110	5.867	100
105	0.410	0.464	0.523	0.872	1.004	1.154	0.526	0.603	0.689	3.770	4.359	5.029	105
110	0.363	0.411	0.466	0.749	0.866	0.999	0.457	0.525	0.602	3.214	3.734	4.327	110
115	0.322	0.366	0.416	0.645	0.750	0.869	0.397	0.459	0.529	2.750	3.210	3.737	115
120	0.286	0.327	0.372	0.558	0.651	0.758	0.347	0.403	0.466	2.363	2.769	3.238	120
	β (25/85) = 3300°k ±3%			β (25/85) = 4200°k ±3%			β (25/85) = 3970°k ±3%			β (25/85) = 4400°k ±3%			

TEMP. (℃)	NTC 10 KD - 5J RESISTANCE (kΩ) min.	center	max.	NTC 50 KD- 5J RESISTANCE (kΩ) min.	center	max.	NTC 150 KD - 5J RESISTANCE (kΩ) min.	center	max.	NTC 470 KD-5J RESISTANCE (kΩ) min.	center	max.	TEMP. (℃)
-40	267.215	311.858	363.048	2,729.109	3,256.188	3,875.350	9,815.911	1,1777.577	14,095.946	307.566	36,903.179	44,167.422	-40
-35	199.515	230.753	266.214	1,866.595	2,201.083	2,589.022	6,597.369	7819.143	9,244.013	20,671.801	24,500.039	28,964.641	-35
-30	149.834	171.765	196.414	1,293.941	1,508.617	1,754.513	4,497.369	5267.447	6,153.961	14,091.782	16,504.698	19,282.449	-30
-25	113.194	128.642	145.832	908.522	1,047.732	1,205.252	3,107.395	3598.092	4,155.861	9,736.520	11,274.041	13,021.720	-25
-20	86.029	96.944	108.969	645.728	736.849	838.726	2,174.722	2490.496	2,844.992	6,814.136	7,803.566	8,914.321	-20
-15	65.780	73.513	81.949	464.309	524.452	590.905	1,540.688	1745.691	1,973.027	4,827.494	5,469.837	6,182.157	-15
-10	50.602	56.094	62.026	337.577	377.564	421.231	1,104.279	1238.392	1,385.321	3,460.077	3,880.299	4,340.678	-10
-5	39.160	43.067	47.246	248.041	274.790	303.663	800.312	888.617	984.198	2,507.647	2,784.335	3,083.824	-5
0	30.487	33.270	36.216	184.098	202.080	221.263	586.183	644.624	707.118	1,836.709	2,019.822	2,215.638	0
5	23.873	25.856	27.934	137.959	150.089	162.876	433.700	472.515	513.517	1,358.928	1,480.548	1,609.020	5
10	18.803	20.215	21.679	104.337	112.534	121.072	323.988	34.981	376.755	1,015.162	1,096.085	1,180.500	10
15	14.893	15.897	16.925	79.604	85.142	90.839	244.266	261.443	279.129	765.367	819.190	874.606	15
20	11.862	12.573	13.292	61.245	64.977	68.765	185.786	197.175	208.740	582.131	617.817	654.052	20
25	9.500	10.000	10.500	47.500	50.000	52.500	142.500	150.000	157.500	446.500	470.000	493.500	25
30	7.546	7.996	8.453	36.561	38.780	41.030	108.441	115.060	121.778	339.783	360.523	381.573	30
35	6.027	6.429	6.840	28.362	30.306	32.303	83.199	88.962	94.885	260.693	278.748	297.309	35
40	4.840	5.195	5.563	22.166	23.856	25.612	64.334	69.307	74.478	201.582	217.164	233.365	40
45	3.906	4.220	4.547	17.448	18.910	20.443	50.121	54.389	58.873	157.046	170.420	184.471	45
50	3.169	3.444	3.734	13.829	15.089	16.424	39.329	42.980	46.854	123.231	134.673	146.810	50
55	2.584	2.825	3.081	11.033	12.118	13.277	31.073	34.192	37.531	97.364	107.138	117.597	55
60	2.117	2.328	2.553	8.858	9.791	10.796	24.714	27.376	30.250	77.437	85.780	94.785	60
65	1.742	1.927	2.125	7.155	7.958	8.830	19.780	22.054	24.528	61.980	69.104	76.855	65
70	1.440	1.602	1.777	5.813	6.505	7.261	15.929	17.872	20.002	49.910	56.000	62.675	70
75	1.196	1.337	1.492	4.749	5.346	6.002	12.902	14.565	16.402	40.427	45.639	51.393	75
80	0.997	1.121	1.257	3.901	4.416	4.987	10.509	11.935	13.521	32.930	37.398	42.366	80
85	0.835	0.944	1.064	3.221	3.667	4.164	8.607	9.831	11.202	26.969	30.806	35.102	85
90	0.702	0.797	0.903	2.672	3.059	3.493	7.085	8.139	9.327	22.201	25.505	29226	90
95	0.593	0.676	0.770	2.228	2.564	2.943	5.862	6.771	7.803	18.368	21.218	24.449	95
100	0.502	0.576	0.659	1.866	2.159	2.491	4.873	5.660	6.557	15.271	17.735	20.546	100
105	0.427	0.492	0.565	1.570	1.825	2.117	4.070	4.752	5.534	12.754	14.890	17.341	105
110	0.364	0.422	0.487	1.326	1.550	1.806	3.415	4.007	4.690	10.700	12.556	14.698	110
115	0.312	0.363	0.421	1.125	1.321	1.547	2.877	3.393	3.992	9.016	10.633	12.508	115
120	0.268	0.313	0.365	0.958	1.130	1.330	2.434	2.885	3.410	7.628	9.040	10.686	120
	β (25/85) = 4200°k ±3%			β (25/85) = 4650°k ±3%			β (25/85) = 4850°k ±3%			β (25/85) = 5000°k ±3%			

NTC CHIP IN GLASS THERMISTOR

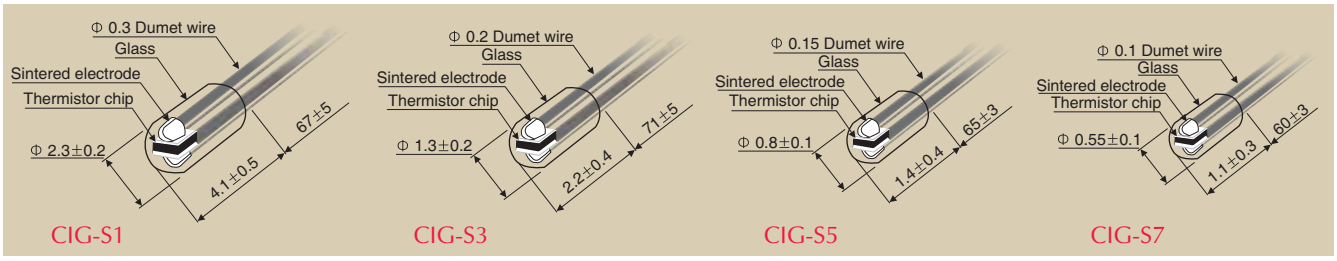


The Glass chip type thermistor is sealed in glass, Heat resistive and highly stable.
Economical to use in large or small quantities. Suitable for instruments and other applications requiring low power and high reliability.

CIG - 103 F 343 F - S1
① ② ③ ④ ⑤ ⑥

① SYMBOL
② (103 : 10kΩ)
③ RESISTANCE TOLERANCE (F : ±1%)
④ B VALUE
⑤ B TOLERANCE (F : ±1%)
⑥ GLASS TYPE : CIG-S1

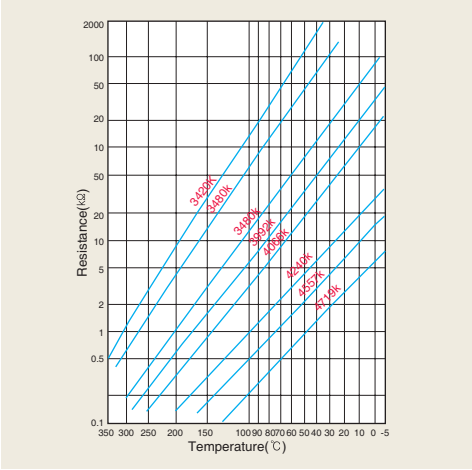
DIMENSIONS



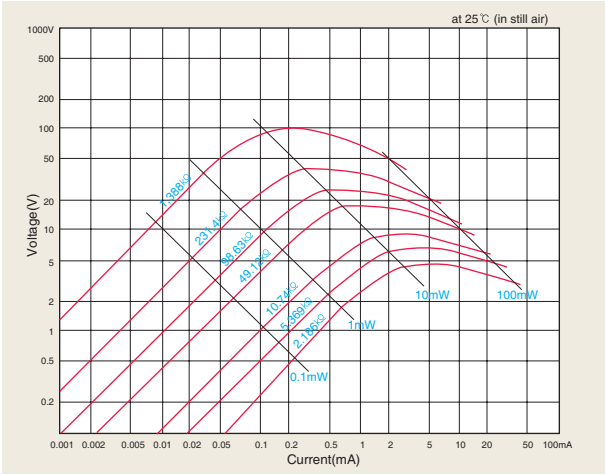
SPECIFICATIONS

Shape \ Item	Operating temperature range	Thermal time constant (in still air)	Dissipation constant (instill air)	Insulation resistance (between lead and glass)
CIG-S1	-50℃ ~ +300℃ (-58°F ~ +572°F)	10 sec. ~ 17 sec.	1.3 mW/℃	Min. 50 MΩ (500 V d.c.)
CIG-S3		3.5 sec. ~ 6.5 sec.	0.75 mW/℃	Min. 10 MΩ (50 V d.c.)
CIG-S5	-50℃ ~ +300℃ (-58°F ~ +572°F)	1.7 sec. ~ 2.9 sec.	0.4 mW/℃	
CIG-S7		0.6 sec. ~ 1.5 sec.	0.25 mW/℃	

RESISTANCE vs. TEMPERATURE CURVES



I-V CURVES (PSB-S3)



STANDARD R/T CURVES OF CHIP IN GLASS THERMISTOR

Unit : kΩ

B constant (25/85℃)		3420K	3480K	3480K	3992K	4066K	4240K	4557K	4719K
Temperature ℃	℉								
-50	-58	77.582	203.98	407.96					
-45	-49	57.692	150.72	301.43					
-40	-40	43.340	112.54	225.09					
-35	-31	32,874	84.884	169.77					
-30	-22	25.166	64.632	129.26					
-25	-13	19.433	49.658	99.316	657.35	1317.4			
-20	-4	15.132	38.481	76.963	487.37	980.54			
-15	5	11,876	30.065	60.129	365.04	736.79			
-10	14	9.3920	23.672	47.344	276.06	558.64			
-5	23	7.4810	18.777	37.554	210.69	427.22			
0	32	6.0000	15.000	30.000	162.21	329.40	806.46		
5	41	4.8440	12.064	24.128	125.78	254.96	618.94		
10	50	3.9355	9.7654	19.531	98.322	198.90	478.76		
15	59	3.2167	7.9537	15.907	77.454	156.33	373.11		
20	68	2.6445	6.5165	13.033	61.465	123.75	292.85		
25	77	2.1862	5.3694	10.739	49.120	98.633	231.44	1388.1	3643.2
30	86	1.8169	4.4482	8.8965	39.517	79.126	184.11	1085.0	2830.5
35	95	1.5178	3.7044	7.4088	31.996	63.874	147.37	853.90	2213.2
40	104	1.2741	3.1004	6.2007	26.065	51.870	118.68	676.47	1741.3
45	113	1.0747	2.6073	5.2147	21.358	42.364	96.126	539.29	1378.3
50	122	0.91057	2.2029	4.4057	17.599	34.790	78.291	432.53	1097.2
55	131	0.77491	1.8694	3.7388	14.579	28.721	64.104	348.92	878.28
60	140	0.66224	1.5932	3.1865	12.140	23.831	52.757	283.03	706.81
65	149	0.56826	1.3634	2.7269	10.159	19.869	43.633	230.82	571.77
70	158	0.48953	1.1714	2.3429	8.5415	16.643	36.258	189.20	464.83
75	167	0.42330	1.0103	2.0207	7.2142	14.004	30.266	155.86	379.72
80	176	0.36737	0.87459	1.7492	6.1198	11.834	25.376	129.00	311.64
85	185	0.31996	0.75978	1.5196	5.2134	10.042	21.366	107.25	256.92
90	194	0.27961	0.66232	1.3246	4.4591	8.5558	18.064	89.570	212.73
95	203	0.24516	0.57927	1.1585	3.8288	7.3175	15.332	75.118	176.89
100	212	0.21563	0.50826	1.0165	3.3000	6.2818	13.062	63.256	147.69
105	221	0.19025	0.44734	0.89468	2.8545	5.4120	11.170	53.477	123.80
110	230	0.16835	0.39490	0.78980	2.4777	4.6788	9.5853	45.382	104.16
115	239	0.14940	0.34962	0.69924	2.1579	4.0585	8.2539	38.654	87.970
120	248	0.13296	0.31040	0.62080	1.8855	3.5319	7.1309	33.041	74.563
125	257	0.11864	0.27633	0.55266	1.6526	3.0832	6.1806	28.339	63.421
130	266	0.10615	0.24665	0.49329	1.4529	2.6996	5.3735	24.387	54.126
135	275	0.095208	0.22071	0.44143	1.2811	2.3707	4.6859	21.054	46.346
140	284	0.085608	0.19800	0.39599	1.1327	2.0877	4.0982	18.232	39.811
145	293	0.077159	0.17804	0.35608	1,0043	1.8436	3.5943	15.837	34.304
150	302	0.069706	0.16047	0.32094	0.89279	1.6323	3.1610	13.796	29.648
155	311	0.063114	0.14496	0.28992	0.79570	1.4490	2.7873	12.052	25.699
160	320	0.057271	0.13124	0.26248	0.71092	1.2894	2.4641	10.557	22.340
165	329	0.052079	0.11907	0.23813	0.63670	1.1502	2.1839	9.2719	19.474
170	338	0.047455	0.10825	0.21649	0.57155	1.0285	1.9402	8.1463	17.021
175	347	0.043329	0.098606	0.19721	0.51423	0.92168	1.7277	7.2069	14.916
180	356	0.039639	0.090001	0.18000	0.46367	0.82781	1.5421	6.3772	13.105
185	365	0.036332	0.082302	0.16460	0.41896	0.74509	1.3794	5.6563	11.542
190	374	0.033362	0.075401	0.15080	0.37935	0.67203	1.2366	5.0283	10.191
195	383	0.030690	0.069202	0.13840	0.34416	0.60737	1.1109	4.4800	9.0189
200	392	0.028281	0.063624	0.12725	0.31285	0.55000	1.0000	4.0000	8.0000
205	401				0.28492	0.49900	0.90197	3.5789	7.1121
210	410				0.25996	0.45358	0.81512	3.2087	6.3367
215	419				0.23761	0.41303	0.73802	2.8825	5.6578
220	428				0.21755	0.37677	0.66944	2.5944	5.0621
225	437				0.19952	0.34428	0.60831	2.3395	4.5834
230	446				0.18329	0.31512	0.55373	2.1135	4.0769
235	455				0.16864	0.28890	0.50490	1.9127	3.6694
240	464				0.15541	0.26527	0.46114	1.7340	3.3089
245	478				0.14343	0.24396	0.42184	1.5746	2.9892
250	482				0.13257	0.22469	0.38650	1.4323	2.7054
255	491				0.12270	0.20725	0.35467	1.3049	2.4527
260	500				0,11373	0.19143	0.32594	1.1907	2.2275
265	509				0,10555	0.17707	0.29998	1.0881	2.0264
270	518				0.098098	0.16400	0.27648	0.99584	1.8464
275	527				0.091286	0.15211	0.25517	0.91273	1.6852
280	536				0.085054	0.14125	0.23582	0.83774	1.5404
285	545				0.079344	0.13134	0.21823	0.76997	1.4102
290	554				0.074106	0.12227	0.20222	0.70864	1.2930
295	563				0.069295	0.11397	0.18761	0.65305	1.1872
300	572				0.064870	0.10635	0.17428	0.60260	1.0917
305	581								1.0053
310	590								0.92690
315	599								0.85590
320	608								0.79130
325	617								0.73250
330	626								0.67900
335	635								0.63020
340	644								0.58550
345	653								0.54470
350	662								0.50730
R(25℃)		2.1862kΩ	5.369kΩ	10.74kΩ	49.12kΩ	98.63kΩ	231.4kΩ	1,388kΩ	3,643kΩ

NTC POWER THERMISTOR

The POWER THERMISTOR is a device for suppressing inrush current to an electric circuit.
Circuits including electric bulbs or capacitors induce an inrush current more than 100 times the normal current when the circuit switch is turned on. The POWER THERMISTOR in the circuits protects electric equipments from being damaged by limiting the inrush current.

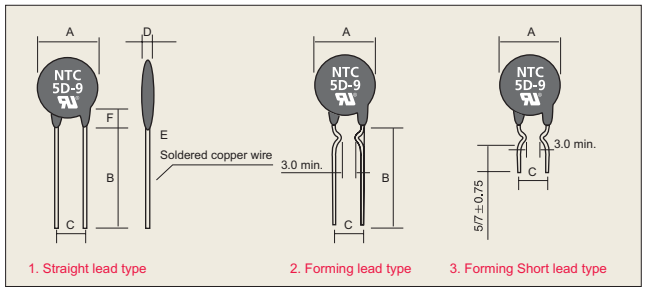
NTC - 5 D-9 (F)
① ② ③ ④

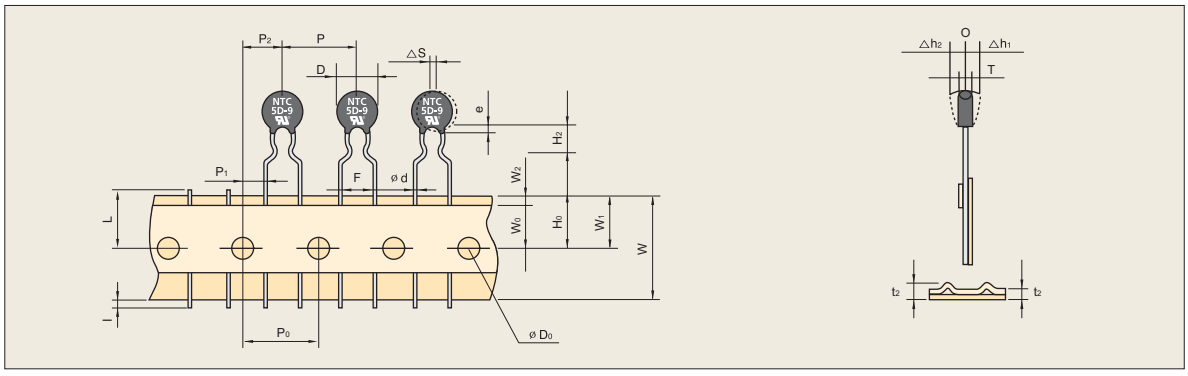
① SYMBOL
② RESISTANCE AT 25℃ (5 : 5Ω)
③ ELEMENT DIAMETER (9 : 9Φ)
④ TYPE (S : Straight, F : Forming, TP : Taping)

DIMENSIONS

(unit : mm)

PART No.	A	B	C	D	E	F
D - 7	9.5 max.	25 min.	5±1	5 max.	ø 0.6	5 max.
D - 9	10.5 max.	25 min.	5±1	5 max.	ø 0.6	5 max.
D - 11	12.5 max.	25 min.	7.5±1	5 max.	ø 0.8	5 max.
D - 13	14.5 max.	25 min.	7.5±1	5 max.	ø 0.8	5 max.
D - 15	16.5 max.	25 min.	10±1	5 max.	ø 0.8	5 max.
D - 18	22.5 max.	25 min.	10±1	5 max.	ø 0.8	5 max.
D - 22	24.5 max.	25 min.	10±1	5 max.	ø 0.8	5 max.
D - 30	32.5 max.	25 min.	10±1	5 max.	ø 1.0	5 max.





Item	Code	Dimension(mm)
Pitch of Component	P	12.7
Pitch of Sproket Hole	P_0	12.7±0.3
Lead Spacing	F	$5.0^{+0.8}_{-0.2}$
Lead Length from Hole Center to Component Center	P_2	6.35±1.3
Lead Length from Hole Center toLead	P_1	3.85±0.8
Body Diameter	D	9.5/10.5 max.
Deviation along Tape, Left or Right	△S	0±2.0
Carrier Tape Width	W	18.0±0.5
Position of Sproket Hole	W_1	9.0±0.5
Lead Distance between Reference and Bottom Planes	H_0	16.0±1.0

Item	Code	Dimension(mm)
Height of Component	H_2	4.0 max.
Overflow of Lead	I	+0.5 to -1.0
Diameter of Sproket Hole	D_0	4.0±0.1
Lead Diameter	d	0.5±0.03
Total Tape Thickness	t_1	0.6±0.3
Total Thickness(Tape and Lead Wire)	t_2	1.5 max.
Deviation Across Tape	$△h_1$, h_2	1.0 max.
Portion to Cut in Case of Defect	L	$11.0^{+0}_{-2.0}$
Hole Down Tape Width	W_0	11.0 min.
Hole Down Tape Position	W_2	1.5±1.5
Coating Extention on Lead	e	to line A
Thickness	T	5.0 max.

● Taping Type is available for standard type only.

How to use the power thermistor

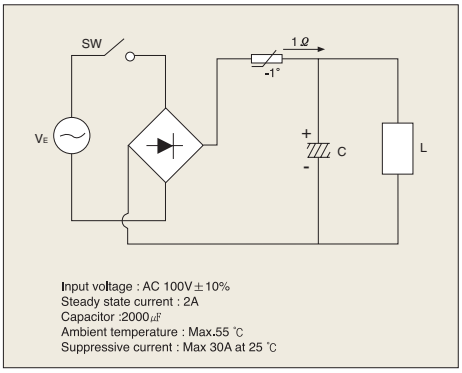
The most suitable power thermistor for the above circuit is required to fulfill the following terms and conditions.

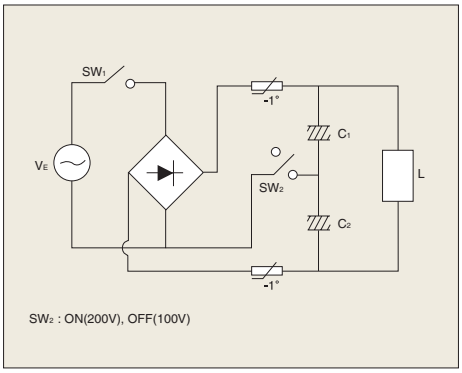
1. The permissible current at ambient temperature of 55℃ should be over 2A.
2. The thermistor resistance for suppressive current which becomes below 30A should be over 4.2 ohm from the under-mentioned formula.

$$\frac{\sqrt{2}\,V_E \times 1.1 \leqq 30}{R_C + R_{25}}$$

R_C : Intial resistance value in the circuit is 1 ohm (100V/100A)
R_{25} : Rated zero-power resistance at 25℃

3. Max. capacitance shall be over 2000 ㎌ at AC 100V.
   Accordingly, suitable thermistors are 6D-22, 5D-18 and 8D-18, and if we consider in the points of small time constant which means a small size and large effect for suppressive current which means large rated zero power resistance, 8D-18 is the most suitable one.
   Use the following circuit in the power supply for 100V and 200V.





SPECIFICATIONS

PART No.	R25℃(Ω) (±20%)	B value B25/85(K)	Max. rating current at 25℃(A)	Residual resistance(Ω)	Thermal Dissipation Factor δ (㎽/℃)	Thermal Time Constant (sec)	Maximum Capacitance (㎌) AC100V	AC240V
NTC 5D-7	5	2800	2	0.23	9	35	200	34
NTC 8D-7	8	3000	2	0.29	9	35	250	43
NTC 10D-7	10	3000	2	0.37	9	30	254	44
NTC 16D-7	16	3000	1.5	0.59	12	30	283	49
NTC 22D-7	22	3100	1.5	0.81	10	32	310	50
NTC 50D-7	50	3300	1.5	1.85	8	28	510	80
NTC 5D-9	5	3000	3	0.18	9	42	400	69
NTC 8D-9	8	3000	3	0.22	9	42	550	97
NTC 10D-9	10	3000	3	0.28	9	42	680	118
NTC 16D-9	16	3000	2	0.45	12	45	700	120
NTC 22D-9	22	3100	2	0.62	12	50	700	120
NTC 50D-9	50	3300	2	1.41	10	47	800	140
NTC 5D-11	5	3000	4	0.18	13	45	900	150
NTC 8D-11	8	3000	3	0.28	12	45	1400	240
NTC 10D-11	10	3000	3	0.35	12	45	1800	480
NTC 5D-13	5	3000	5	0.18	20	74	900	150
NTC 8D-13	8	3000	4	0.17	15	83	1400	240
NTC 10D-13	10	3000	4	0.35	17	75	1400	240
NTC 2.5D-15	2.5	2800	7	0.09	20	75	1560	270
NTC 3D-15	3	2900	7	0.11	20	70	1640	280
NTC 5D-15	5	3000	6	0.18	20	76	1640	280
NTC 7D-15	7	3000	5	0.24	21	80	2030	350
NTC 8D-15	8	3000	5	0.26	19	85	2030	350
NTC 10D-15	10	3000	5	0.28	17	75	2030	350
NTC 16D-15	16	3300	4	0.45	22	85	2540	440
NTC 5D-18	5	3000	7	0.11	25	120	2500	430
NTC 8D-18	8	3100	7	0.18	27	150	4100	710
NTC 10D-18	10	3100	7	0.25	28	150	5000	860
NTC 3D-22	3	2900	8	0.11	24	140	8500	1470
NTC 5D-22	5	3000	7	0.18	24	140	11000	1900
NTC 6D-22	6	3000	7	0.22	24	140	11000	1900
NTC 10D-22	10	3100	6	0.16	25	142	17000	2950
NTC 1D-30	1	2900	20	0.074	48	180	25000	4300
NTC 2D-30	2	2900	20	0.074	48	180	28000	4800