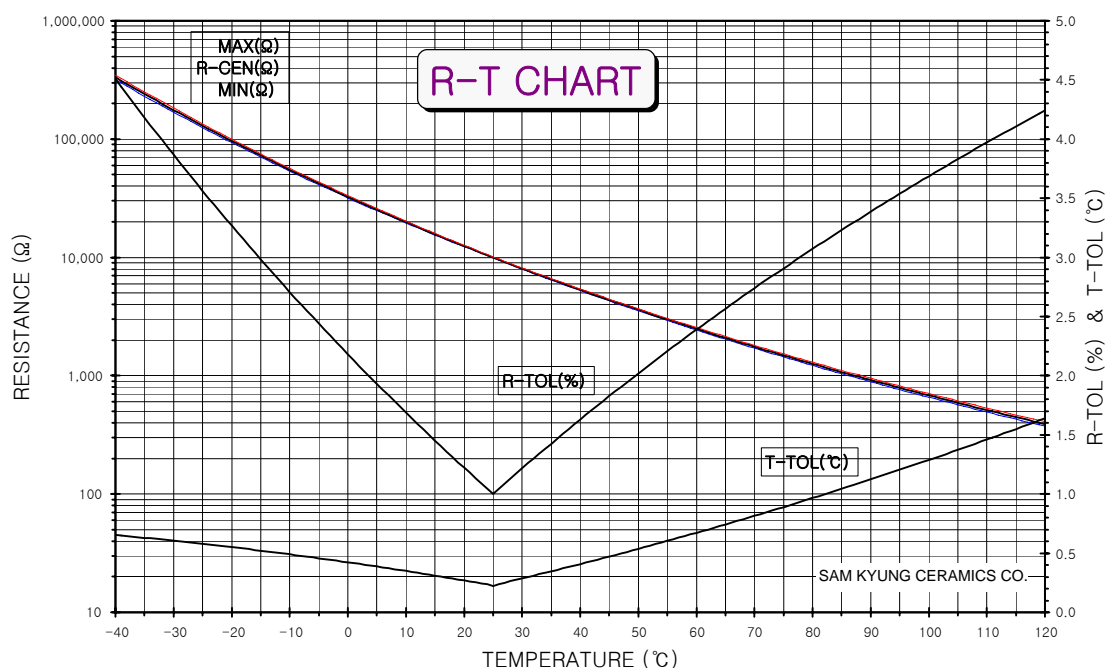


# R-T Characteristics & Tolerance

Part Name **NTC THERMISTOR**  
 Customer  
 Part No. **NTC-103F397F**  
 Usage / Remark  
 Recorder **Y.S HWA**  
 Center-Temp / R-Value **25.0°C/10.00kΩ**  
 R-Tolerance of Center-Temp **1.00%**  
 Test Conditon **Un Loaded**  
 β-Range **25/85**  
 β-Value **3970K**  
 β-Tolerance **1.00%**



L : 0.0°C=32,600.00Ω  
 M : 25.0°C=10,000.00Ω  
 H : 85.0°C=1,074.60Ω

TEMP. (°C)	RESISTANCE (Ω)			RESIST.-TOL. (%)		TEMP.-TOL. (°C)	
	MIN	CENTER	MAX	MAX	MIN	MAX	MIN
-40	318417.75	<b>333110.21</b>	348445.8	4.60	4.41	0.67	0.64
-39	298320.39	<b>311880.07</b>	326023.5	4.53	4.35	0.66	0.64
-38	279613.35	<b>292131.57</b>	305179.7	4.47	4.29	0.66	0.63
-37	262192.72	<b>273753.09</b>	285794.6	4.40	4.22	0.65	0.63
-36	245962.89	<b>256641.96</b>	267757.9	4.33	4.16	0.65	0.62
-35	230835.84	<b>240703.76</b>	250968.4	4.26	4.10	0.64	0.62
-34	216730.52	<b>225851.57</b>	235332.9	4.20	4.04	0.64	0.61
-33	203572.26	<b>212005.38</b>	220765.8	4.13	3.98	0.63	0.61
-32	191292.22	<b>199091.47</b>	207188.0	4.07	3.92	0.63	0.60
-31	179826.93	<b>187041.91</b>	194526.9	4.00	3.86	0.62	0.60
-30	169117.82	<b>175794.07</b>	182715.6	3.94	3.80	0.62	0.59
-29	159110.84	<b>165290.18</b>	171692.3	3.87	3.74	0.61	0.59
-28	149756.08	<b>155476.92</b>	161400.2	3.81	3.68	0.61	0.58
-27	141007.44	<b>146305.08</b>	151786.6	3.75	3.62	0.60	0.58
-26	132822.29	<b>137729.21</b>	142803.1	3.68	3.56	0.59	0.57
-25	125161.26	<b>129707.28</b>	134405.0	3.62	3.50	0.59	0.57
-24	117987.88	<b>122200.49</b>	126550.8	3.56	3.45	0.58	0.56
-23	111268.46	<b>115172.92</b>	119202.5	3.50	3.39	0.58	0.56
-22	104971.76	<b>108591.35</b>	112324.5	3.44	3.33	0.57	0.55
-21	99068.88	<b>102425.03</b>	105884.3	3.38	3.28	0.56	0.55
-20	93533.03	<b>96645.50</b>	99851.5	3.32	3.22	0.56	0.54

TEMP. (℃)	RESISTANCE (Ω)			RESIST.-TOL. (%)		TEMP.-TOL. (℃)	
	MIN	CENTER	MAX	MAX	MIN	MAX	MIN
-19	88339.39	<b>91226.37</b>	94198.3	3.26	3.16	0.55	0.54
-18	83464.93	<b>86143.21</b>	88898.5	3.20	3.11	0.55	0.53
-17	78888.30	<b>81373.35</b>	83928.3	3.14	3.05	0.54	0.53
-16	74589.68	<b>76895.79</b>	79265.3	3.08	3.00	0.53	0.52
-15	70550.67	<b>72691.02</b>	74888.8	3.02	2.94	0.53	0.51
-14	66754.19	<b>68740.94</b>	70779.7	2.97	2.89	0.52	0.51
-13	63184.35	<b>65028.74</b>	66920.3	2.91	2.84	0.52	0.50
-12	59826.40	<b>61538.82</b>	63293.9	2.85	2.78	0.51	0.50
-11	56666.61	<b>58256.65</b>	59885.3	2.80	2.73	0.50	0.49
-10	53692.23	<b>55168.76</b>	56680.2	2.74	2.68	0.50	0.48
-9	50891.38	<b>52262.59</b>	53665.4	2.68	2.62	0.49	0.48
-8	48253.00	<b>49526.48</b>	50828.5	2.63	2.57	0.48	0.47
-7	45766.78	<b>46949.56</b>	48158.1	2.57	2.52	0.48	0.47
-6	43423.15	<b>44521.71</b>	45643.5	2.52	2.47	0.47	0.46
-5	41213.15	<b>42233.51</b>	43274.8	2.47	2.42	0.46	0.45
-4	39128.46	<b>40076.19</b>	41042.8	2.41	2.36	0.45	0.45
-3	37161.30	<b>38041.55</b>	38938.8	2.36	2.31	0.45	0.44
-2	35304.41	<b>36121.98</b>	36954.8	2.31	2.26	0.44	0.43
-1	33551.04	<b>34310.34</b>	35083.3	2.25	2.21	0.43	0.43
0	31894.85	<b>32600.00</b>	33317.4	2.20	2.16	0.43	0.42
1	30329.96	<b>30984.76</b>	31650.5	2.15	2.11	0.42	0.41
2	28850.83	<b>29458.82</b>	30076.6	2.10	2.06	0.41	0.41
3	27452.33	<b>28016.78</b>	28590.0	2.05	2.01	0.40	0.40
4	26129.62	<b>26653.58</b>	27185.3	2.00	1.97	0.40	0.39
5	24878.21	<b>25364.49</b>	25857.7	1.94	1.92	0.39	0.38
6	23693.87	<b>24145.10</b>	24602.5	1.89	1.87	0.38	0.38
7	22572.65	<b>22991.27</b>	23415.3	1.84	1.82	0.37	0.37
8	21510.87	<b>21899.14</b>	22292.2	1.79	1.77	0.37	0.36
9	20505.06	<b>20865.08</b>	21229.3	1.75	1.73	0.36	0.36
10	19551.98	<b>19885.70</b>	20223.1	1.70	1.68	0.35	0.35
11	18648.59	<b>18957.83</b>	19270.3	1.65	1.63	0.34	0.34
12	17792.04	<b>18078.49</b>	18367.7	1.60	1.58	0.34	0.33
13	16979.66	<b>17244.89</b>	17512.5	1.55	1.54	0.33	0.33
14	16208.94	<b>16454.40</b>	16701.9	1.50	1.49	0.32	0.32
15	15477.53	<b>15704.59</b>	15933.4	1.46	1.45	0.31	0.31
16	14783.22	<b>14993.15</b>	15204.5	1.41	1.40	0.30	0.30
17	14123.95	<b>14317.91</b>	14513.1	1.36	1.35	0.30	0.29
18	13497.75	<b>13676.85</b>	13856.9	1.32	1.31	0.29	0.29
19	12902.81	<b>13068.07</b>	13234.1	1.27	1.26	0.28	0.28
20	12337.40	<b>12489.76</b>	12642.7	1.22	1.22	0.27	0.27
21	11799.91	<b>11940.26</b>	12081.1	1.18	1.18	0.26	0.26
22	11288.81	<b>11417.97</b>	11547.5	1.13	1.13	0.25	0.25
23	10802.68	<b>10921.42</b>	11040.4	1.09	1.09	0.25	0.25
24	10340.16	<b>10449.20</b>	10558.3	1.04	1.04	0.24	0.24
25	9900.00	<b>10000.00</b>	10100.0	1.00	1.00	0.22	0.22
26	9472.71	<b>9572.58</b>	9672.5	1.04	1.04	0.24	0.24
27	9066.21	<b>9165.77</b>	9265.5	1.09	1.09	0.25	0.25
28	8679.38	<b>8778.48</b>	8877.8	1.13	1.13	0.26	0.26
29	8311.16	<b>8409.67</b>	8508.5	1.18	1.17	0.28	0.27
30	7960.58	<b>8058.36</b>	8156.5	1.22	1.21	0.29	0.29
31	7626.68	<b>7723.64</b>	7821.1	1.26	1.26	0.30	0.30
32	7308.61	<b>7404.65</b>	7501.2	1.30	1.30	0.31	0.31
33	7005.52	<b>7100.56</b>	7196.2	1.35	1.34	0.32	0.32
34	6716.65	<b>6810.60</b>	6905.2	1.39	1.38	0.34	0.33
35	6441.24	<b>6534.05</b>	6627.5	1.43	1.42	0.35	0.34
36	6178.61	<b>6270.22</b>	6362.6	1.47	1.46	0.36	0.36
37	5928.10	<b>6018.46</b>	6109.6	1.51	1.50	0.37	0.37
38	5689.09	<b>5778.16</b>	5868.0	1.56	1.54	0.38	0.38
39	5461.00	<b>5548.75</b>	5637.3	1.60	1.58	0.40	0.39
40	5243.27	<b>5329.67</b>	5416.9	1.64	1.62	0.41	0.41
41	5035.39	<b>5120.41</b>	5206.3	1.68	1.66	0.42	0.42
42	4836.85	<b>4920.48</b>	5005.1	1.72	1.70	0.44	0.43
43	4647.20	<b>4729.42</b>	4812.6	1.76	1.74	0.45	0.44
44	4465.99	<b>4546.79</b>	4628.6	1.80	1.78	0.46	0.46
45	4292.80	<b>4372.18</b>	4452.6	1.84	1.82	0.47	0.47
46	4127.25	<b>4205.21</b>	4284.2	1.88	1.85	0.49	0.48
47	3968.95	<b>4045.48</b>	4123.1	1.92	1.89	0.50	0.49
48	3817.55	<b>3892.67</b>	3968.9	1.96	1.93	0.51	0.51
49	3672.73	<b>3746.43</b>	3821.2	2.00	1.97	0.53	0.52
50	3534.16	<b>3606.45</b>	3679.9	2.04	2.00	0.54	0.53

TEMP. (℃)	RESISTANCE (Ω)			RESIST.-TOL. (%)		TEMP.-TOL. (℃)	
	MIN	CENTER	MAX	MAX	MIN	MAX	MIN
51	3401.54	<b>3472.44</b>	3544.5	2.07	2.04	0.55	0.55
52	3274.59	<b>3344.10</b>	3414.7	2.11	2.08	0.57	0.56
53	3153.04	<b>3221.18</b>	3290.5	2.15	2.12	0.58	0.57
54	3036.64	<b>3103.41</b>	3171.3	2.19	2.15	0.60	0.59
55	2925.13	<b>2990.56</b>	3057.2	2.23	2.19	0.61	0.60
56	2818.30	<b>2882.40</b>	2947.7	2.26	2.22	0.62	0.61
57	2715.92	<b>2778.71</b>	2842.7	2.30	2.26	0.64	0.63
58	2617.79	<b>2679.29</b>	2742.0	2.34	2.30	0.65	0.64
59	2523.71	<b>2583.93</b>	2645.3	2.38	2.33	0.67	0.65
60	2433.49	<b>2492.46</b>	2552.6	2.41	2.37	0.68	0.67
61	2346.96	<b>2404.70</b>	2463.6	2.45	2.40	0.69	0.68
62	2263.96	<b>2320.47</b>	2378.2	2.49	2.44	0.71	0.69
63	2184.31	<b>2239.63</b>	2296.1	2.52	2.47	0.72	0.71
64	2107.86	<b>2162.02</b>	2217.3	2.56	2.50	0.74	0.72
65	2034.49	<b>2087.49</b>	2141.7	2.59	2.54	0.75	0.74
66	1964.04	<b>2015.90</b>	2068.9	2.63	2.57	0.77	0.75
67	1896.38	<b>1947.14</b>	1999.1	2.67	2.61	0.78	0.76
68	1831.40	<b>1881.07</b>	1931.9	2.70	2.64	0.80	0.78
69	1768.97	<b>1817.57</b>	1867.3	2.74	2.67	0.81	0.79
70	1708.99	<b>1756.54</b>	1805.2	2.77	2.71	0.83	0.81
71	1651.34	<b>1697.86</b>	1745.5	2.81	2.74	0.84	0.82
72	1595.92	<b>1641.44</b>	1688.1	2.84	2.77	0.86	0.83
73	1542.64	<b>1587.17</b>	1632.8	2.88	2.81	0.87	0.85
74	1491.41	<b>1534.97</b>	1579.7	2.91	2.84	0.89	0.86
75	1442.13	<b>1484.75</b>	1528.5	2.94	2.87	0.90	0.88
76	1394.73	<b>1436.42</b>	1479.21	2.98	2.90	0.92	0.89
77	1349.12	<b>1389.91</b>	1431.78	3.01	2.93	0.93	0.91
78	1305.23	<b>1345.13</b>	1386.11	3.05	2.97	0.95	0.92
79	1262.98	<b>1302.01</b>	1342.12	3.08	3.00	0.96	0.94
80	1222.31	<b>1260.49</b>	1299.74	3.11	3.03	0.98	0.95
81	1183.15	<b>1220.50</b>	1258.91	3.15	3.06	1.00	0.97
82	1145.43	<b>1181.97</b>	1219.56	3.18	3.09	1.01	0.98
83	1109.11	<b>1144.85</b>	1181.64	3.21	3.12	1.03	1.00
84	1074.11	<b>1109.08</b>	1145.08	3.25	3.15	1.04	1.01
85	1040.39	<b>1074.60</b>	1109.83	3.28	3.18	1.06	1.03
86	1007.89	<b>1041.36</b>	1075.84	3.31	3.21	1.08	1.04
87	976.56	<b>1009.31</b>	1043.05	3.34	3.24	1.09	1.06
88	946.36	<b>978.40</b>	1011.42	3.38	3.27	1.11	1.08
89	917.24	<b>948.59</b>	980.91	3.41	3.30	1.12	1.09
90	889.16	<b>919.83</b>	951.46	3.44	3.33	1.14	1.11
91	862.07	<b>892.08</b>	923.04	3.47	3.36	1.16	1.12
92	835.94	<b>865.30</b>	895.61	3.50	3.39	1.17	1.14
93	810.73	<b>839.46</b>	869.12	3.53	3.42	1.19	1.15
94	786.40	<b>814.51</b>	843.55	3.56	3.45	1.21	1.17
95	762.91	<b>790.42</b>	818.85	3.60	3.48	1.22	1.19
96	740.24	<b>767.16</b>	794.99	3.63	3.51	1.24	1.20
97	718.35	<b>744.70</b>	771.94	3.66	3.54	1.26	1.22
98	697.21	<b>723.00</b>	749.66	3.69	3.57	1.28	1.23
99	676.79	<b>702.03</b>	728.14	3.72	3.60	1.29	1.25
100	657.07	<b>681.78</b>	707.34	3.75	3.62	1.31	1.27
101	638.02	<b>662.20</b>	687.23	3.78	3.65	1.33	1.28
102	619.61	<b>643.28</b>	667.78	3.81	3.68	1.35	1.30
103	601.82	<b>624.99</b>	648.98	3.84	3.71	1.36	1.32
104	584.62	<b>607.30</b>	630.80	3.87	3.73	1.38	1.33
105	567.99	<b>590.20</b>	613.21	3.90	3.76	1.40	1.35
106	551.92	<b>573.66</b>	596.19	3.93	3.79	1.42	1.37
107	536.37	<b>557.66</b>	579.73	3.96	3.82	1.43	1.38
108	521.34	<b>542.18</b>	563.80	3.99	3.84	1.45	1.40
109	506.79	<b>527.20</b>	548.37	4.02	3.87	1.47	1.42
110	492.72	<b>512.71</b>	533.45	4.05	3.90	1.49	1.43
111	479.11	<b>498.68</b>	519.00	4.07	3.92	1.51	1.45
112	465.93	<b>485.10</b>	505.00	4.10	3.95	1.52	1.47
113	453.18	<b>471.95</b>	491.45	4.13	3.98	1.54	1.48
114	440.84	<b>459.22</b>	478.33	4.16	4.00	1.56	1.50
115	428.89	<b>446.90</b>	465.61	4.19	4.03	1.58	1.52
116	417.32	<b>434.96</b>	453.30	4.22	4.06	1.60	1.54
117	406.11	<b>423.39</b>	441.36	4.24	4.08	1.62	1.55
118	395.25	<b>412.18</b>	429.80	4.27	4.11	1.63	1.57
119	384.74	<b>401.33</b>	418.59	4.30	4.13	1.65	1.59
120	374.55	<b>390.80</b>	407.72	4.33	4.16	1.67	1.61