

**SPECIFICATION FOR APPROVAL**

CUSTOMER Maxtronix Technology Ltd.

PART NO. 103FET163435FA06633R

APPLICATION \_\_\_\_\_

CUSTOMER P/N 000-1002-1038-020N

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**REVISED RECORD**

REV. No.	REV. DATE	REVISED CONTENT
1.0	June 12, 2019	New Establish



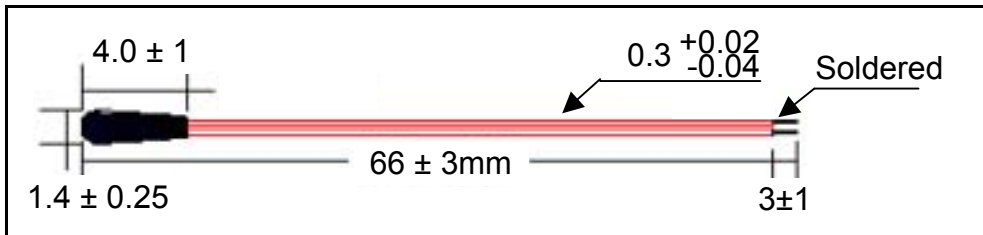
# Technical Data

## 103FET163435FA06633R

## NTC Thermistor Specifications

1 Part Number 103FET163435FA06633R

### 2 Dimensions



### 3 Rating

- a) Rated zero-power resistance.  $R_{25} = 10K\Omega \pm 1\%$  ( at  $25^{\circ}C$  )
- b) B constant  
 $B_{25^{\circ}C/85^{\circ}C} = 3435K \pm 1\%$   
 $B_{25^{\circ}C/50^{\circ}C} = 3380K \pm 1\%$

The B constant is calculated using the zero-power resistance values measured at  $25^{\circ}C$  and  $50^{\circ}C$

- c) Dissipation constant : 1.8 mW /  $^{\circ}C$  Min. ( in still air )
- d) Thermal time constant : Approx. 8 sec. ( in still air )
- e) Operating temperature :  $-30^{\circ}C$  to  $+80^{\circ}C$
- f) Power consumption : 10 mW ( max. )

### 4 Reliability

- a) High Temperature Aging Test ( HTAT )  
Elements are placed in a chamber of temperature at  $110^{\circ}C \pm 5^{\circ}C$  for 1,000 hours. Drift of electric characteristics (  $R_{25}$ ,  $B_{25/85}$  ) after HTAT are less than  $\pm 1\%$ .
- b) Low Temperature Aging Test ( LTAT )  
Elements are placed in an oil bath of temperature at  $-30^{\circ}C \pm 5^{\circ}C$  for 1,000 hours. Drift of electric characteristics (  $R_{25}$ ,  $B_{25/85}$  ) after LTAT are less than  $\pm 1\%$ .
- c) Heat Cycling Test ( HCT )  
Elements are dipped into an oil bath of temperature at  $-30^{\circ}C$  for 5 minute and then dipped into another bath of temperature at  $90^{\circ}C$  for 5 minute. Drift of the characteristics (  $R_{25}$ ,  $B_{25/85}$  ), after 1,000 times of HCT, are less than  $\pm 1\%$ .
- d) High Temperature Aging Test at DC 5V  
Elements are placed in atmosphere of  $110^{\circ}C \pm 5^{\circ}C$  at DC 5V for 1,000 hours. Drift of electric characteristics (  $R_{25}$ ,  $B_{25/85}$  ) after test are less than  $\pm 1\%$ .

### 5 Soldering

- a) Solderability  
Terminals shall be immersed into solder bath up to 2.5mm from the body at  $255^{\circ}C \pm 5^{\circ}C$  for  $5 \pm 0.5$  seconds. More than 90% of its terminals shall be covered with solder.
- b) Resistance to soldering heat  
After lead wires are immersed into solder bath up to 2.5mm from the body at  $375^{\circ}C \pm 5^{\circ}C$  for  $3.5 \pm 0.5$  seconds, the change ratio of  $R_{25}$  shall be within  $\pm 1\%$  of the initial value.

### 6 Part Numbering System

103	F	ET	16	3435	F	A	066	3	3	R
1	2	3	4	5	6	7	8	9	10	11

- 1 Resistance Code (Nominal Zero-Power Resistance at  $25^{\circ}C$ )
- 2 Resistance Tolerance Code
- 3 ET Series
- 4 Shape Code ( 16=1.6mm Max.)
- 5 B Value Code
- 6 B Value Tolerance Code
- 7 B Value Calculation Method Code ( A= $25^{\circ}C/85^{\circ}C$ , B= $25^{\circ}C/50^{\circ}C$  )
- 8 Lead Wire Length Code (020=20mm, 066=66mm, 088=88mm, 105=105mm Tolerance :  $\pm 3$ mm)
- 9 Solder Lead Free Length Code (3= $3 \pm 1$ mm, 2= $2 \pm 1$ mm)
- 10 Lead Wire Diameter Code (2=0.2mm, 3=0.3mm Tolerance :  $+0.02/-0.04$ )
- 11 Polyurethane Coating Color (B=Brown, G=Green, R=Red)

\* All coding please see Coding page

## Technical Data

### 103FET163435FA06633R NTC Thermistor Specifications

#### 7 R / T table for 103FET163435FA06633R

Temperature °C	Minimum (KΩ)	Center (KΩ)	Maximum (KΩ)	Res. Tolerance (%)		Tolerance (°C)	
				ΔR (%)	-ΔR (%)	Max	Min
-30	107.564	111.300	115.155	3.46	-3.36	0.69	-0.67
-29	102.204	105.700	109.304	3.41	-3.31	0.68	-0.66
-28	97.130	100.400	103.770	3.36	-3.26	0.68	-0.66
-27	92.407	95.470	98.625	3.30	-3.21	0.68	-0.66
-26	87.931	90.800	93.754	3.25	-3.16	0.67	-0.65
-25	83.702	86.390	89.156	3.20	-3.11	0.66	-0.64
-24	79.701	82.220	84.810	3.15	-3.06	0.66	-0.64
-23	75.928	78.290	80.717	3.10	-3.02	0.65	-0.64
-22	72.365	74.580	76.855	3.05	-2.97	0.65	-0.63
-21	68.993	71.070	73.202	3.00	-2.92	0.64	-0.62
-20	65.792	67.740	69.739	2.95	-2.88	0.62	-0.61
-19	62.714	64.540	66.412	2.90	-2.83	0.62	-0.60
-18	59.808	61.520	63.274	2.85	-2.78	0.61	-0.60
-17	57.045	58.650	60.294	2.80	-2.74	0.61	-0.59
-16	54.445	55.950	57.491	2.75	-2.69	0.60	-0.59
-15	51.978	53.390	54.835	2.71	-2.64	0.59	-0.58
-14	49.626	50.950	52.304	2.66	-2.60	0.59	-0.58
-13	47.417	48.660	49.930	2.61	-2.55	0.58	-0.57
-12	45.314	46.480	47.672	2.56	-2.51	0.58	-0.57
-11	43.344	44.440	45.559	2.52	-2.47	0.56	-0.55
-10	41.422	42.450	43.499	2.47	-2.42	0.55	-0.54
-9	39.596	40.560	41.543	2.42	-2.38	0.55	-0.54
-8	37.856	38.760	39.682	2.38	-2.33	0.54	-0.53
-7	36.202	37.050	37.914	2.33	-2.29	0.53	-0.52
-6	34.635	35.430	36.240	2.29	-2.24	0.53	-0.52
-5	33.144	33.890	34.649	2.24	-2.20	0.52	-0.51
-4	31.730	32.430	33.142	2.20	-2.16	0.51	-0.50
-3	30.383	31.040	31.708	2.15	-2.12	0.51	-0.50
-2	29.104	29.720	30.346	2.11	-2.07	0.50	-0.49
-1	27.892	28.470	29.057	2.06	-2.03	0.49	-0.49
0	26.738	27.280	27.831	2.02	-1.99	0.48	-0.47
1	25.621	26.130	26.646	1.97	-1.95	0.47	-0.46
2	24.553	25.030	25.513	1.93	-1.90	0.46	-0.46
3	23.543	23.990	24.443	1.89	-1.86	0.45	-0.45
4	22.571	22.990	23.414	1.84	-1.82	0.45	-0.45
5	21.658	22.050	22.447	1.80	-1.78	0.44	-0.44
6	20.782	21.150	21.522	1.76	-1.74	0.44	-0.43
7	19.955	20.300	20.649	1.72	-1.70	0.43	-0.42
8	19.157	19.480	19.806	1.68	-1.66	0.42	-0.41
9	18.397	18.700	19.006	1.63	-1.62	0.41	-0.41
10	17.677	17.960	18.246	1.59	-1.58	0.40	-0.39
11	16.975	17.240	17.507	1.55	-1.54	0.39	-0.38
12	16.302	16.550	16.800	1.51	-1.50	0.38	-0.38
13	15.668	15.900	16.134	1.47	-1.46	0.38	-0.37
14	15.063	15.280	15.498	1.43	-1.42	0.36	-0.36
15	14.478	14.680	14.884	1.39	-1.38	0.36	-0.36
16	13.931	14.120	14.310	1.35	-1.34	0.35	-0.34
17	13.393	13.570	13.748	1.31	-1.30	0.35	-0.35
18	12.895	13.060	13.226	1.27	-1.26	0.33	-0.33
19	12.406	12.560	12.715	1.23	-1.23	0.33	-0.33
20	11.946	12.090	12.234	1.19	-1.19	0.31	-0.31

R25 = 10KΩ ± 1% ( at 25°C )

B25°C/50°C = 3380K ± 1%

B25°C/85°C = 3435K ± 1%

# Technical Data

**103FET163435FA06633R**

**NTC Thermistor Specifications**

Temperature °C	Minimum ( KΩ )	Center ( KΩ )	Maximum ( KΩ )	Res. Tolerance (%)		Tolerance ( °C )	
				ΔR (%)	-ΔR (%)	Max	Min
20	11.946	12.090	12.234	1.19	-1.19	0.31	-0.31
21	11.496	11.630	11.764	1.15	-1.15	0.31	-0.31
22	11.075	11.200	11.325	1.11	-1.11	0.30	-0.30
23	10.664	10.780	10.896	1.08	-1.07	0.29	-0.29
24	10.272	10.380	10.488	1.04	-1.04	0.28	-0.28
25	9.900	10.000	10.100	1.00	-1.00	0.27	-0.27
26	9.532	9.632	9.732	1.04	-1.04	0.28	-0.28
27	9.181	9.281	9.381	1.08	-1.07	0.30	-0.30
28	8.845	8.944	9.044	1.11	-1.11	0.31	-0.31
29	8.523	8.622	8.721	1.15	-1.15	0.32	-0.32
30	8.215	8.313	8.412	1.19	-1.18	0.33	-0.33
31	7.917	8.015	8.113	1.22	-1.22	0.34	-0.34
32	7.628	7.725	7.822	1.26	-1.26	0.36	-0.36
33	7.359	7.455	7.552	1.30	-1.29	0.37	-0.37
34	7.097	7.192	7.288	1.33	-1.33	0.38	-0.38
35	6.847	6.941	7.036	1.37	-1.36	0.39	-0.39
36	6.605	6.699	6.793	1.41	-1.40	0.41	-0.40
37	6.375	6.468	6.561	1.44	-1.43	0.42	-0.42
38	6.155	6.246	6.338	1.48	-1.46	0.43	-0.43
39	5.943	6.033	6.124	1.51	-1.50	0.45	-0.44
40	5.740	5.829	5.919	1.55	-1.53	0.45	-0.45
41	5.542	5.630	5.719	1.58	-1.57	0.47	-0.46
42	5.352	5.439	5.527	1.62	-1.60	0.48	-0.48
43	5.170	5.256	5.343	1.65	-1.63	0.49	-0.49
44	4.995	5.080	5.166	1.69	-1.67	0.51	-0.50
45	4.828	4.912	4.997	1.72	-1.70	0.52	-0.51
46	4.667	4.749	4.832	1.75	-1.73	0.54	-0.53
47	4.513	4.594	4.676	1.79	-1.77	0.55	-0.54
48	4.364	4.444	4.525	1.82	-1.80	0.56	-0.56
49	4.221	4.300	4.380	1.86	-1.83	0.57	-0.57
50	4.083	4.161	4.240	1.89	-1.86	0.58	-0.57
51	3.950	4.026	4.103	1.92	-1.90	0.60	-0.59
52	3.822	3.897	3.973	1.96	-1.93	0.61	-0.60
53	3.698	3.772	3.847	1.99	-1.96	0.63	-0.62
54	3.579	3.652	3.726	2.02	-1.99	0.64	-0.63
55	3.465	3.537	3.610	2.06	-2.02	0.65	-0.64
56	3.356	3.426	3.498	2.09	-2.05	0.67	-0.66
57	3.250	3.319	3.389	2.12	-2.09	0.68	-0.67
58	3.148	3.216	3.285	2.15	-2.12	0.69	-0.68
59	3.049	3.116	3.184	2.18	-2.15	0.72	-0.70
60	2.955	3.021	3.088	2.22	-2.18	0.72	-0.71
61	2.863	2.928	2.994	2.25	-2.21	0.73	-0.72
62	2.774	2.838	2.903	2.28	-2.24	0.75	-0.74
63	2.690	2.752	2.816	2.31	-2.27	0.77	-0.75
64	2.608	2.669	2.732	2.34	-2.30	0.78	-0.77
65	2.529	2.589	2.650	2.37	-2.33	0.80	-0.78
66	2.453	2.512	2.572	2.41	-2.36	0.81	-0.79
67	2.379	2.437	2.496	2.44	-2.39	0.82	-0.81
68	2.308	2.365	2.423	2.47	-2.42	0.85	-0.83
69	2.240	2.296	2.353	2.50	-2.45	0.86	-0.84
70	2.174	2.229	2.285	2.53	-2.47	0.85	-0.84

R25 = 10KΩ ± 1% ( at 25°C )

B25°C/50°C = 3380K ± 1%

B25°C/85°C = 3435K ± 1%

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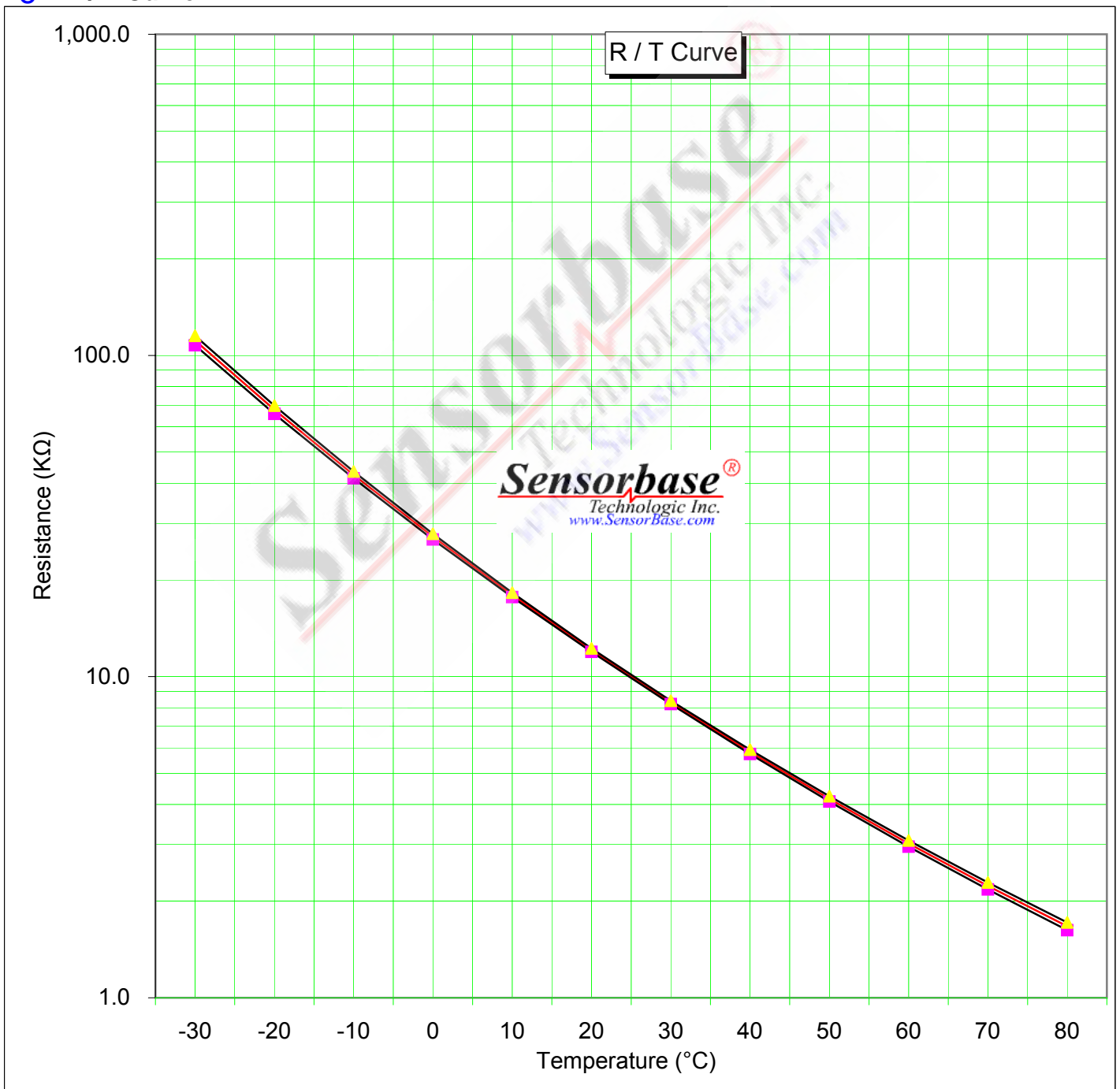
# Technical Data

## 103FET163435FA06633R

## NTC Thermistor Specifications

Temperature °C	Minimum ( KΩ )	Center ( KΩ )	Maximum ( KΩ )	Res. Tolerance (%)		Tolerance ( °C )	
				ΔR (%)	-ΔR (%)	Max	Min
70	2.174	2.229	2.285	2.53	-2.47	0.85	-0.84
71	2.109	2.163	2.218	2.56	-2.50	0.89	-0.87
72	2.048	2.101	2.155	2.59	-2.53	0.89	-0.87
73	1.988	2.040	2.093	2.62	-2.56	0.91	-0.89
74	1.930	1.981	2.033	2.65	-2.59	0.92	-0.90
75	1.874	1.924	1.976	2.68	-2.62	0.95	-0.93
76	1.821	1.870	1.921	2.71	-2.65	0.96	-0.93
77	1.768	1.817	1.867	2.74	-2.67	0.98	-0.95
78	1.718	1.766	1.815	2.77	-2.70	0.98	-0.95
79	1.669	1.716	1.764	2.80	-2.73	1.02	-1.00
80	1.623	1.669	1.716	2.82	-2.76	1.06	-1.04

### 8 R / T Curve



R25 = 10KΩ ± 1% ( at 25°C )  
 B25°C/50°C = 3380K ± 1%  
 B25°C/85°C = 3435K ± 1%

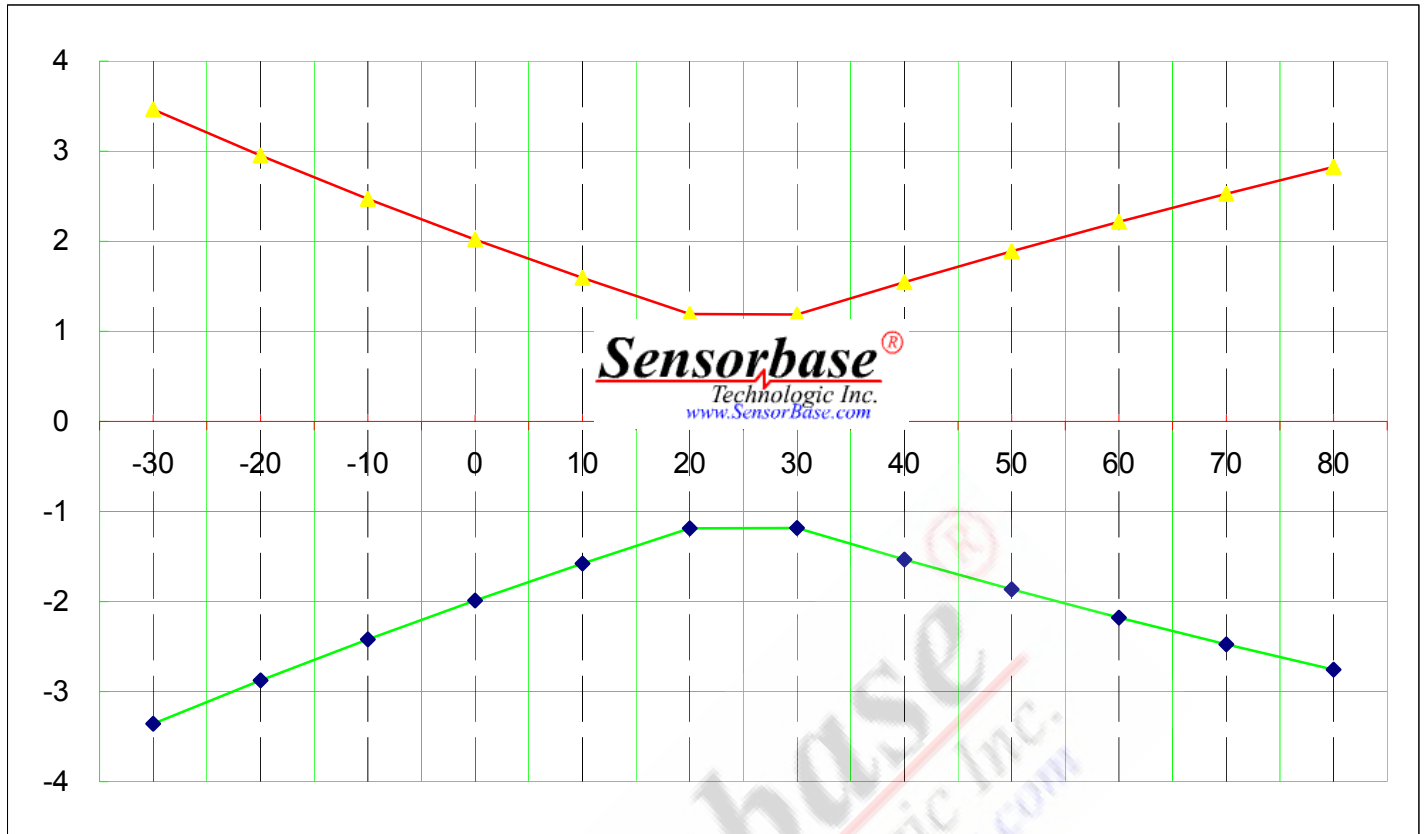
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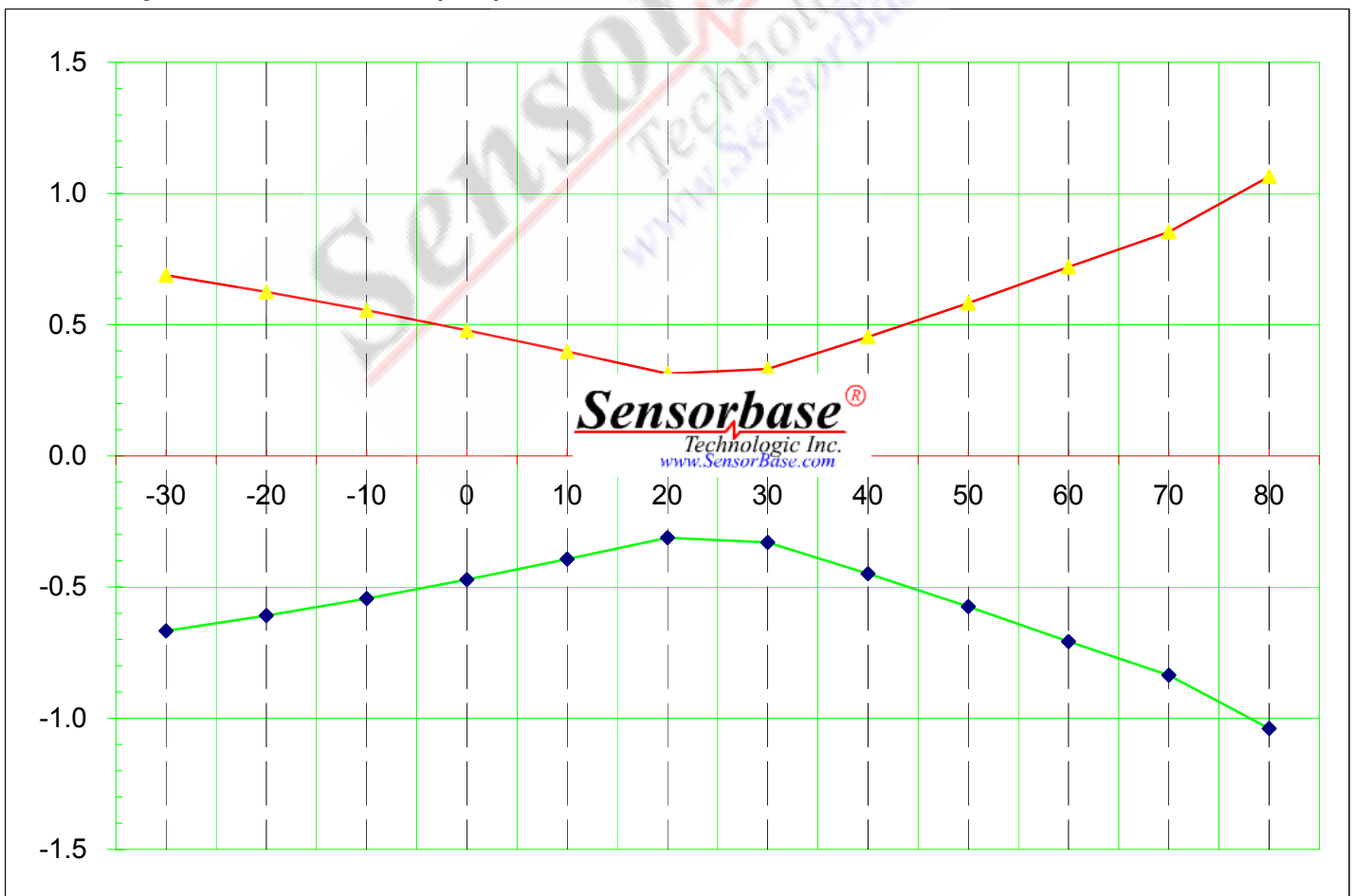
103FET163435FA06633R

NTC Thermistor Specifications

## 9 Resistance Tolerance (%)



## 10 Temperature Tolerance (°C)



R25 = 10KΩ ± 1% ( at 25°C )

B25°C/50°C = 3380K ± 1%

B25°C/85°C = 3435K ± 1%

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