

# MEC

## 产品规格书

(第 1 次送样)

客 户:

名 称: 温补型 NTC 热敏电阻器

型 号: MF11 503M4200

拟制		审查		批准	
日期	2016-5-6	日期	2016-5-6	日期	2016-5-6

公司

确认收到此规格书

## 客 户 承 认

兹同意此规格书作为我公司 MF11 503 电阻

的验收标准。

工程 \_\_\_\_\_

品质 \_\_\_\_\_

采购 \_\_\_\_\_

公司地址:

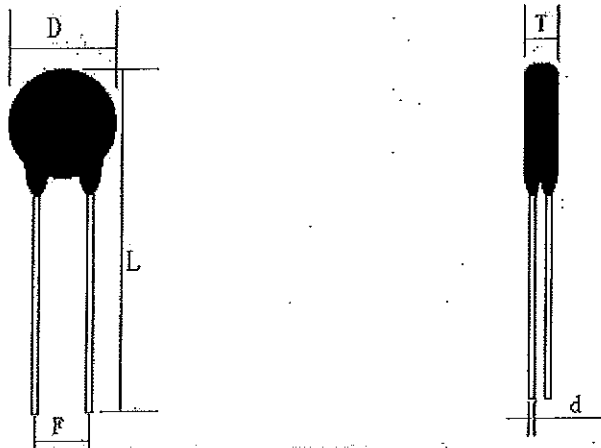
网 址:

电子信箱:

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## 1、一般参数 (Common Parameters) :

### (1) 尺寸 (mm) (Size)



DMax	L Min	F	TMax	d
6.0	25.0	2.5 ± 1.0	4.0	0.45 ± 0.06

### (2) 材料 (Materials)

- ①封装材料 (Wrapper) : 环氧树脂 (Silicone)
- ②引线 (Down-lead) : 镀锡电子线 (Tinned Electron Wire)
- ③颜色 (Coating color) : 黑色 (Black)

## 2、主要技术参数 (Parameters of Technology) :

- ①25°C时零功率电阻值 (Ω) (Zero Power Resistance at 25°C) : 50000 ± 20%
- ②B 值 25/50°C (K) (B Value) : 4200 ± 5%
- ③热时间常数(S) (Thermal Time Constant) : ≤ 30
- ④热耗散系数 (mW/°C) (Thermal Dissipation Constant) : ≥ 6
- ⑤工作温度 (°C) (Operating Temperature) : -40 - +125
- ⑥绝缘电阻(MΩ) (Insulating Resistance) : ≥ 100

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## 3. 电气性能及要求 (electrical properties and requirements)

项目	测试方法	性能要求
<b>零功率电阻值</b> Zero Power Resistance	<p>在 25°C 下, 当由于电阻体内部发热引起的电阻值变化相对于总测量误差可以忽略不计时所测得的电阻值。</p> <p>At 25°C, the measured resistance value can be neglected compared to the general tolerance when the change of the resistance is made through its self-heat of the resistor.</p>	见电特性参数 See Electrical Parameters
<b>B 值</b> B-value	<p>B 值可以用 25°C 和 50°C 时的零功率电阻值计算出来。其计算公式是:</p> $B = \frac{T_1 * T_2}{T_2 - T_1} * \ln \left( \frac{R_1}{R_2} \right)$ <p>The B value can be calculated using the zero power resistance value at 25°C and 50°C. The equation is as above.</p>	见电特性参数 See Electrical Parameters
<b>热耗散系数</b> Thermal Dissipation Constant	<p>在规定的温度下, 热敏电阻中耗散的功率变化与热敏电阻相应温度变化之比。其单位: mw/°C</p> <p>The ratio of the change of the dissipation power to the corresponding change of the temperature at specified temperature. The unit is: mw/°C</p>	见电特性参数 See Electrical Parameters
<b>热时间常数</b> Thermal Time Constant	<p>在零功率条件下, 当温度发生变化时, 热敏电阻的温度变化为其初始的和最终的温度差的 63.2% 所需的时间。</p> <p>Under zero power condition, thermal time constant is the time required by a thermistor that its body temperature reach 63.2% of the difference between its initial and final temperature.</p>	见电特性参数 See Electrical Parameters
<b>工作温度</b> Operating Temperature	<p>热敏电阻器长期连续工作所允许的温度范围。</p> <p>Allowable temperature range while the thermistor work continuously for long time</p>	-40--+125°C

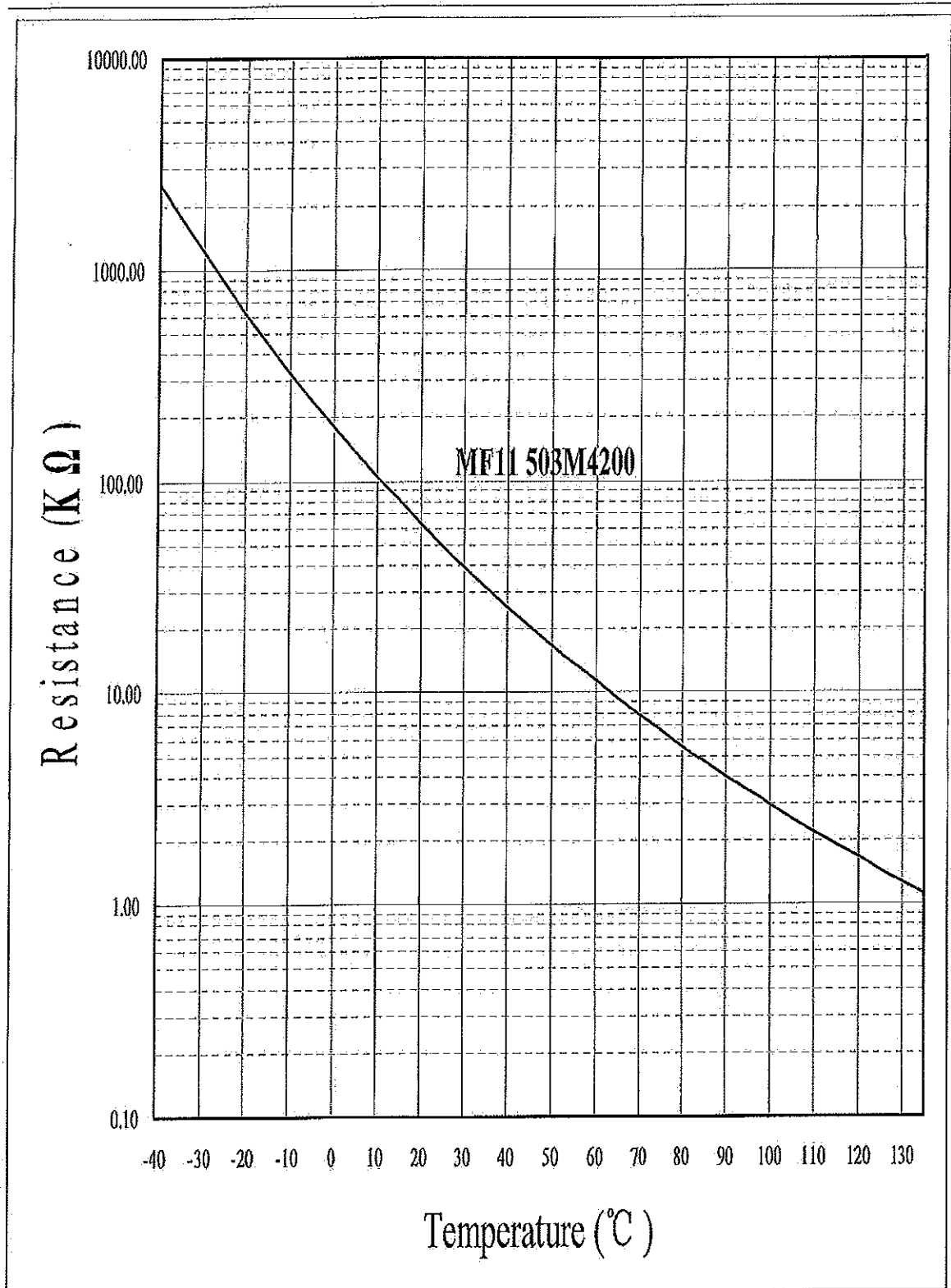
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<p><b>稳态湿热</b></p> <p>Damp Heat</p>	<p>温度 <math>40\pm 2^{\circ}\text{C}</math>，相对湿度 <math>93\pm 3\%</math>，存放 <math>1000\pm 2</math> 小时后，在正常状态下 1 小时。</p> <p>The sample should be subjected to <math>40\pm 2^{\circ}\text{C}</math>，relative humidity <math>93\pm 3\%</math> for <math>1000\pm 2</math> hours, then stored at room temperature and humidity for 1 hour.</p>	<p>无可见损伤、标志清晰、无击穿或飞弧，绝缘电阻大于 <math>100\text{M}\Omega</math>。电阻值的最大变化率在 <math>\pm 15\%</math> 以内。</p> <p>No visible damage, the mark is clear, no breakdown or arcing. Insulating resistance is <math>&gt;100\text{M}\Omega</math>. The change ratio of the resistance is within <math>\pm 15\%</math>.</p>
<p><b>耐电压</b></p> <p>Withstand Voltage</p>	<p>施加 <math>700\text{ACV}</math> 电压，时间 60S，电压加在电阻器引线及绝缘层之间</p> <p>Applied AC voltage of <math>700\text{v}</math> between the lead of the resistor and the insulating coating for 60S</p>	<p>无击穿或飞弧</p> <p>No breakdown or arcing</p>
<p><b>耐焊接热</b></p> <p>Resistance to Soldering Heat</p>	<p>将热敏电阻器引线在 <math>260\pm 10^{\circ}\text{C}</math> 的焊锡液里，液面距电阻体 <math>6\text{mm}</math> 时间 10S。在室温下恢复到原来的状态。</p> <p>Immerse the lead of the resistor into tin liquor of <math>260\pm 10^{\circ}\text{C}</math> for 10S, the distance from the liquor surface to the resistor is <math>6\text{mm}</math>. Then resume to the original state.</p>	<p>无可见损伤、电阻值的最大变化率在 <math>\pm 15\%</math> 以内</p> <p>No visible damage. The max change ratio of the resistance is within <math>\pm 15\%</math></p>
<p><b>可焊性</b></p> <p>Solderability</p>	<p>引线浸在 <math>260\pm 10^{\circ}\text{C}</math> 的锡液里，时间 3 秒。</p> <p>浸锡温度：<math>260\pm 5^{\circ}\text{C}</math></p> <p>手锡温度：<math>260\pm 5^{\circ}\text{C}</math> (5s)</p> <p>Immerse the lead into tin liquor of <math>260\pm 10^{\circ}\text{C}</math> for 3 sec. The temperature of immerse welding: <math>260\pm 5^{\circ}\text{C}</math>, The temperature of hand welding: <math>260\pm 5^{\circ}\text{C}</math> (5s)</p>	<p>焊锡涂布面积在 90% 以上</p> <p>The covered surface area should be above 90%</p>
<p><b>引出端变曲强度</b></p> <p>Bending Strength of Terminals</p>	<p>固定电阻体，在一根引出端悬挂 <math>0.5\text{kg}</math> 重力变曲 <math>90^{\circ}</math> 度；然后再回复，再把方向弯曲 <math>90^{\circ}</math> 度</p> <p>Fix the resistor, hanging a force of <math>0.5\text{kg}</math> to one terminal to bend it by <math>90^{\circ}</math> degree, then resume to the original state, bend it by <math>90^{\circ}</math> degree again.</p>	<p>无可见损伤</p> <p>NO visible damage</p>

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<p><b>振 动</b> Vibration</p>	<p>频率: 10-50HZ; 振幅: 1.55mm 方向和时间: X、Y 及 Z 轴各 2 个小时 Frequency: 10-50HZ, Wave Amplitude:1.55mm. Direction and Time: 2 hours respectively f o r X , Y a n d Z a x i s .</p>	<p>无机械损伤 No mechanical damage</p>
<p><b>绝缘电阻</b> Insulation resistance</p>	<p>施加 500DCV 电压, 时间 60s, 电压加在电 阻器引线及绝缘层之间 Applied DC voltage of 500v between the lead of the resistor and the insulating coating for 60s</p>	<p>伤绝缘电阻 <math>\geq 100M \Omega</math> 无击穿或飞弧 Insulation resistance <math>\geq 100M \Omega</math> No breakdown or arcing</p>
<p><b>温度快速变化</b> Temperature Rapid Change</p>	<p>-40°C/30 → 25°C/5 → +160°C/30 → 25°C/5</p>	<p>电阻变化率 <math>\pm 20\%</math> The change ratio of the resistance is <math>\pm</math> 20%</p>
<p><b>储存条件</b> Storage conditions</p>	<p>-10°C ~ 40°C RH <math>\leq 75\%</math></p>	

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型号: MF11 503M4200

R: 50000 ohms  $\pm$  20%

B: 4200 °K  $\pm$  5%

温度 (°C)	阻值 ( $\Omega$ )			温度系数 (%/°C)	阻值精度偏差 (%)		测温精度偏差 (°C)	
	上限值	中心值	下限值		最小	最大	最小	最大
0.0	136158.7355	181532.6554	232346.0235	-5.63	-24.99	27.99	-4.97	4.44
0.5	132572.2409	176502.8389	225591.1331	-5.61	-24.89	27.81	-4.96	4.44
1.0	129092.7950	171629.9893	219056.2153	-5.59	-24.78	27.63	-4.94	4.43
1.5	125716.8519	166908.6936	212733.3854	-5.57	-24.68	27.45	-4.93	4.43
2.0	122440.9942	162333.7421	206615.0658	-5.55	-24.57	27.28	-4.92	4.43
2.5	119261.9281	157900.1208	200693.9733	-5.53	-24.47	27.10	-4.90	4.43
3.0	116176.4783	153603.0027	194963.1067	-5.51	-24.37	26.93	-4.89	4.42
3.5	113181.5836	149437.7409	189415.7352	-5.49	-24.26	26.75	-4.87	4.42
4.0	110274.2921	145399.8609	184045.3869	-5.47	-24.16	26.58	-4.86	4.42
4.5	107451.7576	141485.0539	178845.8383	-5.45	-24.05	26.41	-4.85	4.41
5.0	104711.2348	137689.1702	173811.1038	-5.43	-23.95	26.23	-4.83	4.41
5.5	102050.0759	134008.2129	168935.4263	-5.41	-23.85	26.06	-4.82	4.41
6.0	99465.7267	130438.3314	164213.2672	-5.39	-23.75	25.89	-4.80	4.41
6.5	96955.7230	126975.8161	159639.2980	-5.37	-23.64	25.72	-4.79	4.40
7.0	94517.6873	123617.0928	155208.3914	-5.35	-23.54	25.56	-4.78	4.40
7.5	92149.3253	120358.7171	150915.6134	-5.33	-23.44	25.39	-4.76	4.39
8.0	89848.4226	117197.3692	146756.2149	-5.31	-23.34	25.22	-4.75	4.39
8.5	87612.8423	114129.8496	142725.6249	-5.30	-23.23	25.06	-4.73	4.39
9.0	85440.5215	111153.0738	138819.4428	-5.28	-23.13	24.89	-4.72	4.38
9.5	83329.4686	108264.0682	135033.4318	-5.26	-23.03	24.73	-4.70	4.38
10.0	81277.7609	105459.9655	131363.5123	-5.24	-22.93	24.56	-4.69	4.38
10.5	79283.5417	102738.0008	127805.7555	-5.22	-22.83	24.40	-4.67	4.37
11.0	77345.0180	100095.5078	124356.3774	-5.20	-22.73	24.24	-4.66	4.37
11.5	75460.4582	97529.9144	121011.7331	-5.18	-22.63	24.08	-4.64	4.37
12.0	73628.1897	95038.7398	117768.3115	-5.17	-22.53	23.92	-4.63	4.36
12.5	71846.5967	92619.5906	114622.7293	-5.15	-22.43	23.76	-4.61	4.36
13.0	70114.1183	90270.1574	111571.7270	-5.13	-22.33	23.60	-4.60	4.35
13.5	68429.2461	87988.2120	108612.1631	-5.11	-22.23	23.44	-4.59	4.35

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14.0	66790.5227	85771.6039	105741.0099	-5.09	-22.13	23.28	-4.57	4.34
14.5	65196.5396	83618.2577	102955.3491	-5.08	-22.03	23.13	-4.56	4.34
15.0	63645.9356	81526.1699	100252.3675	-5.06	-21.93	22.97	-4.54	4.34
15.5	62137.3947	79493.4065	97629.3526	-5.04	-21.83	22.81	-4.53	4.33
16.0	60669.6449	77518.1005	95083.6892	-5.02	-21.73	22.66	-4.51	4.33
16.5	59241.4564	75598.4487	92612.8553	-5.01	-21.64	22.51	-4.50	4.32
17.0	57851.6401	73732.7103	90214.4185	-4.99	-21.54	22.35	-4.48	4.32
17.5	56499.0461	71919.2039	87886.0328	-4.97	-21.44	22.20	-4.47	4.31
18.0	55182.5623	70156.3055	85625.4352	-4.95	-21.34	22.05	-4.45	4.31
18.5	53901.1133	68442.4463	83430.4423	-4.94	-21.25	21.90	-4.43	4.30
19.0	52653.6586	66776.1109	81298.9476	-4.92	-21.15	21.75	-4.42	4.30
19.5	51439.1918	65155.8350	79228.9183	-4.90	-21.05	21.60	-4.40	4.29
20.0	50256.7393	63580.2038	77218.3927	-4.89	-20.96	21.45	-4.39	4.29
20.5	49105.3588	62047.8502	75265.4775	-4.87	-20.86	21.30	-4.37	4.28
21.0	47984.1389	60557.4526	73368.3452	-4.85	-20.76	21.15	-4.36	4.28
21.5	46892.1971	59107.7340	71525.2314	-4.84	-20.67	21.01	-4.34	4.27
22.0	45828.6797	57697.4598	69734.4329	-4.82	-20.57	20.86	-4.33	4.27
22.5	44792.7601	56325.4364	67994.3050	-4.81	-20.48	20.72	-4.31	4.26
23.0	43783.6382	54990.5098	66303.2595	-4.79	-20.38	20.57	-4.30	4.26
23.5	42800.5394	53691.5643	64659.7627	-4.77	-20.28	20.43	-4.28	4.25
24.0	41842.7137	52427.5209	63062.3330	-4.76	-20.19	20.28	-4.26	4.24
24.5	40909.4350	51197.3359	61509.5396	-4.74	-20.09	20.14	-4.25	4.24
25.0	40000.0000	50000.0000	60000.0000	-4.72	-20.00	20.00	-4.23	4.23
25.5	39021.5857	48834.5369	58670.5914	-4.71	-20.09	20.14	-4.28	4.27
26.0	38070.2565	47700.0019	57374.9372	-4.69	-20.19	20.28	-4.32	4.30
26.5	37145.1810	46595.4813	56112.0788	-4.68	-20.28	20.42	-4.37	4.34
27.0	36245.5557	45520.0909	54881.0878	-4.66	-20.37	20.56	-4.41	4.37
27.5	35370.6040	44472.9748	53681.0643	-4.65	-20.47	20.70	-4.46	4.40
28.0	34519.5752	43453.3052	52511.1369	-4.63	-20.56	20.84	-4.50	4.44
28.5	33691.7436	42460.2803	51370.4607	-4.62	-20.65	20.98	-4.55	4.47
29.0	32886.4075	41493.1246	50258.2173	-4.60	-20.74	21.12	-4.59	4.51
29.5	32102.8885	40551.0869	49173.6131	-4.59	-20.83	21.26	-4.64	4.54
30.0	31340.5306	39633.4401	48115.8794	-4.57	-20.92	21.40	-4.68	4.58
30.5	30598.6994	38739.4803	47084.2706	-4.56	-21.01	21.54	-4.73	4.61
31.0	29876.7811	37868.5258	46078.0641	-4.54	-21.10	21.68	-4.77	4.65
31.5	29174.1823	37019.9164	45096.5593	-4.53	-21.19	21.82	-4.82	4.68
32.0	28490.3287	36193.0128	44139.0768	-4.51	-21.28	21.95	-4.87	4.72
32.5	27824.6648	35387.1956	43204.9579	-4.50	-21.37	22.09	-4.91	4.75
33.0	27176.6532	34601.8652	42293.5637	-4.48	-21.46	22.23	-4.96	4.79



