

SPECIFICATION

PS- Series

Spec. List

STE P/N	Spec	Approval			Marking
		CQC	cUL (Canada)	VDE	
MF0703002M4BP0CST0	3D-7	✓		✓	Example 2
MF0705002M4BP0CST0	5D-7	✓	✓	✓	Example 1
MF0710001M4BP0CST0	10D-7	✓	✓	✓	Example 1
MF0905003M4BN0CSB0	5D-9	✓	✓	✓	Example 1
MF0908002M4BP0CST0	8D-9	✓	✓	✓	Example 1
MF0910002M4BN0CSB0	10D-9	✓	✓	✓	Example 1
MF0920001M4BN0CSB0	20D-9	✓	✓	✓	Example 1
MF1101005M4EN0CSB0	1D-11			✓	Example 3
MF1101005M4EP0CST0	1D-11			✓	Example 3
MF112R505M4EN0CSB0	2.5D-11	✓	✓	✓	Example 1
MF112R505M4EP0CST0	2.5D-11	✓	✓	✓	Example 1
MF1103005M4EP0CST0	3D-11	✓	✓	✓	Example 1
MF1105004M4EP0CST0	5D-11	✓	✓	✓	Example 1
MF1108003M4EP0CST0	8D-11	✓	✓	✓	Example 1
MF1110003M4EP0CST0	10D-11	✓	✓	✓	Example 1
MF1120002M4EP0CST0	20D-11	✓	✓	✓	Example 1
MF131R307M4EP0CST0	1.3D-13	✓	✓	✓	Example 1
MF132R506M4EN0CSB0	2.5D-13	✓	✓	✓	Example 1
MF132R506M4EP0CST0	2.5D-13	✓	✓	✓	Example 1
MF1303006M4EP0CST0	3D-13	✓	✓	✓	Example 1
MF1305005M4EN0CSB0	5D-13	✓	✓	✓	Example 1
MF1305005M4EP0CST0	5D-13	✓	✓	✓	Example 1
MF1310004M4EN0CSB0	10D-13	✓	✓	✓	Example 1
MF152R507M4EN0CSB0	2.5D-15	✓	✓	✓	Example 1
MF1503007M4EP0CST0	3D-15	✓	✓	✓	Example 1
MF1505006M4EP0CST0	5D-15	✓	✓	✓	Example 1

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MF2003008M1DN0CSB0	3D-20	✓	✓	✓	Example 1
MF2005007M1DN0CSB0	5D-20	✓	✓	✓	Example 1
MF2010006M1DN0CSB0	10D-20	✓	✓	✓	Example 1
MF2020004M1DN0CSB0	20D-20	✓		✓	Example 2
MF2030004M1DN0CSB0	30D-20	✓		✓	Example 2
MF252R509M1DN0CSB0	2.5D-25			✓	Example 3
MF2503009M1DN0CSB0	3D-25			✓	Example 3
MF2510007M1DN0CSB0	10D-25			✓	Example 3
MF2516006M1DN0CSB0	16D-25			✓	Example 3

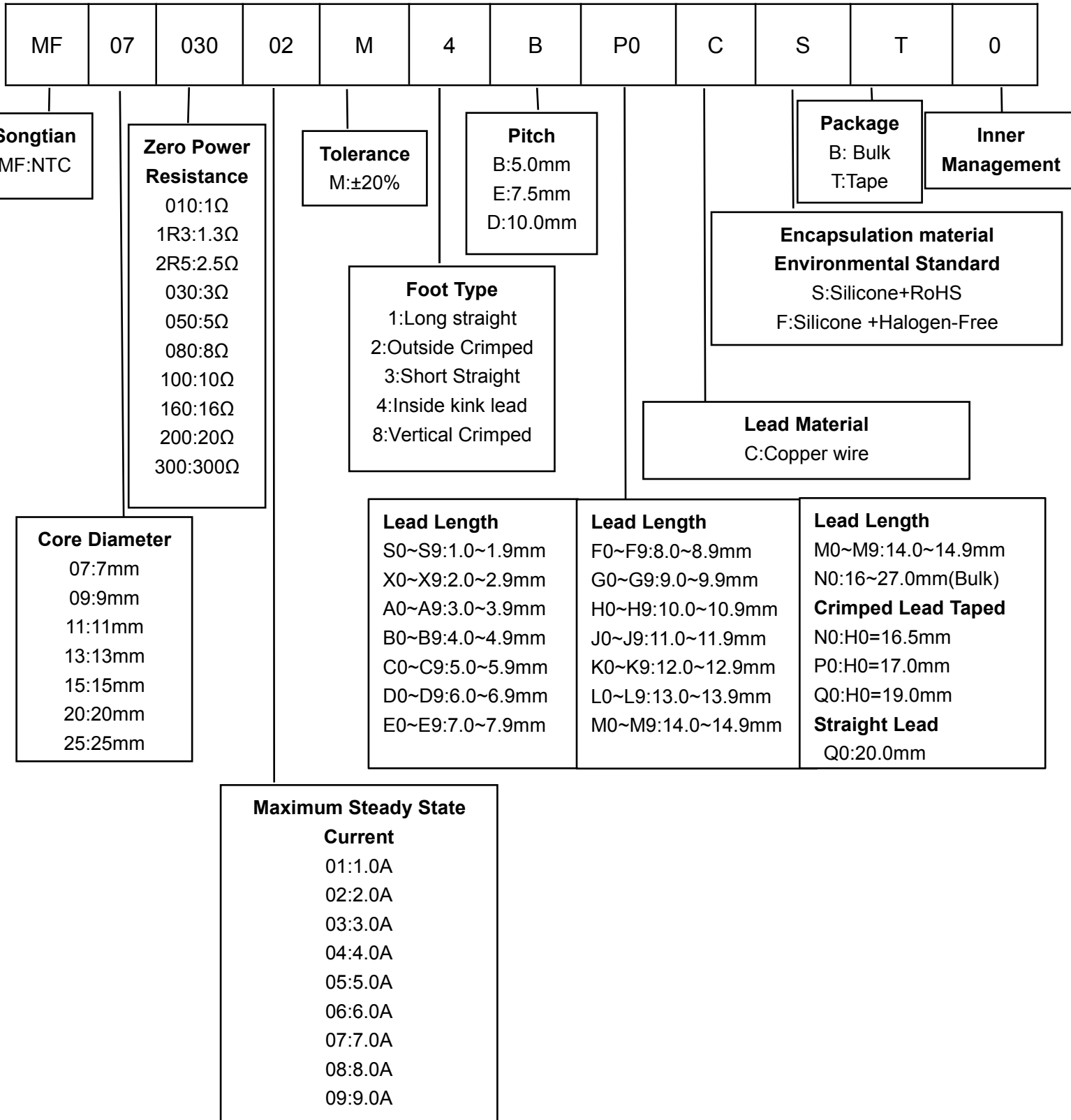
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1. Applications

■ Suitable for power supply, electronic motors, transformers, adapters, projectors, halogen machines, LED drive circuits, etc.

2. Part Number Code



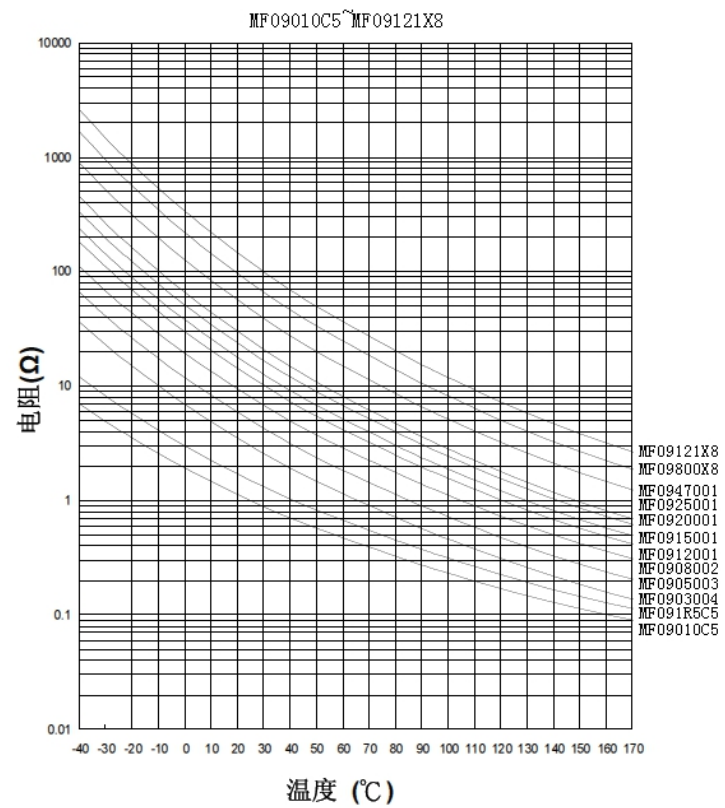
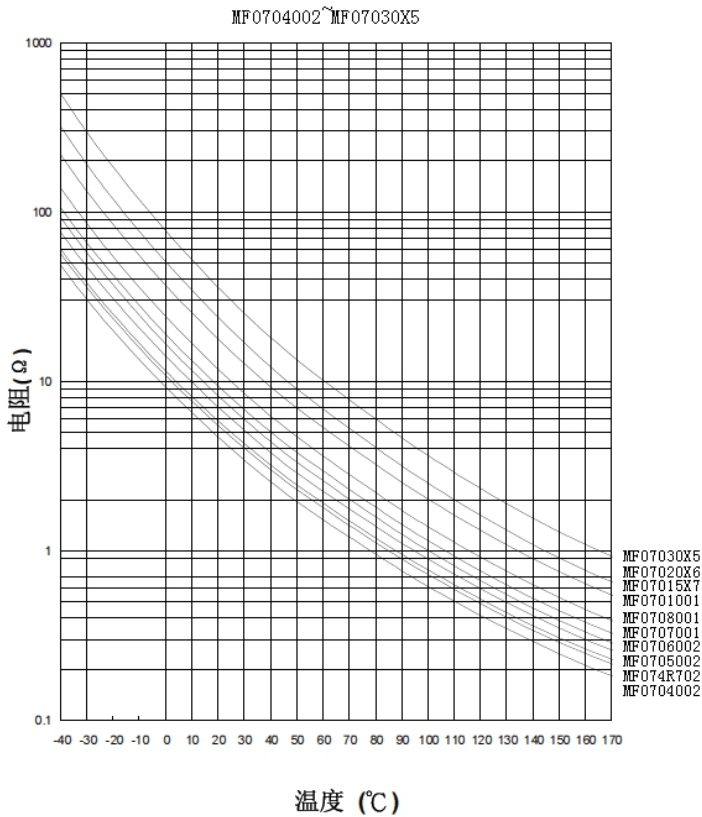
3. Electrical Characteristics

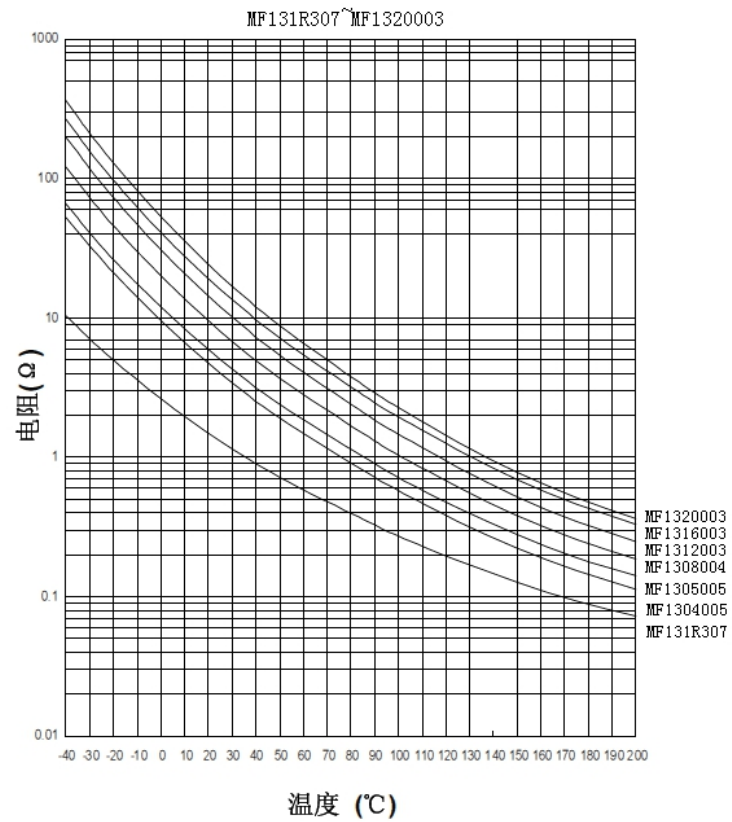
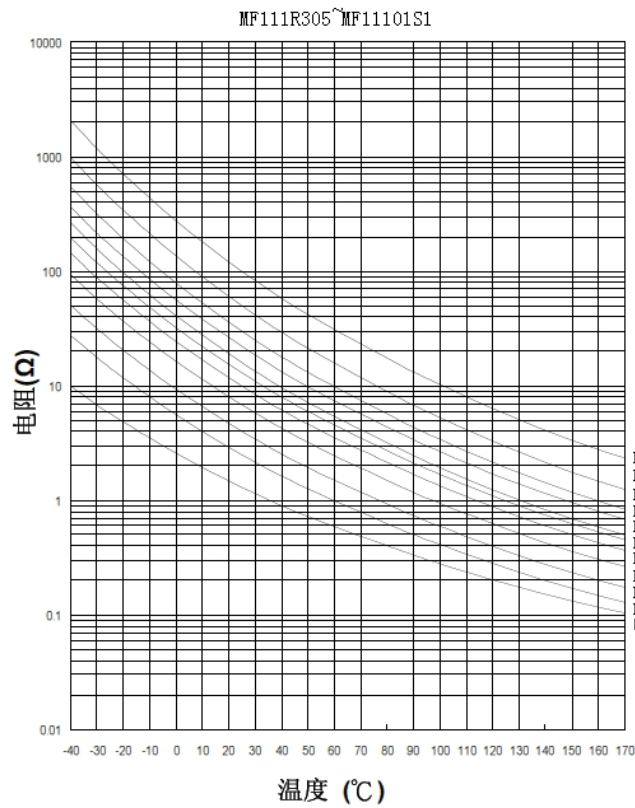
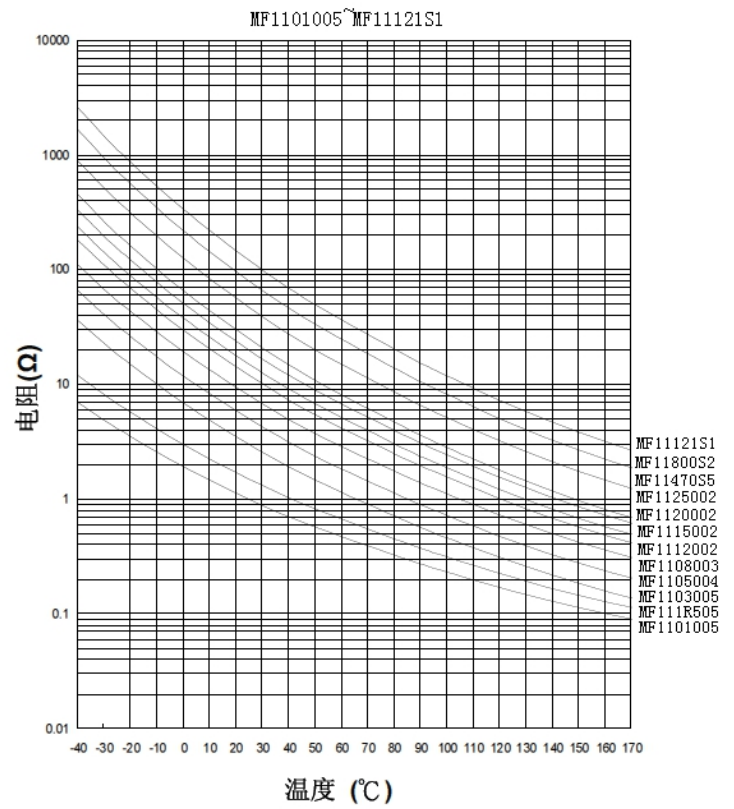
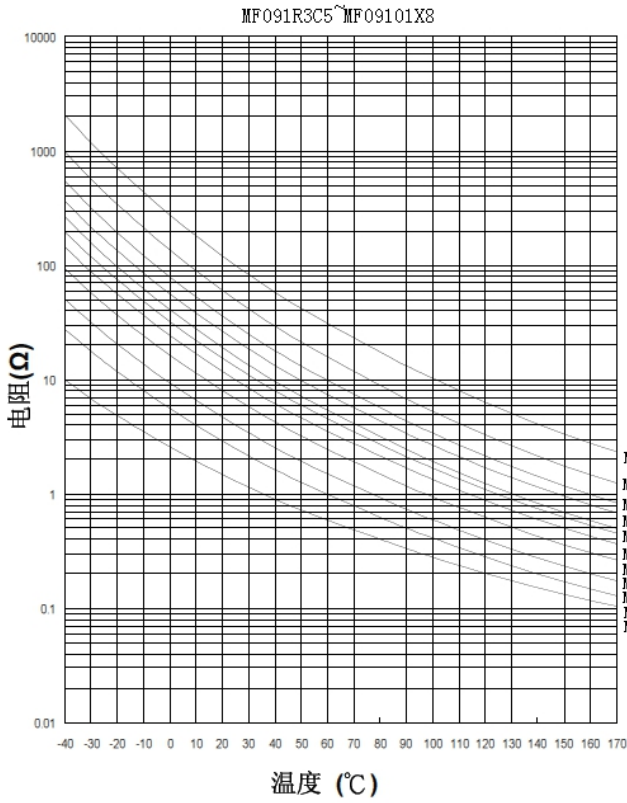
Part Number	Rated Zero Power Resistance @25°C(Ω)	Nominal B-Constant (K) ±10%	Thermal Time Constant (S)	Heat Dissipation Coefficient (mW/°C)	Operating Temperature Range (°C)	Maximum Steady Current @25°C(A)
3D-7	3	2600	<30	>10	-40°C~175°C	2.0
5D-7	5	2600	<30	>10	-40°C~175°C	2.0
10D-7	1	2600	<30	>10	-40°C~175°C	1.0
5D-9	5	2600	<34	>11	-40°C~175°C	3.0
8D-9	8	2800	<32	>11	-40°C~175°C	2.0
10D-9	10	2800	<32	>11	-40°C~175°C	2.0
20D-9	20	3000	<30	>11	-40°C~175°C	1.0
1D-11	1	2600	<43	>13	-40°C~175°C	5.0
1D-11	1	2600	<43	>13	-40°C~175°C	5.0
2.5D-11	2.5	2600	<43	>13	-40°C~175°C	5.0
2.5D-11	2.5	2600	<43	>13	-40°C~175°C	5.0
3D-11	3	2600	<43	>13	-40°C~175°C	5.0
5D-11	5	2800	<45	>13	-40°C~175°C	4.0
8D-11	8	2800	<47	>14	-40°C~175°C	3.0
10D-11	10	2800	<47	>14	-40°C~175°C	3.0
20D-11	20	3000	<52	>15	-40°C~175°C	2.0
1.3D-13	1.3	2600	<60	>13	-40°C~200°C	7.0
2.5D-13	2.5	2600	<60	>13	-40°C~200°C	6.0
2.5D-13	2.5	2600	<60	>13	-40°C~200°C	6.0
3D-13	3	2600	<60	>14	-40°C~200°C	6.0
5D-13	5	2800	<68	>15	-40°C~200°C	5.0
5D-13	5	2800	<68	>15	-40°C~200°C	5.0
10D-13	10	3000	<65	>15	-40°C~200°C	4.0
2.5D-15	2.5	2600	<76	>18	-40°C~200°C	7.0
3D-15	2.5	2600	<76	>18	-40°C~200°C	7.0
5D-15	5	3000	<76	>20	-40°C~200°C	6.0
20D-15	20	3200	<86	>21	-40°C~200°C	4.0

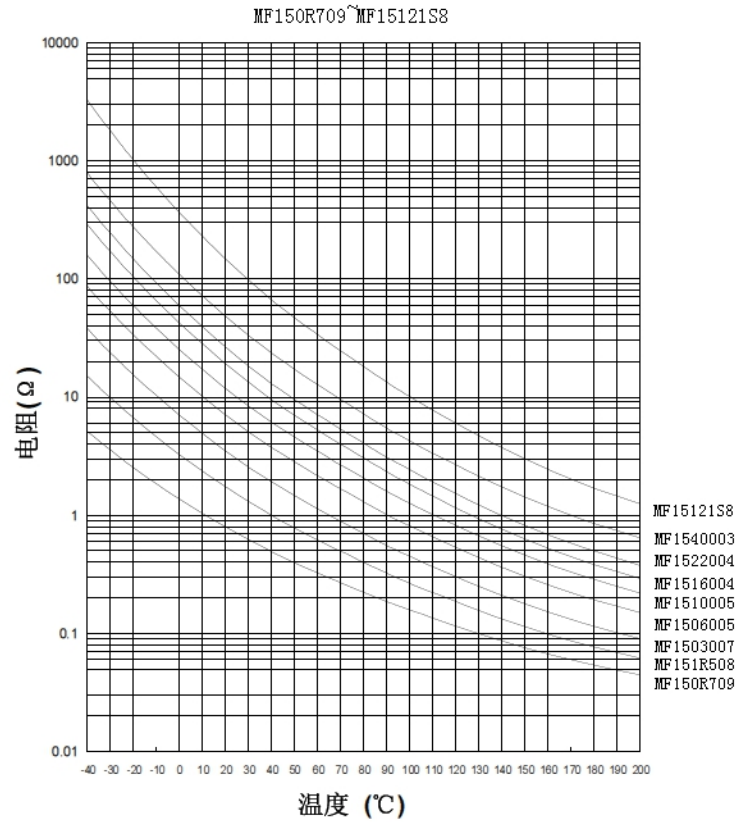
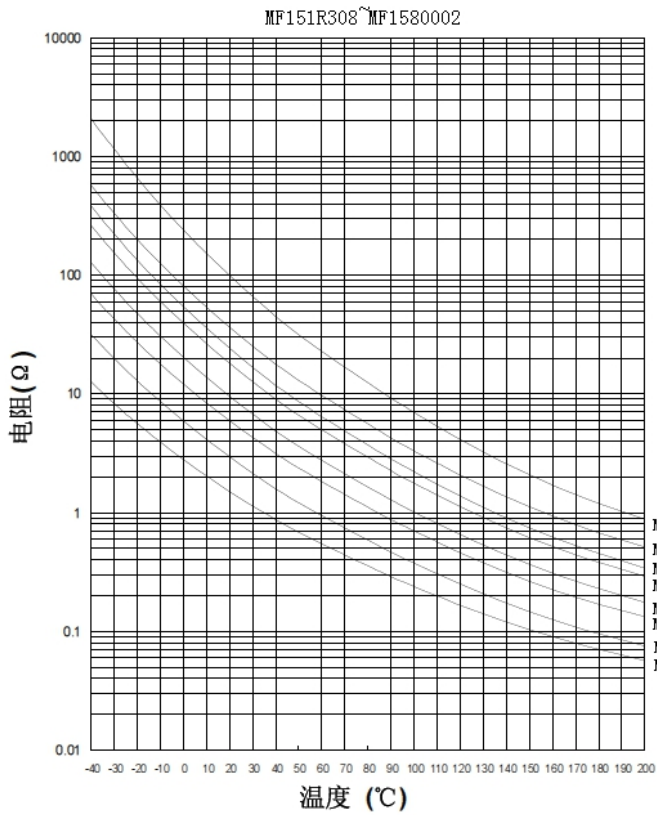
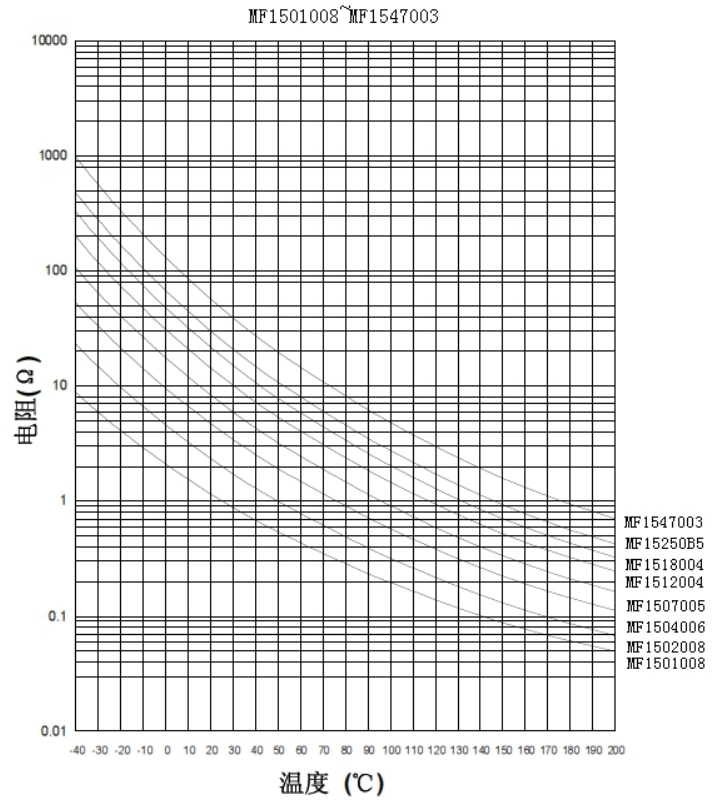
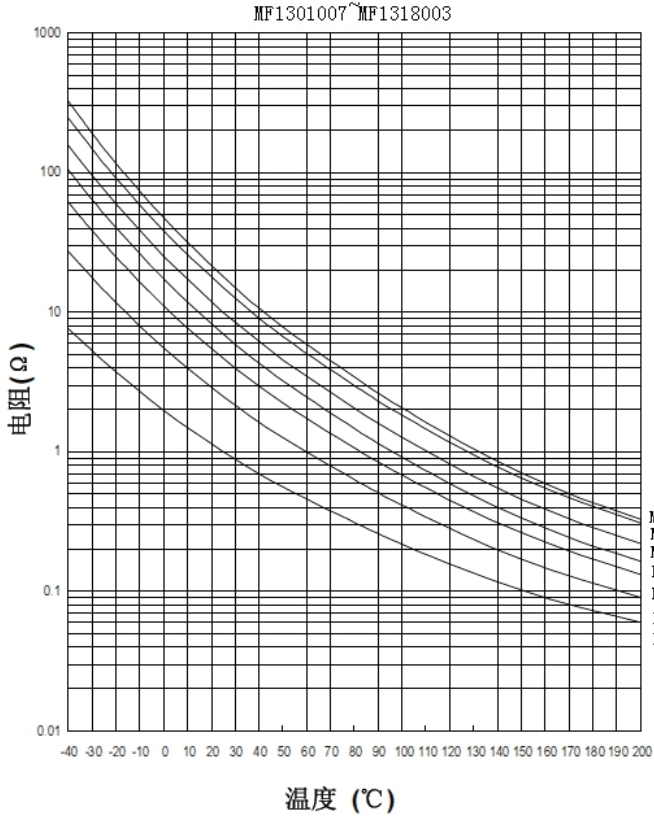
20D-15	20	3200	<86	>21	-40℃~200℃	4.0
2.5D-20	2.5	2800	<88	>24	-40℃~200℃	8.0
3D-20	3	2800	<88	>24	-40℃~200℃	8.0
5D-20	5	3000	<87	>24	-40℃~200℃	7.0
10D-20	10	3200	<102	>25	-40℃~200℃	6.0
20D-20	20	3200	<105	>25	-40℃~200℃	4.0
30D-20	30	3200	<115	>26	-40℃~200℃	4.0
2.5D-25	2.5	2800	<124	>32	-40℃~200℃	9.0
3D-25	3	2800	<124	>32	-40℃~200℃	9.0
10D-25	10	3200	<127	>32	-40℃~200℃	7.0
16D-25	16	3200	<126	>35	-40℃~200℃	6.0

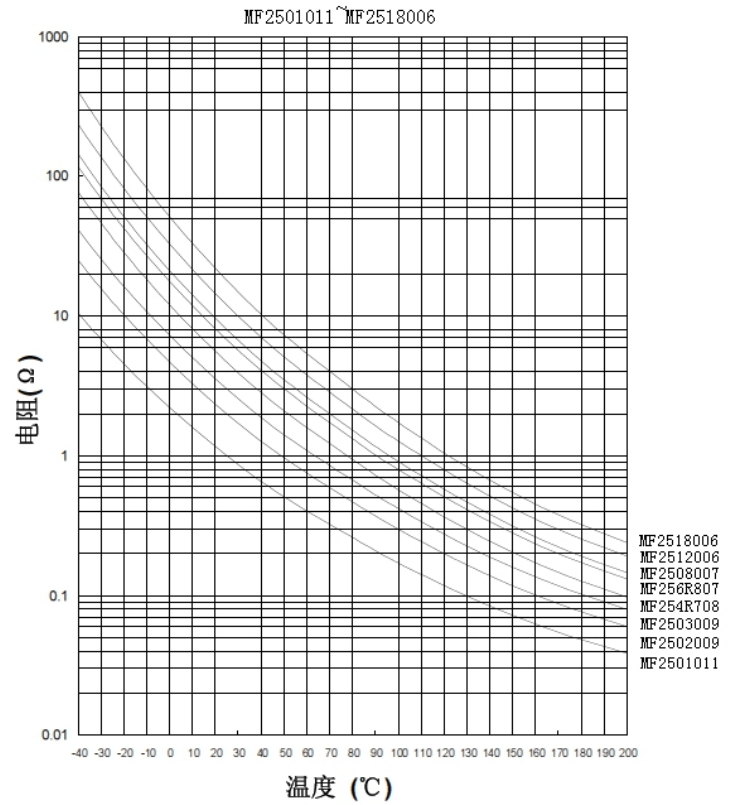
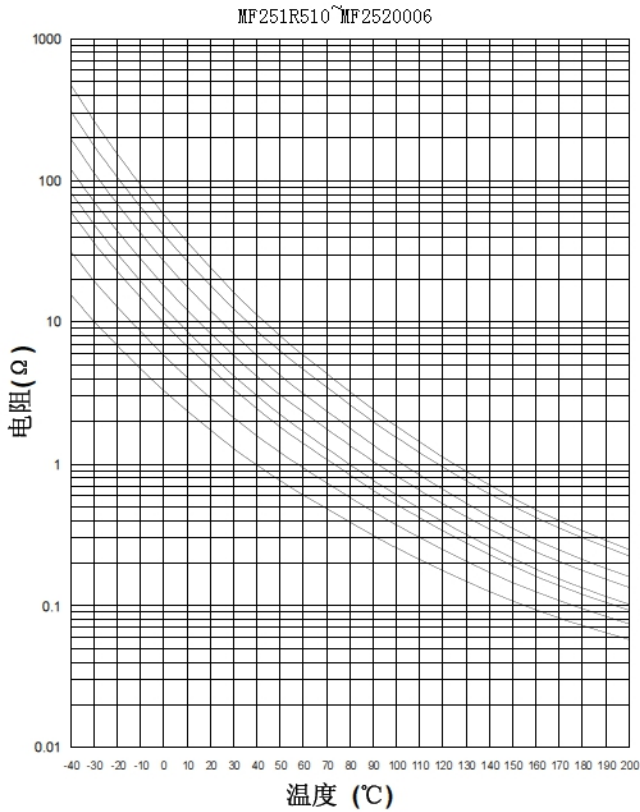
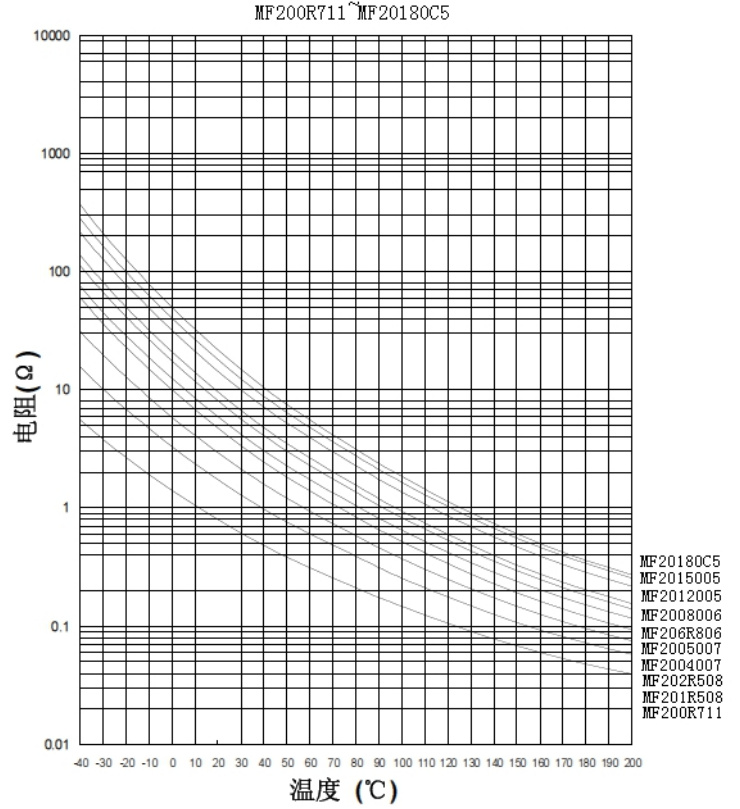
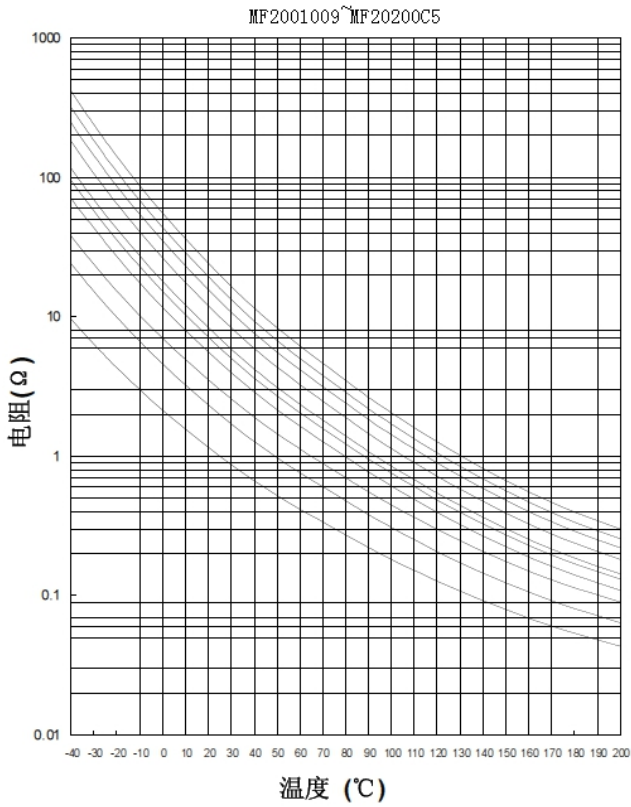
4.Characteristic Curves

R-T Characteristic Curves

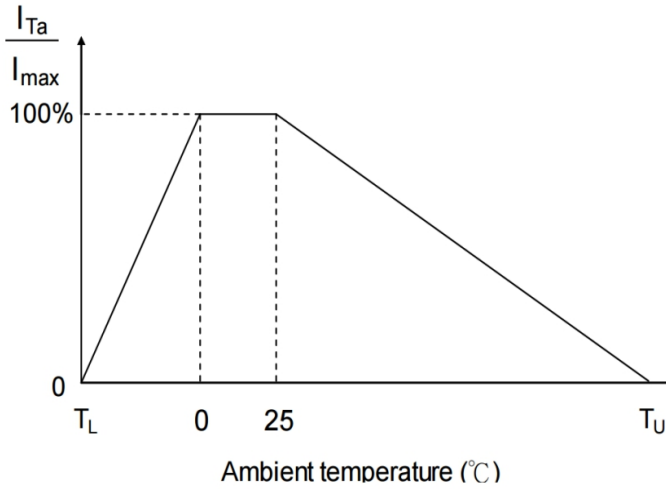








5. The Maximum Current Derating Curve



T_U : Maximum operating temperature(°C)

T_L : Minimum operating temperature(°C)

For example:

Ambient temperature(T_a) = 60°C

Maximum operating temperature(T_U) = 200°C

$I_{Ta} = [1-(T_a-25)/(T_U-25)] \times I_{max} = 80\% I_{max}$

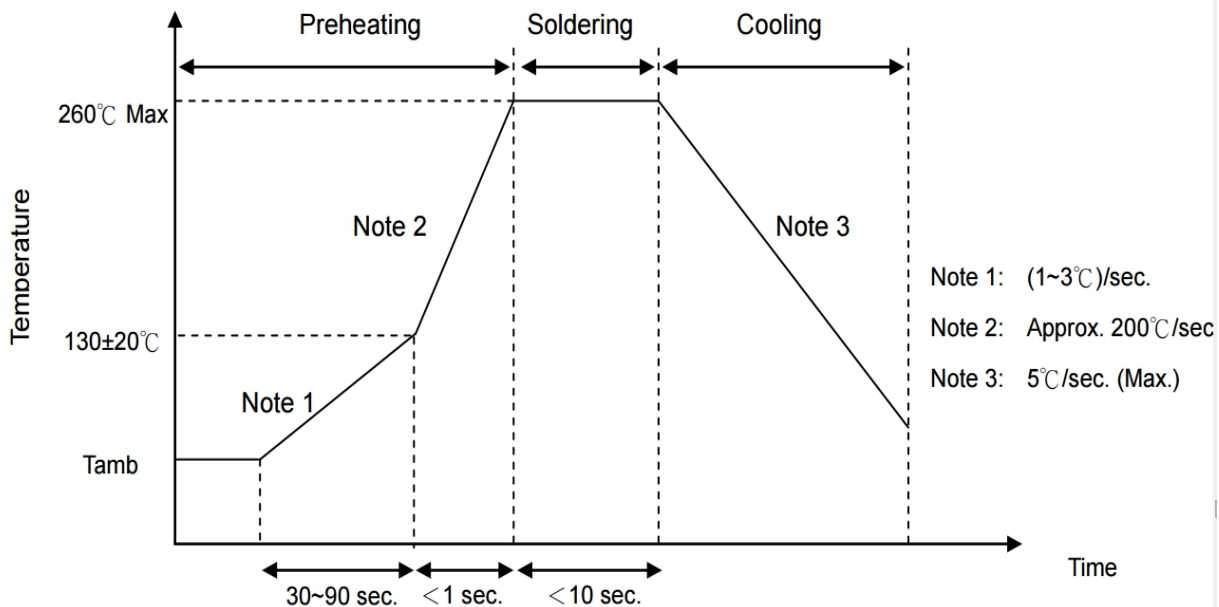
Ambient temperature(T_a) = -10°C

Minimum operating temperature(T_L) = -40°C

$I_{Ta} = [1-(T_a - T_L)/(0-T_L)] \times I_{max} = 25\% I_{max}$

6. Soldering Recommendation

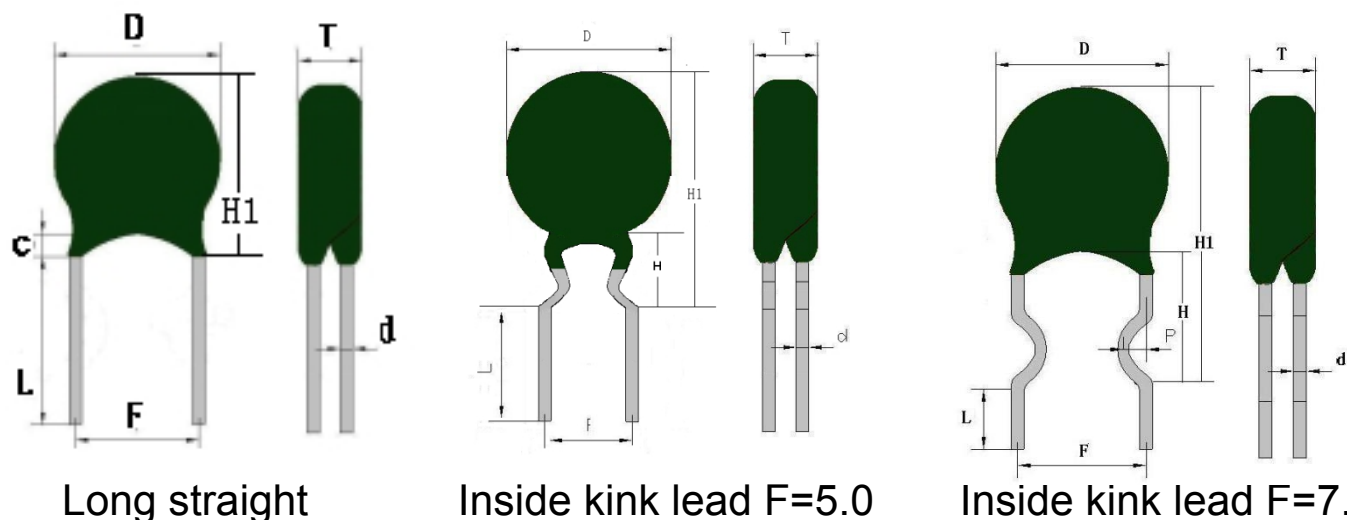
Wave Soldering Profile



Recommend Rework Conditions with Soldering Iron

Item	Condition
Temperature of Soldering Iron-tip	360°C (Max)
Soldering Time	3 sec(Max)
Distance from Thermistor	2 mm(Min)

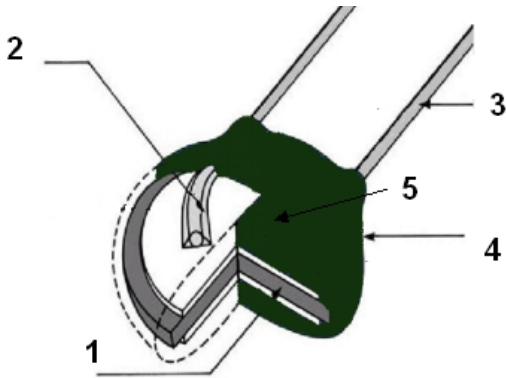
7. Dimensions and Approval



STE P/N	Spec	Size (mm)							Packing
		D Max	T Max	L Min	F±0.8	d±0.05	C/H Max	H1 Max	
MF0703002M4 BP0CST0	3D-7	8.5	4.5	/	5.0	0.6	6.0	14.5	Taping 1
MF0705002M4 BP0CST0	5D-7	8.5	4.5	/	5.0	0.6	6.0	14.5	Taping 1
MF0710001M4 BP0CST0	10D-7	8.5	4.5	/	5.0	0.6	6.0	14.5	Taping 1
MF0905003M4 BN0CSB0	5D-9	10.5	5.5	16.0	5.0	0.8	6.0	16.5	Bulk
MF0908002M4 BP0CST0	8D-9	10.5	5.5	/	5.0	0.8	6.0	16.5	Taping 1
MF0910002M4 BN0CSB0	10D-9	10.5	5.5	16.0	5.0	0.8	6.0	16.5	Bulk
MF0920001M4 BN0CSB0	20D-9	10.5	5.5	16.0	5.0	0.8	6.0	16.5	Bulk
MF1101005M4 EN0CSB0	1D-11	12.5	6.0	16.0	7.5	0.8	6.0	18.5	Bulk
MF1101005M4 EP0CST0	1D-11	12.5	6.0	/	7.5	0.8	6.0	18.5	Taping 2
MF112R505M4 EN0CSB0	2.5D-11	12.5	6.0	16.0	7.5	0.8	6.0	18.5	Bulk
MF112R505M4 EP0CST0	2.5D-11	12.5	6.0	/	7.5	0.8	6.0	18.5	Taping 2
MF1103005M4 EP0CST0	3D-11	12.5	6.0	/	7.5	0.8	6.0	18.5	Taping 2
MF1105004M4 EP0CST0	5D-11	12.5	6.0	/	7.5	0.8	6.0	18.5	Taping 2
MF1108003M4 EP0CST0	8D-11	12.5	6.0	/	7.5	0.8	6.0	18.5	Taping 2









MF1110003M4 EP0CST0	10D-11	12.5	6.0	/	7.5	0.8	6.0	18.5	Taping 2
MF1120002M4 EP0CST0	20D-11	12.5	6.0	/	7.5	0.8	6.0	18.5	Taping 2
MF131R307M4 EP0CST0	1.3D-13	15.0	6.5	/	7.5	0.8	6.0	21.0	Taping 2
MF132R506M4 EN0CSB0	2.5D-13	15.0	6.5	16.0	7.5	0.8	6.0	21.0	Bulk
MF132R506M4 EP0CST0	2.5D-13	15.0	6.5	/	7.5	0.8	6.0	21.0	Taping 2
MF1303006M4 EP0CST0	3D-13	15.0	6.5	/	7.5	0.8	6.0	21.0	Taping 2
MF1305005M4 EN0CSB0	5D-13	15.0	6.5	16.0	7.5	0.8	6.0	21.0	Bulk
MF1305005M4 EP0CST0	5D-13	15.0	6.5	/	7.5	0.8	6.0	21.0	Taping 2
MF1310004M4 EN0CSB0	10D-13	15.0	6.5	16.0	7.5	0.8	6.0	21.0	Bulk
MF152R507M4 EN0CSB0	2.5D-15	17.5	6.5	16.0	7.5	0.8	6.0	23.5	Bulk
MF1503007M4 EP0CST0	3D-15	17.5	6.5	16.0	7.5	0.8	6.0	23.5	Bulk
MF1505006M4 EP0CST0	5D-15	17.5	6.5	/	7.5	0.8	6.0	23.5	Taping 2
MF1520004M4 EN0CSB0	20D-15	17.5	6.5	16.0	7.5	0.8	6.0	23.5	Bulk
MF1520004M4 EP0CST0	20D-15	17.5	6.5	/	7.5	0.8	6.0	23.5	Taping 2
MF202R508M1 DN0CSB0	2.5D-20	22.5	7.0	16.0	10.0	1.0	3.0	25.5	Bulk
MF2003008M1 DN0CSB0	3D-20	22.5	7.0	16.0	10.0	1.0	3.0	25.5	Bulk
MF2005007M1 DN0CSB0	5D-20	22.5	7.0	16.0	10.0	1.0	3.0	25.5	Bulk
MF2010006M1 DN0CSB0	10D-20	22.5	7.0	16.0	10.0	1.0	3.0	25.5	Bulk
MF2020004M1 DN0CSB0	20D-20	22.5	7.0	16.0	10.0	1.0	3.0	25.5	Bulk
MF2030004M1 DN0CSB0	30D-20	22.5	7.0	16.0	10.0	1.0	3.0	25.5	Bulk
MF252R509M1 DN0CSB0	2.5D-25	27.5	8.0	16.0	10.0	1.0	3.0	30.5	Bulk
MF2503009M1 DN0CSB0	3D-25	27.5	8.0	16.0	10.0	1.0	3.0	30.5	Bulk
MF2510007M1 DN0CSB0	10D-25	27.5	8.0	16.0	10.0	1.0	3.0	30.5	Bulk
MF2516006M1 DN0CSB0	16D-25	27.5	8.0	16.0	10.0	1.0	3.0	30.5	Bulk

8. Internal Structure



NO	Name	Material	Percentage
1	Disc	Metal oxide	55.0%
2	Solder	Tin	3.0%
3	Lead	Copper wire	15.0%
4	Coating Material	Resin	27%
5	Marking	Laser marking	/

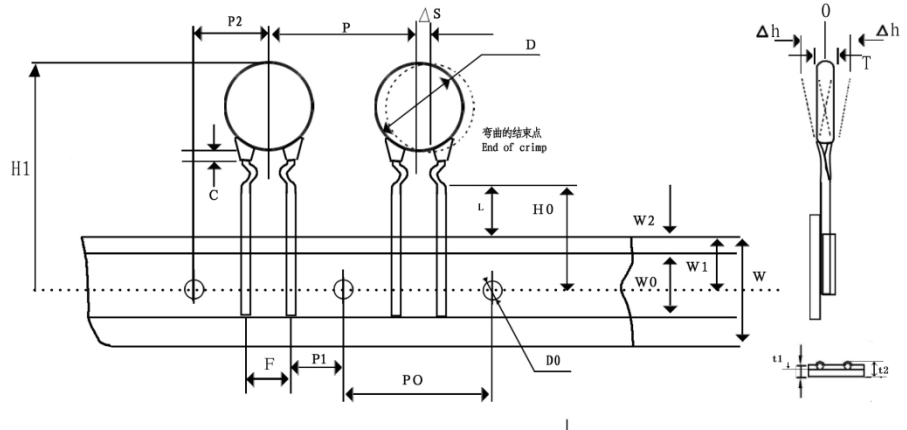
9. Marking (Example)

	① Registered Trademark		
	② 10	Zero power resistance at 25°C	
	③ D	Finished component shape (round)	
	④ 11	Disc diameter (mm)	
	⑤ M	Zero power resistance tolerance $\pm 20\%$	
	⑥ Safety Approval Symbol	CQC certification	
UL certification			
VDE certification			
Example 1	Example 2	Example 3	
			

10. Taping And Dimensions

Taping 1

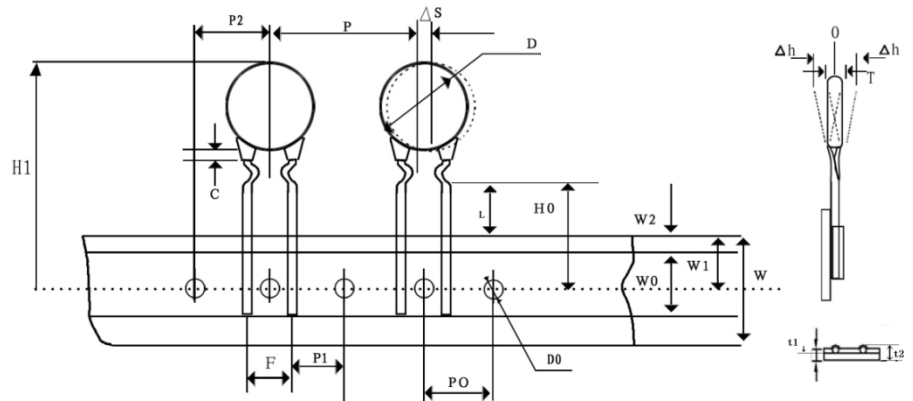
Inside kink lead F=5.0



Code	P ₀	P	P ₁	P ₂	F	ΔS	Δh	W	W ₀
Size(mm)	12.7	12.7	3.85	6.35	7.5	0	0	18.0	10.5
Tolerance	±0.3	±1.0	±0.7	±1.3	±0.8	±2.0	±2.0	+1.5/-1.0	Max
Code	W ₁	W ₂	H ₁	D ₀	H ₀	L	t ₁	t ₂	c
Size(mm)	9.0	3.0	45.0	4.0	17.0	9.0	0.5	1.7	/
Tolerance	+0.75/-0.5	Max	Max	±0.2	+1.5/-1	Max	±0.2	Max	/




Taping 2

Inside kink lead F=7.5



Code	P ₀	P	P ₁	P ₂	F	ΔS	Δh	W	W ₀
Size(mm)	12.7	25.4	8.95	12.7	7.5	0	0	18.0	10.5
Tolerance	±0.3	±1.0	±0.7	±1.3	±0.8	±2.0	±2.0	+1.5/-1.0	Max
Code	W ₁	W ₂	H ₁	D ₀	H ₀	L	t ₁	t ₂	c
Size(mm)	9.0	3.0	45.0	4.0	17.0	9.0	0.5	1.7	/
Tolerance	+0.75/-0.5	Max	Max	±0.2	+1.5/-1	Max	±0.2	Max	/

11. Safety Certificate

Approval		Organization	Safety Standards	Certificate No.
China		CQC	GB/T 6663.1-2007	CQC19001213204
USA Canada		UL	UL 1434	E474052
Germany		VDE	EN60539-1:2017-01 EN60539-1: 2016	40050168

12. Reliability

Item	Testing Conditions	Requirements	Standard	
Robustness of Terminals (Tensile)	Gradually apply the specified force and keep the unit fixed for 10±1sec.		No visible damage. $\Delta R_{25}/R_{25} \leq \pm 25\%$	IEC 60068-2-21
	Terminal diameter (mm)	Force (N)		
	0.5 < d ≤ 0.8	10 ± 10%		
Robustness of Terminals (Bending)	Apply a specified weight to one lead of the sample, bent ±90°, 2 times.		No visible damage. $\Delta R_{25}/R_{25} \leq \pm 25\%$	IEC 60068-2-21
	Terminal diameter (mm)	Bending Test Apply force(N)		
	0.5 < D ≤ 0.8	5 ± 10%		
Solderability	245±3°C, 3±0.3s. Solder composition: Sn96.5Ag3.0Cu0.5	No visible damage.	IEC 60068-2-20	
Resistance to Soldering Heat	260±5°C, 10±1sec.	No visible damage. $\Delta R_{25}/R_{25} \leq \pm 25\%$	IEC 60068-2-20	
High Temperature Storage	T _U ±2°C, 1000hrs.	No visible damage. $\Delta R_{25}/R_{25} \leq \pm 25\%$	IEC 60068-2-2	
Cold Test	T _L ±2°C, 1000hrs.	No visible damage. $\Delta R_{25}/R_{25} \leq \pm 25\%$	IEC 60068-2-1	

Item	Testing Conditions	Requirements	Standard															
Rapid Change of Temperature	<p>The conditions shown below shall be repeated 5 cycles.</p> <table border="1" data-bbox="363 501 986 719"> <thead> <tr> <th>Step</th> <th>Temperature</th> <th>Period</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>$T_L \pm 5^\circ\text{C}$</td> <td>30min</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>3min</td> </tr> <tr> <td>3</td> <td>$T_U \pm 5^\circ\text{C}$</td> <td>30min</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>3min</td> </tr> </tbody> </table>	Step	Temperature	Period	1	$T_L \pm 5^\circ\text{C}$	30min	2	Room temperature	3min	3	$T_U \pm 5^\circ\text{C}$	30min	4	Room temperature	3min	No visible damage. $\Delta R_{25}/R_{25} \leq \pm 25\%$	IEC 60068-2-14
Step	Temperature	Period																
1	$T_L \pm 5^\circ\text{C}$	30min																
2	Room temperature	3min																
3	$T_U \pm 5^\circ\text{C}$	30min																
4	Room temperature	3min																
Damp Heat Steady State	$40 \pm 2^\circ\text{C}$, 90~95% RH, 1000 \pm 24 hrs.	No visible damage. $\Delta R_{25}/R_{25} \leq \pm 25\%$	IEC 60068-2-78															
Durability at Upper Category Temperature	T_U , 1000 \pm 24hrs.	No visible damage. $\Delta R_{25}/R_{25} \leq \pm 25\%$	GB/T 6663.1-2007															
Endurance	$15^\circ\text{C} \sim 35^\circ\text{C}$, I_{max} , C_{th} , 1min ON / 5 mins OFF x 1000 cycles C_{th} = Capacitance at 240 Vac Testing Current: Details see page No. 7-8.	No visible damage. $\Delta R_{25}/R_{25} \leq \pm 25\%$	GB/T 6663.1-2007															
Durability Test with Continuous Application of Maximum Current	$15^\circ\text{C} \sim 35^\circ\text{C}$; 1000 \pm 24hrs/ Details see page No. 7-8.	No visible damage. $\Delta R_{25}/R_{25} \leq \pm 25\%$	GB/T 6663.1-2007															

13. Electrical Testing

Item	Testing Conditions	Requirements
Standard Test Condition	15~35℃, 25%~75%RH, 86kPa~106kPa.	/
Zero Power Resistance at 25℃	25℃±0.02℃, 1.5VDC.	±20%
Heat Dissipation Coefficient (mW/℃)	At a specific ambient temperature, the heat dissipation coefficient (δ) is the ratio of the thermistor electrical power consumption (ΔP) to the body temperature change (ΔT).	Meet the specified value.
Thermal Time Constant (S)	Thermal time constant (τ). The time required for the temperature of the thermistor to drop to a difference of 63.2% between its initial temperature and the final temperature under zero power conditions.	Meet the specified value.
Nominal B-Constant (K)	Zero Power Resistance Value at T1(K) Zero Power Resistance Value at T2(K) Two Specified Temperature(K) T1=298.15K(25℃) T2=358.15K(85℃) $B = \frac{T_1 T_2}{T_2 - T_1} \ln \frac{R_{T1}}{R_{T2}}$	Meet the specified value.
Maximum Steady Current (A)	The maximum current (DC or sine wave rms) that can be applied continuously to the thermistor at an ambient temperature of 25℃.	Meet the specified value.

14. Storage Conditions

14.1 Temperature: ≤35℃

14.2 Humidity: ≤70%RH

14.3 Period: ≤12 Months

14.4 Storage Place: Do not expose under the condition below:

14.4.1 Corrosive or easily oxidized gas

14.4.2 Flammable gas

14.4.3 Oil, water and chemical solvents

14.4.4 Under sunlight

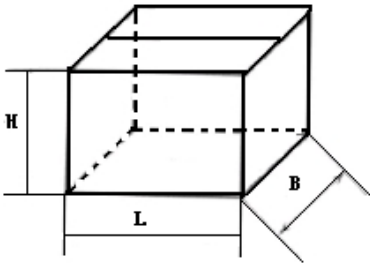
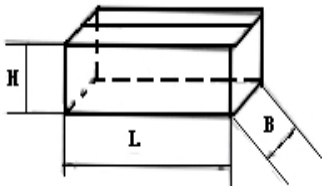
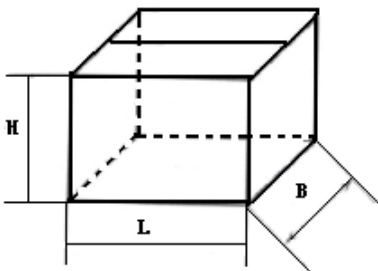
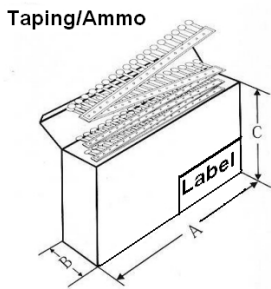
14.5 Try to ensure that the opening is minimized. Immediately re-sealed and stored in a sealed container with desiccant .

15. Environmental Compliance:

RoHS Compliance

REACH Compliance

16. Packaging

External Packaging (Bulk)	Internal Packaging (Bulk)
	
External Packaging (Taping)	Internal Packaging (Taping)
	

Dimension Description (cm)

External Packaging (Bulk)			Internal Packaging (Bulk)		
L	B	H	L	B	H
41.0	29.0	16.0	18.6	27.3	12.6
External Packaging (Taping)			Internal Packaging (Taping)		
L	B	H	B	A	C
54.0	36.0	26.3	4.4	33.5	26.2

SPQ Reference Table

Type	Specification	SPQ Quantity
Bulk	□D-5、□D-7、□D-9	1000
	□D-5、□D-7、□D-9 (P=5.0)	1000
	□D-9 (P=7.5) 、□D-11(Short lead)	1000
	□D-9 (P=7.5) 、□D-11(Long Lead)	500
	□D-13、□D-15(Long Lead)	250
	□D-13、□D-15(Short lead)	500
	□D-20	250
	□D-25(Long Lead)	125
	□D-25(Short lead)	250
Taping	P=5	1000
	P=7.5/ P=10	500

Note: The above is for reference only, the actual packing number of braided tape shall prevail.