



Data sheet

**Brief Introduction :**

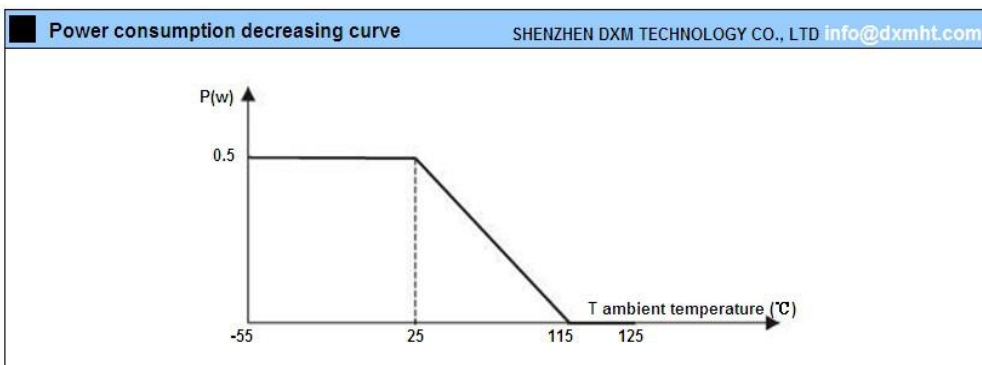
Temperature compensation NTC thermistor MF11 series is in resin coated pin wire form and has higher temperature coefficient, it can be widely applied in temperature compensation of many semiconductor and ICs that have temperature coefficient and require temperature compensation, to reach stability in wider temperature range.

**Product Application :**

1. Temperature compensation for computation equipment
2. Temperature compensation for electronic circuit
3. Temperature compensation for instrument loop, integrated circuit, crystal oscillator
4. Common precise temperature control

**Main parameter:**

Rated power  $\leq 0.5W$   
 Measured power  $\leq 0.1mW$   
 Operating temperature range  $-55^{\circ}C \sim +125^{\circ}C$   
 Rated zero power resistance R25 ( $\Omega$ )  
 R25 resistance tolerance (%)  
 B value (25/50  $^{\circ}C$ ) / (K)  
 Time constant  $\leq 30S$   
 Dissipation factor ( $mW/^{\circ}C$ )



**Advantages:**

1. Good consistency
2. Wide resistance range: 0.01~200K $\Omega$
3. Resistance tolerance can reach  $\pm 5\%$
4. Small rated power: 0.5W
5. Wide operating temperature range:  $-55 \sim +125^{\circ}C$
6. Cost-effective

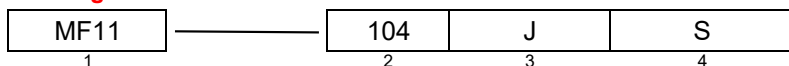
**Dimension(Unit: mm)::**

**Dimension**

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Lead wire type	Straight	In-formed
Dimension (in:mm)		

**Marking of Part Number:**



1. NTC thermistor for temperature compensation MF11 Series
2. Resistance R 25: R 25: 22R-22 $\Omega$  104-100K $\Omega$
3. Tolerance: J- $\pm 5\%$  K- $\pm 10\%$  L- $\pm 15\%$  M- $\pm 20\%$
4. Wire shape: S-Straight, U-In-formed



## Data sheet

## Specification&amp;Part no.:

Item	Part No.	Resistance @25 °C		B Value		Operating Temperature (°C)	Thermal Time Constant (S)	Dissipation Factor (mW/°C)
		(R 25) Resistance (KΩ)	Tolerance (±%)	B Value (K)	Tolerance (±%)			
1	MF11-□□□	3.3~33	5,10,20	2700	5	-55~+125	≤30 In still air	≥6.0 In still air
2		6.8~68		2830				
3		15~150		2950				
4		33~330		3150				
5		68~680		3250				
6		150~1500		3400				
7		330~3300		3570				
8		680~6800		3740				
9		1500~15000		3900				
10		3300~33000		4050				
11		6800~68000		4250				
12		15000~150000		4450				
13		33000~330000		4670				
14		68000~680000		4800				
15		150000~2000000		5050				

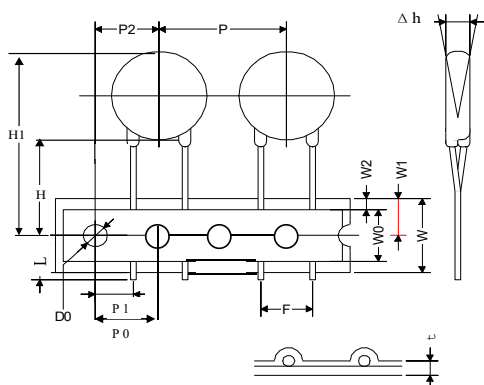
Note: First □ for filling in resistance @25 ,Second □ for filling in °C resistance tolerance code name,Third □ for filling in wire shape.

## Packing method

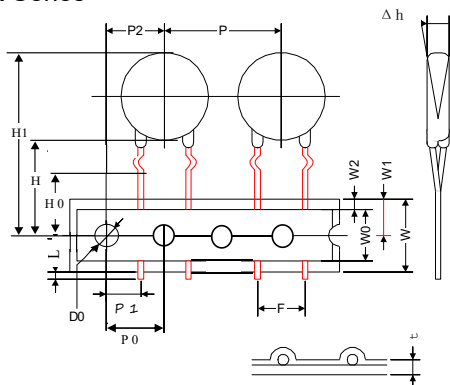
## Packing Specifications

## Ammo &amp; Reel Packing Dimension

SA / SR



CA / CR Series

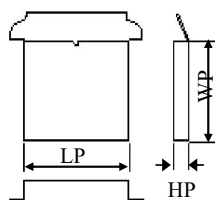


Unit: mm

Symbol	P	P0	P1	P2	F	W	W0	W1
D14	25.4±1.0	12.7±1.0	8.95±0.7	12.7±1.3	7.5±0.5	18.0±1.0	12.5max.	9.0±0.5
Symbol	W2	H	H0	H1	Δh	L	D0	t
D14	3.0max.	20.0±2.0	16.0±1.0	40.0max.	0±2	1.0max.	4.0±0.2	0.6±0.3

## Ammo &amp; Reel Packing Dimension

Ammo &amp; Reel Box



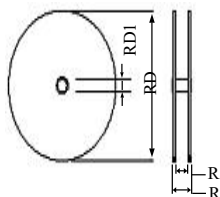
<b>Symbol</b>	Ammo
<b>LP :</b>	335 mm
<b>WP :</b>	243 mm
<b>HP :</b>	50 mm
<b>Carton :</b>	355 mm * 260 mm * 537 mm

<b>Symbol</b>	Reel
<b>LP :</b>	345mm



## Data sheet

Reel



WP :	345mm
HP :	65mm
RD :	340 mm
RD1 :	30 ± 0.5 mm
RW :	51mm
RW1 :	56mm
Carton :	360 mm * 360 mm * 480 mm

## Electrical properties and requirements

Item	Description	Test Condition Description	Requirement
1	Zero Power Resistance	At 25°C, the measured resistance value can be neglected compared to the general tolerance	See Electrical Parameters
2	B-value	$B = \frac{T_1 * T_2}{T_2 - T_1} * \ln \left( \frac{R_1}{R_2} \right)$ <p>The B value can be calculated using the zeropower resistance value at 25°C and 50°C. The equation is as above.</p>	See Electrical Parameters
3	Thermal Dissipation Constant	The ratio of the change of the dissipation power to the corresponding change of the temperature at specified temperature. The unit is: mw/°C	See Electrical Parameters
4	Thermal Time Constant	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.	See Electrical Parameters
5	Operating Temperature	Allowable temperature range while the thermistor work continuously for long time	-40-+125°C
6	Storage conditions	-10°C ~ 40°C RH≤75%	-10°C ~ 40°C

## Reliability Test

## Mechanical Ratings

Test Parameter	Test Condition / Description	Performance Requirements		Standard	
		Diameter	Loading		
Terminal Pull Strength	After gradually applying the load specified below and keeping the unit fixed for 10±1 seconds, the terminal shall be visually examined for any damage.	0.3<d ≤0.5	0.5 Kg	No visible damage	IEC 60068-2-21
		0.6mm	1.0 Kg		
		0.8mm	1.0 Kg		
		1.0mm	2.0 Kg		
Terminal Bending Strength	The unit shall be secured with its terminal kept vertical and the weight specified below be applied in the axial direction. The terminal shall gradually be bent by 90° in one direction, then 90° in the opposite direction, and again back to the original position. The damage of the terminal shall be visually examined.	0.3<d ≤0.5	0.25 Kg	No visible damage	IEC 60068-2-21
		0.6mm	0.5 Kg		
		0.8mm	0.5 Kg		
		1.0mm	1.0 Kg		
Resistance to Soldering Heat	Immerse the lead of the resistor into tin liquor of 260±3°C for 10± 1 sec., the distance from the liquor surface to the resistor is 6mm. Then resume to the original state.	No visible damage. The max change ratio of the resistance is within±15%		IEC 60068-2-20	
Solderability	Immerse the lead into tin liquor of 245 ± 3 °C , for 3 ± 0.3 sec. The temperature of immerse welding: 245 ± 3 °C, The temperature of hand welding: 245 ± 3 °C (5s)	The covered surface area should be above 95%		IEC 60068-2-20	
Vibration	The Specimen shall be vibrated by its lead wires with a total amplitude of 1.5mm and a varying frequency of 10~55~10HZ(each minutes) for a period of 2 hours respectively in each X,Yand Z directions.	No visible damage ΔVB/VB% ≤±5%			



# Shenzhen DXM Technology Co., Ltd

## NTC thermistor

NTC thermistor for temperature compensation MF11-104JS

### Data sheet

ENVIRONMENTAL RATINGS						
High Temperature Storage	In a drying oven without load. Ambient temp: $125 \pm 5^\circ\text{C}$ ; period: $1000 \pm 24$ hours		No visible damage   $\Delta R_{25}/R_{25}$   $\leq 5\%$ IEC 600068-2-2			
Dry Heat Loading	The specimen shall be applied continuously the maximum allowable voltage at the specified conditions for specified period and then stored at room temperature and normal humidity over 2 hours. Thereafter, the change of Vb and mechanical damage shall be examined. Ambient temp: $125 \pm 5^\circ\text{C}$ ; Period: $1000 \pm 24$ hours.		$\Delta VB/VB\% \leq \pm 10\%$			
Damp Heat Loading	The specimen shall be applied continuously the maximum allowable voltage at the specified conditions for specified period and then stored at room temperature and normal humidity over 2 hours. Thereafter, the change of Vb and mechanical damage shall be examined. Ambient condition: $40 \pm 2^\circ\text{C}$ , 90 to 95%R.H. ; period: $1000 \pm 24$ hours		No visible damage   $\Delta R_{25}/R_{25}$   $\leq 3\%$ IEC 60068-2-78			
Rapid Change of Temperature Cycle	Condition the specimen to each temperature form step 1 to step 4 in this order for the period shown in the table of specifications. The change of Vb and mechanical damage shall be examined after 2 hours.		No visible damage   $\Delta R_{25}/R_{25}$   $\leq 3\%$ IEC 60068-2-14			
				The conditions shown below shall be repeated 5 cycles.		
				Step	Temp $^\circ\text{C}$	Period(min.)
				1	$-30 \pm 5$	$30 \pm 3$
				2	Room Temp	$5 \pm 3$
	3	$125 \pm 5$	$30 \pm 3$			
	4	Room Temp	$5 \pm 3$			
Max. Power Dissipation	$25 \pm 5^\circ\text{C}$ , Pmax. , $1000 \pm 24$ hrs		No visible damage   $\Delta R_{25}/R_{25}$   $\leq 5\%$ IEC 60539-1 4.26.3			
Insulation Test	1000 VDC , 1 min		$\geq 500 \text{ M}\Omega$ MIL-STD-202F -Method 302			

#### Packing Quantity

Type	Body diameter	Packaging Quantities
Reel	$\geq 9.0\text{mm}$	1000PCS
	$< 9.0\text{mm}$	1500PCS
Amm	$\geq 12\text{mm}$	500PCS
	$< 12\text{mm}$	1250PCS
Bulk	$\geq 12\text{mm}$	500PCS
	$< 12\text{mm}$	1000PCS

#### Storage Conditions of thermistor :

- Storage Temperature :  $-10 \sim +40^\circ\text{C}$
- Relative humidity :  $\leq 75\%RH$
- Thermistors must be kept away from sunlight and stored in a non-corrosive atmosphere.

Thermistor Period of Storage : 1 year