

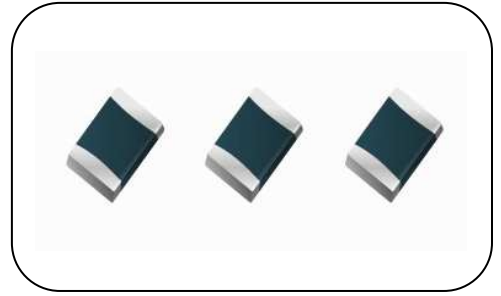
CPTC Thermistor : TPM Type

SMD CPTC Thermistor for Over-Current Protection



■ Features

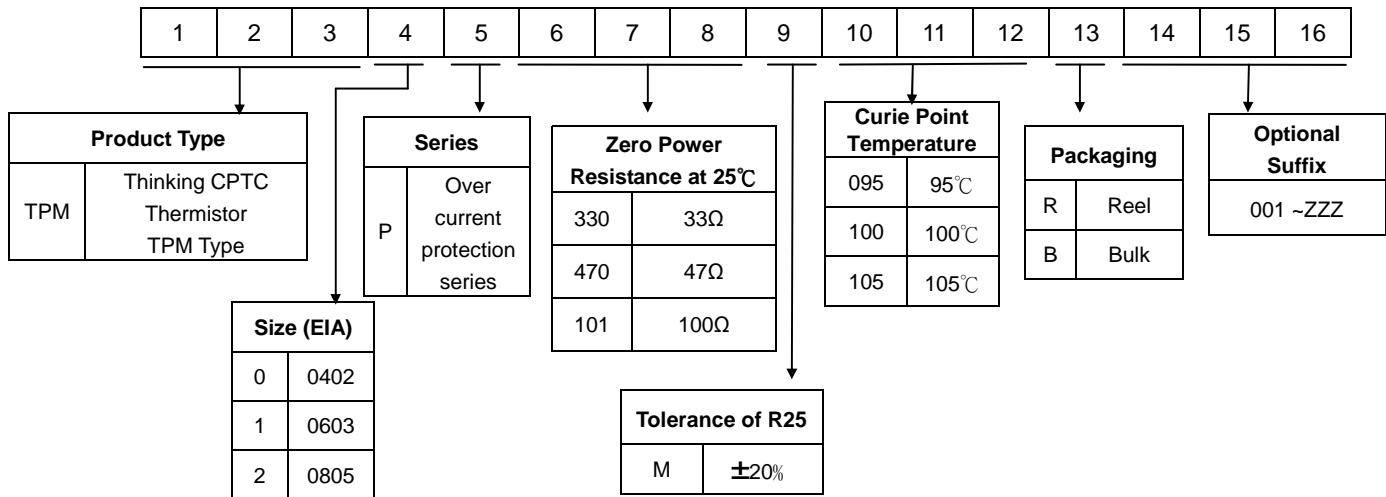
1. RoHS & Halogen-free compliant
2. EIA size 0603
3. Suitable for reflow soldering
4. Suitable for over-current or short circuit protection



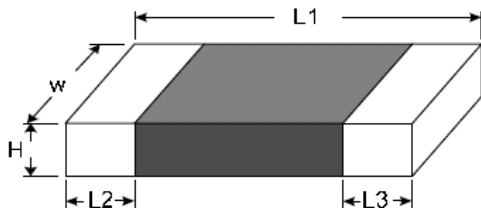
■ Recommended Applications

1. Notebook
2. AC adapter
3. Battery charger
4. LED
5. Over-current protection for any consumer device

■ Part Number Code



■ Structure and Dimensions



(Unit: mm)

Part No.	Size (EIA)	L1	W	H max.	L2 and L3.
TPM1P	0603	1.60±0.15	0.80±0.15	0.95	0.4±0.02

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■ Electrical Characteristics

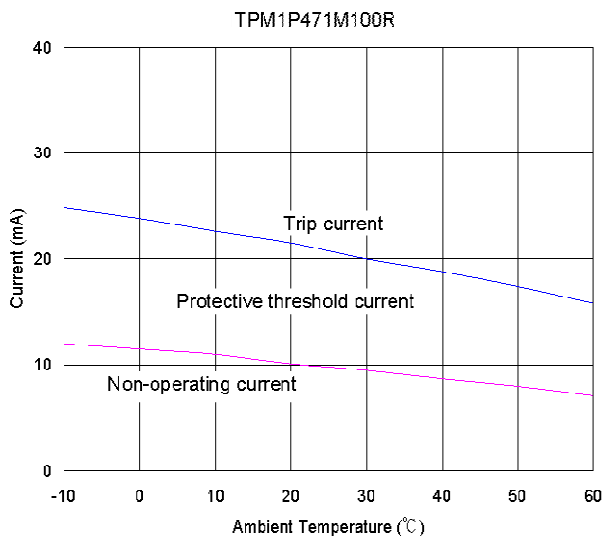
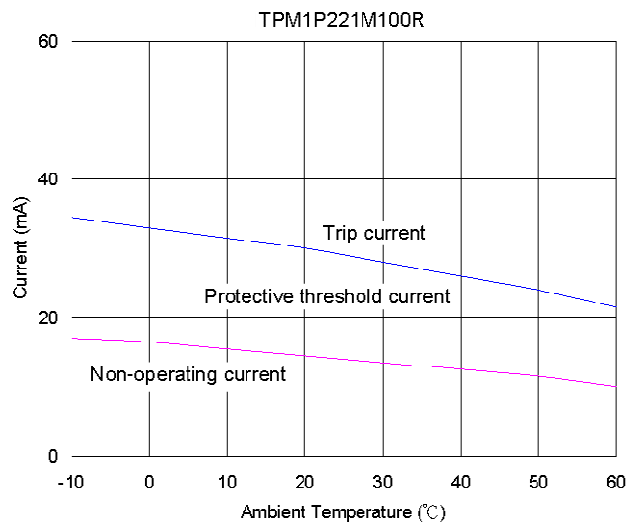
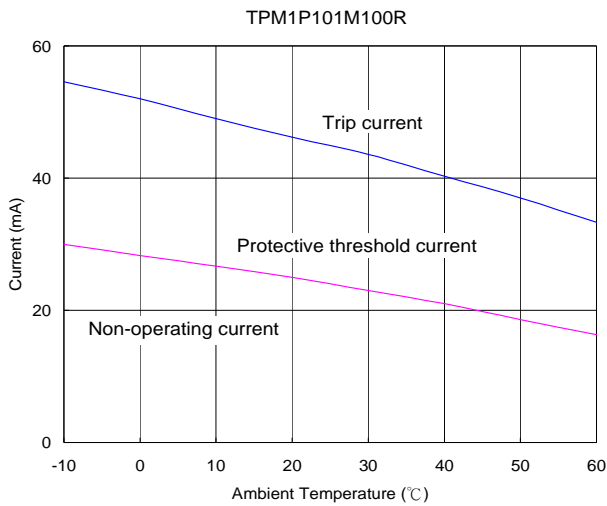
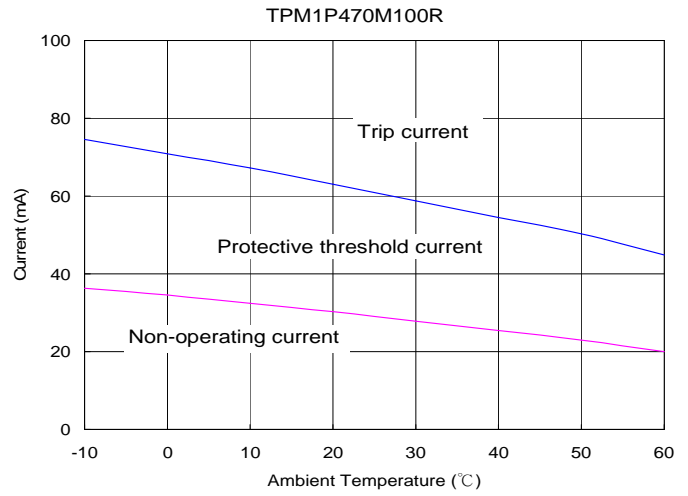
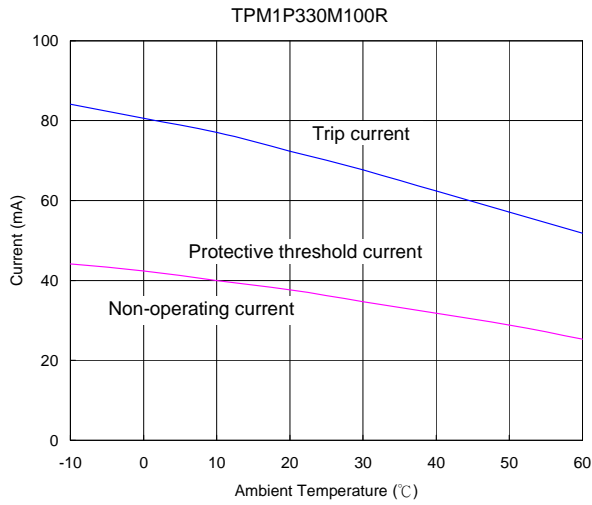
Part No.	Size (EIA)	Curie Point Temp.	Zero Power Resistance at 25°C	Non-operating Current		Trip Current (at -10°C)		Max. Voltage	Max. Current	Operating Temperature Range	
				@ +25°C	@ +60°C	@ -10°C	@ +25°C			@ Vmax	@ V=0
		Tc (°C)	R25(Ω)	In(mA)		It(mA)		V _{dc} (V)	I _{max} (mA)	T _L ~T _U (°C)	
TPM1P330M100R	0603	100±10	33	36	25	85	71	24	900	-10 ~ +60	-40 ~ +125
TPM1P470M100R			47	29	20	75	61		630		
TPM1P101M100R			100	21	15	55	45		300		
TPM1P221M100R			220	14	10	35	29		130		
TPM1P471M100R			470	10	7	25	21		60		

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■ Protective Threshold Current Range



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■ Typical Application Circuit

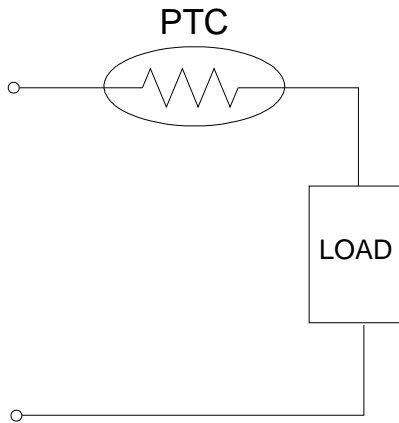


Fig 1. Over-current Protection

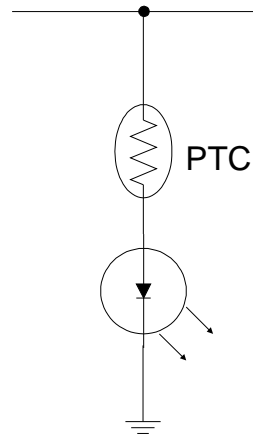
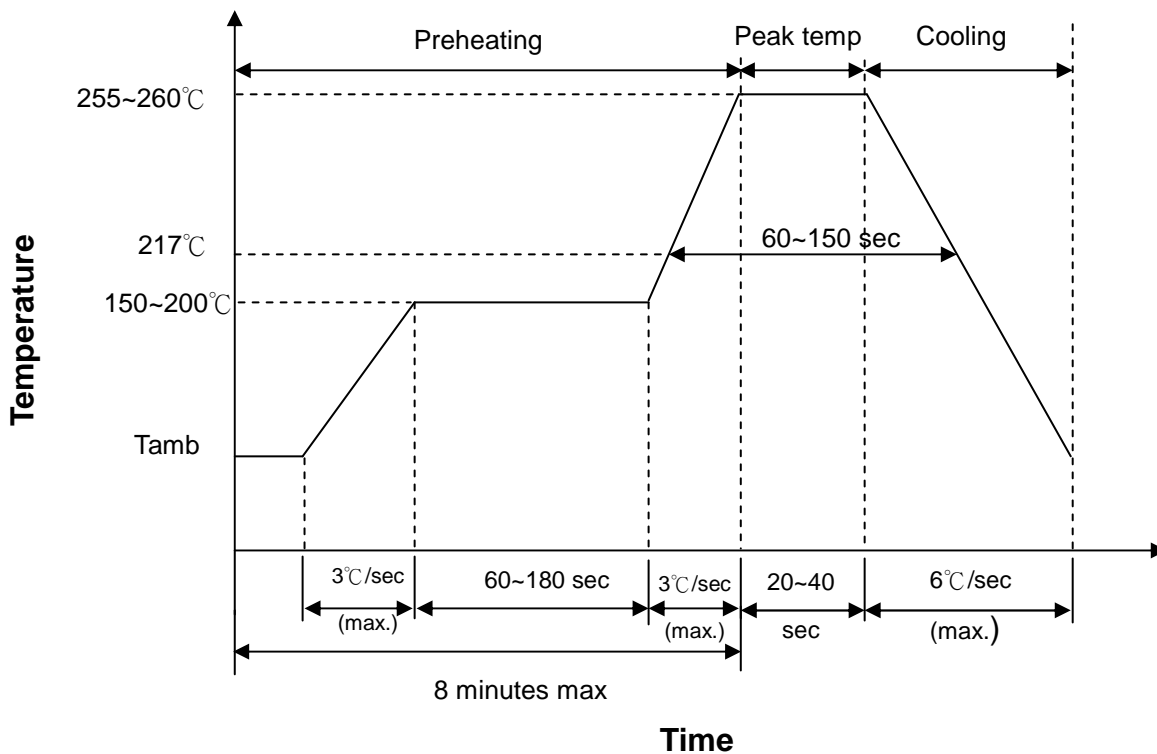


Fig 2. LED Protection

Soldering Recommendation

■ IR-Reflow Soldering Profile



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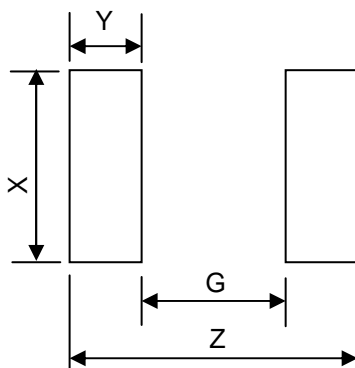


■ Reworking Conditions With Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	360°C (max.)
Soldering Time	3 sec (max.)
Diameter of Soldering Iron-tip	Φ3mm (max.)

Caution: Do not touch the component surface with soldering iron directly to prevent it from damage.

■ Recommended Pad Dimensions




Size	Z (mm)	G (mm)	X (mm)	Y (mm)
0603	3.0	1.0	1.0	1.0

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■ Reliability

Item	Standard	Test Conditions / Methods	Specifications															
Bending Strength	IEC-60068-2-21	Warp 3mm Speed < 0.5mm/sec. Duration: 10 sec on PCB. 	No visible damage $\Delta R_{25}/R_{25}$ $\leq 10\%$															
Damp Heat, Steady State	IEC 60068-2-3	60 \pm 2 $^{\circ}\text{C}$, 90 ~ 95% RH , 1000 \pm 24 HRS	No visible damage $\Delta R_{25}/R_{25}$ $\leq 20\%$															
High Temp. Storage	IEC 60738-1 IEC 60068-2-2	125 \pm 3 $^{\circ}\text{C}$, 1000 \pm 24 HRS	No visible damage $\Delta R_{25}/R_{25}$ $\leq 20\%$															
Low Temp. Storage	Specification Standard	-40 \pm 3 $^{\circ}\text{C}$, 1000 \pm 24 hrs	No visible damage $\Delta R_{25}/R_{25}$ $\leq 20\%$															
Rapid Change of Temperature	IEC 60068-2-14	The conditions shown below shall be repeated 5 cycles on PCB <table border="1" data-bbox="574 958 1114 1249"> <thead> <tr> <th>Step</th> <th>Temperature ($^{\circ}\text{C}$)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40 \pm 5</td> <td>30 \pm 3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>5 \pm 3</td> </tr> <tr> <td>3</td> <td>125 \pm 5</td> <td>30 \pm 3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>5 \pm 3</td> </tr> </tbody> </table>	Step	Temperature ($^{\circ}\text{C}$)	Period (minutes)	1	-40 \pm 5	30 \pm 3	2	Room temperature	5 \pm 3	3	125 \pm 5	30 \pm 3	4	Room temperature	5 \pm 3	No visible damage $\Delta R_{25}/R_{25}$ $\leq 20\%$
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1	-40 \pm 5	30 \pm 3																
2	Room temperature	5 \pm 3																
3	125 \pm 5	30 \pm 3																
4	Room temperature	5 \pm 3																
High Temp. Endurance Load	IEC 60738-1	60 \pm 3 $^{\circ}\text{C}$ Vmax. , for 1.5hrs on / 0.5hrs off , 1000 \pm 24 HRS	No visible damage $\Delta R_{25}/R_{25}$ $\leq 20\%$															
Climatic Sequence	IEC 60738-1	a. 125 $^{\circ}\text{C}$ x 16 HRS b. 1st cycle : 40 $^{\circ}\text{C}$ 95 %RH x 24 HRS c. -40 $^{\circ}\text{C}$ x 2 HRS d. 5 cycles : 40 $^{\circ}\text{C}$ 95% RH x 24 HRS / Cycle	No visible damage $\Delta R_{25}/R_{25}$ $\leq 20\%$															
Solderability	IEC 60068-2-58	245 \pm 5 $^{\circ}\text{C}$, 3 \pm 0.3 sec	At least 95% of terminal electrode is covered by new solder															
Resistance to Soldering Heat	IEC 60068-2-58	260 \pm 5 $^{\circ}\text{C}$, 10 \pm 1 sec	No visible damage $\Delta R_{25}/R_{25}$ $\leq 20\%$															

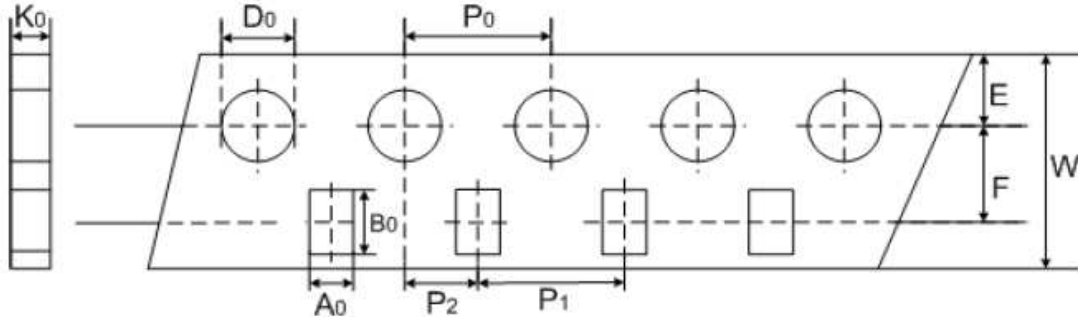
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■ Package

● Taping Specification

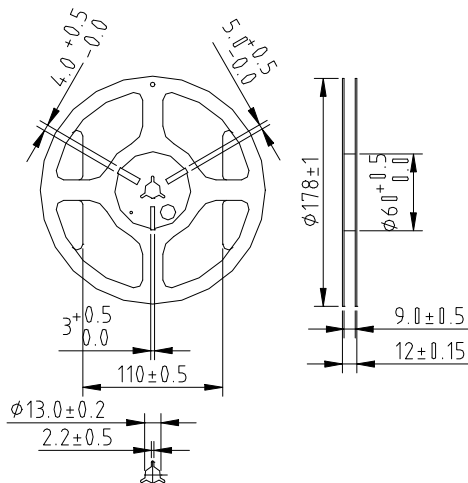


(Unit: mm)

Index Type	A ₀	B ₀	W	E	F	P ₁	P ₂	P ₀	D ₀	K ₀
0603	±0.2	±0.2	±0.2	±0.1	±0.05	±0.1	±0.05	±0.1	±0.1	±0.1
0603	1.1	1.9	8	1.75	3.5	4	2	4	1.55	0.95

● Quantity

(Unit: mm)



Type	Quantity(pcs/reel)
0603	4000

■ Storage Condition of Products

- Storage Conditions :
 1. Storage Temperature: -10°C ~ +40°C
 2. Relative Humidity: ≤ 75%RH
 3. Keep away from corrosive atmosphere and sunlight.
- Period of Storage : 1 year