

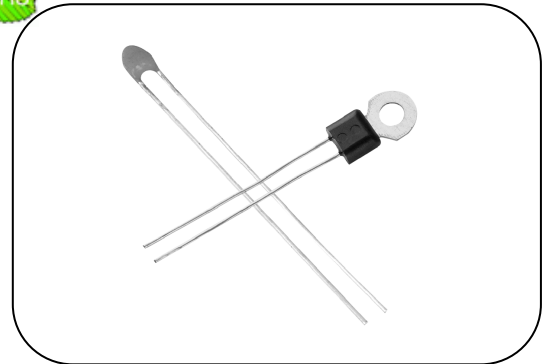
CPTC Thermistor: PT Series

Temperature Sensor



■ Features

1. RoHS compliant
2. Small size
3. Very fast reaction time
4. Wide range of protection temperatures
5. No need reset supply after protection
6. Stable over along life
7. Operating temperature range :
 $0 \sim +40^{\circ}\text{C}$ ($V=V_{\text{max}}$)
 $0 \sim T_s+25^{\circ}\text{C}$ ($V=0$)
8. Agency Recognition: UL /cUL / CQC



■ Recommended Applications

1. Electrical equipment (Electrical machinery, Transformer)

■ Part No. Code

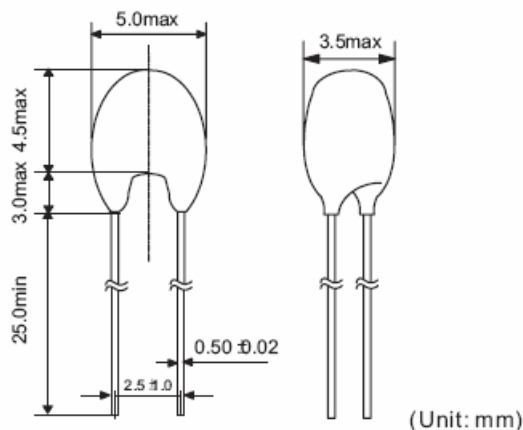
P	T	L	S	2	1	0	1	Y	P	8	1	6	B	0	0																																																		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																																																		
<table><tr><td colspan="2">Product Code</td></tr><tr><td>PT</td><td>PTC Thermistor for Temperature Sensor</td></tr></table>		Product Code		PT	PTC Thermistor for Temperature Sensor	<table><tr><td colspan="2">Dimensions</td></tr><tr><td>S2</td><td>2mm Square</td></tr></table>		Dimensions		S2	2mm Square	<table><tr><td colspan="2">Resistance (R₂₅)</td></tr><tr><td>800</td><td>80 Ω</td></tr><tr><td>101</td><td>100 Ω</td></tr><tr><td>331</td><td>330 Ω</td></tr></table>		Resistance (R ₂₅)		800	80 Ω	101	100 Ω	331	330 Ω	<table><tr><td colspan="2">Tolerance of R₂₅</td></tr><tr><td>R</td><td>0%~ 100%</td></tr><tr><td>Y</td><td>Special</td></tr></table>		Tolerance of R ₂₅		R	0%~ 100%	Y	Special	<table><tr><td colspan="2">Curie Temperature</td></tr><tr><td>P0</td><td>0℃</td></tr><tr><td>P8</td><td>80℃</td></tr><tr><td>A0</td><td>100℃</td></tr><tr><td>A2</td><td>120℃</td></tr><tr><td>A4</td><td>140℃</td></tr></table>		Curie Temperature		P0	0℃	P8	80℃	A0	100℃	A2	120℃	A4	140℃	<table><tr><td colspan="2">Maximum Voltage(Vdc)</td></tr><tr><td>16</td><td>16V</td></tr><tr><td>30</td><td>30V</td></tr></table>		Maximum Voltage(Vdc)		16	16V	30	30V	<table><tr><td colspan="2">Packaging</td></tr><tr><td>B(Y)</td><td>Bulk</td></tr><tr><td>A(X)</td><td>Ammo Box Pitch 12.7</td></tr><tr><td>R(W)</td><td>Taping & Reel Pitch 12.7</td></tr></table>		Packaging		B(Y)	Bulk	A(X)	Ammo Box Pitch 12.7	R(W)	Taping & Reel Pitch 12.7	<table><tr><td colspan="2">Internal Control Code</td></tr></table>		Internal Control Code	
		Product Code																																																															
PT	PTC Thermistor for Temperature Sensor																																																																
Dimensions																																																																	
S2	2mm Square																																																																
Resistance (R ₂₅)																																																																	
800	80 Ω																																																																
101	100 Ω																																																																
331	330 Ω																																																																
Tolerance of R ₂₅																																																																	
R	0%~ 100%																																																																
Y	Special																																																																
Curie Temperature																																																																	
P0	0℃																																																																
P8	80℃																																																																
A0	100℃																																																																
A2	120℃																																																																
A4	140℃																																																																
Maximum Voltage(Vdc)																																																																	
16	16V																																																																
30	30V																																																																
Packaging																																																																	
B(Y)	Bulk																																																																
A(X)	Ammo Box Pitch 12.7																																																																
R(W)	Taping & Reel Pitch 12.7																																																																
Internal Control Code																																																																	
<table><tr><td colspan="2">Series</td></tr><tr><td>L</td><td>Lead Type</td></tr><tr><td>M</td><td>Metal Terminal Type</td></tr></table>		Series		L	Lead Type	M	Metal Terminal Type																																																										
Series																																																																	
L	Lead Type																																																																
M	Metal Terminal Type																																																																

Note:
The last 4 bits of B and S are not used.

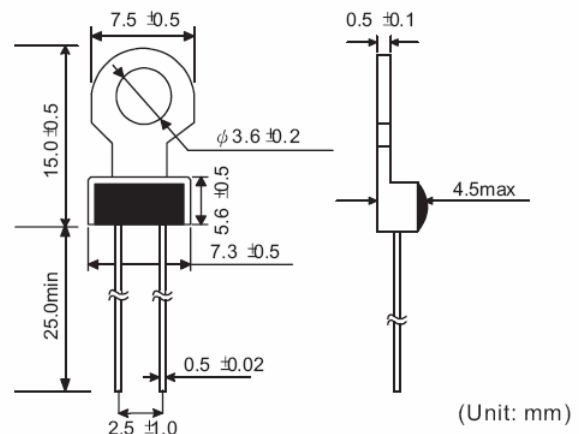
Note:
The code in () is for RoHS control.

■ Dimensions

PTL Series



PTM Series



CPTC Thermistor: PT Series

Temperature Sensor



■ Characteristics

PTL Series

Part No.	Curie Temperature	Sensing Temperature	Resistance Value			Max. Voltage	Max. Current	Safety Approvals		
	T _c (°C)	T _s (°C)	25°C (Ω)	T _s -5°C (Ω)	T _s +5°C (Ω)	V _{max} (V _{DC})	I _{max} (mA)	UL	cUL	CQC
PTLS2101□P4**	40±10	55	100 max.	330 max.	470 min.	30	100	√	√	√
PTLS2101□P5**	50±10	65						√	√	√
PTLS2101□P6**	60±10	75						√	√	√
PTLS2101□P7**	70±10	85						√	√	√
PTLS2101□P8**	80±10	95						√	√	√
PTLS2101□P9**	90±10	105						√	√	√
PTLS2101□A0**	100±10	115						√	√	√
PTLS2331□P4**	40±10	55	330 max.	1500 max.	2200 min.			√	√	√
PTLS2331□P5**	50±10	65						√	√	√
PTLS2331□P6**	60±10	75						√	√	√
PTLS2331□P7**	70±10	85						√	√	√
PTLS2331□P8**	80±10	95						√	√	√
PTLS2331□P9**	90±10	105						√	√	√
PTLS2331□A0**	100±10	115						√	√	√

Note1: □=Tolerance of R₂₅

Note2: **= Maximum Voltage: 16V_{DC} or 30V_{DC}.

Note3: UL&cUL File No. E138827 , CQC File No. CQC03001008129

PTL –Y02/03 Series

Part No.	Curie Temperature	Sensing Temperature	Resistance Value					Max. Voltage	Max. Current	Safety Approvals		
	T _c (°C)	T _s (°C)	25°C (Ω)	T _s -5°C (Ω)	T _s +5°C (Ω)	T _s +15°C (Ω)	T _s +23°C (Ω)	V _{max} (V _{DC})	I _{max} (mA)	UL	cUL	CQC
PTLS2101□P4**Y02	40±10	60	100 max.	570 max.	570 min.	—	10K min.	30	100	√	√	√
PTLS2101□P5**Y02	50±10	70								√	√	√
PTLS2101□P6**Y02	60±10	80								√	√	√
PTLS2101□P7**Y03	70±10	90		550 max.	1330 min.	4000 min.	—			√	√	√
PTLS2101□P8**Y03	80±10	100								√	√	√
PTLS2101□P9**Y03	90±10	110								√	√	√
PTLS2101□A0**Y03	100±10	120								√	√	√
PTLS2101□A1**Y03	110±10	130										
PTLS2101□A2**Y03	120±10	140										
PTLS2101□A3**Y03	130±10	150										
PTLS2101□A4**Y03	140±10	160										
PTLS2101□A5**Y03	150±10	170										
PTLS2101□A6**Y03	160±10	180										

Note1: □=Tolerance of R₂₅

Note2: **= Maximum Voltage: 16V_{DC} or 30V_{DC}.

Note3: UL&cUL File No. E138827 , CQC File No. CQC03001008129

CPTC Thermistor: PT Series

Temperature Sensor



PTM Series

Part No.	Curie Temperature	Sensing Temperature	Resistance Value			Max. Voltage	Max. Current	Safety Approvals		
	T _c (°C)	T _s (°C)	25°C (Ω)	T _s -5°C (Ω)	T _s +5°C (Ω)	V _{max} (V _{DC})	I _{max} (mA)	UL	cUL	CQC
PTMS2101□P4**	40±10	55	100 max.	330 max.	470 min.	30	100	√	√	√
PTMS2101□P5**	50±10	65						√	√	√
PTMS2101□P6**	60±10	75						√	√	√
PTMS2101□P7**	70±10	85						√	√	√
PTMS2101□P8**	80±10	95						√	√	√
PTMS2101□P9**	90±10	105						√	√	√
PTMS2101□A0**	100±10	115						√	√	√
PTMS2331□P4**	40±10	55	330 max.	1500 max.	2200 min.			√	√	√
PTMS2331□P5**	50±10	65						√	√	√
PTMS2331□P6**	60±10	75						√	√	√
PTMS2331□P7**	70±10	85						√	√	√
PTMS2331□P8**	80±10	95						√	√	√
PTMS2331□P9**	90±10	105						√	√	√
PTMS2331□A0**	100±10	115						√	√	√

Note1: □=Tolerance of R₂₅

Note2: **= Maximum Voltage: 16V_{DC} or 30V_{DC}.

Note3: UL&cUL File No. E138827 , CQC File No. CQC03001008129

PTM -Y02/03 Series

Part No.	Curie Temperature	Sensing Temperature	Resistance Value					Max. Voltage	Max. Current	Safety Approvals		
	T _c (°C)	T _s (°C)	25°C (Ω)	T _s -5°C (Ω)	T _s +5°C (Ω)	T _s +15°C (Ω)	T _s +23°C (Ω)	25°C (Ω)	Vmax (V _{DC})	UL	cUL	CQC
PTMS2101□P4**Y02	40±10	60	100 max.	570 max.	570 min.	—	10K min.	30	100	√	√	√
PTMS2101□P5**Y02	50±10	70								√	√	√
PTMS2101□P6**Y02	60±10	80								√	√	√
PTMS2101□P7**Y03	70±10	90		550 max.	1330 min.	4000 min.	—			√	√	√
PTMS2101□P8**Y03	80±10	100								√	√	√
PTMS2101□P9**Y03	90±10	110								√	√	√
PTMS2101□A0**Y03	100±10	120								√	√	√
PTMS2101□A1**Y03	110±10	130										
PTMS2101□A2**Y03	120±10	140										

Note1: □=Tolerance of R₂₅

Note2: **= Maximum Voltage: 16V_{DC} or 30V_{DC}.

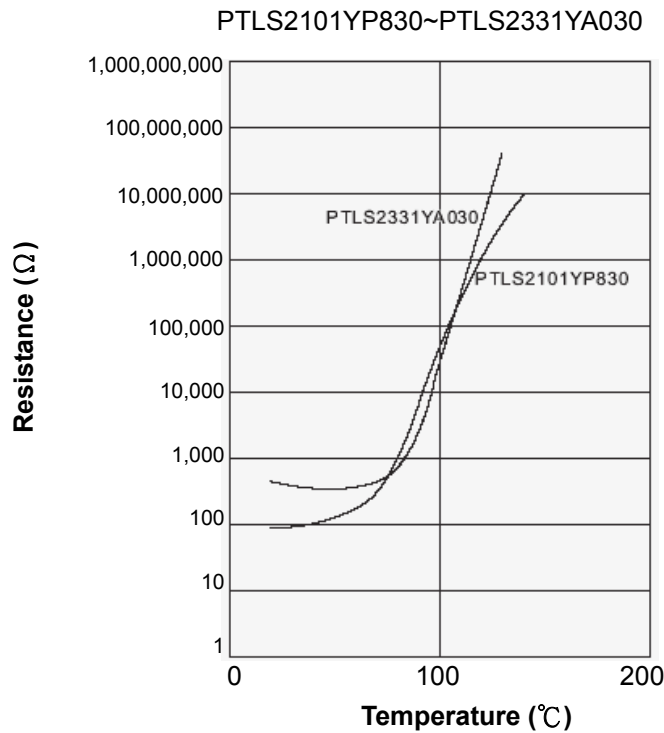
Note3: UL&cUL File No. E138827 , CQC File No. CQC03001008129

CPTC Thermistor: PT Series

Temperature Sensor

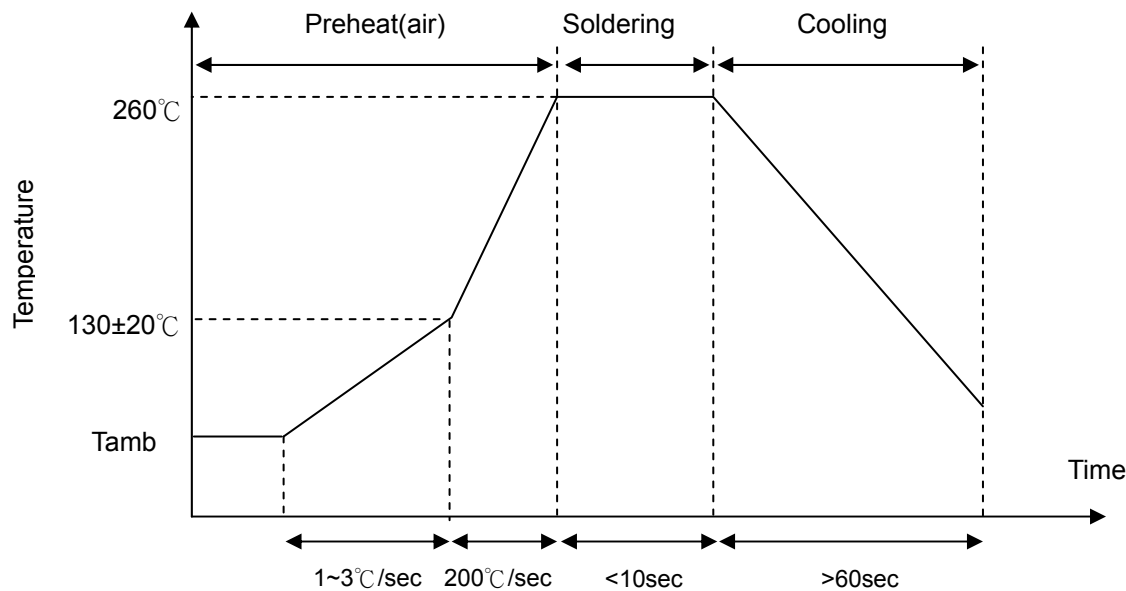


■ R-T Characteristic Curve (Representative)



■ Soldering Recommendation

● Wave Flow Soldering Profile



● Recommended Reworking Conditions With Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	360°C (max.)
Soldering Time	2 sec (max.)
Distance from coating	6 mm (min.)

CPTC Thermistor: PT Series

Temperature Sensor



■ Reliability Test

Item	Standard	Test conditions / Methods	Specifications								
Tensile Strength of Terminals	IEC60068-2-21	Fasten body and apply a force gradually to each lead for 10±1 sec. <table><tr><td>Terminal diameter (mm)</td><td>Force T(N)</td></tr><tr><td>0.35<d≤0.5</td><td>5.0</td></tr><tr><td>0.5<d≤0.8</td><td>10.0</td></tr><tr><td>0.8<d≤1.25</td><td>20.0</td></tr></table>	Terminal diameter (mm)	Force T(N)	0.35<d≤0.5	5.0	0.5<d≤0.8	10.0	0.8<d≤1.25	20.0	ΔR/R25 ≤20% No damage observed
Terminal diameter (mm)	Force T(N)										
0.35<d≤0.5	5.0										
0.5<d≤0.8	10.0										
0.8<d≤1.25	20.0										
Solderability	IEC60068-2-20	Then dip each lead into 255±5℃ solder for 3±0.5sec.to the 4±1mm above from body .	At least 95% of terminal electrode is covered by new solder								
Resistance to Soldering Heat	IEC60068-2-20	Dip each lead into 350±10℃ solder for 3~4sec. to the 4±1mm above body.	ΔR/R25 ≤20% No damage observed								
Vibration	IEC60068-2-6	Fasten body to baseboard with solder perfectly and supply sine wave oscillation at frequency from 10 HZ to 55HZ all oscillation with 0.75 mm of Vibrato for 24 cycles in each of 3 naturally perpendicular plane for a total of 6 hours	ΔR/R25 ≤20% No damage observed								
Shock	IEC60068-2-27	Putting the PTC product in the shock equipment shock wave: half-sine ΔV=1.0m/s;Acceleration:50m/s ² ;Pulse time:30ms	ΔR/R25 ≤20% No damage observed								
Climatic sequence	IEC60738-1	+40℃,20%R.H X 24hrs →100℃ X 16hrs→25℃ X 2hrs→+40℃,95%R.HX 24hrs→ 0℃ X 2hrs→+40℃,95%R.HX 24hrs→25℃ X (1~2)hrs	ΔR/R25 ≤20% No damage observed								
Insulation *	CECC42000	100±15V _{DC} , 60±5S	≥ 100MΩ								
Voltage Proof *	CECC42000	1000±10V _{rms} , 60±5S	No damage observed								
Humidity	IEC60068-2-3	40±2℃ ,90~95%RH,12±2V _{DC} * for 1000±2 hrs	ΔR/R25 ≤20% No damage observed								
Temp. cycle	IEC60068-2-14	-40±3℃×30min.→+85±2℃×30min ×5Cycles excessive time:2min<T<3min	ΔR/R25 ≤20% No damage observed								
Endurance at upper category temperature	IEC60068-2-2	Ts+25℃, for 1000±2hrs	ΔR/R25 ≤20% No damage observed								
Endurance at maximum operating temperature and maximum voltage	IEC60738-1	Ts+25℃, Vmax, Imax for 1000±2 hrs	ΔR/R25 ≤20% No damage observed								
Climatic sequence	IEC60738-1	+40℃,20%R.H X 24hrs →100℃ X 16hrs→25℃ X 2hrs→ +40℃,95%R.HX 24hrs→ 0℃ X 2hrs→+40℃,95%R.H X 24hrs→25℃ X (1~2)hrs	ΔR/R25 ≤20% No damage observed								

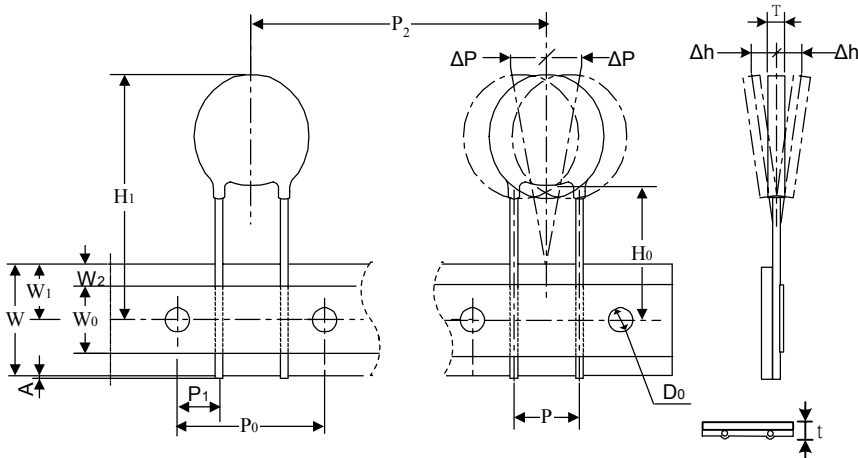
* : Only application for PTM series

CPTC Thermistor: PT Series

Temperature Sensor



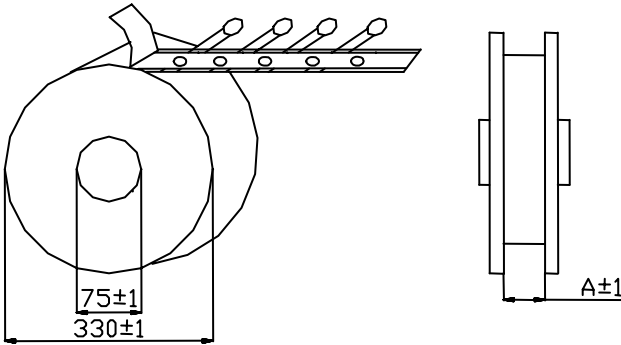
- Packaging
 - Taping Specification



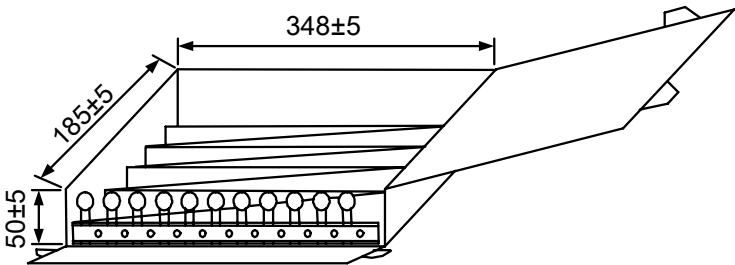
Taping Code	P_0 ± 0.3	P ± 0.3	P_1 ± 1.0	H_0 ± 1.0	W_0 ± 1.0	W_1 ± 1.0	W_2 ± 1.0	W ± 1.0	T Max	ΔP Max	Δh Max	A Max	D_0 ± 0.2	t ± 0.2	H_1 MAX
A(X)/R(W)	12.7	2.5	5.10	18.0	12.0	9.0	3.0	18.0	6.0	1.0	2.0	0.5	4.0	0.6	32.5

■ Quantity

- Reel Packing
2000pcs/reel



- Ammo packing
1500pcs/box



- Bulk Packing

Type	Quantity pcs/bag
PTL	500
PTM	200

CPTC Thermistor: PT Series

Temperature Sensor



■ Storage condition of products

- Storage Conditions :
 1. Storage Temperature : $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$
 2. Relative humidity : $\leq 75\% \text{RH}$
 3. Thermistor must be kept away from sunlight and stored in a non-corrosive atmosphere.
- Period of Storage : 1 year