

NTC Thermistor: TTC05 Series



Φ5 mm Disc Type for Temperature Sensing/Compensation

■ Features

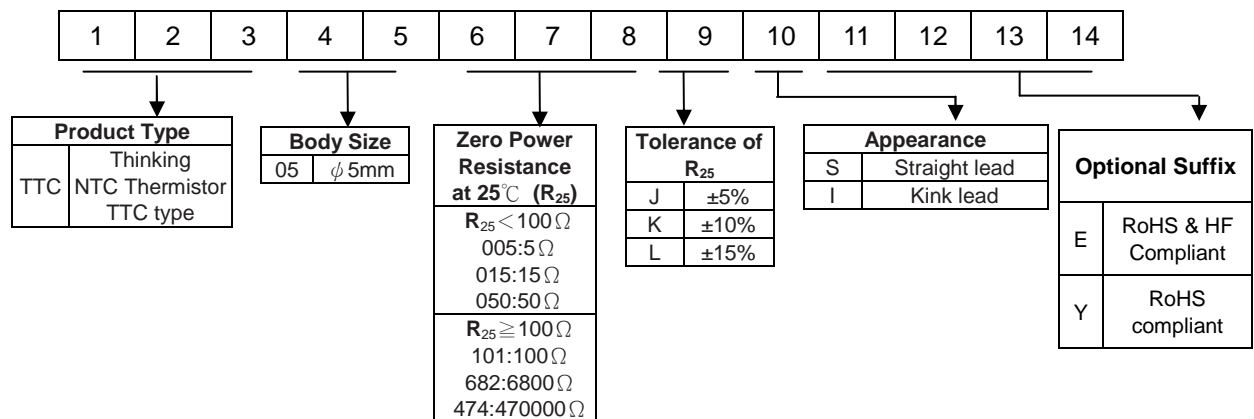
1. RoHS compliant & Halogen-free series are available
2. Body size Φ5mm
3. Radial lead resin coated
4. -30 ~ +125°C operating temperature range
5. Wide resistance range
6. Cost effective
7. Agency recognition :UL /cUL/CSA/TUV/CQC



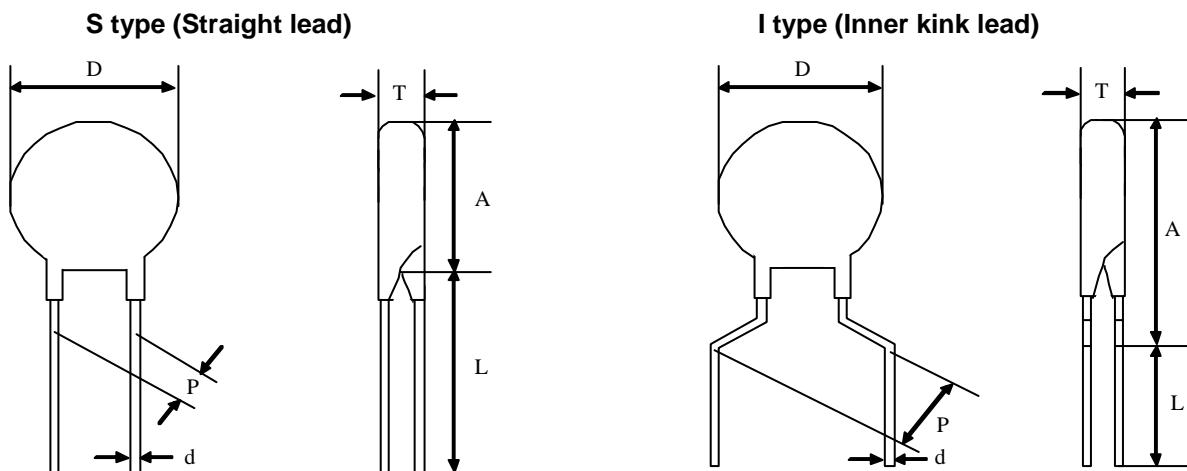
■ Recommended Applications

1. Home appliances (air conditioner, refrigerator, electric fan, electric cooker, washing machine, microwave oven, drinking machine, CTV, radio.)
2. Automotive electronics
3. Computers
4. Digital meter

■ Part Number Code



■ Structure and Dimensions



(Unit: mm)

Type	D max.	P	d	A max.	L min.	T max.
Straight lead	6.5	3.5± 0.5	0.5±0.02	6.5	31	5
Inner kink lead	6.5	5± 0.8	0.5±0.02	10	29	5

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■ Electrical Characteristics

Part No.	Zero Power Resistance at 25°C	Tolerance of R ₂₅	B _{25/50} Value	Max. Power Dissipation at 25°C	Dissipation Factor	Thermal Time Constant	Operating Temperature Range	Safety Approvals			
	R ₂₅ (Ω)	(±%)	(K)	P _{max} (mW)	δ(mW/°C)	τ(Sec.)	T _L ~T _U (°C)	UL/cUL	CSA	TUV	CQC
TTC05005□	5	5、10、15	2400	450	Approx. 4.5	Approx. 20	-30~+125		√	√	√
TTC05010□	10		√					√	√	√	
TTC05015□	15		√					√	√	√	
TTC05020□	20		√					√	√	√	
TTC05025□	25		√					√	√	√	
TTC05045□	45		√					√	√	√	
TTC05050□	50		√					√	√	√	
TTC05060□	60		√					√	√	√	
TTC05085□	85		√					√	√	√	
TTC05090□	90		√					√	√	√	
TTC05101□	100		√					√	√	√	
TTC05121□	120		√					√	√	√	
TTC05151□	150		√					√	√	√	
TTC05201□	200		√					√	√	√	
TTC05221□	220		√					√	√	√	
TTC05251□	250		√					√	√	√	
TTC05301□	300		√					√	√	√	
TTC05471□	470		√					√	√	√	
TTC05501□	500		√					√	√	√	
TTC05681□	680		√					√	√	√	
TTC05701□	700		√					√	√	√	
TTC05102□	1000		√					√	√	√	
TTC05152□	1500		√					√	√	√	
TTC05202□	2000		√					√	√	√	
TTC05222□	2200		√					√	√	√	
TTC05252□	2500		√					√	√	√	
TTC05302□	3000		√					√	√	√	
TTC05332□	3300		√					√	√	√	
TTC05402□	4000		√					√	√	√	
TTC05472□	4700		√					√	√	√	
TTC05502□	5000		√					√	√	√	
TTC05602□	6000		√					√	√	√	
TTC05682□	6800		√					√	√	√	
TTC05802□	8000		√					√	√	√	
TTC05103□	10000		√					√	√	√	
TTC05123□	12000		√					√	√	√	
TTC05153□	15000		√					√	√	√	
TTC05203□	20000		√					√	√	√	
TTC05303□	30000		√					√	√	√	
TTC05473□	47000		√					√	√	√	
TTC05503□	50000	√	√	√	√						
TTC05104□	100000	√	√	√	√						
TTC05154□	150000	√	√	√	√						
TTC05204□	200000	√	√	√	√						
TTC05224□	220000	√	√	√	√						
TTC05474□	470000	√	√	√	√						

Note : □ = Tolerance of R₂₅

Note2 : UL file no. E138827

CSA file no. 97495

TUV file no. R 50050155

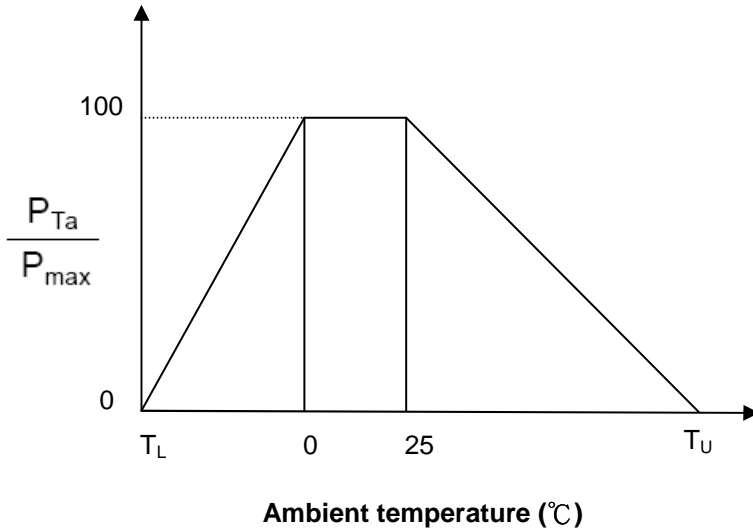
CQC file no. CQC05001011991 ; CQC05001011994

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■ Max. Power Dissipation Derating Curve



T_U : Maximum operating temperature (°C)

T_L : Minimum operating temperature (°C)

For example :

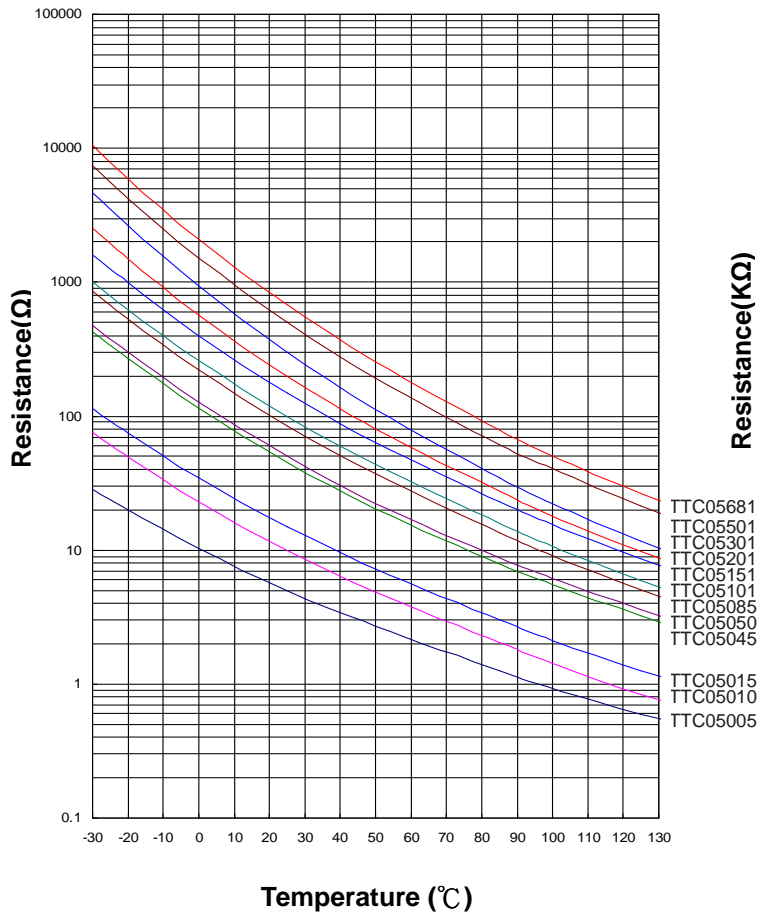
Ambient temperature (T_a)=55°C

Maximum operating temperature (T_U)= 125°C

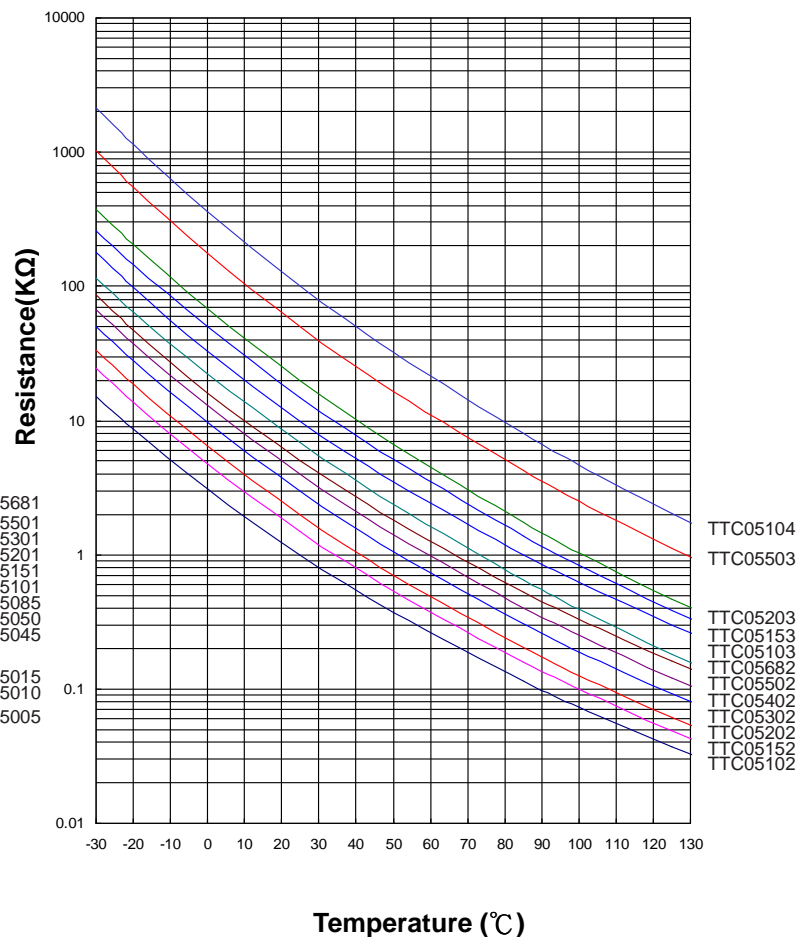
$$P_{Ta} = (T_U - T_a) / (T_U - 25) \times P_{max} = 70\% P_{max}$$

■ R-T Characteristic Curves (representative)

TTC05005~TTC05681



TTC05102~TTC05104



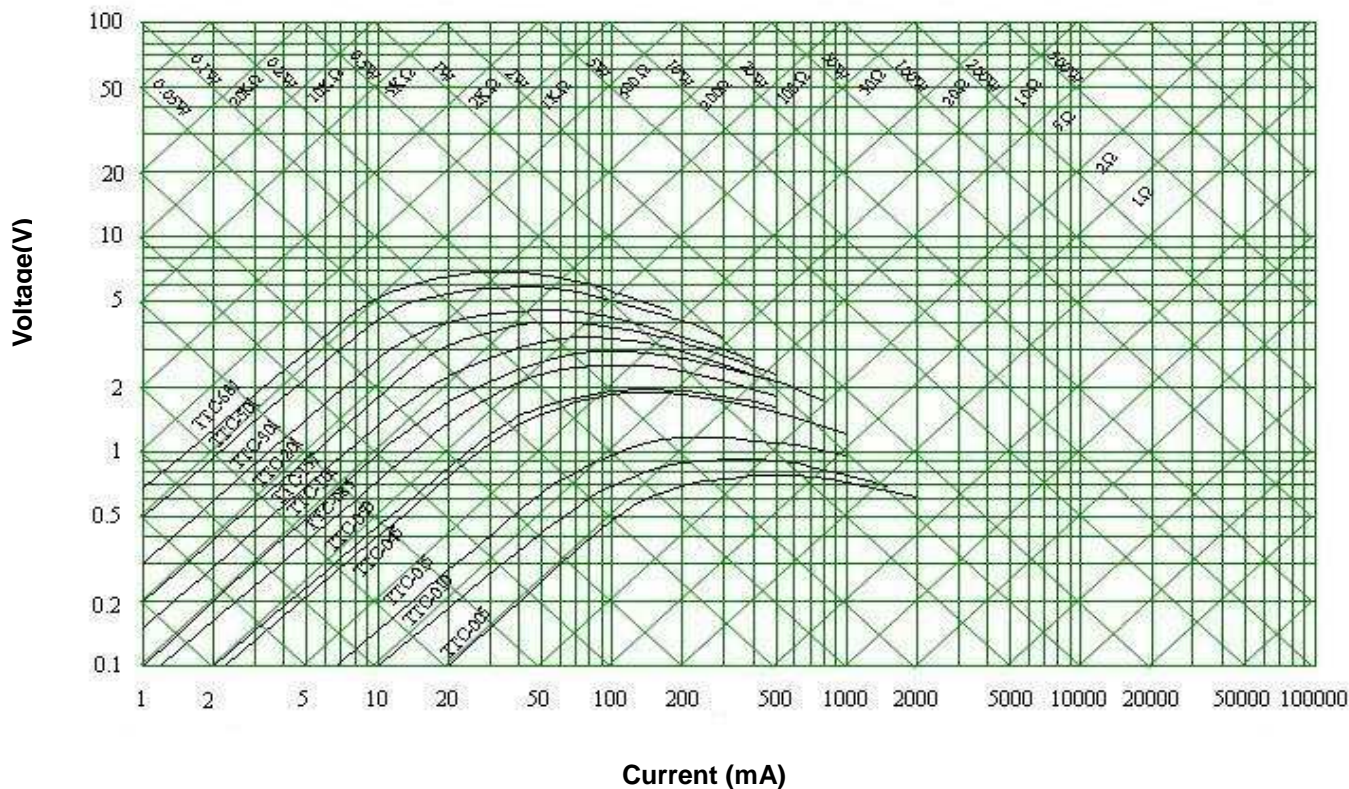
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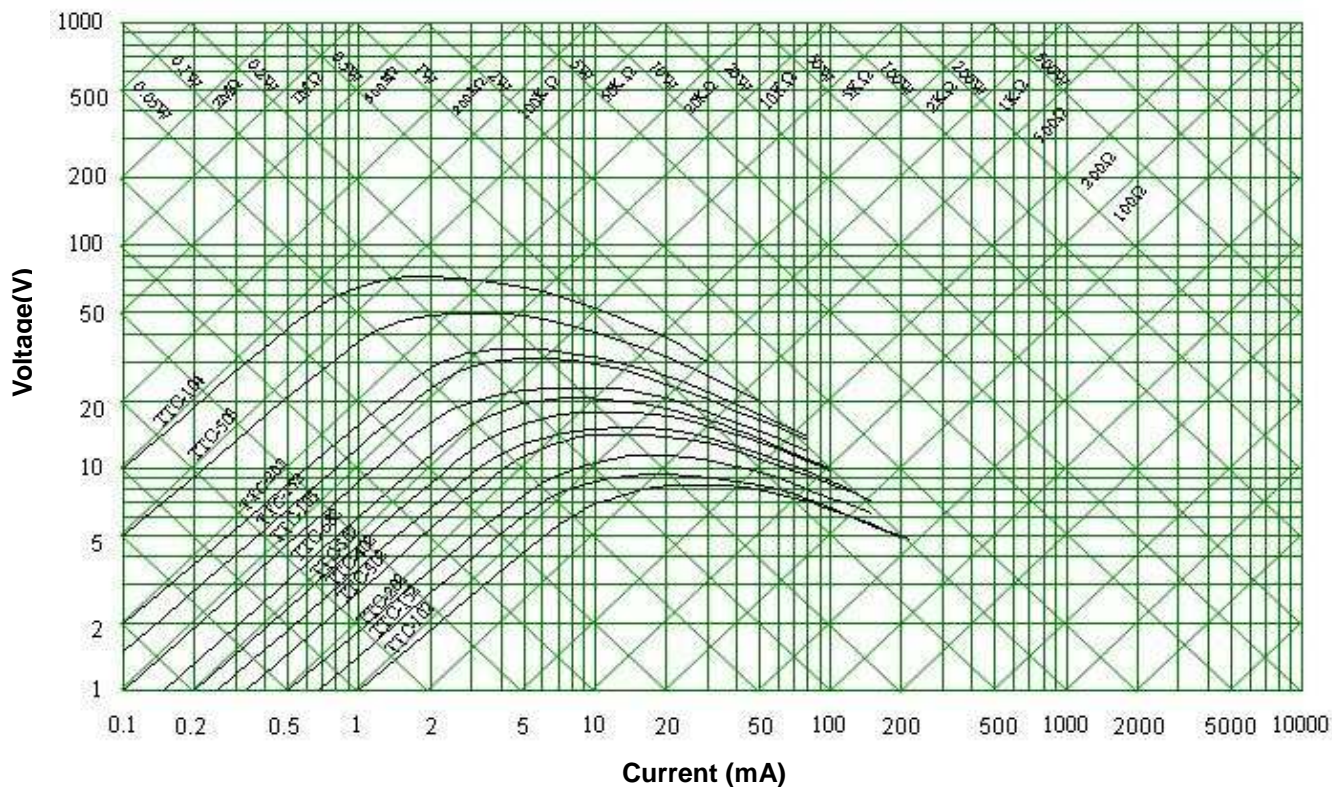
Φ5 mm Disc Type for Temperature Sensing/Compensation

■ V-I Characteristic Curves (representative)

TTC05005~TTC05681



TTC05102~TTC05104



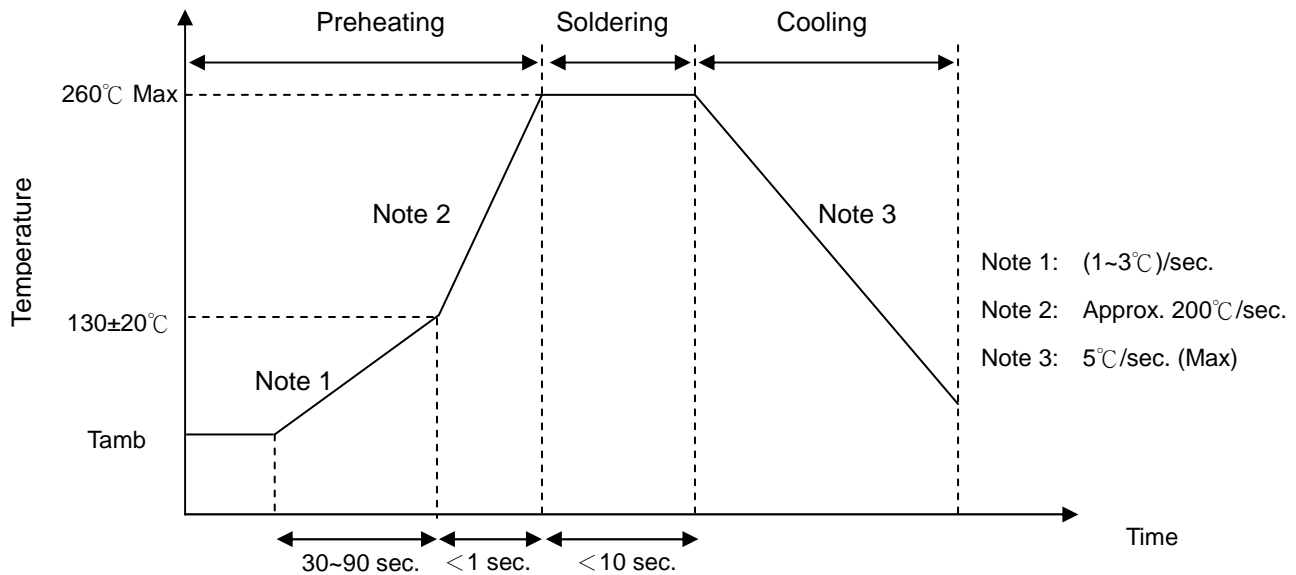
NTC Thermistor: TTC05 Series



Φ5 mm Disc Type for Temperature Sensing/Compensation

■ Soldering Recommendation

● Wave Soldering Profile



● Recommended Reworking Conditions with Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	360°C (max.)
Soldering Time	3 sec (max.)
Distance from Thermistor	2 mm (min.)

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■ Reliability

Item	Standard	Test conditions / Methods	Specifications															
Tensile Strength of Terminals	IEC60068-2-21	Gradually applying the force specified and keeping the unit fixed for 10±1 sec. <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Terminal diameter (mm)</td> <td style="text-align: center;">Force (Kg)</td> </tr> <tr> <td style="text-align: center;">0.3<d≤0.5</td> <td style="text-align: center;">0.5</td> </tr> <tr> <td style="text-align: center;">0.5<d≤0.8</td> <td style="text-align: center;">1.0</td> </tr> </table>	Terminal diameter (mm)	Force (Kg)	0.3<d≤0.5	0.5	0.5<d≤0.8	1.0	No visible damage									
Terminal diameter (mm)	Force (Kg)																	
0.3<d≤0.5	0.5																	
0.5<d≤0.8	1.0																	
Bending Strength of Terminals	IEC60068-2-21	Hold specimen and apply the force specified below to each lead. Bend the specimen to 90°, then return to the original position. Repeat the procedure in the opposite direction.. <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Terminal diameter (mm)</td> <td style="text-align: center;">Force (Kg)</td> </tr> <tr> <td style="text-align: center;">0.3<d≤0.5</td> <td style="text-align: center;">0.25</td> </tr> <tr> <td style="text-align: center;">0.5<d≤0.8</td> <td style="text-align: center;">0.50</td> </tr> </table>	Terminal diameter (mm)	Force (Kg)	0.3<d≤0.5	0.25	0.5<d≤0.8	0.50	No visible damage									
Terminal diameter (mm)	Force (Kg)																	
0.3<d≤0.5	0.25																	
0.5<d≤0.8	0.50																	
Solderability	IEC60068-2-20	245 ± 3 °C , 3 ± 0.3 sec	At least 95% of terminal electrode is covered by new solder															
Resistance to Soldering Heat	IEC60068-2-20	260 ± 3 °C , 10 ± 1 sec	No visible damage ΔR ₂₅ /R ₂₅ ≤ 3 %															
High Temperature Storage	IEC60068-2-2	125 ± 5 °C , 1000± 24 hrs	No visible damage ΔR ₂₅ /R ₂₅ ≤ 5 %															
Damp Heat , Steady State	IEC60068-2-3	40 ± 2°C , 90~95% RH , 1000 ± 24 hrs	No visible damage ΔR ₂₅ /R ₂₅ ≤ 3 %															
Rapid Change of Temperature	IEC60068-2-14	The conditions shown below shall be repeated 5 cycles <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">-30 ± 5</td> <td style="text-align: center;">30 ± 3</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">Room temperature</td> <td style="text-align: center;">5 ± 3</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">125 ± 5</td> <td style="text-align: center;">30 ± 3</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">Room temperature</td> <td style="text-align: center;">5 ± 3</td> </tr> </tbody> </table>	Step	Temperature (°C)	Period (minutes)	1	-30 ± 5	30 ± 3	2	Room temperature	5 ± 3	3	125 ± 5	30 ± 3	4	Room temperature	5 ± 3	No visible damage ΔR ₂₅ /R ₂₅ ≤ 3 %
Step	Temperature (°C)	Period (minutes)																
1	-30 ± 5	30 ± 3																
2	Room temperature	5 ± 3																
3	125 ± 5	30 ± 3																
4	Room temperature	5 ± 3																
Max. Power Dissipation	IEC 60539-1	25 ± 5°C , Pmax. X 1000± 24 hrs	No visible damage ΔR ₂₅ /R ₂₅ ≤ 5 %															
Insulation Test	MIL-STD-202F -Method 302	1000 V _{DC} 1 min	No visible damage ≥ 500 MΩ															

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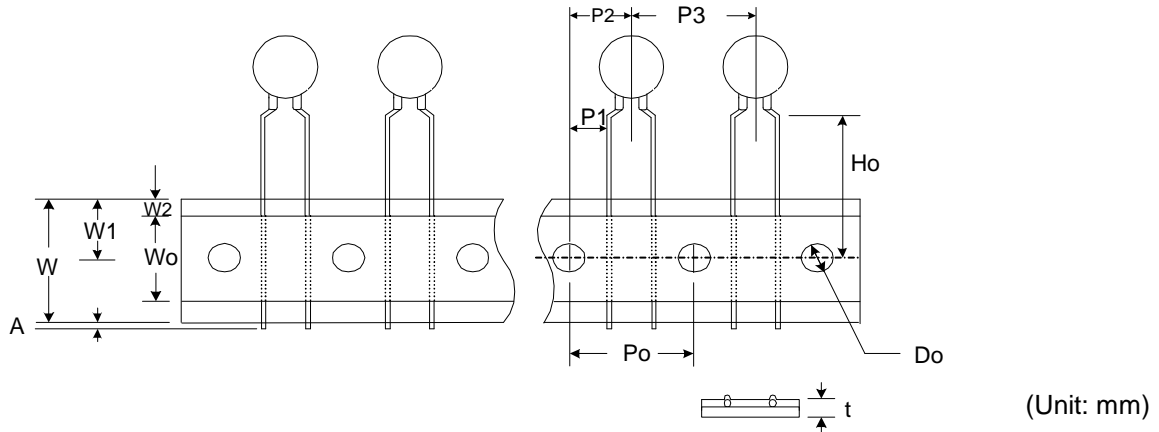


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■ Packaging

● Taping Specification

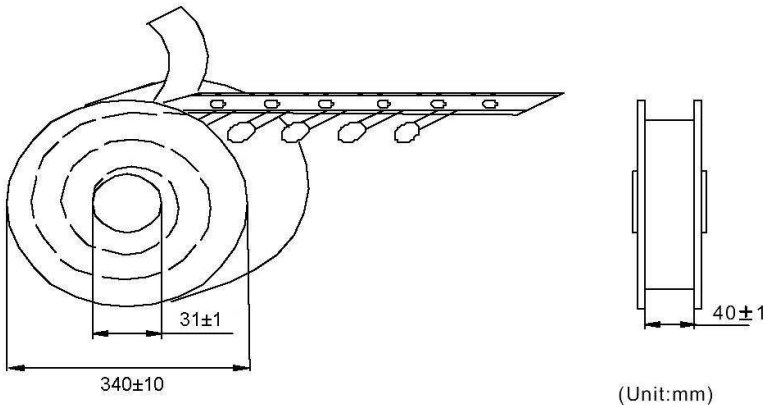
For I Type Only (Inner kink lead)



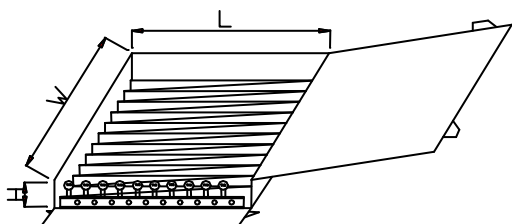
Taping Code	Body Size	P ₀	P ₁	P ₂	P ₃	H ₀	W ₀	W ₁	W ₂	W	A	D ₀	t
		±0.5	±0.7	±1.3	±0.5	±0.5	±1	±0.5	Max.	±0.5	Max.	±0.2	±0.2
A (P ₀ =12.7)	φ05	12.7	3.6	6.35	12.7	16	12	9	3	18	1	4	0.6
E (P ₀ =15.0)	φ05	15	4.75	7.5	15	16	12	9	3	18	1	4	0.6

■ Quantity

- Bulk Packing: 250 pcs/bag for standard lead type , 500 pcs/bag for cut lead type
- Reel Packing: 2500 pcs/reel



- Ammo Packing: 2000 pcs/box



W	L	H
348mm	275mm	60mm

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■ Storage Conditions of Products

- Storage Conditions :
 1. Storage Temperature : $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$
 2. Relative Humidity : $\leq 75\%RH$
 3. Keep away from corrosive atmosphere and sunlight.
- Period of Storage : 1 year