

# NTC Thermistor: TTC03 Series



## Φ3mm Disc Type for Temperature Sensing/Compensation

### ■ Features

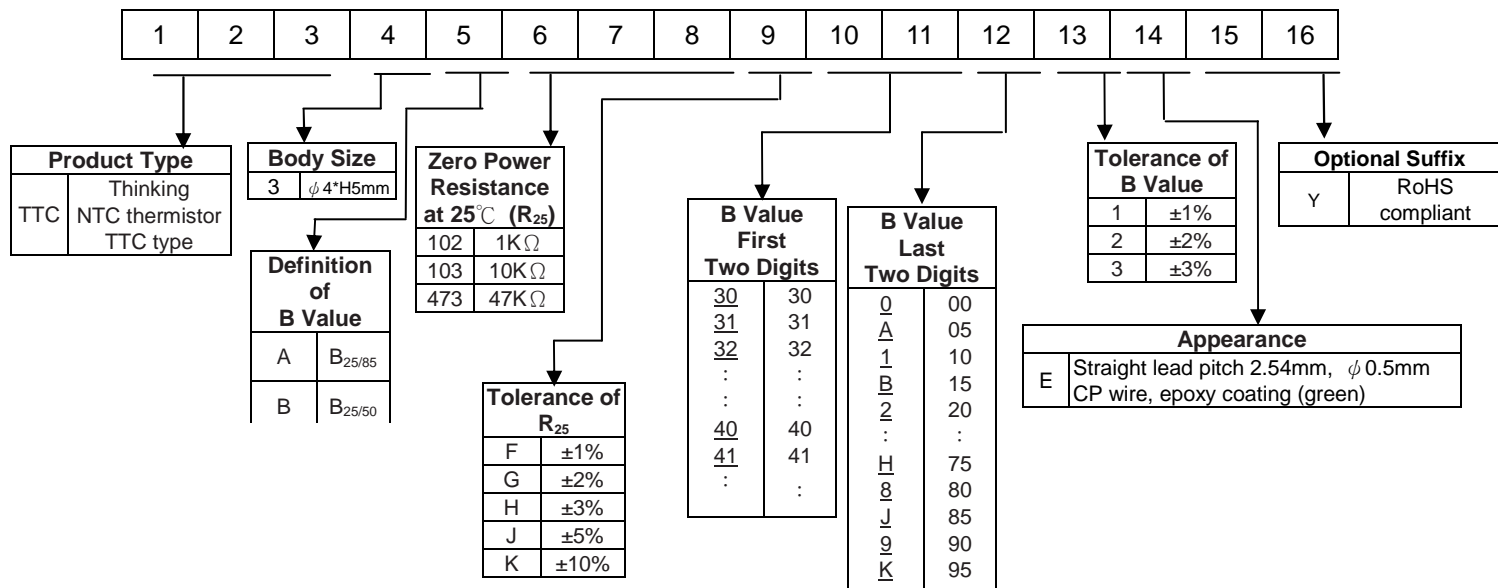
1. RoHS compliant
2. Body size Φ3mm
3. Radial lead resin coated
4. -40 ~ +125°C operating temperature range
5. Wide resistance range
6. Cost effective
7. Agency recognition: UL /CQC



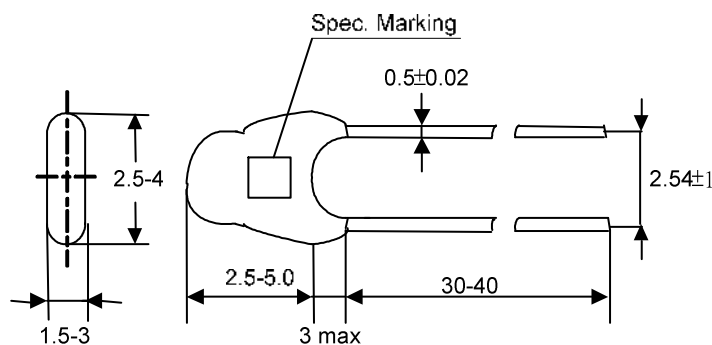
### ■ Recommended Applications

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)

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### ■ Electrical Characteristics

Part No.	Zero Power Resistance at 25°C	Tolerance of R <sub>25</sub>	B <sub>25/85</sub> Value	Tolerance of B value	Max. Power Rating at 25°C	Dissipation Factor	Thermal Time Constant	Operating Temperature Range	Safety Approvals	
	R <sub>25</sub> (KΩ)	(±%)	(K)	(±%)	P <sub>max</sub> (mW)	δ(mW/°C)	τ(Sec.)	T <sub>L</sub> ~T <sub>U</sub> (°C)	UL	CQC
TTC3A901□39D*	0.9	1、2、3、 5、10	3935	1、2、3	150	≥2.5	≤18	-40~+125	√	√
TTC3A102□39D*	1		3935						√	√
TTC3A152□39D*	1.5		3935						√	√
TTC3A202□39H*	2		3975						√	√
TTC3A222□39H*	2.2		3975						√	√
TTC3A272□39H*	2.7		3975						√	√
TTC3A302□39H*	3		3975						√	√
TTC3A332□39H*	3.3		3975						√	√
TTC3A472□39H*	4.7		3975						√	√
TTC3A502□39H*	5		3975						√	√
TTC3A682□39H*	6.8		3975						√	√
TTC3A103□34D*	10		3435						√	√
TTC3A103□374*	10		3740						√	√
TTC3A103□39H*	10		3975						√	√
TTC3A123□374*	12		3740						√	√
TTC3A153□374*	15		3740						√	√
TTC3A203□374*	20		3740						√	√
TTC3A223□374*	22		3740						√	√
TTC3A333□409*	33		4090						√	√
TTC3A473□409*	47		4090						√	√
TTC3A503□39H*	50		3975						√	√
TTC3A503□406*	50		4060						√	√
TTC3A683□419*	68		4190						√	√
TTC3A104□419*	100		4190						√	√
TTC3A154□437*	150		4370						√	√
TTC3A224□437*	220		4370						√	√
TTC3A334□457*	330		4570						√	√
TTC3A474□457*	470		4570						√	√

Note 1: □ = Tolerance of rR<sub>25</sub>

Note 2: \* = Tolerance of B value

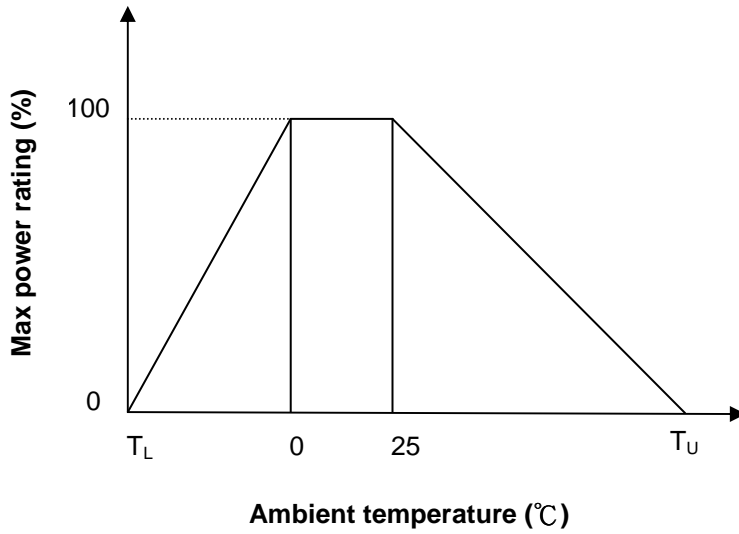
Note 3: UL file no.E138827 CQC file no. 04001011966

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### ■ Power Derating Curve



$T_U$  : Maximum operating temperature (°C)

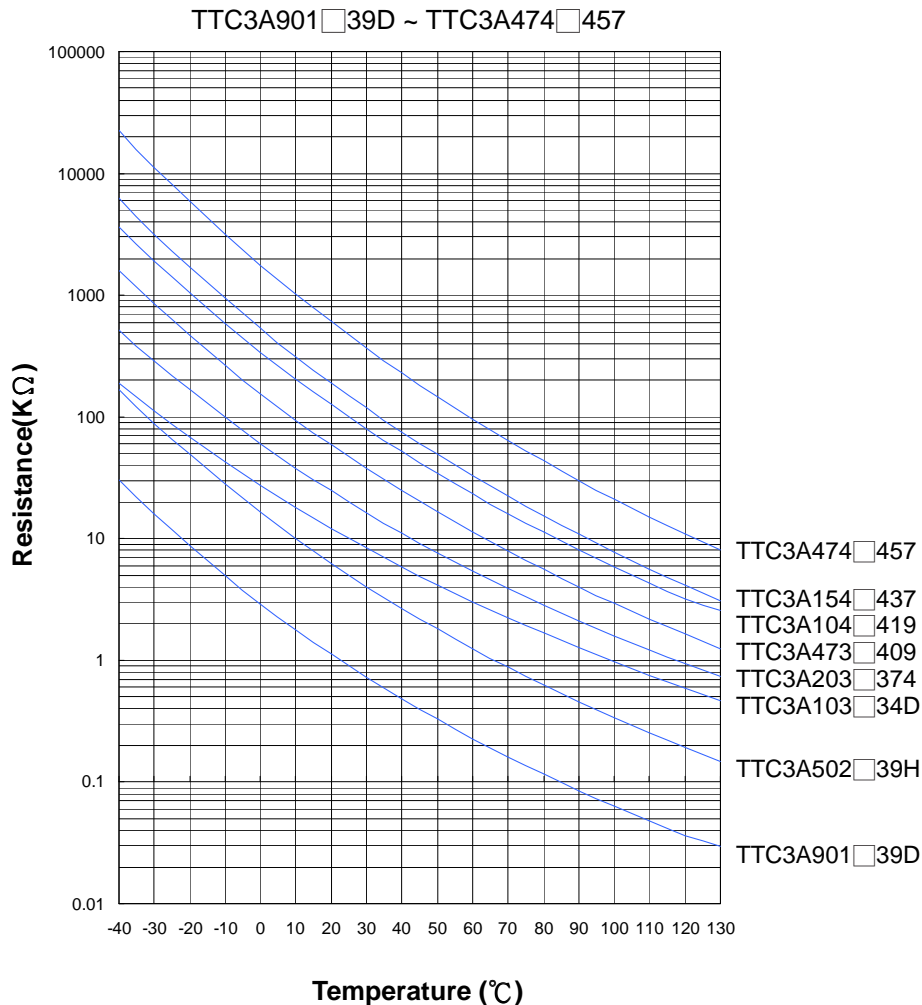
$T_L$  : Minimum operating temperature (°C)

For example : Ambient temperature( $T_a$ )=55°C

Maximum operating temperature( $T_U$ )= 125°C

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

### ■ R-T Characteristic Curves (representative)



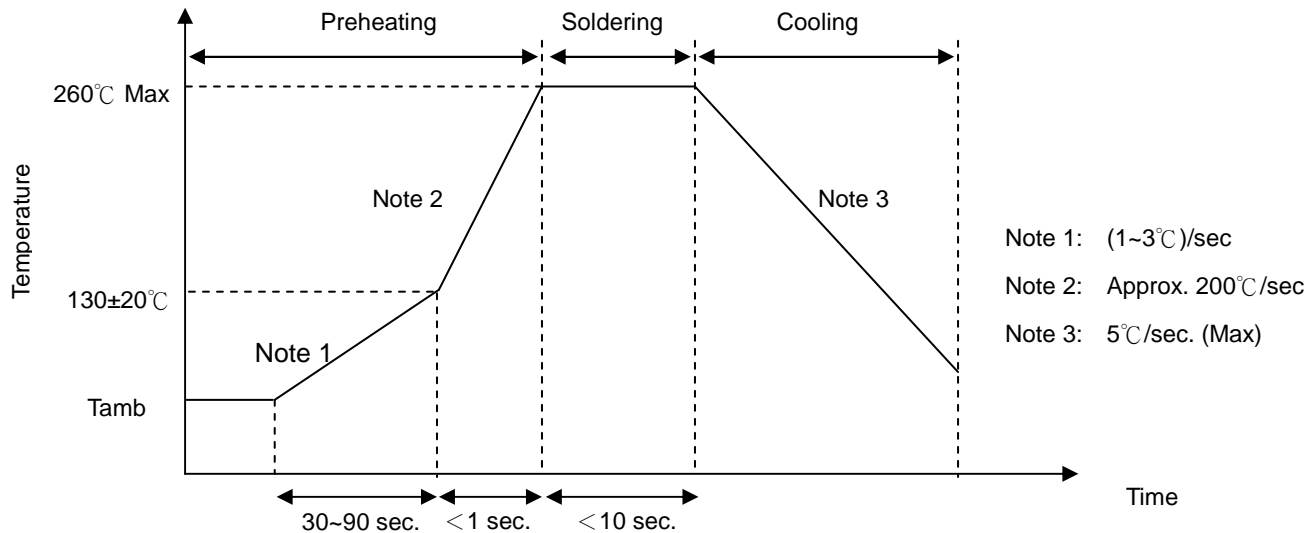
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## Φ3mm Disc Type for Temperature Sensing/Compensation

### ■ Soldering Recommendation

#### ● Wave Soldering Profile



#### ● Recommended Reworking Conditions with Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	$360^\circ\text{C}$ (max.)
Soldering Time	3 sec (max.)
Distance from Thermistor	2 mm (min.)

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## Φ3mm Disc Type for Temperature Sensing/Compensation

### ■ Reliability

Item	Standard	Test conditions / Methods	Specifications															
Tensile Strength of Terminations	IEC 60068-2-21	<p>Gradually applying the force specified and keeping the unit fixed for 10±1 sec.</p> <table border="1"> <thead> <tr> <th>Terminal diameter (mm)</th> <th>Force (Kg)</th> </tr> </thead> <tbody> <tr> <td>0.3&lt;d≤0.5</td> <td>0.5</td> </tr> <tr> <td>0.5&lt;d≤0.8</td> <td>1.0</td> </tr> </tbody> </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 Terminations	IEC 60068-2-21	<p>Hold specimen and apply the force specified below to each lead. Bend the specimen to 90°, then r return to the original position. Repeat the procedure in the opposite direction.</p> <table border="1"> <thead> <tr> <th>Terminal diameter (mm)</th> <th>Force (Kg)</th> </tr> </thead> <tbody> <tr> <td>0.3&lt;d≤0.5</td> <td>0.25</td> </tr> <tr> <td>0.5&lt;d≤0.8</td> <td>0.5</td> </tr> </tbody> </table>	Terminal diameter (mm)	Force (Kg)	0.3<d≤0.5	0.25	0.5<d≤0.8	0.5	No visible damage									
Terminal diameter (mm)	Force (Kg)																	
0.3<d≤0.5	0.25																	
0.5<d≤0.8	0.5																	
Solderability	IEC 60068-2-20	235 ± 5°C , 2 ± 0.5 sec	At least 95% of terminal electrode is covered by new solder															
Resistance to Soldering Heat	IEC 60068-2-20	260 ± 5°C , 10 ± 1 sec	No visible damage   ΔR <sub>25</sub> /R <sub>25</sub>   ≤ 3 %															
High Temperature Storage	IEC 60068-2-3	125 ± 5°C x 1000 ± 24 hrs	No visible damage   ΔR <sub>25</sub> /R <sub>25</sub>   ≤ 5 %															
Damp Heat, Steady State	IEC 60068-2-2	40 ± 2°C , 90~95% RH , 1000 ± 24 hrs	No visible damage   ΔR <sub>25</sub> /R <sub>25</sub>   ≤ 3 %															
Rapid Change of Temperature	IEC 60068-2-14	<p>The conditions shown below shall be repeated 5 cycles</p> <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±5</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>5±3</td> </tr> <tr> <td>3</td> <td>125±5</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>5±3</td> </tr> </tbody> </table>	Step	Temperature (°C)	Period (minutes)	1	-40±5	30±3	2	Room temperature	5±3	3	125±5	30±3	4	Room temperature	5±3	No visible damage   ΔR <sub>25</sub> /R <sub>25</sub>   ≤ 3 %
Step	Temperature (°C)	Period (minutes)																
1	-40±5	30±3																
2	Room temperature	5±3																
3	125±5	30±3																
4	Room temperature	5±3																
Life Test	IEC 60539-1	25 ± 5°C , Pmax. x 1000 ± 24 hrs	No visible damage   ΔR <sub>25</sub> /R <sub>25</sub>   ≤ 5 %															

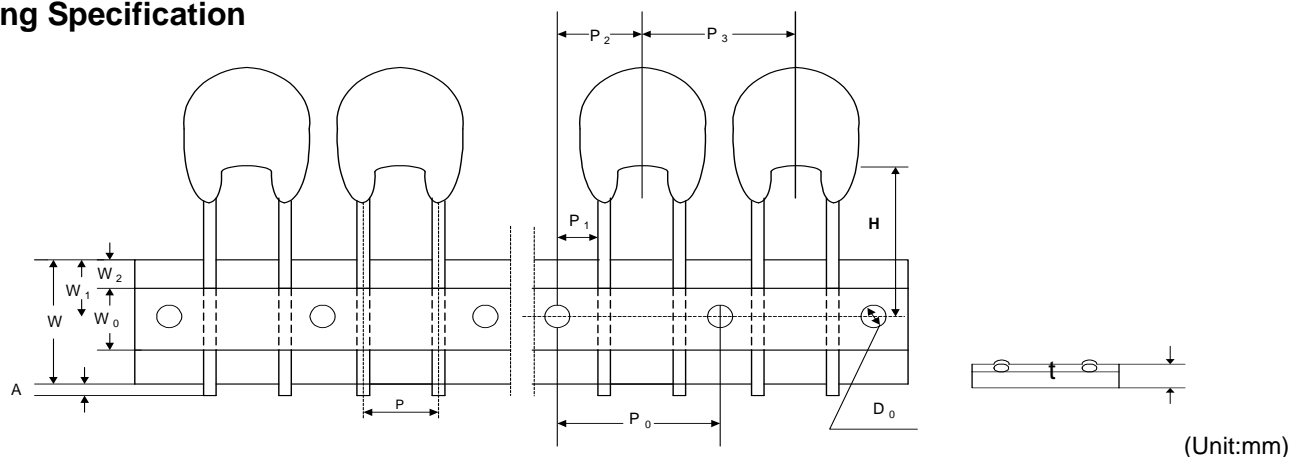
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### ■ Packaging

#### ● Taping Specification



Taping Code	$P_0 \pm 1$	$P_3 \pm 1$	$P_1 \pm 1$	$P_2 \pm 1.3$	$H \pm 2 / -0$	$W_0 \pm 1$	$W_1 \pm 1$	$W_2(\max)$	$W \pm 1$	Amax	$D_0 \pm 0.2$	$P \pm 1.0$	$t \pm 0.2$
A ( $P_0=12.7$ )	12.7	12.7	4.83	6.35	18	12	9	3	18	1	4	2.54	0.6
E ( $P_0=15.0$ )	15.0	15.0	5.98	7.50	18	12	9	3	18	1	4	2.54	0.6

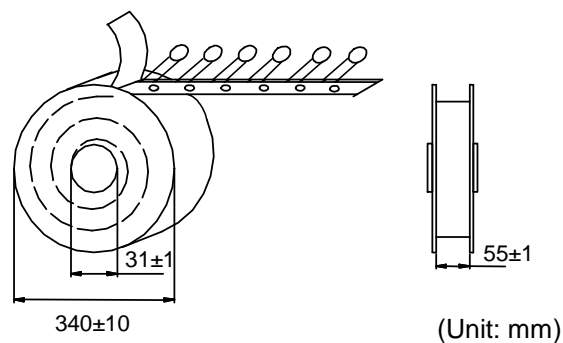
### ■ Quantity

#### ● Bulk Packing

Body Size/mm	Quantity (pcs/bag)
Φ03	500

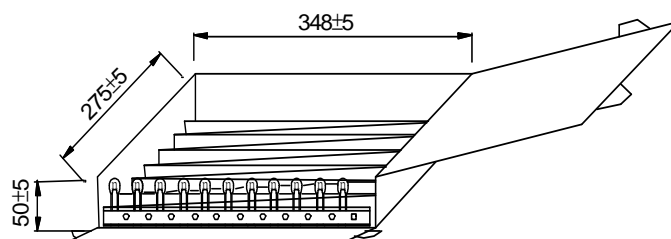
#### ● Reel Packing

Body Size/mm	Quantity (pcs/reel)
Φ03	2500



#### ● Ammo Packing

Body Size/mm	Quantity (pcs/box)
Φ03	2500



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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