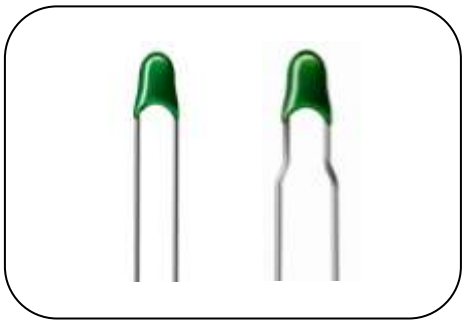
NTC Thermistor：TTC3 Series

Φ3 mm Lead Type for Temperature Sensing/Compensation

■ Features

1. RoHS compliant
2. Halogen-Free(HF) series are available
3. Body size: Φ3mm
4. Radial lead resin coated
5. Operating temperature range: -40℃~+125℃
6. Wide resistance range
7. Cost effective
8. Agency recognition: UL / cUL / TUV / CQC



■ Recommended Applications

1. Home appliances
2. Computers
3. Digital meters
4. Switch mode power supplies
5. Adapters

■ Part Number Code

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Product Type	
TTC	THINKING NTC Thermistor TTC Series

Body Size	
3	Φ3mm

Definition of B Value	
A	$B_{25/85}$
B	$B_{25/50}$

Zero Power Resistance at 25℃ (R_{25})	
102	1KΩ
103	10KΩ
473	47KΩ

Tolerance of R_{25}	
F	±1%
G	±2%
H	±3%
J	±5%
K	±10%

B Value	
374	3740
39D	3935
395	3950
39H	3975
520	5200

Tolerance of B Value	
1	±1%
2	±2%
3	±3%

Optional Suffix	
Y	RoHS Compliant
A	RoHS & HF Compliant

Appearance	
E	Straight lead, pitch 2.54mm, Φ0.5mm
P	Straight lead, pitch 5mm, Φ0.5mm
L	Wider Kink, pitch 2.54mm, Φ0.5mm
Q	Wider Kink, pitch 5mm, Φ0.5mm
F	Outer Kink, pitch 2.54mm, Φ0.5mm

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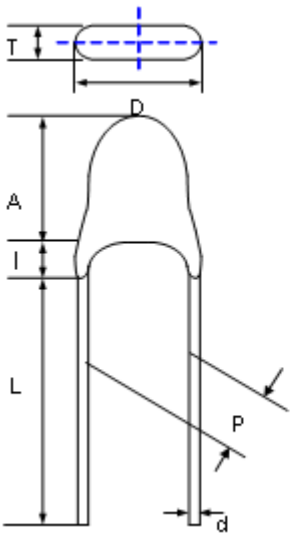
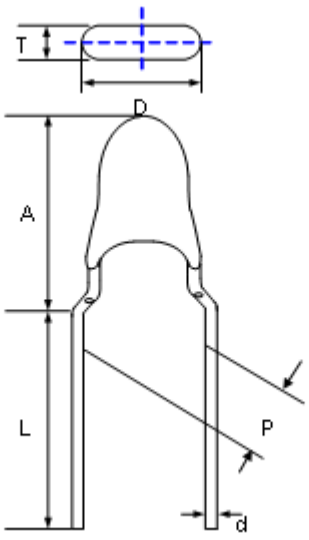
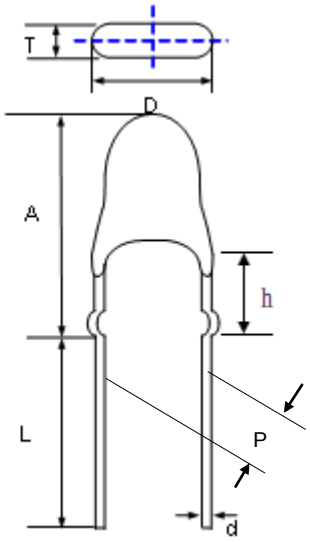
■ Structure and Dimensions



Straight Lead



Wider Kink



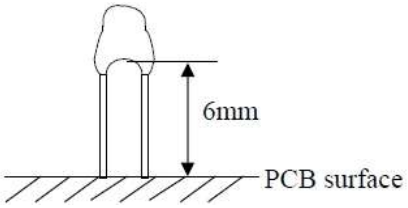
Outer Kink

(Unit: mm)

Lead Type	P	D	T	$A_{max.}$	$l_{max.}$	h	L	d
Straight Lead	2.54±0.5	2.5~4.0	1.5~3.0	5	3	Note*	30~40	0.5±0.02
	5±0.5	2.0~6.5	1.5~5.0	7	3			
Wider Kink	2.54±0.5	2.0~4.0	1.5~3.0	6	--	--		
	5±0.5	2.0~4.0	1.5~3.0	10	--			
Outer Kink	2.54±0.5	2.0~4.0	1.5~3.0	13.5	--	5~7	24.5~34.5	

Note*:

Caution：It has be better to keep the minimum distance as 6mm between the bottom of the thermistor body and PCB surface to prevent component damage.



NTC Thermistor：TTC3 Series

Φ3 mm Lead Type for Temperature Sensing/Compensation

■ Electrical Characteristics

Part No.	Zero Power Resistance at 25°C	Tolerance of R_{25}	B Value		Tolerance of B value	Max. Power Dissipation at 25℃	Dissipation Factor	Thermal Time Constant	Operating Temperature Range	Safety Approvals		
										UL cUL	TUV	CQC
	R_{25} (KΩ)	(±%)	(K)		(±%)	P_{max}(mW)	δ(mW/°C)	τ (Sec.)	T_L~T_U(°C)			
TTC3A901□39D*	0.9	1、2、3、5	25/85	3935	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	1、2、3					√	√	√
TTC3A482□395*	4.8			3950						√	√	
TTC3A482□39H*	4.8			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						√	√	√
TTC3A203□426*	20			4260						√	√	√
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						√	√	√
TTC3A104□436*	100			4360						√	√	√
TTC3A154□437*	150			4370						√	√	√
TTC3A204□385*	200			3850						√	√	
TTC3A224□437*	220			4370						√	√	√
TTC3A334□457*	330			4570						√	√	√
TTC3A474□457*	470			4570						√	√	√
TTC3A474□520*	470			5200	3					√	√	√
TTC3B202□350*	2		25/50	3500	2、3					√	√	√
TTC3B473□39D*	47			3935	1、2、3					√	√	√
TTC3B503□440*	50			4400	2、3					√	√	√
TTC3B434□507*	430			5070						√	√	
TTC3B474□520*	470			5200	3					√	√	√

Note 1: □ = Tolerance of R_{25}

* = Tolerance of B value

Note 2: UL/cUL File No: E138827, TUV File No: R50050155

CQC File No: CQC04001011945, CQC04001011966

Note 3: Special specifications are available upon request.

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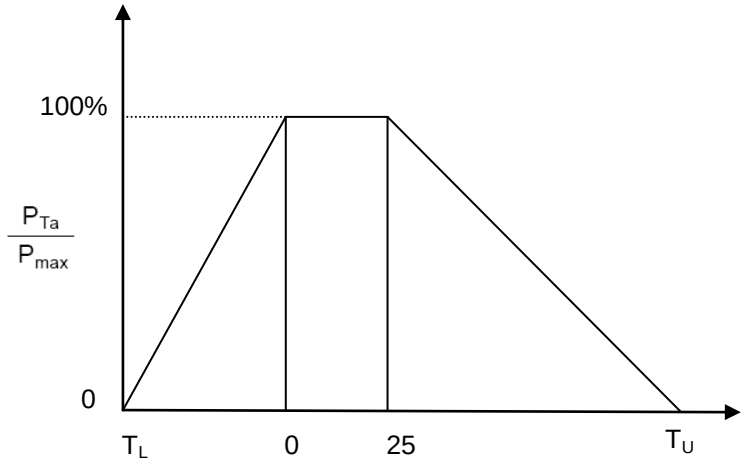
■ Max. Power Dissipation Derating Curve



Ambient temperature (℃)

T_U : Maximum operating temperature (℃)

T_L : Minimum operating temperature (℃)

For example:

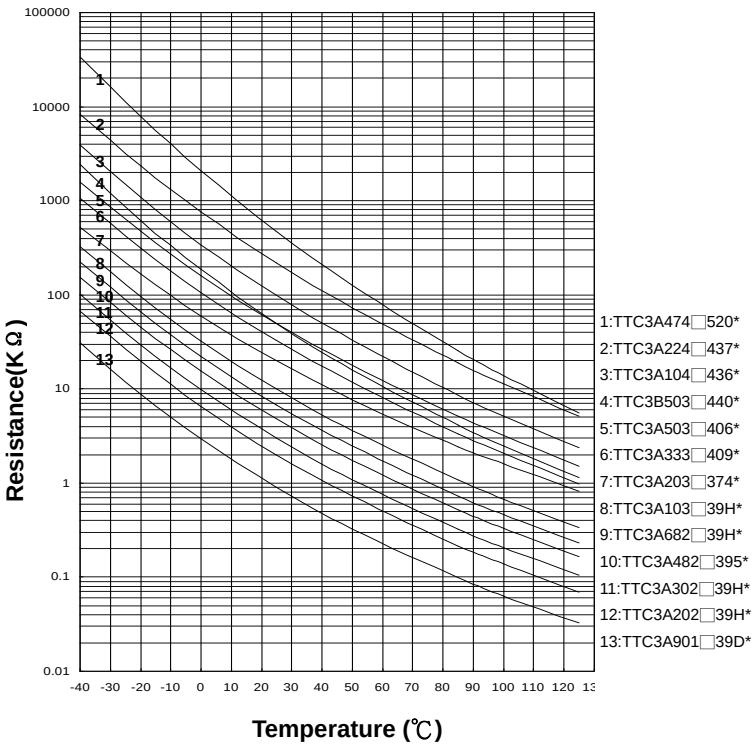
Ambient temperature(Ta) = 55℃

Maximum operating temperature(T_U) = 125℃

P_{Ta} = (T_U-Ta)/(T_U-25)×Pmax = 70% Pmax

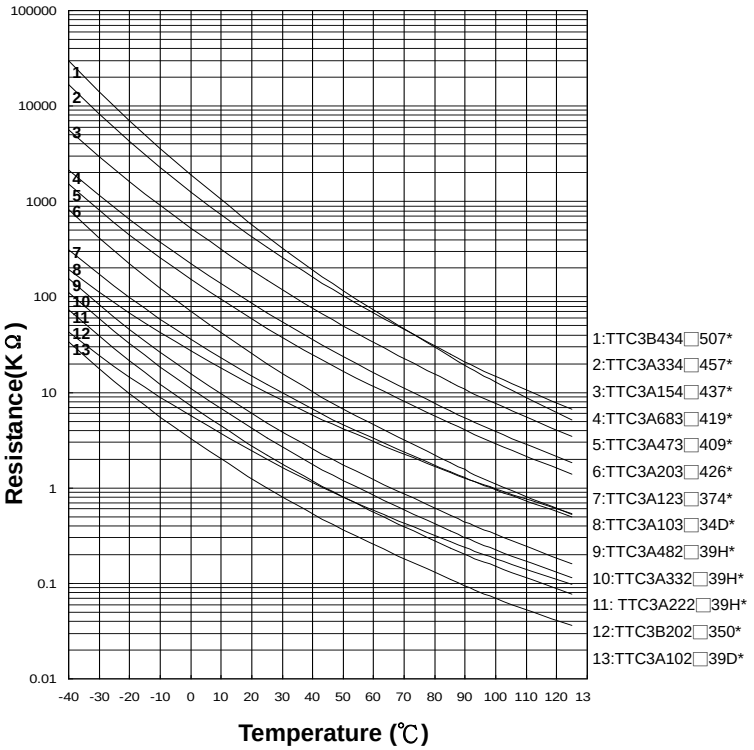
■ R-T Characteristic Curves

TTC3A901□39D*~ TTC3A474□520*

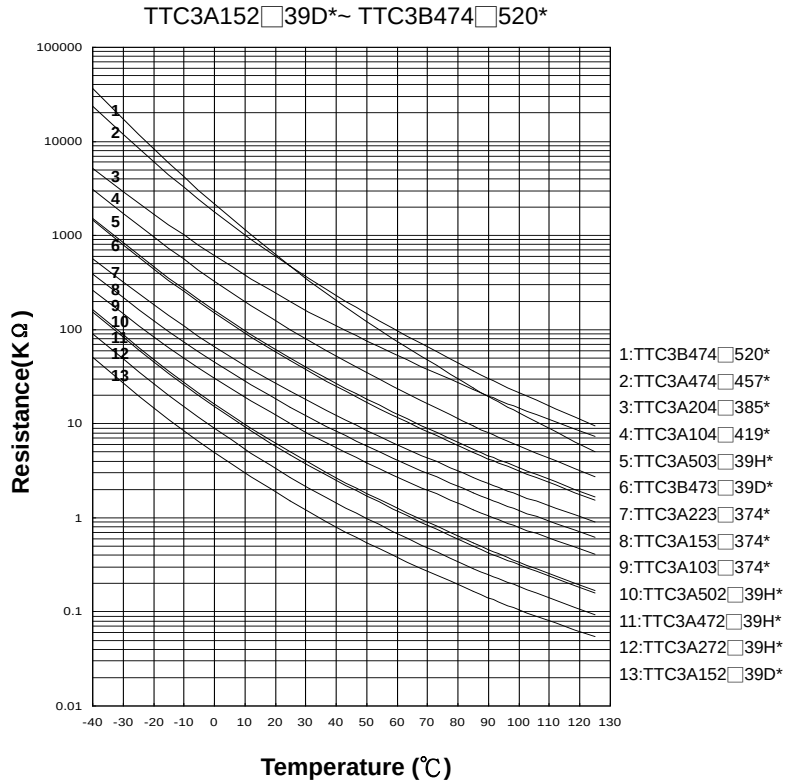


Temperature (℃)

TTC3A102□39D*~ TTC3B434□507*

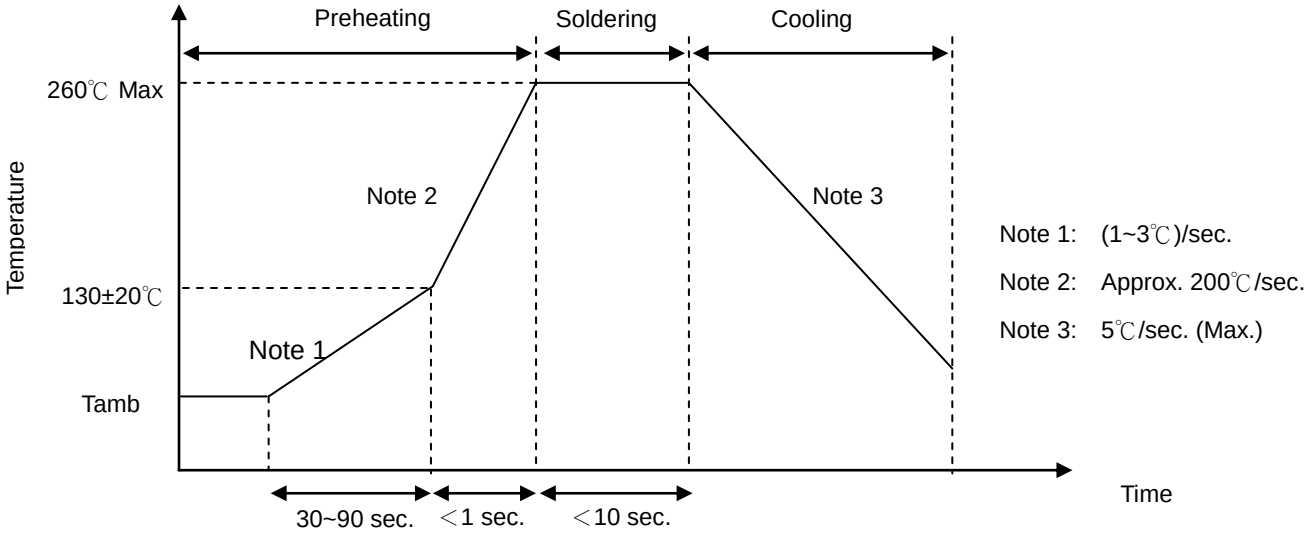


Temperature (℃)



■ Soldering Recommendation

● Wave Soldering Profile



● Recommended Reworking Conditions with Soldering Iron

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

■ Reliability

<table>
<tr><th>Item</th><th>Standard</th><th>Test conditions / Methods</th><th>Specifications</th></tr>
<tr><td>Tensile Strength of Terminations</td><td>IEC 60068-2-21</td><td>Gradually apply the specified force and keep the unit fixed for 10±1 sec.

Terminal diameter (mm): 0.3<d≦0.5
Force (Kg): 0.5</td><td>No visible damage</td></tr>
<tr><td>Bending Strength of Terminations</td><td>IEC 60068-2-21</td><td>Hold specimen and apply the force specified below to each lead. Bend the specimen to 90°, and then return to the original position. Repeat the procedure in the opposite direction.

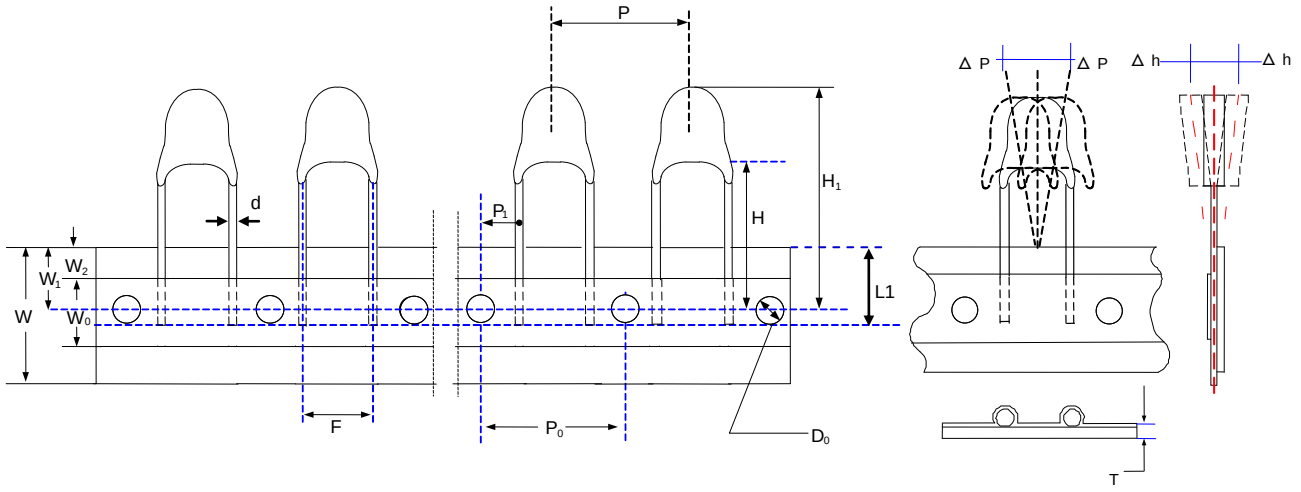
Terminal diameter (mm): 0.3<d≦0.5
Force (Kg): 0.25</td><td>No visible damage</td></tr>
<tr><td>Solderability</td><td>IEC 60068-2-20</td><td>245±3 ℃, 3±0.3 sec.</td><td>At least 95% of terminal electrode is covered by new solder</td></tr>
<tr><td>Resistance to Soldering Heat</td><td>IEC 60068-2-20</td><td>260 ± 3℃, 10 ± 1 sec.</td><td>No visible damage
｜Δ R_{25}/R_{25}｜≦ 3 %</td></tr>
<tr><td>High Temperature Storage</td><td>IEC 60068-2-2</td><td>125 ± 5℃ , 1000 ± 24 hrs</td><td>No visible damage
｜Δ R_{25}/R_{25}｜≦ 5 %</td></tr>
<tr><td>Damp Heat, Steady State</td><td>IEC 60068-2-78</td><td>40 ± 2℃ , 90~95% RH , 1000 ± 24 hrs</td><td>No visible damage
｜Δ R_{25}/R_{25}｜≦ 3 %</td></tr>
<tr><td>Rapid Change of Temperature</td><td>IEC 60068-2-14</td><td>The conditions shown below shall be repeated 5 cycles

<table>
<tr><th>Step</th><th>Temperature (℃)</th><th>Period (minutes)</th></tr>
<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>
</table>
</td><td>No visible damage
｜△R_{25}/R_{25}｜≦ 3 %</td></tr>
<tr><td>Max. Power Dissipation</td><td>IEC 60539-1 4.26.3</td><td>25 ± 5℃, Pmax. , 1000 ± 24 hrs</td><td>No visible damage
｜Δ R_{25}/R_{25}｜≦ 5 %</td></tr>
</table>

■ Packaging

● Taping Specification

Straight Lead

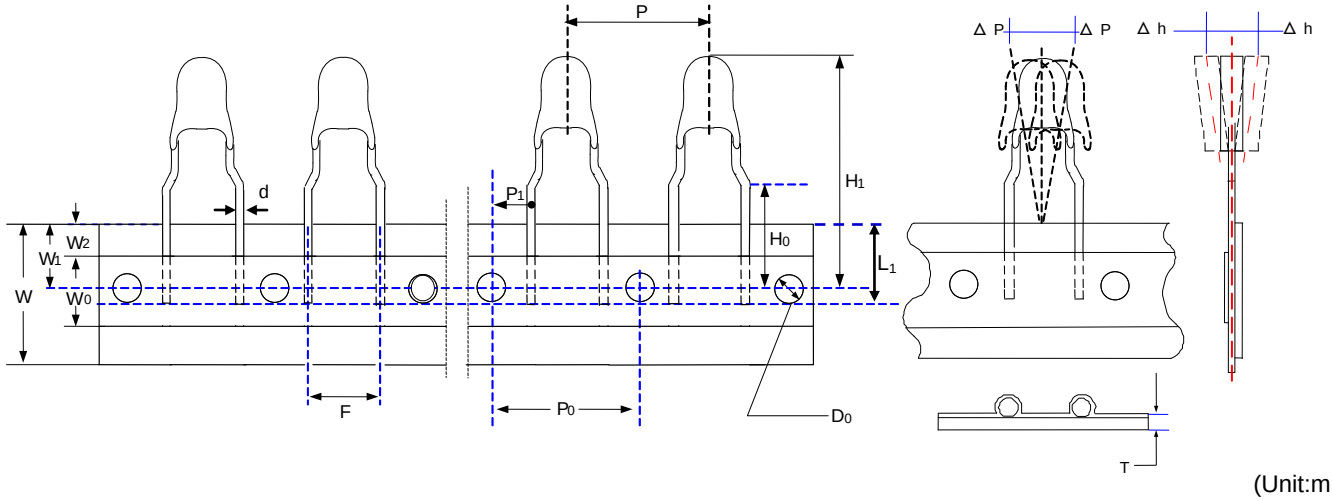


(Unit:mm)

Taping Dimension	P_0	F	P	P_1	H	H_1	d	W_0	W_1	W_2	W	△P	△h	L_1	D_0	T
	±0.3	±0.5	±1	±0.7	+2/-0	Max.	±0.02	±1.5	+0.75 /-0.5	Max.	+1/ -0.5	Max.	Max.	±1	±0.2	±0.2
P_0=12.7	12.7	2.54	12.7	5.08	18	25	0.5	12	9	3	18	1	2	10	4	0.6
	12.7	5.00	12.7	3.85	18	25	0.5	12	9	3	18	1	2	10	4	0.6
P_0=15.0	15.0	2.54	15.0	6.23	18	25	0.5	12	9	3	18	1	2	10	4	0.6
	15.0	5.00	15.0	5.00	18	25	0.5	12	9	3	18	1	2	10	4	0.6

Wider Kink

I



(Unit:mm)

Taping Dimension	P_0	F	P	P_1	H_0	H_1	d	W_0	W_1	W_2	W	△P	△h	L_1	D_0	T
	±0.3	±0.5	±1	±0.7	±0.5	Max.	±0.02	±1.5	+0.75 /-0.5	Max.	+1/ -0.5	Max.	Max.	±1	±0.2	±0.2
P_0=12.7	12.7	2.54	12.7	5.08	16	26	0.5	12	9	3	18	1	2	10	4	0.6
	12.7	5.00	12.7	3.85	16	26	0.5	12	9	3	18	1	2	10	4	0.6

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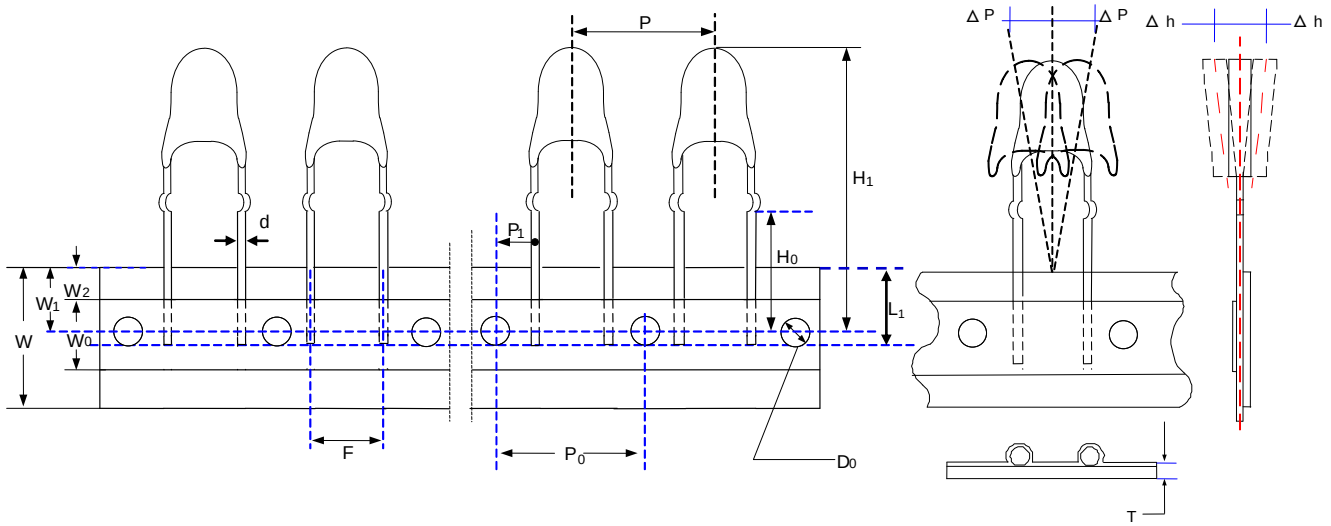
Outer Kink



(Unit:mm)

Taping Dimension	P_0	F	P	P_1	H_0	H_1	d	W_0	W_1	W_2	W	△P	△h	L_1	D_0	T
	±0.3	±0.5	±1	±0.7	±0.5	Max.	±0.02	±1.5	+0.75 /-0.5	Max.	+1/ -0.5	Max.	Max.	±1	±0.2	±0.2
P_0=12.7	12.7	2.54	12.7	5.08	16	26	0.5	12	9	3	18	1	2	10	4	0.6

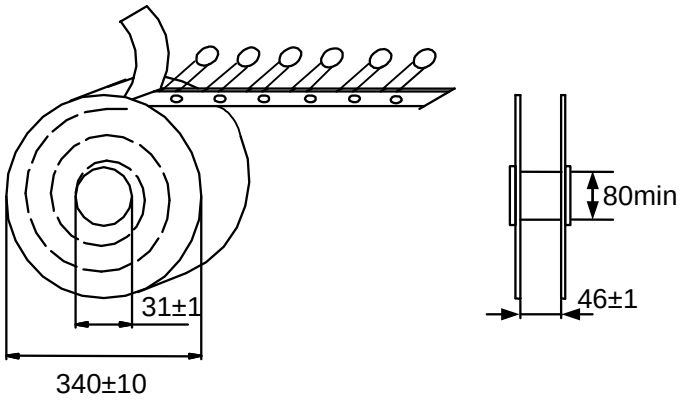
■ Quantity

● Bulk Packing

Series	Quantity (pcs/bag)
TTC3	500

● Reel Packing

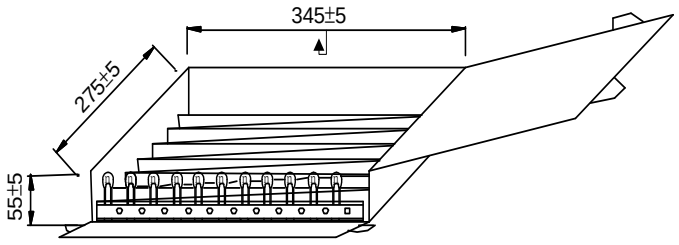
Series	Quantity (pcs/reel)
TTC3	2,500



(Unit: mm)

● Ammo Packing

Series	Quantity (pcs/box)
TTC3	2,500



■ Warehouse Storage Conditions of Products

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