

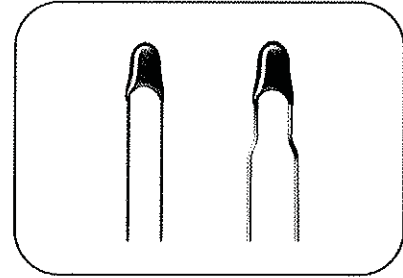
# NTC Thermistor : TTC3 Series



Φ3 mm Lead Type for Temperature Sensing/Compensation

## ■ Features

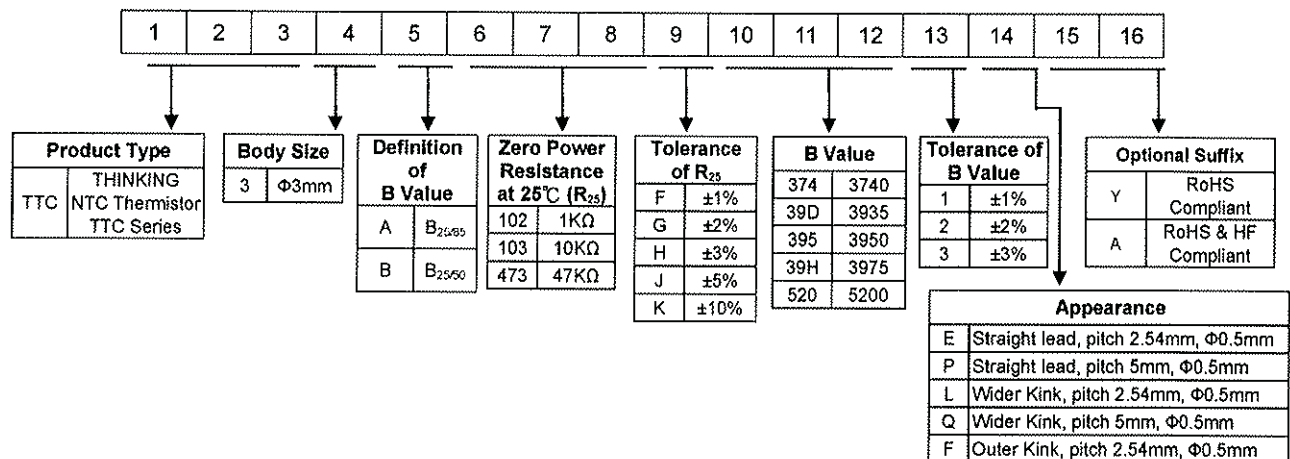
1. RoHS compliant
2. Halogen-Free(HF) series are available
3. Body size: Φ3mm
4. Radial lead resin coated
5. Operating temperature range: -40°C~+125°C
6. Wide resistance range
7. Cost effective
8. Agency recognition: UL / TUV / CQC



## ■ Recommended Applications

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

## ■ Part Number Code

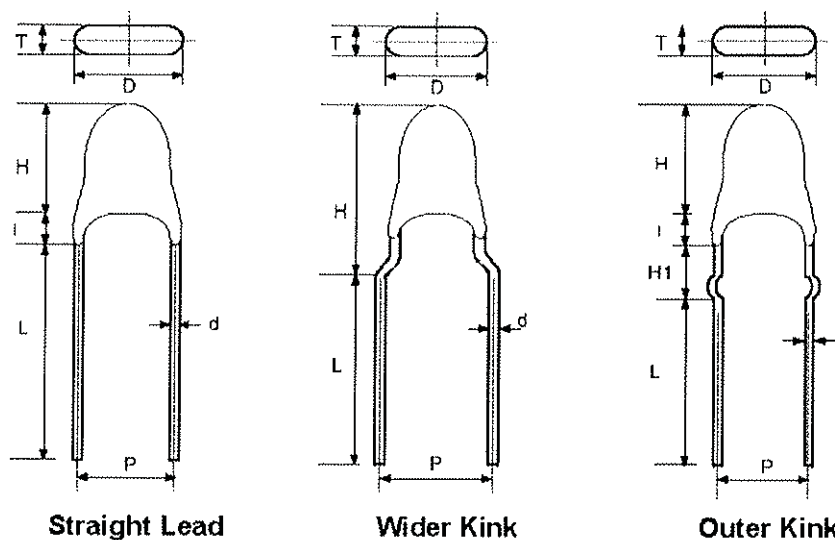


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Φ3 mm Lead Type for Temperature Sensing/Compensation

## ■ Structure and Dimensions



(Unit: mm)

Lead Type	P	Dmax.	Tmax.	Hmax.	H1max.	lmax.	L	d
Straight Lead	2.54±1	4	3	5	--	3	30~40	0.5±0.02
	5±1	6.5	5	7	--	3		
Wider Kink	2.54±1	4	3	6	--	--		
	5±1	4	3	10	--	--		
Outer Kink	2.54±1	4	3	5	5.5	3	24.5~34.5	

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## Electrical Characteristics

Part No.	Zero Power Resistance at 25°C	Tolerance of R <sub>25</sub>	B Value	Tolerance of B value	Max. Power Dissipation 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 cUL	TUV	CQC	
TTC3A901□38D*	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						✓	✓	✓
TTC3A482□395*	4.8			3950						✓	✓	
TTC3A482□39H*	4.8			3975	1 · 2 · 3					✓	✓	
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	2 · 3					✓	✓	✓
TTC3A203□426*	20			4260	2 · 3					✓	✓	✓
TTC3A223□374*	22			3740	✓					✓	✓	
TTC3A333□409*	33			4090	✓					✓	✓	
TTC3A473□409*	47			4090	1 · 2 · 3					✓	✓	✓
TTC3A503□39H*	50			3975	✓					✓	✓	
TTC3A503□406*	50			4060	✓					✓	✓	
TTC3A683□419*	68			4190	✓					✓	✓	
TTC3A104□419*	100			4190	✓					✓	✓	
TTC3A104□436*	100			4360	✓					✓	✓	
TTC3A154□437*	150			4370	2 · 3					✓	✓	✓
TTC3A204□386*	200			3850	✓					✓		
TTC3A224□437*	220			4370	✓					✓	✓	
TTC3A334□457*	330			4570	✓					✓	✓	
TTC3A474□457*	470			4570	✓					✓	✓	
TTC3A474□520*	470	5200	3	✓	✓	✓						
TTC3B202□350*	2	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<sub>25</sub>

\* = Tolerance of B value

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

CQC File No: CQC04001011945, CQC04001011966

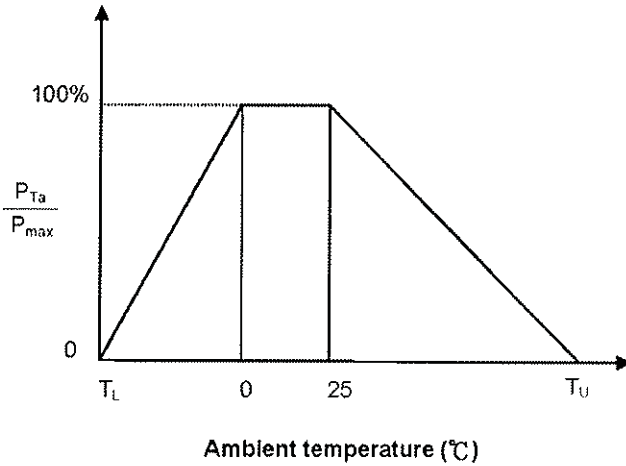
Note 3: Special specifications are available upon request.

# NTC Thermistor : TTC3 Series



Φ3 mm Lead Type for Temperature Sensing/Compensation

## Max. Power Dissipation Derating Curve



$T_U$  : Maximum operating temperature (°C)

$T_L$  : Minimum operating temperature (°C)

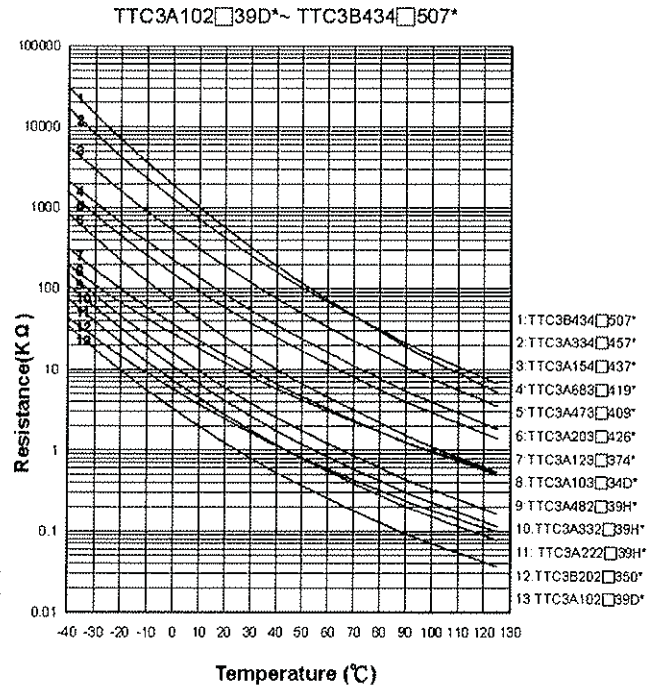
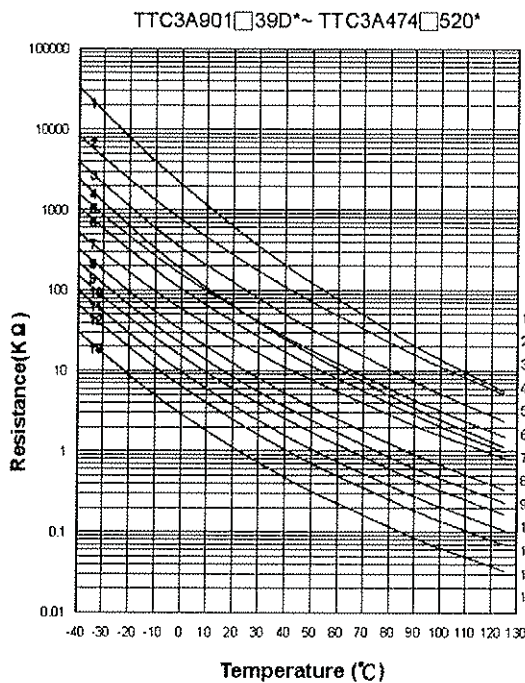
For example:

Ambient temperature( $T_a$ ) = 55°C

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

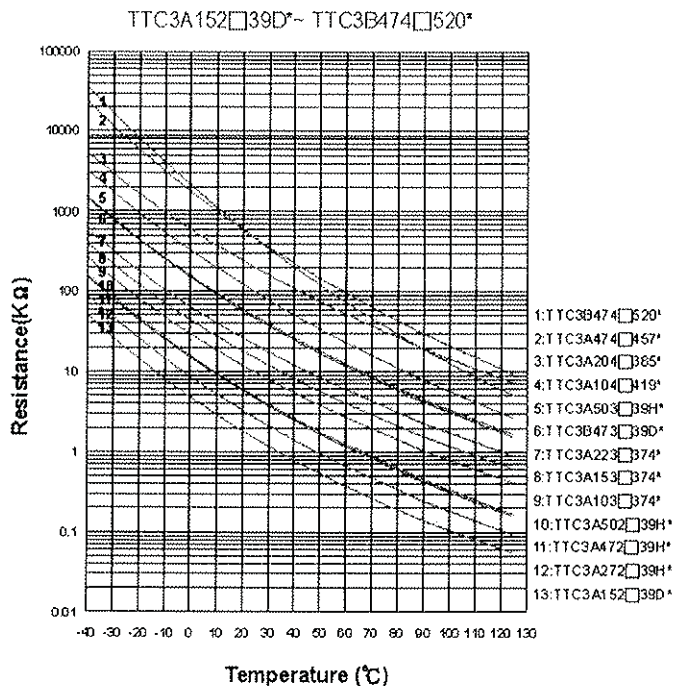
$$P_{Ta} = (T_U - T_a) / (T_U - 25) \times P_{max} = 70\% P_{max}$$

## R-T Characteristic Curves



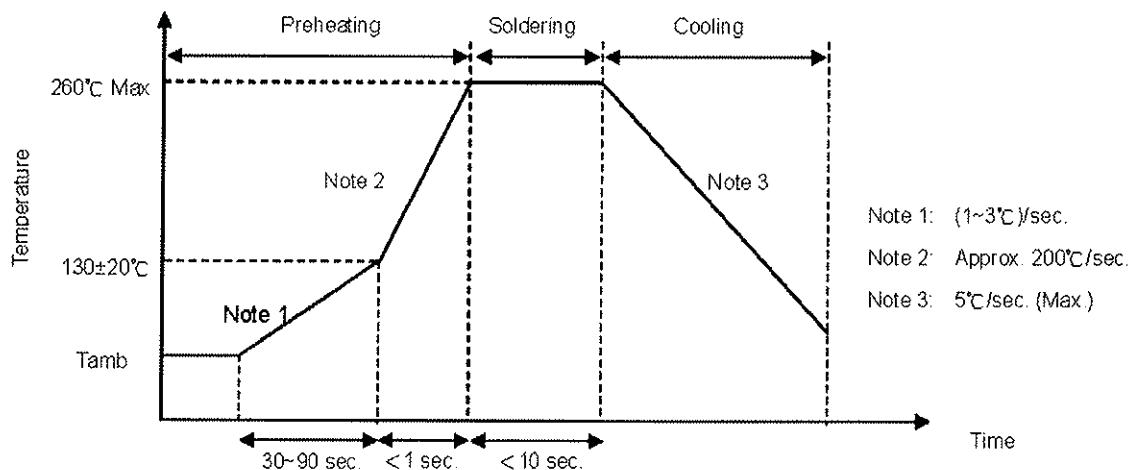
# NTC Thermistor : TTC3 Series

Φ3 mm Lead 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.)

# NTC Thermistor : TTC3 Series



## Φ3 mm Lead Type for Temperature Sensing/Compensation

### ■ Reliability

Item	Standard	Test conditions / Methods	Specifications															
Tensile Strength of Terminations	IEC 60068-2-21	<p>Gradually apply the specified force and keep the unit fixed for 10±1 sec.</p> <table style="width: 100%; border: none;"> <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;"><math>0.3 &lt; d \leq 0.5</math></td> <td style="text-align: center;">0.5</td> </tr> </table>	Terminal diameter (mm)	Force (Kg)	$0.3 < d \leq 0.5$	0.5	No visible damage											
Terminal diameter (mm)	Force (Kg)																	
$0.3 < d \leq 0.5$	0.5																	
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°, and then return to the original position. Repeat the procedure in the opposite direction.</p> <table style="width: 100%; border: none;"> <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;"><math>0.3 &lt; d \leq 0.5</math></td> <td style="text-align: center;">0.25</td> </tr> </table>	Terminal diameter (mm)	Force (Kg)	$0.3 < d \leq 0.5$	0.25	No visible damage											
Terminal diameter (mm)	Force (Kg)																	
$0.3 < d \leq 0.5$	0.25																	
Solderability	IEC 60068-2-20	245±3 °C , 3±0.3 sec.	At least 95% of terminal electrode is covered by new solder															
Resistance to Soldering Heat	IEC 60068-2-20	260 ± 3°C , 10 ± 1 sec.	No visible damage   $\Delta R_{25}/R_{25}$   ≤ 3 %															
High Temperature Storage	IEC 60068-2-2	125 ± 5°C , 1000 ± 24 hrs	No visible damage   $\Delta R_{25}/R_{25}$   ≤ 5 %															
Damp Heat, Steady State	IEC 60068-2-3	40 ± 2°C , 90-95% RH , 1000 ± 24 hrs	No visible damage   $\Delta R_{25}/R_{25}$   ≤ 3 %															
Rapid Change of Temperature	IEC 60068-2-14	<p>The conditions shown below shall be repeated 5 cycles</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <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   $\Delta R_{25}/R_{25}$   ≤ 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																
Max. Power Dissipation	IEC 60539-1	25 ± 5°C , Pmax. , 1000 ± 24 hrs	No visible damage   $\Delta R_{25}/R_{25}$   ≤ 5 %															

# NTC Thermistor : TTC3 Series

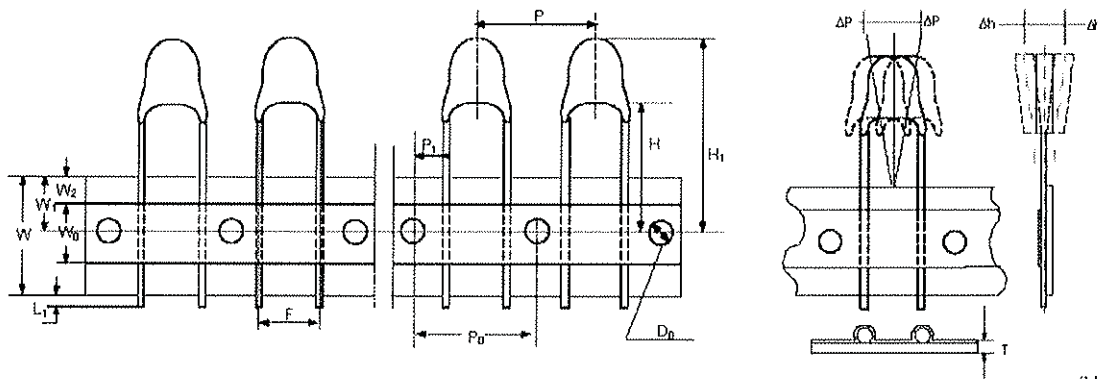


## Φ3 mm Lead Type for Temperature Sensing/Compensation

### ■ Packaging

- Taping Specification

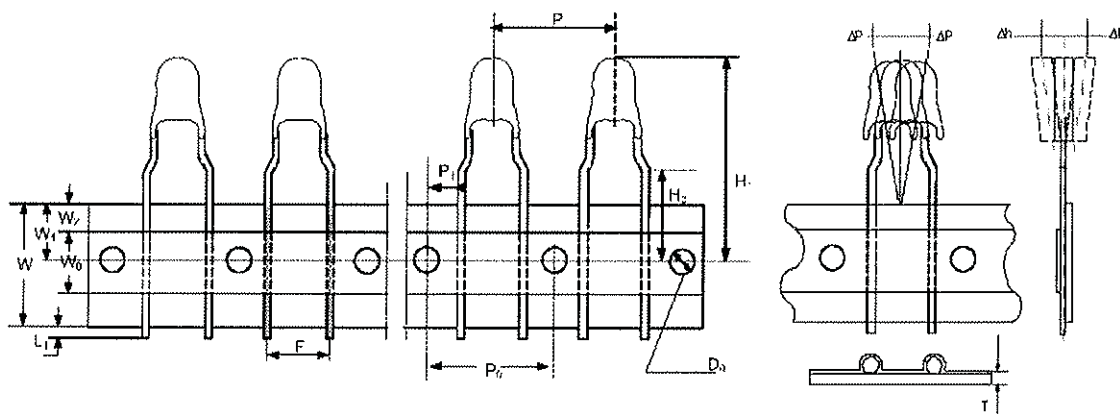
#### Straight Lead



(Unit:mm)

Taping Dimension	P <sub>0</sub>	F	P	P <sub>1</sub>	H	H <sub>1</sub>	d	W <sub>0</sub>	W <sub>1</sub>	W <sub>2</sub>	W	ΔP	Δh	L <sub>1</sub>	D <sub>0</sub>	T
	±0.3	±1	±1	±0.7	+2/-0	Max.	±0.02	±1	+0.75 /-0.5	Max.	+1/ -0.5	Max.	Max.	Max.	±0.2	±0.2
P <sub>0</sub> =12.7	12.7	2.54	12.7	5.08	18	25	0.5	12	9	3	18	1	2	0.5	4	0.6
	12.7	5	12.7	3.85	18	25	0.5	12	9	3	18	1	2	0.5	4	0.6
P <sub>0</sub> =15.0	15	2.54	15	6.23	18	25	0.5	12	9	3	18	1	2	0.5	4	0.6
	15	5	15	5.00	18	25	0.5	12	9	3	18	1	2	0.5	4	0.6

#### Wider Kink



(Unit:mm)

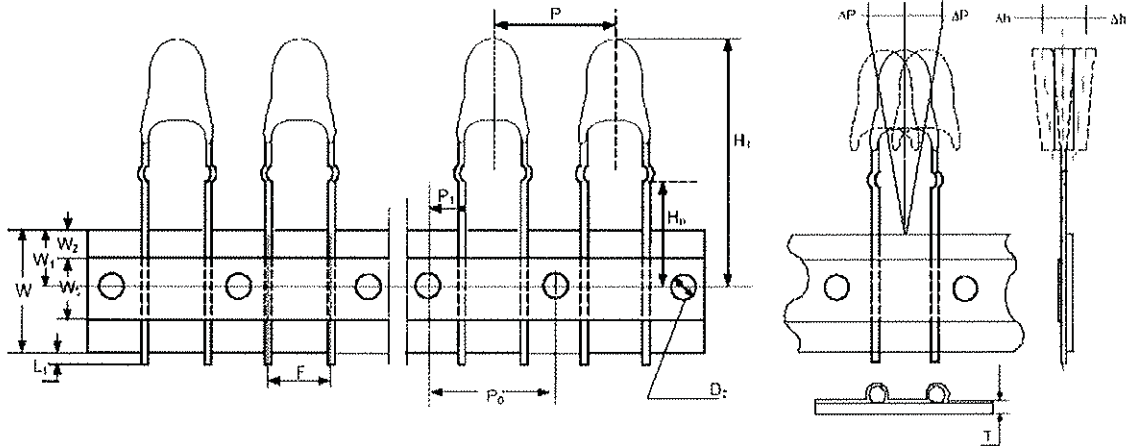
Taping Dimension	P <sub>0</sub>	F	P	P <sub>1</sub>	H <sub>0</sub>	H <sub>1</sub>	d	W <sub>0</sub>	W <sub>1</sub>	W <sub>2</sub>	W	ΔP	Δh	L <sub>1</sub>	D <sub>0</sub>	T
	±0.3	±1	±1	±0.7	±0.5	Max.	±0.02	±1	+0.75 /-0.5	Max.	+1/ -0.5	Max.	Max.	Max.	±0.2	±0.2
P <sub>0</sub> =12.7	12.7	2.54	12.7	5.08	16	26	0.5	12	9	3	18	1	2	0.5	4	0.6
	12.7	5	12.7	3.85	16	26	0.5	12	9	3	18	1	2	0.5	4	0.6

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## Outer Kink



(Unit: mm)

Taping Dimension	P <sub>0</sub>	F	P	P <sub>1</sub>	H <sub>0</sub>	H <sub>1</sub>	d	W <sub>0</sub>	W <sub>1</sub>	W <sub>2</sub>	W	ΔP	Δh	L <sub>1</sub>	D <sub>0</sub>	T
	±0.3	±1	±1	±0.7	±0.5	Max.	±0.02	±1	+0.75 /-0.5	Max.	+1/ -0.5	Max.	Max.	Max.	±0.2	±0.2
P <sub>0</sub> =12.7	12.7	2.54	12.7	5.08	16	26	0.5	12	9	3	18	1	2	0.5	4	0.6

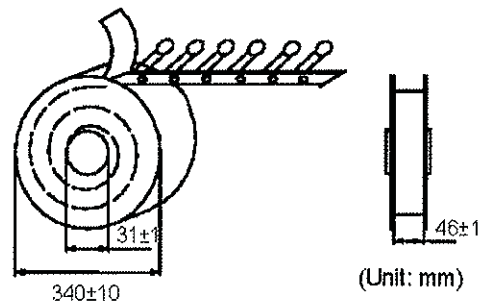
## Quantity

### Bulk Packing

Series	Quantity (pcs/bag)
TTC3	500

### Reel Packing

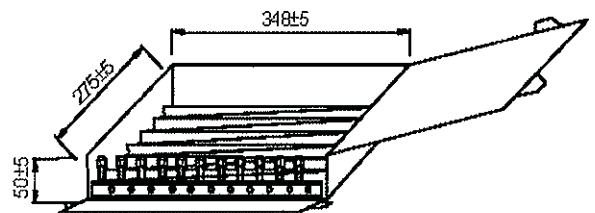
Series	Quantity (pcs/reel)
TTC3	2,500



(Unit: mm)

### Ammo Packing

Series	Quantity (pcs/box)
TTC3	2,500



## Warehouse Storage Conditions of Products

### Storage Conditions:

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

### Period of Storage : 1 year