

# NTC Thermistor: TTC05 Series

## Φ5 mm Disc Type for Temperature Sensing/Compensation

### ■ Features

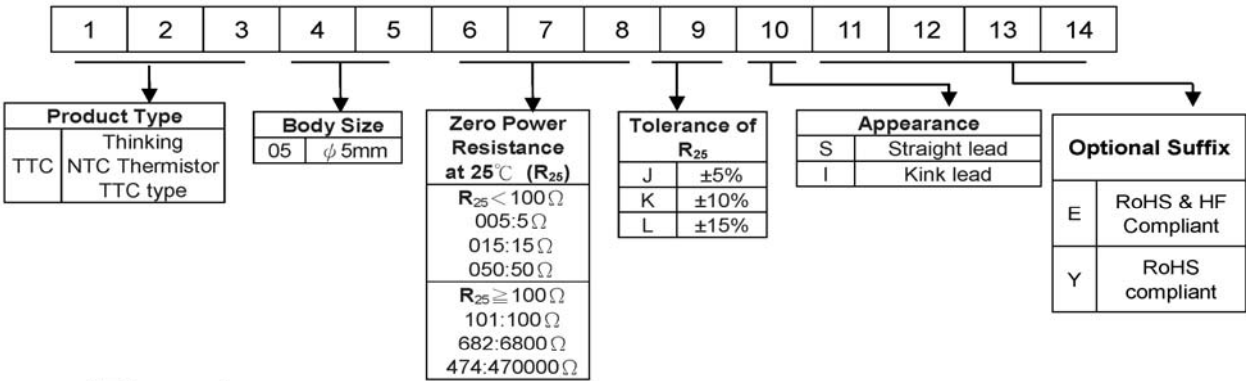
- 1. RoHS compliant & Halogen-free series are available
- 2. Body size Φ5mm
- 3. Radial lead resin coated
- 4. -30 ~ +125℃ operating temperature range
- 5. Wide resistance range
- 6. Cost effective
- 7. Agency recognition :UL /cUL/CSA/TUV/CQC



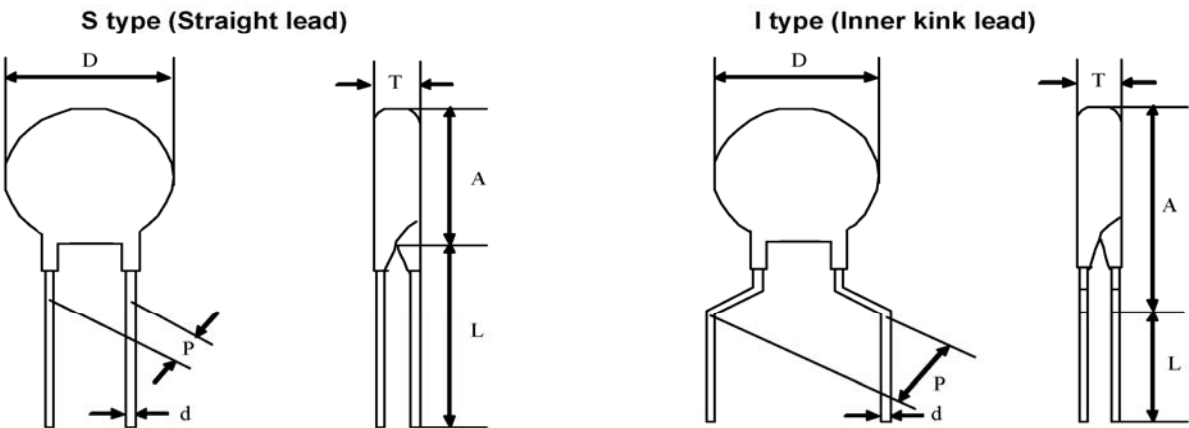
### ■ Recommended Applications

- 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 <sub>25</sub>	B <sub>25/50</sub> Value	Max. Power Dissipation at 25°C	Dissipation Factor	Thermal Time Constant	Operating Temperature Range	Safety Approvals			
	R <sub>25</sub> (Ω)	( ±%)	(K)	P <sub>max</sub> (mW)	δ(mW/°C)	τ(Sec.)	T <sub>L</sub> ~T <sub>U</sub> (°C)	UL /cUL	CSA	TUV	CQC
TTC05005□	5	5 - 10 - 15	2400	450	Approx. 4.5	Approx. 20	-30~+125		✓	✓	✓
TTC05010□	10		2800						✓	✓	✓
TTC05015□	15		2800					✓	✓	✓	✓
TTC05020□	20		2800					✓	✓	✓	✓
TTC05025□	25		2900					✓	✓	✓	✓
TTC05045□	45		3100					✓	✓	✓	✓
TTC05050□	50		3100					✓	✓	✓	✓
TTC05060□	60		3100					✓	✓	✓	✓
TTC05085□	85		3200					✓	✓	✓	✓
TTC05090□	90		3200					✓		✓	✓
TTC05101□	100		3200					✓	✓	✓	✓
TTC05121□	120		3300					✓	✓	✓	✓
TTC05151□	150		3300					✓	✓	✓	✓
TTC05201□	200		3500					✓	✓	✓	✓
TTC05221□	220		3500					✓	✓	✓	✓
TTC05251□	250		3500					✓	✓	✓	✓
TTC05301□	300		3800					✓	✓	✓	✓
TTC05471□	470		3500					✓	✓	✓	✓
TTC05501□	500		3700					✓	✓	✓	✓
TTC05681□	680		3800					✓	✓	✓	✓
TTC05701□	700		3800					✓	✓	✓	✓
TTC05102□	1000		3800					✓	✓	✓	✓
TTC05152□	1500		3950					✓	✓	✓	✓
TTC05202□	2000		4000					✓	✓	✓	✓
TTC05222□	2200		4000					✓	✓	✓	✓
TTC05252□	2500		4000					✓	✓	✓	✓
TTC05302□	3000		4000					✓	✓	✓	✓
TTC05332□	3300		4000					✓	✓	✓	✓
TTC05402□	4000		4000					✓	✓	✓	✓
TTC05472□	4700		4050					✓	✓	✓	✓
TTC05502□	5000		3950					✓	✓	✓	✓
TTC05602□	6000		4050					✓	✓	✓	✓
TTC05682□	6800		4050					✓	✓	✓	✓
TTC05802□	8000		4050					✓	✓	✓	✓
TTC05103□	10000		4050					✓	✓	✓	✓
TTC05123□	12000		4050					✓	✓	✓	✓
TTC05153□	15000		4150					✓	✓	✓	✓
TTC05203□	20000		4250					✓	✓	✓	✓
TTC05303□	30000		4250					✓	✓	✓	✓
TTC05473□	47000		4300					✓	✓	✓	✓
TTC05503□	50000		4300					✓	✓	✓	✓
TTC05104□	100000		4400					✓	✓	✓	✓
TTC05154□	150000		4500					✓	✓	✓	✓
TTC05204□	200000		4600					✓	✓	✓	✓
TTC05224□	220000		4600					✓		✓	✓
TTC05474□	470000		4750					✓		✓	✓

Note : □ = Tolerance of R<sub>25</sub>

Note2 : UL file no. E138827

CSA file no. 97495

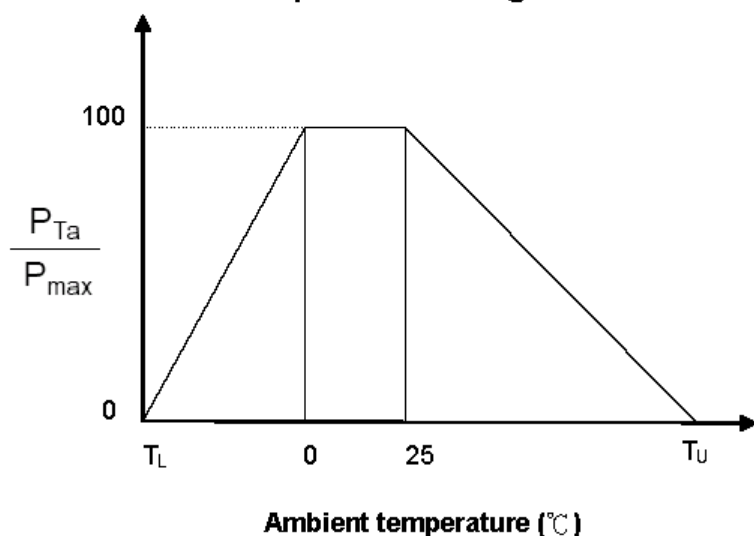
TUV file no. R 50050155

CQC file no. CQC05001011991 ; CQC05001011994

# NTC Thermistor: TTC05 Series

## Φ5 mm Disc Type for Temperature Sensing/Compensation

### ■ Max. Power Dissipation Derating Curve



$T_U$  : Maximum operating temperature (°C)

$T_L$  : Minimum operating temperature (°C)

For example :

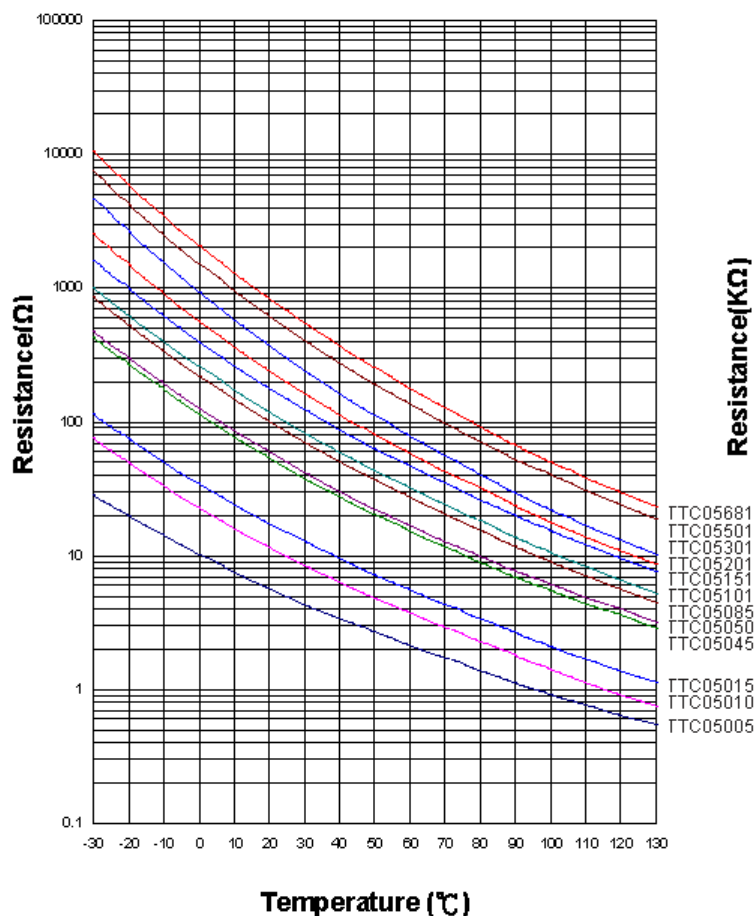
Ambient temperature ( $T_a$ )=55°C

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

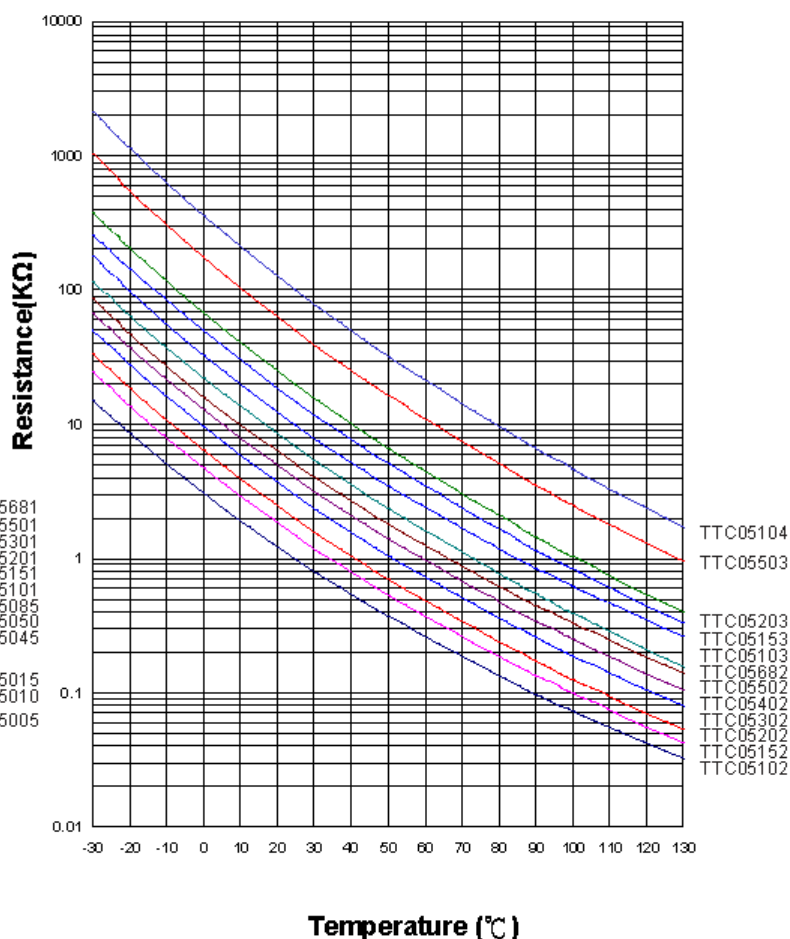
$P_{Ta} = (T_U - T_a) / (T_U - 25) \times P_{max} = 70\% P_{max}$

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

#### TTC05005~TTC05681



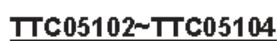
#### TTC05102~TTC05104





### Φ5 mm Disc Type for Temperature Sensing/Compensation

**TTC05005~TTC05681**

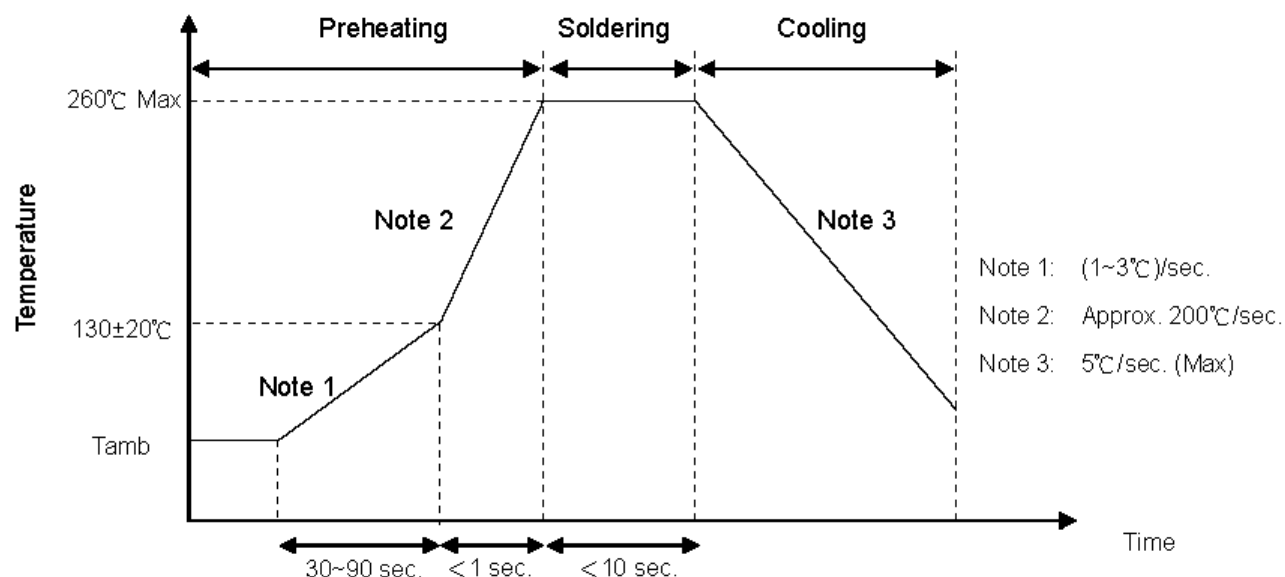


# NTC Thermistor: TTC05 Series

## 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	$360^{\circ}\text{C}$ (max.)
Soldering Time	3 sec (max.)
Distance from Thermistor	2 mm (min.)

# NTC Thermistor: TTC05 Series

## Φ5 mm Disc Type for Temperature Sensing/Compensation

### ■ 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><tr><td>Terminal diameter (mm)</td><td>Force (Kg)</td></tr><tr><td><math>0.3 &lt; d \leq 0.5</math></td><td>0.5</td></tr><tr><td><math>0.5 &lt; d \leq 0.8</math></td><td>1.0</td></tr></table>	Terminal diameter (mm)	Force (Kg)	$0.3 < d \leq 0.5$	0.5	$0.5 < d \leq 0.8$	1.0	No visible damage									
Terminal diameter (mm)	Force (Kg)																	
$0.3 < d \leq 0.5$	0.5																	
$0.5 < d \leq 0.8$	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><tr><td>Terminal diameter (mm)</td><td>Force (Kg)</td></tr><tr><td><math>0.3 &lt; d \leq 0.5</math></td><td>0.25</td></tr><tr><td><math>0.5 &lt; d \leq 0.8</math></td><td>0.50</td></tr></table>	Terminal diameter (mm)	Force (Kg)	$0.3 < d \leq 0.5$	0.25	$0.5 < d \leq 0.8$	0.50	No visible damage									
Terminal diameter (mm)	Force (Kg)																	
$0.3 < d \leq 0.5$	0.25																	
$0.5 < d \leq 0.8$	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 <sub>25</sub> /R <sub>25</sub>   ≤ 3 %															
High Temperature Storage	IEC600068-2-2	125 ± 5 °C , 1000 ± 24 hrs	No visible damage   ΔR <sub>25</sub> /R <sub>25</sub>   ≤ 5 %															
Damp Heat , Steady State	IEC60068-2-3	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	IEC60068-2-14	The conditions shown below shall be repeated 5 cycles <table><tr><td>Step</td><td>Temperature (°C)</td><td>Period (minutes)</td></tr><tr><td>1</td><td>-30 ± 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>	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 <sub>25</sub> /R <sub>25</sub>   ≤ 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 <sub>25</sub> /R <sub>25</sub>   ≤ 5 %															
Insulation Test	MIL-STD-202F -Method 302	1000 V <sub>dc</sub> 1 min	No visible damage ≥ 500 MΩ															

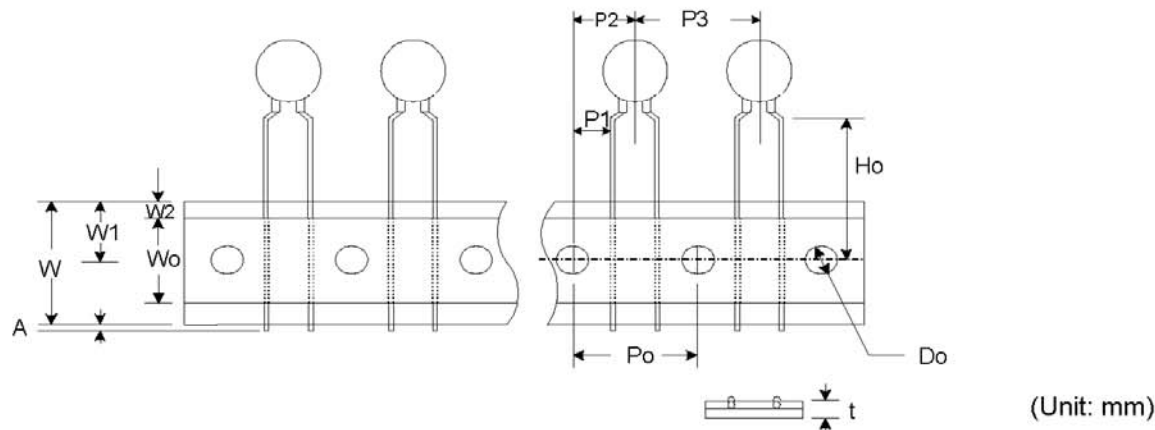


# NTC Thermistor: TTC05 Series

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### ■ Packaging

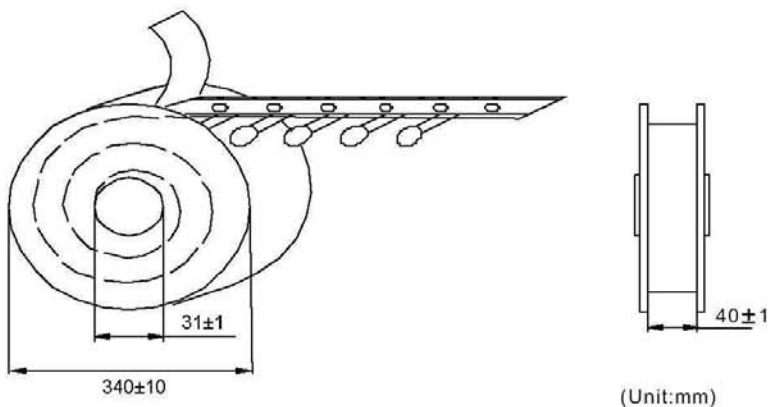
- Taping Specification  
For I Type Only (Inner kink lead)



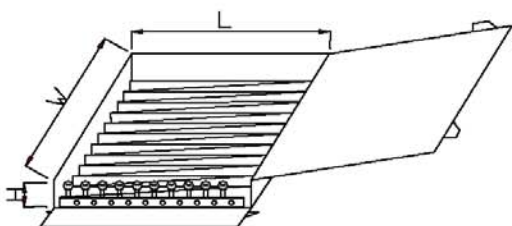
Taping Code	Body Size	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	H <sub>0</sub>	W <sub>0</sub>	W <sub>1</sub>	W <sub>2</sub>	W	A	D <sub>0</sub>	t
		±0.5	±0.7	±1.3	±0.5	±0.5	±1	±0.5	Max.	±0.5	Max.	±0.2	±0.2
A (P <sub>0</sub> =12.7)	φ 05	12.7	3.6	6.35	12.7	16	12	9	3	18	1	4	0.6
E (P <sub>0</sub> =15.0)	φ 05	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 :  $\leq 75\% \text{RH}$
  3. Keep away from corrosive atmosphere and sunlight.
- Period of Storage : 1 year