

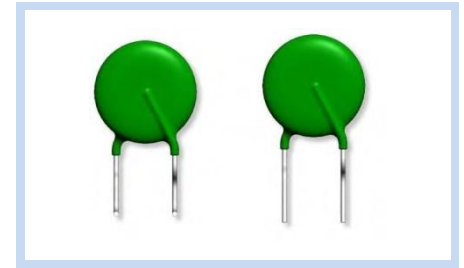
# High Power NTC Thermistor Inrush Current Limiter

NTIC-P Series

MERITEK

## FEATURE

- High Power Rating
- Wide Resistance Range
- Radial Lead Resin Coated
- Applications: Switch Mode Power Supply, Electric Motor, Transformer, Adapter, Projector, Halogen Lamp, LED Driver Circuit
- UL Safety Approved: Certification No: E223027



## ELECTRICAL CHARACTERISTICS

Part Number	Zero Power Resistance at 25°C $R_{25}$	Max. Current at 25°C $I_{max}$	Residual Resistance at 25°C $R_{imax}$	$B_{25/50}$ Value	Recommend Capacitance @240Vac $C_{th}$	Max. Power Rating at 25°C $P_{max}$	Dissipation Factor $\delta$	Thermal Time Constant $T$
	( $\Omega$ )	(A)	( $\Omega$ )	(K)	( $\mu$ F)	(W)	(mW/°C)	(Sec.)
NTIC200R7□*P	0.7	18.0	0.018	2300 ±7%	1200	5.8	Approx. 28	Approx. 113
NTIC201R0□*P	1.0	16.0	0.023	2500 ±7%		5.9		
NTIC201R5□*P	1.5	13.0	0.035	2600 ±7%		5.9		
NTIC202R0□*P	2.0	12.0	0.042	2750 ±7%		6.0		
NTIC202R5□*P	2.5	11.0	0.050	2750 ±7%		6.1		
NTIC203R0□*P	3.0	11.0	0.052	2800 ±7%		6.3		
NTIC204R0□*P	4.0	9.5	0.067	3000 ±7%		6.0		
NTIC204R7□*P	4.7	9.5	0.074	3000 ±7%		6.7		
NTIC205R0□*P	5.0	9.5	0.076	3000 ±7%		6.9		
NTIC206R0□*P	6.0	9.0	0.083	3050 ±7%		6.7		
NTIC206R8□*P	6.8	8.5	0.093	3100 ±7%		6.7		
NTIC207R0□*P	7.0	8.5	0.095	3100 ±7%		6.9		
NTIC208R0□*P	8.0	8.0	0.101	3150 ±7%		6.5		
NTIC20100□*P	10.0	7.5	0.126	3200 ±7%		7.1		
NTIC20120□*P	12.0	7.5	0.123	3200 ±7%		6.9		
NTIC20130□*P	13.0	7.5	0.125	3250 ±7%		7.0		
NTIC20150□*P	15.0	7.0	0.145	3250 ±7%		7.1		
NTIC20160□*P	16.0	6.5	0.158	3300 ±7%		6.7		
NTIC20180□*P	18.0	6.0	0.159	3350 ±7%		5.7		
NTIC20200□*P	20.0	6.0	0.185	3350 ±7%		6.7		
NTIC20470□*P	47.0	4.5	0.336	3550 ±7%	6.8			
NTIC20550□*P	55.0	4.0	0.409	3550 ±7%	6.5			
NTIC20121□*P	120.0	3.0	0.697	3550 ±7%	6.3			

Note

- 1: □ = Tolerance of R25 (L: ±15% M: ±20%), \* = Lead Type and Internal code
- 2: Operating Temperature: -40°C~200°C

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## ELECTRICAL CHARACTERISTICS

Part Number	Zero Power Resistance at 25°C R <sub>25</sub>	Max. Current at 25°C I <sub>max</sub>	Residual Resistance at 25°C R <sub>imax</sub>	B <sub>25/50</sub> Value	Recommend Capacitance @240Vac C <sub>th</sub>	Max. Power Rating at 25°C P <sub>max</sub>	Dissipation Factor δ	Thermal Time Constant T		
	(Ω)	(A)	(Ω)	(K)	(μF)	(W)	(mW/°C)	(Sec.)		
NTIC251R0□*P	1.0	22.5	0.019	2600 ±7%	2200	9.6	Approx. 30	Approx. 130		
NTIC251R5□*P	1.5	21.5	0.022	2600 ±7%		10.2				
NTIC252R0□*P	2.0	21.0	0.024	2800 ±7%		10.6				
NTIC252R5□*P	2.5	19.5	0.027	2800 ±7%		10.3				
NTIC253R0□*P	3.0	18.0	0.030	2900 ±7%		9.7				
NTIC254R0□*P	4.0	17.0	0.035	3000 ±7%		10.1				
NTIC254R7□*P	4.7	16.5	0.037	3100 ±7%		10.1				
NTIC255R0□*P	5.0	16.0	0.040	3100 ±7%		10.2				
NTIC256R8□*P	6.8	14.5	0.054	3150 ±7%		11.4				
NTIC257R0□*P	7.0	14.0	0.055	3150 ±7%		10.8				
NTIC258R0□*P	8.0	13.0	0.060	3200 ±7%		10.1				
NTIC25100□*P	10.0	12.0	0.063	3300 ±7%		9.1				
NTIC25120□*P	12.0	11.0	0.066	3300 ±7%		8.0				
NTIC25150□*P	15.0	9.0	0.108	3350 ±7%		8.7				
NTIC25180□*P	18.0	8.5	0.115	3450 ±7%		8.3				
NTIC25200□*P	20.0	8.0	0.139	3500 ±7%		8.9				
NTIC25121□*P	120.0	5.0	0.377	4000 ±7%		9.4				
NTIC251R0□*CP	1.0	22.5	0.019	2600 ±7%		4200			9.6	Approx. 30
NTIC251R5□*CP	1.5	21.5	0.022	2600 ±7%	10.2					
NTIC252R0□*CP	2.0	21.0	0.024	2800 ±7%	10.6					
NTIC252R5□*CP	2.5	19.5	0.027	2800 ±7%	10.3					
NTIC253R0□*CP	3.0	18.0	0.030	2900 ±7%	9.7					
NTIC254R0□*CP	4.0	17.0	0.035	3000 ±7%	10.1					
NTIC254R7□*CP	4.7	16.5	0.037	3100 ±7%	10.1					
NTIC255R0□*CP	5.0	16.0	0.040	3100 ±7%	10.2					
NTIC256R8□*CP	6.8	14.5	0.054	3150 ±7%	11.4					
NTIC257R0□*CP	7.0	14.0	0.055	3150 ±7%	10.8					
NTIC258R0□*CP	8.0	13.0	0.060	3200 ±7%	10.1					
NTIC25100□*CP	10.0	12.0	0.063	3300 ±7%	9.1					
NTIC25120□*CP	12.0	11.0	0.066	3300 ±7%	8.0					
NTIC25150□*CP	15.0	9.0	0.108	3350 ±7%	8.7					
NTIC25180□*CP	18.0	8.5	0.115	3450 ±7%	8.3					
NTIC25200□*CP	20.0	8.0	0.139	3500 ±7%	8.9					
NTIC25121□*CP	120.0	5.0	0.377	4000 ±7%	9.4					

Note

1: □ = Tolerance of R25 (L: ±15% M: ±20%), \* = Lead Type and Internal code

2: Operating Temperature: -40°C~200°C

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## ELECTRICAL CHARACTERISTICS

Part Number	Zero Power Resistance at 25°C R <sub>25</sub>	Max. Current at 25°C I <sub>max</sub>	Residual Resistance at 25°C R <sub>imax</sub>	B <sub>25/50</sub> Value	Recommend Capacitance @240Vac C <sub>th</sub>	Max. Power Rating at 25°C P <sub>max</sub>	Dissipation Factor δ	Thermal Time Constant T			
	(Ω)	(A)	(Ω)	(K)	(μF)	(W)	(mW/°C)	(Sec.)			
NTIC300R5□*P	0.5	38.0	0.010	2600 ±7%	3000	14.4	Approx. 40	Approx. 190			
NTIC301R0□*P	1.0	34.0	0.012	2600 ±7%		13.9					
NTIC301R5□*P	1.5	30.0	0.014	2600 ±7%		12.6					
NTIC302R0□*P	2.0	27.0	0.017	2800 ±7%		12.4					
NTIC302R5□*P	2.5	24.0	0.021	2800 ±7%		12.1					
NTIC303R0□*P	3.0	24.0	0.023	3000 ±7%		13.2					
NTIC304R0□*P	4.0	21.0	0.029	3000 ±7%		12.8					
NTIC304R7□*P	4.7	20.0	0.032	3100 ±7%		12.8					
NTIC305R0□*P	5.0	19.5	0.033	3150 ±7%		12.5					
NTIC306R0□*P	6.0	18.0	0.037	3200 ±7%		12.0					
NTIC306R8□*P	6.8	17.0	0.040	3250 ±7%		11.6					
NTIC307R0□*P	7.0	17.0	0.041	3250 ±7%		11.8					
NTIC308R0□*P	8.0	16.5	0.045	3250 ±7%		12.3					
NTIC30100□*P	10.0	16.0	0.052	3300 ±7%		13.3					
NTIC30120□*P	12.0	14.0	0.064	3450 ±7%		12.5					
NTIC30150□*P	15.0	14.0	0.073	3500 ±7%		14.3					
NTIC30180□*P	18.0	12.0	0.092	3500 ±7%		13.2					
NTIC30200□*P	20.0	10.0	0.104	3550 ±7%		10.4					
NTIC300R5□*CP	0.5	38.0	0.010	2600 ±7%		5200			14.4	Approx. 40	Approx. 190
NTIC301R0□*CP	1.0	34.0	0.012	2600 ±7%					13.9		
NTIC301R5□*CP	1.5	30.0	0.014	2600 ±7%	12.6						
NTIC302R0□*CP	2.0	27.0	0.017	2800 ±7%	12.4						
NTIC302R5□*CP	2.5	24.0	0.021	2800 ±7%	12.1						
NTIC303R0□*CP	3.0	24.0	0.023	3000 ±7%	13.2						
NTIC304R0□*CP	4.0	21.0	0.029	3000 ±7%	12.8						
NTIC304R7□*CP	4.7	20.0	0.032	3100 ±7%	12.8						
NTIC305R0□*CP	5.0	19.5	0.033	3150 ±7%	12.5						
NTIC306R0□*CP	6.0	18.0	0.037	3200 ±7%	12.0						
NTIC306R8□*CP	6.8	17.0	0.040	3250 ±7%	11.6						
NTIC307R0□*CP	7.0	17.0	0.041	3250 ±7%	11.8						
NTIC308R0□*CP	8.0	16.5	0.045	3250 ±7%	12.3						
NTIC30100□*CP	10.0	16.0	0.052	3300 ±7%	13.3						
NTIC30120□*CP	12.0	14.0	0.064	3450 ±7%	12.5						
NTIC30150□*CP	15.0	14.0	0.073	3500 ±7%	14.3						
NTIC30180□*CP	18.0	12.0	0.092	3500 ±7%	13.2						
NTIC30200□*CP	20.0	10.0	0.104	3550 ±7%	10.4						

Note

- 1: □ = Tolerance of R25 (L: ±15% M: ±20%), \* = Lead Type and Internal code
- 2: Operating Temperature: -40°C~200°C

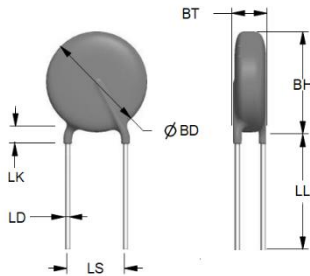
# High Power NTC Thermistor Inrush Current Limiter

NTIC-P Series

MERITEK

## DIMENSIONS

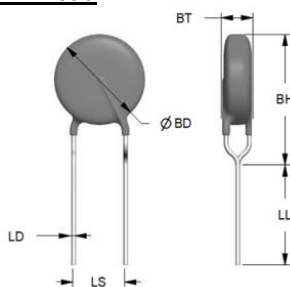
### Straight lead



Series	BD <sub>max</sub>	LS	LD	BH <sub>max</sub>	LL <sub>min</sub>	BT <sub>max</sub>	LK <sub>max</sub>
NTIC20-P	21.5	7.5±0.5	1.0±0.02	21.5	26	6	3
NTIC25-P	29.0	7.5±1	1.0±0.02	29.0	22	6	3
NTIC25-CP	29.0	7.5±1	1.0±0.02	29.0	22	7	3
NTIC30-P	36.0	7.5±1	1.0±0.02	36.0	22	6	3
NTIC30-CP	36.0	7.5±1	1.0±0.02	36.0	22	7	3

Unit: mm

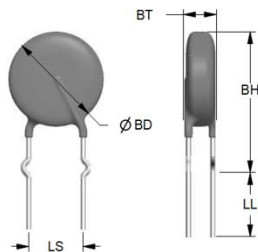
### Y kink lead



Series	BD <sub>max</sub>	LS	LD	BH <sub>max</sub>	LL <sub>min</sub>	BT <sub>max</sub>
NTIC20-P	21.5	7.5±0.5	1.0±0.02	24.5	25	6
NTIC25-P	29.0	7.5±1	1.0±0.02	35.0	22	6
NTIC25-CP	29.0	7.5±1	1.0±0.02	35.0	22	7
NTIC30-P	36.0	7.5±1	1.0±0.02	42.0	22	6
NTIC30-CP	36.0	7.5±1	1.0±0.02	42.0	22	7

Unit: mm

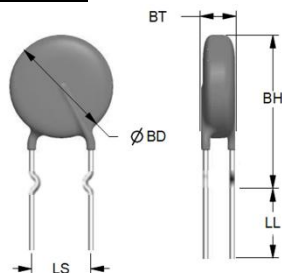
### O kink lead



Series	BD <sub>max</sub>	LS	LD	BH <sub>max</sub>	LL <sub>min</sub>	BT <sub>max</sub>
NTIC20-P	21.5	7.5±0.5	1.0±0.02	30.0	24	6
NTIC25-P	29.0	7.5±1	1.0±0.02	35.0	22	6
NTIC25-CP	29.0	7.5±1	1.0±0.02	35.0	22	7
NTIC30-P	36.0	7.5±1	1.0±0.02	42.0	22	6
NTIC30-CP	36.0	7.5±1	1.0±0.02	42.0	22	7

Unit: mm

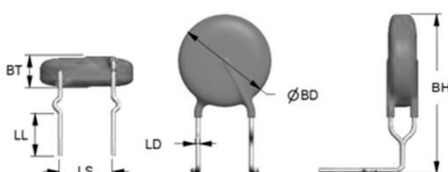
### I kink lead



Series	BD <sub>max</sub>	LS	LD	BH <sub>max</sub>	LL <sub>min</sub>	BT <sub>max</sub>
NTIC20-P	21.5	7.5±0.5	1.0±0.02	28.0	24	6
NTIC25-P	29.0	7.5±1	1.0±0.02	35.0	22	6
NTIC25-CP	29.0	7.5±1	1.0±0.02	35.0	22	7
NTIC30-P	36.0	7.5±1	1.0±0.02	42.0	22	6
NTIC30-CP	36.0	7.5±1	1.0±0.02	42.0	22	7

Unit: mm

### L kink lead

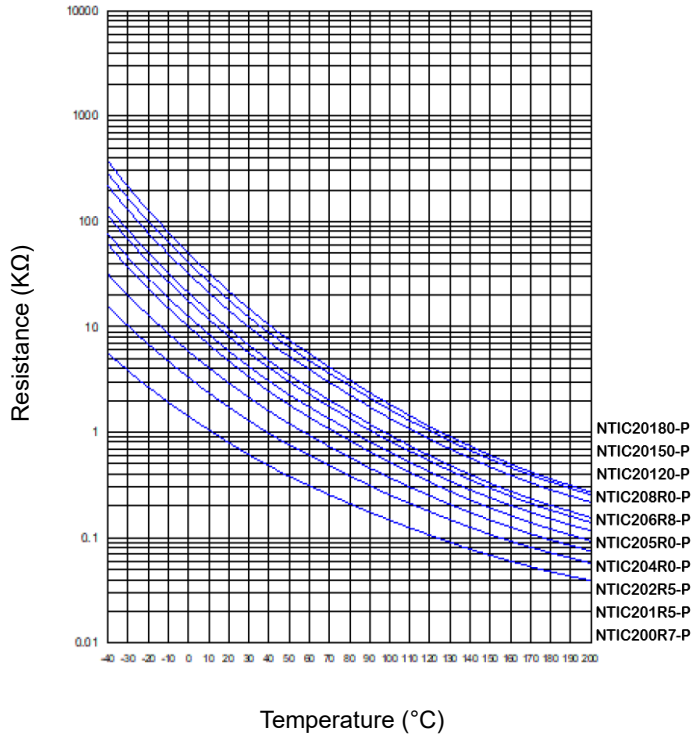


Series	BD <sub>max</sub>	LS	LD	TH <sub>max</sub>	LL	BT <sub>max</sub>
NTIC20-P	21.5	7.5±0.5	1.0±0.02	21.5	3.5	6

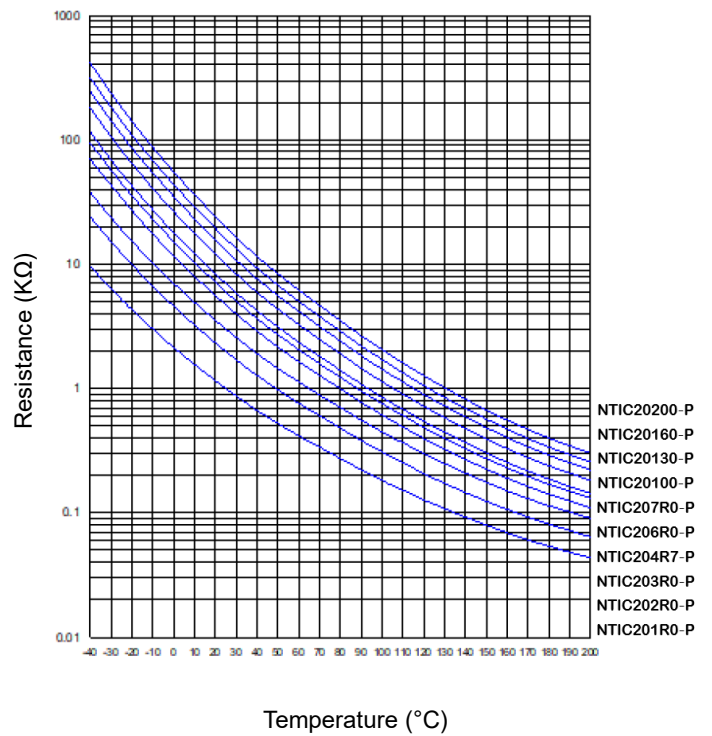
Unit: mm

### CHARACTERISTIC CURVES

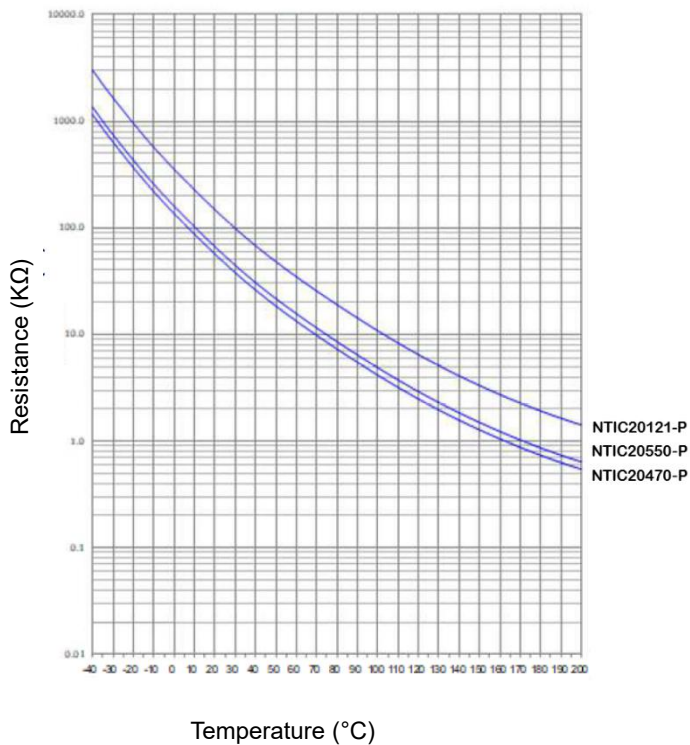
NTIC200R7-P ~ NTIC20180-P



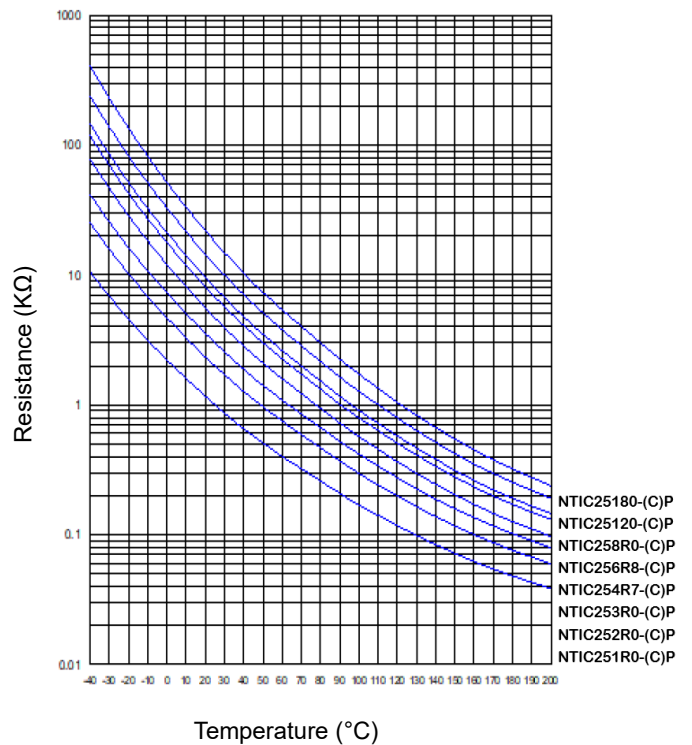
NTIC201R0-P ~ NTIC2020-P



NTIC20470-P ~ NTIC20121-P

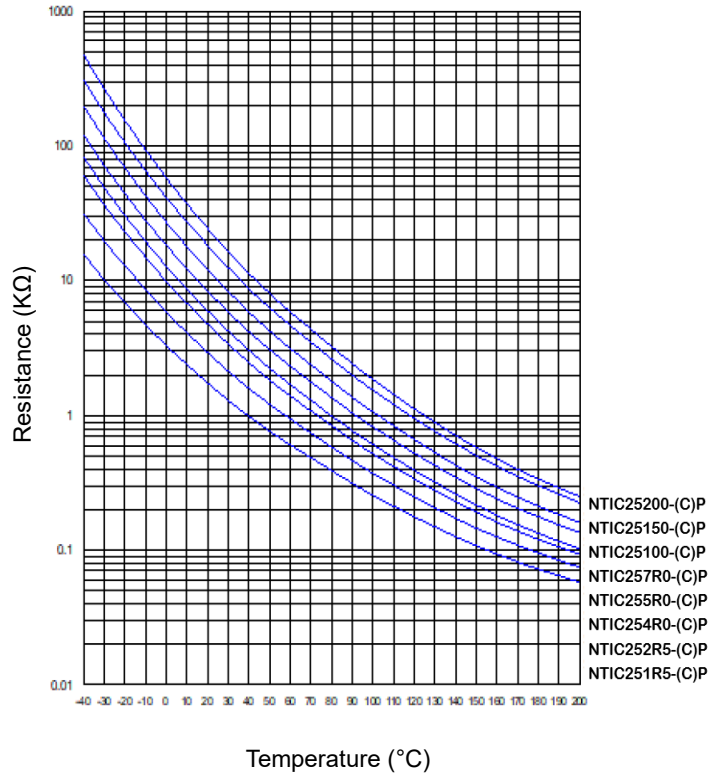


NTIC251R0-(C)P ~ NTIC25180-(C)P

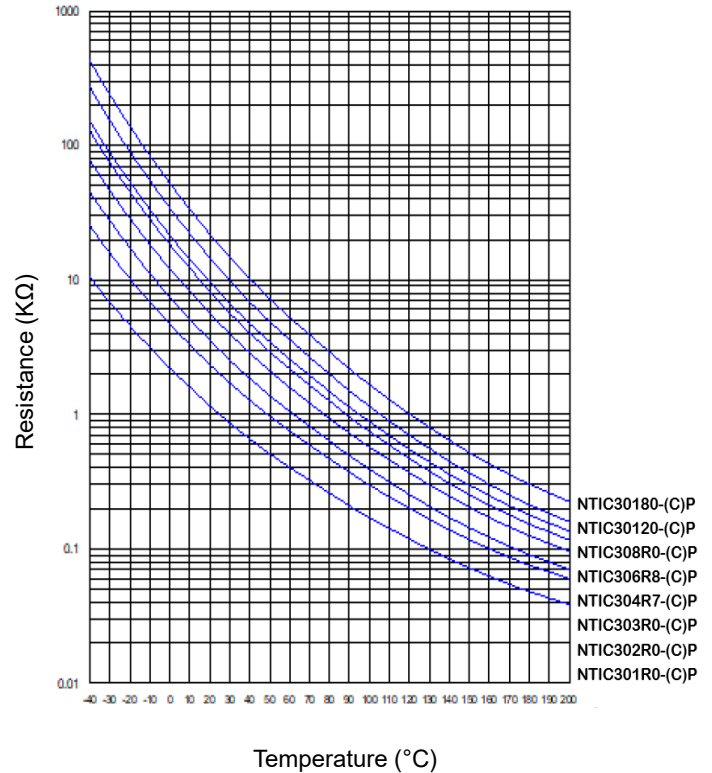


### CHARACTERISTIC CURVES

NTIC251R5-(C)P ~ NTIC25200-(C)P

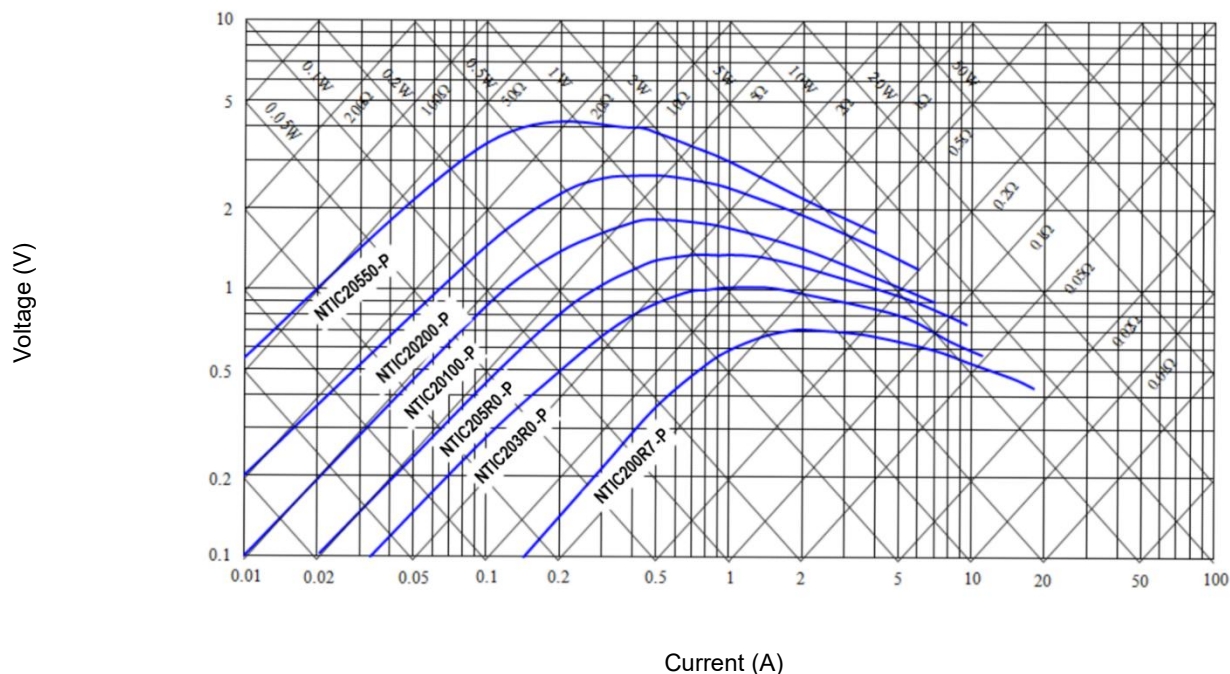


NTIC301R0-(C)P ~ NTIC30180-(C)P



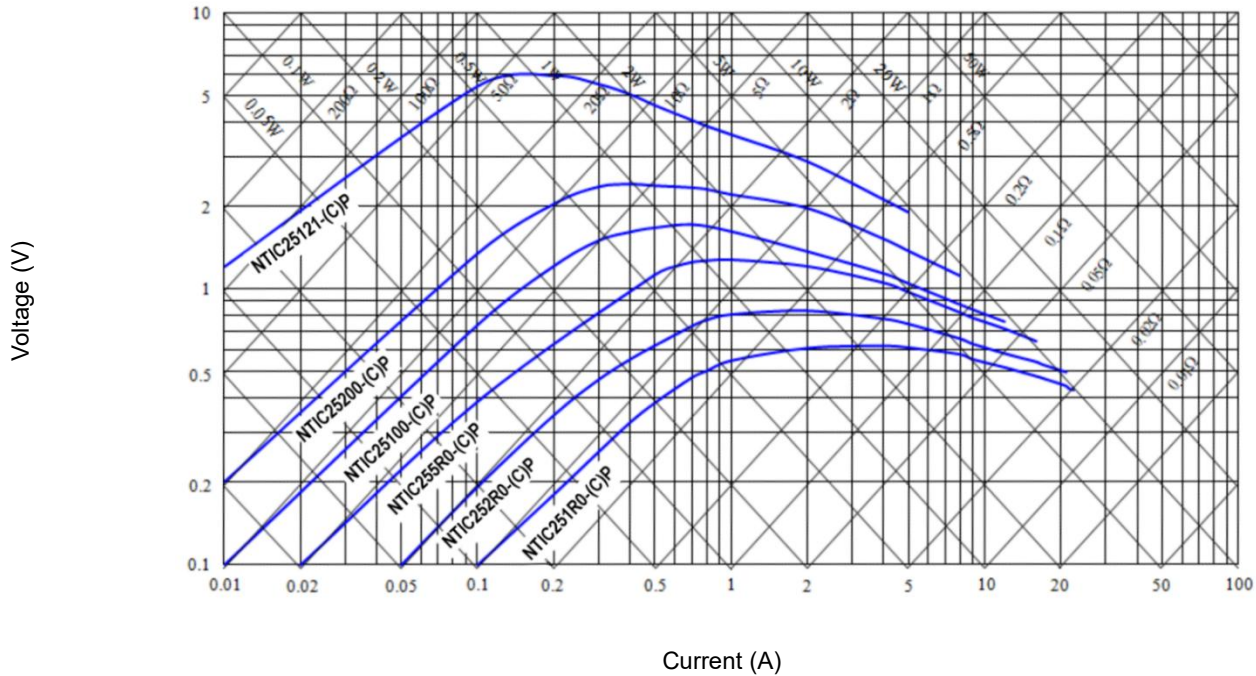
### V-I CHARACTERISTIC CURVES

NTIC200R7-P~NTIC20550-P

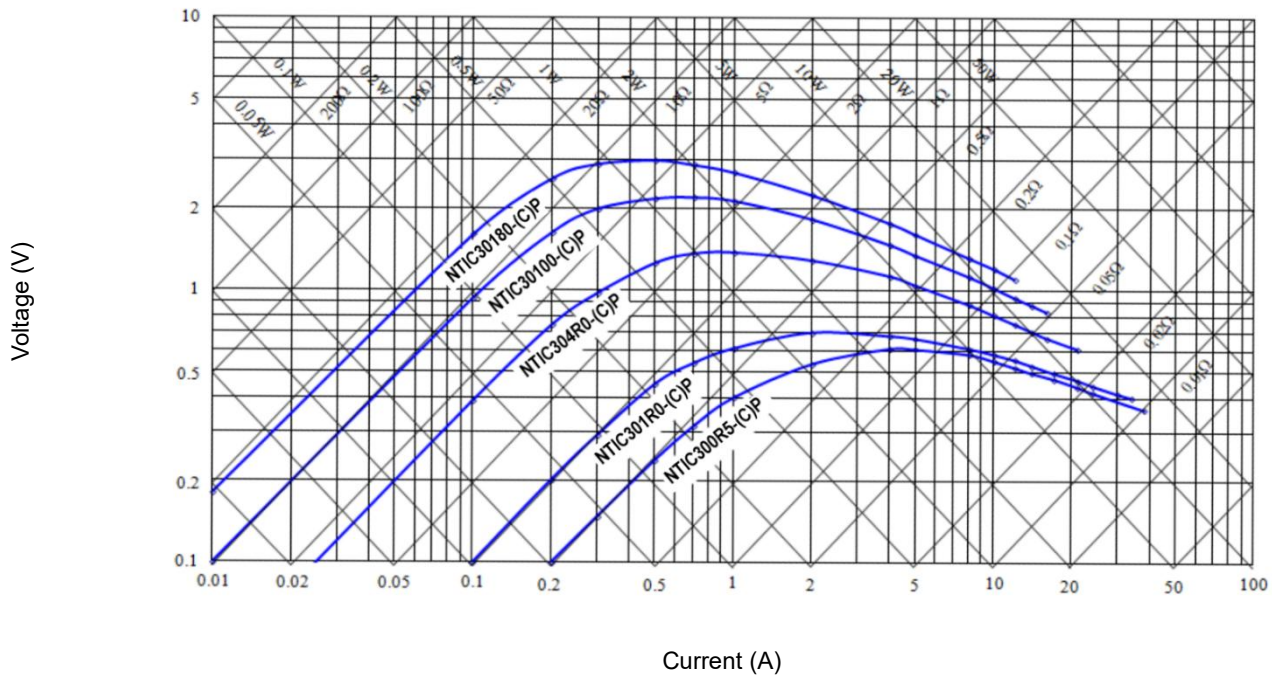


### V-I CHARACTERISTIC CURVES

NTIC251R0-(C)P ~ NTIC25121-(C)P



NTIC300R5-(C)P ~ NTIC30180-(C)P

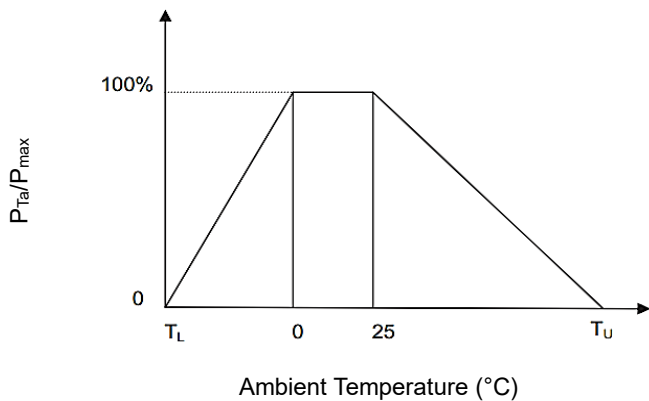


# High Power NTC Thermistor Inrush Current Limiter

NTIC-P Series

**MERITEK**

## MAX CURRENT DERATING CURVE



Item	Description
$T_U$	Maximum Operating Temperature (°C)
$T_L$	Minimum Operating Temperature (°C)
<b>Example</b>	Ambient Temperature ( $T_a$ ) = 85°C Maximum Operating Temperature ( $T_U$ ) = 200°C $I_{Ta} = [1 - (T_a - 65) / (T_U - 65)] \times I_{max} = 85.2\%$ $I_{max}$ Ambient temperature ( $T_a$ ) = -10°C Minimum operating temperature ( $T_L$ ) = -40°C $I_{Ta} = (1 - T_a / T_L) \times I_{max} = 75\% I_{max}$

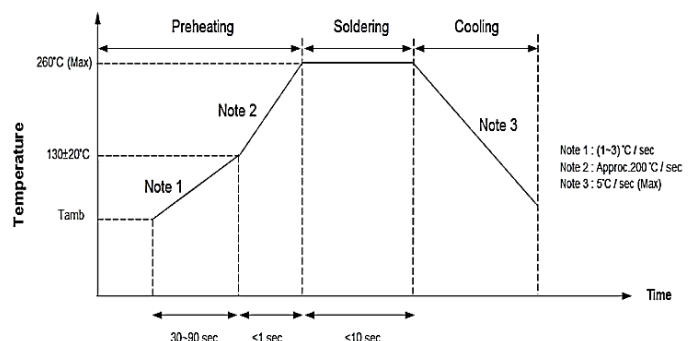
## RELIABILITY

Item	Standard	Test conditions / Methods	Specifications	
<b>Tensile Strength of Terminals</b>	IEC 60068-2-21	Gradually apply the force 2.0Kg and keep the unit fixed for 10±1 sec.	$ \Delta R_{25} / R_{25}  \leq 10 \%$	
<b>Solderability</b>	IEC 60068-2-20	245 ±3°C, 3 ± 0.3 sec	At least 95% of terminal electrode is covered by new solder	
<b>Resistance to Soldering Heat</b>	IEC 60068-2-20	260 ± 3°C, 10 ± 1 sec	No visible damage $ \Delta R_{25} / R_{25}  \leq 10 \%$	
<b>High Temperature Storage</b>	IEC 60068-2-2	$T_u \pm 2^\circ\text{C}$ , 1000± 24 hrs	No visible damage $ \Delta R_{25} / R_{25}  \leq 20 \%$	
<b>Damp Heat, Steady State</b>	IEC 60068-2-78	40 ± 2°C, 90~95% RH, 1000 ± 24 hrs	No visible damage $ \Delta R_{25} / R_{25}  \leq 20 \%$	
<b>Rapid Change of Temperature</b>	IEC 60068-2-14	The conditions shown below shall be repeated 5 cycles.		
		<b>Step</b>	<b>Temperature (°C)</b>	<b>Period (minutes)</b>
		1	$T_L \pm 3$	30±3
		2	Room temperature	<3
		3	$T_U \pm 2$	30±3
4	Room temperature	<3		
<b>Max. Current</b>	IEC 60539-1	25 ± 5°C, $I_{max}$ , 1000± 24 hrs	No visible damage $ \Delta R_{25} / R_{25}  \leq 20 \%$	
<b>Endurance</b>	IEC 60539-1	25 ± 5°C, $I_{max}$ , Cth, 1min ON / 5 mins OFF x 1000 cycles Cth= Capacitance at 240 Vac	No visible damage $ \Delta R_{25} / R_{25}  \leq 20 \%$	

## SOLDERING RECOMMENDATION

Wave Soldering Process	Condition
Peak Temperature	260°C (max.)
Dipping Time	10 sec. (max.)
Soldering	1 time

Soldering Iron Process	Condition
Temperature of Soldering Iron-tip	360°C (max.)
Soldering Time	3 sec. (max.)
Distance From Varistor	2 mm (min.)



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## PACKAGING SPECIFICATIONS

### Taping specification

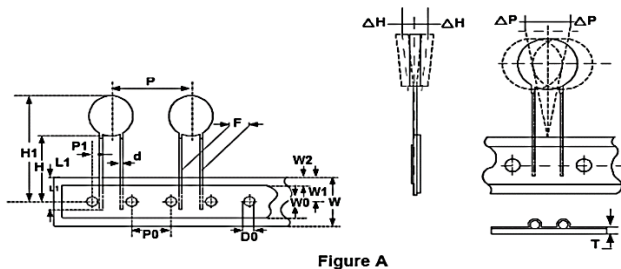


Figure A

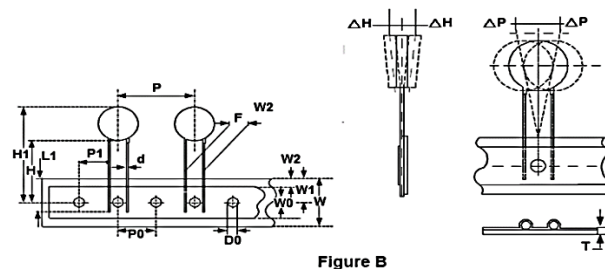
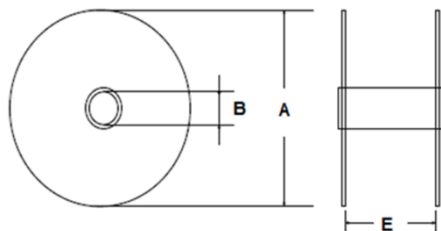


Figure B

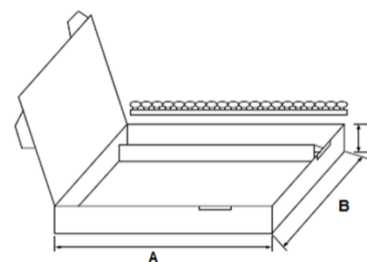
Unit: mm

Lead Type	Disc Size	P0 ±0.3	F ±0.5	P ±1.0	P1 ±0.7	H +2/-0	H1 Max	d ±0.02	W0 ±1.5	W1 +0.75/-0.5	W2 Max	W +1/-0.5	ΔP Max	ΔH Max	L1 Min	D0 ±0.2	T ±0.2	Figure
S	20	12.7	7.5	25.4	8.95	18	42	1.0	12	9	3	18	1	2	9	4	0.6	A
S	20	12.7	10.0	25.4	7.70	18	42	1.0	12	9	3	18	1	2	9	4	0.6	B
S	20	15.0	7.5	30.0	3.75	18	42	1.0	12	9	3	18	1	2	9	4	0.6	A
S	20	15.0	10.0	30.0	10.0	18	42	1.0	12	9	3	18	1	2	9	4	0.6	A
Y	20	12.7	7.5	25.4	8.95	18	42	1.0	12	9	3	18	1	2	9	4	0.6	A
Y	20	12.7	10.0	25.4	7.70	18	42	1.0	12	9	3	18	1	2	9	4	0.6	A
Y	20	15.0	7.5	30.0	3.75	18	42	1.0	12	9	3	18	1	2	9	4	0.6	B
Y	20	15.0	10.0	30.0	10.0	18	42	1.0	12	9	3	18	1	2	9	4	0.6	A
O	20	12.7	7.5	25.4	8.95	18	46	1.0	12	9	3	18	1	2	9	4	0.6	A
O	20	12.7	10.0	25.4	7.70	18	44	1.0	12	9	3	18	1	2	9	4	0.6	A
O	20	15.0	7.5	30.0	3.75	18	46	1.0	12	9	3	18	1	2	9	4	0.6	B
O	20	15.0	10.0	30.0	10.0	18	44	1.0	12	9	3	18	1	2	9	4	0.6	A
I	20	12.7	7.5	25.4	8.95	18	44	1.0	12	9	3	18	1	2	9	4	0.6	A
I	20	12.7	10.0	25.4	7.70	18	44	1.0	12	9	3	18	1	2	9	4	0.6	A
I	20	15.0	7.5	30.0	3.75	18	44	1.0	12	9	3	18	1	2	9	4	0.6	B
I	20	15.0	10.0	30.0	10.0	18	44	1.0	12	9	3	18	1	2	9	4	0.6	A

### Reel specification



Reel Pack	A (mm)	B (mm)	E (mm)	pcs/reel
NTIC20-P	340±10	31±1	55±1	400



Ammo	A (mm)	B (mm)	E (mm)	pcs/box
NTIC20-P	345	275	55	400

### Bulk/Cardboard pack

Item	Standard Lead Type Quantity (pcs/cardboard box)	Cut Lead Type Quantity (pcs/bag)	L Kink Type Quantity (pcs/bag)
NTIC20-P	600	50	50
NTIC25-(C)P	330	---	---
NTIC30-(C)P	330	---	---

# High Power NTC Thermistor Inrush Current Limiter

NTIC-P Series

**MERITEK**

## WAREHOUSE STORAGE

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

## PART NUMBERING SYSTEM

NTIC   20   100   L   Y   P  
(1)   (2)   (3)   (4)   (5)   (6)

No	Item	Code	Description	Series Reference
(1)	Product Code	NTIC	Thermistor Series	Power Thermistor for Limiting Inrush Current
(2)	Body Size Code	20	20mm Body Diameter	See table reference below
(3)	Zero Power Resistance	100	100: 10Ω	First two digits: significant, Third :multiplier
(4)	Tolerance of R <sub>25</sub>	L	L: ±15%	M: ±20%
(5)	Lead Type	Y	Y: Y Kink	L: L Kink, Blank: Straight Lead
(6)	Internal Code	P	P: High Power type	CP: High Power & High Capacitacne type

\*Specifications subject to change without notice.