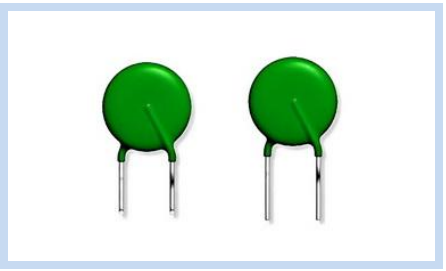
High Power NTC Thermistor
Inrush Current Limiter

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



RoHS

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 δ	Thermal Time Constant T
	(Ω)	(A)	(Ω)	(K)	(μF)	(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

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 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		
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

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 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		
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

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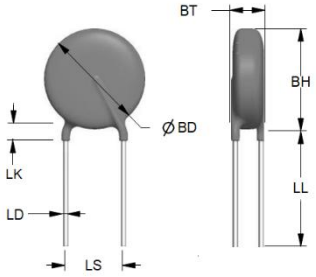
DIMENSIONS

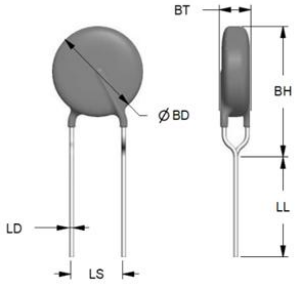
Straight lead



Unit: mm

Series	BDmax	LS	LD	BHmax	LLmin	BTmax	LKmax
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

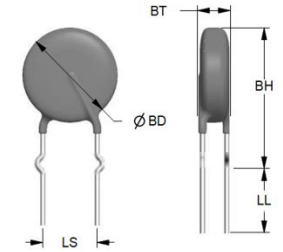
Y kink lead



Unit: mm

Series	BDmax	LS	LD	BHmax	LLmin	BTmax
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

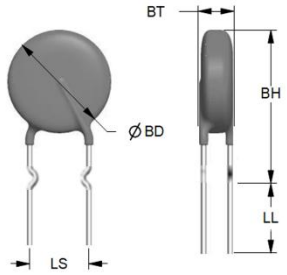
O kink lead



Unit: mm

Series	BDmax	LS	LD	BHmax	LLmin	BTmax
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

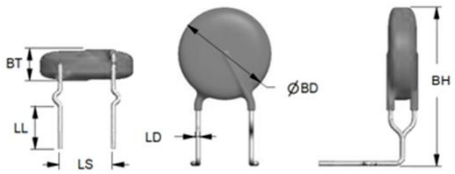
I kink lead



Unit: mm

Series	BDmax	LS	LD	BHmax	LLmin	BTmax
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

L kink lead

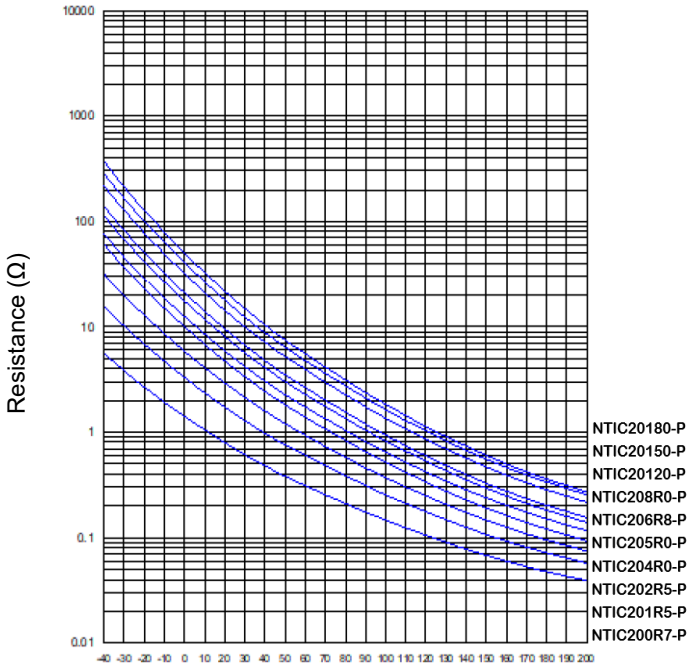


Unit: mm

Series	BDmax	LS	LD	BHmax	LLmin	BTmax
NTIC20-P	21.5	7.5±0.5	1.0±0.02	26	3.5	6

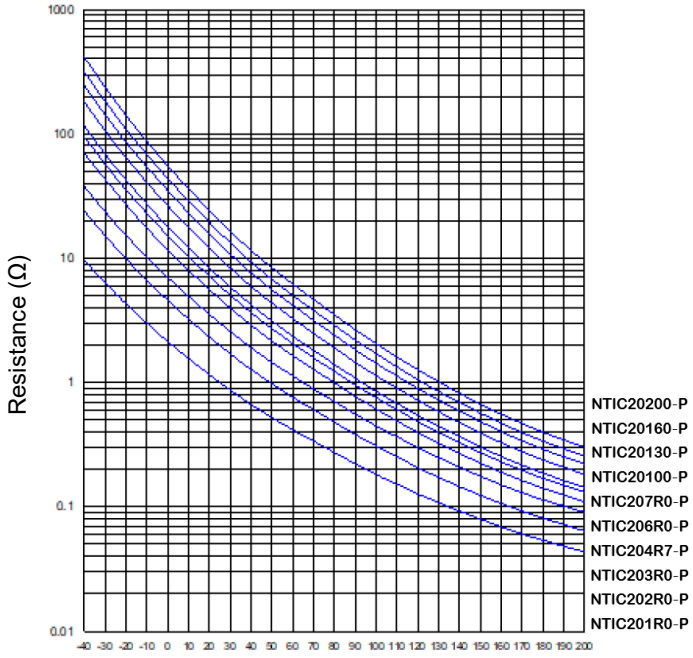
CHARACTERISTIC CURVES

NTIC200R7-P ~ NTIC20180-P



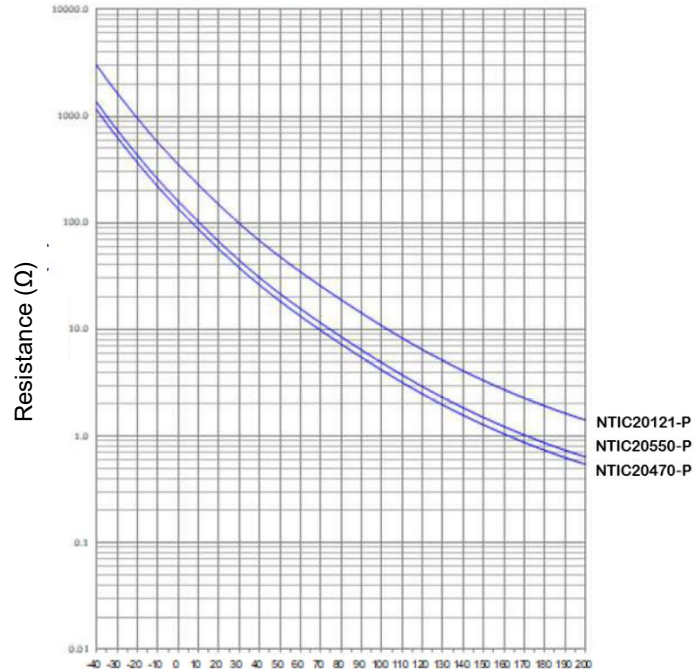
Temperature (°C)

NTIC201R0-P ~ NTIC2020-P



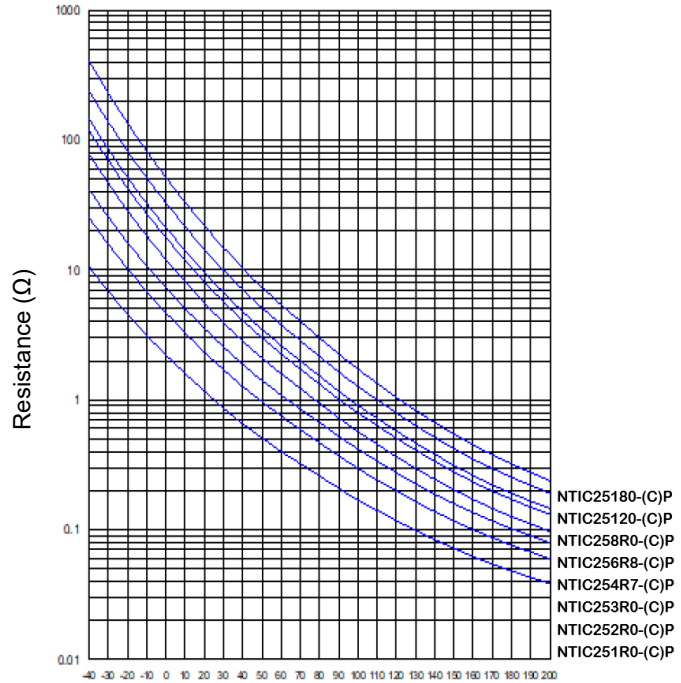
Temperature (°C)

NTIC20470-P ~ NTIC20121-P



Temperature (°C)

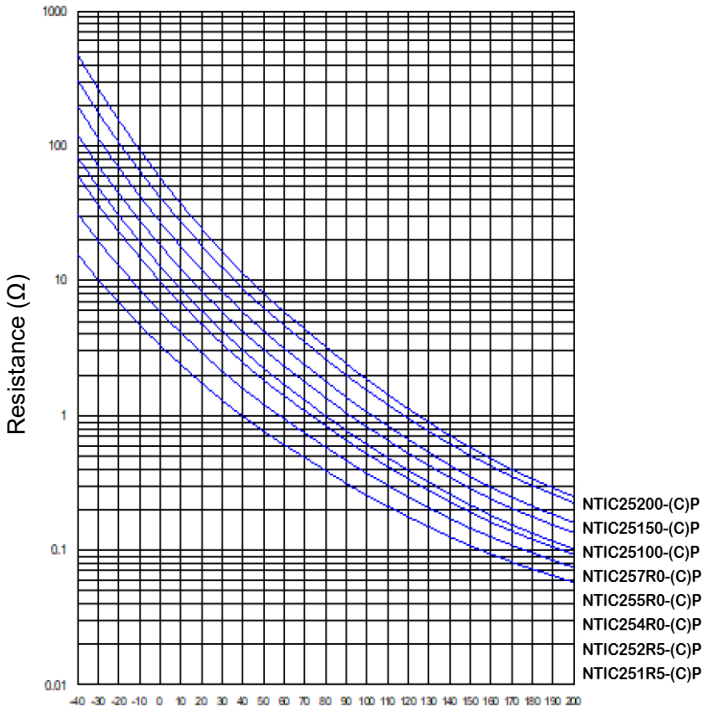
NTIC251R0-(C)P ~ NTIC25180-(C)P



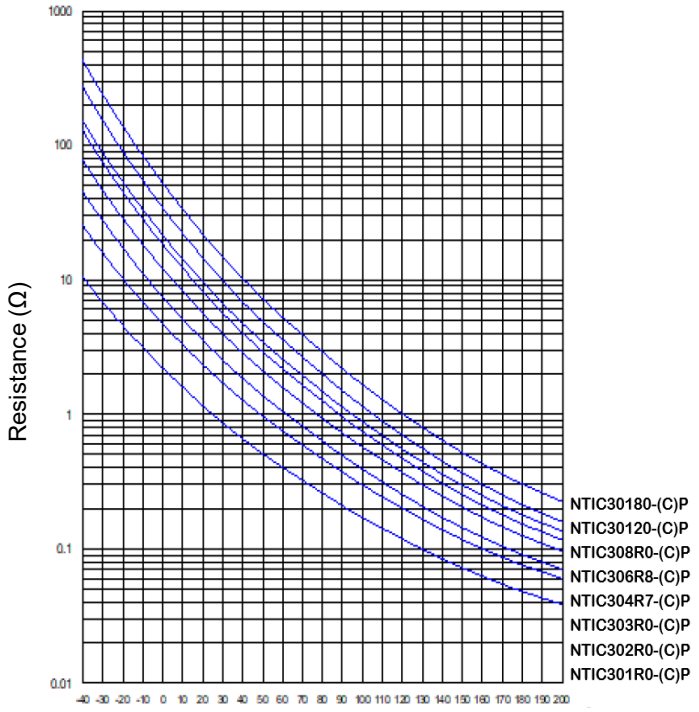
Temperature (°C)

CHARACTERISTIC CURVES

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

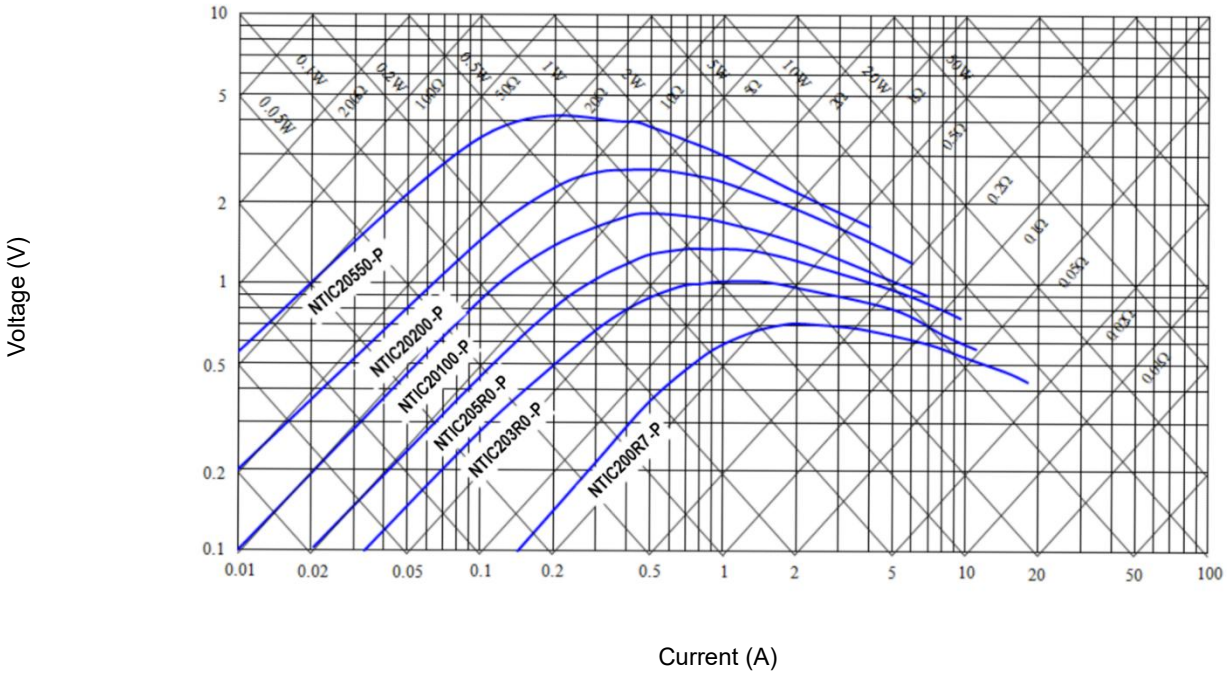


NTIC301R0-(C)P ~ NTIC30180-(C)P



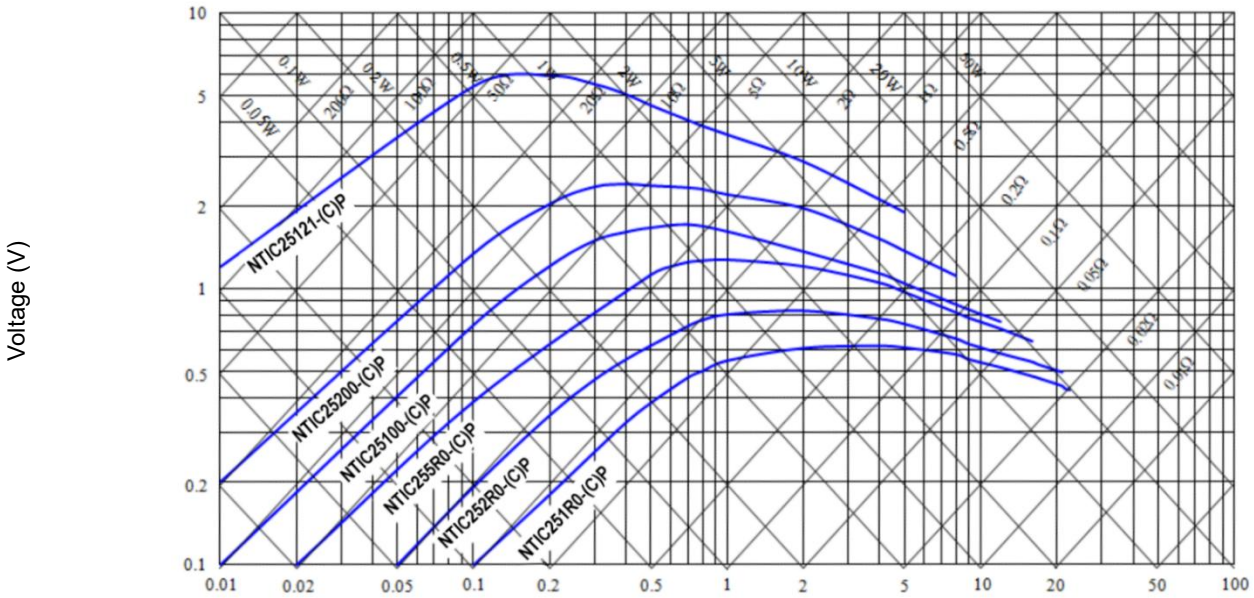
V-I CHARACTERISTIC CURVES

NTIC200R7-P~NTIC20550-P

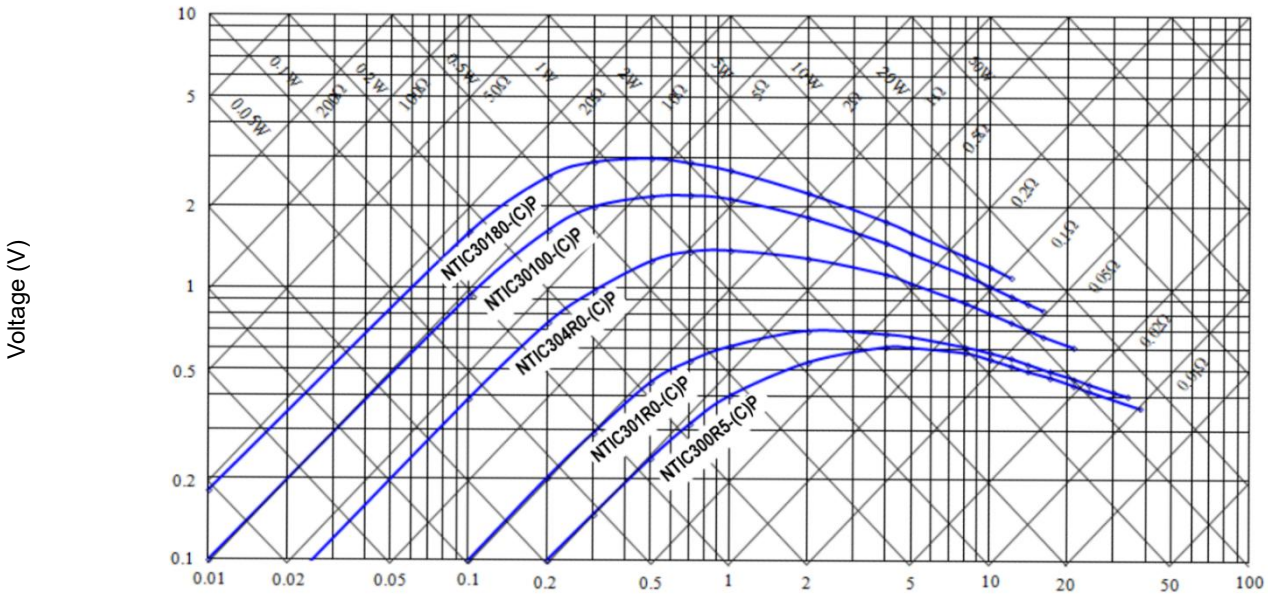


V-I CHARACTERISTIC CURVES

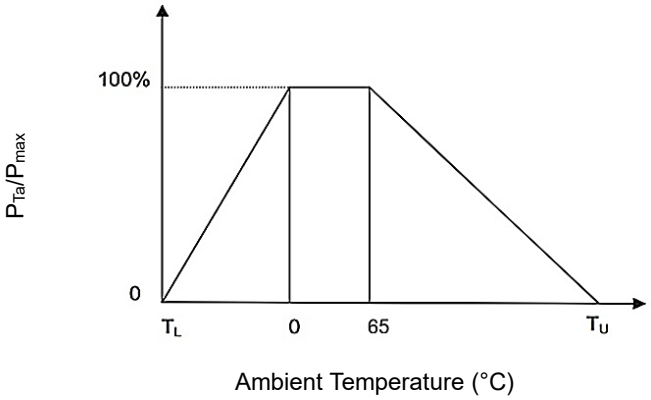
NTIC251R0-(C)P ~ NTIC25121-(C)P



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



MAX POWER DISSIPATION DERATING CURVE



Item	Description
T_U	Maximum Operating Temperature (ºC)
T_L	Minimum Operating Temperature (ºC)
Example	Ambient Temperature (T_a) = 85ºC Maximum Operating Temperature (T_U) = 200ºC I_{Ta} = [1-(Ta-65)/(Tu-65)]× Imax = 85.2% Imax Ambient temperature(Ta) = -10℃ Minimum operating temperature(T_L) = -40℃ I_{Ta} = (1-Ta/TL)× Imax = 75%Imax

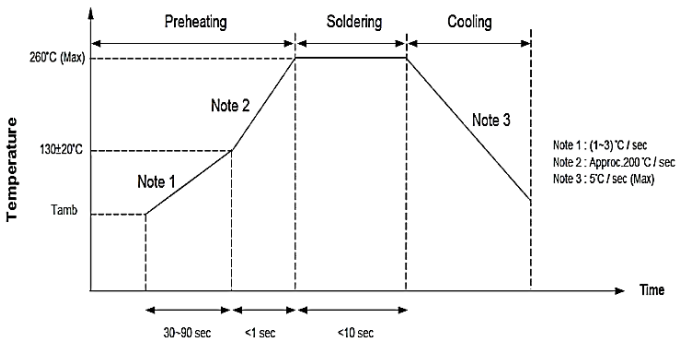
RELIABILITY

Item	Standard	Test conditions / Methods	Specifications
Tensile Strength of Terminals	IEC 60068-2-21	Gradually apply the force 2.0Kg and keep the unit fixed for 10±1 sec.	$\|\triangle R_{25}/ R_{25}\| \leqq 10$ %
Resistance to Soldering Heat	IEC 60068-2-20	260 ± 3℃, 10 ± 1 sec	No visible damage $\|\triangle R_{25}/ R_{25}\| \leqq 10$ %
High Temperature Storage	IEC 60068-2-2	Tu ± 2 ℃ , 1000± 24 hrs	No visible damage $\|\triangle R_{25}/ R_{25}\| \leqq 20$ %
Damp Heat, Steady State	IEC 60068-2-78	40 ± 2℃, 90~95% RH, 1000 ± 24 hrs	No visible damage $\|\triangle R_{25}/ R_{25}\| \leqq 20$ %
Rapid Change of Temperature	IEC 60068-2-14	The conditions shown below shall be repeated 5 cycles. Step 1: T_L±3, 30±3 Step 2: Room temperature, <3 Step 3: T_U±2, 30±3 Step 4: Room temperature, <3	No visible damage $\|\triangle R_{25}/R_{25}\| \leqq 20$ %
Max. Current	IEC 60539-1	25 ± 5℃, Imax. , 1000± 24 hrs	No visible damage $\|\triangle R_{25}/R_{25}\| \leqq 20$ %
Endurance	IEC 60539-1	25 ± 5℃, Imax. , Cth x 1000 cycles, Cooling time = 5τ Cth= Capacitance at 240 Vac	No visible damage $\|\triangle R_{25}/R_{25}\| \leqq 20$ %

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.)



PACKAGING SPECIFICATIONS

Taping specification

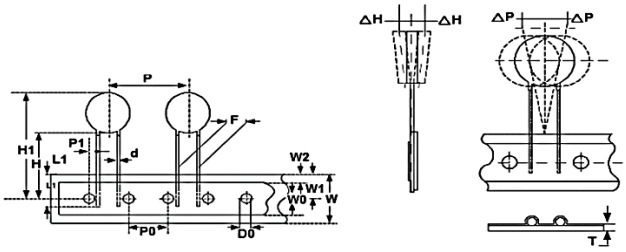


Figure A

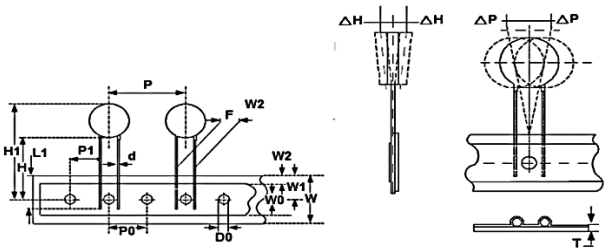
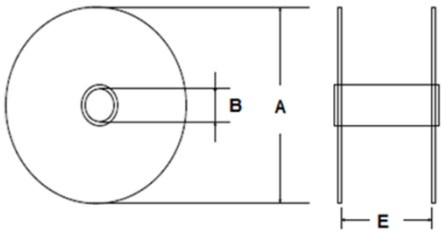


Figure B

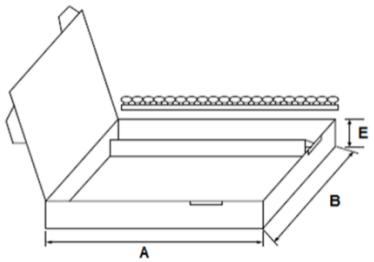
Unit: mm

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	A
S	20	15.0	7.5	30.0	3.75	18	42	1.0	12	9	3	18	1	2	9	4	0.6	B
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 Pack	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	---	---

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_{25}**	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

WAREHOUSE STORAGE

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

*Specifications subject to change without notice.