Negative Temperature Coefficient Resistor NTC Series

Description

This is a Negative Temperature Coefficient Resistor Whose resistance changes with ambient temperature changes. Thermistor comprises 2 or 4 kinds of metal oxides of iron, nickel, cobalt, manganese and copper, being shaped and Sintered at high temperature(1200℃ to 1500℃)

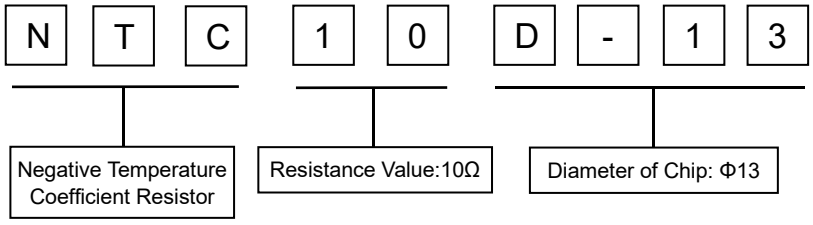
Features

- Small size, large power, strong capacity of suppression of inrush current
- Fast resporse
- Big material constant(B value),small residual resistance
- Long life and high reliability
- Complete series, wide applications

Applications

- Switching power-supply, switch power ,ups power
- Electronic energy saving lamps electronic ballast and all kinds of electric heater
- All kinds of RT, display
- Bulb and other lighting lamps

Part Number Code



Materials

Item	name
Wrapper	Modified phenolic resin
Down-lead	CP Wire
Coating color	Black

Parameters of Technology

Model	R_{25} (Ω)	Max. steady State current (A)	Residual Resistance (Ω)	Dissipation factor (mw/℃)	Themal time Constant (s)	Max. allowable capacity value 240V/120V (μF)	B (K)	Operating Temperature (℃)
NTC5D-5	5	1	0.35	≈6	≈20	150/560	2700	
NTC8D-5	8	0.7	0.77	≈6	≈20	100/390	2700	
NTC10D-5	10	0.7	0.77	≈6	≈20	68/270	2700	
NTC20D-5	20	0.5	0.997	≈6	≈20	39/150	2800	
NTC33D-5	33	0.5	1.88	≈6	≈20	39/150	2950	
NTC5D-7	5	2	0.28	≈9	≈30	100/390	2700	
NTC8D-7	8	1	0.54	≈9	≈30	100/390	2700	-40~+150
NTC10D-7	10	1	0.62	≈9	≈30	100/390	2700	
NTC12D-7	12	1	0.82	≈9	≈30	82/330	2700	
NTC16D-7	16	0.7	1.00	≈9	≈30	82/330	2800	
NTC20D-7	20	0.6	1.11	≈9	≈30	82/330	2800	
NTC22D-7	22	0.6	1.11	≈9	≈30	68/270	2800	
NTC33D-7	33	0.5	1.49	≈9	≈30	68/270	2950	
NTC3D-9	3	4	0.12	≈11	≈35	220/820	2600	
NTC5D-9	5	3	0.21	≈11	≈35	220/820	2700	
NTC6D-9	6	2	0.32	≈11	≈35	220/820	2700	
NTC8D-9	8	2	0.40	≈11	≈35	150/560	2700	
NTC10D-9	10	2	0.46	≈11	≈35	150/560	2700	
NTC12D-9	12	1	0.66	≈11	≈35	150/560	2700	
NTC15D-9	15	1	0.80	≈11	≈35	150/560	2800	
NTC16D-9	16	1	0.80	≈11	≈35	82/330	2800	
NTC20D-9	20	1	0.88	≈11	≈35	82/330	2800	
NTC22D-9	22	1	0.95	≈11	≈35	82/330	2800	
NTC33D-9	33	1	1.12	≈11	≈35	68/270	2950	
NTC50D-9	50	1	1.25	≈11	≈35	68/270	2950	
NTC100D-9	100	0.8	3.02	≈11	≈35	68/270	3200	
NTC120D-9	120	0.8	3.02	≈11	≈35	68/270	3200	-40~+175
NTC2.5D-11	2.5	5	0.10	≈14	≈50	680/2700	2700	
NTC3D-11	3	5	0.10	≈14	≈50	680/2700	2700	
NTC5D-11	5	4	0.16	≈14	≈50	470/1800	2700	
NTC8D-11	8	3	0.25	≈14	≈50	470/1800	2800	
NTC10D-11	10	3	0.28	≈14	≈50	220/820	2800	
NTC12D-11	12	2	0.46	≈14	≈50	220/820	2800	
NTC15D-11	15	2	0.47	≈14	≈50	150/560	2800	
NTC16D-11	16	2	0.47	≈14	≈50	150/560	2800	
NTC20D-11	20	2	0.51	≈14	≈50	100/390	2950	
NTC22D-11	22	2	0.56	≈14	≈50	100/390	2950	
NTC33D-11	33	1.5	0.67	≈14	≈50	100/390	2950	
NTC47D-11	47	1.5	1.02	≈14	≈50	100/390	2950	
NTC50D-11	50	1.5	1.02	≈14	≈50	100/390	2950	

Parameters of Technology

Model	R_{25} (Ω)	Max. steady State current (A)	Residual Resistance (Ω)	Dissipation factor (mw/℃)	Themal time Constant (s)	Max. allowable capacity value 240V/120V (μF)	B (K)	Operating Temperature (℃)
NTC1.5D-13	1.5	6.5	0.085	≈15	≈68	680/2700	2600	
NTC2.5D-13	2.5	6	0.088	≈15	≈68	680/2700	2600	
NTC3D-13	3	6	0.092	≈15	≈68	680/2700	2600	
NTC4.7D-13	4.7	5	0.12	≈15	≈68	680/2700	2700	
NTC5D-13	5	5	0.125	≈15	≈68	680/2700	2700	
NTC8D-13	8	4	0.194	≈15	≈68	330/1200	2800	
NTC10D-13	10	4	0.206	≈15	≈68	330/1200	2800	
NTC16D-13	16	3	0.335	≈15	≈68	220/820	2800	
NTC18D-13	18	3	0.372	≈15	≈68	220/820	2800	
NTC20D-13	20	3	0.372	≈15	≈68	220/820	2800	
NTC30D-13	30	2.5	0.517	≈15	≈68	150/560	2950	
NTC47D-13	47	2	0.81	≈15	≈68	150/560	2950	
NTC1.3D-15	1.3	8	0.052	≈18	≈86	820/3300	2600	
NTC1.5D-15	1.5	8	0.071	≈18	≈86	820/3300	2600	
NTC2.5D-15	2.5	8	0.071	≈18	≈86	820/3300	2600	
NTC3D-15	3	7	0.075	≈18	≈86	820/3300	2600	
NTC5D-15	5	6	0.112	≈18	≈86	680/2700	2800	
NTC7D-15	7	5	0.173	≈18	≈86	680/2700	2800	-40~+200
NTC8D-15	8	5	0.178	≈18	≈86	680/2700	2950	
NTC10D-15	10	5	0.18	≈18	≈86	560/2200	2950	
NTC15D-15	15	4	0.268	≈18	≈86	560/2200	2950	
NTC16D-15	16	4	0.268	≈18	≈86	560/2200	2950	
NTC18D-15	18	4	0.288	≈18	≈86	330/1200	2950	
NTC20D-15	20	4	0.288	≈18	≈86	220/820	2950	
NTC30D-15	30	3.5	0.438	≈18	≈86	220/820	2950	
NTC47D-15	47	3	0.68	≈18	≈86	220/820	3200	
NTC50D-15	50	3	0.72	≈18	≈86	220/820	3200	
NTC1.3D-20	1.3	9	0.037	≈24	≈113	820/3300	2600	
NTC1.5D-20	1.5	9	0.037	≈24	≈113	820/3300	2600	
NTC2.5D-20	2.5	8	0.049	≈24	≈113	820/3300	2700	
NTC3D-20	3	8	0.055	≈24	≈113	820/3300	2700	
NTC5D-20	5	7	0.087	≈24	≈113	820/3300	2800	
NTC8D-20	8	6	0.142	≈24	≈113	820/3300	2950	
NTC10D-20	10	6	0.162	≈24	≈113	820/3300	2950	
NTC16D-20	16	5	0.212	≈24	≈113	820/3300	3200	
NTC20D-20	20	4	0.231	≈24	≈113	820/3300	3200	

Storage condition

Temperature	-10℃～+40℃
Humidity	≤70%RH
Term	≤12 months (First-in/ First-out)
Place	1. Do not exposing the components to the following conditions, otherwise, it may result in deterioration of characteristics 2. Corrosive gas or deoxidizing gas 3. Flammable and explosive gases 4. Oil, water and chemical liquid 5. Under the sunlight

Notes: Do not apply the components under the following conditions, otherwise, it may result in deterioration of characteristics, destruction of components orin the worst case to catching fire:1. Exceeding Imax 2. Exceeding rated temperature range 3. Inferior thermal dissipation，Due to badly inferior thermal dissipation, some part of the components body will become overheated and then be damaged

properties of products

Mechanical Characteristics		
Item	Specification	Test Conditions & Methods
Solder-ability	The terminals shall be uniformly tinned, and its area≥95%	Dipping the NTC terminals to a depth of 15mm in a soldering bath of 240-245℃ and to the place of 6mm far from NTC body for 2-3s (See IEC68-2-20 /GB2423.28 Ta)
Resistance To Soldering Heat	No visible mechanical damage. ΔR/RN ≤20% (ΔR = ｜RN-RN'｜)	Dipping the NTC terminals to a depth of 15mm in a soldering bath of 265±5℃ and to the place for 6mm below from NTC body for 10±1s.After recovering 4-5h under 25±2℃. The rated zero power resistance value RN' shall be measured. (See IEC68-2-20 /GB2423.28 Tb)

Strength of lead terminal	No break out ΔR/RN ≤20% (ΔR = | RN-RN' |)	Fasten the body and apply a force gradually to each lead until 10N and then keep for 10sec, Hold body and apply a force to each lead until 90°slowly at 5N in the direction of lead axis and then keep for 10sec, and do this in the opposite direction repeat for other terminal. After recovering 4~5h under 25±2℃, the rated zero power resistance value RN' shall be measured. (See IEC68-2-21/GB2423.29 Ua / Ub)

Electrical Characteristics		
Item	Specification	Test Conditions & Methods
Rated Zero-Power Resistance RN (Ω)	RN±20%	Ambient temp. Range:25℃±2℃(TA). Testing voltage: 1.5VDC After placing for 1~2 hours under TA, the resistance value shall be measured
Thermal Dissipation Constant δ (mW/℃)	See the main technical parameter list	The thermal dissipation constant(δ) could be calculated by the ratio of a change in power dissipation(ΔP) of the thermistor to a change in temperature(ΔT) of the thermistor at a specified ambient temperature
Thermal Time Constant T(s)	See the main technical parameter list	The time(τ shall be measured within which the temperature change of NTC thermistor is reached at 63.2% of the ambient temperature change under zero power condition
Material Constant B	B=T1T2/(T2- T1) × Ln (R1/R2)	R1 , R2 is zero-power resistance at T1 , T2 T1 = 298.15 K(25℃) T2 = 323.15 K(50℃)
Max. Steady State Current (A)	visible mechanical damage. ΔRN / RN ≤20% (ΔR = | RN-RN' |)	ambient temperature:25℃±2℃ Testing Time: min 100h
Reliability Test		
Item	Specification	Test Conditions & Methods
Temp. Cycling Testing	No visible mechanical damage. ΔRN / RN ≤20% (ΔR = | RN-RN' |)	Ta:-40±3℃/ 30min→25±2℃/ 5min→Tb:200±3℃/30min→ 25±2℃/ 5min Cycles: 5times After recovering 4~5 h under 25±2℃, the rated zero power resistance value RN' shall be measured.

Electrical Cycling Testing	No visible mechanical damage. ΔRN / RN ≤20% (ΔR = | RN-RN' |)	Ambient temp. Range:25℃±2℃. Cycles: 1,000times On / Off: 1m / 5m Test Current: 6.0A After recovering 4~5h under 25±2℃, the rated zero power resistance value RN' shall be measured.
LoadLife (Endurance) Testing	No visible mechanical damage. ΔRN / RN ≤20% (ΔR = | RN-RN' |)	Ambient temp. Range:25℃±2℃; 6.0A/ 1,000±24h After recovering 4~5 h under 25±2℃, the rated zero power resistance value RN' shall be measured.
Humidity Testing	No visible mechanical damage. ΔRN / RN ≤20% (ΔR = | RN-RN' |)	Ambient temp. range : 40℃±2℃,R.H.:93±3% , Energized time:1000±24 h After recovering 4~5 h under 25±2℃, the rated zero power resistance value RN' shall be measured

Graph of Characteristics

Figure 1 - Graph of Resistance vs. Temperature

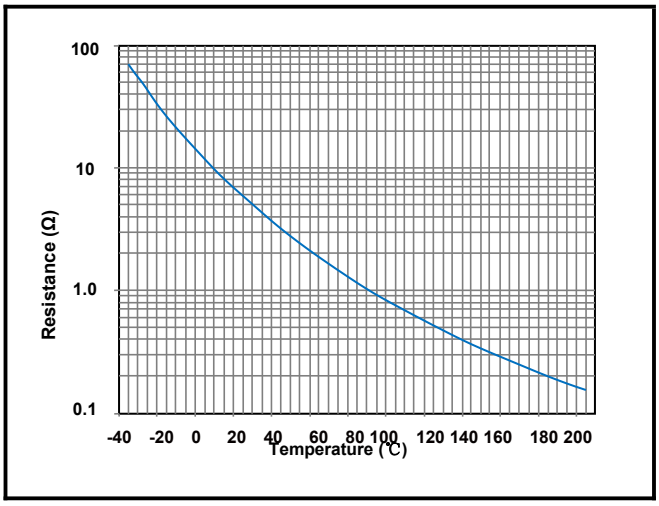
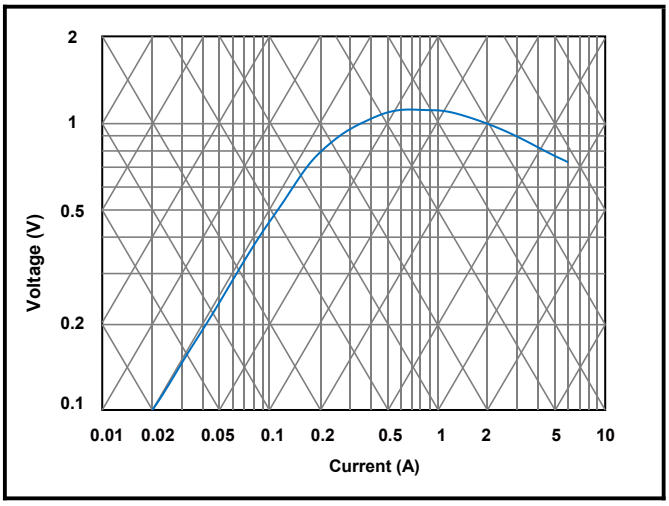
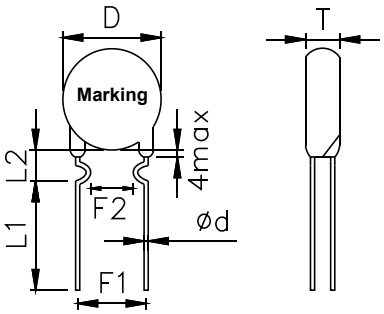


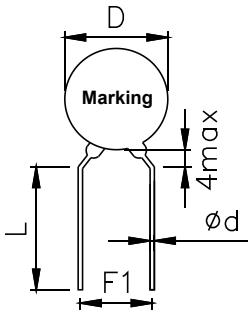
Figure 2 - Graph of Voltage vs. Current



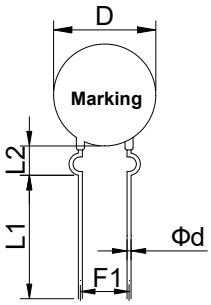
Product Dimensions



I Type（内弯脚）



S Type（直线脚）



O Type（外弯脚）

Dimension	Dimensions（mm）								
	Type	D(max)	T(max)	Φd±0.1	F1±1	F2±1.5	Straight Lead Wire	Curved Lead Wire	
							L （±1）	L1 （±0.5）	L2 （±2）
NTCxxD-5	S	7	5	0.55	5	/	20~25	/	/
NTCxxD-7	I	9	5	0.55	5	3	20~25	20~25	4
NTCxxD-9	I	11	5.5	0.75	7.5	5	20~25	20~25	4
NTCxxD-11	I	13	5.5	0.75	7.5	5	20~25	20~25	4
NTCxxD-13	I	15.5	6	0.75	7.5	5	20~25	20~25	4
NTCxxD-15	I	17.5	6	0.75	7.5	5	20~25	20~25	4
NTCxxD-20	S	22.5	7	1.00	10	/	20~25	/	/

Packaging

Dimension	Bag (pcs)	Inside the box (pcs)	carton (pcs)
NTCxxD-5	1000	3000	18000
NTCxxD-7	1000	3000	18000
NTCxxD-9	500	2000	12000
NTCxxD-11	500	1500	9000
NTCxxD-13	250	1000	6000
NTCxxD-15	250	1000	6000
NTCxxD-20	100	400	2400