

# NTC POWER THERMISTOR



The POWER THERMISTOR is a device for suppressing inrush current to an electric circuit.

Circuits including electric bulbs or capacitors induce an inrush current more than 100 times the normal current when the circuit switch is turned on. The POWER THERMISTOR in the circuits protects electric equipments from being damaged by limiting the inrush current.

## NTC - 5 D-9 (F)

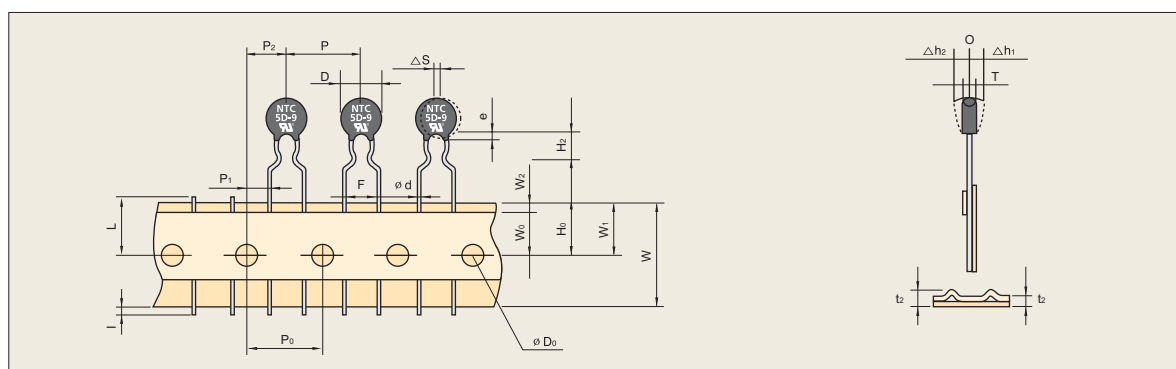
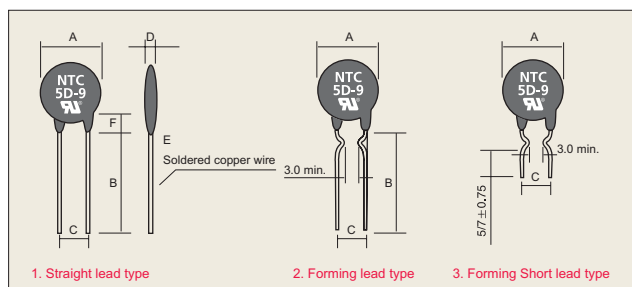
① ② ③ ④

- ① SYMBOL
- ② RESISTANCE AT 25℃ (5 : 5Ω)
- ③ ELEMENT DIAMETER (9 : 9Φ)
- ④ TYPE (S : Straight, F : Forming, TP : Taping)

### DIMENSIONS

(unit : mm)

PART No.	A	B	C	D	E	F
D - 7	9.5 max.	25 min.	5±1	5 max.	ø 0.6	5 max.
D - 9	10.5 max.	25 min.	5±1	5 max.	ø 0.6	5 max.
D - 11	12.5 max.	25 min.	7.5±1	5 max.	ø 0.8	5 max.
D - 13	14.5 max.	25 min.	7.5±1	5 max.	ø 0.8	5 max.
D - 15	16.5 max.	25 min.	10±1	5 max.	ø 0.8	5 max.
D - 18	22.5 max.	25 min.	10±1	5 max.	ø 0.8	5 max.
D - 22	24.5 max.	25 min.	10±1	5 max.	ø 0.8	5 max.
D - 30	32.5 max.	25 min.	10±1	5 max.	ø 1.0	5 max.



Item	Code	Dimension(mm)
Pitch of Component	P	12.7
Pitch of Sprocket Hole	P <sub>0</sub>	12.7±0.3
Lead Spacing	F	5.0 <sup>+0.8</sup> <sub>-0.2</sub>
Lead Length from Hole Center to Component Center	P <sub>2</sub>	6.35±1.3
Lead Length from Hole Center to Lead	P <sub>1</sub>	3.85±0.8
Body Diameter	D	9.5/10.5 max.
Deviation along Tape, Left or Right	ΔS	0±2.0
Carrier Tape Width	W	18.0±0.5
Position of Sprocket Hole	W <sub>1</sub>	9.0±0.5
Lead Distance between Reference and Bottom Planes	H <sub>0</sub>	16.0±1.0

● Taping Type is available for standard type only.

Item	Code	Dimension(mm)
Height of Component	H <sub>2</sub>	4.0 max.
Overflow of Lead	l	+0.5 to -1.0
Diameter of Sprocket Hole	D <sub>0</sub>	4.0±0.1
Lead Diameter	d	0.5±0.03
Total Tape Thickness	t <sub>1</sub>	0.6±0.3
Total Thickness(Tape and Lead Wire)	t <sub>2</sub>	1.5 max.
Deviation Across Tape	Δh <sub>1</sub> , h <sub>2</sub>	1.0 max.
Portion to Cut in Case of Defect	L	11.0 <sup>+0</sup> <sub>-2.0</sub>
Hole Down Tape Width	W <sub>0</sub>	11.0 min.
Hole Down Tape Position	W <sub>2</sub>	1.5±1.5
Coating Extention on Lead	e	to line A
Thickness	T	5.0 max.

## How to use the power thermistor

The most suitable power thermistor for the above circuit is required to fulfill the following terms and conditions.

1. The permissible current at ambient temperature of 55 °C should be over 2A.
2. The thermistor resistance for suppressive current which becomes below 30A should be over 4.2 ohm from the under-mentioned formula.

$$\frac{\sqrt{2} V_E \times 1.1}{R_C + R_{25}} \leq 30$$

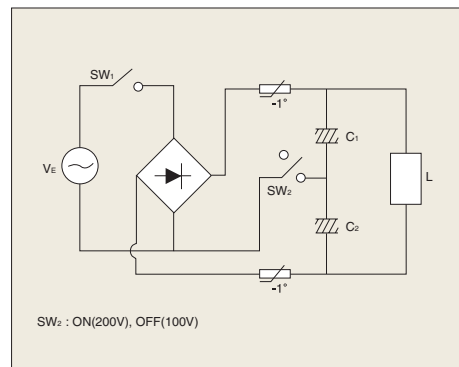
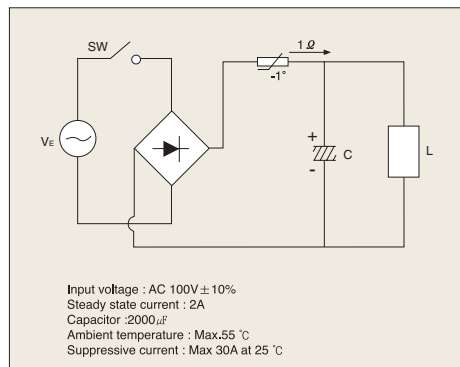
$R_C$  : Initial resistance value in the circuit is 1 ohm (100V/100A)

$R_{25}$  : Rated zero-power resistance at 25 °C

3. Max. capacitance shall be over 2000  $\mu F$  at AC 100V.

Accordingly, suitable thermistors are 6D-22, 5D-18 and 8D-18, and if we consider in the points of small time constant which means a small size and large effect for suppressive current which means large rated zero power resistance, 8D-18 is the most suitable one.

Use the following circuit in the power supply for 100V and 200V.



## SPECIFICATIONS

PART No.	R25°C(Ω) (±20%)	B value B25/85(K)	Max, rating current at 25°C(A)	Residual resistance(Ω)	Thermal Dissipation Factor $\theta$ (mW/°C)	Thermal Time Constant (sec)	Maximum Capacitance (μF)	
							AC100V	AC240V
NTC 5D-7	5	2800	2	0.23	9	35	200	34
NTC 8D-7	8	3000	2	0.29	9	35	250	43
NTC 10D-7	10	3000	2	0.37	9	30	254	44
NTC 16D-7	16	3000	1.5	0.59	12	30	283	49
NTC 22D-7	22	3100	1.5	0.81	10	32	310	50
NTC 50D-7	50	3300	1.5	1.85	8	28	510	80
NTC 5D-9	5	3000	3	0.18	9	42	400	69
NTC 8D-9	8	3000	3	0.22	9	42	550	97
NTC 10D-9	10	3000	3	0.28	9	42	680	118
NTC 16D-9	16	3000	2	0.45	12	45	700	120
NTC 22D-9	22	3100	2	0.62	12	50	700	120
NTC 50D-9	50	3300	2	1.41	10	47	800	140
NTC 5D-11	5	3000	4	0.18	13	45	900	150
NTC 8D-11	8	3000	3	0.28	12	45	1400	240
NTC 10D-11	10	3000	3	0.35	12	45	1800	480
NTC 5D-13	5	3000	5	0.18	20	74	900	150
NTC 8D-13	8	3000	4	0.17	15	83	1400	240
NTC 10D-13	10	3000	4	0.35	17	75	1400	240
NTC 2.5D-15	2.5	2800	7	0.09	20	75	1560	270
NTC 3D-15	3	2900	7	0.11	20	70	1640	280
NTC 5D-15	5	3000	6	0.18	20	76	1640	280
NTC 7D-15	7	3000	5	0.24	21	80	2030	350
NTC 8D-15	8	3000	5	0.26	19	85	2030	350
NTC 10D-15	10	3000	5	0.28	17	75	2030	350
NTC 16D-15	16	3300	4	0.45	22	85	2540	440
NTC 5D-18	5	3000	7	0.11	25	120	2500	430
NTC 8D-18	8	3100	7	0.18	27	150	4100	710
NTC 10D-18	10	3100	7	0.25	28	150	5000	860
NTC 3D-22	3	2900	8	0.11	24	140	8500	1470
NTC 5D-22	5	3000	7	0.18	24	140	11000	1900
NTC 6D-22	6	3000	7	0.22	24	140	11000	1900
NTC 10D-22	10	3100	6	0.16	25	142	17000	2950
NTC 1D-30	1	2900	20	0.074	48	180	25000	4300
NTC 2D-30	2	2900	20	0.074	48	180	28000	4800