



# SYNTON-TECH CORPORATION

## POWER THERMISTORS NTC ( LEAD TYPE )

|           |            |
|-----------|------------|
| File No.: | NTC-02     |
| Version:  | A          |
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### 1. INTRODUCTION

Rush current suppressor is a NTC THERMISTOR which exhibits a large decrease in resistance when AC/DC current starts flowing at loop. For a negative temperature coefficient, the devices provide prevention against high peak inrush current at turn-on, temperature compensation and temperature sensing, especially in power supplies where charging capacitors initial present extremely low impedance. Rush current suppressor can effectively limit surge currents for several seconds through an initial high resistance, therefore, critical components extend their life. The products are manufactured of a specially-formulated metal oxide ceramic material and coated with silicon for insulation.

### 2. FEATURES

- Special applications is available upon request.
- Special kink leads are available upon requirement.
- Special marking to customer's need.
- Special coating material : 350°C silicon.
- Tolerance available :  $\pm 15\%$ ,  $\pm 10\%$ ,  $\pm 5\%$

| APPROVED | CHECKED | DESIGNED | REMARK | DOCUMENT NO. |
|----------|---------|----------|--------|--------------|
| Carol    | May     | Chen     |        | 0201010090   |



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**3. EXPLANATIONS OF ORDERING CODE**

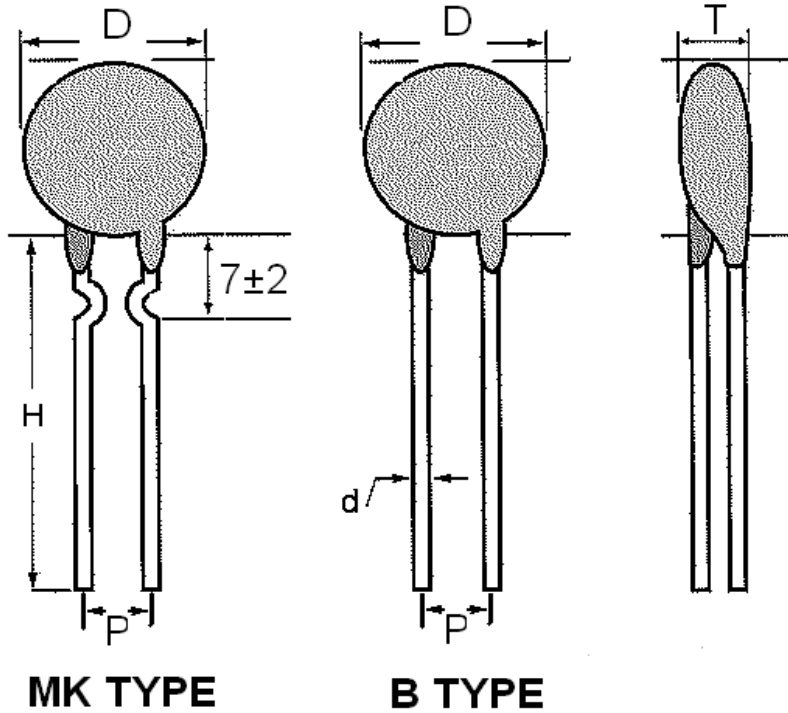
**DESCRIPTION : NTC 5Ø 15% 10K 2A 直脚 3.5X30mm**

**SYNTON CODE : NTC 05 L 103 / 2A B3.5 X 30**

| <u>DISC</u>                    | <u>TOLERANCE</u>                | <u>RESISTANCE</u>   | <u>AMPERES</u>                 | <u>Pitch</u>  | <u>Lead</u>                          |
|--------------------------------|---------------------------------|---|--------------------------------|---|--------------------------------------|
| <u>DIAMETER</u>                | J : ±5%<br>K : ±10%<br>L : ±15% | <u>VALUE</u><br>E24 Series<br>3 Digits :<br>2R2 : 2.2Ω<br>101 : 100Ω<br>102 : 1K<br>103 : 10K | 0.5A<br>~<br>30A               | B-TYPE<br>3.5 mm<br>( ± 1.0 mm )<br><br>MK-TYPE<br>5.0 ~ 7.5 mm<br>( ± 1.0 mm ) | <u>Length</u><br>25 ~ 30 mm<br>(max) |
| (Please see detail of Figure1) |                                 |   | (Please see detail of Figure2) | (Please see detail of Figure1)  |                                      |



**4. DIMENSIONS**



Unit: m/m

| TYPE  | DIMENSIONS | D MAX. | T MAX. | H MAX. | P± 1.0 |     | d ± 0.1 |
|-------|------------|--------|--------|--------|--------|-----|---------|
| NTC05 | 5 φ        | 6.5    | 5.0    | 30.0   | 3.5    |     | 0.8     |
| NTC08 | 8 φ        | 9.8    | 5.0    | 25.0   | 5.0    | 7.5 | 0.8     |
| NTC10 | 10 φ       | 11.8   | 5.0    | 25.0   | 5.0    | 7.5 | 0.8     |
| NTC13 | 13 φ       | 14.8   | 6.0    | 25.0   | 7.5    |     | 0.8     |
| NTC15 | 15 φ       | 17.0   | 6.0    | 25.0   | 7.5    |     | 1.0     |
| NTC22 | 22 φ       | 23.0   | 7.0    | 25.0   | 7.5    |     | 1.0     |
| NTC30 | 30 φ       | 33.0   | 7.0    | 25.0   | 7.5    |     | 1.0     |

\*5 φ IS FOR B-TYPE ONLY.

Figure1



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### 5. SPECIFICATION

| Disc | Part No. | No Load Resistance at 25°C<br>(Ω) | Max Steady State Current (A) | (25°C Ambient) Approx. Resistance at Max. Current (Ω) | Thermal Dissipation Constant (mW/°C) | Thermal Time Constant (Sec) |
|------|----------|-----------------------------------|------------------------------|---|--------------------------------------|-----------------------------|
| 5 φ  | NTC05    | 5                                 | 2                            | 0.360   | 13                                   | 12                          |
|      |          | 7                                 | 1.5                          | 0.523   | 12                                   | 11                          |
|      |          | 10                                | 1                            | 1.004   | 12                                   | 9                           |
|      |          | 15                                | 0.8                          | 1.257   | 11                                   | 11                          |
|      |          | 20                                | 0.7                          | 1.281   | 11                                   | 10                          |
|      |          | 40                                | 0.6                          | 1.593   | 11                                   | 10                          |
|      |          | 50                                | 0.5                          | 1.652   | 11                                   | 10                          |
| 8 φ  | NTC08    | 5                                 | 3                            | 0.200   | 10                                   | 35                          |
|      |          | 5                                 | 4.5                          | 0.150   | 10                                   | 36*                         |
|      |          | 6                                 | 3                            | 0.210   | 11                                   | 35                          |
|      |          | 6                                 | 4                            | 0.167   | 11                                   | 36*                         |
|      |          | 8                                 | 3                            | 0.220   | 11                                   | 32                          |
|      |          | 8                                 | 3.5                          | 0.204   | 11                                   | 33*                         |
|      |          | 10                                | 3                            | 0.230   | 12                                   | 31                          |
| 10   | 3.5      | 0.215                             | 12                           | 33*   |                                      |                             |
| 10 φ | NTC10    | 2.5                               | 4                            | 0.122   | 11.5                                 | 40                          |
|      |          | 2.5                               | 5.5                          | 0.095   | 12                                   | 40*                         |
|      |          | 4                                 | 4                            | 0.150   | 12                                   | 43                          |
|      |          | 5                                 | 4                            | 0.155   | 12                                   | 43                          |
|      |          | 5                                 | 5                            | 0.127   | 12                                   | 45*                         |
|      |          | 6                                 | 3                            | 0.168   | 12.5                                 | 45                          |
|      |          | 8                                 | 3                            | 0.240   | 12.5                                 | 45                          |
|      |          | 8                                 | 4                            | 0.197   | 12                                   | 46*                         |
|      |          | 10                                | 3                            | 0.290   | 12.5                                 | 50                          |
|      |          | 10                                | 4.5                          | 0.245   | 12.5                                 | 52*                         |
|      |          | 12                                | 2                            | 0.500   | 12                                   | 52                          |
|      |          | 12                                | 3.5                          | 0.230   | 12                                   | 53*                         |
|      |          | 16                                | 2                            | 0.520   | 12                                   | 50                          |
|      |          | 16                                | 3.5                          | 0.235   | 12                                   | 53*                         |
|      |          | 20                                | 2                            | 0.500   | 12                                   | 50                          |
|      |          | 20                                | 3.3                          | 0.271   | 12                                   | 53*                         |
|      |          | 25                                | 2                            | 0.500   | 12                                   | 53                          |
| 25   | 3        | 0.302                             | 12                           | 54*   |                                      |                             |
| 50   | 1.5      | 1.010                             | 13                           | 53  |                                      |                             |
| 50   | 2.3      | 0.437                             | 13                           | 55*   |                                      |                             |
| 80   | 1        | 1.700                             | 10                           | 42  |                                      |                             |
| 80   | 1.6      | 1.515                             | 10                           | 45*   |                                      |                             |
| 120  | 1        | 2.200                             | 10                           | 42  |                                      |                             |
| 120  | 1.5      | 1.820                             | 10                           | 45*   |                                      |                             |



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| Disc | Part No. | No Load Resistance at 25°C<br>(Ω) | Max Steady State Current<br>(A) | (25°C Ambient) Approx. Resistance at Max. Current<br>(Ω) | Thermal Dissipation Constant<br>(mW/°C) | Thermal Time Constant<br>(Sec) |
|------|----------|-----------------------------------|---------------------------------|--|---|--------------------------------|
| 13 φ | NTC13    | 1.3                               | 8                               | 0.051  | 15                                      | 70*                            |
|      |          | 2.5                               | 6                               | 0.088  | 15                                      | 72                             |
|      |          | 2.5                               | 8                               | 0.047  | 15                                      | 75*                            |
|      |          | 4                                 | 5                               | 0.121  | 16                                      | 68                             |
|      |          | 4                                 | 7                               | 0.091  | 16                                      | 72*                            |
|      |          | 5                                 | 5                               | 0.151  | 17                                      | 65                             |
|      |          | 5                                 | 6.5                             | 0.120  | 17                                      | 72*                            |
|      |          | 6                                 | 4                               | 0.165  | 15                                      | 65                             |
|      |          | 7                                 | 6                               | 0.121  | 15                                      | 72*                            |
|      |          | 8                                 | 4                               | 0.204  | 15                                      | 62                             |
|      |          | 10                                | 4                               | 0.211  | 15                                      | 62                             |
|      |          | 10                                | 5                               | 0.180  | 15                                      | 69*                            |
|      |          | 12                                | 3                               | 0.250  | 14                                      | 65                             |
|      |          | 12                                | 4                               | 0.213  | 14                                      | 72*                            |
|      |          | 16                                | 3                               | 0.367  | 15                                      | 68                             |
| 20   | 3        | 0.382                             | 14                              | 68   |   |                                |
| 15 φ | NTC15    | 1                                 | 11                              | 0.020  | 18                                      | 68*                            |
|      |          | 1.3                               | 8                               | 0.049  | 17                                      | 55                             |
|      |          | 1.5                               | 8                               | 0.060  | 17                                      | 58                             |
|      |          | 2.5                               | 8                               | 0.064  | 18                                      | 60                             |
|      |          | 2.5                               | 9                               | 0.040  | 18                                      | 65*                            |
|      |          | 3                                 | 7                               | 0.076  | 18                                      | 65                             |
|      |          | 4                                 | 6                               | 0.100  | 20                                      | 70                             |
|      |          | 4                                 | 8                               | 0.071  | 20                                      | 72*                            |
|      |          | 5                                 | 6                               | 0.116  | 20                                      | 75                             |
|      |          | 5                                 | 8                               | 0.079  | 20                                      | 76*                            |
|      |          | 6                                 | 5                               | 0.159  | 20                                      | 75                             |
|      |          | 7                                 | 5                               | 0.165  | 20                                      | 75                             |
|      |          | 10                                | 5                               | 0.178  | 20                                      | 75                             |
|      |          | 10                                | 6                               | 0.151  | 20                                      | 76*                            |
|      |          | 12                                | 4                               | 0.247  | 20                                      | 75                             |
|      |          | 15                                | 4                               | 0.254  | 20                                      | 75                             |
|      |          | 16                                | 4                               | 0.274  | 18                                      | 75                             |
|      |          | 20                                | 4                               | 0.290  | 18                                      | 80                             |
|      |          | 25                                | 3                               | 0.410  | 20                                      | 80                             |
|      |          | 40                                | 3                               | 0.470  | 20                                      | 80                             |
| 40   | 3.5      | 0.387                             | 20                              | 83*  |   |                                |
| 50   | 3        | 0.495                             | 20                              | 80   |   |                                |
| 50   | 3.5      | 0.411                             | 20                              | 82*  |   |                                |
| 80   | 2.5      | 0.725                             | 20                              | 80   |   |                                |
| 120  | 2        | 1.136                             | 20                              | 85   |   |                                |
| 220  | 1.5      | 1.722                             | 20                              | 85   |   |                                |



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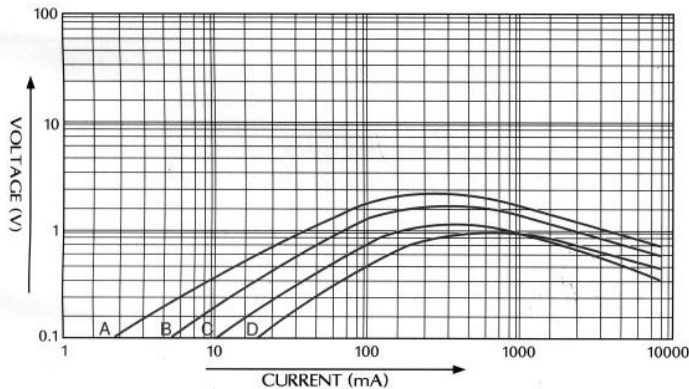
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| Disc | Part No. | No Load Resistance at 25°C<br>(Ω) | Max Steady State Current<br>(A) | (25°C Ambient) Approx. Resistance at Max. Current<br>(Ω) | Thermal Dissipation Constant<br>(mW/°C) | Thermal Time Constant<br>(Sec) |
|------|----------|-----------------------------------|---------------------------------|--|---|--------------------------------|
| 22 φ | NTC22    | 1                                 | 20                              | 0.015  | 28                                      | 125*                           |
|      |          | 2                                 | 18                              | 0.030  | 28                                      | 125*                           |
|      |          | 2.5                               | 15                              | 0.032  | 26                                      | 120*                           |
|      |          | 4                                 | 14                              | 0.052  | 27                                      | 125*                           |
|      |          | 5                                 | 12                              | 0.068  | 28                                      | 125*                           |
|      |          | 7                                 | 10                              | 0.072  | 29                                      | 125*                           |
|      |          | 10                                | 8                               | 0.110  | 29                                      | 125*                           |
|      |          | 25                                | 6                               | 0.225  | 26                                      | 120*                           |
|      |          | 50                                | 5                               | 0.376  | 25                                      | 120*                           |
|      |          | 120                               | 3.5                             | 1.130  | 29                                      | 125*                           |
| 30 φ | NTC30    | 0.5                               | 30                              | 0.015  | 35                                      | 162*                           |
|      |          | 1                                 | 28                              | 0.018  | 36                                      | 165*                           |
|      |          | 2                                 | 23                              | 0.022  | 36                                      | 165*                           |
|      |          | 5                                 | 18                              | 0.030  | 37                                      | 167*                           |
|      |          | 10                                | 12                              | 0.039  | 36                                      | 166*                           |

NOTE: THE SIGN\*IS THE SYMBOL OF HIGH POWER.

Figure2

**V- I CHARACTERISTIC CHART** Model A:15 φ 50 Ω B:15 φ 20 Ω  
C:13 φ 5 Ω D:10 φ 10 Ω



**AMBIENT TEMP. DERATING CURVE**

