

# NTC Surge Protectors / Inrush Current Limiters

## Thermistors

### SP 系列

ROHS series 



### Part Number Code.

Example :

$\frac{N}{(1)}$      $\frac{20}{(2)}$      $\frac{SP}{(3)}$      $\frac{005}{(4)}$   $\frac{\square}{(5)}$     -     $\frac{5}{(6)}$      $\frac{\square\square}{(7)}$

(1) NTC. ( Negative Temperature Coefficient )

(2) Nominal Diameter :

|    |   |      |    |   |      |
|----|---|------|----|---|------|
| 08 | : | 8mm  | 10 | : | 10mm |
| 13 | : | 13mm | 15 | : | 15mm |
| 20 | : | 20mm |    |   |      |

(3) SP : Surge Protection

(4) Resistance of 25°C

|     |   |      |         |   |       |
|-----|---|------|---------|---|-------|
| 0R7 | : | 0.7Ω | 1R3     | : | 1.3Ω  |
| 2R5 | : | 2.5Ω | 003~008 | : | 3~8Ω  |
| 120 | : | 120Ω | 010~080 | : | 0~80Ω |

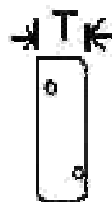
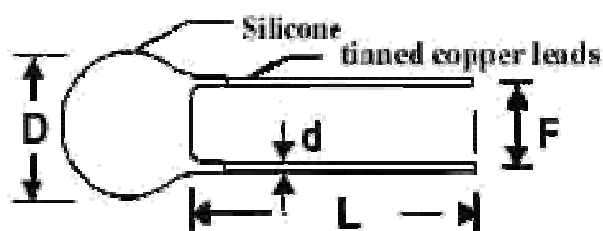
(5) Tolerance of Resistance

|   |   |      |
|---|---|------|
| L | : | ±15% |
| M | : | ±20% |

(6) Lead free(ROHS)

(7) Forming Type (Kink)

### DIMENSION



FORMING SPECIFICATIONS

| Disc Φ | Dmax | Lmin | d        | F       | Tmax |
|--------|------|------|----------|---------|------|
| 8      | 9.5  | 25   | 0.8±0.02 | 5.0±1.0 | 5    |
| 10     | 11.5 | 25   | 0.8±0.02 | 5.0±1.0 | 5    |
| 13     | 15   | 25   | 1.0±0.02 | 7.5±1.0 | 6    |
| 15     | 17   | 25   | 1.0±0.02 | 7.5±1.0 | 6    |
| 20     | 22   | 25   | 1.0±0.02 | 7.5±1.0 | 6    |
| 25     | 27   | 25   | 1.0±0.02 | 7.5±1.0 | 6    |

unit : mm

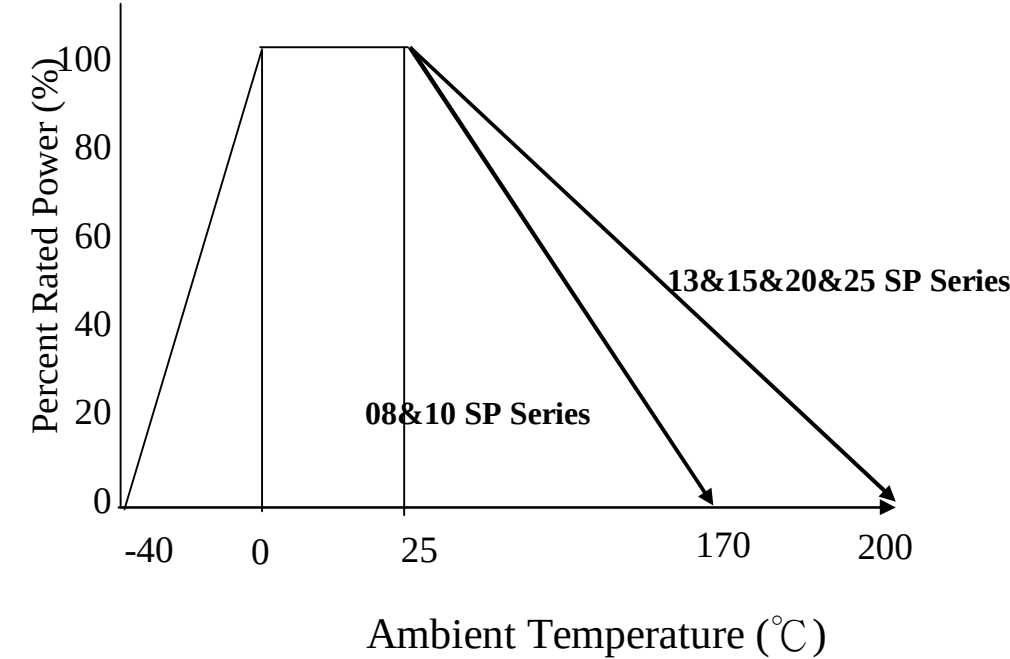
SPECIFICATIONS

| Nominal Diameter(mm) | Part No.     | Zero power Resistance at 25°C (Ohms) | Max Steady State Current(Amps) | Thermal Time Constant(S ec.) | Thermal Dissipation Constant(mW/°C) | Max. Steady Power (w) | Operating temperature range ( °C ) | UL | VDE |
|----------------------|--------------|--------------------------------------|--------------------------------|------------------------------|-------------------------------------|-----------------------|------------------------------------|----|-----|
| 8                    | 08SP003 - 5  | 3                                    | 3                              | 48                           | 12                                  | 1.7                   | -40~+170                           |    |     |
|                      | 08SP004 - 5  | 4                                    | 3                              | 45                           |                                     |                       |                                    |    |     |
|                      | 08SP005 - 5  | 5                                    | 3                              | 48                           |                                     |                       |                                    | .  | .   |
|                      | 08SP006 - 5  | 6                                    | 3                              | 45                           |                                     |                       |                                    | .  | .   |
|                      | 08SP008 - 5  | 8                                    | 3                              | 45                           |                                     |                       |                                    | .  | .   |
|                      | 08SP010 - 5  | 10                                   | 3                              | 45                           |                                     |                       |                                    | .  | .   |
|                      | 08SP012 - 5  | 12                                   | 3                              | 45                           |                                     |                       |                                    |    |     |
|                      | 08SP015 - 5  | 15                                   | 2                              | 45                           |                                     |                       |                                    | .  | .   |
|                      | 08SP020 - 5  | 20                                   | 2                              | 45                           |                                     |                       |                                    |    |     |
|                      | 08SP022 - 5  | 22                                   | 2                              | 45                           |                                     |                       |                                    |    |     |
|                      | 08SP033 - 5  | 33                                   | 2                              | 45                           |                                     |                       |                                    |    |     |
| 10                   | N10SP001 - 5 | 1                                    | 5                              | 65                           | 16                                  | 2.3                   | -40~+170                           |    |     |
|                      | N10SP1R3 - 5 | 1.3                                  | 5                              | 63                           |                                     |                       |                                    |    |     |
|                      | N10SP1R5 - 5 | 1.5                                  | 5                              | 60                           |                                     |                       |                                    |    |     |
|                      | N10SP002 - 5 | 2                                    | 5                              | 55                           |                                     |                       |                                    |    |     |
|                      | N10SP2R5 - 5 | 2.5                                  | 5                              | 58                           |                                     |                       |                                    | .  | .   |
|                      | N10SP003 - 5 | 3                                    | 5                              | 60                           |                                     |                       |                                    | .  | .   |
|                      | N10SP004 - 5 | 4                                    | 4                              | 62                           |                                     |                       |                                    | .  | .   |
|                      | N10SP005 - 5 | 5                                    | 4                              | 58                           |                                     |                       |                                    | .  | .   |
|                      | N10SP006 - 5 | 6                                    | 3                              | 59                           |                                     |                       |                                    | .  | .   |
|                      | N10SP007 - 5 | 7                                    | 3                              | 60                           |                                     |                       |                                    | .  | .   |
|                      | N10SP008 - 5 | 8                                    | 3                              | 59                           |                                     |                       |                                    | .  | .   |
|                      | N10SP010 - 5 | 10                                   | 3                              | 56                           |                                     |                       |                                    | .  | .   |
|                      | N10SP012 - 5 | 12                                   | 2                              | 58                           |                                     |                       |                                    | .  | .   |
|                      | N10SP015 - 5 | 15                                   | 2                              | 62                           |                                     |                       |                                    |    |     |
|                      | N10SP016 - 5 | 16                                   | 2                              | 62                           |                                     |                       |                                    | .  | .   |
|                      | N10SP020 - 5 | 20                                   | 2                              | 60                           |                                     |                       |                                    | .  | .   |
|                      | N10SP025 - 5 | 25                                   | 2                              | 56                           |                                     |                       |                                    | .  | .   |
|                      | N10SP050 - 5 | 50                                   | 2                              | 58                           |                                     |                       |                                    | .  | .   |
|                      | N10SP080 - 5 | 80                                   | 1                              | 55                           |                                     |                       |                                    | .  | .   |
|                      | N10SP120 - 5 | 120                                  | 1                              | 60                           |                                     |                       |                                    | .  | .   |

|    |              |     |     |     |    |     |          |   |   |
|----|--------------|-----|-----|-----|----|-----|----------|---|---|
| 13 | N13SP1R3 - 5 | 1.3 | 7   | 91  | 17 | 3.0 | -40~+200 |   |   |
|    | N13SP1R5 - 5 | 1.5 | 7   | 92  |    |     |          |   |   |
|    | N13SP2R5 - 5 | 2.5 | 6   | 85  |    |     |          |   |   |
|    | N13SP003 - 5 | 3   | 5   | 93  |    |     |          |   |   |
|    | N13SP004 - 5 | 4   | 5   | 91  |    |     |          |   |   |
|    | N13SP005 - 5 | 5   | 5   | 93  |    |     |          | . | . |
|    | N13SP006 - 5 | 6   | 3   | 59  |    |     |          |   |   |
|    | N13SP007 - 5 | 7   | 3   | 60  |    |     |          |   |   |
|    | N13SP008 - 5 | 8   | 4   | 91  |    |     |          | . | . |
|    | N13SP010 - 5 | 10  | 4   | 87  |    |     |          | . | . |
|    | N13SP012 - 5 | 12  | 4   | 82  |    |     |          |   |   |
|    | N13SP016 - 5 | 16  | 3   | 87  |    |     |          | . | . |
|    | N13SP018 - 5 | 18  | 3   | 92  |    |     |          |   |   |
|    | N13SP020 - 5 | 20  | 3   | 93  |    |     |          |   |   |
| 15 | N15SP1R3 - 5 | 1.3 | 8   | 107 | 20 | 3.5 | -40~+200 | . | . |
|    | N15SP1R5 - 5 | 1.5 | 8   | 107 |    |     |          | . | . |
|    | N15SP2R5 - 5 | 2.5 | 8   | 104 |    |     |          | . | . |
|    | N15SP003 - 5 | 3   | 7   | 105 |    |     |          | . | . |
|    | N15SP004 - 5 | 4   | 6   | 104 |    |     |          | . | . |
|    | N15SP005 - 5 | 5   | 6   | 110 |    |     |          | . | . |
|    | N15SP006 - 5 | 6   | 5   | 102 |    |     |          | . | . |
|    | N15SP007 - 5 | 7   | 5   | 99  |    |     |          | . | . |
|    | N15SP008 - 5 | 8   | 5   | 103 |    |     |          | . | . |
|    | N15SP010 - 5 | 10  | 5   | 103 |    |     |          | . | . |
|    | N15SP012 - 5 | 12  | 4   | 102 |    |     |          | . | . |
|    | N15SP015 - 5 | 15  | 4   | 101 |    |     |          | . | . |
|    | N15SP016 - 5 | 16  | 4   | 102 |    |     |          | . | . |
|    | N15SP020 - 5 | 20  | 4   | 101 |    |     |          | . | . |
|    | N15SP022 - 5 | 22  | 4   | 107 |    |     |          |   |   |
|    | N15SP025 - 5 | 25  | 3   | 100 |    |     |          | . | . |
|    | N15SP040 - 5 | 40  | 3   | 101 |    |     |          | . | . |
|    | N15SP047 - 5 | 47  | 3   | 102 |    |     |          | . | . |
|    | N15SP055 - 5 | 55  | 3   | 102 |    |     |          |   |   |
|    | N15SP080 - 5 | 80  | 2.5 | 102 |    |     |          | . | . |
|    | N15SP120 - 5 | 120 | 2   | 104 |    |     |          | . | . |
| 20 | N20SP0R7 - 5 | 0.7 | 12  | 145 | 23 | 4.0 | -40~+200 | . |   |
|    | N20SP001 - 5 | 1   | 10  | 160 |    |     |          |   |   |
|    | N20SP1R3 - 5 | 1.3 | 8   | 144 |    |     |          | . |   |
|    | N20SP002 - 5 | 2   | 8   | 140 |    |     |          |   |   |
|    | N20SP2R5 - 5 | 2.5 | 8   | 120 |    |     |          |   |   |
|    | N20SP004 - 5 | 4   | 8   | 135 |    |     |          |   |   |
|    | N20SP005 - 5 | 5   | 7   | 144 |    |     |          | . |   |
|    | N20SP006 - 5 | 6   | 6   | 136 |    |     |          | . |   |
|    | N20SP007 - 5 | 7   | 6   | 132 |    |     |          |   |   |
|    | N20SP010 - 5 | 10  | 6   | 135 |    |     |          | . |   |
|    | N20SP012 - 5 | 12  | 5   | 132 |    |     |          | . |   |
|    | N20SP020 - 5 | 20  | 6   | 127 |    |     |          |   |   |
|    | N20SP033 - 5 | 33  | 3   | 128 |    |     |          |   |   |
|    | N20SP120 - 5 | 120 | 2   | 142 |    |     |          | . |   |

|    |              |     |      |     |    |   |          |  |  |
|----|--------------|-----|------|-----|----|---|----------|--|--|
| 25 | N25SP001 - 5 | 1   | 15   | 150 | 30 | 5 | -40~+200 |  |  |
|    | N25SP1R5 - 5 | 1.5 | 15   | 150 |    |   |          |  |  |
|    | N25SP002 - 5 | 2   | 15   | 150 |    |   |          |  |  |
|    | N25SP2R5 - 5 | 2.5 | 15   | 150 |    |   |          |  |  |
|    | N25SP003 - 5 | 3   | 15   | 150 |    |   |          |  |  |
|    | N25SP004 - 5 | 4   | 14   | 150 |    |   |          |  |  |
|    | N25SP4R7 - 5 | 4.7 | 13   | 150 |    |   |          |  |  |
|    | N25SP005 - 5 | 5   | 12   | 150 |    |   |          |  |  |
|    | N25SP6R8 - 5 | 6.8 | 10.5 | 150 |    |   |          |  |  |
|    | N25SP007 - 5 | 7   | 10   | 150 |    |   |          |  |  |
|    | N25SP008 - 5 | 8   | 9    | 150 |    |   |          |  |  |
|    | N25SP010 - 5 | 10  | 8    | 150 |    |   |          |  |  |
|    | N25SP012 - 5 | 12  | 7.5  | 150 |    |   |          |  |  |
|    | N25SP015 - 5 | 15  | 6.5  | 150 |    |   |          |  |  |
|    | N25SP018 - 5 | 18  | 5.5  | 150 |    |   |          |  |  |
|    | N25SP020 - 5 | 20  | 5    | 150 |    |   |          |  |  |
|    | N25S9120 - 5 | 120 | 3    | 150 |    |   |          |  |  |

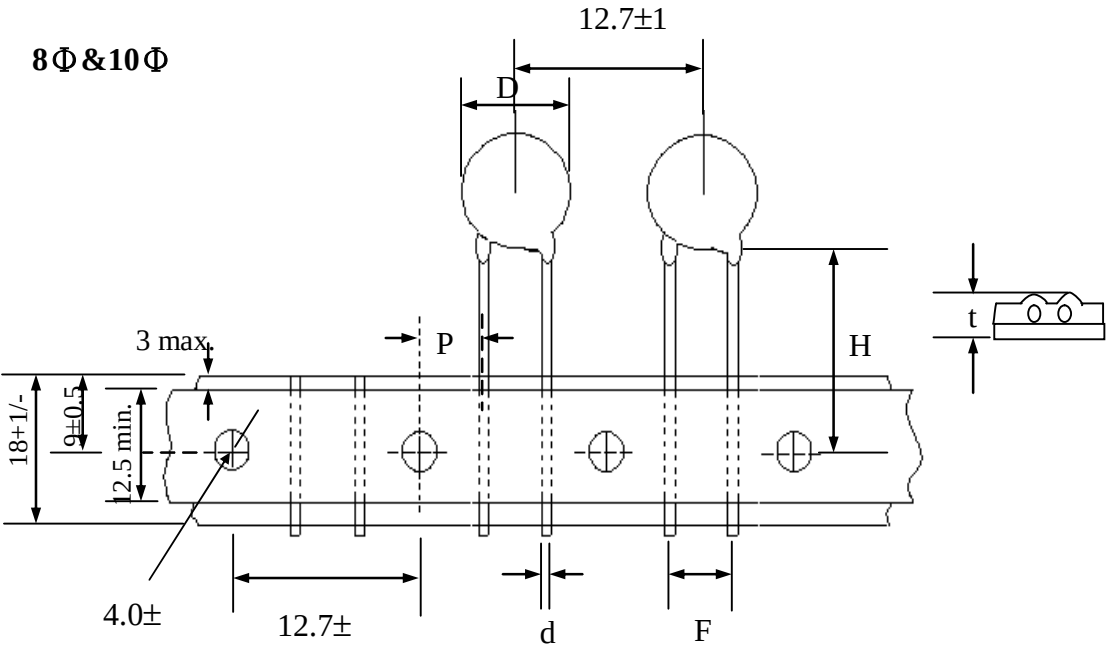
Maximum. power rating(Pmax)



Packaging

◎Taping Specifica

8Φ&10Φ



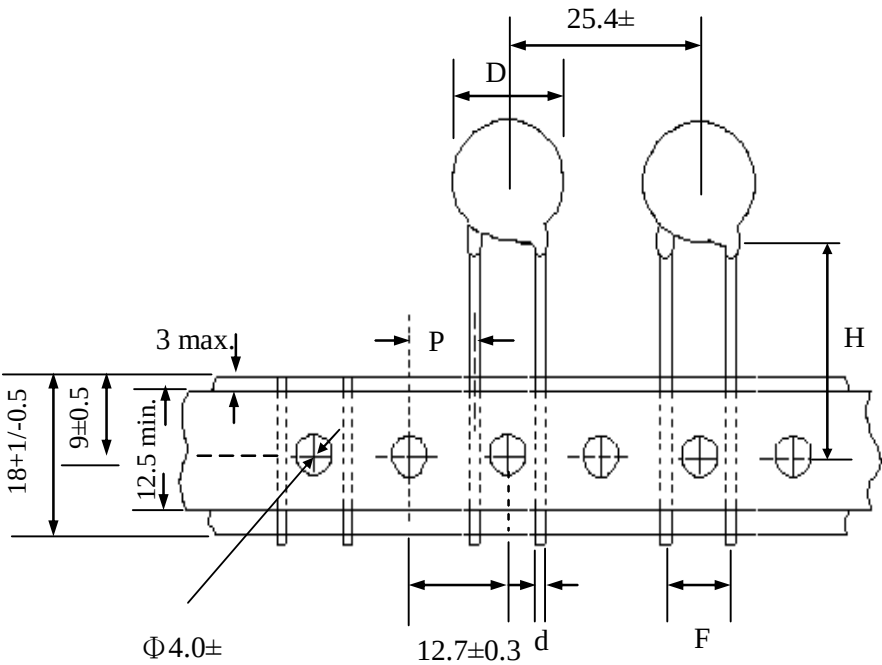
TA SERIES

| Φ  | Dmax. | F±1 | Tmax. | d±0.02 | P1±1 | H±1.5 | t   | A   | B   | C  |
|----|-------|-----|-------|--------|------|-------|-----|-----|-----|----|
| 8  | 9.5   | 5.0 | 5.0   | 0.8    | 3.85 | 18    | 1.7 | 330 | 260 | 50 |
| 10 | 11.5  | 5.0 | 5.0   | 0.8    | 3.85 | 18    | 1.7 | 330 | 260 | 50 |

TR SERIES

| Φ  | Dmax. | F±1 | Tmax. | d±0.02 | P1±1 | H0±1 | t   | A±2 | B±2 | C±5 | E  |
|----|-------|-----|-------|--------|------|------|-----|-----|-----|-----|----|
| 8  | 9.5   | 5.0 | 5.0   | 0.8    | 3.85 | 18   | 1.7 | 31  | 76  | 340 | 55 |
| 10 | 11.5  | 5.0 | 5.0   | 0.8    | 3.85 | 18   | 1.7 | 31  | 76  | 340 | 55 |

13Φ&15Φ&20Φ



## TA SERIES

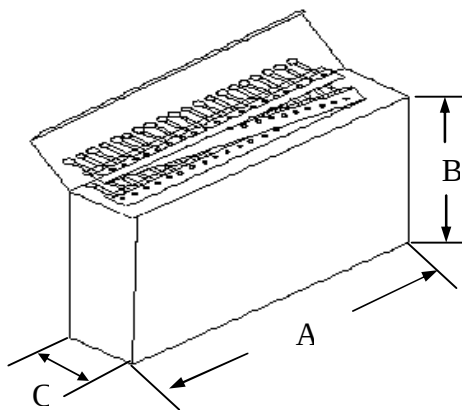
| $\Phi$ | Dmax. | F $\pm 1$ | Tmax. | d $\pm 0.02$ | P1 $\pm 1$ | H $\pm 1.5$ | t   | A   | B   | C  |
|--------|-------|-----------|-------|--------------|------------|-------------|-----|-----|-----|----|
| 13     | 15.0  | 7.5       | 6.0   | 1.00         | 8.95       | 18          | 1.9 | 330 | 260 | 50 |
| 15     | 17.0  | 7.5       | 6.0   | 1.00         | 8.95       | 18          | 1.9 | 330 | 260 | 50 |
| 20     | 22.0  | 7.5       | 6.0   | 1.00         | 8.95       | 18          | 1.9 | 330 | 260 | 50 |

## TR SERIES

| $\Phi$ | Dmax. | F $\pm 1$ | Tmax. | d $\pm 0.02$ | P1 $\pm 1$ | H0 $\pm 1$ | t   | A $\pm 2$ | B $\pm 2$ | C $\pm 5$ | E  |
|--------|-------|-----------|-------|--------------|------------|------------|-----|-----------|-----------|-----------|----|
| 13     | 15.0  | 7.5       | 6.0   | 1.00         | 8.95       | 18         | 1.9 | 31        | 76        | 340       | 55 |
| 15     | 17.0  | 7.5       | 6.0   | 1.00         | 8.95       | 18         | 1.9 | 31        | 76        | 340       | 55 |
| 20     | 22.0  | 7.5       | 6.0   | 1.00         | 8.95       | 18         | 1.9 | 31        | 76        | 340       | 55 |

## Quantity

### TA SERIES

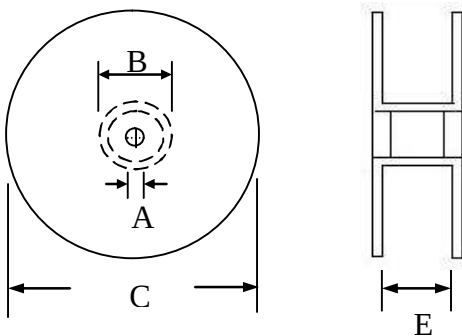


### AMMO Packing

| Disc size/mm | Quantity(PCS/BOX) |
|--------------|-------------------|
| 8 $\Phi$     | 1000              |
| 10 $\Phi$    | 1000              |
| 13 $\Phi$    | 500               |
| 15 $\Phi$    | 500               |
| 20 $\Phi$    | 500               |

### AMMO

### TR SERIES



### REEL

### REEL Packing

| Disc size/mm | Quantity(PCS/REEL) |
|--------------|--------------------|
| 8 $\Phi$     | 1000               |
| 10 $\Phi$    | 1000               |
| 13 $\Phi$    | 500                |
| 15 $\Phi$    | 500                |
| 20 $\Phi$    | 500                |

## BULK Packing

| Disc size/mm | Quantity(PCS/Bag) |
|--------------|-------------------|
| 8 $\Phi$     | 200               |
| 10 $\Phi$    | 200               |
| 13 $\Phi$    | 100               |
| 15 $\Phi$    | 100               |
| 20 $\Phi$    | 50                |
| 25 $\Phi$    | 50                |