

## CNR 07D 突波吸收器

## Device Ratings and Characteristics

## 元件的額定值與特性

| Part No.<br>型號 | Maximum Allowable Voltage<br>最大容許電壓 |       | Varistor Voltage<br>突波吸收器<br>動作電壓<br>(@1mA) |         |      | Maximum Clamping Voltage<br>抑制電壓<br>@ Test Current<br>(8/20μs) |        | Maximum Energy<br>最大吸收<br>能量<br>(J) | Maximum Peak Current<br>最大<br>電流耐量<br>(8/20μs) | Rated Power<br>消耗<br>功率 | Typical Capacitance<br>參考電容值<br>(@1KHz) | Standards<br>安規 |
|----------------|-------------------------------------|-------|---------------------------------------------|---------|------|----------------------------------------------------------------|--------|-------------------------------------|------------------------------------------------|-------------------------|-----------------------------------------|-----------------|
|                | ACrms(V)                            | DC(V) | Min.                                        | Vb(Vdc) | Max. | Vc (V)                                                         | Ip (A) | 10/1000μs                           | (A)                                            | (W)                     | (pF)                                    |                 |
| CNR-07D180K    | 11                                  | 14    | 14.4                                        | 18      | 21.6 | 42                                                             | 2.5    | 0.9                                 | 250                                            | 0.02                    | 3800                                    | ☆               |
| CNR-07D220K    | 14                                  | 18    | 18.7                                        | 22      | 26.0 | 47                                                             | 2.5    | 1.1                                 | 250                                            | 0.02                    | 3600                                    | ☆               |
| CNR-07D270K    | 17                                  | 22    | 23.0                                        | 27      | 31.1 | 53                                                             | 2.5    | 1.4                                 | 250                                            | 0.02                    | 3400                                    | ☆               |
| CNR-07D330K    | 20                                  | 26    | 29.5                                        | 33      | 36.5 | 65                                                             | 2.5    | 1.7                                 | 250                                            | 0.02                    | 2900                                    | ☆               |
| CNR-07D390K    | 25                                  | 31    | 35                                          | 39      | 43   | 77                                                             | 2.5    | 2.1                                 | 250                                            | 0.02                    | 1600                                    | ☆               |
| CNR-07D470K    | 30                                  | 38    | 42                                          | 47      | 52   | 93                                                             | 2.5    | 2.5                                 | 250                                            | 0.02                    | 1550                                    | ☆               |
| CNR-07D560K    | 35                                  | 45    | 50                                          | 56      | 62   | 110                                                            | 2.5    | 3.1                                 | 250                                            | 0.02                    | 1500                                    | ☆               |
| CNR-07D680K    | 40                                  | 56    | 61                                          | 68      | 75   | 135                                                            | 2.5    | 3.6                                 | 250                                            | 0.02                    | 1200                                    | ☆ □             |
| CNR-07D820K    | 50                                  | 65    | 74                                          | 82      | 90   | 135                                                            | 10     | 5.5                                 | 1200                                           | 0.25                    | 860                                     | ☆ ◎ □           |
| CNR-07D101K    | 60                                  | 85    | 90                                          | 100     | 110  | 165                                                            | 10     | 6.5                                 | 1200                                           | 0.25                    | 750                                     | ☆ ◎ □           |
| CNR-07D121K    | 75                                  | 100   | 108                                         | 120     | 132  | 200                                                            | 10     | 7.8                                 | 1200                                           | 0.25                    | 530                                     | ☆ ◎ □           |
| CNR-07D151K    | 95                                  | 125   | 135                                         | 150     | 165  | 250                                                            | 10     | 9.7                                 | 1200                                           | 0.25                    | 410                                     | ☆ ◎ □           |
| CNR-07D181K    | 115                                 | 150   | 162                                         | 180     | 198  | 300                                                            | 10     | 11.7                                | 1200                                           | 0.25                    | 300                                     | ☆ ◎ □           |
| CNR-07D201K    | 130                                 | 170   | 185                                         | 200     | 225  | 340                                                            | 10     | 13.0                                | 1200                                           | 0.25                    | 250                                     | ☆ △ ※ ◎ □       |
| CNR-07D221K    | 140                                 | 180   | 198                                         | 220     | 242  | 360                                                            | 10     | 14.0                                | 1200                                           | 0.25                    | 250                                     | ☆ △ ※ ◎ □       |
| CNR-07D241K    | 150                                 | 200   | 216                                         | 240     | 264  | 395                                                            | 10     | 15.0                                | 1200                                           | 0.25                    | 240                                     | ☆ △ ※ ◎ □       |
| CNR-07D271K    | 175                                 | 225   | 247                                         | 270     | 303  | 455                                                            | 10     | 18.0                                | 1200                                           | 0.25                    | 220                                     | ☆ △ ※ ◎ □       |
| CNR-07D301K    | 195                                 | 250   | 270                                         | 300     | 330  | 500                                                            | 10     | 20.0                                | 1200                                           | 0.25                    | 190                                     | ☆ △ ※ ◎ □       |
| CNR-07D331K    | 210                                 | 275   | 297                                         | 330     | 363  | 550                                                            | 10     | 25.0                                | 1200                                           | 0.25                    | 180                                     | ☆ △ ※ ◎ □       |
| CNR-07D361K    | 230                                 | 300   | 324                                         | 360     | 396  | 595                                                            | 10     | 25.0                                | 1200                                           | 0.25                    | 170                                     | ☆ △ ※ ◎ □       |
| CNR-07D391K    | 250                                 | 320   | 351                                         | 390     | 429  | 650                                                            | 10     | 25.0                                | 1200                                           | 0.25                    | 160                                     | ☆ △ ※ ◎ □       |
| CNR-07D431K    | 275                                 | 350   | 387                                         | 430     | 473  | 710                                                            | 10     | 28.0                                | 1200                                           | 0.25                    | 150                                     | ☆ △ ※ ◎ □       |
| CNR-07D471K    | 300                                 | 385   | 423                                         | 470     | 517  | 775                                                            | 10     | 30.0                                | 1200                                           | 0.25                    | 130                                     | ☆ △ ※ ◎ □       |
| CNR-07D511K    | 320                                 | 410   | 459                                         | 510     | 561  | 845                                                            | 10     | 30.0                                | 1200                                           | 0.25                    | 120                                     | ☆ △ ※ ◎ □       |
| CNR-07D561K    | 350                                 | 460   | 504                                         | 560     | 616  | 915                                                            | 10     | 30.0                                | 1200                                           | 0.25                    | 120                                     | ☆ △ ※ ◎ □       |
| CNR-07D621K    | 385                                 | 505   | 558                                         | 620     | 682  | 1025                                                           | 10     | 30.0                                | 1200                                           | 0.25                    | 120                                     | ☆ △ ※ ◎ □       |
| CNR-07D681K    | 420                                 | 560   | 612                                         | 680     | 748  | 1120                                                           | 10     | 30.0                                | 1200                                           | 0.25                    | 110                                     | ☆ △ ※ ◎ □       |
| CNR-07D751K    | 460                                 | 615   | 675                                         | 750     | 825  | 1240                                                           | 10     | 33.0                                | 1200                                           | 0.25                    | 100                                     | ☆ △ ※ ◎ □       |
| CNR-07D781K    | 485                                 | 640   | 702                                         | 780     | 858  | 1290                                                           | 10     | 37.0                                | 1200                                           | 0.25                    | 90                                      | ☆ △ ※ ◎ □       |
| CNR-07D821K    | 510                                 | 670   | 738                                         | 820     | 902  | 1355                                                           | 10     | 40.0                                | 1200                                           | 0.25                    | 90                                      | ☆ △ ※ ◎ □       |

## Related Standards

## 安規說明

| Standard No.<br>安規號碼 | UL 1414                    | UL 1449 (3rd Edition)   | CSA                                           | VDE                                       | CQC                                                                  |
|----------------------|----------------------------|-------------------------|-----------------------------------------------|-------------------------------------------|----------------------------------------------------------------------|
| Title<br>名稱          | Across-The-Line Components | Surge Protective Device | Accessories and Parts for Electronic Products | Varistors for use in Electronic equipment | GB/T10193<br>GB/T10194<br>GB8898<br>GB4943.1                         |
| File No.<br>檔案號碼     | E165143                    | E316325                 | LR109736-1                                    | 21557-4790-001                            | CQC02001002471<br>CQC08001023767<br>CQC08001023768<br>CQC08001023769 |
| Symbols<br>符號        | △                          | ☆                       | ※                                             | ◎                                         | □                                                                    |

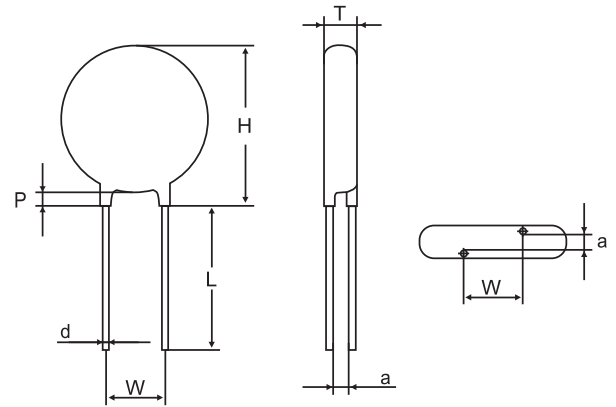
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# Dimension of Component for Standard Product 標準品之尺寸規格

Dimension Table

Unit: mm

| Model<br>Symbol | 05D    | 07D    | 10D    | 14D                    | 18D    | 20D                    |
|-----------------|--------|--------|--------|------------------------|--------|------------------------|
| D(max.)         | 7.5    | 9.0    | 14.0   | 17.5                   | 23.0   | 25.0                   |
| H(max.)         | 10.0   | 12.0   | 17.0   | 20.5                   | 26.0   | 28.0                   |
| W(±1.0)         | 5.0    | 5.0    | 7.5    | 7.5                    | 7.5    | 7.5/10.0               |
| P(max.)         | 3.0    |        |        |                        |        |                        |
| L(min)          | 25.0   |        |        |                        |        |                        |
| d(±0.05)        | 0.6    | 0.6    | 0.8    | 0.8                    | 0.8    | 0.8/1.0                |
|                 | Cuorcp | Cuorcp | Cuorcp | Cuorcp<br>182 Konly Cu | Cuorcp | Cuorcp<br>1.0 Konly Cu |



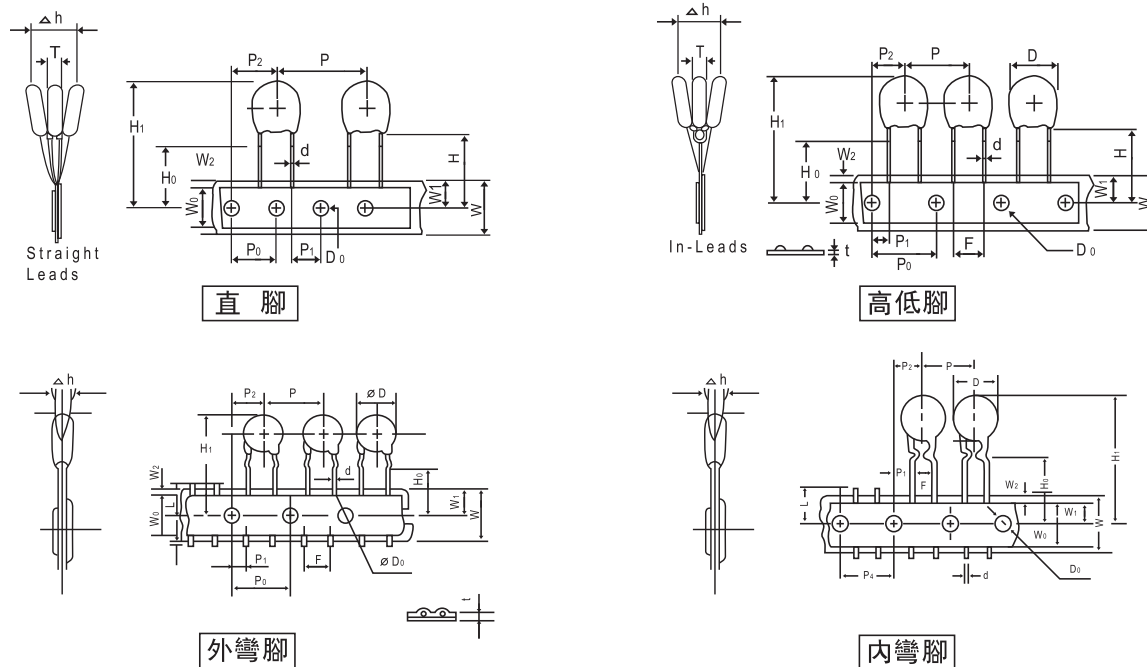
T max. Table

Unit: mm

| Part No. | 05D | 07D | 10D | 14D | 18D | 20D | <sup>a</sup><br>(±0.4) |
|----------|-----|-----|-----|-----|-----|-----|------------------------|
| 180K     | 3.3 | 3.5 | 3.9 | 4.0 | 4.2 | 4.3 | 1.0                    |
| 220K     | 3.6 | 3.8 | 4.2 | 4.3 | 4.5 | 4.6 | 1.1                    |
| 270K     | 3.8 | 4.0 | 4.4 | 4.5 | 4.7 | 4.8 | 1.2                    |
| 330K     | 3.3 | 3.5 | 3.9 | 4.0 | 4.2 | 4.3 | 1.1                    |
| 390K     | 3.5 | 3.7 | 4.1 | 4.2 | 4.4 | 4.5 | 1.3                    |
| 470K     | 3.7 | 3.9 | 4.3 | 4.4 | 4.6 | 4.7 | 1.4                    |
| 560K     | 4.0 | 4.2 | 4.6 | 4.7 | 4.9 | 5.0 | 1.5                    |
| 680K     | 4.3 | 4.5 | 4.9 | 5.0 | 5.2 | 5.3 | 1.7                    |
| 820K     | 3.3 | 3.5 | 3.9 | 4.0 | 4.2 | 4.3 | 1.0                    |
| 101K     | 3.6 | 3.8 | 4.2 | 4.3 | 4.5 | 4.6 | 1.0                    |
| 121K     | 3.8 | 4.0 | 4.4 | 4.5 | 4.7 | 4.8 | 1.1                    |
| 151K     | 4.1 | 4.3 | 4.7 | 4.8 | 5.0 | 5.1 | 1.3                    |
| 181K     | 3.2 | 3.4 | 3.8 | 3.9 | 4.1 | 4.2 | 1.0                    |
| 201K     | 3.3 | 3.5 | 3.9 | 4.0 | 4.2 | 4.3 | 1.0                    |
| 221K     | 3.4 | 3.6 | 4.0 | 4.1 | 4.3 | 4.4 | 1.1                    |
| 241K     | 3.5 | 3.7 | 4.1 | 4.2 | 4.4 | 4.5 | 1.2                    |
| 271K     | 3.7 | 3.9 | 4.2 | 4.3 | 4.5 | 4.6 | 1.3                    |

| Part No. | 05D | 07D | 10D | 14D  | 18D  | 20D  | <sup>a</sup><br>(±0.4) |
|----------|-----|-----|-----|------|------|------|------------------------|
| 301K     | 3.9 | 4.1 | 4.3 | 4.4  | 4.6  | 4.7  | 1.4                    |
| 331K     | 4.0 | 4.2 | 4.5 | 4.6  | 4.8  | 4.9  | 1.5                    |
| 361K     | 4.1 | 4.3 | 4.7 | 4.8  | 5.0  | 5.1  | 1.2                    |
| 391K     | 4.2 | 4.4 | 4.8 | 4.9  | 5.1  | 5.2  | 1.3                    |
| 431K     | 4.4 | 4.6 | 5.0 | 5.1  | 5.3  | 5.4  | 1.4                    |
| 471K     | 4.6 | 4.8 | 5.2 | 5.3  | 5.5  | 5.6  | 1.5                    |
| 511K     | 4.8 | 5.0 | 5.3 | 5.4  | 5.6  | 5.7  | 1.7                    |
| 561K     | 5.0 | 5.2 | 5.5 | 5.6  | 5.8  | 5.9  | 1.8                    |
| 621K     | 5.3 | 5.5 | 5.7 | 5.8  | 6.0  | 6.1  | 2                      |
| 681K     | 5.4 | 5.6 | 5.8 | 5.9  | 6.1  | 6.2  | 2.2                    |
| 751K     | 5.6 | 5.8 | 6.0 | 6.1  | 6.3  | 6.4  | 2.4                    |
| 781K     | 5.8 | 6.0 | 6.3 | 6.4  | 6.6  | 6.7  | 2.5                    |
| 821K     | -   | 6.3 | 6.5 | 6.6  | 6.8  | 6.9  | 2.6                    |
| 911K     | -   | -   | 6.6 | 6.7  | 6.9  | 7.0  | 3                      |
| 102K     | -   | -   | 7.0 | 7.1  | 7.3  | 7.4  | 3.3                    |
| 112K     | -   | -   | 7.4 | 7.5  | 7.7  | 7.9  | 3.6                    |
| 182K     | -   | -   | -   | 11.5 | 11.7 | 11.9 | 5.5                    |

## Tape and Reel Specifications 捲帶裝尺寸規格



| Symbol               | PARAMETER                                 | Model Size           |                      |                      |                      |                      |                      |
|----------------------|-------------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                      |                                           | □ 05D series         | □ 07D series         | □ 10D series         | □ 10D series         | □ 14D series         | □ 14D series         |
| <b>P</b>             | Pitch of Component                        | 12.7±1.0             | 12.7±1.0             | 12.7±1.0             | 15.0±1.0             | 25.4±1.0             | 30.0±1.0             |
| <b>P<sub>0</sub></b> | Feed Hole Pitch                           | 12.7±0.2             | 12.7±0.2             | 12.7±0.2             | 15.0±0.2             | 25.4±0.2             | 30.0±0.2             |
| <b>P<sub>1</sub></b> | Feed Hole Center Lead                     | 3.85±0.7             | 3.85±0.7             | 3.85±0.7             | 3.75±0.7             | 8.95±0.7             | 3.75±0.7             |
| <b>P<sub>2</sub></b> | Hole Center to Component Center           | 6.35±0.7             | 6.35±0.7             |                      | 7.5±1.3              | 12.7±0.7             | 7.5±0.7              |
| <b>F</b>             | Lead to Lead Distance                     | 5.0±0.8              | 5.0±0.8              | 7.5±0.8              | 5.0±0.8              | 7.5±0.8              | 7.5±0.8              |
| <b>Δh</b>            | Component Alignment                       | 2.0 Max              | 2.0 Max              | 2.0 Max              | 2.0 Max              | 2.0 Max              | 2.0 Max              |
| <b>W</b>             | Tape Width                                | 18.0+1.0<br>18.0-0.5 | 18.0+1.0<br>18.0-0.5 | 18.0+1.0<br>18.0-0.5 | 18.0+1.0<br>18.0-0.5 | 18.0+1.0<br>18.0-0.5 | 18.0+1.0<br>18.0-0.5 |
| <b>W<sub>0</sub></b> | Hold Down Tape Width                      | 5.0 MIN.             | 5.0 MIN.             | 5.0 MIN.             | 5.0 MIN.             | 5.0 MIN.             | 5.0 MIN.             |
| <b>W<sub>1</sub></b> | Hole Position                             | 9.0+0.75<br>9.0-0.50 | 9.0+0.75<br>9.0-0.50 | 9.0+0.75<br>9.0-0.50 | 9.0+0.75<br>9.0-0.50 | 9.0+0.75<br>9.0-0.50 | 9.0+0.75<br>9.0-0.50 |
| <b>W<sub>2</sub></b> | Hold Down Tape Position                   | 3.0 Max              | 3.0 Max              | 3.0 Max              | 3.0 Max              | 3.0 Max              | 3.0 Max              |
| <b>H</b>             | Height from Tape Center to Component Base | 18.0+2.0<br>18.0-0.0 | 18.0+2.0<br>18.0-0.0 | 18.0+2.0<br>18.0-0.0 | 18.0+2.0<br>18.0-0.0 | 18.0+2.0<br>18.0-0.0 | 18.0+2.0<br>18.0-0.0 |
| <b>H<sub>0</sub></b> | Seating Plane Height                      | 16.0±0.5             | 16.0±0.5             | 16.0±0.5             | 16.0±0.5             | 16.0±0.5             | 16.0±0.5             |
| <b>H<sub>1</sub></b> | Component Height                          | 29.0 Max             | 32.0 Max             | 36.0 Max             | 36.0 Max             | 40.0 Max             | 40.0 Max             |
| <b>D<sub>0</sub></b> | Feed Hole Diameter                        | 4.0±0.2              | 4.0±0.2              | 4.0±0.2              | 4.0±0.2              | 4.0±0.2              | 4.0±0.2              |
| <b>t</b>             | Total Tape Thickness                      | 0.7±0.2              | 0.7±0.2              | 0.7±0.2              | 0.7±0.2              | 0.7±0.2              | 0.7±0.2              |
| <b>L</b>             | Length of Clipped Lead                    | 11.0 Max             | 11.0 Max             | 11.0 Max             | 11.0 Max             | 11.0 Max             | 11.0 Max             |

Unit : mm

### Order Information of Taped Reel

| Standard Products | Tape Reel Straight Lead | Tape Reel Crimped Lead | Min. Q'ty | Q'ty/Inner Box |
|-------------------|-------------------------|------------------------|-----------|----------------|
| CNR-05DXXXK       | CNR-05DXXXK-TRS         | CNR-05DXXXK-TRK        | 2000/1500 | 4000/3000      |
| CNR-07DXXXK       | CNR-07DXXXK-TRS         | CNR-07DXXXK-TRK        | 2000/1500 | 4000/3000      |
| CNR-10DXXXK       | CNR-10DXXXK-TRS         | CNR-10DXXXK-TRK        | 1500/1000 | 3000/2000      |
| CNR-14DXXXK       | CNR-14DXXXK-TRS         | CNR-14DXXXK-TRK        | 1000/800  | 2000/1600      |

Note :

1."2000/1500" Packing in CNR-XXD180K to CNR-XXD271K are 2000 pcs, CNR-XXD301K to CNR-XXD471K with 1500 pcs.

2.Packing unit in pcs.

## Packaging Specifications

| Flat box |          |    |     | Reel   |                   |    |     |     |
|----------|----------|----|-----|--------|-------------------|----|-----|-----|
|          |          |    |     |        |                   |    |     |     |
| Symbol   | 5D       | 7D | 10D | Symbol | 5D                | 7D | 10D | 14D |
| A        | 55 Max.  |    |     | W      | Approx. 45        |    |     | 55  |
| B        | 330 Max. |    |     | D      | 360 Max.          |    |     |     |
| C        | 340 Max. |    |     | A      | Approx. $\phi$ 30 |    |     |     |
|          |          |    |     | B      | Approx. $\phi$ 90 |    |     |     |

Unit : mm

## Order Information of Flat Box

| Standard Products | Tape Box Straight Lead | Tape Box Crimped Lead | Max. Q'ty | Q'ty/Box  |
|-------------------|------------------------|-----------------------|-----------|-----------|
| CNR-05DXXXK       | CNR-05DXXXK-BTS        | CNR-05DXXXK-BTK       | 2000/1500 | 4000/3000 |
| CNR-07DXXXK       | CNR-07DXXXK-BTS        | CNR-07DXXXK-BTK       | 2000/1500 | 4000/3000 |
| CNR-10DXXXK       | CNR-10DXXXK-BTS        | CNR-10DXXXK-BTK       | 1500/1000 | 3000/2000 |

Note :

1."2000/1500" Packing in CNR-XXD180K to CNR-XXD271K are 2000 pcs, CNR-XXD301K to CNR-XXD471K with 1500 pcs.

3.Packing unit in pcs.

| Series |                             |            | 05D     | 07D     | 10D     | 14D     |
|--------|-----------------------------|------------|---------|---------|---------|---------|
| Symbol |                             |            |         |         |         |         |
| A max. | Varistor Voltage<br>V1mA(V) | 18 to 270  | 13.0    | 15.0    | 19.5    | 22.5    |
|        |                             | 360 to 470 | 13.0    | 15.0    | 20.5    | 23.5    |
| D max. |                             |            | 7.5     | 9.0     | 14.0    | 17.5    |
| K      |                             |            | 1.2±0.4 | 1.2±0.4 | 1.4±0.4 | 1.4±0.4 |
| W      |                             |            | 5.0±1.0 | 5.0±1.0 | 7.5±1.0 | 7.5±1.0 |
| ψ d    |                             |            | 0.6     | 0.6     | 0.8     | 0.8     |

The diagram illustrates the physical dimensions of a varistor component. The main view shows a top-down perspective of the oval-shaped body with diameter D, a side view showing height A, and a cross-sectional view showing the internal structure with dimensions K, CL, and W. A separate detail view shows the thickness T of the component.

T max. See standard product specification table.

## Order Information of Crimp Leads

| Standard Products | Tape Reel Straight Lead | Tape Reel Crimped Lead | Min. Q'ty | Q'ty/Inner Box |
|-------------------|-------------------------|------------------------|-----------|----------------|
| CNR-05DXXXK       | CNR-05DXXXK-TRS         | CNR-05DXXXK-TRK        | 2000/1500 | 4000/3000      |
| CNR-07DXXXK       | CNR-07DXXXK-TRS         | CNR-07DXXXK-TRK        | 2000/1500 | 4000/3000      |
| CNR-10DXXXK       | CNR-10DXXXK-TRS         | CNR-10DXXXK-TRK        | 1500/1000 | 3000/2000      |
| CNR-14DXXXK       | CNR-14DXXXK-TRS         | CNR-14DXXXK-TRK        | 1000/800  | 2000/1600      |

Note :

1.Packing unit in pcs.

## Impulse Life Time Rating Curves 額定脈衝壽命次數曲線

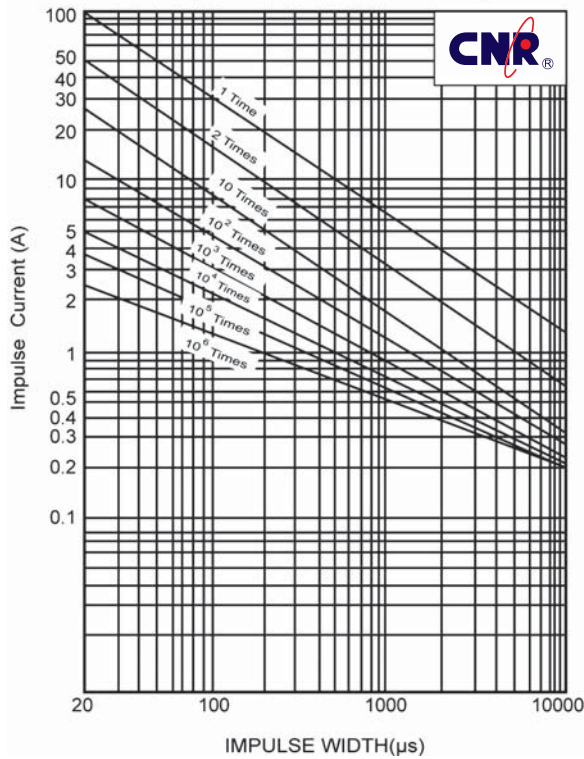
2 times: 5 minutes interval

up to 10 times: 2 minutes interval

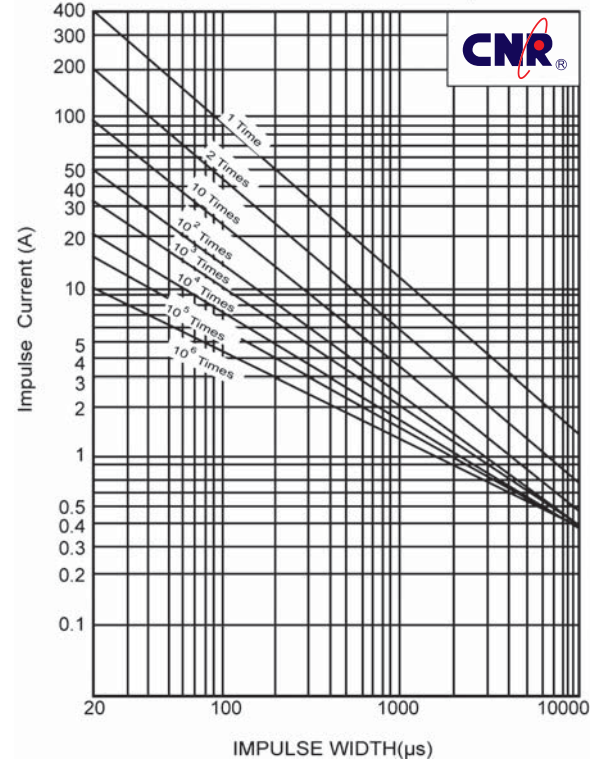
up to  $10^6$  times 10 seconds interval

### 5D Series

(CNR05D180K to CNR05D680K)

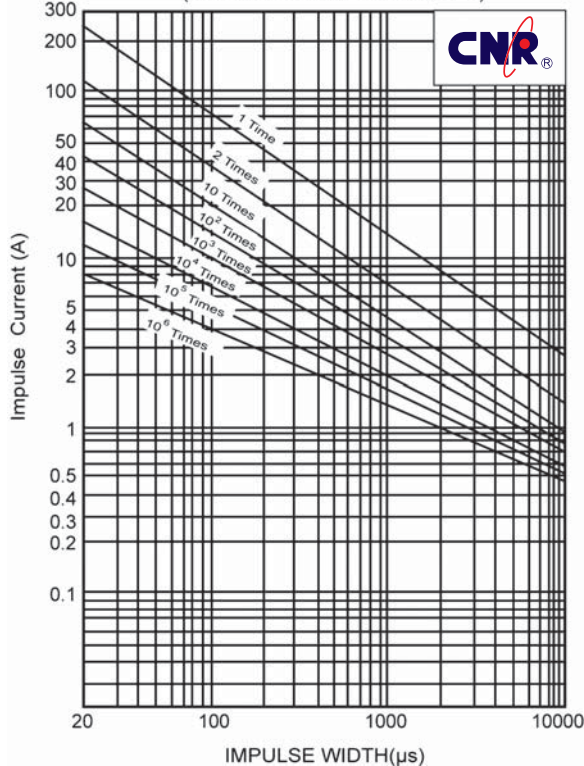


(CNR05D820K to CNR05D751K)

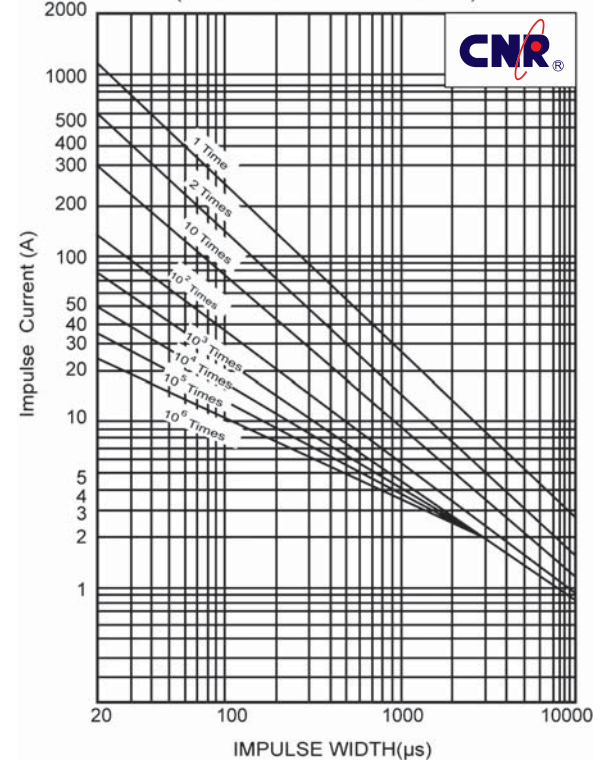


### 7D Series

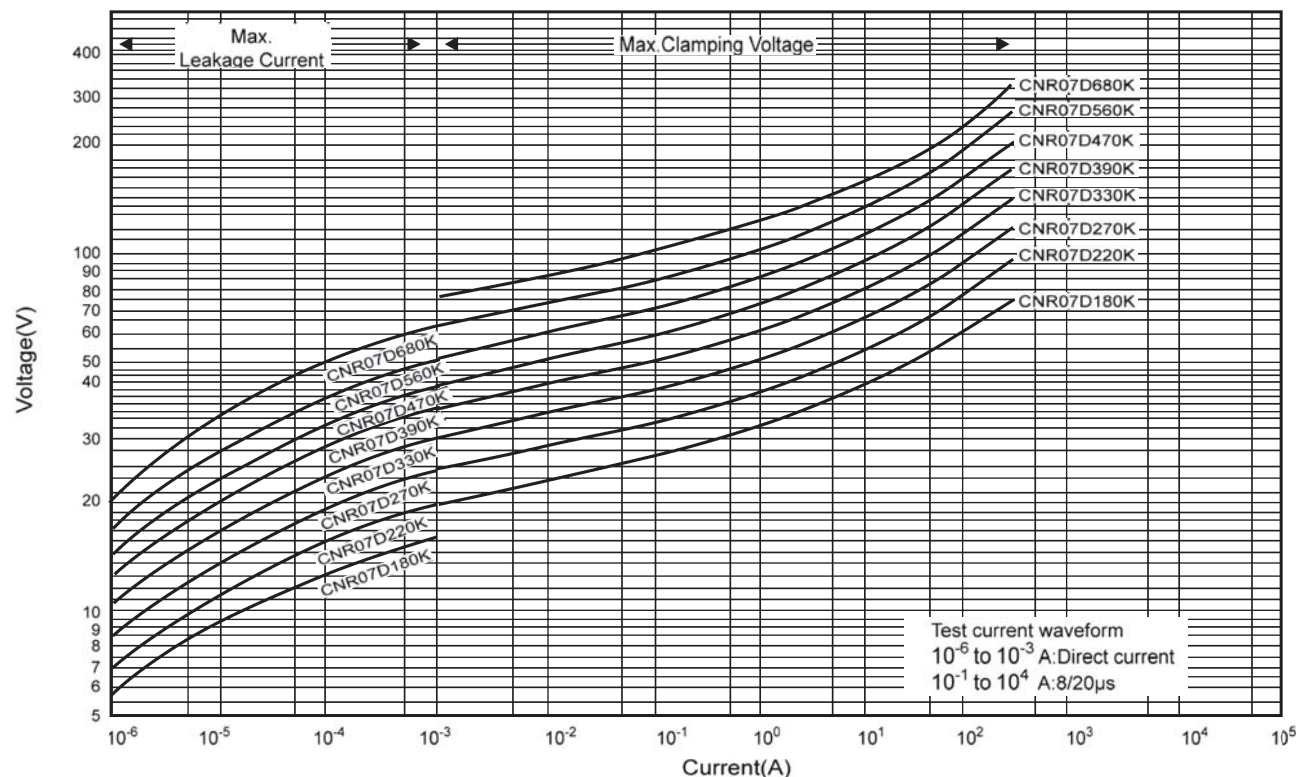
(CNR07D180K to CNR07D680K)



(CNR07D820K to CNR07D821K)



V-I Curve CNR07D180K to CNR07D680K 電壓-電流特性曲線



V-I Curve CNR07D820K to CNR07D821K 電壓-電流特性曲線

