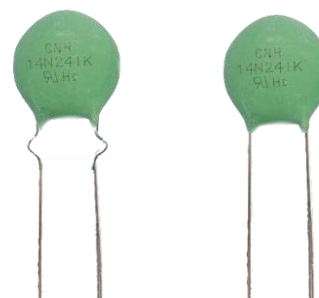


Description

CNR Varistors are voltage dependent, nonlinear device which have an electrical behavior similar to back-to-back zener diodes. CNR metal oxide varistor are nonlinear resistors, consisting main of zinc oxide and several kinds of metal oxide additive. They are bilateral and symmetrical V-I characteristics curve and unparalleled large peak current capability are used for absorption of transient voltage, suppression of pulse noise and circuit voltage stabilization.



| Agency Approvals                                                                    |                                                |                 |
|-------------------------------------------------------------------------------------|------------------------------------------------|-----------------|
| Agency                                                                              | Agency Approval                                | Certificate No. |
|    | UL 1449 4 <sup>th</sup> & cUL                  | E316324         |
|  | IEC 61051-1                                    | -               |
|                                                                                     | IEC 61051-2                                    |                 |
|                                                                                     | IEC 61051-2-2                                  |                 |
|                                                                                     | IEC 60950-1 (Annex Q) for 10N,14N and 20N only |                 |
|  | GB/T 10193-1997                                | -               |
|                                                                                     | GB/T 10194-1997                                |                 |
|                                                                                     | GB 4943.1-2011                                 |                 |
|                                                                                     | GB 8898-2011                                   |                 |

| Features                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. RoHS compliant<br>2. Halogen-free Series are                                                                                                                                                                        |
| Applications                                                                                                                                                                                                           |
| 1. Power supply<br>2. Home appliance<br>3. Industrial equipment<br>4. Telecommunication or telephone system<br>5. Smart meter<br>6. PLC (Power line communication)<br>7. Lighting products<br>8. Photovoltaic industry |

| Max. Rating                             |              |       |
|-----------------------------------------|--------------|-------|
|                                         | N-Seires     | Units |
| AC Voltage Range (Vac)                  | 11 to 460    | V     |
| DC Voltage Range(Vdc)                   | 14 to 615    | V     |
| Peak Current for 8/20μS Current Wave    | 150 to 20000 | A     |
| Energy Range For 10/1000μS Current Wave | 0.9 to 725   | J     |
| Operation Ambient Temperature Range     | -40 to +125  | °C    |
| Storage Tempersture Range               | -40 to +150  | °C    |
| Varistor Voltage Range Vn(Vdc)          | 18 to 750    | V     |
| Insulation Resistance                   | >1000        | MΩ    |
| Typical Response Time                   | <25          | ns    |

| Device Ratings and Characteristics |                |                           |       |                         |         |      |                                           |       |                             |                                |             |                             |                         |                          |
|------------------------------------|----------------|---------------------------|-------|-------------------------|---------|------|-------------------------------------------|-------|-----------------------------|--------------------------------|-------------|-----------------------------|-------------------------|--------------------------|
| Part No.                           | Device Marking | Maximum Allowable Voltage |       | Varistor Voltage (@1mA) |         |      | Clamping Voltage @ Test Current (@8/20μs) |       | Maximum Energy (@10/1000μs) | Maximum Peak Current (@8/20μs) | Rated Power | Typical Capacitance (@1KHz) | UL 1449 4th ,In @8/20us | Related Standards Symbol |
|                                    |                | ACrms(V)                  | DC(V) | Min.                    | Vn(Vdc) | Max. | Vc(V)                                     | Ip(A) | (J)                         | (A)                            | (W)         | (pF)                        | (KA)                    |                          |
| CNR-05N180K                        | 05N180K        | 11                        | 14    | 16                      | 18      | 20   | 36                                        | 1     | 0.9                         | 150                            | 0.02        | 1480                        | 0.15                    | ⊙                        |
| CNR-05N220K                        | 05N220K        | 14                        | 18    | 20                      | 22      | 24   | 43                                        | 1     | 1.1                         | 150                            | 0.02        | 1320                        |                         | ⊙                        |
| CNR-05N270K                        | 05N270K        | 17                        | 22    | 24                      | 27      | 30   | 53                                        | 1     | 1.4                         | 150                            | 0.02        | 1030                        |                         | ⊙                        |
| CNR-05N330K                        | 05N330K        | 20                        | 26    | 30                      | 33      | 36   | 65                                        | 1     | 1.7                         | 150                            | 0.02        | 760                         |                         | ⊙                        |
| CNR-05N390K                        | 05N390K        | 25                        | 31    | 35                      | 39      | 43   | 77                                        | 1     | 2.1                         | 150                            | 0.02        | 720                         |                         | ⊙                        |
| CNR-05N470K                        | 05N470K        | 30                        | 38    | 42                      | 47      | 52   | 93                                        | 1     | 2.5                         | 150                            | 0.02        | 620                         |                         | ⊙                        |
| CNR-05N560K                        | 05N560K        | 35                        | 45    | 50                      | 56      | 62   | 110                                       | 1     | 3.1                         | 150                            | 0.02        | 515                         |                         | ⊙                        |
| CNR-05N680K                        | 05N680K        | 40                        | 56    | 61                      | 68      | 75   | 135                                       | 1     | 3.6                         | 150                            | 0.02        | 450                         |                         | ⊙                        |
| CNR-05N201K                        | 05N201K        | 130                       | 170   | 180                     | 200     | 220  | 340                                       | 10    | 13                          | 1200                           | 0.05        | 70                          | 0.5                     | □                        |
| CNR-05N221K                        | 05N221K        | 140                       | 180   | 198                     | 220     | 242  | 360                                       | 10    | 14                          | 1200                           | 0.25        | 60                          |                         | □                        |
| CNR-05N241K                        | 05N241K        | 150                       | 200   | 216                     | 240     | 264  | 395                                       | 10    | 15                          | 1200                           | 0.25        | 60                          |                         | □                        |
| CNR-05N271K                        | 05N271K        | 175                       | 225   | 243                     | 270     | 297  | 455                                       | 10    | 18                          | 1200                           | 0.25        | 50                          |                         | □                        |
| CNR-05N301K                        | 05N301K        | 195                       | 250   | 270                     | 300     | 330  | 500                                       | 10    | 19                          | 1200                           | 0.25        | 50                          |                         | □                        |
| CNR-05N331K                        | 05N331K        | 215                       | 275   | 297                     | 330     | 363  | 550                                       | 10    | 21                          | 1200                           | 0.25        | 45                          |                         | □                        |
| CNR-05N361K                        | 05N361K        | 230                       | 300   | 324                     | 360     | 396  | 595                                       | 10    | 23                          | 1200                           | 0.25        | 0                           |                         | □                        |
| CNR-05N391K                        | 05N391K        | 250                       | 320   | 351                     | 390     | 429  | 650                                       | 10    | 25                          | 1200                           | 0.25        | 40                          |                         | □                        |
| CNR-05N431K                        | 05N431K        | 275                       | 350   | 387                     | 430     | 473  | 710                                       | 10    | 28                          | 1200                           | 0.25        | 35                          |                         | □                        |
| CNR-05N471K                        | 05N471K        | 300                       | 385   | 423                     | 470     | 517  | 775                                       | 10    | 30                          | 1200                           | 0.25        | 30                          |                         | □                        |
| CNR-05N511K                        | 05N511K        | 320                       | 420   | 459                     | 510     | 561  | 845                                       | 10    | 30                          | 1200                           | 0.25        | 0                           |                         | □                        |
| CNR-05N561K                        | 05N561K        | 350                       | 460   | 504                     | 560     | 616  | 915                                       | 10    | 30                          | 1200                           | 0.25        | 30                          |                         | □                        |
| CNR-05N621K                        | 05N621K        | 395                       | 510   | 558                     | 620     | 682  | 1020                                      | 10    | 30                          | 1200                           | 0.25        | 0                           |                         | □                        |
| CNR-05N681K                        | 05N681K        | 420                       | 560   | 612                     | 680     | 748  | 1120                                      | 10    | 30                          | 1200                           | 0.25        | 20                          |                         | □                        |
| CNR-05N751K                        | 05N751K        | 465                       | 615   | 675                     | 750     | 825  | 1235                                      | 10    | 33                          | 1200                           | 0.25        | 20                          |                         | □                        |

**Related Standards**

|          |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Symbols  | □                                                                                   |                                                                                     | ⊙                                                                                   |                                                                                     |
| Approval |  |  |  |  |

Note : VDE & CQC Certification are under appovaling

| Device Ratings and Characteristics |                |                           |       |                         |         |      |                                           |       |                             |                                |             |                             |                         |                          |
|------------------------------------|----------------|---------------------------|-------|-------------------------|---------|------|-------------------------------------------|-------|-----------------------------|--------------------------------|-------------|-----------------------------|-------------------------|--------------------------|
| Part No.                           | Device Marking | Maximum Allowable Voltage |       | Varistor Voltage (@1mA) |         |      | Clamping Voltage @ Test Current (@8/20μs) |       | Maximum Energy (@10/1000μs) | Maximum Peak Current (@8/20μs) | Rated Power | Typical Capacitance (@1KHz) | UL 1449 4th ,In @8/20us | Related Standards Symbol |
|                                    |                | ACrms(V)                  | DC(V) | Min.                    | Vn(Vdc) | Max. | Vc(V)                                     | Ip(A) | (J)                         | (A)                            | (W)         | (pF)                        | (KA)                    |                          |
| CNR-07N180K                        | 07N180K        | 11                        | 14    | 16                      | 18      | 20   | 36                                        | 2.5   | 2.1                         | 750                            | 0.05        | 3600                        | 0.5                     | ⊙                        |
| CNR-07N220K                        | 07N220K        | 14                        | 18    | 20                      | 22      | 24   | 43                                        | 2.5   | 2.5                         | 750                            | 0.05        | 3200                        |                         | ⊙                        |
| CNR-07N270K                        | 07N270K        | 17                        | 22    | 24                      | 27      | 30   | 53                                        | 2.5   | 3                           | 750                            | 0.05        | 2500                        |                         | ⊙                        |
| CNR-07N330K                        | 07N330K        | 20                        | 26    | 30                      | 33      | 36   | 65                                        | 2.5   | 4                           | 750                            | 0.05        | 1850                        |                         | ⊙                        |
| CNR-07N390K                        | 07N390K        | 25                        | 31    | 35                      | 39      | 43   | 77                                        | 2.5   | 4.6                         | 750                            | 0.05        | 1750                        |                         | ⊙                        |
| CNR-07N470K                        | 07N470K        | 30                        | 38    | 42                      | 47      | 52   | 93                                        | 2.5   | 5.5                         | 750                            | 0.05        | 1500                        |                         | ⊙                        |
| CNR-07N560K                        | 07N560K        | 35                        | 45    | 50                      | 56      | 62   | 110                                       | 2.5   | 7                           | 750                            | 0.05        | 1250                        |                         | ⊙                        |
| CNR-07N680K                        | 07N680K        | 40                        | 56    | 61                      | 68      | 75   | 135                                       | 2.5   | 8.2                         | 750                            | 0.05        | 1100                        |                         | ⊙                        |
| CNR-07N201K                        | 07N201K        | 130                       | 170   | 180                     | 200     | 220  | 340                                       | 25    | 26                          | 2500                           | 0.3         | 220                         | 0.5                     | □                        |
| CNR-07N221K                        | 07N221K        | 140                       | 180   | 198                     | 220     | 242  | 360                                       | 25    | 30                          | 2500                           | 0.3         | 210                         |                         | □                        |
| CNR-07N241K                        | 07N241K        | 150                       | 200   | 216                     | 240     | 264  | 395                                       | 25    | 33                          | 2500                           | 0.3         | 190                         |                         | □                        |
| CNR-07N271K                        | 07N271K        | 175                       | 225   | 243                     | 270     | 297  | 455                                       | 25    | 39                          | 2500                           | 0.3         | 165                         |                         | □                        |
| CNR-07N301K                        | 07N301K        | 195                       | 250   | 270                     | 300     | 330  | 500                                       | 25    | 42                          | 2500                           | 0.3         | 155                         |                         | □                        |
| CNR-07N331K                        | 07N331K        | 215                       | 275   | 297                     | 330     | 363  | 550                                       | 25    | 44                          | 2500                           | 0.3         | 145                         |                         | □                        |
| CNR-07N361K                        | 07N361K        | 230                       | 300   | 324                     | 360     | 396  | 595                                       | 25    | 50                          | 2500                           | 0.3         | 145                         |                         | □                        |
| CNR-07N391K                        | 07N391K        | 250                       | 320   | 351                     | 390     | 429  | 650                                       | 25    | 53                          | 2500                           | 0.3         | 145                         |                         | □                        |
| CNR-07N431K                        | 07N431K        | 275                       | 350   | 387                     | 430     | 473  | 710                                       | 25    | 60                          | 2500                           | 0.3         | 130                         |                         | □                        |
| CNR-07N471K                        | 07N471K        | 300                       | 385   | 423                     | 470     | 517  | 775                                       | 25    | 65                          | 2500                           | 0.3         | 110                         |                         | □                        |
| CNR-07N511K                        | 07N511K        | 320                       | 420   | 459                     | 510     | 561  | 845                                       | 25    | 70                          | 2500                           | 0.3         | 100                         |                         | □                        |
| CNR-07N561K                        | 07N561K        | 350                       | 460   | 504                     | 560     | 616  | 915                                       | 25    | 75                          | 2500                           | 0.3         | 100                         |                         | □                        |
| CNR-07N621K                        | 07N621K        | 395                       | 510   | 558                     | 620     | 682  | 1020                                      | 25    | 80                          | 2500                           | 0.3         | 100                         |                         | □                        |
| CNR-07N681K                        | 07N681K        | 420                       | 560   | 612                     | 680     | 748  | 1120                                      | 25    | 85                          | 2500                           | 0.3         | 90                          |                         | □                        |
| CNR-07N751K                        | 07N751K        | 465                       | 615   | 675                     | 750     | 825  | 1235                                      | 25    | 92                          | 2500                           | 0.3         | 90                          |                         | □                        |
| CNR-07N781K                        | 07N781K        | 485                       | 640   | 702                     | 780     | 858  | 1290                                      | 25    | 102                         | 2500                           | 0.3         | 90                          |                         | □                        |
| CNR-07N821K                        | 07N821K        | 510                       | 670   | 738                     | 820     | 902  | 1355                                      | 25    | 115                         | 2500                           | 0.3         | 80                          |                         | □                        |

**Related Standards**

|          |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |   |  |  |  |  |
|----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---|--|--|--|--|
| Symbols  | □                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | ⊙ |  |  |  |  |
| Approval |  |  |  |  |  |   |  |  |  |  |

Note : VDE & CQC Certification are under appovaling

| Device Ratings and Characteristics |                |                           |       |                         |         |      |                                           |       |                             |                                |             |                             |                         |                          |
|------------------------------------|----------------|---------------------------|-------|-------------------------|---------|------|-------------------------------------------|-------|-----------------------------|--------------------------------|-------------|-----------------------------|-------------------------|--------------------------|
| Part No.                           | Device Marking | Maximum Allowable Voltage |       | Varistor Voltage (@1mA) |         |      | Clamping Voltage @ Test Current (@8/20μs) |       | Maximum Energy (@10/1000μs) | Maximum Peak Current (@8/20μs) | Rated Power | Typical Capacitance (@1KHz) | UL 1449 4th ,In @8/20us | Related Standards Symbol |
|                                    |                | ACrms(V)                  | DC(V) | Min.                    | Vn(Vdc) | Max. | Vc(V)                                     | Ip(A) | (J)                         | (A)                            | (W)         | (pF)                        | (KA)                    |                          |
| CNR-10N180K                        | 10N180K        | 11                        | 14    | 16                      | 18      | 20   | 36                                        | 5     | 4                           | 1500                           | 0.08        | 8000                        | 1                       | ⊙                        |
| CNR-10N220K                        | 10N220K        | 14                        | 18    | 20                      | 22      | 24   | 43                                        | 5     | 5                           | 1500                           | 0.08        | 7000                        |                         | ⊙                        |
| CNR-10N270K                        | 10N270K        | 17                        | 22    | 24                      | 27      | 30   | 53                                        | 5     | 6                           | 1500                           | 0.08        | 5500                        |                         | ⊙                        |
| CNR-10N330K                        | 10N330K        | 20                        | 26    | 30                      | 33      | 36   | 65                                        | 5     | 7.5                         | 1500                           | 0.08        | 4100                        |                         | ⊙                        |
| CNR-10N390K                        | 10N390K        | 25                        | 31    | 35                      | 39      | 43   | 77                                        | 5     | 8.6                         | 1500                           | 0.08        | 3900                        |                         | ⊙                        |
| CNR-10N470K                        | 10N470K        | 30                        | 38    | 42                      | 47      | 52   | 93                                        | 5     | 10                          | 1500                           | 0.08        | 3300                        |                         | ⊙                        |
| CNR-10N560K                        | 10N560K        | 35                        | 45    | 50                      | 56      | 62   | 110                                       | 5     | 11                          | 1500                           | 0.08        | 2800                        |                         | ⊙                        |
| CNR-10N680K                        | 10N680K        | 40                        | 56    | 61                      | 68      | 75   | 135                                       | 5     | 14                          | 1500                           | 0.08        | 2300                        |                         | ⊙                        |
| CNR-10N201K                        | 10N201K        | 130                       | 170   | 180                     | 200     | 220  | 340                                       | 50    | 52                          | 4500                           | 0.5         | 420                         | 2                       | □                        |
| CNR-10N221K                        | 10N221K        | 140                       | 180   | 198                     | 220     | 242  | 360                                       | 50    | 58                          | 4500                           | 0.5         | 390                         |                         | □                        |
| CNR-10N241K                        | 10N241K        | 150                       | 200   | 216                     | 240     | 264  | 395                                       | 50    | 64                          | 4500                           | 0.5         | 360                         |                         | □                        |
| CNR-10N271K                        | 10N271K        | 175                       | 225   | 243                     | 270     | 297  | 455                                       | 50    | 67                          | 4500                           | 0.5         | 330                         |                         | □                        |
| CNR-10N301K                        | 10N301K        | 195                       | 250   | 270                     | 300     | 330  | 500                                       | 50    | 70                          | 4500                           | 0.5         | 300                         |                         | □                        |
| CNR-10N331K                        | 10N331K        | 215                       | 275   | 297                     | 330     | 363  | 550                                       | 50    | 78                          | 4500                           | 0.5         | 270                         |                         | □                        |
| CNR-10N361K                        | 10N361K        | 230                       | 300   | 324                     | 360     | 396  | 595                                       | 50    | 84                          | 4500                           | 0.5         | 250                         |                         | □                        |
| CNR-10N391K                        | 10N391K        | 250                       | 320   | 351                     | 390     | 429  | 650                                       | 50    | 91                          | 4500                           | 0.5         | 230                         |                         | □                        |
| CNR-10N431K                        | 10N431K        | 275                       | 350   | 387                     | 430     | 473  | 710                                       | 50    | 99                          | 4500                           | 0.5         | 220                         |                         | □                        |
| CNR-10N471K                        | 10N471K        | 300                       | 385   | 423                     | 470     | 517  | 775                                       | 50    | 107                         | 4500                           | 0.5         | 200                         |                         | □                        |
| CNR-10N511K                        | 10N511K        | 320                       | 420   | 459                     | 510     | 561  | 845                                       | 50    | 117                         | 4500                           | 0.5         | 190                         |                         | □                        |
| CNR-10N561K                        | 10N561K        | 350                       | 460   | 504                     | 560     | 616  | 915                                       | 50    | 125                         | 4500                           | 0.5         | 180                         |                         | □                        |
| CNR-10N621K                        | 10N621K        | 395                       | 510   | 558                     | 620     | 682  | 1020                                      | 50    | 128                         | 4500                           | 0.5         | 160                         |                         | □                        |
| CNR-10N681K                        | 10N681K        | 420                       | 560   | 612                     | 680     | 748  | 1120                                      | 50    | 134                         | 4500                           | 0.5         | 140                         |                         | □                        |
| CNR-10N751K                        | 10N751K        | 465                       | 615   | 675                     | 750     | 825  | 1235                                      | 50    | 146                         | 4500                           | 0.5         | 130                         |                         | □                        |

**Related Standards**

|          |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Symbols  | □                                                                                   |                                                                                     | ⊙                                                                                   |                                                                                     |
| Approval |  |  |  |  |

Note : VDE & CQC Certification are under appovaling

| Device Ratings and Characteristics |                |                           |       |                         |         |      |                                           |       |                             |                                |             |                             |                         |                          |
|------------------------------------|----------------|---------------------------|-------|-------------------------|---------|------|-------------------------------------------|-------|-----------------------------|--------------------------------|-------------|-----------------------------|-------------------------|--------------------------|
| Part No.                           | Device Marking | Maximum Allowable Voltage |       | Varistor Voltage (@1mA) |         |      | Clamping Voltage @ Test Current (@8/20μs) |       | Maximum Energy (@10/1000μs) | Maximum Peak Current (@8/20μs) | Rated Power | Typical Capacitance (@1KHz) | UL 1449 4th ,In @8/20us | Related Standards Symbol |
|                                    |                | ACrms(V)                  | DC(V) | Min.                    | Vn(Vdc) | Max. | Vc(V)                                     | Ip(A) | (J)                         | (A)                            | (W)         | (pF)                        | (KA)                    |                          |
| CNR-14N180K                        | 14N180K        | 11                        | 14    | 16                      | 18      | 20   | 36                                        | 10    | 11                          | 3000                           | 0.15        | 18500                       | 2                       | ⊙                        |
| CNR-14N220K                        | 14N220K        | 14                        | 18    | 20                      | 22      | 24   | 43                                        | 10    | 14                          | 3000                           | 0.15        | 16400                       |                         | ⊙                        |
| CNR-14N270K                        | 14N270K        | 17                        | 22    | 24                      | 27      | 30   | 53                                        | 10    | 18                          | 3000                           | 0.15        | 13000                       |                         | ⊙                        |
| CNR-14N330K                        | 14N330K        | 20                        | 26    | 30                      | 33      | 36   | 65                                        | 10    | 23                          | 3000                           | 0.15        | 9500                        |                         | ⊙                        |
| CNR-14N390K                        | 14N390K        | 25                        | 31    | 35                      | 39      | 43   | 77                                        | 10    | 26                          | 3000                           | 0.15        | 8800                        |                         | ⊙                        |
| CNR-14N470K                        | 14N470K        | 30                        | 38    | 42                      | 47      | 52   | 93                                        | 10    | 33                          | 3000                           | 0.15        | 7700                        |                         | ⊙                        |
| CNR-14N560K                        | 14N560K        | 35                        | 45    | 50                      | 56      | 62   | 110                                       | 10    | 41                          | 3000                           | 0.15        | 6400                        |                         | ⊙                        |
| CNR-14N680K                        | 14N680K        | 40                        | 56    | 61                      | 68      | 75   | 135                                       | 10    | 46                          | 3000                           | 0.15        | 5600                        |                         | ⊙                        |
| CNR-14N201K                        | 14N201K        | 130                       | 170   | 180                     | 200     | 220  | 340                                       | 100   | 140                         | 10000                          | 1           | 860                         | 3                       | □                        |
| CNR-14N221K                        | 14N221K        | 140                       | 180   | 198                     | 220     | 242  | 360                                       | 100   | 155                         | 10000                          | 1           | 810                         |                         | □                        |
| CNR-14N241K                        | 14N241K        | 150                       | 200   | 216                     | 240     | 264  | 395                                       | 100   | 168                         | 10000                          | 1           | 860                         |                         | □                        |
| CNR-14N271K                        | 14N271K        | 175                       | 225   | 243                     | 270     | 297  | 455                                       | 100   | 190                         | 10000                          | 1           | 700                         |                         | □                        |
| CNR-14N301K                        | 14N301K        | 195                       | 250   | 270                     | 300     | 330  | 500                                       | 100   | 209                         | 10000                          | 1           | 640                         |                         | □                        |
| CNR-14N331K                        | 14N331K        | 215                       | 275   | 297                     | 330     | 363  | 550                                       | 100   | 228                         | 10000                          | 1           | 580                         |                         | □                        |
| CNR-14N361K                        | 14N361K        | 230                       | 300   | 324                     | 360     | 396  | 595                                       | 100   | 255                         | 10000                          | 1           | 530                         |                         | □                        |
| CNR-14N391K                        | 14N391K        | 250                       | 320   | 351                     | 390     | 429  | 650                                       | 100   | 275                         | 10000                          | 1           | 480                         |                         | □                        |
| CNR-14N431K                        | 14N431K        | 275                       | 350   | 387                     | 430     | 473  | 710                                       | 100   | 303                         | 10000                          | 1           | 430                         |                         | □                        |
| CNR-14N471K                        | 14N471K        | 300                       | 385   | 423                     | 470     | 517  | 775                                       | 100   | 350                         | 10000                          | 1           | 380                         |                         | □                        |
| CNR-14N511K                        | 14N511K        | 320                       | 410   | 459                     | 510     | 561  | 845                                       | 100   | 382                         | 10000                          | 1           | 350                         |                         | □                        |
| CNR-14N561K                        | 14N561K        | 350                       | 460   | 504                     | 560     | 616  | 915                                       | 100   | 382                         | 10000                          | 1           | 320                         |                         | □                        |
| CNR-14N621K                        | 14N621K        | 395                       | 510   | 558                     | 620     | 682  | 1020                                      | 100   | 382                         | 7500                           | 1           | 300                         |                         | □                        |
| CNR-14N681K                        | 14N681K        | 420                       | 560   | 612                     | 680     | 748  | 1120                                      | 100   | 382                         | 7500                           | 1           | 270                         |                         | □                        |
| CNR-14N751K                        | 14N751K        | 465                       | 615   | 675                     | 750     | 825  | 1235                                      | 100   | 420                         | 7500                           | 1           | 250                         |                         | □                        |

**Related Standards**

|          |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Symbols  | □                                                                                   |                                                                                     | ⊙                                                                                   |                                                                                     |
| Approval |  |  |  |  |

Note : VDE & CQC Certification are under appovaling

| Device Ratings and Characteristics |                |                           |       |                         |         |      |                                           |       |                             |                                |             |                             |                         |                          |
|------------------------------------|----------------|---------------------------|-------|-------------------------|---------|------|-------------------------------------------|-------|-----------------------------|--------------------------------|-------------|-----------------------------|-------------------------|--------------------------|
| Part No.                           | Device Marking | Maximum Allowable Voltage |       | Varistor Voltage (@1mA) |         |      | Clamping Voltage @ Test Current (@8/20μs) |       | Maximum Energy (@10/1000μs) | Maximum Peak Current (@8/20μs) | Rated Power | Typical Capacitance (@1KHz) | UL 1449 4th ,In @8/20us | Related Standards Symbol |
|                                    |                | ACrms(V)                  | DC(V) | Min.                    | Vn(Vdc) | Max. | Vc(V)                                     | Ip(A) | (J)                         | (A)                            | (W)         | (pF)                        | (KA)                    |                          |
| CNR-18N180K                        | 18N180K        | 11                        | 14    | 16                      | 18      | 20   | 36                                        | 15    | 22                          | 4500                           | 0.2         | 18500                       | 3                       | ⊙                        |
| CNR-18N220K                        | 18N220K        | 14                        | 18    | 20                      | 22      | 24   | 43                                        | 15    | 28                          | 4500                           | 0.2         | 16400                       |                         | ⊙                        |
| CNR-18N270K                        | 18N270K        | 17                        | 22    | 24                      | 27      | 30   | 53                                        | 15    | 36                          | 4500                           | 0.2         | 13000                       |                         | ⊙                        |
| CNR-18N330K                        | 18N330K        | 20                        | 26    | 30                      | 33      | 36   | 65                                        | 15    | 46                          | 4500                           | 0.2         | 9500                        |                         | ⊙                        |
| CNR-18N390K                        | 18N390K        | 25                        | 31    | 35                      | 39      | 43   | 77                                        | 15    | 52                          | 4500                           | 0.2         | 8800                        |                         | ⊙                        |
| CNR-18N470K                        | 18N470K        | 30                        | 38    | 42                      | 47      | 52   | 93                                        | 15    | 66                          | 4500                           | 0.2         | 7700                        |                         | ⊙                        |
| CNR-18N560K                        | 18N560K        | 35                        | 45    | 50                      | 56      | 62   | 110                                       | 15    | 82                          | 4500                           | 0.2         | 6400                        |                         | ⊙                        |
| CNR-18N680K                        | 18N680K        | 40                        | 56    | 61                      | 68      | 75   | 135                                       | 15    | 92                          | 4500                           | 0.2         | 5600                        |                         | ⊙                        |
| CNR-18N201K                        | 18N201K        | 130                       | 170   | 180                     | 200     | 220  | 340                                       | 125   | 252                         | 15000                          | 1           | 860                         | 5                       | □                        |
| CNR-18N221K                        | 18N221K        | 140                       | 180   | 198                     | 220     | 242  | 360                                       | 125   | 279                         | 15000                          | 1           | 810                         |                         | □                        |
| CNR-18N241K                        | 18N241K        | 150                       | 200   | 216                     | 240     | 264  | 395                                       | 125   | 302                         | 15000                          | 1           | 860                         |                         | □                        |
| CNR-18N271K                        | 18N271K        | 175                       | 225   | 243                     | 270     | 297  | 455                                       | 125   | 342                         | 15000                          | 1           | 700                         |                         | □                        |
| CNR-18N301K                        | 18N301K        | 195                       | 250   | 270                     | 300     | 330  | 500                                       | 125   | 376                         | 15000                          | 1           | 640                         |                         | □                        |
| CNR-18N331K                        | 18N331K        | 210                       | 275   | 297                     | 330     | 363  | 550                                       | 125   | 410                         | 15000                          | 1           | 580                         |                         | □                        |
| CNR-18N361K                        | 18N361K        | 230                       | 300   | 324                     | 360     | 396  | 595                                       | 125   | 405                         | 15000                          | 1           | 530                         |                         | □                        |
| CNR-18N391K                        | 18N391K        | 250                       | 320   | 351                     | 390     | 429  | 650                                       | 125   | 495                         | 15000                          | 1           | 480                         |                         | □                        |
| CNR-18N431K                        | 18N431K        | 275                       | 350   | 387                     | 430     | 473  | 710                                       | 125   | 545                         | 15000                          | 1           | 430                         |                         | □                        |
| CNR-18N471K                        | 18N471K        | 300                       | 385   | 423                     | 470     | 517  | 775                                       | 125   | 630                         | 15000                          | 1           | 380                         |                         | □                        |
| CNR-18N511K                        | 18N511K        | 320                       | 418   | 459                     | 510     | 561  | 845                                       | 125   | 687                         | 15000                          | 1           | 350                         |                         | □                        |
| CNR-18N561K                        | 18N561K        | 350                       | 460   | 504                     | 560     | 616  | 915                                       | 125   | 687                         | 15000                          | 1           | 320                         |                         | □                        |
| CNR-18N621K                        | 18N621K        | 385                       | 505   | 558                     | 620     | 682  | 1020                                      | 125   | 687                         | 12000                          | 1           | 300                         |                         | □                        |
| CNR-18N681K                        | 18N681K        | 420                       | 560   | 612                     | 680     | 748  | 1120                                      | 125   | 687                         | 12000                          | 1           | 270                         |                         | □                        |
| CNR-18N751K                        | 18N751K        | 460                       | 615   | 675                     | 750     | 825  | 1235                                      | 125   | 756                         | 12000                          | 1           | 240                         |                         | □                        |

#### Related Standards

|          |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Symbols  | □                                                                                   |                                                                                     | ⊙                                                                                   |                                                                                     |
| Approval |  |  |  |  |

Note : VDE & CQC Certification are under appovaling

| Device Ratings and Characteristics |                |                           |       |                         |         |      |                                           |       |                             |                                |             |                             |                         |                          |
|------------------------------------|----------------|---------------------------|-------|-------------------------|---------|------|-------------------------------------------|-------|-----------------------------|--------------------------------|-------------|-----------------------------|-------------------------|--------------------------|
| Part No.                           | Device Marking | Maximum Allowable Voltage |       | Varistor Voltage (@1mA) |         |      | Clamping Voltage @ Test Current (@8/20μs) |       | Maximum Energy (@10/1000μs) | Maximum Peak Current (@8/20μs) | Rated Power | Typical Capacitance (@1KHz) | UL 1449 4th ,In @8/20us | Related Standards Symbol |
|                                    |                | ACrms(V)                  | DC(V) | Min.                    | Vn(Vdc) | Max. | Vc(V)                                     | Ip(A) | (J)                         | (A)                            | (W)         | (pF)                        | (KA)                    |                          |
| CNR-20N180K                        | 20N180K        | 11                        | 14    | 16                      | 18      | 20   | 36                                        | 20    | 28                          | 6000                           | 0.3         | 42000                       | 3                       | ⊙                        |
| CNR-20N220K                        | 20N220K        | 14                        | 18    | 20                      | 22      | 24   | 43                                        | 20    | 36                          | 6000                           | 0.3         | 37000                       |                         | ⊙                        |
| CNR-20N270K                        | 20N270K        | 17                        | 22    | 24                      | 27      | 30   | 53                                        | 20    | 46                          | 6000                           | 0.3         | 29200                       |                         | ⊙                        |
| CNR-20N330K                        | 20N330K        | 20                        | 26    | 30                      | 33      | 36   | 65                                        | 20    | 59                          | 6000                           | 0.3         | 21400                       |                         | ⊙                        |
| CNR-20N390K                        | 20N390K        | 25                        | 31    | 35                      | 39      | 43   | 77                                        | 20    | 67                          | 6000                           | 0.3         | 19800                       |                         | ⊙                        |
| CNR-20N470K                        | 20N470K        | 30                        | 38    | 42                      | 47      | 52   | 93                                        | 20    | 85                          | 6000                           | 0.3         | 17300                       |                         | ⊙                        |
| CNR-20N560K                        | 20N560K        | 35                        | 45    | 50                      | 56      | 62   | 110                                       | 20    | 106                         | 6000                           | 0.3         | 14400                       |                         | ⊙                        |
| CNR-20N680K                        | 20N680K        | 40                        | 56    | 61                      | 68      | 75   | 135                                       | 20    | 119                         | 6000                           | 0.3         | 12600                       |                         | ⊙                        |
| CNR-20N201K                        | 20N201K        | 130                       | 170   | 180                     | 200     | 220  | 340                                       | 200   | 200                         | 20000                          | 1           | 2125                        | 5                       | □                        |
| CNR-20N221K                        | 20N221K        | 140                       | 180   | 198                     | 220     | 242  | 360                                       | 200   | 215                         | 20000                          | 1           | 2000                        |                         | □                        |
| CNR-20N241K                        | 20N241K        | 150                       | 200   | 216                     | 240     | 264  | 395                                       | 200   | 235                         | 20000                          | 1           | 1875                        |                         | □                        |
| CNR-20N271K                        | 20N271K        | 175                       | 225   | 243                     | 270     | 297  | 455                                       | 200   | 275                         | 20000                          | 1           | 1625                        |                         | □                        |
| CNR-20N301K                        | 20N301K        | 195                       | 250   | 270                     | 300     | 330  | 500                                       | 200   | 295                         | 20000                          | 1           | 1500                        |                         | □                        |
| CNR-20N331K                        | 20N331K        | 215                       | 275   | 297                     | 330     | 363  | 550                                       | 200   | 320                         | 20000                          | 1           | 1375                        |                         | □                        |
| CNR-20N361K                        | 20N361K        | 230                       | 300   | 324                     | 360     | 396  | 595                                       | 200   | 350                         | 20000                          | 1           | 1375                        |                         | □                        |
| CNR-20N391K                        | 20N391K        | 250                       | 320   | 351                     | 390     | 429  | 650                                       | 200   | 385                         | 20000                          | 1           | 1375                        |                         | □                        |
| CNR-20N431K                        | 20N431K        | 275                       | 350   | 387                     | 430     | 473  | 710                                       | 200   | 425                         | 20000                          | 1           | 1250                        |                         | □                        |
| CNR-20N471K                        | 20N471K        | 300                       | 385   | 423                     | 470     | 517  | 775                                       | 200   | 450                         | 20000                          | 1           | 1125                        |                         | □                        |
| CNR-20N511K                        | 20N511K        | 320                       | 410   | 459                     | 510     | 561  | 845                                       | 200   | 500                         | 20000                          | 1           | 1000                        |                         | □                        |
| CNR-20N561K                        | 20N561K        | 350                       | 460   | 504                     | 560     | 616  | 915                                       | 200   | 520                         | 20000                          | 1           | 938                         |                         | □                        |
| CNR-20N621K                        | 20N621K        | 395                       | 510   | 558                     | 620     | 682  | 1020                                      | 200   | 590                         | 15000                          | 1           | 713                         |                         | □                        |
| CNR-20N681K                        | 20N681K        | 420                       | 560   | 612                     | 680     | 748  | 1120                                      | 200   | 650                         | 15000                          | 1           | 688                         |                         | □                        |
| CNR-20N751K                        | 20N751K        | 465                       | 615   | 675                     | 750     | 825  | 1235                                      | 200   | 725                         | 15000                          | 1           | 663                         |                         | □                        |

**Related Standards**

|          |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |   |
|----------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---|
| Symbols  | □                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | ⊙ |
| Approval |  |  |  |  |  |   |

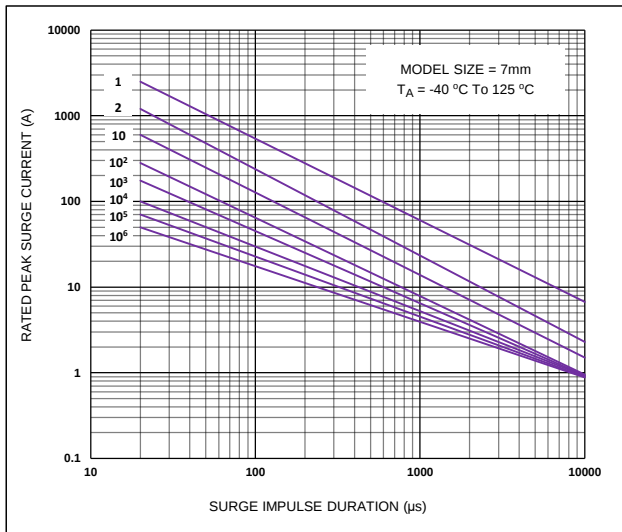
Note : VDE & CQC Certification are under appovaling

**Reliability**

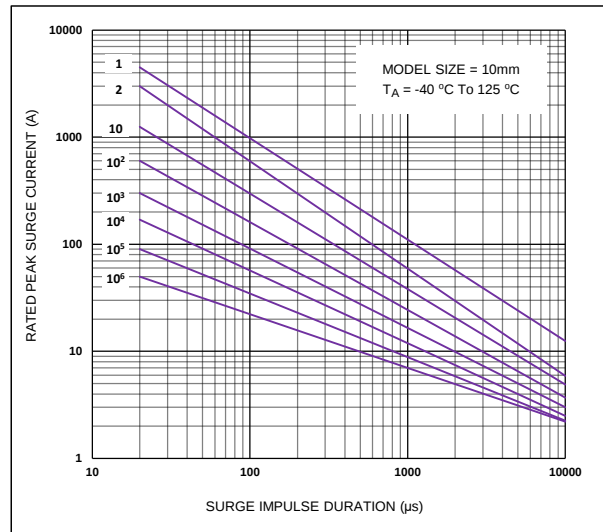
| Characteristics                      | Standard       | Test condition / Methods                                                                                                      | Specifications                   |
|--------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Single peak current                  | IEC61051-1     | The maximum current within the varistor voltage change of ±10% with the standard impulse current (8/20 μs) applied one times. | △V/V ≤±10%                       |
| Nominal discharge current test       | UL 1449 4th    | Refer to UL 1449 4th item 41.1, the test condition is 8/20 μs surge current waveform for 15 times.                            | △V/V ≤ ±10%<br>No visible damage |
| Multiple pulse capability            | IEC61051-1     | Refer to Impulse life rating curve 100 times current.                                                                         | △V/V ≤ ±10%<br>No visible damage |
| Energy                               | IEC61051-1     | The maximum energy within the varistor voltage change of±10% when one impulse of 2 ms or 10/1000 μs is applied.               | △V/V ≤±10%                       |
| Robustness of Terminations (Tensile) | IEC 60068-2-21 | After Gradually applying the specified force and keep the unit fixed for 10±1 sec.<br>Terminal diameter                       |                                  |

Impulse Life Time Rating Curves

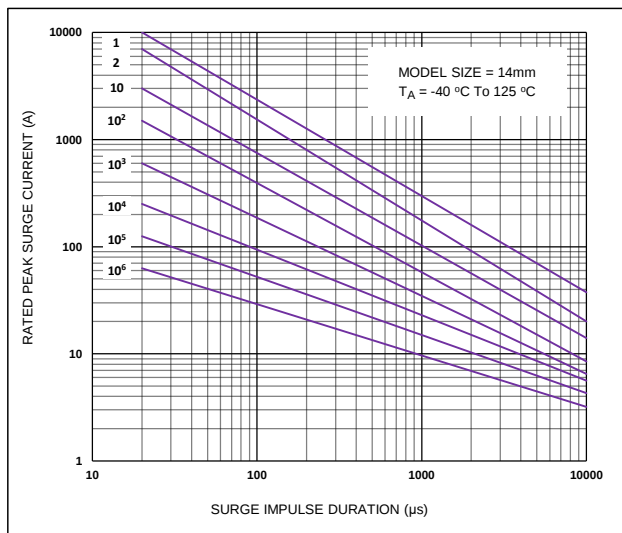
CNR-07N201K to CNR-07N821K



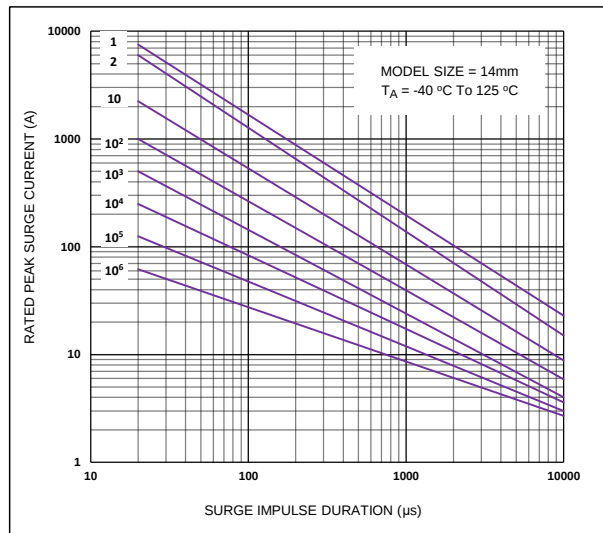
CNR-10N201K to CNR-10N112K



CNR-14N201K to CNR-14N561K

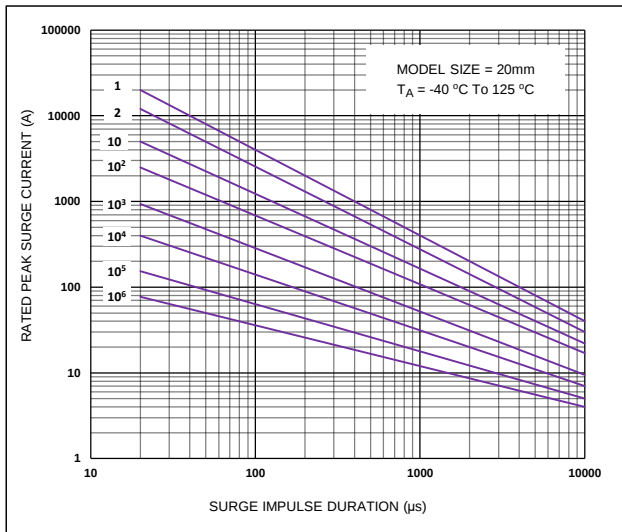


CNR-14N621K to CNR-14N112K

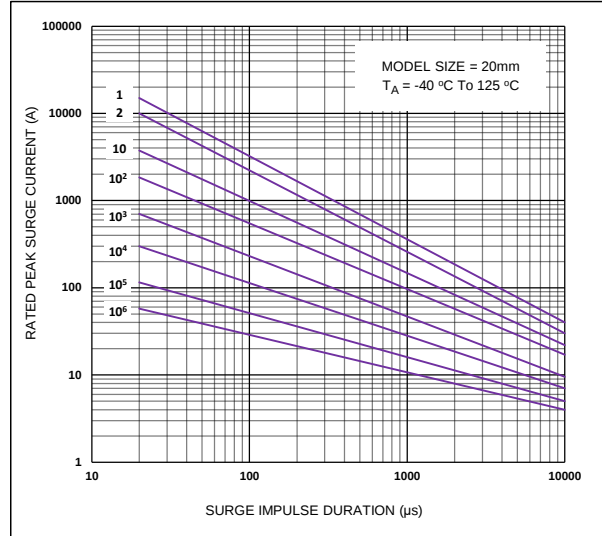


Impulse Life Time Rating Curves

CNR-20N201K to CNR-20N561K

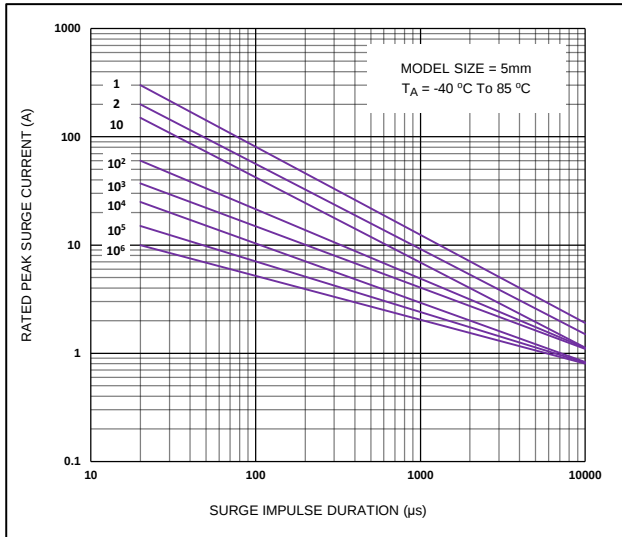


CNR-20N621K to CNR-20N112K

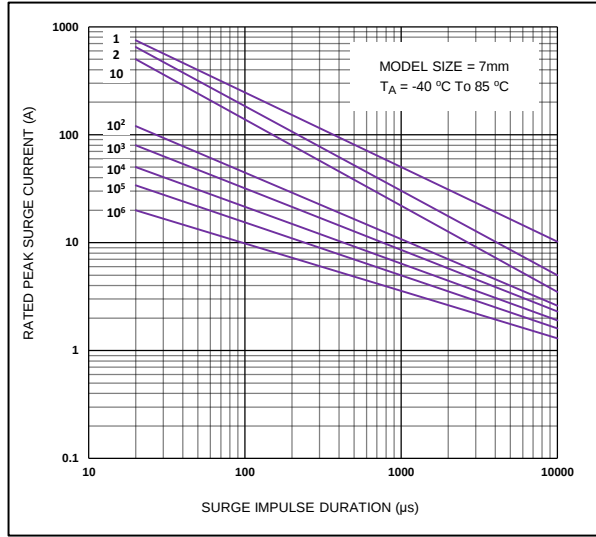


Impulse Life Time Rating Curves

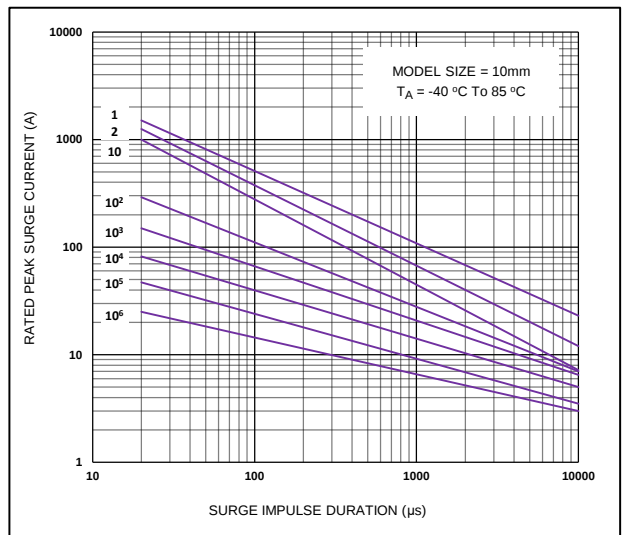
CNR-05N180K to CNR-05N680K



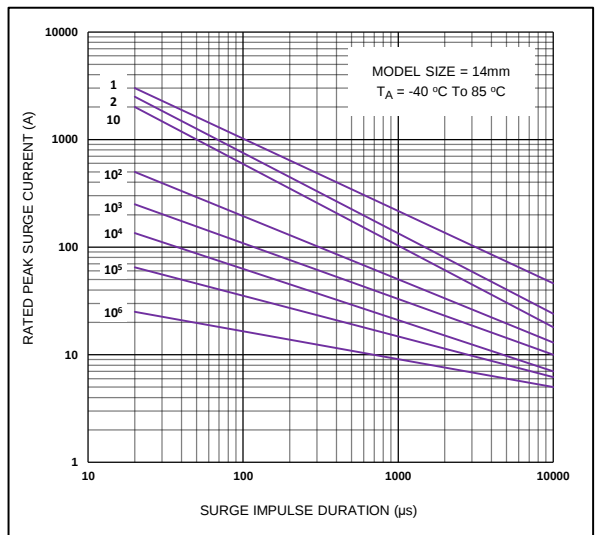
CNR-07N180K to CNR-07N680K



CNR-10N180K to CNR-10N680K

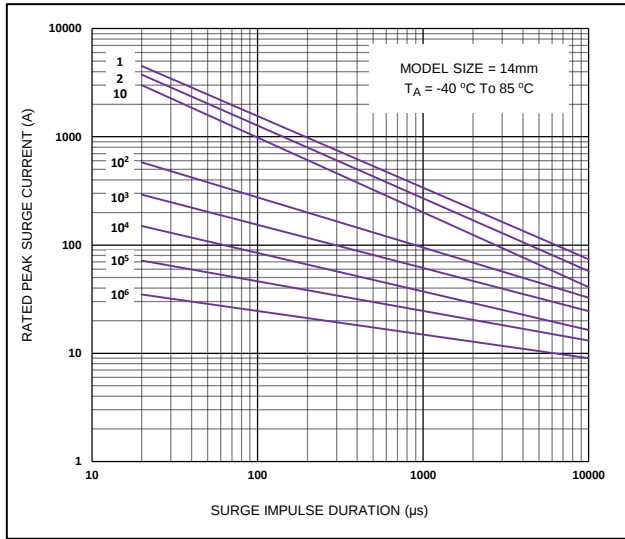


CNR-14C180K to CNR-14C680K

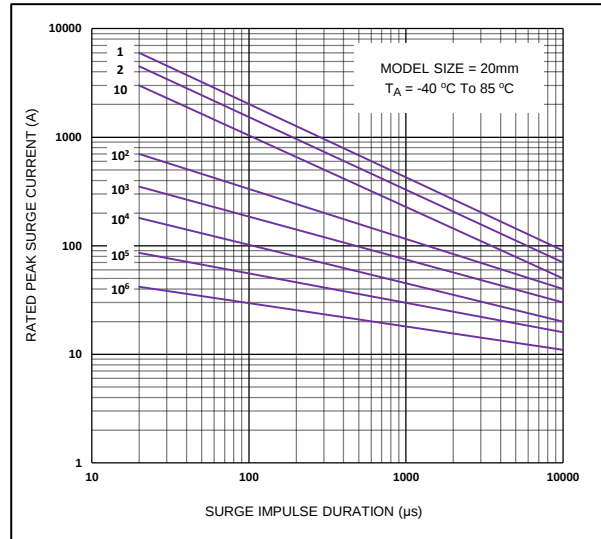


Impulse Life Time Rating Curves

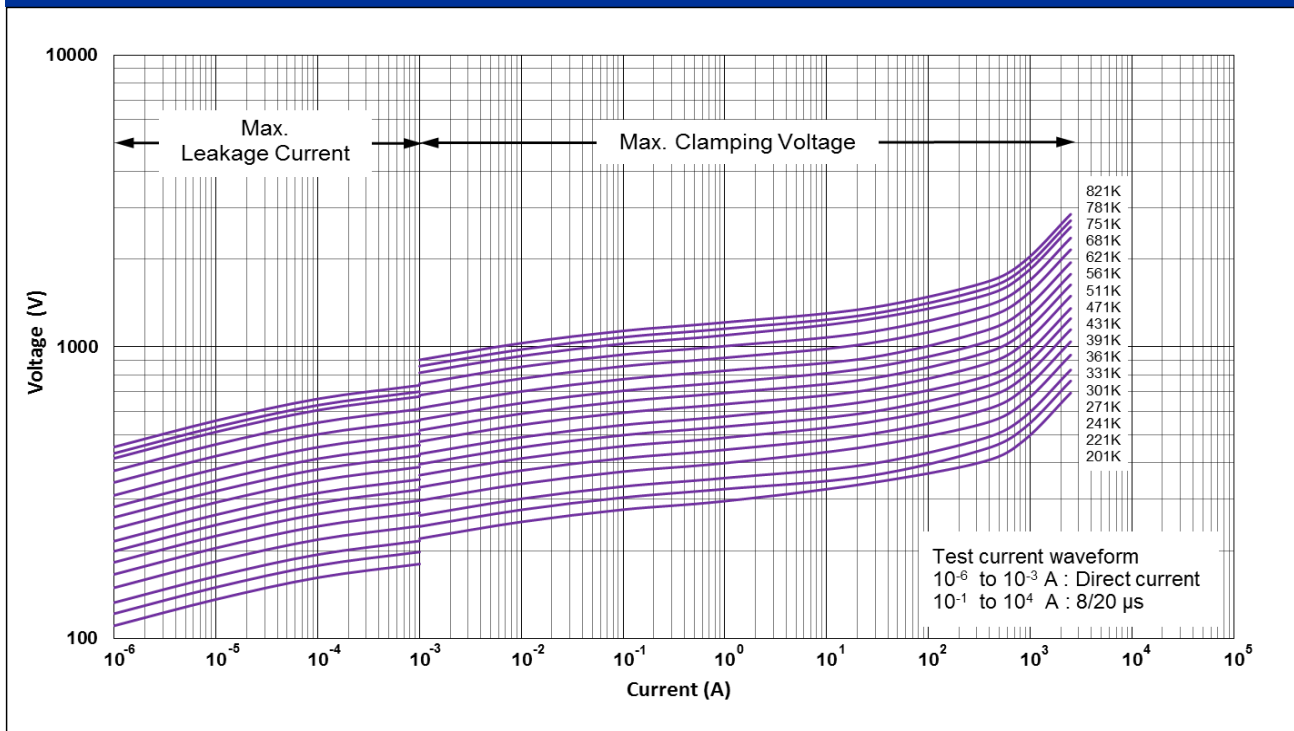
CNR-18N180K to CNR-18N680K



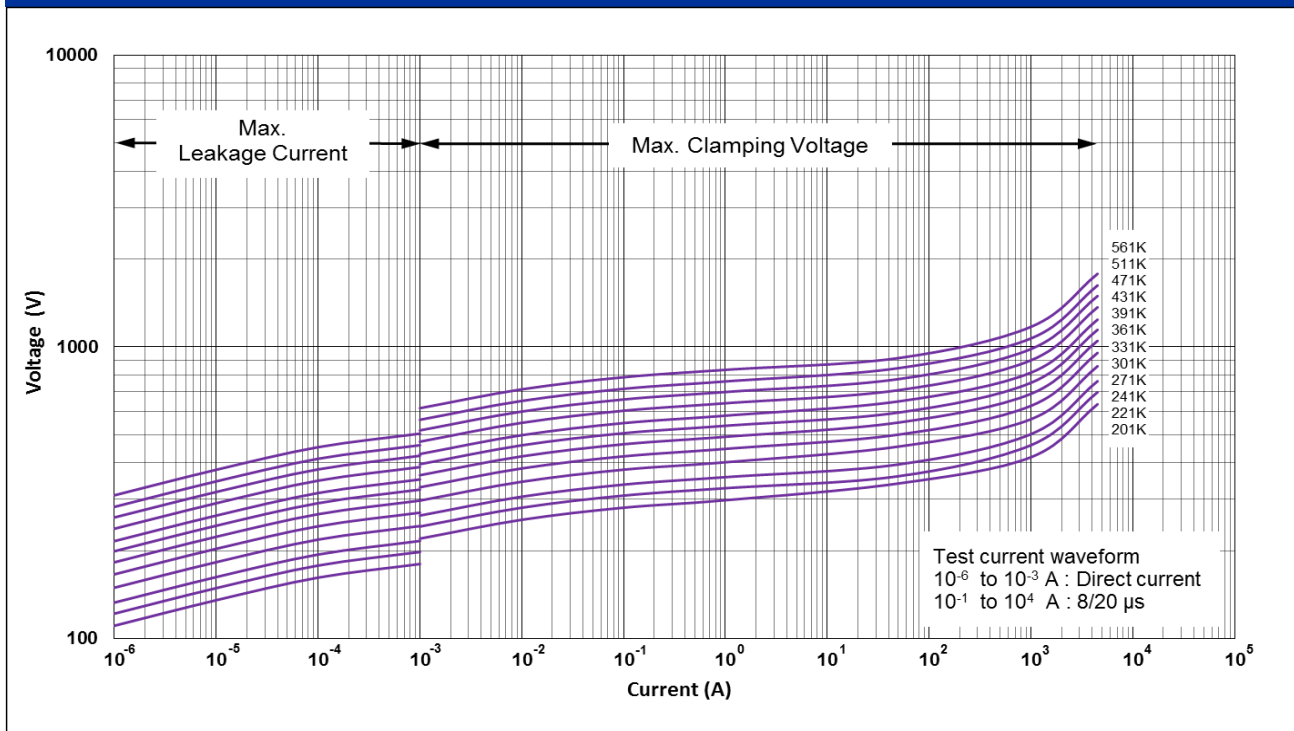
CNR-20N180K to CNR-20N680K



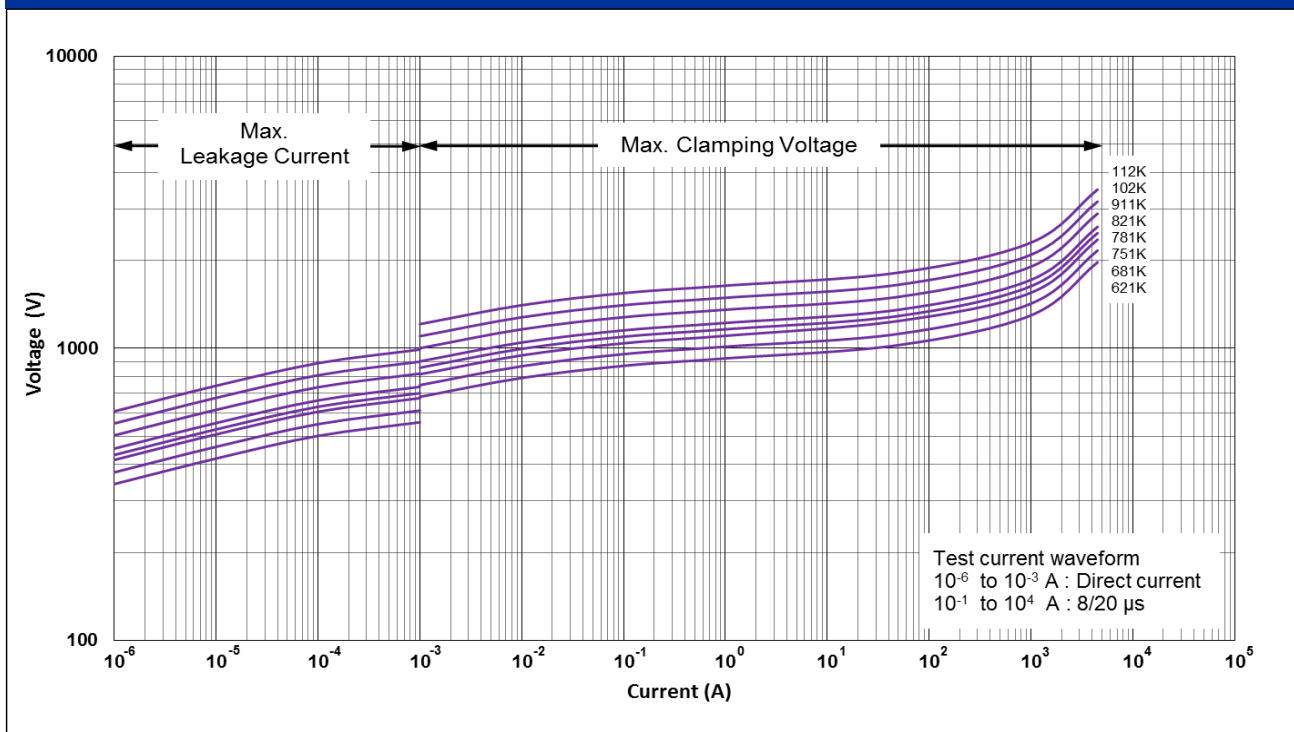
CNR-07N201K to CNR-07N821K V-I Curves



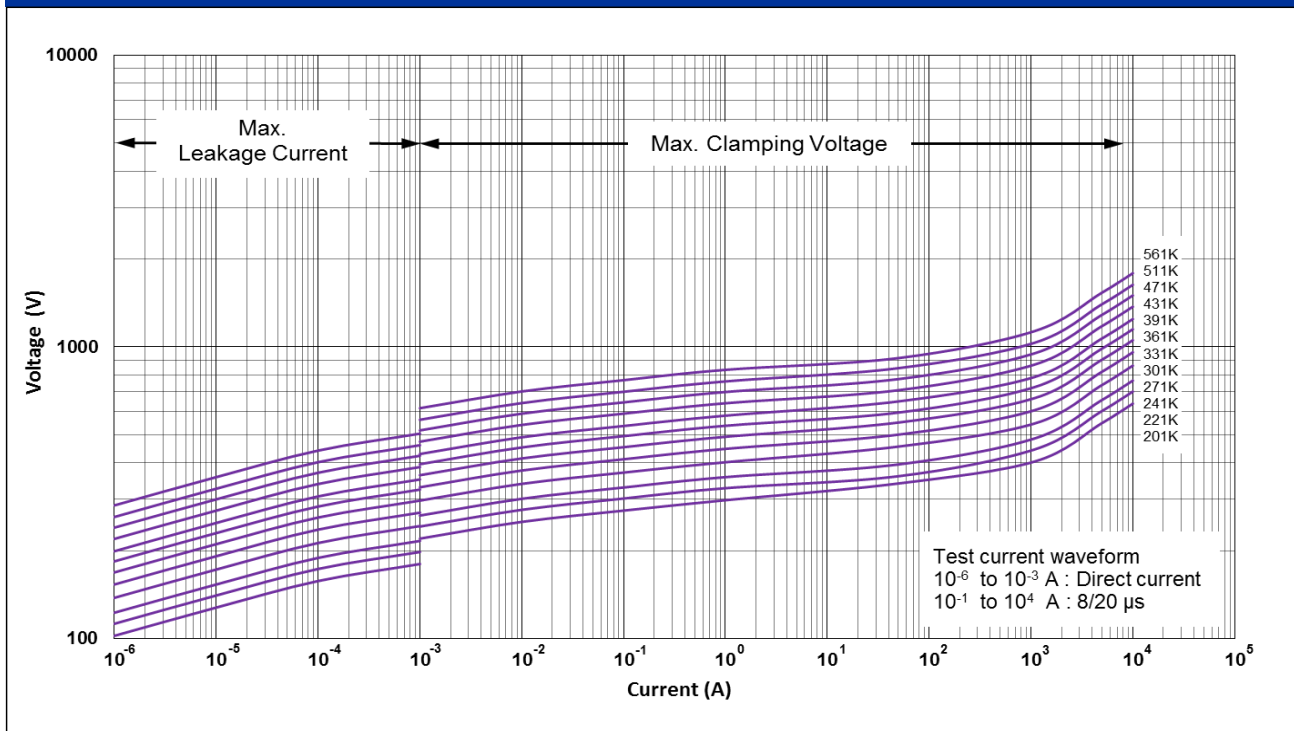
CNR-10N201K to CNR-10N561K V-I Curves



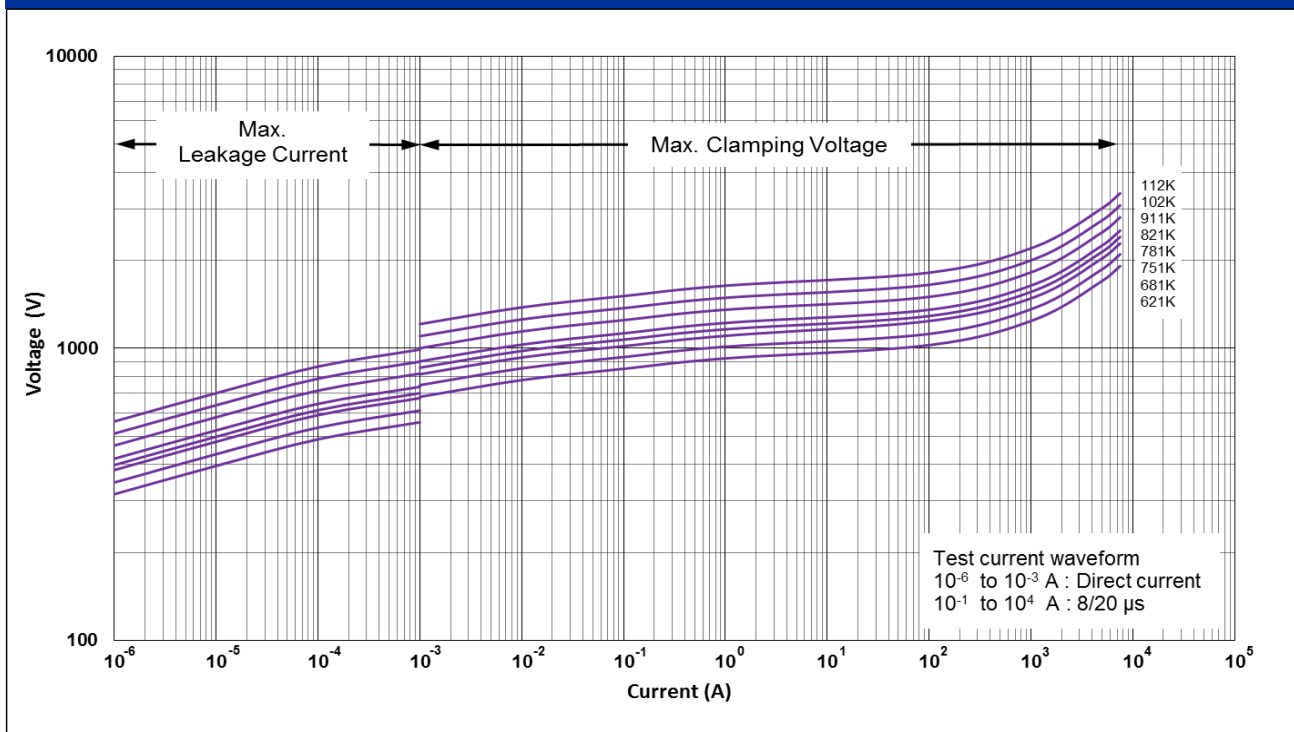
CNR-10N621K to CNR-10N112K V-I Curves



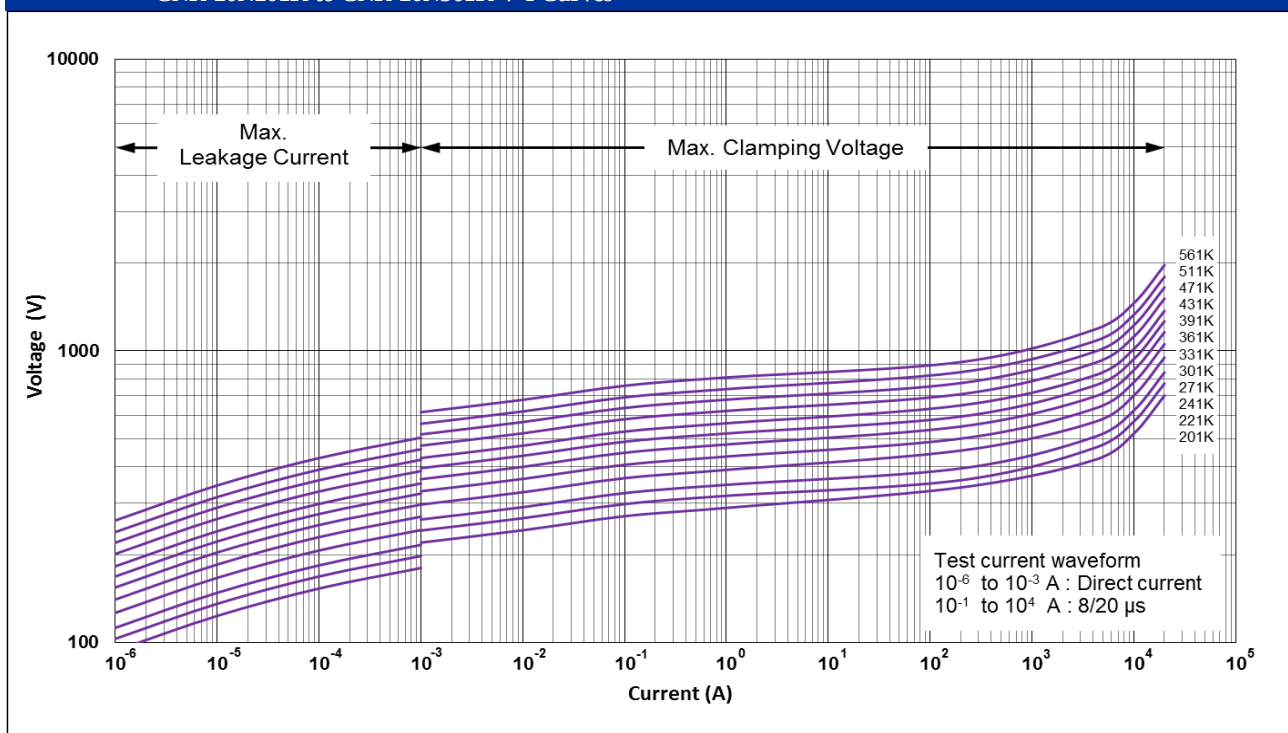
CNR-14N201K to CNR-14N561K V-I Curves



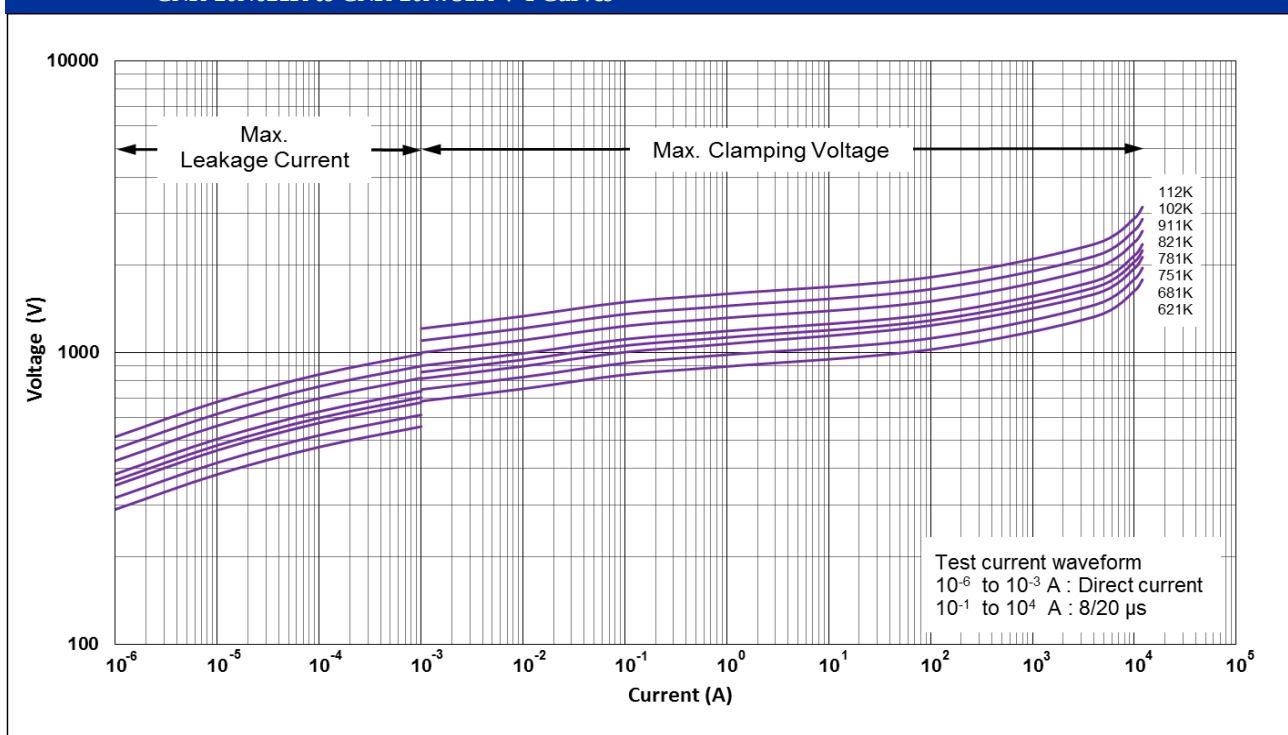
CNR-14N621K to CNR-14N751K V-I Curves



CNR-20N201K to CNR-20N561K V-I Curves

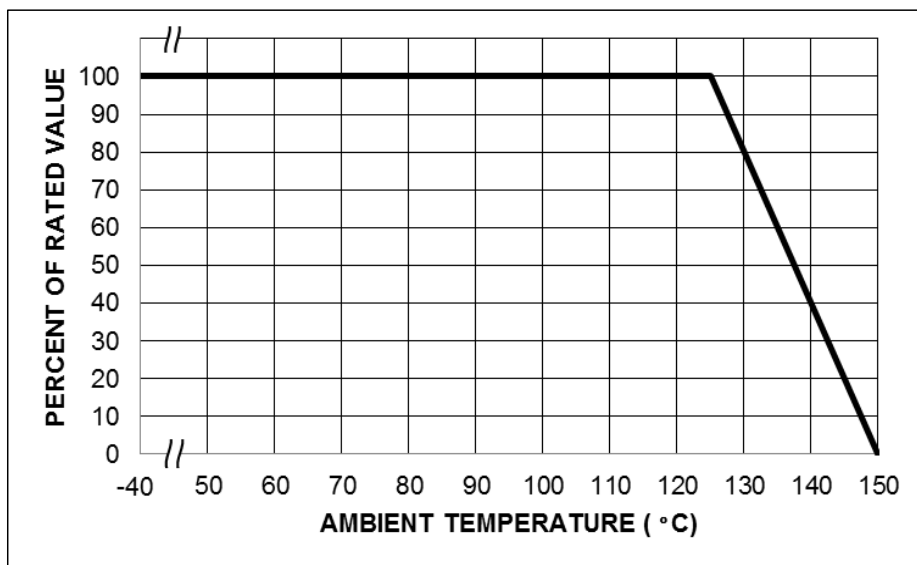


CNR-20N621K to CNR-20N751K V-I Curves

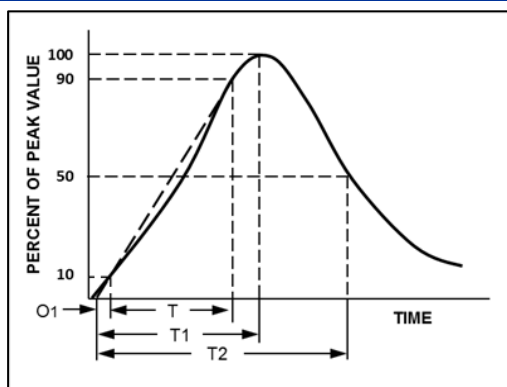


### Power Derating Curve

Should transients occur in rapid succession, the average power dissipation is the energy (watt-seconds) per pulse times the number of pulses per second. The power so developed must be with the specifications shown on the Device Ratings and Specifications Table for the specific device. The operating values of a MOV need to be derated at high temperatures as shown above. Because varistors only dissipate a relatively small amount of average power they are not suitable for repetitive applications that involve substantial amounts of average power dissipation.



### Surge Current Standard Waveform



O1 = Virtual Origin of Wave

T = Time from 10% to 90% of Peak

T1 = Rise Time = 1.25 x T

T2 = Decay Time

Example - For an 8/20  $\mu$ s Current Waveform:

8 $\mu$ s = T1 = Rise Time

20 $\mu$ s = T2 = Decay Time

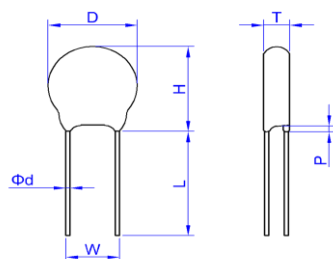


Fig 1. Straight Lead

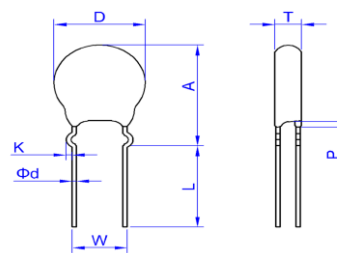


Fig 2. Outside Kink Lead

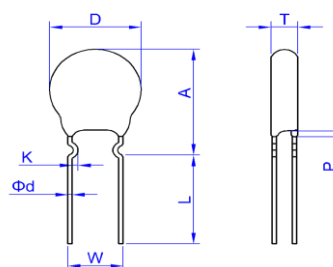


Fig 3. Inside Kink Lead

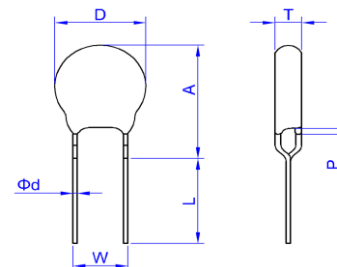


Fig 4. In Line Kink Lead

Dimension Table

Unit:mm

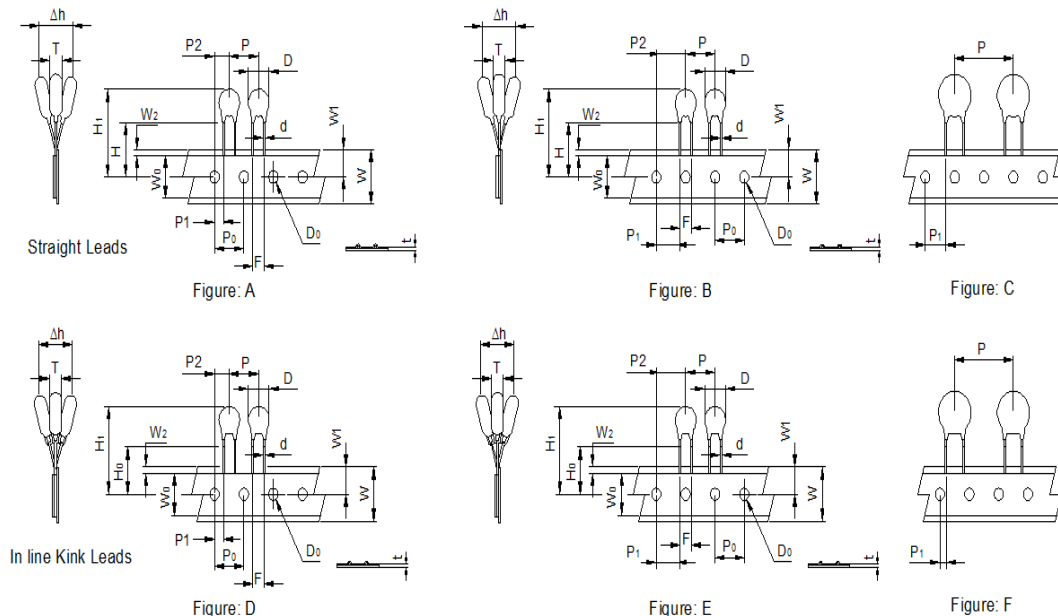
| Model              |           | 05N            |      | 07N  |      | 10N  |      | 14N  |      | 18N  |      | 20N  |      |
|--------------------|-----------|----------------|------|------|------|------|------|------|------|------|------|------|------|
|                    |           | Min.           | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. | Min. | Max. |
| D                  |           | 5.0            | 7.0  | 7.5  | 9.0  | 10.5 | 14.0 | 13.5 | 17.5 | 18.5 | 23.0 | 19.5 | 25.0 |
| H                  |           | -              | 9.0  | -    | 12.0 | -    | 17.0 | -    | 20.5 | -    | 26.0 | -    | 28.0 |
| W                  |           | 4.0            | 6.0  | 4.0  | 6.0  | 6.5  | 8.5  | 6.5  | 8.5  | 6.5  | 8.5  | 9.0  | 11.0 |
| Φd                 |           | 0.58           | 0.62 | 0.58 | 0.62 | 0.78 | 0.82 | 0.78 | 0.82 | 0.78 | 0.82 | 0.98 | 1.02 |
| P(max.)            |           | 3              |      |      |      |      |      |      |      |      |      |      |      |
| L(min)             |           | 25             |      |      |      |      |      |      |      |      |      |      |      |
| K(±0.4)(Kink Lead) |           | 0.8            | 1.6  | 0.8  | 1.6  | 1.0  | 1.8  | 1.0  | 1.8  | 1.0  | 1.8  | 1.0  | 1.8  |
| A(max.)            | 180K-271K | -              | 13.0 | -    | 15.0 | -    | 19.5 | -    | 22.5 | -    | 26.5 | -    | 30.0 |
|                    | >271K     | -              | 13.0 | -    | 15.5 | -    | 20.5 | -    | 23.5 | -    | 27.0 | -    | 31.0 |
| T                  |           | See Tmax table |      |      |      |      |      |      |      |      |      |      |      |

Short Cut Lead type the lead length (L) can 3.0~15mm (expect 20N <10mm) ,see Ordering note page

| T max. Table |     |     |     |     |     | Unit:mm |     |     |     |     |      |
|--------------|-----|-----|-----|-----|-----|---------|-----|-----|-----|-----|------|
| Model        | 05N | 07N | 10N | 14N | 20N | Model   | 05N | 07N | 10N | 14N | 20N  |
| 201K         | 3.3 | 3.5 | 3.9 | 4.0 | 4.5 | 511K    | 4.8 | 5.6 | 6.0 | 6.1 | 6.6  |
| 221K         | 3.4 | 3.7 | 4.1 | 4.2 | 4.7 | 561K    | 5.0 | 5.9 | 6.3 | 6.4 | 6.9  |
| 241K         | 3.5 | 3.8 | 4.2 | 4.3 | 4.8 | 621K    | 5.3 | 6.3 | 6.7 | 6.8 | 7.3  |
| 271K         | 3.7 | 4.0 | 4.4 | 4.5 | 5.0 | 681K    | 5.4 | 6.7 | 7.1 | 7.2 | 7.7  |
| 301K         | 3.9 | 4.2 | 4.6 | 4.7 | 5.2 | 751K    | 5.6 | 7.1 | 7.5 | 7.6 | 8.1  |
| 331K         | 4.0 | 4.4 | 4.8 | 4.9 | 5.4 | 781K    | -   | 7.4 | 7.7 | 7.8 | 8.3  |
| 361K         | 4.1 | 4.6 | 5.0 | 5.1 | 5.6 | 821K    | -   | 7.6 | 8.0 | 8.1 | 8.6  |
| 391K         | 4.2 | 4.8 | 5.2 | 5.3 | 5.8 | 911K    | -   | -   | 8.6 | 8.7 | 9.2  |
| 431K         | 4.4 | 5.0 | 5.4 | 5.5 | 6.0 | 102K    | -   | -   | 9.1 | 9.2 | 9.7  |
| 471K         | 4.6 | 5.3 | 5.7 | 5.8 | 6.3 | 112K    | -   | -   | 9.8 | 9.9 | 10.4 |

**Tape and Reel Specifications**

- Radial devices on tape are supplied with kinked leads, straight leads, or in-line leads



| Symbol         | Description                               | Model Size |           |           |           |           |           |
|----------------|-------------------------------------------|------------|-----------|-----------|-----------|-----------|-----------|
|                |                                           | 05N        | 07N       | 10N       | 10N       | 14N       | 14N       |
| P              | 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  |
| P <sub>0</sub> | Feed Hole Pitch                           | 12.7±0.2   | 12.7±0.2  | 12.7±0.2  | 15.0±0.2  | 12.7±0.2  | 15.0±0.2  |
| P <sub>1</sub> | Feed Hole Center to Pitch                 | 3.85±0.7   | 3.85±0.7  | 8.95±0.7  | 3.75±0.7  | 8.95±0.7  | 3.75±0.7  |
| P <sub>2</sub> | Hole Center to Component Center           | 6.35±0.7   | 6.35±0.7  | 12.7±0.7  | 7.5±0.7   | 12.7±0.7  | 7.5±0.7   |
| F              | Lead to Lead Distance                     | 5.0±0.8    | 5.0±0.8   | 7.5±0.8   | 7.5±0.8   | 7.5±0.8   | 7.5±0.8   |
| △h             | Component Alignment                       | 2.0max     | 2.0max    | 2.0max    | 2.0max    | 2.0max    | 2.0max    |
| W              | Tape Width                                | 18.0+1.0   | 18.0+1.0  | 18.0+1.0  | 18.0+1.0  | 18.0+1.0  | 18.0+1.0  |
|                |                                           | 18.0-0.5   | 18.0-0.5  | 18.0-0.5  | 18.0-0.5  | 18.0-0.5  | 18.0-0.5  |
| W <sub>0</sub> | Hold Down Tape Width                      | 5.0 Min.   | 5.0 Min.  | 5.0 Min.  | 5.0 Min.  | 5.0 Min.  | 5.0 Min.  |
| W <sub>1</sub> | Hole Position                             | 9.0+0.75   | 9.0+0.75  | 9.0+0.75  | 9.0+0.75  | 9.0+0.75  | 9.0+0.75  |
|                |                                           | 9.0-0.5    | 9.0-0.5   | 9.0-0.5   | 9.0-0.5   | 9.0-0.5   | 9.0-0.5   |
| W <sub>2</sub> | Hold Down Tape Position                   | 3.0 Max    | 3.0 Max   | 3.0 Max   | 3.0 Max   | 3.0 Max   | 3.0 Max   |
| H              | Height from Tape Center to Component Base | 18.0+2.0   | 18.0+2.0  | 18.0+2.0  | 18.0+2.0  | 18.0+2.0  | 18.0+2.0  |
|                |                                           | 18.0-0.0   | 18.0-0.0  | 18.0-0.0  | 18.0-0.0  | 18.0-0.0  | 18.0-0.0  |
| H <sub>0</sub> | 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  |
| H <sub>1</sub> | Component Height                          | 32.0 Max.  | 32.0 Max. | 36.0 Max. | 36.0 Max. | 40.0 Max. | 40.0 Max. |
| D <sub>0</sub> | 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   |
| t              | 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   |
| L              | Leagth Clipped Lead                       | 11.0 Max   | 11.0 Max  | 11.0 Max  | 11.0 Max  | 11.0 Max  | 11.0 Max  |
| Figure         |                                           | A, D       | A, D      | B, E      | A, D      | C         | F         |

**Tape and Reel Specifications**

- Radial devices on tape are supplied with kinked leads, straight leads, or in -line leads

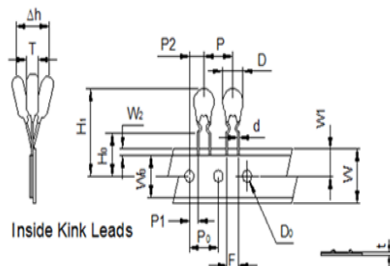


Figure: A

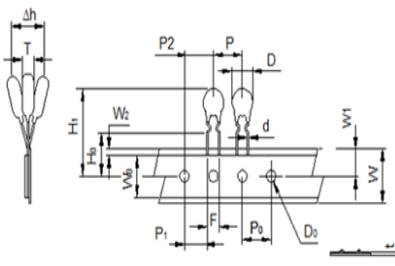


Figure: B

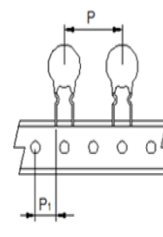


Figure: C

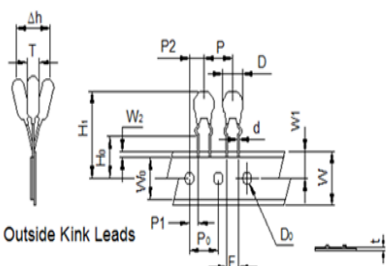


Figure: D

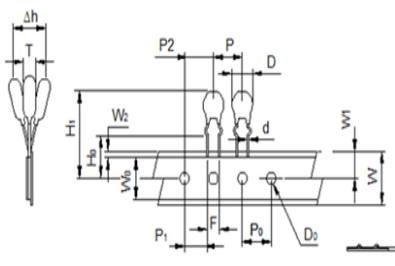


Figure: E

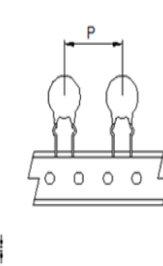


Figure: F

| Symbol         | Description                               | Model Size |           |           |           |           |           |
|----------------|-------------------------------------------|------------|-----------|-----------|-----------|-----------|-----------|
|                |                                           | 05N        | 07N       | 10N       | 10N       | 14N       | 14N       |
| P              | 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  |
| P <sub>0</sub> | Feed Hole Pitch                           | 12.7±0.2   | 12.7±0.2  | 12.7±0.2  | 15.0±0.2  | 12.7±0.2  | 15.0±0.2  |
| P <sub>1</sub> | Feed Hole Center to Pitch                 | 3.85±0.7   | 3.85±0.7  | 8.95±0.7  | 3.75±0.7  | 8.95±0.7  | 3.75±0.7  |
| P <sub>2</sub> | Hole Center to Component Center           | 6.35±0.7   | 6.35±0.7  | 12.7±0.7  | 7.5±0.7   | 12.7±0.7  | 7.5±0.7   |
| F              | Lead to Lead Distance                     | 5.0±0.8    | 5.0±0.8   | 7.5±0.8   | 7.5±0.8   | 7.5±0.8   | 7.5±0.8   |
| △h             | Component Alignment                       | 2.0max     | 2.0max    | 2.0max    | 2.0max    | 2.0max    | 2.0max    |
| W              | Tape Width                                | 18.0+1.0   | 18.0+1.0  | 18.0+1.0  | 18.0+1.0  | 18.0+1.0  | 18.0+1.0  |
|                |                                           | 18.0-0.5   | 18.0-0.5  | 18.0-0.5  | 18.0-0.5  | 18.0-0.5  | 18.0-0.5  |
| W <sub>0</sub> | Hold Down Tape Width                      | 5.0 Min.   | 5.0 Min.  | 5.0 Min.  | 5.0 Min.  | 5.0 Min.  | 5.0 Min.  |
| W <sub>1</sub> | Hole Position                             | 9.0+0.75   | 9.0+0.75  | 9.0+0.75  | 9.0+0.75  | 9.0+0.75  | 9.0+0.75  |
|                |                                           | 9.0-0.5    | 9.0-0.5   | 9.0-0.5   | 9.0-0.5   | 9.0-0.5   | 9.0-0.5   |
| W <sub>2</sub> | Hold Down Tape Position                   | 3.0 Max    | 3.0 Max   | 3.0 Max   | 3.0 Max   | 3.0 Max   | 3.0 Max   |
| H              | Height from Tape Center to Component Base | 18.0+2.0   | 18.0+2.0  | 18.0+2.0  | 18.0+2.0  | 18.0+2.0  | 18.0+2.0  |
|                |                                           | 18.0-0.0   | 18.0-0.0  | 18.0-0.0  | 18.0-0.0  | 18.0-0.0  | 18.0-0.0  |
| H <sub>0</sub> | 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  |
| H <sub>1</sub> | Component Height                          | 29.0 Max.  | 32.0 Max. | 36.0 Max. | 36.0 Max. | 40.0 Max. | 40.0 Max. |
| D <sub>0</sub> | 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   |
| t              | 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   |
| L              | Leagth Clipped Lead                       | 11.0 Max   | 11.0 Max  | 11.0 Max  | 11.0 Max  | 11.0 Max  | 11.0 Max  |
| Figure         |                                           | A, D       | A, D      | B, E      | A, D      | C         | F         |

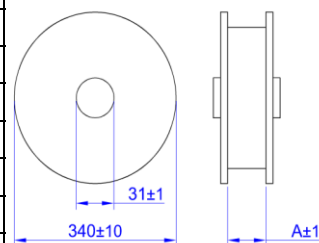
**Packing information**

Bulk packing

| Series  | Straight Lead Type<br>Quantity(pcs/bag) | Cut Lead Type<br>Quantity(pcs/bag) | Kink Type<br>Quantity(pcs/bag) |
|---------|-----------------------------------------|------------------------------------|--------------------------------|
| CNR-05N | 1000                                    | 1000                               | 1000                           |
| CNR-07N | 1000                                    | 1000                               | 1000                           |
| CNR-10N | 500                                     | 500                                | 500                            |
| CNR-14N | 500                                     | 500                                | 500                            |
| CNR-20N | 250                                     | 250                                | 250                            |

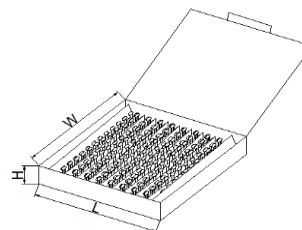
Tape & Reel product packing

| Series                 | A (mm) | Quantity (pcs/reel) |
|------------------------|--------|---------------------|
| CNR-05N(201K~621K)-TRX | 43     | 2000                |
| CNR-05N(681K~781K)-TRX |        | 1500                |
| CNR-07N(201K~391K)-TRX |        | 2000                |
| CNR-07N(431K~821K)-TRX |        | 1500                |
| CNR-07N(201K~391K)-TRX |        | 2000                |
| CNR-07N(431K~821K)-TRX |        | 1500                |
| CNR-10N(201K~621K)-TRX | 56     | 1000                |
| CNR-10N(681K~112K)-TRX |        | 800                 |
| CNR-14N(201K~391K)-TRX |        | 800                 |
| CNR-14N(431K~621K)-TRX |        | 700                 |
| CNR-14N(681K~112K)-TRX |        | 600                 |



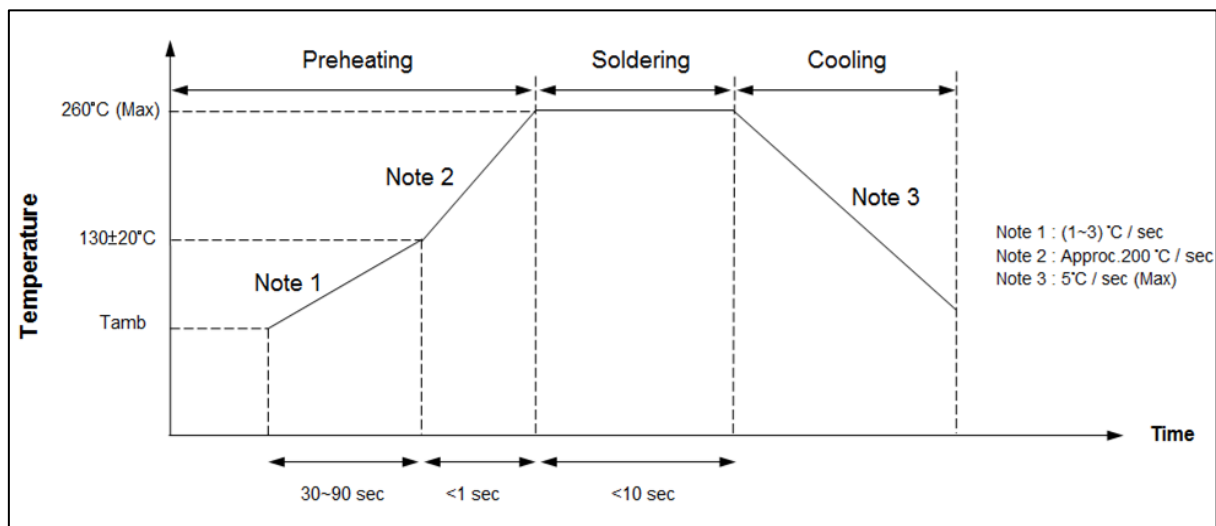
Flat Box product

| Series                 | Quantity (pcs/box) |
|------------------------|--------------------|
| CNR-05N(201K~621K)-BTH | 1000               |
| CNR-05N(681K~781K)-BTH | 800                |
| CNR-07N(201K~621K)-BTH | 1000               |
| CNR-07N(681K~781K)-BTH | 800                |
| CNR-10N(201K~621K)-BTH | 1000               |
| CNR-10N(681K~112K)-BTH | 800                |
| CNR-14N(201K~621K)-BTH | 500                |
| CNR-14N(681K~112K)-BTH | 400                |



| Series      | L±5 | W±5 | N±5 |
|-------------|-----|-----|-----|
| CNR-05N~07N | 340 | 245 | 45  |
| CNR-10N~14N | 340 | 245 | 50  |

### Solder Recommendation



### Recommendation Reworking Conditions with Soldering Iron

| Item                              | Conditions  |
|-----------------------------------|-------------|
| Temperature of soldering Iron-tip | 360°C (Max) |
| Soldering Time                    | 3 sec(Max)  |
| Distance from Varistor            | 2mm(Min)    |

### RoHS Compliant Declaration

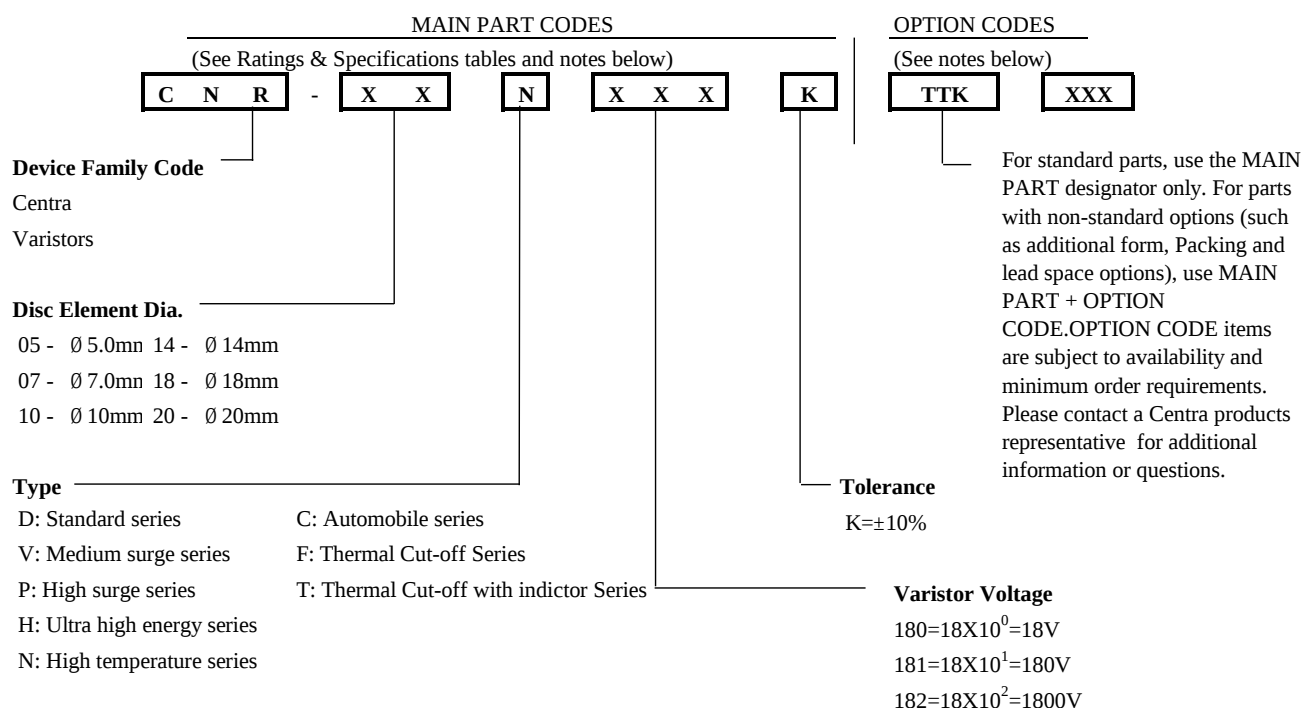
We hereby declare that the components delivered to your company are compliant with RoHS Directive 2002/95/EC

### Storage Conditions of Products

(I) Storage Conditions:

- 1.Storage Temperature: -10°C~+40°C
- 2.Relative Humidity:  $\leq 75\%RH$
- 3.Keep away from corrosive atmosphere and sunlight
- 4.Solvent Resistance: MIL-STD-202, Method 215F
- 5.Moisture Sensitivity: Level 1, J-STD-020

(II) Period of Storage: 1 year

**Explanation of Part Numbers**

**Ordering Notes:**
**MAIN PART CODES**
**Series + /Packaging/ Lead Style / Designators:**
**Ordering examples:**

| Straight Lead Bulk Pack (Standard) | Straight Lead (Short Cut) Bulk Pack | Straight Lead Tape & Reel Pack | Straight Lead Flat Box Pack |
|------------------------------------|-------------------------------------|--------------------------------|-----------------------------|
| CNR-10N471K                        | CNR-10N471KTTXXXX                   | CNR-10N471KTRSA                | CNR-10N471KBTSXXXX          |

| Outside Kink Lead Bulk Pack | Outside Kink Lead (Short Cut) Bulk Pack | Outside Kink Lead Tape & Reel Pack | Outside Kink Lead Flat Box Pack |
|-----------------------------|-----------------------------------------|------------------------------------|---------------------------------|
| CNR-10N471SOK               | CNR-10N471KTTKXXXX                      | CNR-10N471KTRKA                    | CNR-10N471KBTXXXX               |

| Inside Kink Lead Bulk Pack | Inside Kink Lead (Short Cut) Bulk Pack | Inside Kink Lead Tape & Reel Pack | Inside Kink Lead Flat Box Pack |
|----------------------------|----------------------------------------|-----------------------------------|--------------------------------|
| CNR-10N471KSIK             | CNR-10N471KTTIXXX                      | CNR-10N471KTRIA                   | CNR-10N471KBTIXXX              |

| In Line Kink Lead Bulk Pack | In Line Kink Lead (Short Cut) Bulk Pack | In Line Kink Lead Tape & Reel Pack | In Line Kink Lead Flat Box Pack |
|-----------------------------|-----------------------------------------|------------------------------------|---------------------------------|
| CNR-10N471KSHK              | CNR-10N471KTTHXXX                       | CNR-10N471KTRHA                    | CNR-10N471KBTHXXX               |

**+ Option Code**
**XXX**

| Short Cut Lead Length 10mm±1.0mm |
|----------------------------------|
| CNR-10N471KTTTS10                |

| Tape & Reel Pack Feed Hole Pitch |
|----------------------------------|
| CNR-10N471KTRSA                  |

A: P<sub>0</sub> -> 12.7mm±0.2mm

B: P<sub>0</sub> -> 15.0mm±0.2mm

CeNtRa N Series varistors are shipped standard in bulk pack with straight leads or Kink lead and lead spacing outlined in the Package Dimension: section of this data sheet. Contact your CeNtRa sales representative to discuss non-standard options.