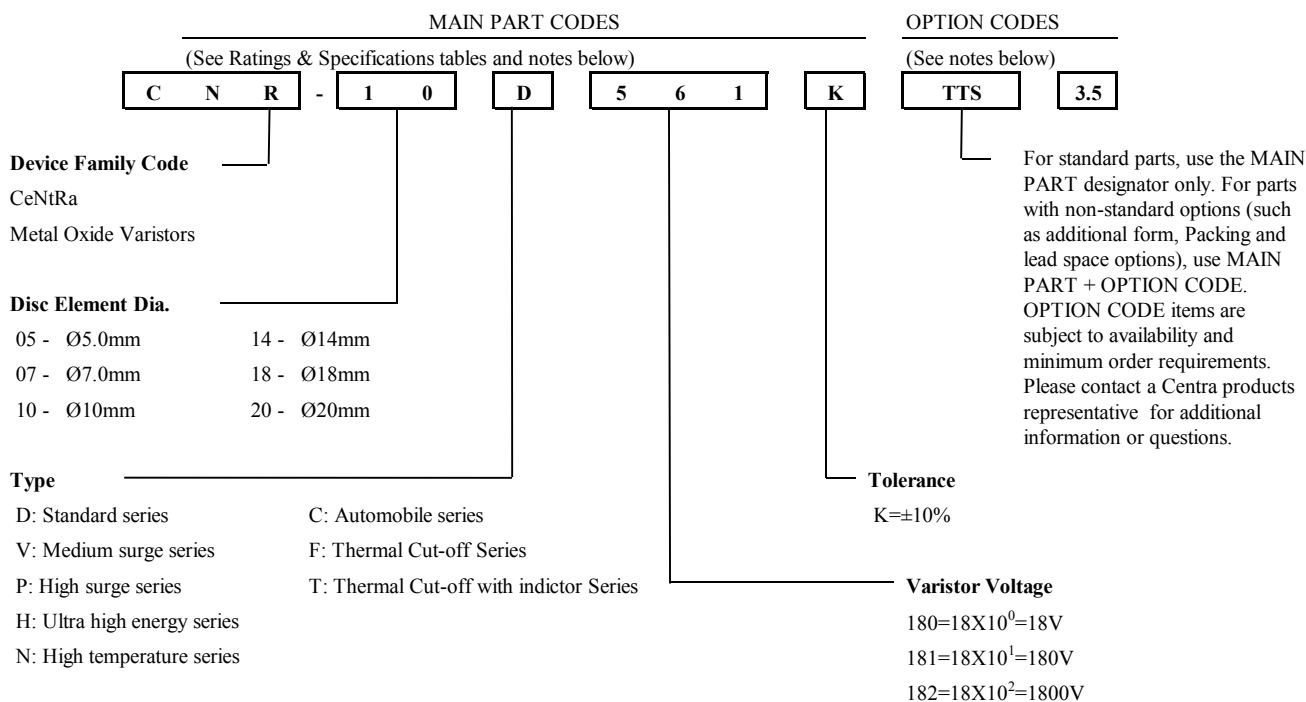


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## Explanation of Part Numbers



## Ordering Notes:

## MAIN PART CODES

Series + /Packaging/ Lead Style / Designators:

Ordering examples:

Option Code

+ XXX

| Straight Lead Bulk Pack (Standard) | Straight Lead (Short Cut) Bulk Pack | Straight Lead Tape & Reel Pack | Straight Lead Flat Box Pack | Short Cut Lead Length 10mm±1.0mm |
|------------------------------------|-------------------------------------|--------------------------------|-----------------------------|----------------------------------|
| CNR-10D561K                        | CNR-10D561KTTSXXX                   | CNR-10D561KTRSX                | CNR-10D561KBTSX             | CNR-10D561KTTS10                 |

| Outside Kink Lead Bulk Pack | Outside Kink Lead (Short Cut) Bulk Pack | Outside Kink Lead Tape & Reel Pack | Outside Kink Lead Flat Box Pack | Tape & Reel Pack Feed Hole Pitch |
|-----------------------------|-----------------------------------------|------------------------------------|---------------------------------|----------------------------------|
| CNR-10D561KSOK              | CNR-10D561KTTKXXX                       | CNR-10D561KTRKX                    | CNR-10D561KBTXX                 | CNR-10D561KTRSA                  |
|                             |                                         |                                    |                                 | CNR-10D561KTRSB                  |

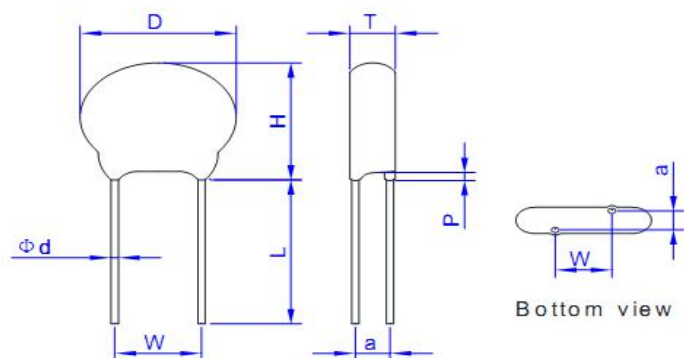
| Inside Kink Lead Bulk Pack | Inside Kink Lead (Short Cut) Bulk Pack | Inside Kink Lead Tape & Reel Pack | Inside Kink Lead Flat Box Pack |  |
|----------------------------|----------------------------------------|-----------------------------------|--------------------------------|--|
| CNR-10D561KSIK             | CNR-10D561KTTIXXX                      | CNR-10D561KTRIX                   | CNR-10D561KBTIX                |  |

| 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-10D561KSHK              | CNR-10D561KTTHXXX                       | CNR-10D561KTRHX                    | CNR-10D561KBTHX                 |  |

A: P<sub>0</sub> → 12.7mm±0.2mm  
B: P<sub>0</sub> → 15.0mm±0.2mm

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

## Product Dimensions



Dimension Table

Unit:mm

| Symbol  | Model size | 10D   |      |
|---------|------------|-------|------|
|         |            | Min.  | Max. |
| D       |            | -     | 14   |
| H       |            | -     | 17   |
| W       |            | 7.0   | 8.0  |
| Ød      |            | 0.75  | 0.85 |
| P(max.) |            | 3     |      |
| L(±0.5) |            | 3.5   |      |
| T(max.) |            | 5.5   |      |
| a(±1.0) |            | 1.8   |      |
|         |            | CP/EI |      |

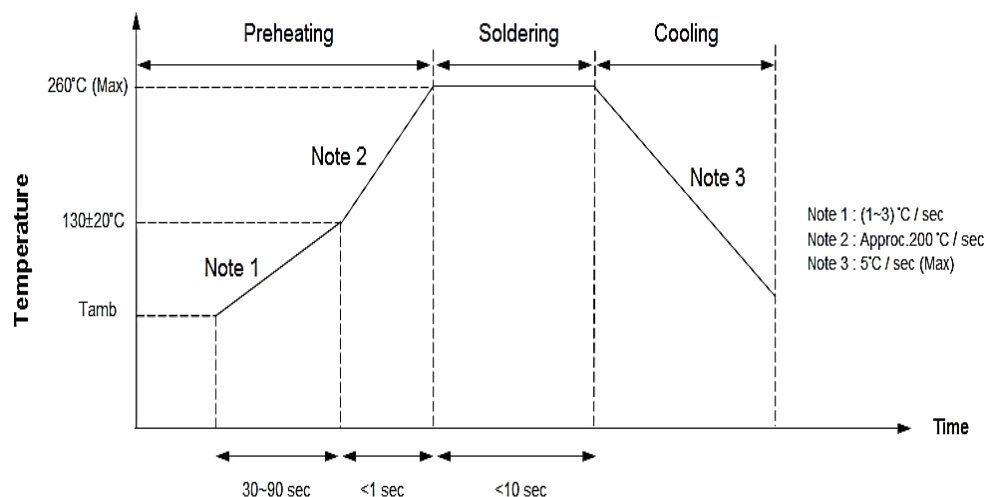
## Device Ratings and Characteristics

| Part No.    | Device Marking | Maximum Allowable Voltage |       | Varistor Voltage (@1mA) |      |      | Clamping Voltage @ Test Current (@8/20µs) |       | Maximum Energy (@10/1000µs) |
|-------------|----------------|---------------------------|-------|-------------------------|------|------|-------------------------------------------|-------|-----------------------------|
|             |                | ACrms(V)                  | DC(V) | Vn(Vdc)                 | Min. | Max. | Vc(V)                                     | Ip(A) | (J)                         |
| CNR-10D561K | 10D561K        | 350                       | 460   | 560                     | 504  | 616  | 915                                       | 25    | 70                          |

| Part No.    | Device Marking | Maximum Peak Current (@8/20µs)<br>(A) | Rated Power<br>(W) | Typical Capacitance (@1KHz)<br>(pF) | LEAKAGE CURRENT AT 460V (DC)<br>(µA) |
|-------------|----------------|---------------------------------------|--------------------|-------------------------------------|--------------------------------------|
| CNR-10D561K | 10D561K        | 2500                                  | 0.4                | 200                                 | <20                                  |

| Reliability                                |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                               |
|--------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Characteristics                            | Standard                                 | Test Conditions                                                                                                                                                                                                                                                                                                                                                                                                       | Specifications                                                                                |
| Robustness of terminations                 | IEC 60068-2-21<br>Test Ua1               | F = 10 N (d ≤ 0.8 mm) , F = 20 N ( d = 1 mm)                                                                                                                                                                                                                                                                                                                                                                          | $\Delta V/V \leq \pm 5\%$<br>No visible damage                                                |
| Solderability                              | IEC 60068-2-20<br>Test Ta (Method 1)     | T = 235±5°C, d = 2±0.5s                                                                                                                                                                                                                                                                                                                                                                                               | Approximately ≥ 95%                                                                           |
| Resistance to soldering heat               | IEC 60068-2-20<br>Test Tb<br>(Method 1A) | T = 260±5°C, d = 10±1s                                                                                                                                                                                                                                                                                                                                                                                                | $\Delta V/V \leq \pm 5\%$<br>No visible damage                                                |
| Vibration                                  | IEC 60068-2-6<br>Test Fc<br>Method B4    | Frequency range: 10 Hz to 55 Hz , a = 0.75 mm or<br>98 m/s <sup>2</sup> (whichever is the less), d = 3x2 h                                                                                                                                                                                                                                                                                                            | $\Delta V/V \leq \pm 5\%$<br>No visible damage                                                |
| Voltage proof                              | IEC 61051-2                              | Metal balls method (4.8.1.2) 2500 V, 60 s                                                                                                                                                                                                                                                                                                                                                                             | As specified in<br>pecification                                                               |
| Pulse current- 8/20 μs                     | IEC 61051-2                              | 8/20 μs, 10 times, I <sub>peak</sub> =0.25*I <sub>max</sub>                                                                                                                                                                                                                                                                                                                                                           | $\Delta V/V \leq \pm 10\%$<br>No visible damage                                               |
| Pulse current- 10/1000 μs                  | IEC 61051-2                              | 10/1000 μs, 10 times, I <sub>peak</sub> = 0.0075* I <sub>max</sub>                                                                                                                                                                                                                                                                                                                                                    | $\Delta V/V \leq \pm 10\%$<br>No visible damage                                               |
| Rapid change of temperature                | IEC 60068-2-14<br>Test Na                | N = 5 cycles, d = 30 min , θA = -40±3°C, θB = 85±2°C                                                                                                                                                                                                                                                                                                                                                                  | $\Delta V/V \leq \pm 5\%$<br>No visible damage                                                |
| Endurance at upper category<br>temperature | IEC 61051-1 (4.21)                       | T: max temperature as specified , Duration: 1000 h,<br>Voltage: max. a.c. voltage or max. d.c. voltage                                                                                                                                                                                                                                                                                                                | $\Delta V/V \leq \pm 10\%$<br>No visible damage<br>R ≥ 1000MΩ<br>U ≤ 1,1 U <sub>initial</sub> |
| Damp heat<br>(Steady state )               | IEC 60068-2-78<br>Test Ca                | T = 40±2°C, RH = 93(+2/-3)%, 56d ,<br>4 specimens: No voltage applied ,<br>Other 4 specimens: Applied voltage: 100%<br>of the max. d.c. voltage                                                                                                                                                                                                                                                                       | $\Delta V/V \leq \pm 10\%$<br>R <sub>ISO</sub> ≥ 100MΩ                                        |
| Varistor Voltage Temp.<br>Coefficient      | Specification Standard                   | V <sub>1mA</sub> at -40°C, 105°C, 25°C<br>$\frac{V_{1mA} \text{ at } 105^{\circ}\text{C} - V_{1mA} \text{ at } 25^{\circ}\text{C}}{V_{1mA} \text{ at } 25^{\circ}\text{C}} \times \frac{1}{80} \times 100(\%/^{\circ}\text{C})$ $\frac{V_{1mA} \text{ at } -40^{\circ}\text{C} - V_{1mA} \text{ at } 25^{\circ}\text{C}}{V_{1mA} \text{ at } 25^{\circ}\text{C}} \times \frac{1}{65} \times 100(\%/^{\circ}\text{C})$ | -0.05 ≤ TC ≤ 0.05(%/°C)                                                                       |
| High Temperature Storage                   | IEC60068-2-2                             | 1000h, T = 125±2°C                                                                                                                                                                                                                                                                                                                                                                                                    | $\Delta V/V \leq \pm 5\%$<br>No visible damage                                                |
| Low Temperature<br>Storage/Cold            | Specification Standard                   | The specimen shall be subjected to -40±2 °C, without<br>load for 1000 hours and then stored at room<br>temperature for one to two hours. Thereafter, the<br>change of V <sub>c</sub> shall be measured.                                                                                                                                                                                                               | $\Delta V_{cmA}/V_{cmA} \leq \pm 5\%$<br>No visible damage                                    |

### Solder Recommendation



### Recommendation Reworking Conditions with Soldering Iron

| Item                              | Conditions                |
|-----------------------------------|---------------------------|
| Temperature of soldering Iron-tip | $360^\circ\text{C (Max)}$ |
| 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 2011/65/EU

### Storage Conditions of Products

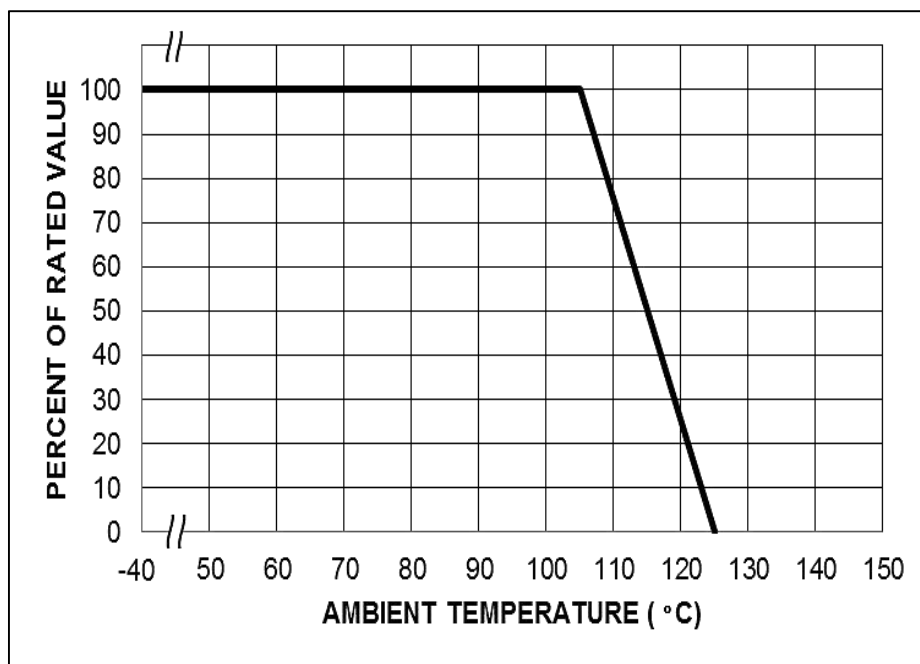
(I) Storage Conditions:

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

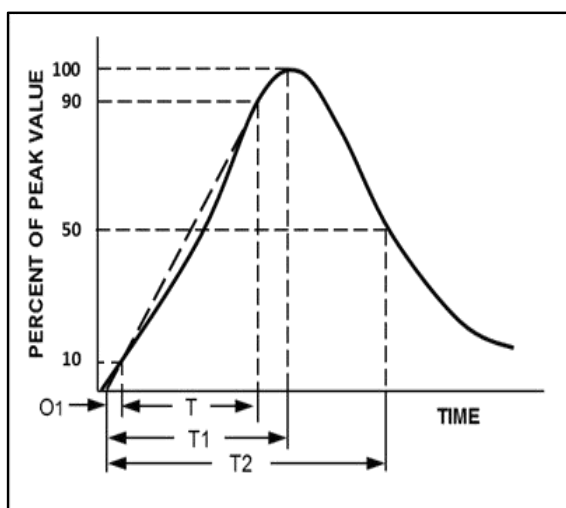
(II) Period of Storage: 1 year

## 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 μs Current Waveform:

8 μs = T1 = Rise Time

20 μs = T2 = Decay Time

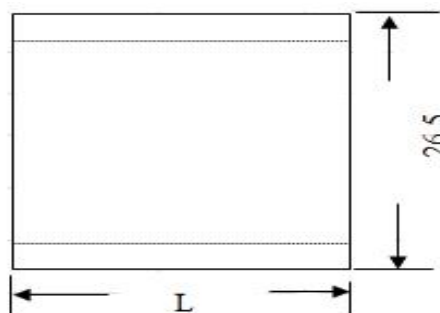
## Packing information

## Bulk packing

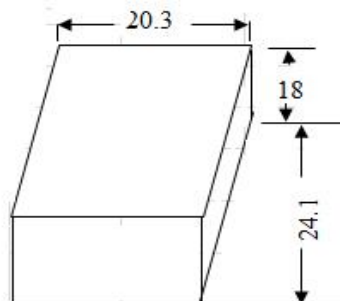
| Part No.          | Min. Q'ty(pcs)/Bags | Q'ty(pcs)/Inner Box | Min. Q'ty(pcs)/Carton | Weight/Carton  |
|-------------------|---------------------|---------------------|-----------------------|----------------|
| CNR-10D561KTTS3.5 | 500                 | 8000                | 16000                 | Less than 20Kg |

Packing Bag

unit:cm

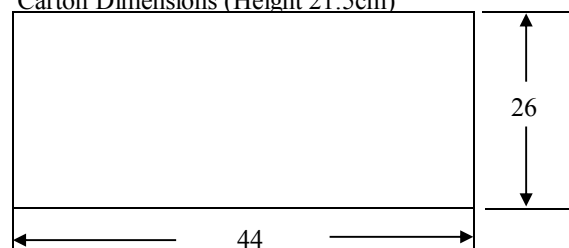


Inner box dimension



|   |                   |      |
|---|-------------------|------|
| L | 05D to 10D Series | 10.5 |
|   | 14D to 20D Series | 14.5 |

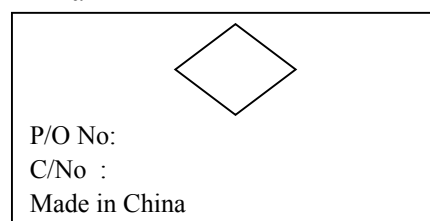
Carton Dimensions (Height 21.5cm)



Label

|                         |              |
|-------------------------|--------------|
| CNR Zinc Oxide Varistor |              |
| Part No.                | Inspected by |
| Quantity                |              |
| Lot No.                 |              |

Mark



## Specification

| Year Code |         |         | Month Code  |           |              |
|-----------|---------|---------|-------------|-----------|--------------|
| W--2022   | G--2014 | L--2018 | 1--January  | 5--May    | 9--September |
| X--2023   | H--2015 | M--2019 | 2--February | 6--June   | o--October   |
| Y--2024   | J--2016 | P--2020 | 3--March    | 7--July   | n--November  |
| Z--2025   | K--2017 | U--2021 | 4--April    | 8--August | d--December  |

EX.

H

1

Year Code

Month Code

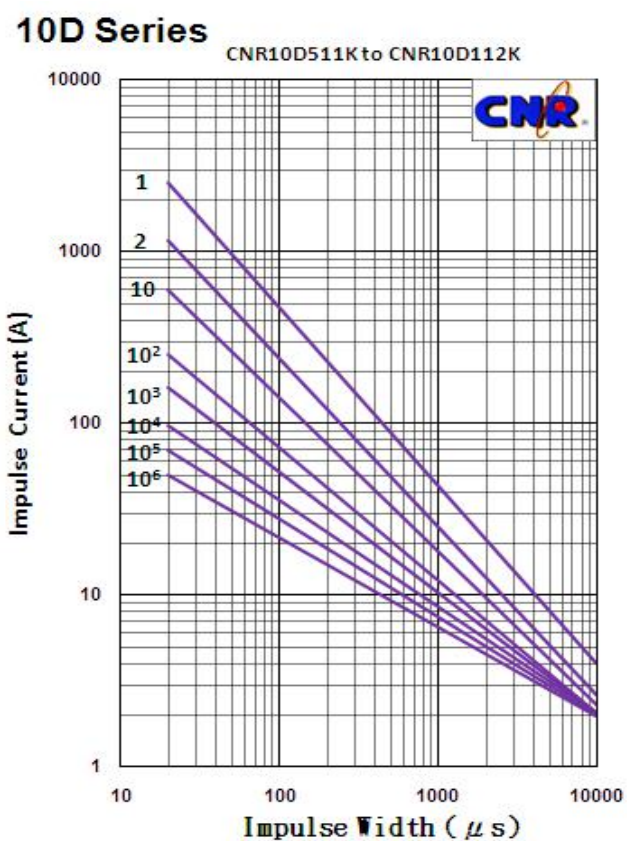
| Agency Approvals                                                                    |                               |                                | Features                                 |
|-------------------------------------------------------------------------------------|-------------------------------|--------------------------------|------------------------------------------|
| Agency                                                                              | Agency Approval               | Certificate No.                | 1. RoHS compliant                        |
|    | UL 1449 4 <sup>th</sup> & cUL | VZCA2.E316325<br>VZCA8.E316325 | 2. Halogen-free series are available     |
|    | IEC 61051-1:2007-04           | 40008220                       | 3. Body size: Ø10 mm                     |
|                                                                                     | IEC 61051-2:2009-05           |                                |                                          |
|                                                                                     | IEC 61051-2-2:1991-01         |                                |                                          |
|                                                                                     | IEC 60950-1:2013              |                                |                                          |
|   | CLASS 2221 01                 | LR 109736-1                    |                                          |
|  | GB/T 10193-1997               | CQC08001023767                 | 1. Power supply                          |
|                                                                                     | GB/T 10194-1997               |                                | 2. Home appliance                        |
|                                                                                     | GB 4943.1-2011                |                                | 3. Industrial equipment                  |
|                                                                                     | GB 8898-2011                  |                                | 4. Telecommunication or telephone system |
|                                                                                     |                               |                                | 5. Smart meter                           |
|                                                                                     |                               |                                | 6. Lighting products                     |
|                                                                                     |                               |                                | 7. Photovoltaic industry                 |

| Max. Rating                         |             |       |
|-------------------------------------|-------------|-------|
|                                     | D-Seires    | Units |
| Operation Ambient Temperature Range | -40 to +105 | °C    |
| Storage Tempersture Range           | -40 to +125 | °C    |
| Insulation Resistance               | >1000       | MΩ    |
| Typical Response Time               | <25         | ns    |



# Impulse Life Time Rating Curves

CNR-10D561K



V-I Curves

CNR-10D561K

CNR-10D511K to CNR-10D182K

