



METAL OXIDE VARISTOR – 20D J2 & J3 SERIES

FEATURES

- * Wide operating voltage (V1mA) range from 18V to 1800V.
- * Fast responding to transient over-voltage.
- * Large absorbing transient energy capability.
- * Low clamping ratio and no follow-on current.
- * Meets MSL level 1, per J-STD-020
- * Safety number : UL- E317616
ISO9001-2018



APPLICATION

- * Transistor, Diode, IC, Thyristor or Triac semiconductor protection.
- * Surge protection in consumer electronics.
- * Surge protection in industrial electronics.
- * Surge protection in electronic home appliances, gas and petroleum appliances.
- * Relay and electromagnetic valve surge absorption.

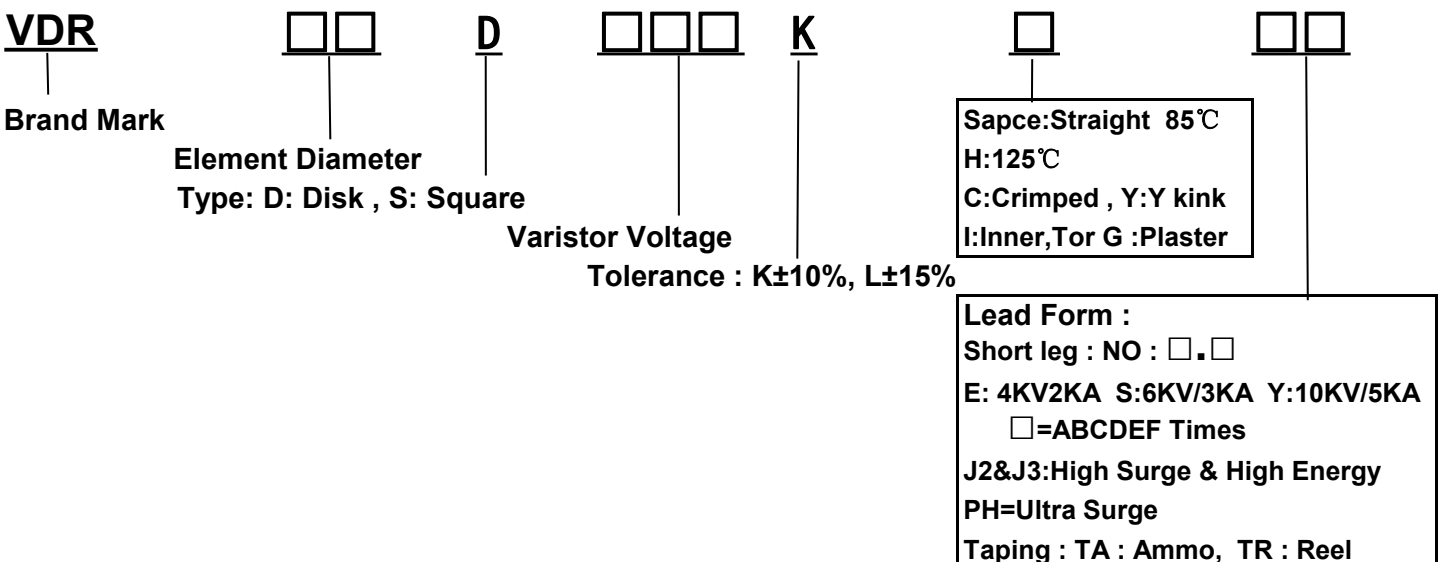
General Characteristics Definition

- * Operating Temperature: (-40 °C ~ +85 °C)
- * Storage Temperature: (-40 °C ~ +125 °C)
- * Working Surface Temperature: +115 °C
- * Insulation Resistance: > 100M Ω
- * Coating (Epoxy Resin): Flame-Retardant to UL 94 V-0

Material

- * Coating: Epoxy Resin
- * Lead Wire: The Copper Wire
- * Electrode: Silver Solder
- * Disk: Zinc Oxide

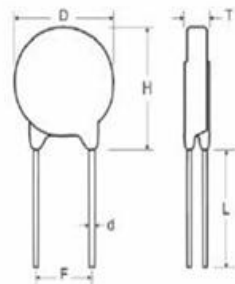
PART NUMBER CODE



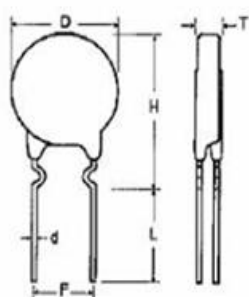


■ Dimensions

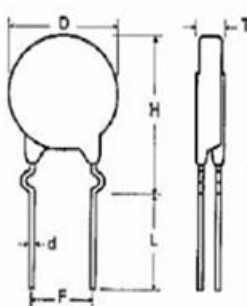
S Type(Straight Lead)



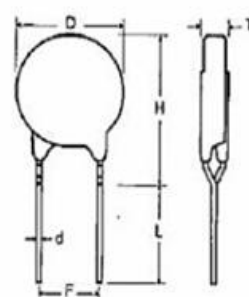
I Type(Inner Crimped Lead)



C Type(Out Crimped Lead)



Y Lead Type(Y Kink Lead)



Unit: mm

| Part No. | Part No. | T Max. | D Max. | H Max. | | L min. | F | d ± 0.05 |
|-------------|--------------|--------|--------|--------|-----------|--------|----------------------|----------|
| | | | | S | I / C / Y | | | |
| VDR-25D180L | VDR-25D180LJ | 4.8 | 28.0 | 32.0 | 34.0 | 20.0 | 10.0±1.0 12.5±1.0 | 1.0 |
| VDR-25D220K | VDR-25D220KJ | 4.9 | | | | | | |
| VDR-25D270K | VDR-25D270KJ | 5.0 | | | | | | |
| VDR-25D330K | VDR-25D330KJ | 5.2 | | | | | | |
| VDR-25D390K | VDR-25D390KJ | 5.5 | | | | | | |
| VDR-25D470K | VDR-25D470KJ | 5.1 | | | | | | |
| VDR-25D560K | VDR-25D560KJ | 5.4 | | | | | | |
| VDR-25D680K | VDR-25D680KJ | 5.7 | | | | | | |
| VDR-25D820K | VDR-25D820KJ | 4.5 | | | | | | |
| VDR-25D101K | VDR-25D101KJ | 4.7 | | | | | | |
| VDR-25D121K | VDR-25D121KJ | 4.8 | | | | | | |
| VDR-25D151K | VDR-25D151KJ | 4.9 | | | | | | |
| VDR-25D181K | VDR-25D181KJ | 5.2 | | | | | | |
| VDR-25D201K | VDR-25D201KJ | 5.3 | | | | | | |
| VDR-25D221K | VDR-25D221KJ | 5.8 | | | | | | |
| VDR-25D241K | VDR-25D241KJ | 5.3 | | | | | | |
| VDR-25D271K | VDR-25D271KJ | 5.4 | | | | | | |
| VDR-25D301K | VDR-25D301KJ | 5.5 | | | | | | |
| VDR-25D331K | VDR-25D331KJ | 5.7 | | | | | | |
| VDR-25D361K | VDR-25D361KJ | 6.0 | | | | | | |
| VDR-25D391K | VDR-25D391KJ | 6.2 | | | | | | |
| VDR-25D431K | VDR-25D431KJ | 6.6 | | | | | | |
| VDR-25D471K | VDR-25D471KJ | 6.7 | | | | | | |
| VDR-25D511K | VDR-25D511KJ | 7.0 | | | | | | |
| VDR-25D561K | VDR-25D561KJ | 7.4 | | | | | | |
| VDR-25D621K | VDR-25D621KJ | 7.7 | | | | | | |
| VDR-25D681K | VDR-25D681KJ | 7.8 | | | | | | |
| VDR-25D751K | VDR-25D751KJ | 8.0 | | | | | | |
| VDR-25D781K | VDR-25D781KJ | 8.2 | | | | | | |
| VDR-25D821K | VDR-25D821KJ | 8.4 | | | | | | |
| VDR-25D911K | VDR-25D911KJ | 9.0 | | | | | | |
| VDR-25D102K | VDR-25D102KJ | 9.5 | | | | | | |
| VDR-25D112K | VDR-25D112KJ | 10.1 | | | | | | |
| VDR-25D122K | VDR-25D122KJ | 10.8 | | | | | | |
| VDR-25D142K | VDR-25D142KJ | 12.6 | | | | | | |
| VDR-25D162K | VDR-25D162KJ | 13.2 | | | | | | |
| VDR-25D182K | VDR-25D182KJ | 14.5 | | | | | | |



ELECTRICAL CHARACTERISTIC

| Part Number | | Maximum Allowable Voltage | | Varistor Voltage | Maximum Clamping Voltage | | Withstanding Surge Current | | Energy 10/1000µS | | Rated Power | Typical Capacitance (Reference) |
|-------------|------------|---------------------------|--------|------------------|--------------------------|-------|----------------------------|-----------------|------------------|----------------|-------------|---------------------------------|
| Standard | High Surge | AC (V) | DC (V) | V1mA(V) | IP(A) | VC(V) | I(A) Standard | I(A) High Surge | (J) Standard | (J) High Surge | (W) | @1KHzPF |
| 25D180L | 25D180LJ | 11 | 14 | 18(15.0~21.6) | 30 | 36 | 4500 | 8000 | 20 | 24 | 0.25 | 45000 |
| 25D220K | 25D220KJ | 14 | 18 | 22(19.5~26.0) | 30 | 43 | 4500 | 8000 | 25 | 30 | 0.25 | 29000 |
| 25D270K | 25D270KJ | 17 | 22 | 27(24~31) | 30 | 53 | 4500 | 8000 | 30 | 36 | 0.25 | 26500 |
| 25D330K | 25D330KJ | 20 | 26 | 33(29.5~36.5) | 30 | 65 | 4500 | 8000 | 35 | 42 | 0.25 | 18000 |
| 25D390K | 25D390KJ | 25 | 31 | 39(35~43) | 30 | 77 | 4500 | 8000 | 40 | 48 | 0.25 | 13500 |
| 25D470K | 25D470KJ | 30 | 38 | 47(42~52) | 30 | 93 | 4500 | 8000 | 50 | 60 | 0.25 | 11500 |
| 25D560K | 25D560KJ | 35 | 45 | 56(50~62) | 30 | 110 | 4500 | 8000 | 60 | 72 | 0.25 | 10500 |
| 25D680K | 25D680KJ | 40 | 56 | 68(61~75) | 30 | 135 | 4500 | 8000 | 70 | 84 | 0.25 | 9050 |
| 25D820K | 25D820KJ | 50 | 65 | 82(74~90) | 150 | 135 | 15000 | 20000 | 80 | 96 | 1.2 | 7700 |
| 25D101K | 25D101KJ | 60 | 85 | 100(90~110) | 150 | 165 | 15000 | 20000 | 100 | 120 | 1.2 | 6300 |
| 25D121K | 25D121KJ | 75 | 100 | 120(108~132) | 150 | 200 | 15000 | 20000 | 120 | 144 | 1.2 | 5200 |
| 25D151K | 25D151KJ | 95 | 125 | 150(135~165) | 150 | 250 | 15000 | 20000 | 160 | 192 | 1.2 | 4300 |
| 25D181K | 25D181KJ | 115 | 150 | 180(162~198) | 150 | 300 | 15000 | 20000 | 175 | 210 | 1.2 | 3500 |
| 25D201K | 25D201KJ | 130 | 170 | 200(185~225) | 150 | 330 | 15000 | 20000 | 190 | 228 | 1.2 | 3200 |
| 20D221K | 20D221KJ | 140 | 180 | 220(198~242) | 150 | 360 | 15000 | 20000 | 200 | 240 | 1.2 | 2900 |
| 25D241K | 25D241KJ | 150 | 200 | 240(216~264) | 150 | 395 | 15000 | 20000 | 220 | 264 | 1.2 | 2650 |
| 25D271K | 25D271KJ | 175 | 225 | 270(243~297) | 150 | 455 | 15000 | 20000 | 255 | 306 | 1.2 | 2400 |
| 25D301K | 25D301KJ | 190 | 250 | 300(270~330) | 150 | 505 | 15000 | 20000 | 275 | 330 | 1.2 | 2100 |
| 25D331K | 25D331KJ | 210 | 275 | 330(297~363) | 150 | 550 | 15000 | 20000 | 300 | 360 | 1.2 | 1900 |
| 25D361K | 25D361KJ | 230 | 300 | 360(324~396) | 150 | 595 | 15000 | 20000 | 330 | 396 | 1.2 | 1750 |
| 25D391K | 25D391KJ | 250 | 320 | 390(351~429) | 150 | 650 | 15000 | 20000 | 360 | 432 | 1.2 | 1600 |
| 25D431K | 25D431KJ | 275 | 350 | 430(387~473) | 150 | 710 | 15000 | 20000 | 380 | 456 | 1.2 | 1500 |
| 25D471K | 25D471KJ | 300 | 385 | 470(423~517) | 150 | 775 | 15000 | 20000 | 400 | 480 | 1.2 | 1400 |
| 25D511K | 25D511KJ | 320 | 415 | 510(459~561) | 150 | 845 | 15000 | 20000 | 420 | 504 | 1.2 | 1250 |
| 25D561K | 25D561KJ | 350 | 460 | 560(504~616) | 150 | 920 | 15000 | 20000 | 440 | 528 | 1.2 | 1150 |
| 25D621K | 25D621KJ | 385 | 505 | 620(558~682) | 150 | 1025 | 15000 | 20000 | 450 | 540 | 1.2 | 1050 |
| 25D681K | 25D681KJ | 420 | 560 | 680(612~748) | 150 | 1120 | 15000 | 20000 | 460 | 552 | 1.2 | 950 |
| 25D751K | 25D751KJ | 460 | 615 | 750(675~825) | 150 | 1240 | 15000 | 20000 | 510 | 612 | 1.2 | 850 |
| 25D781K | 25D781KJ | 485 | 640 | 780(702~858) | 150 | 1290 | 15000 | 20000 | 530 | 636 | 1.2 | 850 |
| 25D821K | 25D821KJ | 510 | 670 | 820(738~902) | 150 | 1355 | 15000 | 20000 | 570 | 684 | 1.2 | 500 |
| 25D911K | 25D911KJ | 550 | 745 | 910(819~1001) | 150 | 1500 | 15000 | 20000 | 620 | 744 | 1.2 | 700 |
| 25D102K | 25D102KJ | 625 | 825 | 1000(900~1100) | 150 | 1650 | 15000 | 20000 | 685 | 822 | 1.2 | 650 |
| 25D112K | 25D112KJ | 680 | 895 | 1100(990~1210) | 150 | 1815 | 15000 | 20000 | 720 | 864 | 1.2 | 600 |
| 25D122K | 25D122KJ | 750 | 990 | 1200(1080~1320) | 150 | 1980 | 15000 | 20000 | 795 | 954 | 1.2 | 550 |
| 25D142K | 25D142KJ | 880 | 1140 | 1400(1260~1540) | 150 | 2310 | 15000 | 20000 | 850 | 1020 | 1.2 | 500 |
| 25D162K | 25D162KJ | 1000 | 1280 | 1600(1400~1760) | 150 | 2640 | 15000 | 20000 | 970 | 1164 | 1.2 | 450 |
| 25D182K | 25D182KJ | 1100 | 1465 | 1800(1620~1980) | 150 | 2970 | 15000 | 20000 | 1092 | 1310 | 1.2 | 400 |

The tolerance of varistor voltage between 18V and 68V is more than 10%.

25D201K To 25D911K does have UL certification



Reliability Test

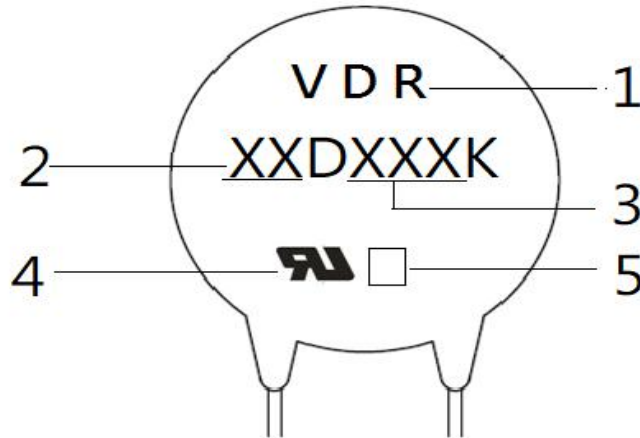
Mechanical Ratings

| Test Parameter | Test Condition / Description | | | Performance Requirements |
|-------------------------------------|---|----------|---------|--|
| Terminal Pull Strength | After gradually applying the load specified below and keeping the unit fixed for ten seconds, the terminal shall be visually examined for any damage. | Diameter | Loading | No visible damage |
| | | 0.6mm | 1.0 Kg | |
| | | 0.8mm | 1.0 Kg | |
| | | 1.0mm | 2.0 Kg | |
| Terminal Bending Strength | The unit shall be secured with its terminal kept vertical and the weight specified below be applied in the axial direction. The terminal shall gradually be bent by 90° in one direction, then 90° in the opposite direction, and again back to the original position. The damage of the terminal shall be visually examined. | Diameter | Loading | No visible damage |
| | | 0.6mm | 0.5 Kg | |
| | | 0.8mm | 0.5 Kg | |
| | | 1.0mm | 1.0 Kg | |
| Vibration | The Specimen shall be vibrated by its lead wires with a total amplitude of 1.5mm and a varying frequency of 10~55~10HZ(each minutes) for a period of 2 hours respectively in each X,Y and Z directions. | | | No visible damage $\Delta VB/VB\% \leq \pm 5\%$ |
| Soldering-solderability | After dipping the terminal to depth of approximately 3mm from the specimen in a soldering bath of 260°C for 10±1(D5: 5±1) seconds. Thereafter the terminal shall be visually examined. | | | Terminations shall be uniformly tinned |
| Soldering-Resistance to Solder Heat | After preheating the specimen, the specimen shall be completely immersed into a soldering bath having a temperature of 260±5°C for 10±1 (D5: 5±1) seconds or iron of 400±5°C for 3±0.5 seconds. There after the change of Vb and mechanical damage shall be examined. | | | No visible damage $\Delta VB/VB\% \leq \pm 5\%$ |

ENVIRONMENTAL RATINGS

| | | | | | |
|--------------------------|--|------|-----------|---|---|
| Dry Heat Loading | The specimen shall be applied continuously the maximum allowable voltage at the specified conditions for specified period and then stored at room temperature and normal humidity over 2 hours. Thereafter, the change of Vb and mechanical damage shall be examined. temp : 125±2°C ; Period : 1000±24hours. | | | $\Delta VB/VB\% \leq \pm 10\%$ | |
| High Temperature Storage | In a drying oven without load. Ambient temp : 125±2°C ; period : 1000±24hours | | | $\Delta VB/VB\% \leq \pm 5\%$ | |
| Damp Heat Loading | The specimen shall be applied continuously the maximum allowable voltage at the specified conditions for specified period and then stored at room temperature and normal humidity over 2 hours. Thereafter, the change of Vb and mechanical damage shall be examined. condition : 40±2°C , 90 to 95%R.H. ; period : 1000±24 hours | | | $\Delta VB/VB\% \leq \pm 10\%$ | |
| Temperature Cycle | Condition the specimen to each temperature form step 1 to step 4 in this order for the period shown in the table of specifications. The change of Vb and mechanical damage shall be examined after 2 hours. | Step | Temp°C | Period | No visible damage $\Delta VB/VB\% \leq \pm 10\%$ |
| | | 1 | -40±3°C | 30 min. | |
| | | 2 | Room Temp | 15 min. | |
| | | 3 | 85±2°C | 30 min. | |
| | | 4 | Room Temp | 15 min. | |
| Surge Lifetime Rating | The change of Vb shall be measured after the impulse listed below is applied 10,000 times continuously with the interval of ten seconds at room temperature. | | | No visible damage $\Delta VB/VB\% \leq \pm 10\%$ | |
| Voltage Proof | Voltage : 2500VAC Leakage Current ≤ 0.5mA Time : 60 Seconds | | | No Breakdown | |

MARKING CODE



- 1 SongLong Lishang Logo
- 2 Disk Size
- 3 Varistor Voltage
- 4 UL Accreditation Logo
- 5 “J” is High Surge Code ,not “ J ” is Standard

Packaging specification / bulk packaging quantity

Unit:Pcs

| Dimension | Part No. | Bag | Small Carton | Carton |
|-----------------|--------------|-----|--------------|--------|
| 25D | 180L to 182K | 100 | 600 | 1,200 |
| 25D (Short leg) | 180L to 182K | 100 | 800 | 1,600 |