32D Series

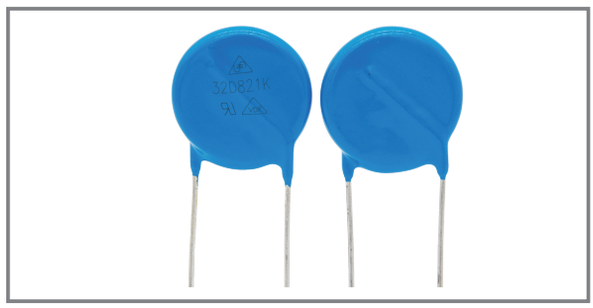
ROHS

Radial Lead Varistor (MOV)

www.unsemi.com.tw

Description

The 32D series radial leaded varistors provides an ideal circuit protection solution for lower DC voltage applications by offering higher surge ratings than ever before available in such small discs. The maximum peak surge current rating can reach up to 30KA (8/20 μs pulse) to protect against high peak surges, including indirect lightning strike interference, system switching transients and abnormal fast transients from the power source.



Features

- Wide operating voltages ranging from 130Vrms to 1100Vrms(AC)
- Fast response time of less than 25ns, instantly clamping the transient over voltage.
- High surge current handling capability.
- High energy absorption capability.
- Low clamping voltages, providing better surge protection
- Low capacitance values, providing digital switching circuitry protection.
- High insulation resistance, preventing electric arching to the adjacent devices or circuits.

Material

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

Applicable

- 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℃~ +85℃
- Storage Temperature: -40℃~ +125℃
- Working Surface Temperature: +115℃
- Insulation Resistance: > 100MΩ
- Coating (Epoxy Resin): Flame-Retardant to UL 94V-0
- Approval Standard and File Number:
  UL: E489912

Part Numbering

32 - D - XXX - K - X - X - X - X

(1) (2) (3) (4) (5) (6) (7) (8)

(1) Size(mm) : 05mm to 32mm

(2) Type : D: Disk, S: Square

(3) Varistor Voltage : 470(47*10^0=47V) , 471(47*10^1=470V)

(4) Tolerance : K±10%, L±15%, M±20%

(5) Surge Current Standard: J:High Surge

(6) Taping Mode : TR : Reel

(7) Lead Form : C:Crimped, Short leg : NO : X.X

(8) Coating : H:Epoxy Coating 125℃

Note: (5)、(6)、(7)、(8) options is non-standard

Electrical Characteristics (@ 25℃ Unless Otherwise Specified)

Part Number		Maximum Allowable Voltage		Varistor Voltage	Withstanding Surge Current 8/20μS		Max Clamping Voltage		Maximum Energy (10/1000μs)		Rated Power
Standard	High Surge	VAC (V)	VDC (V)	V1mA (V)	I(A) Standard 1 time	I(A) High Surge 1 time	VC (V)	IP (A)	(J) Standard	(J) High Surge	(W)
32D201K	32D201KJ	130	170	200(185-225)	25000	30000	340	200	250	275	1.4
32D221K	32D221KJ	140	180	220(198-242)	25000	30000	360	200	270	297	1.4
32D241K	32D241KJ	150	200	240(216-264)	25000	30000	395	200	290	319	1.4
32D271K	32D271KJ	175	225	270(243-297)	25000	30000	455	200	300	330	1.4
32D301K	32D301KJ	190	250	300(270-330)	25000	30000	505	200	330	363	1.4
32D331K	32D331KJ	210	275	330(297-363)	25000	30000	550	200	360	396	1.4
32D361K	32D361KJ	230	300	360(324-396)	25000	30000	595	200	380	418	1.4
32D391K	32D391KJ	250	320	390(351-429)	25000	30000	650	200	400	440	1.4
32D431K	32D431KJ	275	350	430(387-473)	25000	30000	710	200	430	473	1.4
32D471K	32D471KJ	300	385	470(423-517)	25000	30000	775	200	460	506	1.4
32D511K	32D511KJ	320	415	510(459-561)	25000	30000	845	200	510	561	1.4
32D561K	32D561KJ	350	460	560(504-616)	25000	30000	920	200	540	594	1.4
32D621K	32D621KJ	385	505	620(558-682)	25000	30000	1025	200	570	627	1.4
32D681K	32D681KJ	420	560	680(612-748)	25000	30000	1120	200	600	660	1.4
32D751K	32D751KJ	460	615	750(675-825)	25000	30000	1240	200	620	682	1.4
32D781K	32D781KJ	485	640	780(702-858)	25000	30000	1290	200	660	726	1.4
32D821K	32D821KJ	510	670	820(738-902)	25000	30000	1355	200	700	770	1.4
32D911K	32D911KJ	550	745	910(819-1001)	25000	30000	1500	200	750	825	1.4
32D102K	32D102KJ	625	825	1000(900-1100)	25000	30000	1650	200	780	858	1.4
32D112K	32D112KJ	680	895	1100(990-1210)	25000	30000	1815	200	810	891	1.4
32D122K	32D122KJ	750	990	1200(1080-1320)	25000	30000	1980	200	910	1001	1.4
32D142K	32D142KJ	880	1140	1400(1260-1540)	25000	30000	2310	200	960	1056	1.4
32D162K	32D162KJ	1000	1280	1600(1400-1760)	25000	30000	2475	200	1020	1122	1.4
32D182K	32D182KJ	1100	1465	1800(1620-1980)	25000	30000	2970	200	1080	1188	1.4

Part Marking

Marking	
Trademark	UN logo
Part No.	32DXXXK
Standard for Safety	UL / VDE

Packaging Information

Unit:Pcs

Dimension	Part No.	Bag	Small Carton	Carton
32D	201K to 182K	100	500	1000

Package Dimensions Unit: mm

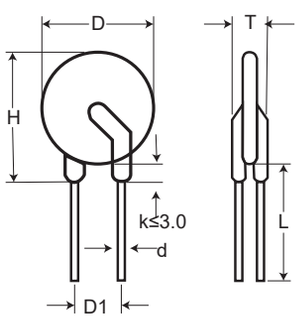


TABLE1	
Symbol	Dimension
H(max.)	39.0
L(min.)	25.0
D(max.)	34.0
D1(±0.8)	10.0
T(max.)	TABLE2
d(±0.05)	1.2

TABLE2			
Model	T(max.)	Model	T(max.)
201K	4.1	102K	7.8
221K	4.2	112K	8.5
241K	4.3	122K	11.0
271K	4.5	142K	11.5
301K	4.7	162K	12.0
331K	4.8	182K	12.5
361K	5.0	-	-
391K	5.1	-	-
431K	5.3	-	-
471K	5.6	-	-
511K	5.8	-	-
561K	6.2	-	-
621K	6.4	-	-
681K	6.4	-	-
751K	6.5	-	-
781K	6.8	-	-
821K	7.2	-	-
911K	7.6	-	-

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 0.6mm / 1.0 Kg 0.8mm / 1.0 Kg 1.0mm / 2.0 Kg	No visible damage
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 0.6mm / 0.5 Kg 0.8mm / 0.5 Kg 1.0mm / 1.0 Kg	No visible damage
Vibration	The Specimen shall be vibrated by its lead wires with a total amplitude of 1.5mm and a varying frequency of10~55~10HZ(each minutes) for a period of 2 hours respectively in each X,Y and Z directions.	No visible damage △VB/VB%≦±5%
Soldering-solder ability	After dipping the terminal to depth of approximately 3mm from the specimen in a soldering bath of 260℃ 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℃ for 10±1 (D5: 5±1) seconds or iron of 400±5℃ for 3±0.5 seconds. There after the change of Vb and mechanical damage shall be examined.	No visible damage △VB/VB%≦±5%

Reliability Test (ENVIRONMENTAL RATINGS)

<table>
<tr><th>Test Parameter</th><th>Test Condition / Description</th><th>Performance Requirements</th></tr>
<tr><td>Dry Heat Loading</td><td>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.Ambient temp：125±2℃ ; Period：1000±24hours</td><td>△VB/VB%≦±10%</td></tr>
<tr><td>High Temperature Storage</td><td>In a drying oven without load.
Ambient temp：125±2℃ ; period：1000±24hours</td><td>△VB/VB%≦±5%</td></tr>
<tr><td>Damp Heat Loading</td><td>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.</td><td>△VB/VB%≦±10%</td></tr>
<tr><td>Temperature Cycle</td><td>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.
<table>
<tr><th>Step</th><th>Temp℃</th><th>Period</th></tr>
<tr><td>1</td><td>-40+3℃</td><td>30 min.</td></tr>
<tr><td>2</td><td>Room Temp</td><td>15 min.</td></tr>
<tr><td>3</td><td>85+2℃</td><td>30 min.</td></tr>
<tr><td>4</td><td>Room Temp</td><td>15 min.</td></tr>
</table></td><td>No visible damage
△VB/VB%≦±10%</td></tr>
<tr><td>Surge Lifetime Rating</td><td>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.Vb and mechanical damage shall be examined.</td><td>No visible damage
△VB/VB%≦±10%</td></tr>
<tr><td>Voltage Proof</td><td>Voltage：2500VAC Leakage Current≦0.5mA
Time：60 Seconds</td><td>No Breakdown</td></tr>
</table>

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