14D-SC Series

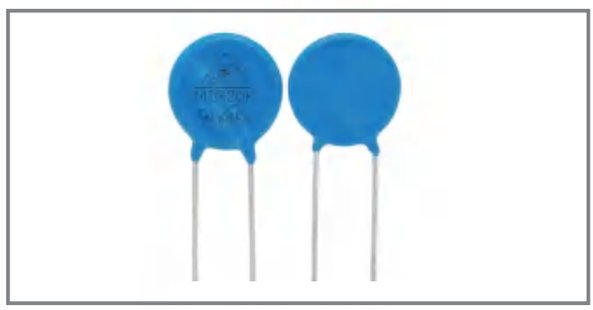
ROHS

Radial Lead Varistor (MOV)

www.unsemi.com.tw

Description

The 14DSC Seriesradial 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 6KA (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 50Vrms to 510Vrms(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:
  VDE：40046112
  CQC：16001161422
  CSA&CUL：E489912

Part Numbering

14 - D - XXX - K - X - X

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

(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 S:6KV/3KA Y:10KV/5KA surge Pulse 40times

(6) C: 4KV /2KA sub 0 , 90 , 180 , 270 four phases, each phases of positive and negative 5 times Total

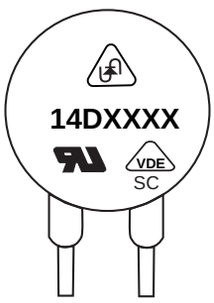
Electrical Characteristics (@ 25℃ Unless Otherwise Specified)

Part Number	Maximum Allowable Voltage		Varistor Voltage	Withstanding Surge Current 8/20μS	Max Clamping Voltage		Maximum Energy (10/1000μs)	Rated Power
Standard	VAC (V)	VDC (V)	V1mA (V)	1.2/50us & 8/20us combinationof wave,6KV/3KA sub 0 , 90 , 180 , 270four phases, each phases of positive and negative 5 times Tota	VC (V)	IP (A)	(J) Standard	(W)
14D820KSC	50	65	82(73.8-90.2)	40times	135	50	27	0.6
14D101KSC	60	85	100(90-110)	40times	165	50	33	0.6
14D121KSC	75	100	120(108-132)	40times	200	50	40	0.6
14D151KSC	95	125	150(135-165)	40times	250	50	53	0.6
14D181KSC	115	150	180(162-198)	40times	300	50	60	0.6
14D201KSC	130	170	200(185-225)	40times	340	50	70	0.6
14D221KSC	140	180	220(198-242)	40times	360	50	78	0.6
14D241KSC	150	200	240(216-264)	40times	395	50	84	0.6
14D271KSC	175	225	270(243-297)	40times	455	50	99	0.6
14D301KSC	190	250	300(270-330)	40times	505	50	108	0.6
14D331KSC	210	275	330(297-363)	40times	550	50	115	0.6
14D361KSC	230	300	360(324-396)	40times	595	50	130	0.6
14D391KSC	250	320	390(351-429)	40times	650	50	140	0.6
14D431KSC	275	350	430(387-473)	40times	710	50	155	0.6
14D471KSC	300	385	470(423-517)	40times	775	50	175	0.6
14D511KSC	320	415	510(459-561)	40times	845	50	180	0.6
14D561KSC	350	460	560(504-616)	40times	920	50	185	0.6
14D621KSC	385	505	620(558-682)	40times	1025	50	190	0.6
14D681KSC	420	560	680(612-748)	40times	1120	50	200	0.6
14D751KSC	460	615	750(675-825)	40times	1240	50	210	0.6
14D781KSC	485	640	780(702-858)	40times	1290	50	220	0.6
14D821KSC	510	670	820(738-902)	40times	1355	50	235	0.6

Approval Standard And File Number

Certified Model No.	c UL us E489912	VDE 40046112	CQC 16001161423	CSA & CUL E489912
14D820KSC	YES	YES	YES	YES
14D101KSC	YES	YES	YES	YES
14D121KSC	YES	YES	YES	YES
14D151KSC	YES	YES	YES	YES
14D181KSC	YES	YES	YES	YES
14D201KSC	YES	YES	YES	YES
14D221KSC	YES	YES	YES	YES
14D241KSC	YES	YES	YES	YES
14D271KSC	YES	YES	YES	YES
14D301KSC	YES	YES	YES	YES
14D331KSC	YES	YES	YES	YES
14D361KSC	YES	YES	YES	YES
14D391KSC	YES	YES	YES	YES
14D431KSC	YES	YES	YES	YES
14D471KSC	YES	YES	YES	YES
14D51 1KSC	YES	YES	YES	YES
14D561KSC	YES	YES	YES	YES
14D621KSC	YES	YES	YES	YES
14D681KSC	YES	YES	YES	YES
14D751KSC	YES	YES	YES	YES
14D781KSC	YES		YES	YES
14D821KSC	YES		YES	YES

Part Marking



Marking	
Trademark	UN logo
Part No.	14DXXXK
Standard for Safety	UL / VDE / CQC
SC	6KV/3KA 40times

Packaging Information

Unit:Pcs

Dimension	Part No.	Bag	Small Carton	Carton
14D	180L to 681K	500	3000	6000
14D (Short leg)	180L to 681K	500	4000	8000
14D	751K to 182K	500	2500	5000
14D (Short leg)	751K to 182K	500	3000	6000

Package Dimensions Unit: mm

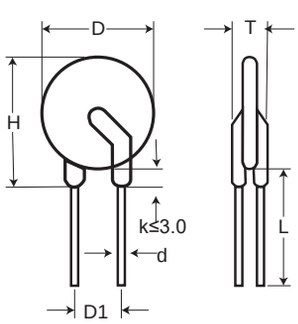


TABLE1	
Symbol	Dimension
H(max.)	21.0
L(min.)	20.0
D(max.)	16.5
D1(±0.8)	7.5
T(max.)	TABLE2
d(±0.05)	0.8

TABLE2			
Model	T(max.)	Model	T(max.)
820K	4.1	511K	6.1
101K	4.3	561K	6.4
121K	4.4	621K	6.8
151K	4.2	681K	7.1
181K	4.3	751K	7.2
201K	4.4	781K	7.3
221K	4.5	821K	7.5
241K	4.6		
271K	4.7		
301K	4.8		
331K	5.0		
361K	5.2		
391K	5.2		
431K	5.4		
471K	5.9		

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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