20D-YC Series

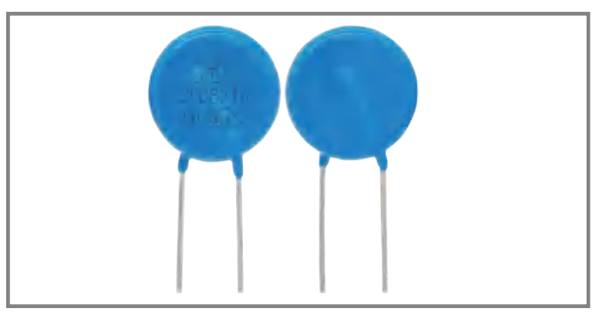
ROHS

Radial Lead Varistor (MOV)

www.unsemi.com.tw

Description

The 20DYC 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 10KA (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: 16001161413
  CSA&CUL: E489912

Part Numbering

20 - 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: Y:10KV/5KA

(6) C: 10KV /5KA sub 0 , 90 , 180 , 270 four phases, each phases of positive and negative 5 times Total

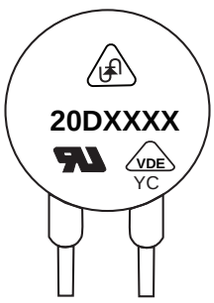
Electrical Characteristics (@ 25℃ Unless Otherwise Specified)

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,10KV /5KA sub 0 , 90 , 180 , 270four phases, each phases of positive and negative 5 times Tota	VC (V)	IP (A)	(J) Standard	(W)
20D820KYC	50	65	82(73.8-90.2)	40times	135	100	62	1.0
20D101KYC	60	85	100(90-110)	40times	165	100	77	1.0
20D121KYC	75	100	120(108-132)	40times	200	100	94	1.0
20D151KYC	95	125	150(135-165)	40times	250	100	117	1.0
20D181KYC	115	150	180(162-198)	40times	300	100	143	1.0
20D201KYC	130	170	200(185-225)	40times	340	100	154	1.0
20D221KYC	140	180	220(198-242)	40times	360	100	171	1.0
20D241KYC	150	200	240(216-264)	40times	395	100	185	1.0
20D271KYC	175	225	270(243-297)	40times	455	100	209	1.0
20D301KYC	190	250	300(270-330)	40times	505	100	231	1.0
20D331KYC	210	275	330(297-363)	40times	550	100	251	1.0
20D361KYC	230	300	360(324-396)	40times	595	100	281	1.0
20D391KYC	250	320	390(351-429)	40times	650	100	303	1.0
20D431KYC	275	350	430(387-473)	40times	710	100	336	1.0
20D471KYC	300	385	470(423-517)	40times	775	100	385	1.0
20D511KYC	320	415	510(459-561)	40times	845	100	396	1.0
20D561KYC	350	460	560(504-616)	40times	920	100	418	1.0
20D621KYC	385	505	620(558-682)	40times	1025	100	429	1.0
20D681KYC	420	560	680(612-748)	40times	1120	100	440	1.0
20D751KYC	460	615	750(675-825)	40times	1240	100	462	1.0
20D781KYC	485	640	780(702-858)	40times	1290	100	484	1.0
20D821KYC	510	670	820(738-902)	40times	1355	100	506	1.0

Approval Standard And File Number

Certified Model No.	c UL us E489912	VDE 40046112	CQC 16001161423	CSA & CUL E489912
20D820KYC	YES	YES	YES	YES
20D101KYC	YES	YES	YES	YES
20D121KYC	YES	YES	YES	YES
20D151KYC	YES	YES	YES	YES
20D181KYC	YES	YES	YES	YES
20D201KYC	YES	YES	YES	YES
20D221KYC	YES	YES	YES	YES
20D241KYC	YES	YES	YES	YES
20D271KYC	YES	YES	YES	YES
20D301KYC	YES	YES	YES	YES
20D331KYC	YES	YES	YES	YES
20D361KYC	YES	YES	YES	YES
20D391KYC	YES	YES	YES	YES
20D431KYC	YES	YES	YES	YES
20D471KYC	YES	YES	YES	YES
20D511KYC	YES	YES	YES	YES
20D561KYC	YES	YES	YES	YES
20D621KYC	YES	YES	YES	YES
20D681KYC	YES	YES	YES	YES
20D751KYC	YES	YES	YES	YES
20D781KYC	YES	YES	YES	YES
20D821KYC	YES	YES	YES	YES

Part Marking



Marking	
Trademark	UN logo
Part No.	20DXXXK
Standard for Safety	UL / VDE / CQC
YC	10KV/5KA 40times

Packaging Information

Unit:Pcs

Dimension	Part No.	Bag	Small Carton	Carton
20D	180L to 681K	250	1500	3000
20D (Short leg)	180L to 681K	250	2000	4000
20D	751K to 182K	200	1000	2000
20D (Short leg)	751K to 182K	200	1500	3000

Package Dimensions Unit: mm

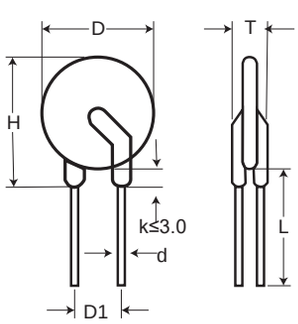


TABLE1	
Symbol	Dimension
H(max.)	26.5
L(min.)	20.0
D(max.)	23.0
D1(±0.8)	10.0
T(max.)	TABL E2
d(±0.05)	1.0

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)

<table>
<tr><th>Test Parameter</th><th>Test Condition / Description</th><th>Performance Requirements</th></tr>
<tr><td>Terminal Pull Strength</td><td>After gradually applying the load specified below and keeping the unit fixed for ten seconds, the terminal shall be visually examined for any damage
<table><tr><td>Diameter</td><td>Loading</td></tr><tr><td>0.6mm</td><td>1.0 Kg</td></tr><tr><td>0.8mm</td><td>1.0 Kg</td></tr><tr><td>1.0mm</td><td>2.0 Kg</td></tr></table></td><td>No visible damage</td></tr>
<tr><td>Terminal Bending Strength</td><td>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.
<table><tr><td>Diameter</td><td>Loading</td></tr><tr><td>0.6mm</td><td>0.5 Kg</td></tr><tr><td>0.8mm</td><td>0.5 Kg</td></tr><tr><td>1. .0mm</td><td>1.0 Kg</td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table></td><td>No visible damage</td></tr>
<tr><td>Vibration</td><td>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.</td><td>No visible damage
△VB/VB%≦±5%</td></tr>
<tr><td>Soldering-solder ability</td><td>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.</td><td>Terminations shall be uniformly tinned</td></tr>
<tr><td>Soldering-Resistance to Solder Heat</td><td>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.</td><td>No visible damage
△VB/VB%≦±5%</td></tr>
</table>

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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