07D-BC Series

ROHS

Radial Lead Varistor (MOV)

www.unsemi.com.tw

Description

The 07DBC 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 1.75KA (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：16001161423
  CSA&CUL：E489912

Part Numbering

07 - 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: B: 2KV/1KA

(6)) C: 2KV /1KA sub 0 , 90 , 180 , 270 four phases, each phases of positive and negative 5 times Total 40times

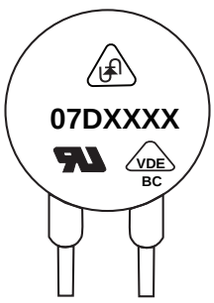
Electrical Characteristics (@ 25℃ Unless Otherwise Specified)

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,2KV /1KA sub 0 , 90 , 180 , 270four phases, each phases of positive and negative 5 times Tota	VC (V)	IP (A)	(J) Standard	(W)
07D820KBC	50	65	82(73.8-90.2)	40times	135	10	12	0.25
07D101KBC	60	85	100(90-110)	40times	165	10	14	0.25
07D121KBC	75	100	120(108-132)	40times	200	10	14	0.25
07D151KBC	95	125	150(135-165)	40times	250	10	16	0.25
07D181KBC	115	150	180(162-198)	40times	300	10	19	0.25
07D201KBC	130	170	200(185-225)	40times	340	10	20	0.25
07D221KBC	140	180	220(198-242)	40times	360	10	23	0.25
07D241KBC	150	200	240(216-264)	40times	395	10	25	0.25
07D271KBC	175	225	270(243-297)	40times	455	10	29	0.25
07D301KBC	190	250	300(270-330)	40times	505	10	31	0.25
07D331KBC	210	275	330(297-363)	40times	550	10	34	0.25
07D361KBC	230	300	360(324-396)	40times	595	10	38	0.25
07D391KBC	250	320	390(351-429)	40times	650	10	42	0.25
07D431KBC	275	350	430(387-473)	40times	710	10	48	0.25
07D471KBC	300	385	470(423-517)	40times	775	10	50	0.25
07D511KBC	320	415	510(459-561)	40times	845	10	54	0.25
07D561KBC	350	460	560(504-616)	40times	920	10	59	0.25
07D621KBC	385	505	620(558-682)	40times	1025	10	66	0.25
07D681KBC	420	560	680(612-748)	40times	1120	10	72	0.25
07D751KBC	460	615	750(675-825)	40times	1240	10	81	0.25
07D781KBC	485	640	780(702-858)	40times	1290	10	81	0.25
07D821KBC	510	670	820(738-902)	40times	1355	10	84	0.25

Approval Standard And File Number

Certified Model No.	c UL us E489912	VDE 40046112	CQC 16001161423	CSA & CUL E489912
07D820KBC	YES	YES	YES	YES
07D101KBC	YES	YES	YES	YES
07D121KBC	YES	YES	YES	YES
07D151KBC	YES	YES	YES	YES
07D181KBC	YES	YES	YES	YES
07D201KBC	YES	YES	YES	YES
07D221KBC	YES	YES	YES	YES
07D241KBC	YES	YES	YES	YES
07D27 1KBC	YES	YES	YES	YES
07D301KBC	YES	YES	YES	YES
07D331KBC	YES	YES	YES	YES
07D361KBC	YES	YES	YES	YES
07D391KBC	YES	YES	YES	YES
07D431KBC	YES	YES	YES	YES
07D471KBC	YES	YES	YES	YES
07D511KBC	YES	YES	YES	YES
07D561KBC	YES	YES	YES	YES
07D621KBC	YES		YES	YES
07D681KBC	YES		YES	YES
07D751KBC			YES	
07D781KBC			YES	
07D821KBC			YES	

Part Marking



Marking	
Trademark	UN logo
Part No.	07DXXXK
Standard for Safety	UL / VDE / CQC
BC	2KV/1KA 40times

Packaging Information

Unit:Pcs

Dimension	Part No.	Bag	Small Carton	Carton
07D	180L to 821K	1000	10000	20000
07D (Short leg)	180L to 821K	1000	15000	30000

Package Dimensions Unit: mm

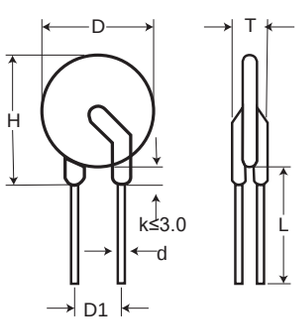


TABLE1	
Symbol	Dimension
H(max.)	14.0
L(min.)	20.0
D(max.)	9.00
D1(±0.8)	5.00
T(max.)	TABLE2
d(±0.05)	0.60

TABLE2			
Model	T(max.)	Model	T(max.)
820K	4.1	511K	6.2
101K	4.3	561K	6.5
121K	4.5	621K	7.1
151K	4.8	681K	7.3
181K	4.3	751K	7.5
201K	4.4	781K	7.7
221K	4.5	821K	8.0
241K	4.6		
271K	4.9		
301K	5.0		
331K	5.1		
361K	5.2		
391K	5.4		
431K	5.7		
471K	6.0		

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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