DATA SHEET

ZINC OXIDE VARISTOR – 7 Φ SERIES

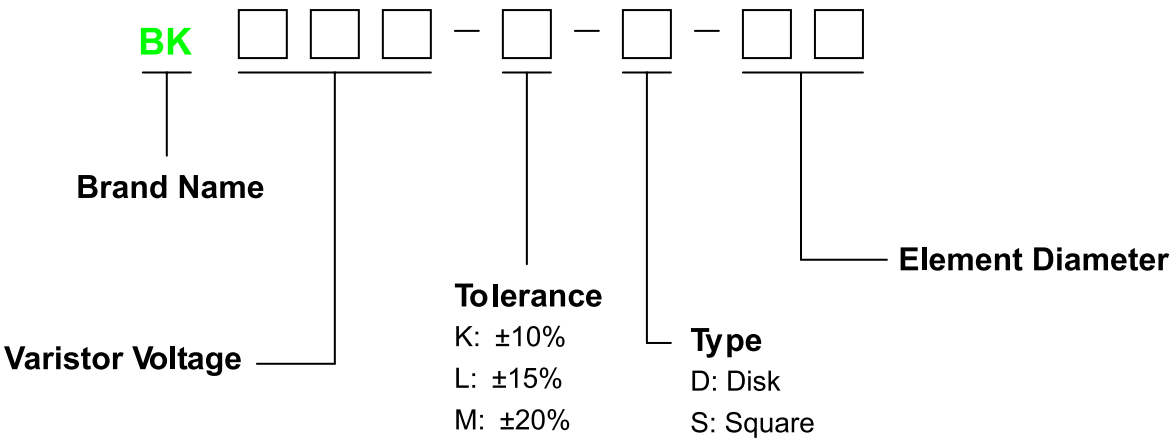
FEATURE

- Wide operating voltage (V_{1mA}) range from 8V to 1800V.
- Fast responding to transient over-voltage.
- Large absorbing transient energy capability.
- Low clamping ratio and no following-on current.

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.

PART NUMBER CODE



PACKAGE DIMENSIONS

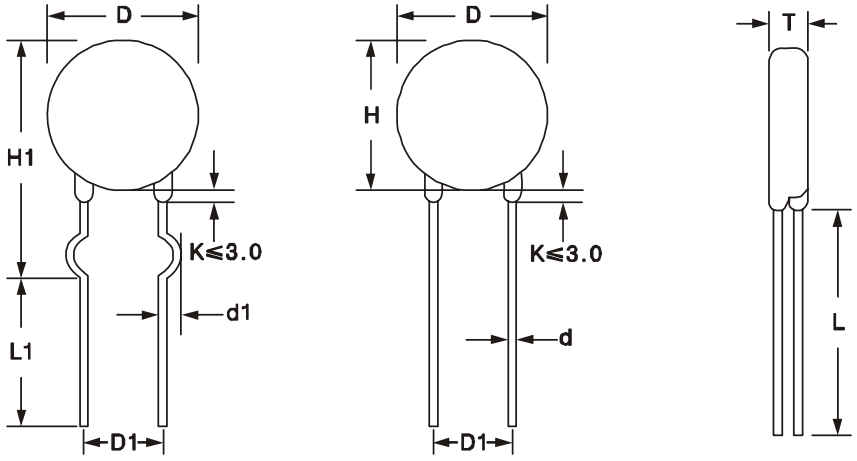


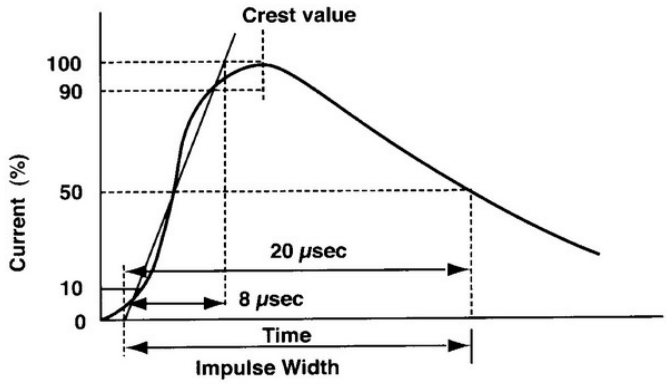
TABLE 1 unit:mm	
Symbol	Dimensions
H(max.)	12.0
H1(max.)	13.5
L(min.)	20.0
L1(min.)	15.0
D(max.)	9.0
D1(±0.8)	5.0
T(max.)	TABLE 2
d(±0.05)	0.6
d1(±0.4)	1.2

TABLE 2 unit:mm			
Model	T(max.)	Model	T(max.)
180L	4.5	241K	4.6
220K	4.6	271K	4.9
270K	4.7	301K	5.0
330K	4.9	331K	5.1
390K	4.8	361K	5.2
470K	4.9	391K	5.4
560K	5.0	431K	5.7
680K	5.2	471K	6.0
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	6.5
201K 4.4		781K	6.7
221K 4.5		821K	6.9

ELECTRICAL CHARACTERISTIC

Part Number		Maximum Allowable Voltage		Varistor Voltage	Maximum Clamping Voltage		Withstanding Surge Current		Maximum Energy (10/1000 μs)		Rated Power	Typical Capacitance (Reference)
Standard	High Surge	V_{AC}(V)	V_{DC}(V)	V_{1mA}(V)	I_P(A)	V_C(V)	I(A) Standard	I(A) High Surge	(J) Standard	(J) High Surge	(W)	@1KHz(pf)
180LD07	180LD07J	11	14	18(15~21)	2.5	36	250	500	0.9	2.0	0.02	2800
220KD07	220KD07J	14	18	22(20~24)	2.5	43	250	500	1.1	2.4	0.02	2300
270KD07	270KD07J	17	22	27(24~30)	2.5	53	250	500	1.4	3.0	0.02	1800
330KD07	330KD07J	20	26	33(30~36)	2.5	65	250	500	1.7	3.5	0.02	1500
390KD07	390KD07J	25	31	39(35~43)	2.5	77	250	500	2.1	4.0	0.02	1300
470KD07	470KD07J	30	38	47(42~54)	2.5	93	250	500	2.5	5.0	0.02	1100
560KD07	560KD07J	35	45	56(50~62)	2.5	110	250	500	3.1	6.0	0.02	890
680KD07	680KD07J	40	56	68(61~75)	2.5	135	250	500	3.6	7.0	0.02	740
820KD07	820KD07J	50	65	82(74~90)	10	135	1200	1750	5.5	10.0	0.25	600
101KD07	101KD07J	60	85	100(90~110)	10	165	1200	1750	6.5	12.0	0.25	500
121KD07	121KD07J	75	100	120(135~165)	10	200	1200	1750	7.8	13.0	0.25	420
151KD07	151KD07J	95	125	150(135~165)	10	250	1200	1750	9.7	13.0	0.25	330
181KD07	181KD07J	115	150	180(162~198)	10	300	1200	1750	11.7	16.0	0.25	280
201KD07	201KD07J	130	170	200(180~220)	10	340	1200	1750	13.0	17.0	0.25	250
221KD07	221KD07J	140	180	220(198~242)	10	360	1200	1750	14.0	19.0	0.25	230
241KD07	241KD07J	150	200	240(216~264)	10	395	1200	1750	15.0	21.0	0.25	210
271KD07	271KD07J	175	225	270(243~297)	10	455	1200	1750	18.0	24.0	0.25	185
301KD07	301KD07J	190	250	300(270~330)	10	500	1200	1750	20.0	26.0	0.25	165
331KD07	331KD07J	210	275	330(297~363)	10	550	1200	1750	23.0	28.0	0.25	150
361KD07	361KD07J	230	300	360(324~396)	10	595	1200	1750	25.0	32.0	0.25	140
391KD07	391KD07J	250	320	390(351~429)	10	650	1200	1750	25.0	35.0	0.25	130
431KD07	431KD07J	275	350	430(387~473)	10	710	1200	1750	28.0	40.0	0.25	115
471KD07	471KD07J	300	385	470(423~517)	10	775	1200	1750	30.0	42.0	0.25	105
511KD07	511KD07J	320	415	510(459~561)	10	845	1200	1750	30.0	45.0	0.25	100
561KD07	561KD07J	350	460	560(504~616)	10	925	1200	1750	30.0	49.0	0.25	90
621KD07	621KD07J	385	505	620(558~682)	10	1025	1200	1750	33.0	55.0	0.25	80
681KD07	681KD07J	420	560	680(612~748)	10	1120	1200	1750	33.0	60.0	0.25	75
751KD07	751KD07J	460	615	750(675~825)	10	1240	1200	1750	67.2	65.0	0.25	70
781KD07	781KD07J	485	640	780(702~858)	10	1290	1200	1750	67.2	65.0	0.25	70
821KD07	821KD07J	510	670	820(738~902)	10	1355	1200	1750	67.2	70.0	0.25	60

ELECTRICAL RATINGS

<table>
<tr><th>Item</th><th>Test Condition/Description</th><th>Requirement</th></tr>
<tr><td>Varistor Voltage</td><td>The voltage between two terminals with the specified measuring current 1mA.DC applied is call Vb.</td><td rowspan="6">To meet the specified value</td></tr>
<tr><td>Maximum Allowable Voltage</td><td>The recommended maximum sine wave voltage (RMS) or the maximum DC voltage can be applied continuously.</td></tr>
<tr><td>Maximum Clamping Voltage</td><td>The maximum voltage between two terminals with the specification standard impulse current.
Applied waveform: 8/20 μsec.
 
</td></tr>
<tr><td>Rated Wattage</td><td>The maximum average power that can be applied within the specified ambient temperature.</td></tr>
<tr><td>Energy</td><td>The maximum energy within the varistor voltage change of ±10% when one impulse of 10/1000 μsec. or 2 msec. is applied.</td></tr>
<tr><td>Withstanding Surge Current</td><td>The maximum current within the varistor voltage change of ±10% with the standard impulse current (8/20 μsec.) applied one time.</td></tr>
<tr><td>Varistor Voltage Temp. Coefficient</td><td>$\frac{Vb\ at\ 20℃\ -\ Vb\ at\ 70℃}{Vb\ at\ 20℃} \times \frac{1}{50} \times 100\ (\%℃)$</td><td>7+0.05% / ℃max</td></tr>
<tr><td>Surge Life</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.
<table>
<tr><td rowspan="2">5Φ series</td><td>180L to 680K</td><td>10A (8/20 μsec.)</td></tr>
<tr><td>820K to 751K</td><td>20A (8/20 μsec.)</td></tr>
<tr><td rowspan="2">7Φ series</td><td>180L to 680K</td><td>25A (8/20 μsec.)</td></tr>
<tr><td>820K to 821K</td><td>50A (8/20 μsec.)</td></tr>
<tr><td rowspan="2">10Φ series</td><td>180L to 680K</td><td>50A (8/20 μsec.)</td></tr>
<tr><td>820K to 182K</td><td>100A (8/20 μsec.)</td></tr>
<tr><td rowspan="2">14Φ series</td><td>180L to 680K</td><td>75A (8/20 μsec.)</td></tr>
<tr><td>820K to 182K</td><td>150A (8/20 μsec.)</td></tr>
<tr><td rowspan="2">20Φ series</td><td>180L to 680K</td><td>100A (8/20 μsec.)</td></tr>
<tr><td>820K to 182K</td><td>200A (8/20 μsec.)</td></tr>
</table></td><td>$\frac{\Delta Vb}{Vb} \leqslant \pm 10\%$</td></tr>
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