DATA SHEET

ZINC OXIDE VARISTOR – 7 Φ SERIES

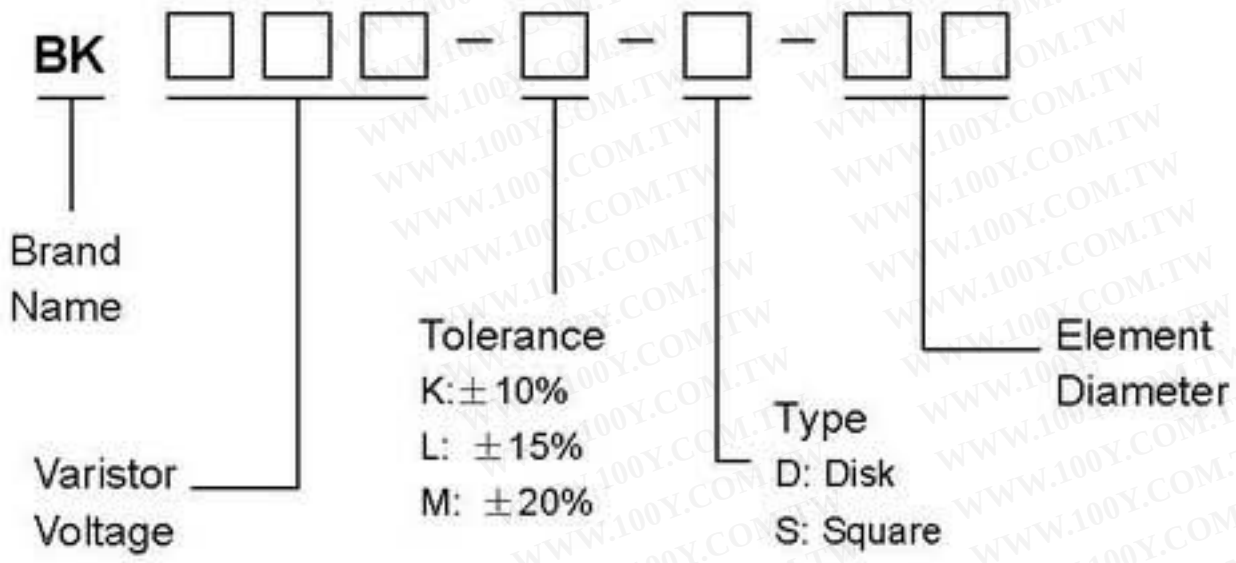
FEATURES

- ✧ 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.

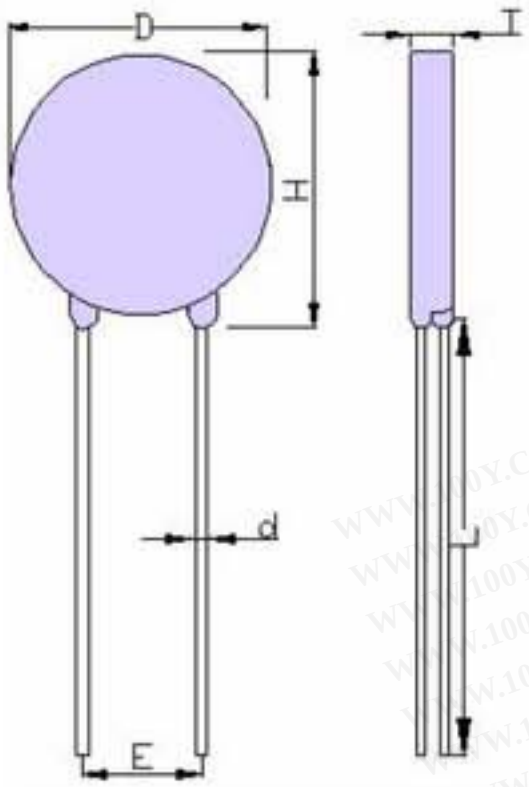
APPLICATION

- ✧ 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



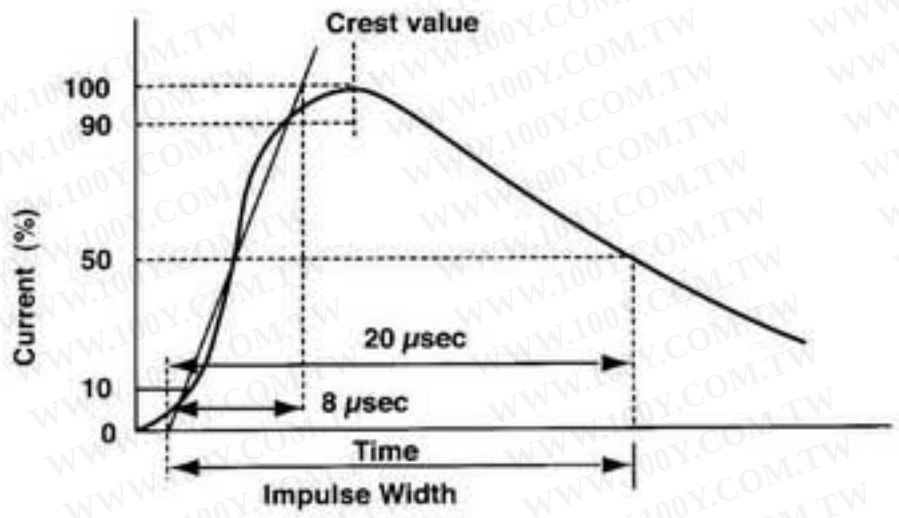
PACKAGE DIMENSIONS



unit :mm

Part Code	T	L	D	H	d	E
	Max.	Min.	Max.	Max.	±0.05	±0.8
821K	6.9	20	9	12	0.6	5
781K	6.7	20	9	12	0.6	5
751K	6.5	20	9	12	0.6	5
681K	6.4	20	9	12	0.6	5
621K	6.4	20	9	12	0.6	5
561K	6.2	20	9	12	0.6	5
511K	5.8	20	9	12	0.6	5
471K	5.6	20	9	12	0.6	5
431K	5.3	20	9	12	0.6	5
391K	5.1	20	9	12	0.6	5
361K	5.0	20	9	12	0.6	5
331K	4.8	20	9	12	0.6	5
301K	4.7	20	9	12	0.6	5
271K	4.5	20	9	12	0.6	5
241K	4.3	20	9	12	0.6	5
221K	4.2	20	9	12	0.6	5
201K	4.1	20	9	12	0.6	5
181K	4.1	20	9	12	0.6	5
151K	4.8	20	9	12	0.6	5
121K	4.5	20	9	12	0.6	5
101K	4.3	20	9	12	0.6	5
820K	4.1	20	9	12	0.6	5
680K	5.2	20	9	12	0.6	5
560K	5.0	20	9	12	0.6	5
470K	4.9	20	9	12	0.6	5
390K	4.8	20	9	12	0.6	5
330K	4.9	20	9	12	0.6	5
270K	4.7	20	9	12	0.6	5
220K	4.6	20	9	12	0.6	5
180L	4.5	20	9	12	0.6	5

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: 8/20μsec.
 
</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 10/1000μsec. 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 (8/20μsec.) 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>+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 (8/20μsec.)</td></tr>
<tr><td>820K to 751K</td><td>20A (8/20μsec.)</td></tr>
<tr><td rowspan="2">7Φ series</td><td>180L to 680K</td><td>25A (8/20μsec.)</td></tr>
<tr><td>820K to 821K</td><td>50A (8/20μsec.)</td></tr>
<tr><td rowspan="2">10Φ series</td><td>180L to 680K</td><td>50A (8/20μsec.)</td></tr>
<tr><td>820K to 182K</td><td>100A (8/20μsec.)</td></tr>
<tr><td rowspan="2">14Φ series</td><td>180L to 680K</td><td>75A (8/20μsec.)</td></tr>
<tr><td>820K to 182K</td><td>150A (8/20μsec.)</td></tr>
<tr><td rowspan="2">20Φ series</td><td>180L to 680K</td><td>100A (8/20μsec.)</td></tr>
<tr><td>820K to 182K</td><td>200A (8/20μsec.)</td></tr>
</table></td><td>$\frac{\Delta Vb}{Vb} \leq \pm 10\%$</td></tr>
</table>

ELECTRIACL CHARACTERISTIC

Part Number	Maximum Allowable Voltage		Maximum Energy	Withstanding Surge Current 8/20μs		Rated Wattage	Varistor Voltage	Maximum Clamping Voltage	Certification		
	ACrms (V)	DC (V)	10/1000μs (J)	1 time (A)	2 times (A)	(W)	V_{1mA} (V)	V_{10A} (V)			
821KD07	510	670	67.2	1200	600	0.25	820(738-902)	1355	•	•	•
781KD07	485	640	67.2				780(702-858)	1290	•	•	•
751KD07	460	615	67.2				750(675-825)	1240	•	•	•
681KD07	420	560	61.6				680(612-748)	1120	•	•	•
621KD07	385	505	61.6				620(558-682)	1025	•	•	•
561KD07	350	460	56.0				560(504-616)	920	•	•	•
511KD07	320	415	56.0				510(459-561)	845	•	•	•
471KD07	300	385	56.0				470(423-517)	775	•	•	•
431KD07	275	350	50.4				430(387-473)	710	•	•	•
391KD07	250	320	46.2				390(351-429)	650	•	•	•
361KD07	230	300	42.0				360(324-396)	595	•	•	•
331KD07	210	275	37.8				330(297-363)	550	•	•	•
301KD07	190	250	35.0				300(270-330)	505	•	•	•
271KD07	175	225	32.2				270(243-297)	455	•	•	•
241KD07	150	200	28.0				240(216-264)	395	•	•	•
221KD07	140	180	28.0				220(198-242)	360	•	•	•
201KD07	130	170	25.2				200(180-220)	330	•	•	•
181KD07	115	150	18.2				180(162-198)	300	•	•	•
151KD07	95	125	16.8				150(135-165)	250	•	•	•
121KD07	75	100	14.0				120(108-132)	200	•	•	•
101KD07	60	85	11.6				100(90-110)	165	•	•	•
820KD07	50	65	9.8				82(74-90)	135	•	•	•
680KD07	40	56	7.3	250	125	0.02	68(61-75)	*135	•	•	
560KD07	35	45	6.2				56(50-62)	*110	•	•	
470KD07	30	38	5.0				47(42-52)	*93	•	•	
390KD07	25	31	4.2				39(35-43)	*77	•	•	
330KD07	20	26	3.5				33(30-36)	*65	•	•	
270KD07	17	22	2.8				27(24-30)	*53	•	•	
220KD07	14	18	2.4				22(20-24)	*43	•	•	
180LD07	10	14	2.1				18(15-21)	*38	•	•	
120MD07	7	9	1.2				12(9.6-14.4)	*25	•	•	
8R0MD07	5	6	0.8				8(6.4-9.6)	*17	•	•	

* 680K-180L Max. Clamping Voltage testing current 2.5A.