

DATA SHEET

METAL OXIDE VARISTOR – 14Φ SERIES

FEATURE

- ◇ Wide operating voltage (V_{1mA}) range from 18V to 1800V.
- ◇ Fast responding to transient over-voltage.
- ◇ Large absorbing transient energy capability.
- ◇ Low clamping ratio and no follow-on current.
- ◇ Meets MSL level 1, per J-STD-020



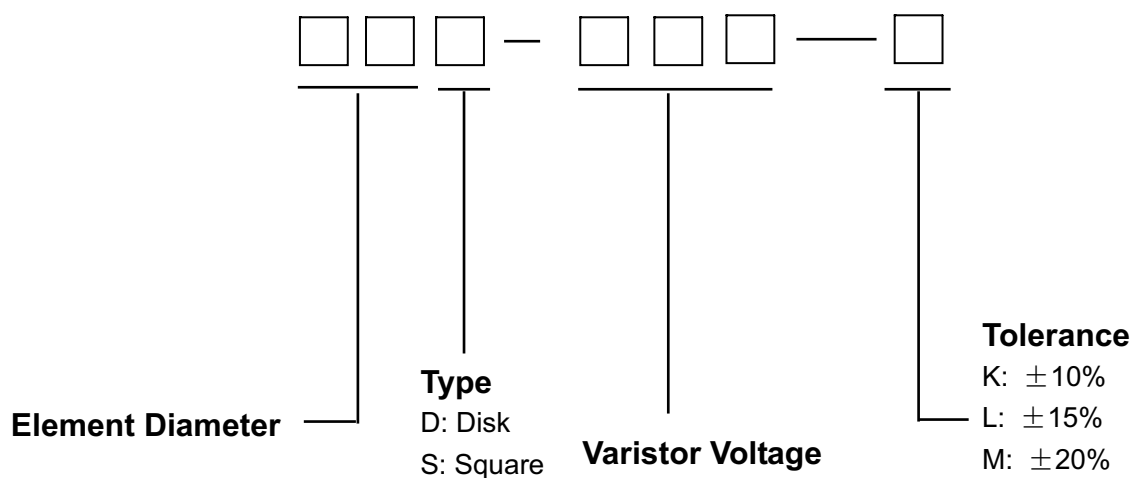
APPLICATION

- ◇ 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.

GENERAL CHARACTERISTICS DEFINITION

- ◇ Operating Temperature: $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- ◇ Storage Temperature: $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$

PART NUMBER CODE



PACKAGE DIMENSIONS

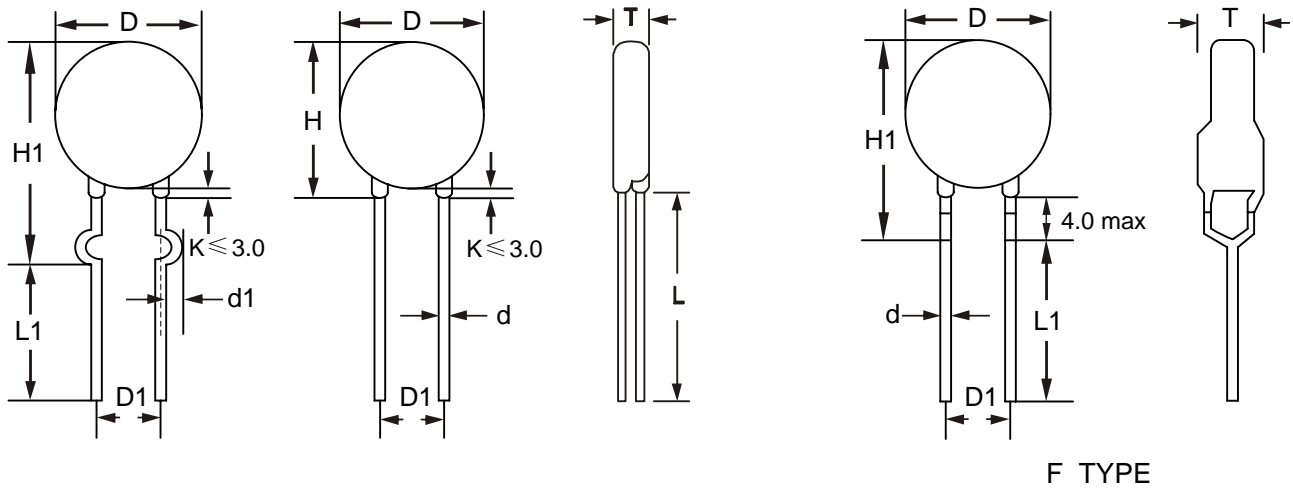


TABLE 1	
unit:mm	
Symbol	Dimensions
H(max.)	20.0
H1(max.)	21.0
L(min.)	20.0
L1(min.)	15.0
D(max.)	16.5
D1(±0.8)	7.5
T(max.)	TABLE 2
d(±0.05)	0.8
d1(±0.4)	1.4

TABLE 2			
unit:mm			
Model	T(Max.)	Model	T(Max.)
180K	3.94	361K	5.20
220K	4.02	391K	5.38
270K	4.16	431K	5.63
330K	4.38	471K	5.87
390K	4.14	511K	6.12
470K	4.33	561K	6.42
560K	4.58	621K	6.79
680K	4.87	681K	7.16
820K	4.08	751K	7.23
101K	4.25	781K	7.29
121K	4.40	821K	7.51
151K	4.12	911K	7.55
181K	4.26	102K	8.00
201K	4.36	112K	8.50
221K	4.40	122K	9.00
241K	4.55	142K	10.50
271K	4.60	162K	11.00
301K	4.64	182K	12.00
331K	5.02		

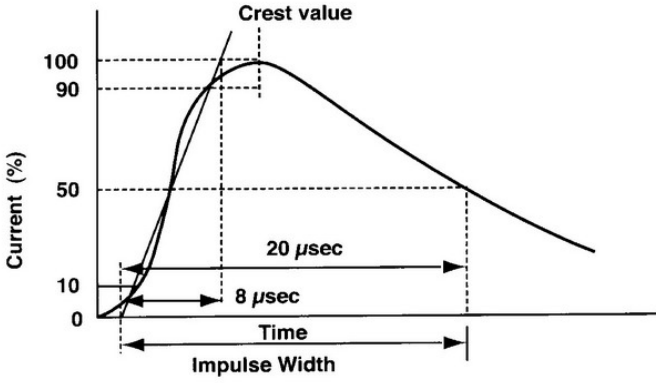
ELECTRICAL CHARACTERISTIC

Part Number		Maximum Allowable Voltage		Varistor Voltage	Maximum Clamping Voltage		Withstanding Surge Current		Maximum Energy (10/1000μs)		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)
14D180K	14D180J	11	14	18(15~21.6)	10	36	1000	2000	4.0	7.0	0.1	11100
14D220K	14D220J	14	18	22(19.5~26)	10	43	1000	2000	5.0	8.0	0.1	9100
14D270K	14D270J	17	22	27(24~31)	10	53	1000	2000	6.0	10.0	0.1	7400
14D330K	14D330J	20	26	33(29.5~36.5)	10	65	1000	2000	7.5	12.0	0.1	6100
14D390K	14D390J	25	31	39(35~43)	10	77	1000	2000	8.6	13.0	0.1	5100
14D470K	14D470J	30	38	47(42~52)	10	93	1000	2000	10.0	17.0	0.1	4300
14D560K	14D560J	35	45	56(50~62)	10	110	1000	2000	11.0	20.0	0.1	3600
14D680K	14D680J	40	56	68(61~75)	10	135	1000	2000	14.0	24.0	0.1	2900
14D820K	14D820J	50	65	82(74~90)	50	135	4500	6000	22.0	27.0	0.6	2400
14D101K	14D101J	60	85	100(90~110)	50	165	4500	6000	28.0	33.0	0.6	2000
14D121K	14D121J	75	100	120(108~132)	50	200	4500	6000	32.0	40.0	0.6	1700
14D151K	14D151J	95	125	150(135~165)	50	250	4500	6000	40.0	53.0	0.6	1300
14D181K	14D181J	115	150	180(162~198)	50	300	4500	6000	50.0	60.0	0.6	1100
14D201K	14D201J	130	170	200(180~220)	50	340	4500	6000	57.0	70.0	0.6	1000
14D221K	14D221J	140	180	220(198~242)	50	360	4500	6000	60.0	78.0	0.6	900
14D241K	14D241J	150	200	240(216~264)	50	395	4500	6000	63.0	84.0	0.6	830
14D271K	14D271J	175	225	270(243~297)	50	455	4500	6000	70.0	99.0	0.6	740
14D301K	14D301J	190	250	300(270~330)	50	500	4500	6000	77.0	108	0.6	670
14D331K	14D331J	210	275	330(297~363)	50	550	4500	6000	85.0	115	0.6	610
14D361K	14D361J	230	300	360(324~396)	50	595	4500	6000	93.0	130	0.6	560
14D391K	14D391J	250	320	390(351~429)	50	650	4500	6000	100	140	0.6	510
14D431K	14D431J	275	350	430(387~473)	50	710	4500	6000	115	155	0.6	460
14D471K	14D471J	300	385	470(423~517)	50	775	4500	6000	125	175	0.6	430
14D511K	14D511J	320	415	510(459~561)	50	845	4500	6000	125	180	0.6	390
14D561K	14D561J	350	460	560(504~616)	50	925	4500	6000	125	185	0.6	360
14D621K	14D621J	385	505	620(558~682)	50	1025	4500	6000	125	190	0.6	320
14D681K	14D681J	420	560	680(612~748)	50	1120	4500	6000	130	200	0.6	290
14D751K	14D751J	460	615	750(675~825)	50	1240	4500	6000	143	210	0.6	270
14D781K	14D781J	485	640	780(702~858)	50	1290	4500	6000	148	220	0.6	260
14D821K	14D821J	510	670	820(738~902)	50	1355	4500	6000	157	235	0.6	240
14D911K	14D911J	550	745	910(819~1001)	50	1500	4500	6000	175	255	0.6	220
14D102K	14D102J	625	825	1000(900~1100)	50	1650	4500	6000	190	280	0.6	200
14D112K	14D112J	680	895	1100(990~1210)	50	1815	4500	6000	213	310	0.6	180
14D122K	14D122J	750	990	1200(1080~1320)	50	1980	4500	6000	232	324	0.6	160
14D142K	14D142J	880	1140	1400(1260~1540)	50	231	4500	6000	238	327	0.6	150
14D162K	14D162J	1000	1280	1600(1440~1760)	50	264	4500	6000	243	331	0.6	140
14D182K	14D182J	1100	1465	1800(1620~1980)	50	297	4500	6000	250	335	0.6	130

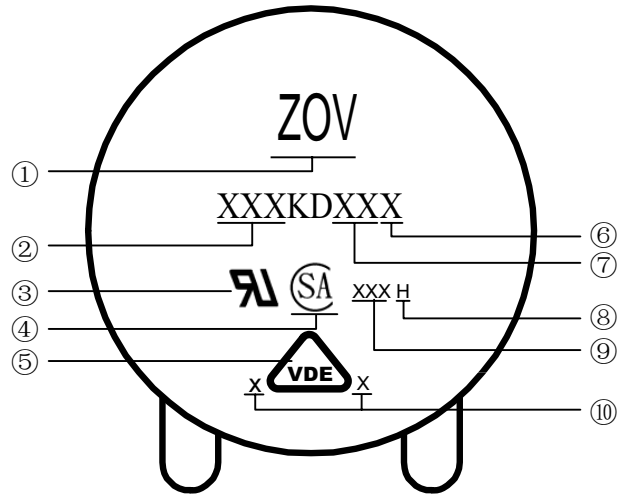
The tolerance of varistor voltage between 18V and 27V is more than 10%.

Varistor voltage ≥ 1200V, structure diagram is F type.

ELECTRICAL RATINGS

Item	Test Condition/Description	Requirement																									
Varistor Voltage	The voltage between two terminals with the specified measuring current 1mA.DC applied is call Vb.																										
Maximum Allowable Voltage	The recommended maximum sine wave voltage (RMS) or the maximum DC voltage can be applied continuously.																										
Maximum Clamping Voltage	<p>The maximum voltage between two terminals with the specification standard impulse current. Applied waveform: 8/20μsec.</p> 		To meet the specified value																								
Rated Wattage	The maximum average power that can be applied within the specified ambient temperature.																										
Energy	The maximum energy within the varistor voltage change of ±10% when one impulse of 10/1000μsec. or 2 msec. is applied.																										
Withstanding Surge Current	The maximum current within the varistor voltage change of ±10% with the standard impulse current (8/20μsec.) applied one time.																										
Varistor Voltage Temp. Coefficient	$\frac{V_b \text{ at } 20^\circ\text{C} - V_b \text{ at } 70^\circ\text{C}}{V_b \text{ at } 20^\circ\text{C}} \times \frac{1}{50} \times 100 (\% / ^\circ\text{C})$	0.05% / °C max																									
Surge Life	<p>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.</p> <table border="1" data-bbox="395 1451 1244 1975"> <tbody> <tr> <td rowspan="2">5Φ series</td> <td>180K 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>180K 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>180K to 680K</td> <td>50A (8/20μsec.)</td> </tr> <tr> <td>820K to 112K</td> <td>100A (8/20μsec.)</td> </tr> <tr> <td rowspan="2">14Φ series</td> <td>180K 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>180K to 680K</td> <td>100A (8/20μsec.)</td> </tr> <tr> <td>820K to 182K</td> <td>200A (8/20μsec.)</td> </tr> </tbody> </table>	5Φ series	180K to 680K	10A (8/20μsec.)	820K to 751K	20A (8/20μsec.)	7Φ series	180K to 680K	25A (8/20μsec.)	820K to 821K	50A (8/20μsec.)	10Φ series	180K to 680K	50A (8/20μsec.)	820K to 112K	100A (8/20μsec.)	14Φ series	180K to 680K	75A (8/20μsec.)	820K to 182K	150A (8/20μsec.)	20Φ series	180K to 680K	100A (8/20μsec.)	820K to 182K	200A (8/20μsec.)	$\frac{\Delta V_b}{V_b} \leq \pm 10\%$
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MARKING CODE



- ① ZOV Logo
- ② Varistor Voltage
- ③ UL Accreditation Logo
- ④ CSA Accreditation Logo
- ⑤ VDE Accreditation Logo
- ⑥ “J” is High Surge Code,not “J” is Standard Surge
- ⑦ Disk Size
- ⑧ “H” is Halogen Free Code,not “H” is Halogen
- ⑨ Date Code
- ⑩ Product Line Code