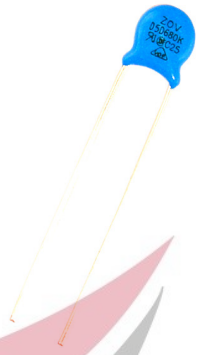
DATA SHEET

METAL OXIDE VARISTOR – 5Φ SERIES

FEATURE



- ✧ Wide operating voltage (V_{1mA}) range from 18V to 750V.
- ✧ 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

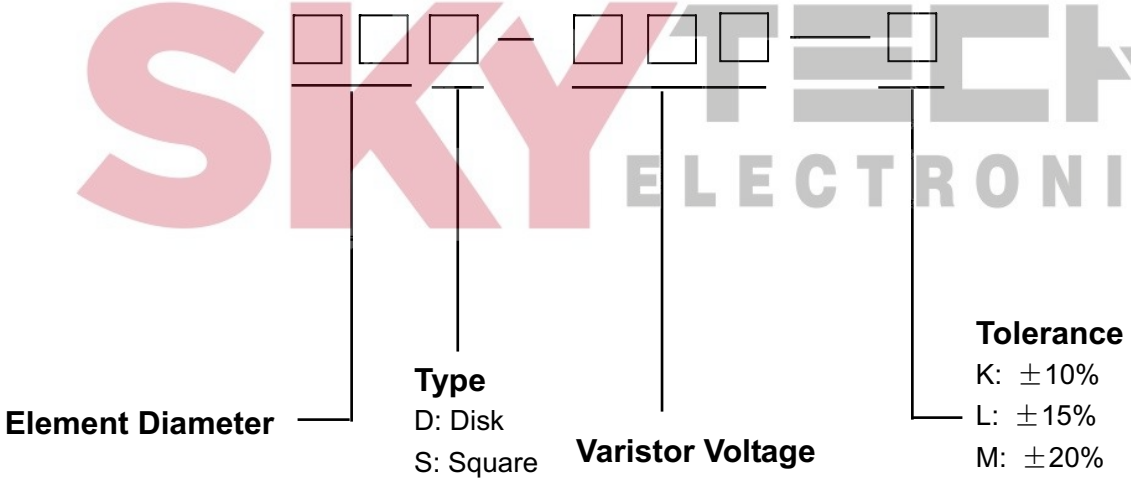
APPLICATION

- ✧ 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℃ ~ +85℃
- ✧ Storage Temperature：-40℃ ~ +125℃

PART NUMBER CODE



PACKAGE DIMENSIONS

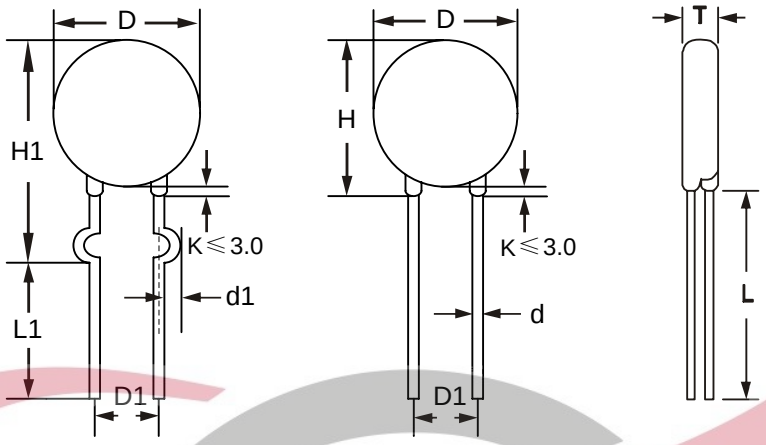


TABLE 1 unit:mm	
Symbol	Dimensions
H(max.)	10.5
H1(max.)	13.0
L(min.)	20.0
L1(min.)	15.0
D(max.)	7.5
D1(±0.8)	5.0
T(Max.)	TABLE 2
d(±0.05)	0.6
d1(±0.4)	1.2

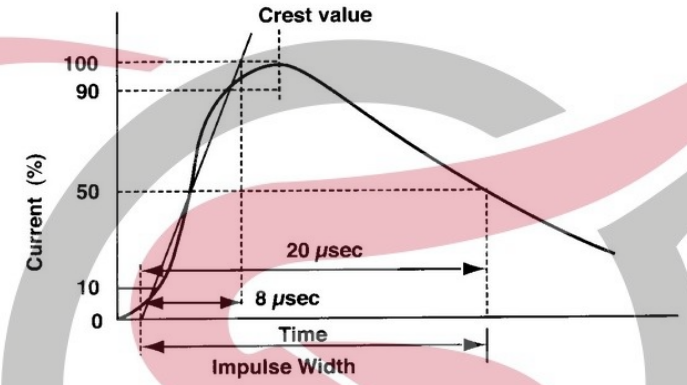
TABLE 2 unit:mm			
Model	T(Max.)	Model	T(Max.)
180K	4.50	221K	4.50
220K	4.60	241K	4.60
270K	4.70	271K	4.90
330K	4.90	301K	5.00
390K	4.80	331K	5.10
470K	4.90	361K	5.20
560K	5.00	391K	5.40
680K	5.20	431K	5.70
820K	4.10	471K	6.00
101K	4.30	511K	6.20
121K	4.50	561K	6.50
151K	4.80	621K	6.50
181K	4.30	681K	6.87
201K	4.40	751K	6.90

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)
05D180K	05D180J	11	14	18(15~21.6)	1	40	100	250	0.4	0.6	0.01	1400
05D220K	05D220J	14	18	22(19.5~26)	1	48	100	250	0.5	0.7	0.01	1150
05D270K	05D270J	17	22	27(24~31)	1	60	100	250	0.6	0.9	0.01	930
05D330K	05D330J	20	26	33(29.5~36.5)	1	73	100	250	0.8	1.1	0.01	760
05D390K	05D390J	25	31	39(35~43)	1	80	100	250	0.9	1.2	0.01	640
05D470K	05D470J	30	38	47(42~52)	1	104	100	250	1.1	1.5	0.01	530
05D560K	05D560J	35	45	56(50~62)	1	123	100	250	1.3	1.8	0.01	450
05D680K	05D680J	40	56	68(61~75)	1	145	100	250	1.6	2.2	0.01	370
05D820K	05D820J	50	65	82(74~90)	5	150	400	800	2.5	4.0	0.1	300
05D101K	05D101J	60	85	100(90~110)	5	177	400	800	3.0	4.1	0.1	250
05D121K	05D121J	75	100	120(108~132)	5	210	400	800	4.0	4.9	0.1	210
05D151K	05D151J	95	125	150(135~165)	5	260	400	800	4.1	6.5	0.1	165
05D181K	05D181J	115	150	180(162~198)	5	320	400	800	4.9	7.5	0.1	140
05D201K	05D201J	130	170	200(180~220)	5	355	400	800	6.5	8.5	0.1	125
05D221K	05D221J	140	180	220(198~242)	5	380	400	800	7.5	9.0	0.1	110
05D241K	05D241J	150	200	240(216~264)	5	415	400	800	8.0	10.5	0.1	100
05D271K	05D271J	175	225	270(243~297)	5	475	400	800	8.5	11.0	0.1	95
05D301K	05D301J	190	250	300(270~330)	5	520	400	800	9.0	12.0	0.1	85
05D331K	05D331J	210	275	330(297~363)	5	570	400	800	9.5	13.0	0.1	75
05D361K	05D361J	230	300	360(324~396)	5	620	400	800	10.0	16.0	0.1	70
05D391K	05D391J	250	320	390(351~429)	5	675	400	800	12.0	17.0	0.1	65
05D431K	05D431J	275	350	430(387~473)	5	745	400	800	13.0	20.0	0.1	60
05D471K	05D471J	300	385	470(423~517)	5	810	400	800	15.0	21.0	0.1	55
05D511K	05D511J	320	415	510(459~561)	5	845	400	800	16.0	22.5	0.1	50
05D561K	05D561J	350	460	560(504~616)	5	920	400	800	16.0	24.0	0.1	45
05D621K	05D621J	385	505	620(558~682)	5	1025	400	800	21.0	25.0	0.1	40
05D681K	05D681J	420	560	680(612~748)	5	1120	400	800	21.0	29.0	0.1	35
05D751K	05D751J	460	615	750(675~825)	5	1240	400	800	22.4	32.0	0.1	30

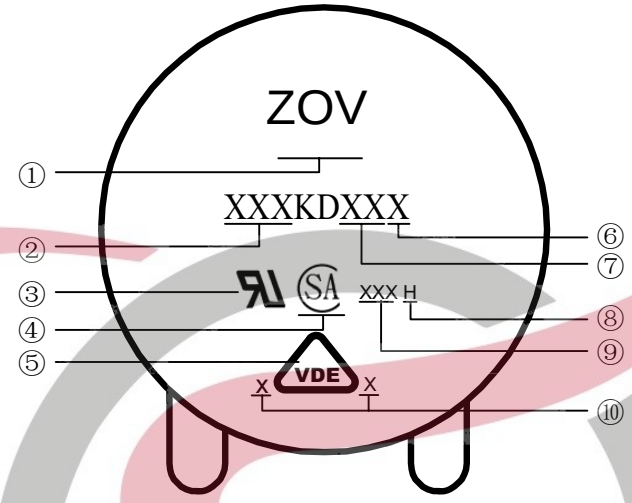
The tolerance of varistor voltage between 18V and 27V is more than 10%.

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.	To meet the specified value
Maximum Allowable Voltage	The recommended maximum sine wave voltage (RMS) or the maximum DC voltage can be applied continuously.	
Maximum Clamping Voltage	The maximum voltage between two terminals with the specification standard impulse current. Applied waveform: 8/20μsec. 	
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	$\frac{Vb\ at\ 20℃\ -\ Vb\ at\ 70℃}{Vb\ at\ 20℃} \times \frac{1}{50} \times 100\ (\%℃)$	0.05% / ℃max
Surge Life	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.	$\frac{\Delta Vb}{Vb} \leq \pm 10\%$

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.)

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