

Features

- Wide operating voltage (V1mA) range from 18V to 750V
- Fast responding to transient over-voltage.
- Large absorbing transient energy capability.
- Low clamping ratio and no following-on current.

General Information

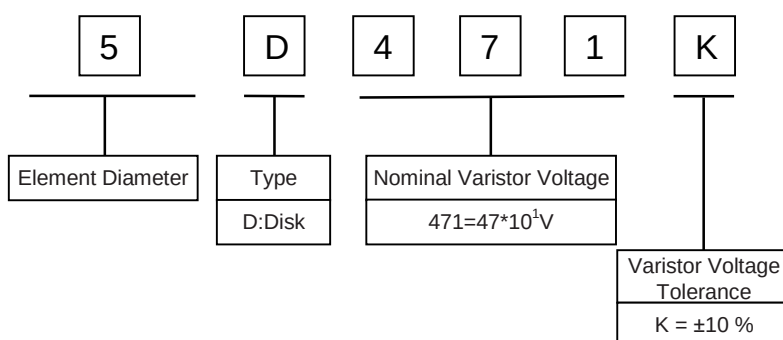
- Surge protection in consumer electronics
- Surge protection in industrial electronics
- Relay and electromagnetic valve surge absorption
- Transistor, diode, IC, thyristor or triac semiconductor protection
- Surge protection in electronic home appliances, gas and petroleum appliances



General Characteristics

- Body: Nickel Plated
- Devices with No Leads: Nickel Plated
- Operating Temperature: -40 °C to +85 °C
- Storage Temperature: -40 °C to +125 °C
- Axial Devices: Tin Plated

Part Number Code



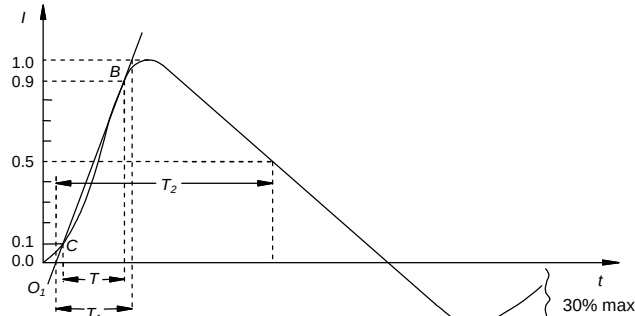


Electrical Characteristics

Type Number	Varistor Voltage	Max. Allowable Voltage		Max. Energy (2ms)	Max. Clamping Voltage (8/20μs)		Withstanding Surge Current (8/20μs)	Rated Power	Typical Capacitance (Reference)
	V _{1mA} (V)	V _{AC} (V)	V _{DC} (V)	(J)	I _P (A)	V _C (V)	I(A)	(W)	@1KHz(pf)
5D180K	16~20	11	14	0.3	1	40	100	0.01	2400
5D220K	20~24	14	18	0.4	1	48	100	0.01	1800
5D270K	24~30	17	22	0.5	1	60	100	0.01	1500
5D330K	30~36	20	26	0.6	1	73	100	0.01	1200
5D390K	35~43	25	31	0.7	1	86	100	0.01	1000
5D470K	42~52	30	38	0.8	1	104	100	0.01	850
5D560K	50~62	35	45	1.0	1	123	100	0.01	700
5D680K	61~75	40	56	1.2	1	145	100	0.01	560
5D820K	74~90	50	65	1.5	5	150	400	0.1	480
5D101K	90~110	60	85	1.8	5	175	400	0.1	420
5D121K	108~132	75	100	2.2	5	210	400	0.1	360
5D151K	135~165	95	125	2.7	5	260	400	0.1	280
5D181K	162~198	115	150	3.2	5	320	400	0.1	200
5D201K	180~220	130	170	3.6	5	355	400	0.1	160
5D221K	198~242	140	180	4.0	5	380	400	0.1	110
5D241K	216~264	150	200	4.3	5	415	400	0.1	85
5D271K	243~297	175	225	4.9	5	475	400	0.1	75
5D301K	270~330	195	250	5.4	5	525	400	0.1	75
5D331K	297~363	210	275	5.9	5	575	400	0.1	75
5D361K	324~396	230	300	6.5	5	620	400	0.1	70
5D391K	351~429	250	320	7.0	5	675	400	0.1	70
5D431K	387~473	275	350	7.7	5	745	400	0.1	65
5D471K	423~517	300	385	8.5	5	810	400	0.1	55
5D511K	459~561	320	418	9.2	5	882	400	0.1	55
5D561K	504~616	350	460	10.1	5	968	400	0.1	50
5D621K	558~682	385	505	11.2	5	1072	400	0.1	45
5D681K	612~748	420	560	12.2	5	1176	400	0.1	40
5D751K	675~825	460	615	13.5	5	1300	400	0.1	35

Note: The energy (10/1000μs) is about 1.4 times of energy(2ms)

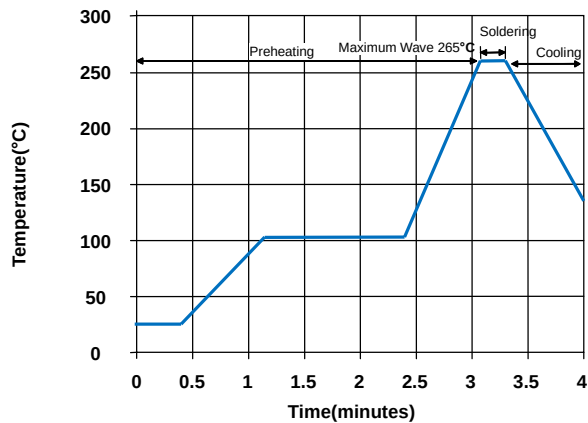
Electrical Ratings

Items	Test Condition/Description	Requirement					
Varistor Voltage	The voltage between two terminals with the specified measuring current 1mA.DC applied is called 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: 8/20μs  $T_1 = 1.25 \cdot T = 8\mu s \pm 20\%$ $T_2 = 20\mu s \pm 20\%$						
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 $\pm 10\%$ when one impulse of 10/1000μs or 2ms is applied.						
Withstanding Surge Current	The maximum current within the varistor voltage change of $\pm 10\%$ with the standard impulse current (8/20μs) applied one time.						
Surge Life	The change of Vb shall be measured after the impulse listed below which is applied 10,000 times continuously with the interval of ten seconds at room temperature. <table border="1" data-bbox="512 1361 1160 1453"> <tr> <td rowspan="2">5Φ series</td><td>180K to 680K</td><td>5A (8/20μs)</td></tr> <tr> <td>820K to 751K</td><td>20A (8/20μs)</td></tr> </table>	5Φ series	180K to 680K	5A (8/20μs)	820K to 751K	20A (8/20μs)	$\frac{\Delta V_b}{V_b} \leq \pm 10\%$
5Φ series	180K to 680K		5A (8/20μs)				
	820K to 751K	20A (8/20μs)					



Soldering Recommendation

Wave Lead Free Soldering Recommendation



Item	Conditions
Peak Temperature	265°C
Dipping Time	10 seconds (max.)
Soldering	1 time

Recommendation Reworking Conditions with Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	360°C (max.)
Soldering Time	3 seconds (max.)
Distance from Varistor	2mm (min.)

Dimensions

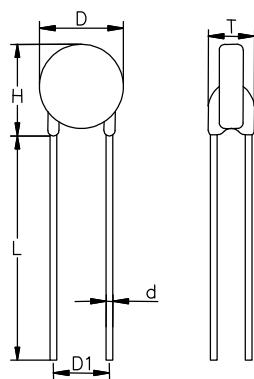


TABLE 1		
Symbol	Millimeters	Inches
H(max)	10.0	0.394
L(min.)	15.0	0.591
D(max)	7.0	0.276
D1(±1.0)	5.0	0.197
T(max.)	TABLE 2	
d(±0.1)	0.6	0.024
Packaging Quantity: 1000pcs/bag		

TABLE 2---T(max.)

Model	Millimeters	Inches	Model	Millimeters	Inches
180K~390K	4.0	0.157	331K~391K	6.0	0.236
470K~680K	4.5	0.177	431K~561K	6.5	0.256
820K~151K	5.0	0.197	621K~751K	7.0	0.276
181K~271K	5.5	0.217			