

Features

- I Wide operating voltage (V1mA) range from 18V to 820V
- I Fast responding to transient over-voltage.
- I Large absorbing transient energy capability.
- I Low clamping ratio and no following-on current.

General Information

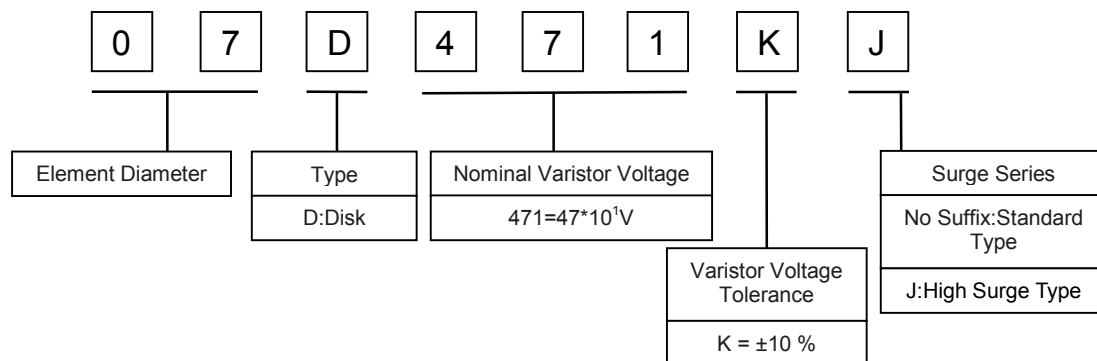
- I Surge protection in consumer electronics
- I Surge protection in industrial electronics
- I Relay and electromagnetic valve surge absorption
- I Transistor, diode, IC, thyristor or triac semiconductor protection
- I Surge protection in electronic home appliances, gas and petroleum appliances



General Characteristics

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

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)
Standard	High Surge	V _{1mA} (V)	V _{AC} (V)	V _{DC} (V)	(J) Standard	(J) High Surge	I _P (A)	V _C (V)	I(A) Standard	I(A) High Surge	(W)	@1KHz(pf)
07D180K	/	15~22	11	14	0.8	/	2.5	38	250	/	0.02	3500
07D220K	/	20~26	14	18	0.9	/	2.5	43	250	/	0.02	2800
07D270K	/	24.3~31.1	17	22	1.1	/	2.5	53	250	/	0.02	2200
07D330K	/	29.7~37.9	20	26	1.4	/	2.5	65	250	/	0.02	1800
07D390K	/	35.2~44.8	25	31	1.6	/	2.5	77	250	/	0.02	1450
07D470K	/	43~53	30	38	2.0	/	2.5	93	250	/	0.02	1150
07D560K	/	51~63	35	45	2.4	/	2.5	110	250	/	0.02	1050
07D680K	/	62~76	40	56	2.9	/	2.5	135	250	/	0.02	970
07D820K	07D820KJ	74~90	50	65	3.4	4.3	10	135	1200	1750	0.25	930
07D101K	07D101KJ	90~110	60	85	4.2	5.3	10	165	1200	1750	0.25	860
07D121K	07D121KJ	108~132	75	100	5.0	6.3	10	200	1200	1750	0.25	670
07D151K	07D151KJ	135~165	95	125	6.3	7.9	10	250	1200	1750	0.25	490
07D181K	07D181KJ	162~198	115	150	7.6	9.5	10	300	1200	1750	0.25	330
07D201K	07D201KJ	180~220	130	170	8.4	10.5	10	340	1200	1750	0.25	240
07D221K	07D221KJ	198~242	140	180	9.2	11.6	10	360	1200	1750	0.25	190
07D241K	07D241KJ	216~264	150	200	10.1	12.6	10	395	1200	1750	0.25	165
07D271K	07D271KJ	243~297	175	225	11.3	14.2	10	455	1200	1750	0.25	150
07D301K	07D301KJ	270~330	195	250	12.6	15.8	10	505	1200	1750	0.25	135
07D331K	07D331KJ	297~363	210	275	13.9	17.3	10	550	1200	1750	0.25	130
07D361K	07D361KJ	324~396	230	300	15.1	18.9	10	595	1200	1750	0.25	125
07D391K	07D391KJ	351~429	250	320	16.4	20.5	10	650	1200	1750	0.25	105
07D431K	07D431KJ	387~473	275	350	18.1	22.6	10	710	1200	1750	0.25	100
07D471K	07D471KJ	423~517	300	385	19.7	24.7	10	775	1200	1750	0.25	90
07D511K	07D511KJ	459~561	320	418	21.4	26.8	10	842	1200	1750	0.25	80
07D561K	07D561KJ	504~616	350	460	23.5	29.4	10	920	1200	1750	0.25	75
07D621K	07D621KJ	558~682	385	505	26.0	32.6	10	1025	1200	1750	0.25	70
07D681K	07D681KJ	612~748	420	560	28.6	35.7	10	1120	1200	1750	0.25	65
07D751K	07D751KJ	675~825	460	615	31.5	39.4	10	1240	1200	1750	0.25	61
07D781K	07D781KJ	702~858	485	640	32.8	41.0	10	1290	1200	1750	0.25	54
07D821K	07D821KJ	738~902	510	670	34.4	43.1	10	1355	1200	1750	0.25	48

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



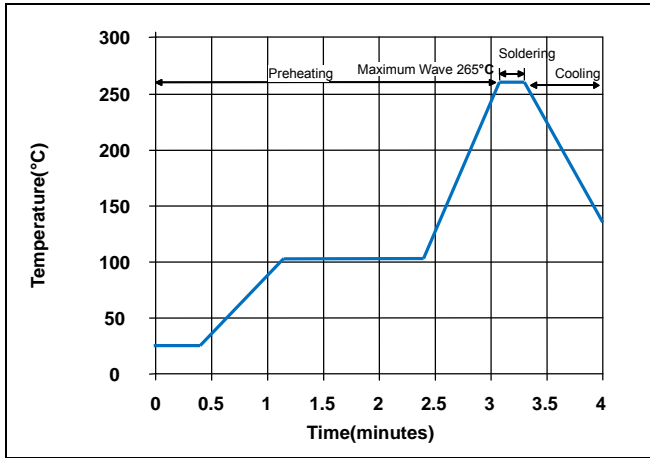
Electrical Ratings

Items	Test Condition/Description	Requirement					
Varistor Voltage	The voltage between two terminals with the specified measuring current 1mA.DC applied is called Vb.						
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: 8/20μs</p> <p style="text-align: center;"> $T_1 = 1.25 * T = 8\mu s \pm 20\%$ $T_2 = 20\mu s \pm 20\%$ </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 $\pm 10\%$ 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	<p>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.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td rowspan="2" style="text-align: center;">7Φ series</td> <td style="text-align: center;">180K to 680K</td> <td style="text-align: center;">15A (8/20μs)</td> </tr> <tr> <td style="text-align: center;">820K to 821K</td> <td style="text-align: center;">50A (8/20μs)</td> </tr> </table>	7Φ series	180K to 680K	15A (8/20μs)	820K to 821K	50A (8/20μs)	$\frac{\Delta V_b}{V_b} \leq \pm 10\%$
7Φ series	180K to 680K		15A (8/20μs)				
	820K to 821K	50A (8/20μs)					



Soldering Recommendation

Wave Lead Free Soldering Recommendation

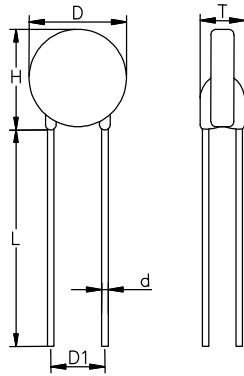


Item	Conditions
Peak Temperature	265°C
Dipping Time	10 seconds (max.)
Soldering	1 time

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



Symbol	Millimeters	Inches
H(max.)	12.0	0.472
L(min.)	15.0	0.591
D(max.)	9.0	0.354
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	5.5	0.217	331K~391K	7.5	0.295
470K~680K	6.0	0.236	431K~561K	8.0	0.315
820K~151K	6.5	0.256	621K~781K	8.5	0.335
181K~301K	7.0	0.276	821K	9.0	0.354

