

**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**

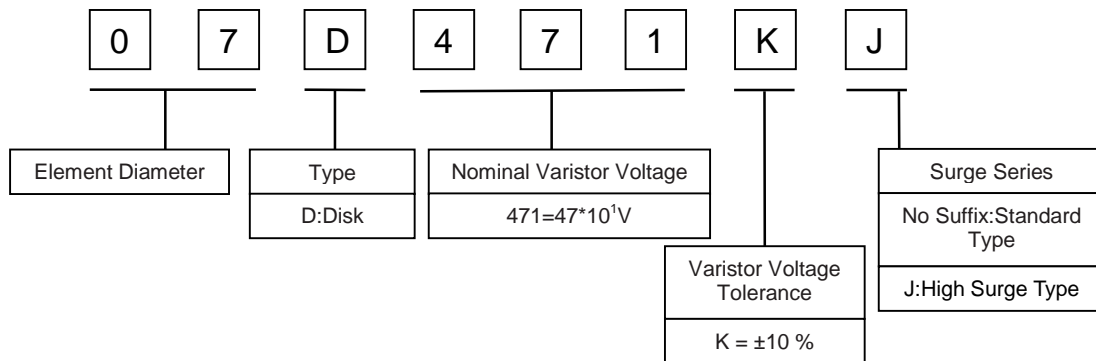
- I Surge protection in consumer electronics
- I Surge protection in industrial electronics
- I Relay and electromagnetic valve surge absorption
- I Transistor, diode, IC, thyristor or triac semiconductor protection
- I Surge protection in electronic home appliances, gas and petroleum appliances



**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 <sub>1mA</sub> (V)	V <sub>AC</sub> (V)	V <sub>DC</sub> (V)	(J) Standard	(J) High Surge	I <sub>P</sub> (A)	V <sub>C</sub> (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	/	24~30	17	22	1.1	/	2.5	53	250	/	0.02	2200
07D330K	/	30~36	20	26	1.4	/	2.5	65	250	/	0.02	1800
07D390K	/	35~43	25	31	1.6	/	2.5	77	250	/	0.02	1450
07D470K	/	42~52	30	38	2.0	/	2.5	93	250	/	0.02	1150
07D560K	/	50~62	35	45	2.4	/	2.5	110	250	/	0.02	1050
07D680K	/	61~75	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)



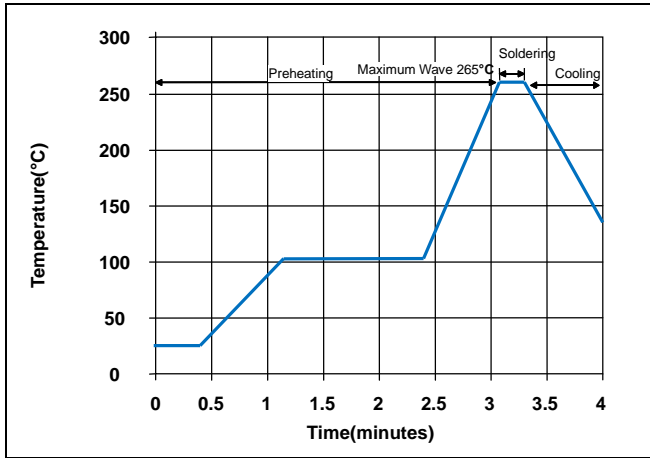
**Electrical Ratings**

Items	Test Condition/Description	Requirement					
Varistor Voltage	The voltage between two terminals with the specified measuring current 1mA.DC applied is called V <sub>b</sub> .						
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;"> <math>T_1 = 1.25 \cdot T = 8\mu s \pm 20\%</math>  <math>T_2 = 20\mu s \pm 20\%</math> </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 10/1000μs or 2ms is applied.						
Withstanding Surge Current	The maximum current within the varistor voltage change of ±10% with the standard impulse current (8/20μs) applied one time.						
Surge Life	<p>The change of V<sub>b</sub> 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**

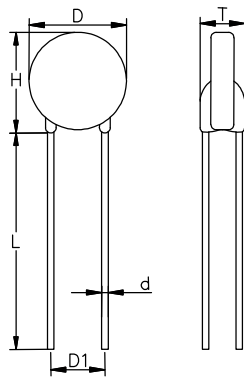


Item	Conditions
Peak Temperature	265°C
Dipping Time	10 seconds (max.)
Soldering	1 time

**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~271K	7.0	0.276	821K	9.0	0.354

