

Features

- I Wide operating voltage (V_{1mA}) range from 18V to 1800V
- I Fast responding to transient over-voltage.
- I Large absorbing transient energy capability.
- I Low clamping ratio and no following-on current.



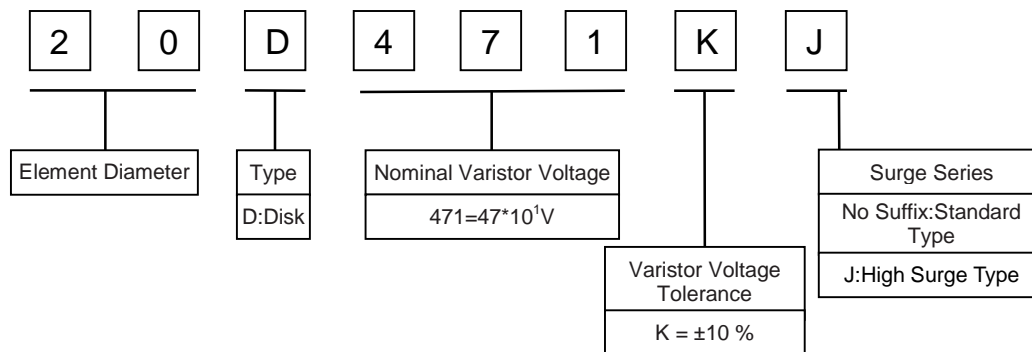
General Information

- 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
- I Agency: CUL(E479668),CQC(22001337054), TUV(J50541477)




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
- I Axial Devices: Tin Plated

Part Number Code



Agency Information

Agency Information		Agency File Number
	CUL	E479668
	CQC	22001337054
	TUV	J50541477

Electrical Characteristics

Type Number		Varistor Voltage	Max. Allowable Voltage		Max. Energy (10/1000µs)		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)
20D180K	/	16~20	11	14	11	/	25	38	2000	/	0.2	39000
20D220K	/	20~24	14	18	14	/	25	43	2000	/	0.2	32000
20D270K	/	24.3~31.1	17	22	18	/	25	53	2000	/	0.2	22000
20D330K	/	29.7~37.9	20	26	23	/	25	65	2000	/	0.2	18000
20D390K	/	35.2~44.8	25	31	26	/	25	77	2000	/	0.2	16000
20D470K	/	43~53	30	38	33	/	25	93	2000	/	0.2	14000
20D560K	/	51~63	35	45	41	/	25	110	2000	/	0.2	12000
20D680K	/	62~76	40	56	46	/	25	135	2000	/	0.2	10000
20D820K	20D820KJ	74~90	50	65	48	67	100	135	6500	10000	1.0	5800
20D101K	20D101KJ	90~110	60	85	52	73	100	165	6500	10000	1.0	4800
20D121K	20D121KJ	108~132	75	100	56	78	100	200	6500	10000	1.0	3800
20D151K	20D151KJ	135~165	95	125	71	99	100	250	6500	10000	1.0	3000
20D181K	20D181KJ	162~198	115	150	86	152	100	300	6500	10000	1.0	2600
20D201K	20D201KJ	185~225	130	170	97	175	100	340	6500	10000	1.0	2400
20D221K	20D221KJ	198~242	140	180	102	185	100	360	6500	10000	1.0	1800
20D241K	20D241KJ	216~264	150	200	110	198	100	395	6500	10000	1.0	1500
20D271K	20D271KJ	243~297	175	225	130	220	100	455	6500	10000	1.0	1400
20D301K	20D301KJ	270~330	195	250	139	245	100	505	6500	10000	1.0	1350
20D331K	20D331KJ	297~363	210	275	153	268	100	550	6500	10000	1.0	1300
20D361K	20D361KJ	324~396	230	300	166	315	100	595	6500	10000	1.0	1250
20D391K	20D391KJ	351~429	250	320	184	350	100	650	6500	10000	1.0	1180
20D431K	20D431KJ	387~473	275	350	194	380	100	710	6500	10000	1.0	1100
20D471K	20D471KJ	423~517	300	385	224	405	100	775	6500	10000	1.0	1050
20D511K	20D511KJ	459~561	320	418	224	445	100	842	6500	10000	1.0	1000
20D561K	20D561KJ	504~616	350	460	224	475	100	920	6500	10000	1.0	970
20D621K	20D621KJ	558~682	385	505	224	490	100	1025	6500	10000	1.0	950
20D681K	20D681KJ	612~748	420	560	235	500	100	1120	6500	10000	1.0	900
20D751K	20D751KJ	675~825	460	615	260	525	100	1240	6500	10000	1.0	850
20D781K	20D781KJ	702~858	485	640	269	530	100	1290	6500	10000	1.0	750
20D821K	20D821KJ	738~902	510	670	288	545	100	1355	6500	10000	1.0	700
20D911K	20D911KJ	819~1001	550	745	316	595	100	1500	6500	10000	1.0	600
20D951K	20D951KJ	855~1045	580	780	328	610	100	1570	6500	10000	1.0	580
20D102K	20D102KJ	900~1100	625	825	349	650	100	1650	6500	10000	1.0	500
20D112K	20D112KJ	990~1210	680	895	391	720	100	1815	6500	10000	1.0	450
20D122K	20D122KJ	1080~1320	740	975	425	730	100	2010	6500	10000	1.0	440
20D142K	20D142KJ	1260~1540	870	1150	481	750	100	2310	6500	10000	1.0	410
20D152K	20D152KJ	1350~1650	900	1220	516	790	100	2475	6500	10000	1.0	400
20D182K	20D182KJ	1620~1980	1000	1465	632	850	100	2970	6500	10000	1.0	220

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 _b .						
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;"> $T_1 = 1.25 \cdot T = 8\mu s \pm 20\%$ $T_2 = 20\mu s \pm 20\%$ </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 V_b 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;">20Φ series</td> <td style="text-align: center;">180K to 680K</td> <td style="text-align: center;">100A (8/20μs)</td> </tr> <tr> <td style="text-align: center;">820K to 182K</td> <td style="text-align: center;">200A (8/20μs)</td> </tr> </table>	20Φ series	180K to 680K	100A (8/20μs)	820K to 182K	200A (8/20μs)	$\frac{\Delta V_b}{V_b} \leq \pm 10\%$
20Φ series	180K to 680K		100A (8/20μs)				
	820K to 182K	200A (8/20μs)					

Soldering Recommendation

Wave Lead Free Soldering Recommendation

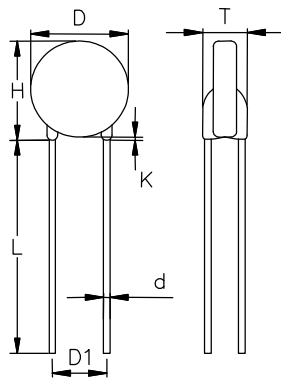


Item	Conditions
Peak Temperature	265°C
Dipping Time	10 seconds (max.)
Soldering	1 time

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	Millimeter	Inches
H(max)	26.0	1.024
L(min)	15.0	0.591
D(max)	23.0	0.906
D1(±1.0)	10.0	0.394
K(max)	2.0	0.079
T(max)	TABLE 2	
d(±0.1)	1.0	0.039

Packaging Quantity: 250pcs/bag

TABLE 2---T(max.)

Model	Millimeters	Inches	Model	Millimeters	Inches
18V~39V	5.1	0.201	430V~560V	6.7	0.264
47V~68V	5.6	0.220	620V~780V	7.7	0.303
82V~150V	5.1	0.201	820V~1200V	8.9	0.350
180V~270V	5.7	0.224	1300V~1500V	10	0.394
330V~390V	6.1	0.240	1600V~1800V	11.8	0.465

Taping Dimensions



Symbol	Millimeters	Inches
W	18±1.0	0.709±0.039
W0(max.)	9.0	0.354
W1	8.0±0.5	0.315±0.02
P	25.4±1.0	1.0±0.039
P0	12.7±1.0	0.50±0.039
P1	7.7±0.7	0.303±0.028
F	10.0±1.0	0.39±0.039
D0	4.0±0.3	0.157±0.012
H	20.0±1.3	0.787±0.051
H1(max.)	45.0	1.772
Packaging Quantity	180K~301K	500pcs/reel
	331K~122K	250pcs/reel

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