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Metal Oxide Varistors (MOV) Datasheet

Features

- Wide operating voltage(V1mA)range from 18V to 1800V
- Fast responding to transient over-voltage.
- Large absorbing transient energy capability.
- Low clamping ratio and no following-on current.
- Coating (Epoxy Resin): Flame-Retardant to UL94 V-0
- Meets MSL level 1,per J-STD-020
- Operating Temperature: -40°C ~+105°C
- Storage Temperature: -40°C ~+125°C
- Safety Certification : UL/CUL , TÜV

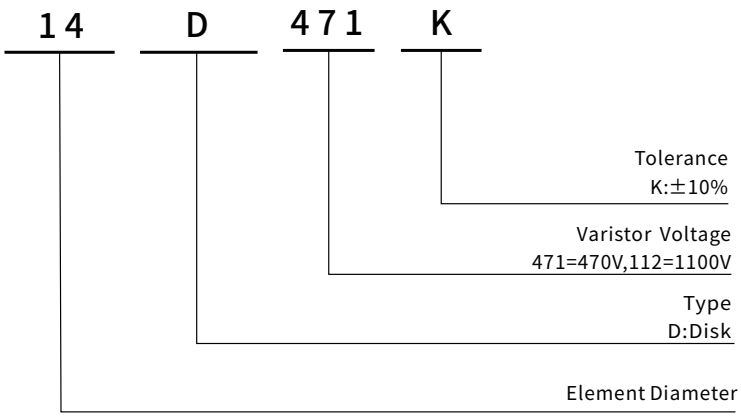
Varistors
Voltage
18V to 1800V

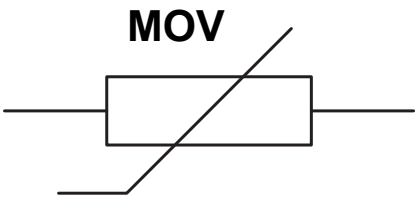
14D SERIES

Applications

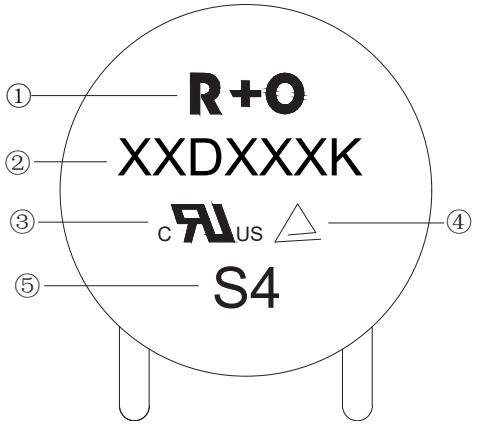
- Surge protection in electronic home appliances,gas and petroleum appliances
- Surge protection in industrial electronics
- Surge protection in consumer electronics
- Transistor,diode,IC,Thyristor or Triac semiconductor protection
- Relay and electromagnetic valve surge absorption

Part Number Code





Marking Code



① HJC Logo

② Part Number

③ UL+CUL Safety Certification Mark

④ TÜV Safety Certification Mark

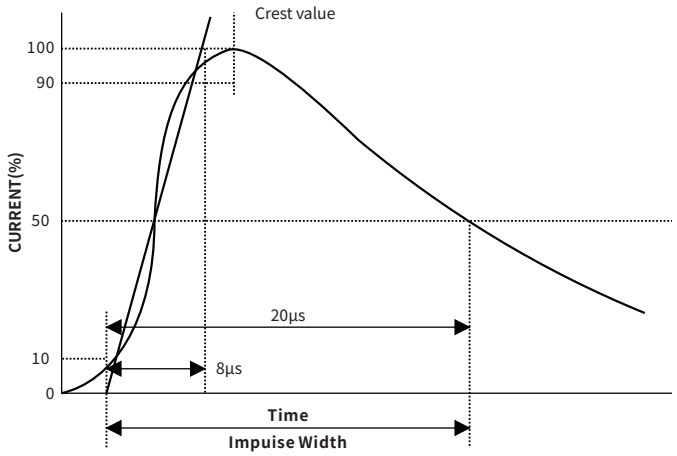
⑤ Date Code

Electrical Characteristics (Ta=25°C Unless otherwise specified)

Part Number	Marking	Varistor Voltage	Max. Allowable Voltage		Max. Energy (10/1000μs)	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)	(A)	(W)	@1KHz(pF)
14D180K	14D180K	18(15~22)	11	14	5.7	10	38	1000	0.1	18000
14D220K	14D220K	22(20~26)	14	18	7.0	10	43	1000	0.1	15000
14D270K	14D270K	27(24.3~31.1)	17	22	8.5	10	53	1000	0.1	10000
14D330K	14D330K	33(29.7~37.9)	20	26	10	10	65	1000	0.1	8500
14D390K	14D390K	39(35.2~44.8)	25	31	12	10	77	1000	0.1	8000
14D470K	14D470K	47(43~53)	30	38	15	10	93	1000	0.1	6500
14D560K	14D560K	56(51~63)	35	45	18	10	110	1000	0.1	5600
14D680K	14D680K	68(62~76)	40	56	21	10	135	1000	0.1	4700
14D820K	14D820K	82(74~90)	50	65	26	50	135	4500	0.6	3900
14D101K	14D101K	100(90~110)	60	85	32	50	165	4500	0.6	3400
14D121K	14D121K	120(108~132)	75	100	38	50	200	4500	0.6	3100
14D151K	14D151K	150(135~165)	95	125	47	50	250	4500	0.6	3000
14D181K	14D181K	180(162~198)	115	150	57	50	300	4500	0.6	1030
14D201K	14D201K	200(185~225)	130	170	63	50	340	4500	0.6	970
14D221K	14D221K	220(198~242)	140	180	69	50	360	4500	0.6	840
14D241K	14D241K	240(216~264)	150	200	76	50	395	4500	0.6	830
14D271K	14D271K	270(243~297)	175	225	85	50	455	4500	0.6	650
14D301K	14D301K	300(270~330)	195	250	95	50	505	4500	0.6	600
14D331K	14D331K	330(297~363)	210	275	104	50	550	4500	0.6	550
14D361K	14D361K	360(324~396)	230	300	113	50	595	4500	0.6	500
14D391K	14D391K	390(351~429)	250	320	123	50	650	4500	0.6	480
14D431K	14D431K	430(387~473)	275	350	136	50	710	4500	0.6	440
14D471K	14D471K	470(423~517)	300	385	148	50	775	4500	0.6	420
14D511K	14D511K	510(459~561)	320	418	148	50	842	4500	0.6	390
14D561K	14D561K	560(504~616)	350	460	148	50	920	4500	0.6	360
14D621K	14D621K	620(558~682)	385	505	148	50	1025	4500	0.6	320
14D681K	14D681K	680(612~748)	420	560	148	50	1120	4500	0.6	290
14D751K	14D751K	750(675~825)	460	615	158	50	1240	4500	0.6	260
14D781K	14D781K	780(702~858)	485	640	164	50	1290	4500	0.6	250
14D821K	14D821K	820(738~902)	510	670	172	50	1355	4500	0.6	240
14D911K	14D911K	910(819~1001)	550	745	191	50	1500	4500	0.6	200
14D102K	14D102K	1000(900~1100)	625	825	210	50	1650	4500	0.6	180
14D112K	14D112K	1100(990~1210)	680	895	231	50	1815	4500	0.6	150
14D142K	14D142K	1400(1260~1540)	870	1150	295	50	2310	4500	0.6	140
14D152K	14D152K	1500(1350~1650)	900	1220	312	50	2475	4500	0.6	140
14D182K	14D182K	1800(1620~1980)	1000	1465	378	50	2970	4500	0.6	120

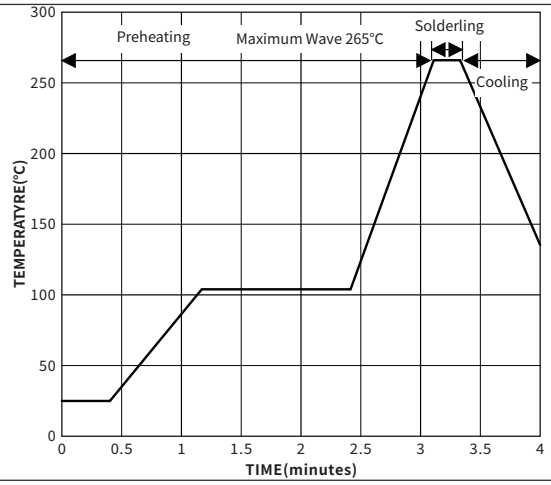
Note: Leakage Current @75%V_{1mA}: 180K~680K,IR ≤ 50μA; 820K~182K,IR ≤ 25μA

Electrical Ratings

<table>
<tr><th>Items</th><th>Test Condition/Description</th><th>Requirement</th></tr>
<tr><td>Varistor Voltage</td><td>The voltage between two terminals with the specified measuring current 1mA.DC applied is called Vb.</td><td rowspan="6">To meet the specified value</td></tr>
<tr><td>Maximum Allowable Voltage</td><td>The recommended maximum sine wave voltage(RMS)orthe Maximum DC voltage can be applied continuously.</td></tr>
<tr><td rowspan="2">Maximum Clamping Voltage</td><td>The maximum voltage between two terminals with the specification standard impulse current.
Applied waveform:8/20μs</td></tr>
<tr><td> 
</td></tr>
<tr><td>Rated Wattage</td><td>The maximum average power that can be applied within the specified ambient temperature.</td></tr>
<tr><td>Energy</td><td>The maximum energy within the varistor voltage change of ±10% when one impulse of 10/1000μs or 2ms is applied.</td></tr>
<tr><td>Withstanding Surge Current</td><td>The maximum current within the varistor voltage change of±10% with the standard impulse current(8/20μs)applied one time.</td></tr>
<tr><td>Surge Life</td><td>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>
<tr><th>Series</th><th>Varistor Voltage</th><th>Surge Current (8/20μs)</th></tr>
<tr><td rowspan="2">10D Series</td><td>180K to 680K</td><td>75A</td></tr>
<tr><td>820K to 182K</td><td>150A</td></tr>
</table></td><td>$\frac{\Delta Vb}{Vb} \leq 10\%$</td></tr>
</table>

Recommended Soldering Conditions

Wave Lead Free Soldering Recommendation

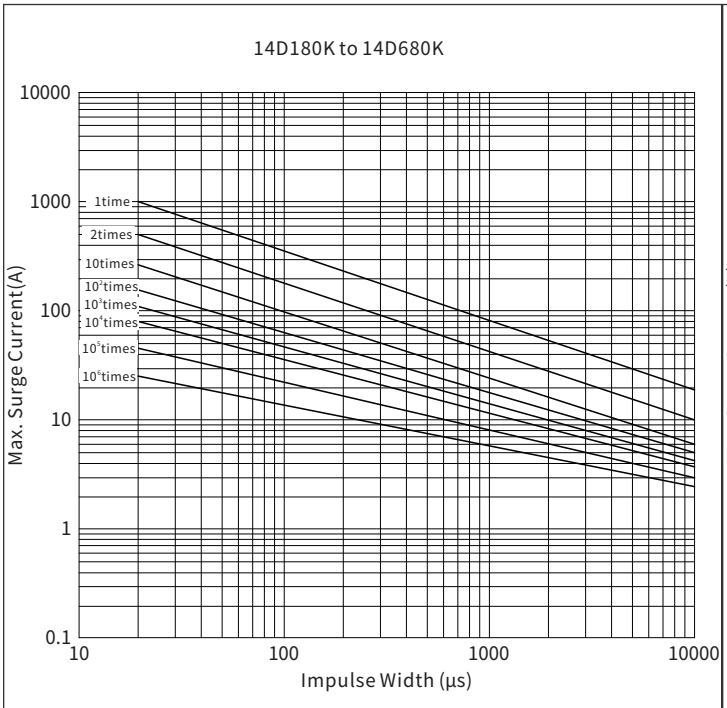


Item	Conditions
Peak Temperature	265°C
Dipping Time	10 secs. Max
Soldering	1 time

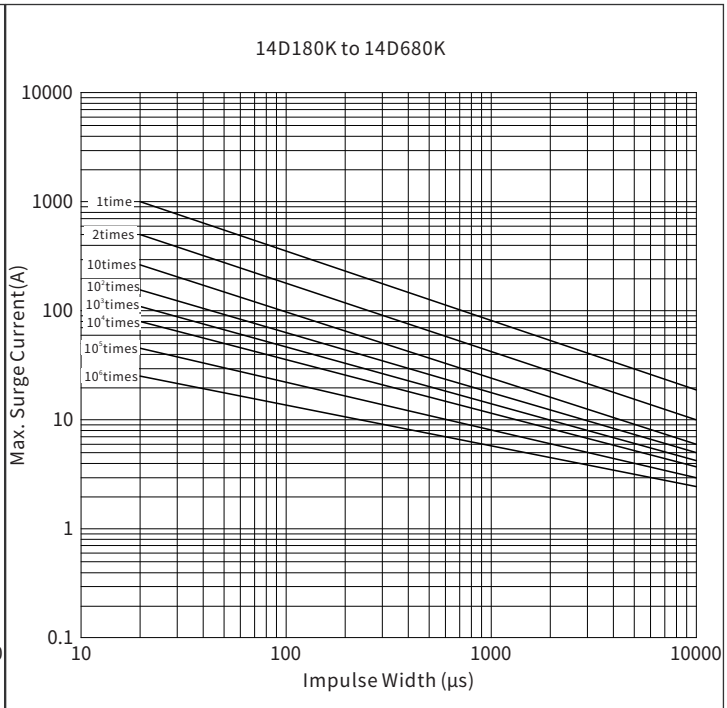
Recommendation Reworking Conditions with Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	360°C Max
Soldering Time	3 secs. Max
Distance from Varistor	2 mm Min

Maximum Surge Current Derating Curve (Ta=25°C Unless otherwise specified)



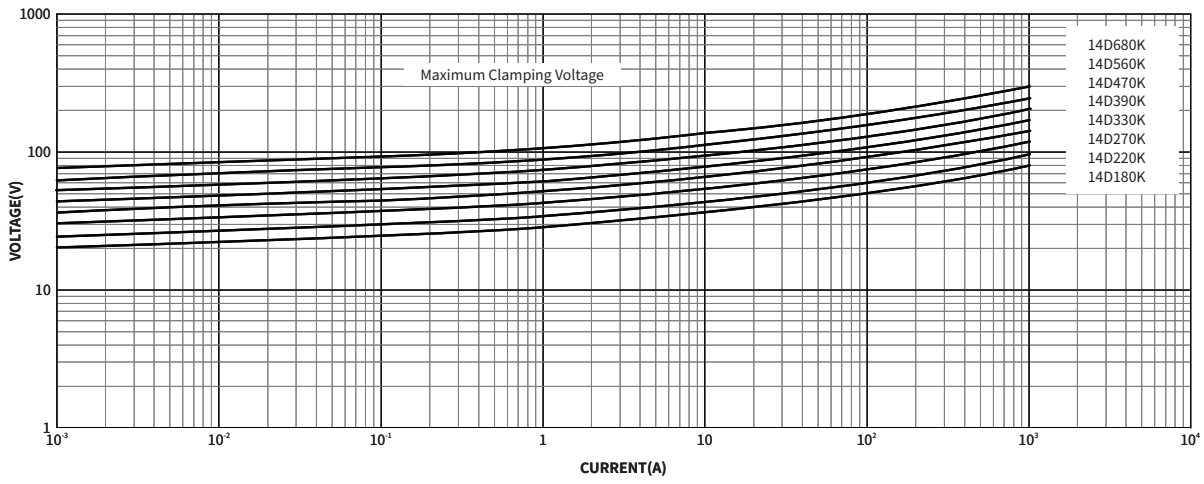
Maximum Surge Current Derating Curve



Maximum Surge Current Derating Curve

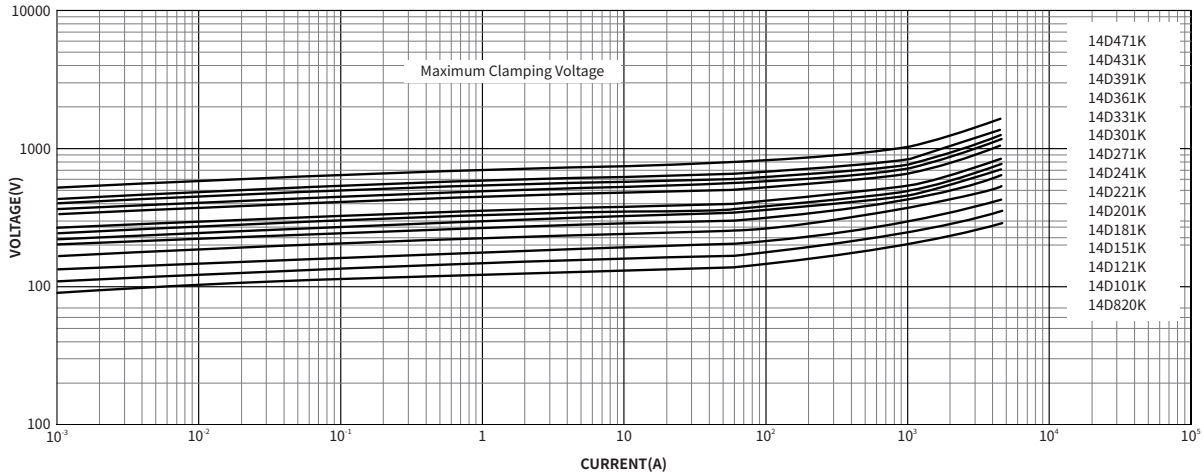
Maximum Clamping Voltage Curve (Ta=25°C Unless otherwise specified)

14D180K to 14D680K



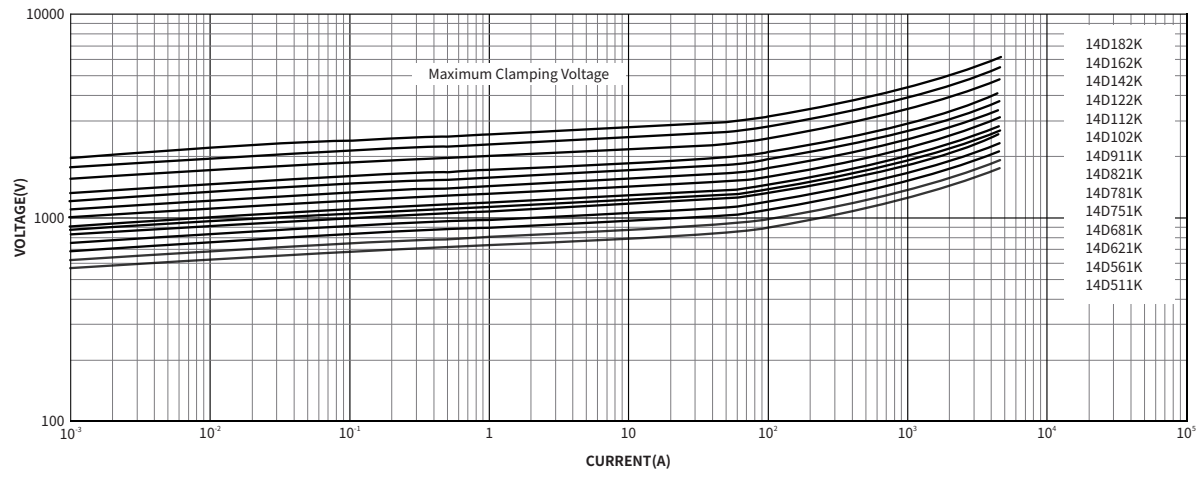
Maximum Clamping Voltage Curve

14D820K to 14D471K



Maximum Clamping Voltage Curve

14D511K to 14D182K



Maximum Clamping Voltage Curve

Dimensions

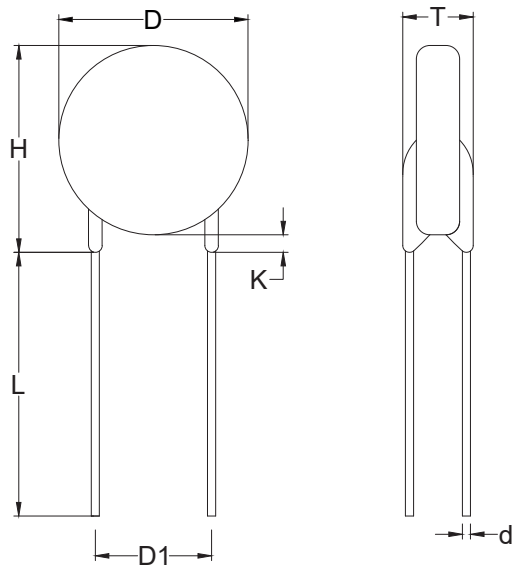


TABLE 1				
Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
D	14.0	17.0	0.552	0.670
H	14.5	20.0	0.571	0.788
L	15.0	-	0.591	-
K	-	2.5	-	0.099
D1	6.5	8.5	0.260	0.335
d	0.7	0.9	0.028	0.036
T(max)	TABLE 2			

TABLE 2 T(max.)					
Voltage	Millimeters	Inches	Voltage	Millimeters	Inches
18V-39V	4.6	0.182	430V-560V	6.2	0.244
47V-68V	5.1	0.201	620V-780V	7.2	0.284
82V-150V	4.6	0.182	820V-1200V	9.0	0.355
180V-270V	5.1	0.201	1300V-1500V	9.5	0.374
330V-390V	5.6	0.221	1600V-1800V	11.3	0.445

Ordering Information

SERIES	DELIVERY MODE	MPQ(PCS)
14D SERIES	Bulk	250