



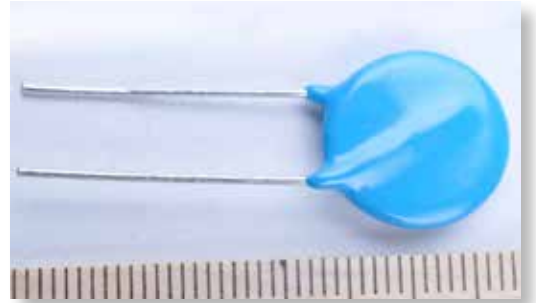
# Metal Oxide Varistors

**14D Series**

## Metal Oxide Varistors - 14D Series

### Features

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



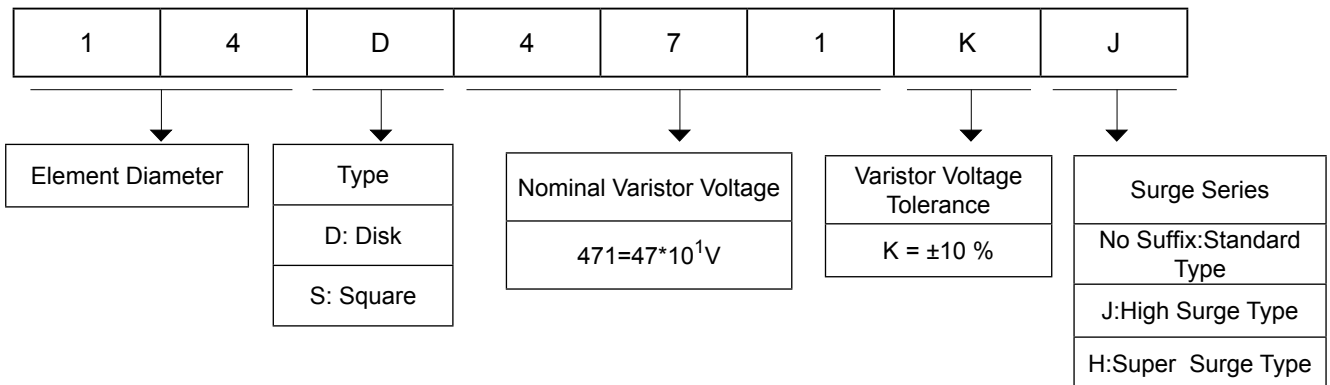
### General Information

- 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:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- Storage Temperature:  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
- Leads: Surface-mount, Axial Devices: Tin Plated

### Product Name



## Metal Oxide Varistors - 14D Series

### Electrical Characteristics

Type Number		Maximum Allowable Voltage		Varistor Voltage	Maximum Clamping Voltage		Withstanding Surge Current		Maximum Energy (10/1000µs)		Rated Power	Typical Capacitance (Reference)
Standard	High Surge	V <sub>AC</sub> (V)	V <sub>DC</sub> (V)	V <sub>1mA</sub> (V)	I <sub>P</sub> (A)	V <sub>C</sub> (V)	I(A) Standard	I(A) High Surge	(J) Standard	(J) High Surge	(W)	@1KHz(pf)
14D180K	14D180KJ	11	14	18(15~21.6)	10	36	1000	2000	3.2	4.1	0.1	18000
14D220K	14D220KJ	14	18	22(19.5~26)	10	43	1000	2000	4.0	5.0	0.1	15000
14D270K	14D270KJ	17	22	27(24~30)	10	53	1000	2000	4.9	6.1	0.1	10000
14K330K	14K330KJ	20	26	33(29.5~36.5)	10	66	1000	2000	5.9	7.4	0.1	8500
14D390K	14D390KJ	25	31	39(35~43)	10	77	1000	2000	7.0	8.8	0.1	7500
14D470K	14D470KJ	30	38	47(42~54)	10	93	1000	2000	8.5	10.6	0.1	6500
14D560K	14D560KJ	35	45	56(50~62)	10	100	1000	2000	10.1	12.6	0.1	5600
14D680K	14D680KJ	40	56	68(61~75)	10	135	1000	2000	12.2	15.3	0.1	4700
14D820K	14D820KJ	50	65	82(74~90)	50	135	4500	6000	14.8	18.5	0.6	3900
14D101K	14D101KJ	60	85	100(90~110)	50	165	4500	6000	18.0	22.5	0.6	3400
14D121K	14D121KJ	75	100	120(108~132)	50	200	4500	6000	21.6	27.0	0.6	3100
14D151K	14D151KJ	95	125	150(135~165)	50	250	4500	6000	27.0	33.8	0.6	3000
14D181K	14D181KJ	115	150	180(162~198)	50	300	4500	6000	32.4	40.5	0.6	1030
14D201K	14D201KJ	130	170	200(180~220)	50	340	4500	6000	36.0	45.0	0.6	970
14D221K	14D221KJ	140	180	220(198~242)	50	360	4500	6000	39.6	49.5	0.6	840
14D241K	14D241KJ	150	200	240(216~264)	50	395	4500	6000	43.2	54.0	0.6	710
14D271K	14D271KJ	175	225	270(243~297)	50	455	4500	6000	48.6	60.8	0.6	650
14D301K	14D301KJ	190	250	300(270~330)	50	500	4500	6000	54.0	67.5	0.6	600
14D331K	14D331KJ	210	275	330(297~363)	50	550	4500	6000	59.4	74.3	0.6	550
14D361K	14D361KJ	230	300	360(324~396)	50	595	4500	6000	64.8	81.0	0.6	500
14D391K	14D391KJ	250	320	390(351~429)	50	650	4500	6000	70.2	87.8	0.6	480
14D431K	14D431KJ	275	350	430(387~473)	50	710	4500	6000	77.4	96.8	0.6	440
14D471K	14D471KJ	300	385	470(423~517)	50	775	4500	6000	84.6	105.8	0.6	420
14D511K	14D511KJ	320	415	510(459~561)	50	845	4500	6000	84.6	105.8	0.6	390
14D561K	14D561KJ	350	460	560(504~616)	50	925	4500	6000	84.6	105.8	0.6	360
14D621K	14D621KJ	385	505	620(558~682)	50	1025	4500	6000	84.6	105.8	0.6	320
14D681K	14D681KJ	420	560	680(612~748)	50	1120	4500	6000	84.6	105.8	0.6	290
14D751K	14D751KJ	460	615	750(675~825)	50	1240	4500	6000	90.0	112.5	0.6	260
14D781K	14D781KJ	485	640	780(702~858)	50	1290	4500	6000	93.6	117.0	0.6	230
14D821K	14D821KJ	510	670	820(738~902)	50	1355	4500	6000	98.4	123.0	0.6	230
14D911K	14D911KJ	550	745	910(819~1001)	50	1500	4500	6000	109.2	136.5	0.6	200
14D951K	14D951KJ	580	780	950(855~1045)	50	1570	4500	6000	113.7	142.1	0.6	190
14D102K	14D102KJ	625	825	1000(900~1100)	50	1650	4500	6000	120.0	150.0	0.6	180
14D112K	14D112KJ	680	895	1100(990~1210)	50	1815	4500	6000	132.0	165.0	0.6	150
14D122K	14D122KJ	750	990	1200(1080~1320)	50	1980	4500	6000	150.0	185.0	0.6	150
14D152K	14D152KJ	900	1220	1500(1350~1650)	50	2475	4500	6000	179.0	223.0	0.6	140
14D182K	14D182KJ	1000	1465	1800(1620~1980)	50	2970	4500	6000	216.0	270.0	0.6	120

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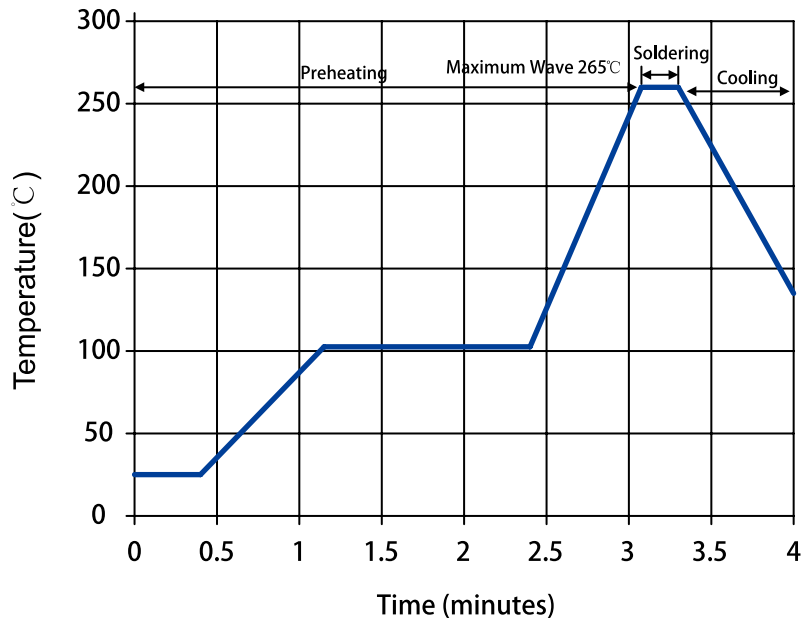
### Electrical Ratings

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: 8/20<math>\mu</math>s</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 10/1000 $\mu$ s or 2ms is applied.																										
Withstanding Surge Current	The maximum current within the varistor voltage change of $\pm 10\%$ with the standard impulse current (8/20 $\mu$ s) 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"> <tbody> <tr> <td rowspan="2">5<math>\Phi</math> series</td> <td>180K to 680K</td> <td>10A (8/20<math>\mu</math>s)</td> </tr> <tr> <td>820K to 751K</td> <td>20A (8/20<math>\mu</math>s)</td> </tr> <tr> <td rowspan="2">7<math>\Phi</math> series</td> <td>180K to 680K</td> <td>25A (8/20<math>\mu</math>s)</td> </tr> <tr> <td>820K to 821K</td> <td>50A (8/20<math>\mu</math>s)</td> </tr> <tr> <td rowspan="2">10<math>\Phi</math> series</td> <td>180K to 680K</td> <td>50A (8/20<math>\mu</math>s)</td> </tr> <tr> <td>820K to 112K</td> <td>100A (8/20<math>\mu</math>s)</td> </tr> <tr> <td rowspan="2">14<math>\Phi</math> series</td> <td>180K to 680K</td> <td>75A (8/20<math>\mu</math>s)</td> </tr> <tr> <td>820K to 182K</td> <td>150A (8/20<math>\mu</math>s)</td> </tr> <tr> <td rowspan="2">20<math>\Phi</math> series</td> <td>180K to 680K</td> <td>100A (8/20<math>\mu</math>s)</td> </tr> <tr> <td>820K to 182K</td> <td>200A (8/20<math>\mu</math>s)</td> </tr> </tbody> </table>	5 $\Phi$ series	180K to 680K	10A (8/20 $\mu$ s)	820K to 751K	20A (8/20 $\mu$ s)	7 $\Phi$ series	180K to 680K	25A (8/20 $\mu$ s)	820K to 821K	50A (8/20 $\mu$ s)	10 $\Phi$ series	180K to 680K	50A (8/20 $\mu$ s)	820K to 112K	100A (8/20 $\mu$ s)	14 $\Phi$ series	180K to 680K	75A (8/20 $\mu$ s)	820K to 182K	150A (8/20 $\mu$ s)	20 $\Phi$ series	180K to 680K	100A (8/20 $\mu$ s)	820K to 182K	200A (8/20 $\mu$ s)	$\frac{\Delta V_b}{V_b} \leq \pm 10\%$
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## Metal Oxide Varistors - 14D Series

### Soldering Recommendation

#### Wave Lead Free Soldering Recommendation



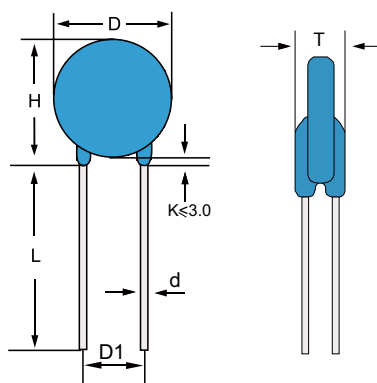
Item	Conditions
Peak Temperature	265°C
Dipping Time	10 seconds (max.)
Soldering	1 time

#### 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.)

## Metal Oxide Varistors - 14D Series

### Package Dimensions (Unit:mm)



**TABLE 1**

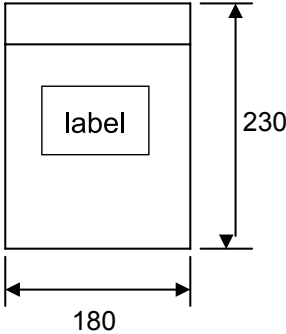
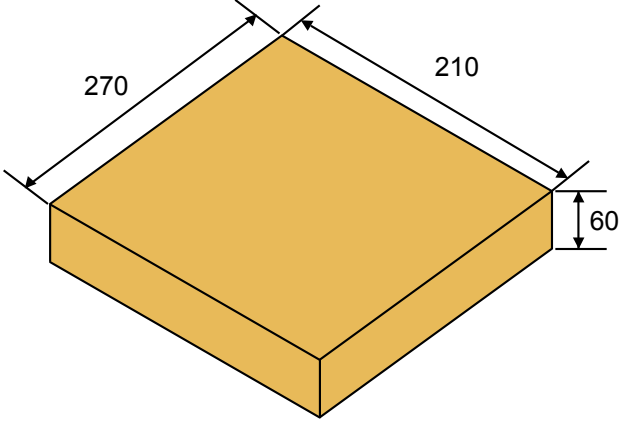
Symbol	Dimensions
H(max.)	20.0
L(min.)	20.0
D(max.)	16.5
D1(±0.8)	7.5
T(max.)	TABLE 2
d(±0.05)	0.8

**TABLE 2**

Model	T(max.)	Model	T(max.)
180K	3.9	361K	5.2
220K	4.0	391K	5.4
270K	4.1	431K	5.6
330K	4.3	471K	5.8
390K	4.1	511K	6.1
470K	4.3	561K	6.4
560K	4.3	621K	6.8
680K	4.8	681K	7.1
820K	4.1	751K	7.2
101K	4.2	781K	7.3
121K	4.4	821K	7.5
151K	4.1	911K	7.5
181K	4.2	951K	8.0
201K	4.3	102K	8.0
221K	4.4	112K	8.5
241K	4.5	122K	9.0
271K	2.6~4.6	152K	11.0
301K	2.7~4.6	182K	12.0
331K	2.7~5.0	-	-

## Metal Oxide Varistors - 14D Series

### Packaging Taping

Bag Packing (180*230mm)	Inner Box (270*210*60mm)
	
250 PCS/ Bag	1000 PCS/ Box

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