

## FEATURES

- | High surge current handling capability
- | High energy absorption capability
- | Wide operating voltages ranging from 130Vrms to 1000Vrms
- | Fast response time of less than 25ns, instantly clamping the transient over voltage
- | Low clamping voltages, providing better surge protection
- | Low capacitance values, providing digital switching circuitry protection
- | High insulation resistance, preventing electric arcing to the adjacent devices or circuits



32D

## APPLICATIONS

- | Surge protection of consumer equipment
- | Surge protection of communication, measuring and controller instrument
- | Surge protection in electronic home appliances, gas and petroleum appliances
- | Relay and electromagnetic valve surge absorption
- | Transistor, Diode, IC, Thyristor or Triac semiconductor protection

## APPROVALS

<b>RoHS</b>	Compliance with 2011/65/EU
<b>HF</b>	Compliance with IEC61249-2-21:2003

## GENERAL CHARACTERISTICS DEFINITION

- | Operating Temperature Range : -40°C ~ +85°C
- | Storage Temperature Range : -40°C ~ +125°C
- | Working Surface Temperature : +115°C
- | Insulation Resistance : >100MΩ

## MATERIAL

- | Coating: Epoxy Resin
- | Lead Wire: The Copper Wire
- | Electrode: Silver Solder
- | Disk: Zinc Oxide

## ELECTRICAL CHARACTERISTICS

Symbol		Maximum Allowable Voltage		Varistor Voltage @1mA	Maximum Clamping Voltage		Withstanding Surge Current (8/20µs)		Maximum Energy (10/1000µs)	Rated Power	Typical Capacitance (Reference)
Standard	High Surge	V <sub>AC</sub> (V)	V <sub>DC</sub> (V)	(V)	V <sub>C</sub> (V)	I <sub>p</sub> (A)	I(A) Standard	I(A) High Surge	(J) Standard	(W)	@1KHz (pF)
32D201K	32D201KJ	130	170	200(185-225)	330	200	25000	30000	250	1.4	5200
32D221K	32D221KJ	140	180	220(198-242)	360	200	25000	30000	270	1.4	5150
32D241K	32D241KJ	150	200	240(216-262)	395	200	25000	30000	290	1.4	5100
32D271K	32D271KJ	175	225	270(243-297)	455	200	25000	30000	300	1.4	4800
32D301K	32D301KJ	190	250	300(270-330)	505	200	25000	30000	330	1.4	4550
32D331K	32D331KJ	210	275	330(297-363)	550	200	25000	30000	360	1.4	4300
32D361K	32D361KJ	230	300	360(324-396)	595	200	25000	30000	380	1.4	3900
32D391K	32D391KJ	250	320	390(351-429)	650	200	25000	30000	400	1.4	3200
32D431K	32D431KJ	275	350	430(387-473)	710	200	25000	30000	430	1.4	3100
32D471K	32D471KJ	300	385	470(423-517)	775	200	25000	30000	460	1.4	2800
32D511K	32D511KJ	320	415	510(459-561)	845	200	25000	30000	510	1.4	2700
32D561K	32D561KJ	350	460	560(504-616)	920	200	25000	30000	530	1.4	2550
32D621K	32D621KJ	385	505	620(558-682)	1025	200	25000	30000	540	1.4	2400
32D681K	32D681KJ	420	560	680(612-748)	1120	200	25000	30000	570	1.4	2200
32D751K	32D751KJ	460	615	750(675-825)	1240	200	25000	30000	600	1.4	2000
32D781K	32D781KJ	485	640	780(702-858)	1290	200	25000	30000	620	1.4	1900
32D821K	32D821KJ	510	670	820(738-902)	1355	200	25000	30000	660	1.4	1800
32D911K	32D911KJ	550	745	910(819-1001)	1500	200	25000	30000	700	1.4	1300
32D102K	32D102KJ	625	825	1000(900-1100)	1650	200	25000	30000	810	1.4	1200
32D112K	32D112KJ	680	895	1100(990-1210)	1815	200	25000	30000	910	1.4	1100
32D152K	32D152KJ	900	1200	1500(1350-1650)	2475	200	25000	30000	1060	1.4	750
32D182K	32D182KJ	1000	1465	1800(1620-1980)	2970	200	25000	30000	1120	1.4	650

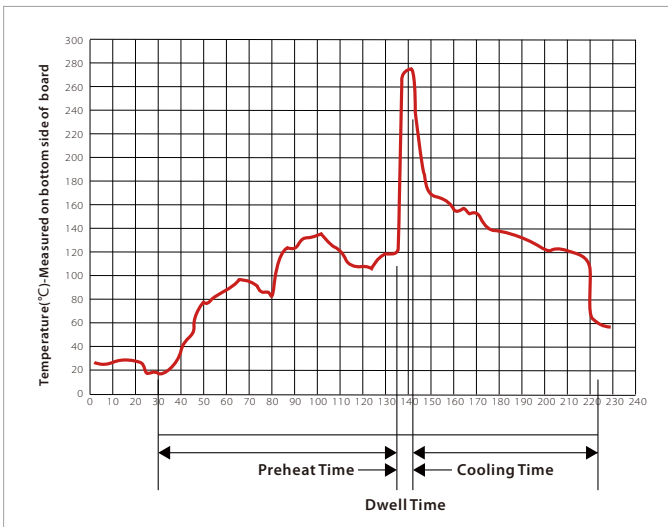
## CHARACTERISTIC CURVES

Items	Test condition/Description
Varistor Voltage	The voltage across the varistor measured at 1 mA DC, can be called Vb
Maximum Allowable Voltage	Maximum continuous sine wave(RMS) or DC voltage which may be applied
Maximum Clamping Voltage	Peak voltage across the varistor with a specified peak impulse current of 8/20μs waveform
Rated Power	The maximum average power that can be applied within the specified ambient temperature
Withstanding Surge Current	The maximum current within the varistor voltage change of less than ±10% when one impulse current(8/20μs) applied
Energy	The max.energy absorbed with a varistor voltage change of less than ± 10% when one impulse (10/1000μs) is applied
Varistor Voltage Temperature Coefficient	$\left  \frac{V_{b@85^{\circ}\text{C}} - V_{b@25^{\circ}\text{C}}}{V_{b@25^{\circ}\text{C}}} \times \frac{1}{60} \times 100\% \left( \%/^{\circ}\text{C} \right) \right  \leq 0.05\% / ^{\circ}\text{C}$ $\left  \frac{V_{b@-40^{\circ}\text{C}} - V_{b@25^{\circ}\text{C}}}{V_{b@25^{\circ}\text{C}}} \times \frac{1}{65} \times 100\% \left( \%/^{\circ}\text{C} \right) \right  \leq 0.05\% / ^{\circ}\text{C}$

## CHARACTERISTIC CURVES

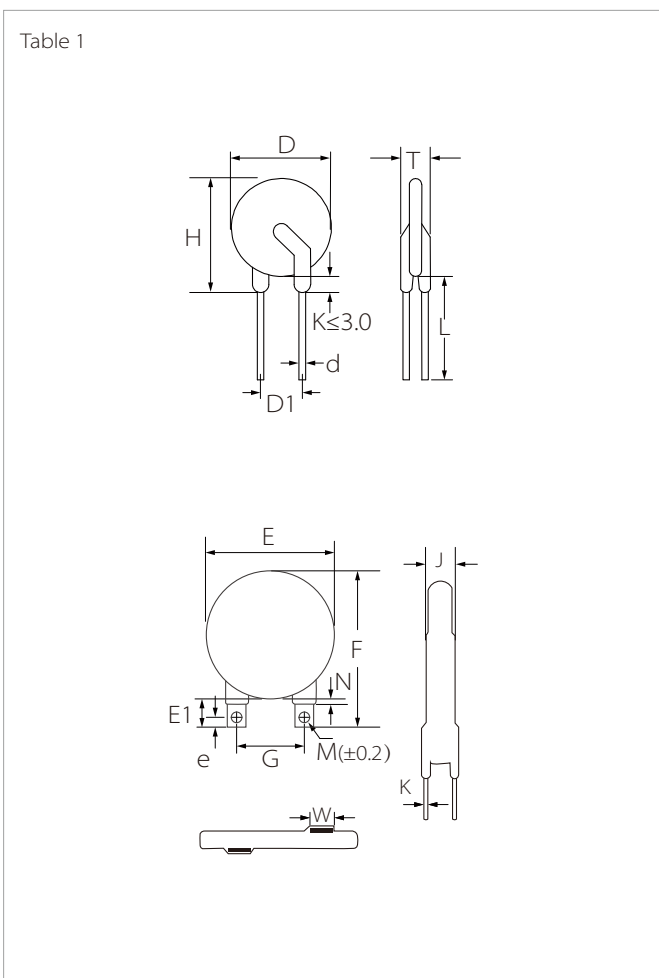
Items	Test condition/Description	Specifications															
High Temperature Storage	Ambient Temp:125±2°C Duration:1000 hrs	$ \Delta V_{1_{mA}} / V_{1_{mA}}  \leq 5\%$															
Low Temperature Storage	Ambient Temp:-40±2°C Duration:1000 hrs	$ \Delta V_{1_{mA}} / V_{1_{mA}}  \leq 5\%$															
Humidity	Ambient Temp:40±2°C,90~95% R.H. Duration:1000 hrs	$ \Delta V_{1_{mA}} / V_{1_{mA}}  \leq 5\%$															
Temperature Cycle	The conditions shown below shall be repeated 5 cycles <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Step</th> <th>Temperature(°C)</th> <th>Period(minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±3</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>15±3</td> </tr> <tr> <td>3</td> <td>125±3</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>15±3</td> </tr> </tbody> </table>	Step	Temperature(°C)	Period(minutes)	1	-40±3	30±3	2	Room temperature	15±3	3	125±3	30±3	4	Room temperature	15±3	No visible damage $ \Delta V_{1_{mA}} / V_{1_{mA}}  \leq 5\%$
Step	Temperature(°C)	Period(minutes)															
1	-40±3	30±3															
2	Room temperature	15±3															
3	125±3	30±3															
4	Room temperature	15±3															
High Temperature Load	Ambient Temp:85±2°C ,Duration:1000 hrs Load:Max.Allowable Voltage in AC eara	$ \Delta V_{1_{mA}} / V_{1_{mA}}  \leq 10\%$															
Damp Heat Load	Ambient Temp:40±2°C ,90~95% R.H. Duration:1000 hrs Load:Max.Allowable Voltage	No visible damage $ \Delta V_{1_{mA}} / V_{1_{mA}}  \leq 10\%$															
Voltage Proof	Metal balls method,2500Vac 1 min	No visible damage															

## WAVE SOLDERING



Wave Parameter		Lead-free assembly
Pre Heat	Temperature Min	100°C
	Temperature Max	150°C
	Time(min to max)	60 – 180 secs
Solder pot Temperature		280°C Max
Solder Dwell Time		2-5 seconds

## PACKAGE INFORMATION



Symbol	Dimension(mm)
H(max)	39.0
H1(max)	36.0
L(min)	25.0
L1(min)	20.0
D(max)	34.0
D1(±0.8)	10.0
T(max)	Table2
d(±0.05)	1.2
d1(±0.4)	1.4
E(max)	45.0
E1(max)	16.5
e(+0.3)	3.4
M(±0.2)	3.8
N(max)	3.18
G(+1.0)	25.4
F(max)	60.2
W(±0.5)	7.0
J(max)	Table3
K(+0.1)	0.5

Table 2		Tmax(mm)					
32D201K	4.1	32D361K	5.0	32D621K	6.4	32D102K	7.8
32D221K	4.2	32D391K	5.1	32D681K	6.4	32D112K	8.5
32D241K	4.3	32D431K	5.3	32D751K	6.5	32D122K	11.0
32D271K	4.5	32D471K	5.6	32D781K	6.8	32D182K	12.5
32D301K	4.7	32D511K	5.8	32D821K	7.2		
32D331K	4.8	32D561K	6.2	32D911K	7.6		

Table 3		Jmax(mm)					
32D201K	6.2	32D361K	7.1	32D621K	8.7	32D102K	11.2
32D221K	6.3	32D391K	7.3	32D681K	9.0	32D112K	11.8
32D241K	6.4	32D431K	7.5	32D751K	9.4	32D122K	12.3
32D271K	6.6	32D471K	7.8	32D781K	9.6	32D182K	15.3
32D301K	6.8	32D511K	8.0	32D821K	9.8		
32D331K	6.9	32D561K	8.3	32D911K	10.4		

## ORDERING INFORMATION

Part Number	Component Package	Package	
		Long lead-wire	Short lead-wire
32D SERIES	32D	100Pcs/Bag	60Pcs/Bag

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