

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



25D

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

RoHS	Compliance with 2011/65/EU
HF	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		Mximum Allowable Voltage		Varistor Voltage @1mA	Mximum Clamping Voltage		Withstanding Surge Current (8/20μs)		Maximum Energy (10/1000μs)	Rated Power	Typical Capacitance (Reference)
Standard	High Surge	V _{ac} (V)	V _{dc} (V)	(V)	V _c (V)	I _p (A)	I(A) Standard	I(A) High Surge	(J) Standard	(W)	@1KHz (pF)
25D201K	25D201KJ	130	170	200(185-225)	330	150	15000	20000	190	1.2	320
25D221K	25D221KJ	140	180	220(198-242)	360	150	15000	20000	200	1.2	2900
25D241K	25D241KJ	150	200	240(216-262)	395	150	15000	20000	220	1.2	2650
25D271K	25D271KJ	175	225	270(243-297)	455	150	15000	20000	255	1.2	2400
25D301K	25D301KJ	190	250	300(270-330)	505	150	15000	20000	275	1.2	2100
25D331K	25D331KJ	210	275	330(297-363)	550	150	15000	2000	295	1.2	1900
25D361K	25D361KJ	230	300	360(324-396)	595	150	15000	20000	300	1.2	1750
25D391K	25D391KJ	250	320	390(351-429)	650	150	15000	20000	330	1.2	1600
25D431K	25D431KJ	275	350	430(387-473)	710	150	15000	20000	360	1.2	1500
25D471K	25D471KJ	300	385	470(423-517)	775	150	15000	20000	380	1.2	1400
25D511K	25D511KJ	320	415	510(459-561)	845	150	15000	20000	400	1.2	1250
25D561K	25D561KJ	350	460	560(504-616)	920	150	15000	20000	440	1.2	1150
25D621K	25D621KJ	385	505	620(558-682)	1025	150	15000	20000	450	1.2	1050
25D681K	25D681KJ	420	560	680(612-748)	1120	150	15000	20000	460	1.2	950
25D751K	25D751KJ	460	615	750(675-825)	1240	150	15000	20000	510	1.2	850
25D781K	25D781KJ	485	640	780(702-858)	1290	150	15000	20000	530	1.2	830
25D821K	25D821KJ	510	670	820(738-902)	1355	150	15000	20000	570	1.2	800
25D911K	25D911KJ	550	745	910(819-1001)	1500	150	15000	20000	620	1.2	700
25D102K	25D102KJ	625	825	1000(900-1100)	1650	150	15000	20000	685	1.2	650
25D112K	25D112KJ	680	895	1100(990-1210)	1815	150	15000	20000	720	1.2	600
25D152K	25D152KJ	900	1200	1500(1350-1650)	2475	150	15000	20000	950	1.2	475
25D182K	25D182KJ	1000	1465	1800(1620-1980)	2970	150	15000	20000	1090	1.2	400

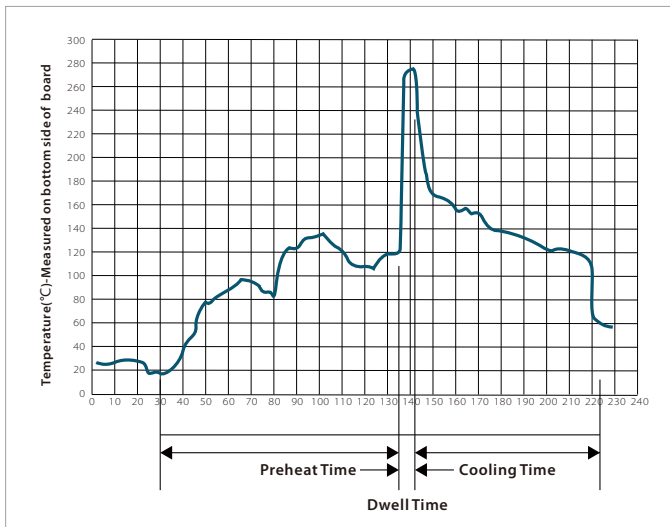
CHARACTERISTIC CURVES

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

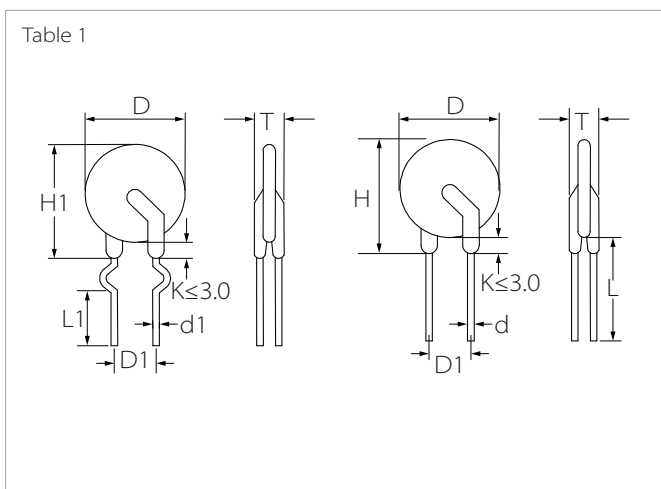
Items	Test condition/Description	Specifications															
High Temperature Storage	Ambient Temp:125±2°C Duration:1000 hrs	$ \Delta V_{1\text{mA}} / V_{1\text{mA}} \leq 5\%$															
Low Temperature Storage	Ambient Temp:-40±2°C Duration:1000 hrs	$ \Delta V_{1\text{mA}} / V_{1\text{mA}} \leq 5\%$															
Humidity	Ambient Temp:40±2°C,90~95% R.H. Duration:1000 hrs	$ \Delta V_{1\text{mA}} / V_{1\text{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\text{mA}} / V_{1\text{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\text{mA}} / V_{1\text{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\text{mA}} / V_{1\text{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)	31.0
H1(max)	28.0
L(min)	20.0
L1(min)	15.0
D(max)	27.0
D1(±0.8)	10.0
T(max)	Table2
d(±0.05)	1.0
d1(±0.4)	1.4

Table 2		Tmax(mm)					
25D201K	4.1	25D361K	5.0	25D621K	6.4	25D102K	7.8
25D221K	4.2	25D391K	5.1	25D681K	6.4	25D112K	8.5
25D241K	4.3	25D431K	5.3	25D751K	6.5	25D122K	11.0
25D271K	4.5	25D471K	5.6	25D781K	6.8	25D182K	12.5
25D301K	4.7	25D511K	5.8	25D821K	7.2		
25D331K	4.8	25D561K	6.2	25D911K	7.6		

ORDERING INFORMATION

Part Number	Component Package	Package
25D SERIES	25D	100PCS

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