JJV32D Disc Varistors

Rev.2.0

FEATURES

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

APPLICATIONS

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

APPLICABLE STANDARDS

- UL1449
- VDE (IEC61051-1, -2, -2-2, IEC60950-1Annex Q)
- CQC (GB/T10193, GB/T10194, GB4943.1, GB8898)

TYPE CODE DESIGNATION

JJV 32 D □□□ K □ □

- JJV: JieJie Semiconductor Varistors
- Size(mm): 32mm
- Type: D: Disk; S: Square
- Varistor voltage: 201K(200V) to 182K(1800V)
- Tolerance: K±10%, L±15%, M±20%
- Surge series: Omission: Standard type; J: high surge & high energy
- Lead length: Omission: Standard lead length; short leg; No: □.□

GENERAL TECHNICAL DATA

Parameter	Value	Unit
Operating temperature	-40 to +85	℃
Storage temperature	-40 to +125	℃
Working surface temperature	+115	℃
Insulation resistance	≥100	MΩ
Coating (epoxy resin)125℃	Flame-retardant to UL 94 V-0	

RATINGS AND CHARACTERISTICS

Part No.		Maximum allowable voltage		Energy 10/1000μs	Withstanding surge current 8/20μs		Rated power	Varistor voltage	Max clamping voltage	Capacitance
Standard	High surge	AC V_{RMS}	DC	High surge	Standard (A)	High surge (A)	W	at 1mA	at 200A	1KHz
		V	V	J	1 TIME	1 TIME		V	V	pF
JJV32D201K	JJV32D201KJ	130	170	250	25000	30000	1.4	200(185-225)	330	5200
JJV32D221K	JJV32D221KJ	140	180	270	25000	30000	1.4	220(198-242)	360	5150
JJV32D241K	JJV32D241KJ	150	200	290	25000	30000	1.4	240(216-264)	395	5100
JJV32D271K	JJV32D271KJ	175	225	300	25000	30000	1.4	270(243-297)	455	4800
JJV32D301K	JJV32D301KJ	190	250	330	25000	30000	1.4	300(270-330)	505	4550
JJV32D331K	JJV32D331KJ	210	275	360	25000	30000	1.4	330(297-363)	550	4300
JJV32D361K	JJV32D361KJ	230	300	380	25000	30000	1.4	360(324-396)	595	3900
JJV32D391K	JJV32D391KJ	250	320	400	25000	30000	1.4	390(351-429)	650	3200
JJV32D431K	JJV32D431KJ	275	350	430	25000	30000	1.4	430(387-473)	710	3100
JJV32D471K	JJV32D471KJ	300	385	460	25000	30000	1.4	470(423-517)	775	2800
JJV32D511K	JJV32D511KJ	320	415	510	25000	30000	1.4	510(459-561)	845	2700
JJV32D561K	JJV32D561KJ	350	460	530	25000	30000	1.4	560(504-616)	920	2550
JJV32D621K	JJV32D621KJ	385	505	540	25000	30000	1.4	620(558-682)	1025	2400
JJV32D681K	JJV32D681KJ	420	560	570	25000	30000	1.4	680(612-748)	1120	2200
JJV32D751K	JJV32D751KJ	460	615	600	25000	30000	1.4	750(675-825)	1240	2000
JJV32D781K	JJV32D781KJ	485	640	620	25000	30000	1.4	780(702-858)	1290	1900
JJV32D821K	JJV32D821KJ	510	670	660	25000	30000	1.4	820 (738-902)	1355	1800
JJV32D911K	JJV32D911KJ	550	745	700	25000	30000	1.4	910 (819-1001)	1500	1300
JJV32D102K	JJV32D102KJ	625	825	810	25000	30000	1.4	1000(900-1100)	1650	1200
JJV32D112K	JJV32D112KJ	680	895	910	25000	30000	1.4	1100(990-1210)	1815	1100
JJV32D152K	JJV32D152KJ	900	1200	1060	25000	30000	1.4	1500(1350-1650)	2475	750
JJV32D182K	JJV32D182KJ	1000	1465	1120	25000	30000	1.4	1800(1620-1980)	2970	650

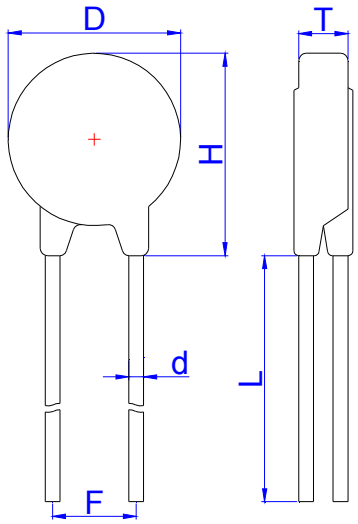
RELIABILITY TESTS - Mechanical ratings

<table>
<tr><th>Parameter</th><th colspan="3">Condition</th><th>Requirements</th></tr>
<tr><td rowspan="4">Terminal Pull Strength</td><td rowspan="4">After gradually applying the load specified below and keeping the unit fixed for ten seconds, the terminal shall be visually examined for any damage.</td><td>Diameter</td><td>Loading</td><td rowspan="4">No visible damage</td></tr>
<tr><td>0.6mm</td><td>1.0Kg</td></tr>
<tr><td>0.8mm</td><td>1.0Kg</td></tr>
<tr><td>1.0mm</td><td>2.0Kg</td></tr>
<tr><td rowspan="5">Terminal Bending Strength</td><td rowspan="5">The unit shall be secured with its terminal kept vertical and the weight specified below be applied in the axial direction. The terminal shall gradually be bent by 90° in one direction, then 90° in the opposite direction, and again back to the original position. The damage of the terminal shall be visually examined.</td><td>Diameter</td><td>Loading</td><td rowspan="5">No visible damage</td></tr>
<tr><td>0.6mm</td><td>0.5Kg</td></tr>
<tr><td>0.8mm</td><td>0.5Kg</td></tr>
<tr><td>1.0mm</td><td>1.0Kg</td></tr>
<tr><td>Vibration</td><td colspan="3">The specimen shall be vibrated by its lead wires with a total amplitude of 1.5mm and a varying frequency of 10~55~10Hz (each minutes) for a period of 2 hours respectively in each X, Y and Z directions.</td><td>No visible damage
$\Delta V_B/V_B\% \leq \pm 5\%$</td></tr>
<tr><td>Soldering-Solderability</td><td colspan="3">After dipping the terminal to depth of approximately 3mm from the specimen in a soldering bath of 260℃ for 10±1 (D5:5±1) seconds. Thereafter the terminal shall be visually examined.</td><td>Terminations shall be uniformly tinned</td></tr>
<tr><td>Soldering-Resistance to Solder Heat</td><td colspan="3">After preheating the specimen, the specimen shall be completely immersed into a soldering bath having a temperature of 260±5℃ for 10±1 (D5:5±1) seconds or iron of 400±5℃ for 3±0.5 seconds. Thereafter the change of V_B and mechanical damage shall be examined.</td><td>No visible damage
$\Delta V_B/V_B\% \leq \pm 5\%$</td></tr>
</table>

RELIABILITY TESTS - Environmental ratings

<table>
<tr><th>Parameter</th><th colspan="4">Condition</th><th>Requirements</th></tr>
<tr><td>Dry Heat Loading</td><td colspan="4">The specimen shall be applied continuously the maximum allowable voltage at the specified conditions for specified period and then stored at room temperature and normal humidity over 2 hours. Thereafter the change of V_B and mechanical damage shall be examined.
Ambient temp.: 125±2℃; Period: 1000±24hours.</td><td>$\Delta V_B/V_B\% \leq \pm 10\%$</td></tr>
<tr><td>High Temperature Storage</td><td colspan="4">In a drying oven without load.
Ambient temp.: 125±2℃; period: 1000±24hours</td><td>$\Delta V_B/V_B\% \leq \pm 5\%$</td></tr>
<tr><td>Damp Heat Loading</td><td colspan="4">The specimen shall be applied continuously the maximum allowable voltage at the specified conditions for specified period and then stored at room temperature and normal humidity over 2 hours. Thereafter, the change of V_B and mechanical damage shall be examined.
Ambient condition: 40±2℃, 90 to 95%R.H.; period: 1000±24 hours</td><td>$\Delta V_B/V_B\% \leq \pm 10\%$</td></tr>
<tr><td rowspan="5">Temperature Cycle</td><td colspan="3" rowspan="5">Condition the specimen to each temperature form step 1 to step 4 in this order for the period shown in the table of specifications. The change of V_B and mechanical damage shall be examined after 2 hours.</td><td>Step</td><td>Temp(℃)</td><td>Period</td><td rowspan="5">No visible damage
$\Delta V_B/V_B\% \leq \pm 10\%$</td></tr>
<tr><td>1</td><td>-40±3℃</td><td>30 min.</td></tr>
<tr><td>2</td><td>Room Temp.</td><td>15 min.</td></tr>
<tr><td>3</td><td>85±2℃</td><td>30 min.</td></tr>
<tr><td>4</td><td>Room Temp.</td><td>15 min.</td></tr>
<tr><td>Surge Lifetime Rating</td><td colspan="4">The change of V_B shall be measured after the impulse listed below is applied 10,000 times continuously with the interval of ten seconds at room temperature.</td><td>No visible damage
$\Delta V_B/V_B\% \leq \pm 10\%$</td></tr>
<tr><td>Voltage Proof</td><td colspan="4">Voltage: 2500 V_{AC}; Leakage current≤0.5mA; Time: 60 Seconds</td><td>No breakdown</td></tr>
</table>

DIMENSIONAL DRAWINGS



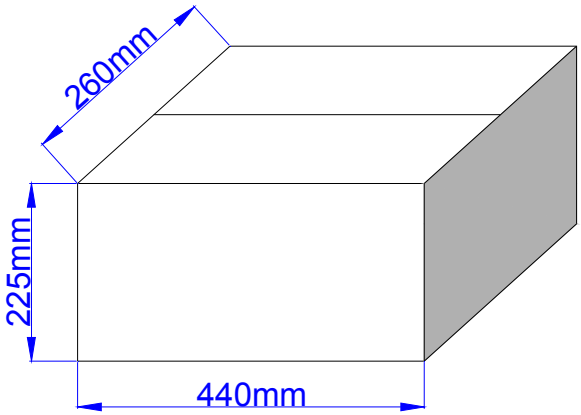
Ref.		Dimensions					
		Millimeters			Inches		
		Min.	Typ.	Max.	Min.	Typ.	Max.
D				34.0			1.339
L		25.0			0.984		
d		1.15	1.20	1.25	0.045	0.047	0.049
F		9.2	10.0	10.8	0.362	0.394	0.425
H				39.0			1.535
T	JJV32D182K			12.5			0.492
	JJV32D152K			11.0			0.433
	JJV32D112K			8.5			0.335
	JJV32D102K			7.8			0.307
	JJV32D911K			7.6			0.299
	JJV32D821K			7.2			0.283
	JJV32D781K			6.8			0.268
	JJV32D751K			6.5			0.256
	JJV32D681K			6.4			0.252
	JJV32D621K			6.4			0.252
	JJV32D561K			6.2			0.244
	JJV32D511K			5.8			0.228
	JJV32D471K			5.6			0.220
	JJV32D431K			5.3			0.209
	JJV32D391K			5.1			0.201
	JJV32D361K			5.0			0.197
	JJV32D331K			4.8			0.190
	JJV32D301K			4.7			0.185
	JJV32D271K			4.5			0.177
	JJV32D241K			4.3			0.169
	JJV32D221K			4.2			0.165
	JJV32D201K			4.1			0.161

MARKING

Trademark	
Part No.	32D201K~182K
Standard for safety	UL/ VDE/ CQC
Date Code	Y: Year M: Month
J	High surge
E*/ S*/ Y*	4KV/2KA / 6KV/3KA / 10KV/5KA

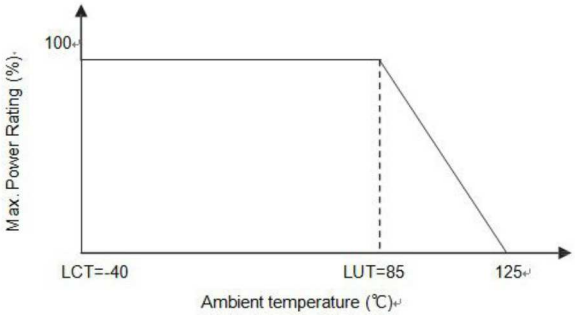
- Quantity of bulk packing method (pcs)

Part No.	Bag	Small Carton	Carton
JJV32D201K ~JJV32D182K	100	500	1000

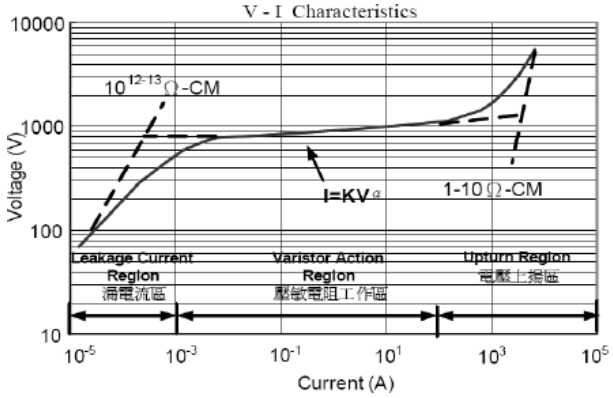


VARISTOR CHARACTERISTICS CURVE

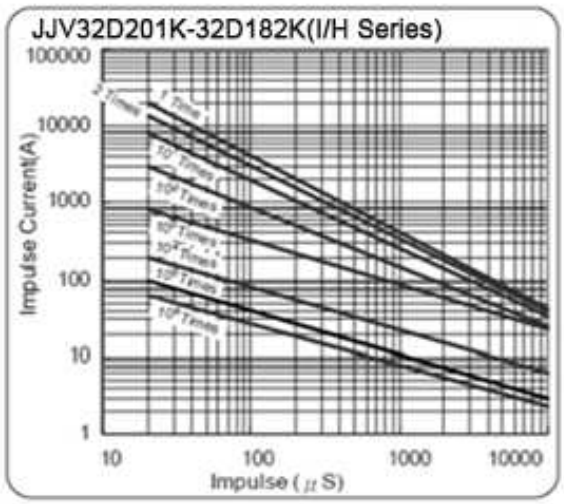
Power derating curve

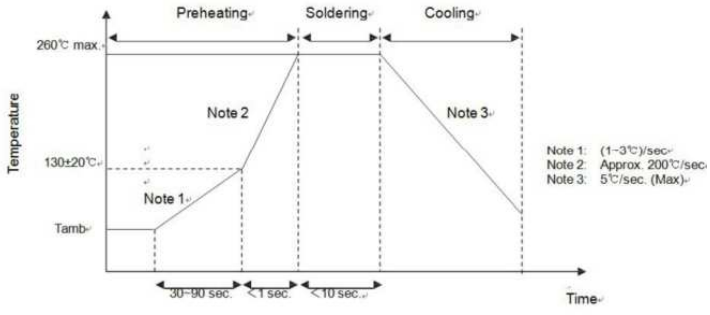


Varistor V-I characteristics curve



Surge life time ratings N (standard) / K (low capacitance) series





V-I curves

JJV32D201K-32D182K (I/H series)