



JJV10D Disc Varistors

Rev.3.3

FEATURES

- Wide operating voltages ranging from 11V_{RMS} to 680V_{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	□□	D	□□□	K	□	□	□
JJV: JieJie Semiconductor						H: epoxy coating 125°C	
Size(mm): 05mm to 32mm						S: short leg; No: □.□	
Type: D: Disk; S: Square						Lead form: P: straight; C: crimped; I: inner Y: Y kink E: 4KV/2KA; S: 6KV/3KA; Y: 10KV/5KA J: high surge & high energy Taping mode: TA: Ammo; TR: Reel	
Varistor voltage: 180L(18V) to 112K(1100V)							
Tolerance: K±10%, L±15%, M±20%							



GENERAL TECHNICAL DATA

Parameter	Value	Unit
Operating temperature	-40 to +85	°C
Storage temperature	-40 to +125	°C
Working surface temperature	+115	°C
Insulation resistance	≥100	MΩ
Coating (epoxy resin) 125°C	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	Standard	High surge	Standard (A)		High surge (A)					
		V	V	J	J	1 TIME	2 TIME	1 TIME	2 TIME	W	at 1mA	at 5A	1KHz
JJV10D180L	JJV10D180LJ	11	14	2.8	3.0	500	250	1000	500	0.05	18(15-21)	38	5600
JJV10D220K	JJV10D220KJ	14	18	4.5	5.0	500	250	1000	500	0.05	22(20-24)	43	4500
JJV10D270K	JJV10D270KJ	17	22	6.0	6.5	500	250	1000	500	0.05	27(24-30)	53	3700
JJV10D330K	JJV10D330KJ	20	26	7.4	8.0	500	250	1000	500	0.05	33(30-36)	65	3000
JJV10D390K	JJV10D390KJ	25	31	9.1	9.5	500	250	1000	500	0.05	39(35-43)	77	2600
JJV10D470K	JJV10D470KJ	30	38	10.8	11	500	250	1000	500	0.05	47(42-52)	93	2100
JJV10D560K	JJV10D560KJ	35	45	12.9	13	500	250	1000	500	0.05	56(50-62)	110	1800
JJV10D680K	JJV10D680KJ	40	56	15.4	16	500	250	1000	500	0.05	68(61-75)	135	1500

JJV10D Series



JieJie Semiconductor Co., Ltd.

Part No		Maximum allowable voltage		Energy 10/1000 μ s		Withstanding surge current 8/20 μ s				Rated power	Varistor voltage	Max clamping voltage	Capacitance
Standard	High surge	AC V _{RMS}	DC	Standard	High surge	Standard (A)		High surge (A)		W	at 1mA	at 25A	1KHz
		V	V	J	J	1 TIME	2 TIME	1 TIME	2 TIME		V	V	pF
JJV10D820K	JJV10D820KJ	50	65	16.8	17.0	2500	1250	3500	2500	0.4	82(74-90)	135	1200
JJV10D101K	JJV10D101KJ	60	85	18.2	18.5	2500	1250	3500	2500	0.4	100(90-110)	165	1000
JJV10D121K	JJV10D121KJ	75	100	21.0	21.5	2500	1250	3500	2500	0.4	120(108-132)	200	830
JJV10D151K	JJV10D151KJ	95	125	15.2	26.0	2500	1250	3500	2500	0.4	150(135-165)	250	670
JJV10D181K	JJV10D181KJ	115	150	30.8	38.0	2500	1250	3500	2500	0.4	180(162-198)	300	560
JJV10D201K	JJV10D201KJ	130	170	42.0	42.5	2500	1250	3500	2500	0.4	200(185-225)	330	500
JJV10D221K	JJV10D221KJ	140	180	46.2	46.5	2500	1250	3500	2500	0.4	220(198-242)	360	450
JJV10D241K	JJV10D241KJ	150	200	50.4	51.0	2500	1250	3500	2500	0.4	240(216-264)	395	420
JJV10D271K	JJV10D271KJ	175	225	57.4	58.0	2500	1250	3500	2500	0.4	270(243-297)	455	370
JJV10D301K	JJV10D301KJ	190	250	63.0	63.5	2500	1250	3500	2500	0.4	300(270-330)	505	330
JJV10D331K	JJV10D331KJ	210	275	68.6	69.0	2500	1250	3500	2500	0.4	330(297-363)	550	300
JJV10D361K	JJV10D361KJ	230	300	74.2	75.0	2500	1250	3500	2500	0.4	360(324-396)	595	280
JJV10D391K	JJV10D391KJ	250	320	81.2	82.0	2500	1250	3500	2500	0.4	390(351-429)	650	260
JJV10D431K	JJV10D431KJ	275	350	88.2	89.0	2500	1250	3500	2500	0.4	430(387-473)	710	230
JJV10D471K	JJV10D471KJ	300	385	96	100	2500	1250	3500	2500	0.4	470(423-517)	775	210
JJV10D511K	JJV10D511KJ	320	415	98	102	2500	1250	3500	2500	0.4	510(459-561)	845	200
JJV10D561K	JJV10D561KJ	350	460	100	104	2500	1250	3500	2500	0.4	560(504-616)	920	180
JJV10D621K	JJV10D621KJ	385	505	102	106	2500	1250	3500	2500	0.4	620(558-682)	1025	160
JJV10D681K	JJV10D681KJ	420	560	104	108	2500	1250	3500	2500	0.4	680(612-748)	1120	150
JJV10D751K	JJV10D751KJ	460	615	110	118	2500	1250	3500	2500	0.4	750(675-825)	1240	140
JJV10D781K	JJV10D781KJ	485	640	118	120	2500	1250	3500	2500	0.4	780(702-858)	1290	130
JJV10D821K	JJV10D821KJ	510	670	122	125	2500	1250	3500	2500	0.4	820(738-902)	1355	120
JJV10D911K	JJV10D911KJ	550	745	128	134	2500	1250	3500	2500	0.4	910(819-1001)	1500	110
JJV10D102K	JJV10D102KJ	625	825	131	140	2500	1250	3500	2500	0.4	1000(900-1100)	1650	100
JJV10D112K	JJV10D112KJ	680	895	133	155	2500	1250	3500	2500	0.4	1100(990-1210)	1815	90

RELIABILITY TESTS - Mechanical ratings

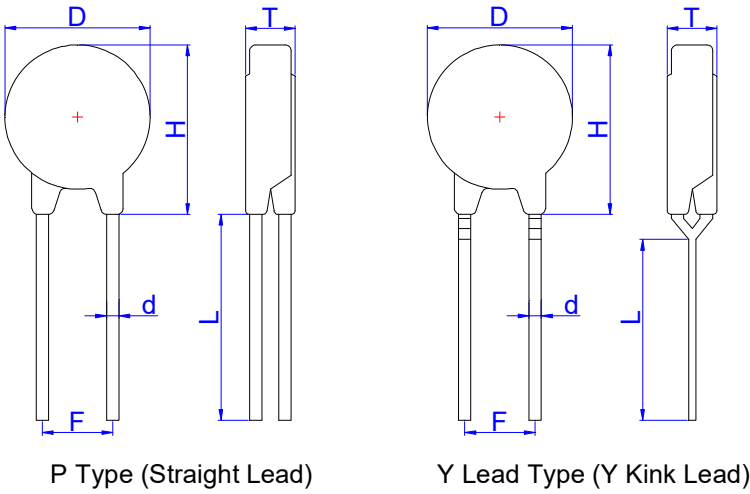
Parameter	Condition		Requirements	
Terminal Pull Strength	After gradually applying the load specified below and keeping the unit fixed for ten seconds, the terminal shall be visually examined for any damage.	Diameter	Loading	No visible damage
		0.6mm	1.0Kg	
		0.8mm	1.0Kg	
		1.0mm	2.0Kg	
Terminal Bending Strength	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.	Diameter	Loading	No visible damage
		0.6mm	0.5Kg	
		0.8mm	0.5Kg	
		1.0mm	1.0Kg	
Vibration	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.		No visible damage $\Delta V_B/V_B\% \leq \pm 5\%$	
Soldering-Solderability	After dipping the terminal to depth of approximately 3mm from the specimen in a soldering bath of 260°C for 10±1 (D5:5±1) seconds. Thereafter the terminal shall be visually examined.		Terminations shall be uniformly tinned	
Soldering-Resistance to Solder Heat	After preheating the specimen, the specimen shall be completely immersed into a soldering bath having a temperature of 260±5°C for 10±1 (D5:5±1) seconds or iron of 400±5°C for 3±0.5 seconds. Thereafter the change of V_B and mechanical damage shall be examined.		No visible damage $\Delta V_B/V_B\% \leq \pm 5\%$	



RELIABILITY TESTS - Environmental ratings

Parameter	Condition			Requirements	
Dry Heat Loading	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.: $125\pm 2^\circ\text{C}$; Period: 1000 ± 24 hours.			$\Delta V_B/V_B\% \leq \pm 10\%$	
High Temperature Storage	In a drying oven without load. Ambient temp.: $125\pm 2^\circ\text{C}$; period: 1000 ± 24 hours			$\Delta V_B/V_B\% \leq \pm 5\%$	
Damp Heat Loading	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: $40\pm 2^\circ\text{C}$, 90 to 95%R.H.; period: 1000 ± 24 hours			$\Delta V_B/V_B\% \leq \pm 10\%$	
Temperature Cycle	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.	Step	Temp($^\circ\text{C}$)	Period	No visible damage $\Delta V_B/V_B\% \leq \pm 10\%$
		1	$-40\pm 3^\circ\text{C}$	30 min.	
		2	Room Temp.	15 min.	
		3	$85\pm 2^\circ\text{C}$	30 min.	
4	Room Temp.	15 min.			
Surge Lifetime Rating	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.			No visible damage $\Delta V_B/V_B\% \leq \pm 10\%$	
Voltage Proof	Voltage: $2500 V_{AC}$; Leakage current $\leq 0.5\text{mA}$; Time: 60 Seconds			No breakdown	

DIMENSIONAL DRAWINGS





Notes:

P type: Normal type
 e.g. JJV10D751K

Y Lead Type: Special type
 e.g. JJV10D751KY

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D	/		12.5			0.492
	6KV/3KA		14.5			0.571
L	15.0			0.591		
d	0.75	0.80	0.85	0.030	0.031	0.033
F	6.7	7.5	8.3	0.264	0.295	0.327
H	SB		16.0			0.630
	CB/IB/YB		20.0			0.787
T	JJV10D112K		7.8			0.307
	JJV10D102K		7.6			0.299
	JJV10D911K		7.2			0.283
	JJV10D821K		6.8			0.268
	JJV10D751K		6.5			0.256
	JJV10D681K		6.4			0.252
	JJV10D621K		6.4			0.252
	JJV10D561K		6.2			0.244
	JJV10D511K		5.8			0.228
	JJV10D471K		5.6			0.220
	JJV10D431K		5.3			0.209
	JJV10D391K		5.1			0.201
	JJV10D361K		5.0			0.197
	JJV10D331K		4.8			0.190
	JJV10D301K		4.7			0.185
	JJV10D271K		4.5			0.177
	JJV10D241K		4.3			0.169
	JJV10D221K		4.2			0.165
	JJV10D201K		4.1			0.161
	JJV10D181K		4.1			0.161
	JJV10D151K		4.8			0.190
	JJV10D121K		4.5			0.177
	JJV10D101K		4.3			0.169
	JJV10D820K		4.1			0.161
	JJV10D680K		4.5			0.177
	JJV10D560K		4.5			0.177
	JJV10D470K		4.5			0.177
	JJV10D390K		4.5			0.177
	JJV10D330K		4.5			0.177
	JJV10D270K		4.5			0.177
	JJV10D220K		4.5			0.177
	JJV10D180L		4.5			0.177

MARKING

	Trademark	
	Part No.	10D180L~112K
	Standard for safety	UL/ VDE/ CQC
	Date Code	Y: Year M: Month
	J	High surge
	E*/ S*/ Y*	4KV/2KA / 6KV/3KA / 10KV/5KA

JJV10D Series

- Quantity of bulk packing method (pcs)



Dimension	Part No.	Bag	Box	Carton
JJV10D	180L to 781K	500	1000	6000
JJV10D	821K to 112K	400	800	4800

- Dimension of bulk packing method (mm)

Part No.	Bag	Box	Carton
JJV10D180L~ JJV10D112K	195*230	240*180*60	370*260*210

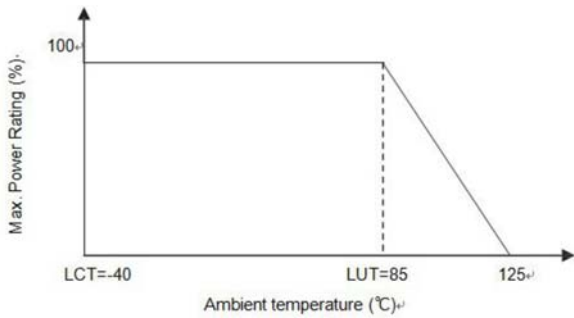
NOTE: Dimension is length*width*height.

APPROVAL STANDARD AND FILE NUMBER

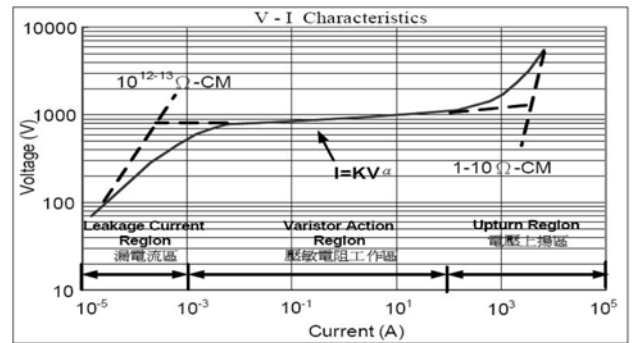
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JJV10D180L	YES		YES		YES		YES
JJV10D220K	YES		YES		YES		YES
JJV10D270K	YES		YES		YES		YES
JJV10D330K	YES		YES		YES		YES
JJV10D390K	YES		YES		YES		YES
JJV10D470K	YES		YES		YES		YES
JJV10D560K	YES		YES		YES		YES
JJV10D680K	YES		YES		YES		YES
JJV10D820K	YES		YES		YES		YES
JJV10D101K	YES		YES		YES		YES
JJV10D121K	YES		YES		YES		YES
JJV10D151K	YES		YES		YES		YES
JJV10D181K	YES		YES	3ka/6kv	YES		YES
JJV10D201K	YES		YES	3ka/6kv	YES		YES
JJV10D221K	YES		YES	3ka/6kv	YES		YES
JJV10D241K	YES		YES	3ka/6kv	YES		YES
JJV10D271K	YES		YES	3ka/6kv	YES		YES
JJV10D301K	YES		YES	3ka/6kv	YES		YES
JJV10D331K	YES		YES	3ka/6kv	YES		YES
JJV10D361K	YES		YES	3ka/6kv	YES		YES
JJV10D391K	YES		YES	3ka/6kv	YES		YES
JJV10D431K	YES		YES	3ka/6kv	YES	3ka/6kv	YES
JJV10D471K	YES	3ka/6kv	YES	3ka/6kv	YES	3ka/6kv	YES
JJV10D511K	YES	3ka/6kv	YES	3ka/6kv	YES	3ka/6kv	YES
JJV10D561K	YES	3ka/6kv	YES	3ka/6kv	YES	3ka/6kv	YES
JJV10D621K	YES	3ka/6kv	YES	3ka/6kv	YES	3ka/6kv	YES
JJV10D681K	YES	3ka/6kv	YES	3ka/6kv	YES	3ka/6kv	YES
JJV10D751K	YES		YES	3ka/6kv	YES	3ka/6kv	YES
JJV10D821K	YES		YES	3ka/6kv	YES	3ka/6kv	YES
JJV10D911K	YES		YES	3ka/6kv	YES	3ka/6kv	YES
JJV10D102K	YES		YES	3ka/6kv	YES	3ka/6kv	YES
JJV10D112K	YES		YES	3ka/6kv	YES	3ka/6kv	YES

VARISTOR CHARACTERISTICS CURVE

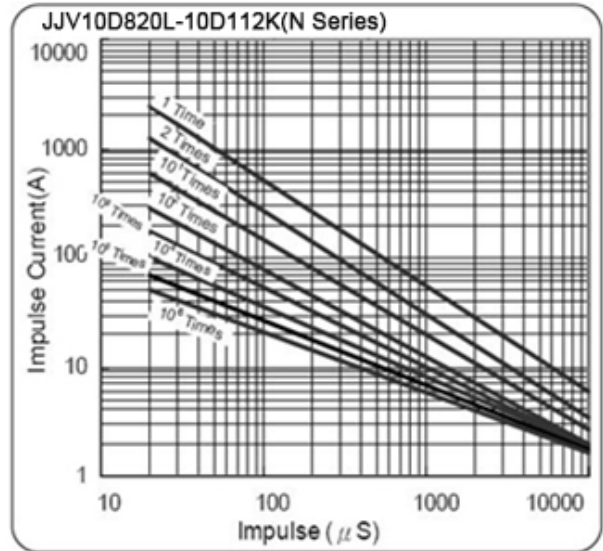
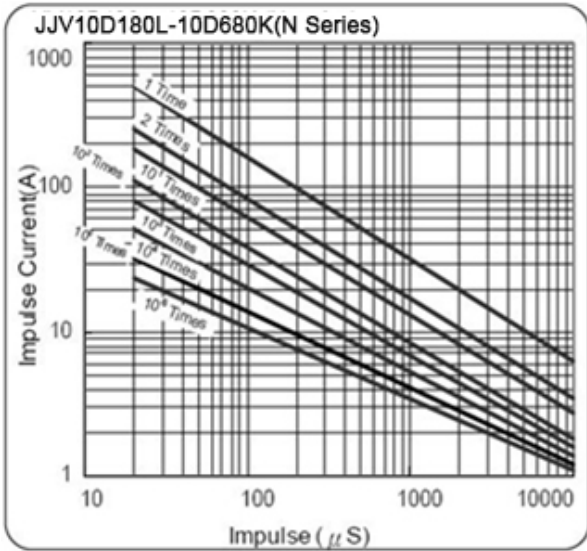
Power derating curve



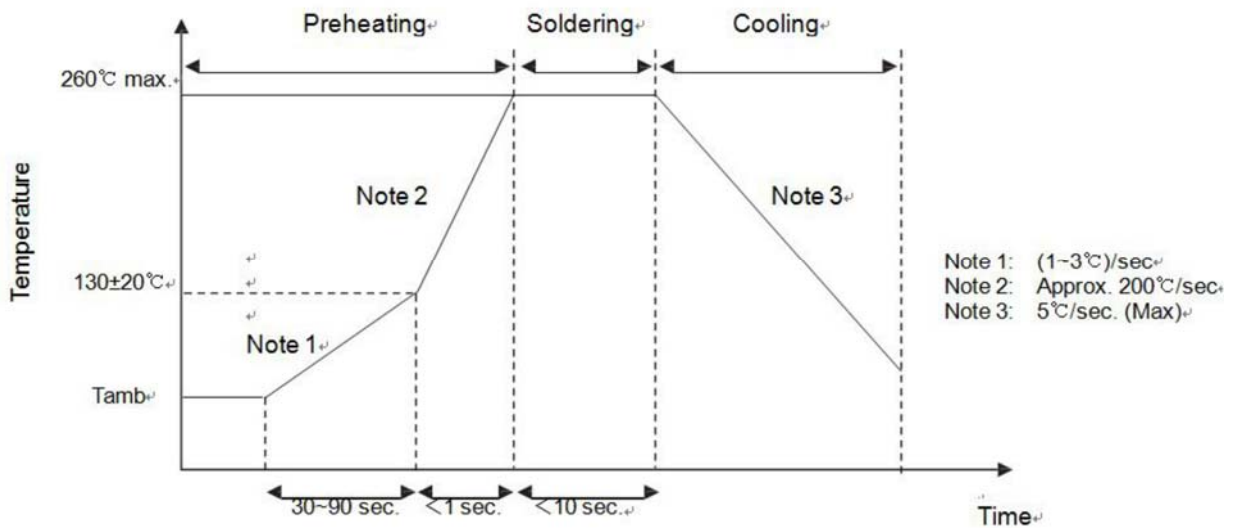
Varistor V-I characteristics curve



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

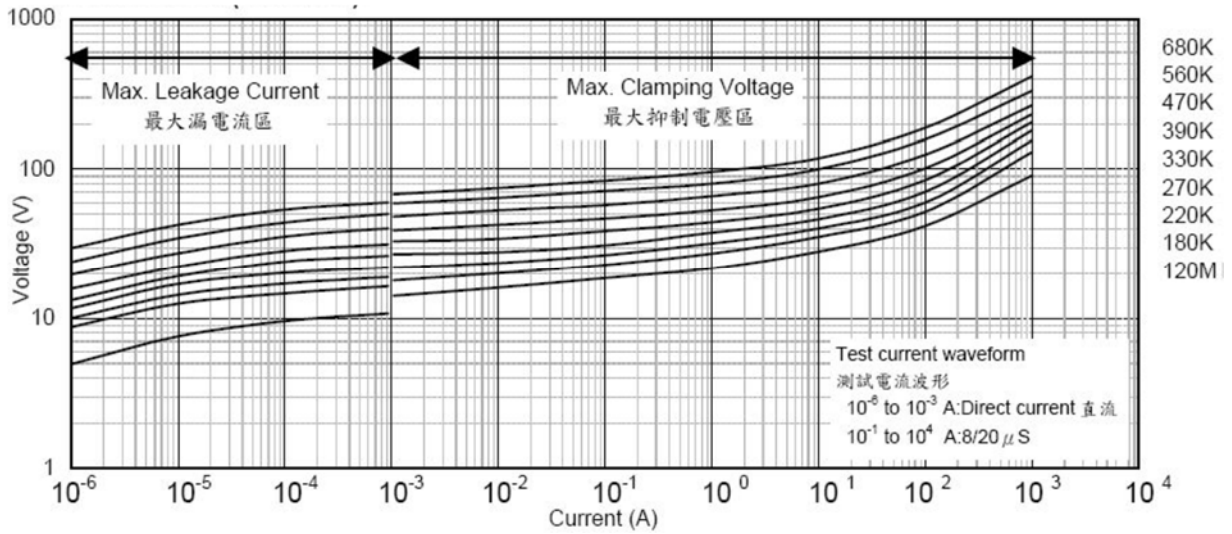


Soldering recommendation - wave soldering profile

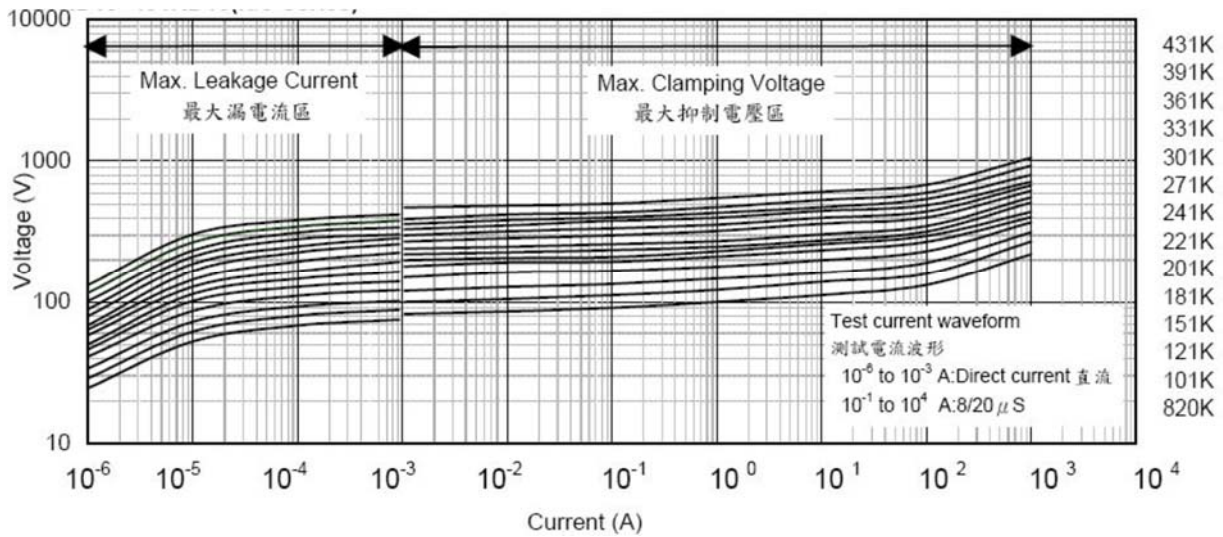


V-I curves

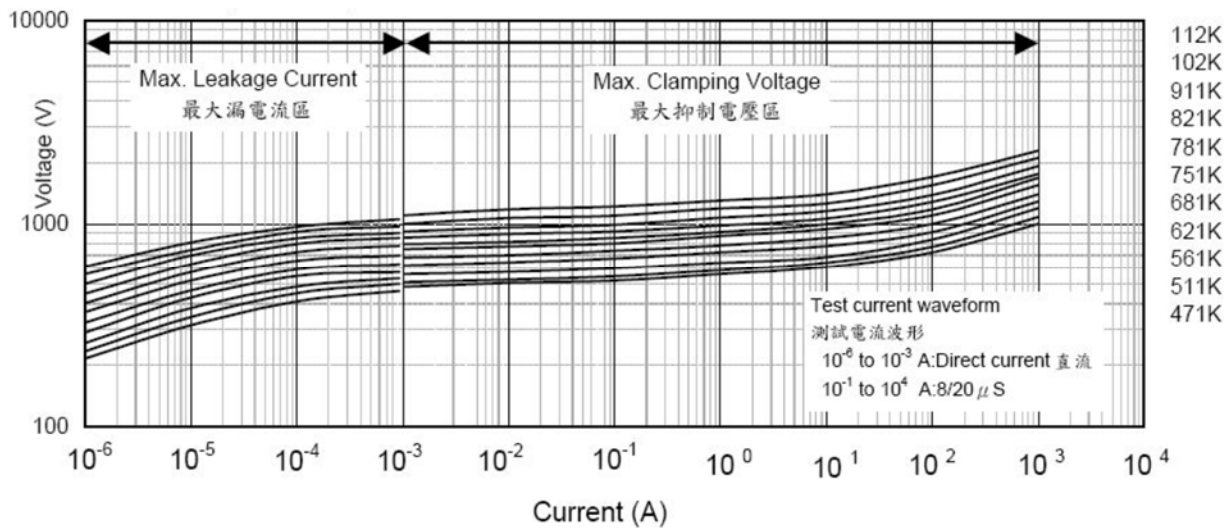
JJV10D120M-10D180K-10D680K (N/J series)



JJV10D820K-10D431K (N/J series)



JJV10D471K-10D112K (N/J series)



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