



JJV20D Disc Varistors

Rev.3.2

FEATURES

- Wide operating voltages ranging from 11 V_{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.



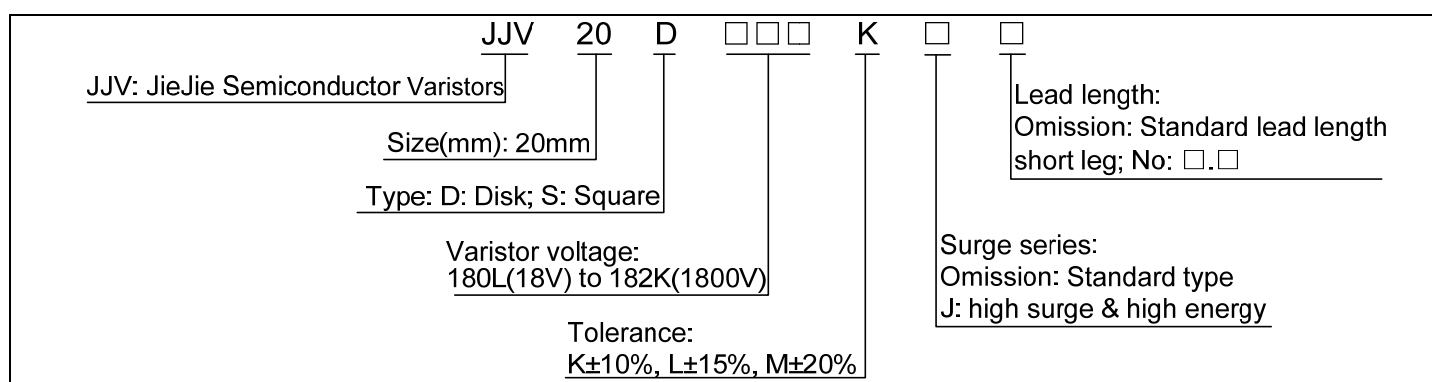
APPLICATIONS

- 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)

TYPE CODE DESIGNATION



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 W	Varistor voltage at 1mA V	Max clamping voltage at 20A V	Capacitance 1KHz pF
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				
JJV20D180L	JJV20D180LJ	11	14	6.1	13.0	2000	1000	3000	1000	0.2	18(15-21)	38	19000
JJV20D220K	JJV20D220KJ	14	18	7.4	16.0	2000	1000	3000	1000	0.2	22(20-24)	43	15000
JJV20D270K	JJV20D270KJ	17	22	9.1	19.0	2000	1000	3000	1000	0.2	27(24-30)	53	12000
JJV20D330K	JJV20D330KJ	20	26	11.2	24.0	2000	1000	3000	1000	0.2	33(30-36)	65	10000
JJV20D390K	JJV20D390KJ	25	31	13.2	28.0	2000	1000	3000	1000	0.2	39(35-43)	77	8500
JJV20D470K	JJV20D470KJ	30	38	16.8	34.0	2000	1000	3000	1000	0.2	47(42-52)	93	7400
JJV20D560K	JJV20D560KJ	35	45	19.6	41.0	2000	1000	3000	1000	0.2	56(50-62)	110	6500
JJV20D680K	JJV20D680KJ	40	56	23.8	49.0	2000	1000	3000	1000	0.2	68(61-75)	135	5800

JJV20D 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 100A	1KHz
		V	V	J	J	1 TIME	2 TIME	1 TIME	2 TIME		V	V	pF
JJV20D820K	JJV20D820KJ	50	65	37.8	56.0	6500	4000	10000	7000	1.0	82(74-90)	135	4900
JJV20D101K	JJV20D101KJ	60	85	42.0	70.0	6500	4000	10000	7000	1.0	100(90-110)	165	4000
JJV20D121K	JJV20D121KJ	75	100	56.0	85.0	6500	4000	10000	7000	1.0	120(108-132)	200	3300
JJV20D151K	JJV20D151KJ	95	125	70.0	106	6500	4000	10000	7000	1.0	150(135-165)	250	2700
JJV20D181K	JJV20D181KJ	115	150	84.0	130	6500	4000	10000	7000	1.0	180(162-198)	300	2200
JJV20D201K	JJV20D201KJ	130	170	98.0	140	6500	4000	10000	7000	1.0	200(185-225)	330	2000
JJV20D221K	JJV20D221KJ	140	180	105	155	6500	4000	10000	7000	1.0	220(198-242)	360	1800
JJV20D241K	JJV20D241KJ	150	200	112	168	6500	4000	10000	7000	1.0	240(216-264)	395	1650
JJV20D271K	JJV20D271KJ	175	225	126	190	6500	4000	10000	7000	1.0	270(243-297)	455	1500
JJV20D301K	JJV20D301KJ	190	250	133	210	6500	4000	10000	7000	1.0	300(270-330)	505	1300
JJV20D331K	JJV20D331KJ	210	275	140	228	6500	4000	10000	7000	1.0	330(297-363)	550	1200
JJV20D361K	JJV20D361KJ	230	300	168	255	6500	4000	10000	7000	1.0	360(324-396)	595	1100
JJV20D391K	JJV20D391KJ	250	320	182	275	6500	4000	10000	7000	1.0	390(351-429)	650	1000
JJV20D431K	JJV20D431KJ	275	350	196	305	6500	4000	10000	7000	1.0	430(387-473)	710	930
JJV20D471K	JJV20D471KJ	300	385	202	350	6500	4000	10000	7000	1.0	470(423-517)	775	850
JJV20D511K	JJV20D511KJ	320	415	207	360	6500	4000	10000	7000	1.0	510(459-561)	845	780
JJV20D561K	JJV20D561KJ	350	460	210	366	6500	4000	10000	7000	1.0	560(504-616)	920	715
JJV20D621K	JJV20D621KJ	385	505	224	372	6500	4000	10000	7000	1.0	620(558-682)	1025	650
JJV20D681K	JJV20D681KJ	420	560	224	382	6500	4000	10000	7000	1.0	680(612-748)	1120	600
JJV20D751K	JJV20D751KJ	460	615	230	410	6500	4000	10000	7000	1.0	750(675-825)	1240	530
JJV20D781K	JJV20D781KJ	485	640	240	421	6500	4000	10000	7000	1.0	780(702-858)	1290	510
JJV20D821K	JJV20D821KJ	510	670	250	460	6500	4000	10000	7000	1.0	820(738-902)	1355	500
JJV20D911K	JJV20D911KJ	550	745	260	510	6500	4000	10000	7000	1.0	910(819-1001)	1500	440
JJV20D102K	JJV20D102KJ	625	825	270	560	6500	4000	10000	7000	1.0	1000(900-1100)	1650	400
JJV20D112K	JJV20D112KJ	680	895	280	620	6500	4000	10000	7000	1.0	1100(990-1210)	1815	360
JJV20D152K	JJV20D152KJ	900	1200	420	780	6500	4000	10000	7000	1.0	1500(1350-1650)	2475	260
JJV20D182K	JJV20D182KJ	1000	1465	560	860	6500	4000	10000	7000	1.0	1800(1620-1980)	2970	220

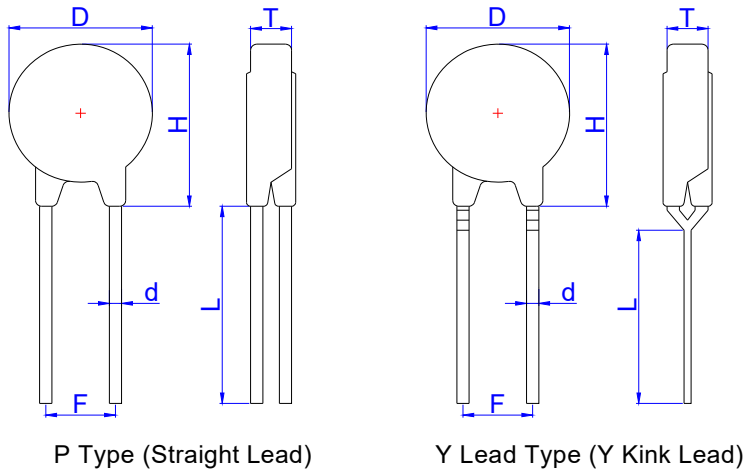
RELIABILITY TESTS - Mechanical ratings

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	
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	
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.	Diameter	Loading	No visible damage $\Delta V_B/V_B\% \leq \pm 5\%$
		0.6mm	0.5Kg	
		0.8mm	0.5Kg	
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($^\circ\text{C}$)	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. JJV20D751K

Y Lead Type: Special type
 e.g. JJV20D751KY

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D			23.0			0.906
L	15.0			0.591		
d	0.95	1.00	1.05	0.037	0.039	0.041
F	9.2	10.0	10.8	0.362	0.394	0.425
H	SB		25.0			0.984
	CB/IB/YB		29.0			1.142
T	JJV20D182K		12.5			0.492
	JJV20D152K		11.0			0.433
	JJV20D112K		8.5			0.335
	JJV20D102K		7.8			0.307
	JJV20D911K		7.6			0.299
	JJV20D821K		7.2			0.283
	JJV20D781K		6.8			0.268
	JJV20D751K		6.5			0.256
	JJV20D681K		6.4			0.252
	JJV20D621K		6.4			0.252
	JJV20D561K		6.2			0.244
	JJV20D511K		5.8			0.228
	JJV20D471K		5.6			0.220
	JJV20D431K		5.3			0.209
	JJV20D391K		5.1			0.201
	JJV20D361K		5.0			0.197
	JJV20D331K		4.8			0.190
	JJV20D301K		4.7			0.185
	JJV20D271K		4.5			0.177
	JJV20D241K		4.3			0.169
	JJV20D221K		4.2			0.165
	JJV20D201K		4.1			0.161
	JJV20D181K		4.1			0.161
	JJV20D151K		4.8			0.190
	JJV20D121K		4.5			0.177
	JJV20D101K		4.3			0.169
	JJV20D820K		4.1			0.161
	JJV20D680K		4.1			0.161
	JJV20D560K		4.1			0.161
	JJV20D470K		4.5			0.177
	JJV20D390K		4.5			0.177
	JJV20D330K		4.2			0.165
JJV20D270K		4.0			0.157	
JJV20D220K		4.0			0.157	
JJV20D180L		4.0			0.157	

MARKING

	Trademark	
	Part No.	20D180L~182K
	Standard for safety	UL/ VDE/ CUL
	Date Code	Y: Year M: Month
	J	High surge
	E*/ S*/ Y*	4KV/2KA / 6KV/3KA / 10KV/5KA

JJV20D Series



JieJie Semiconductor Co., Ltd

- Quantity of bulk packing method (pcs)



Dimension	Part No.	Bag	Box	Carton
JJV20D	180L to 431K	250	500	3000
JJV20D	471K to 781K	200	400	2400
JJV20D	821K to 112K	150	300	1800

- Dimension of bulk packing method (mm)

Part No.	Bag	Box	Carton
JJV20D180L~ JJV20D112K	195*230	240*180*60	370*260*210

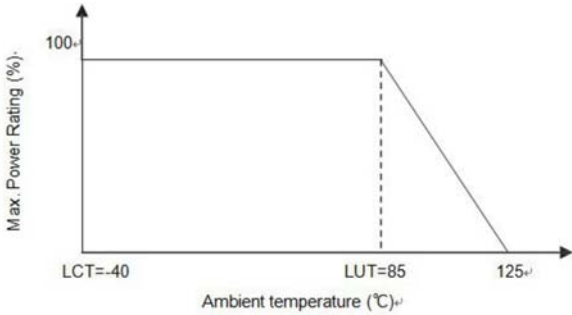
NOTE: Dimension is length*width*height.

APPROVAL STANDARD AND FILE NUMBER

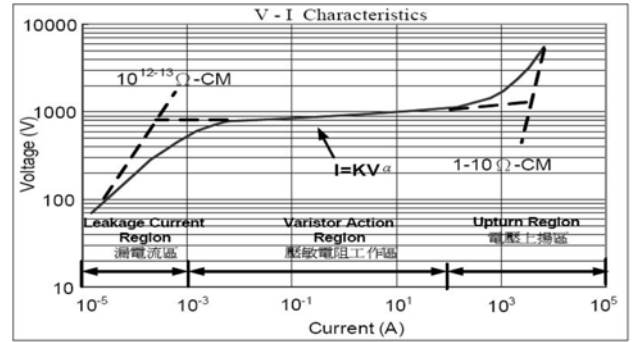
Certified Model No.					CUL
JJV20D180L	YES				YES
JJV20D220K	YES				YES
JJV20D270K	YES		YES		YES
JJV20D330K	YES		YES		YES
JJV20D390K	YES		YES		YES
JJV20D470K	YES		YES		YES
JJV20D560K	YES		YES		YES
JJV20D680K	YES		YES		YES
JJV20D820K	YES	3ka/6kv	YES		YES
JJV20D101K	YES	3ka/6kv	YES		YES
JJV20D121K	YES	3ka/6kv	YES		YES
JJV20D151K	YES	3ka/6kv	YES		YES
JJV20D181K	YES	3ka/6kv	YES	3ka/6kv	YES
JJV20D201K	YES	3ka/6kv	YES	3ka/6kv	YES
JJV20D221K	YES	3ka/6kv	YES	3ka/6kv	YES
JJV20D241K	YES	3ka/6kv	YES	3ka/6kv	YES
JJV20D271K	YES	3ka/6kv	YES	3ka/6kv	YES
JJV20D301K	YES	3ka/6kv	YES	3ka/6kv	YES
JJV20D331K	YES	3ka/6kv	YES	3ka/6kv	YES
JJV20D361K	YES	3ka/6kv	YES	3ka/6kv	YES
JJV20D391K	YES	3ka/6kv	YES	3ka/6kv	YES
JJV20D431K	YES	3ka/6kv	YES	3ka/6kv	YES
JJV20D471K	YES	3ka/6kv	YES	3ka/6kv	YES
JJV20D511K	YES	3ka/6kv	YES	3ka/6kv	YES
JJV20D561K	YES	3ka/6kv	YES	3ka/6kv	YES
JJV20D621K	YES	3ka/6kv	YES	3ka/6kv	YES
JJV20D681K	YES	3ka/6kv	YES	3ka/6kv	YES
JJV20D751K	YES	3ka/6kv	YES		YES
JJV20D821K	YES	3ka/6kv	YES		YES
JJV20D911K	YES	3ka/6kv	YES		YES
JJV20D102K	YES	3ka/6kv			YES
JJV20D112K	YES	3ka/6kv			YES
JJV20D152K	YES	3ka/6kv			YES
JJV20D182K	YES	3ka/6kv			YES

VARISTOR CHARACTERISTICS CURVE

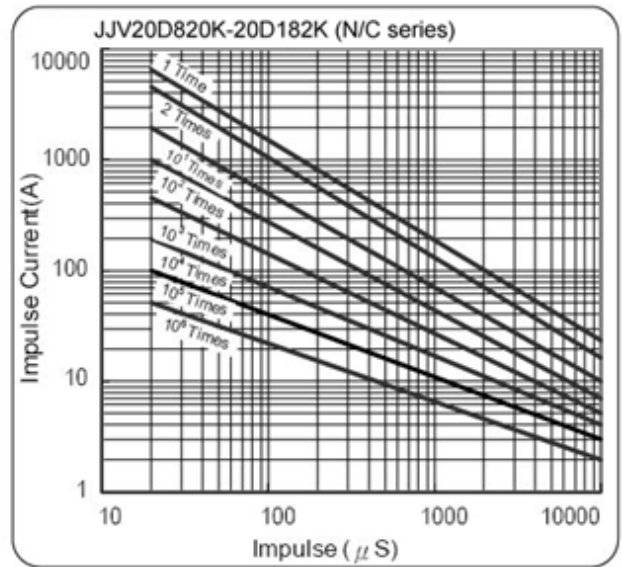
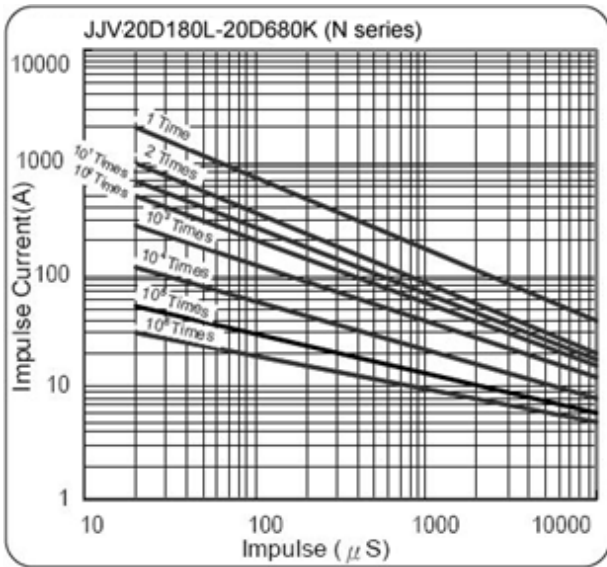
Power derating curve



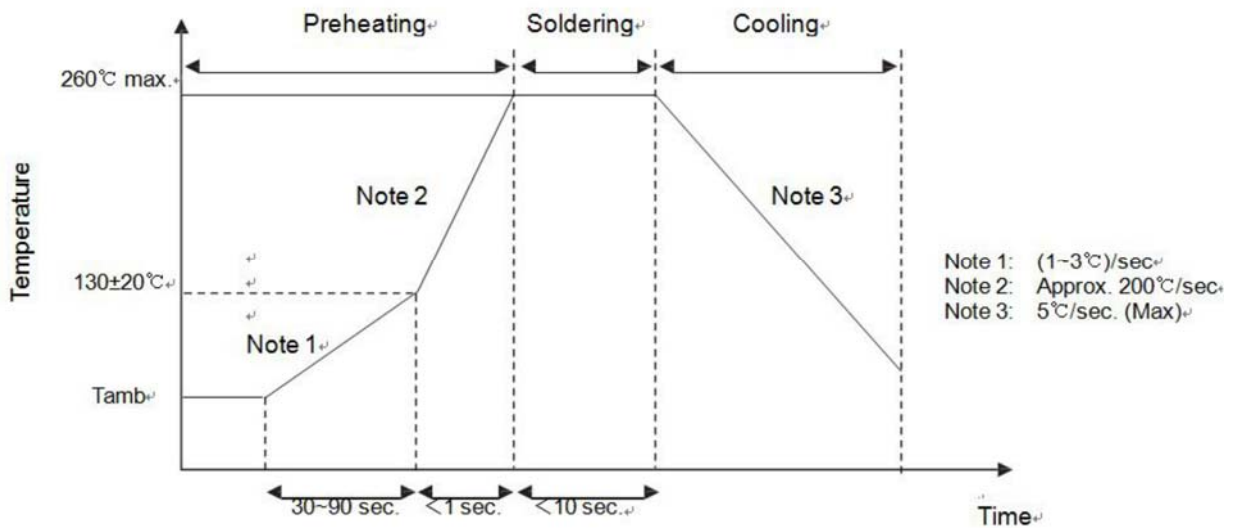
Varistor V-I characteristics curve



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

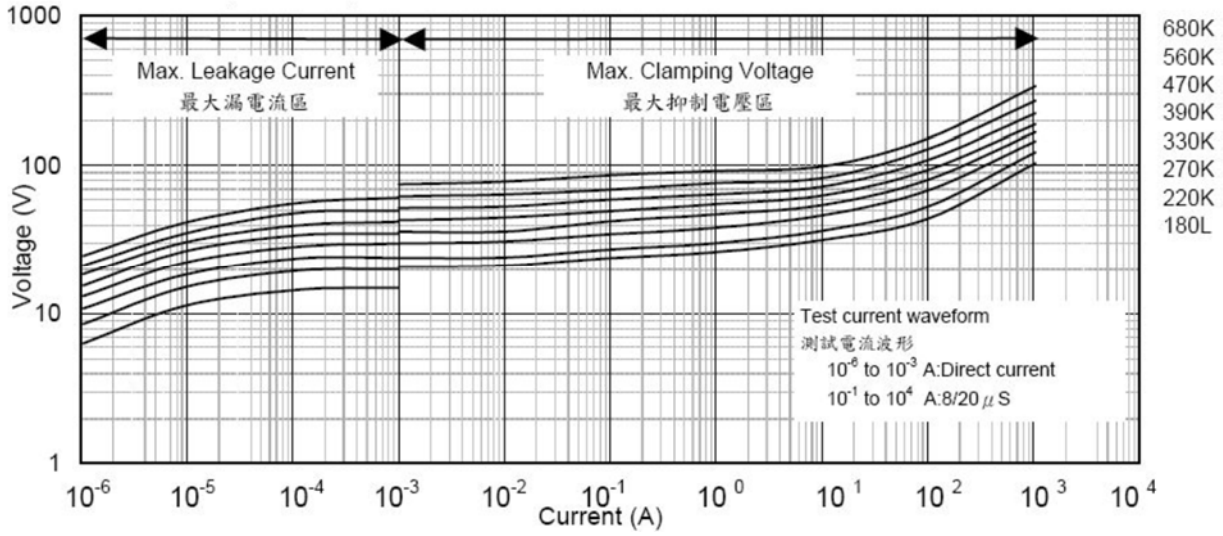


Soldering recommendation - wave soldering profile

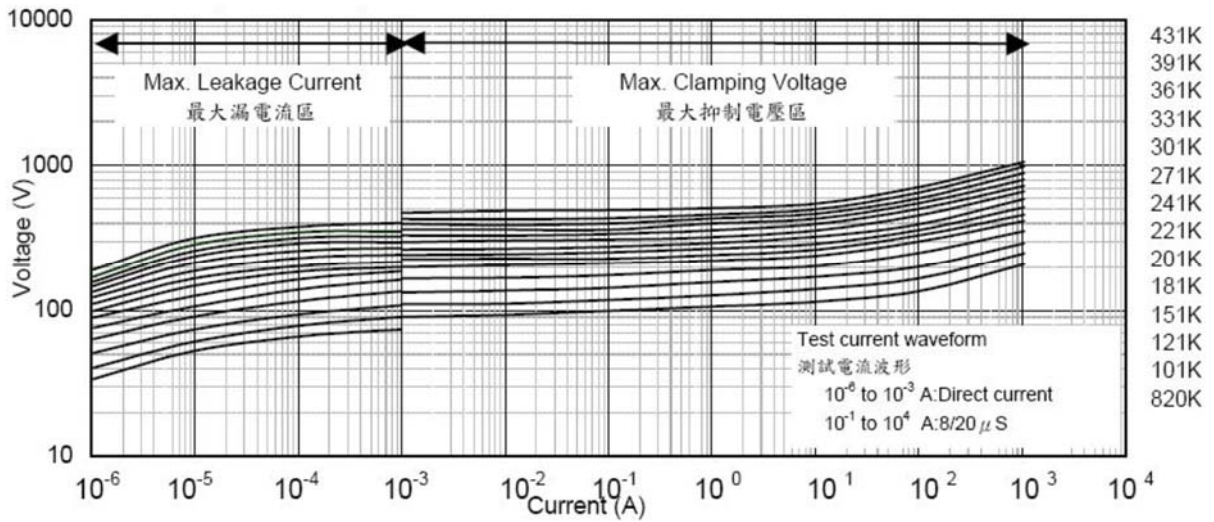


V-I curves

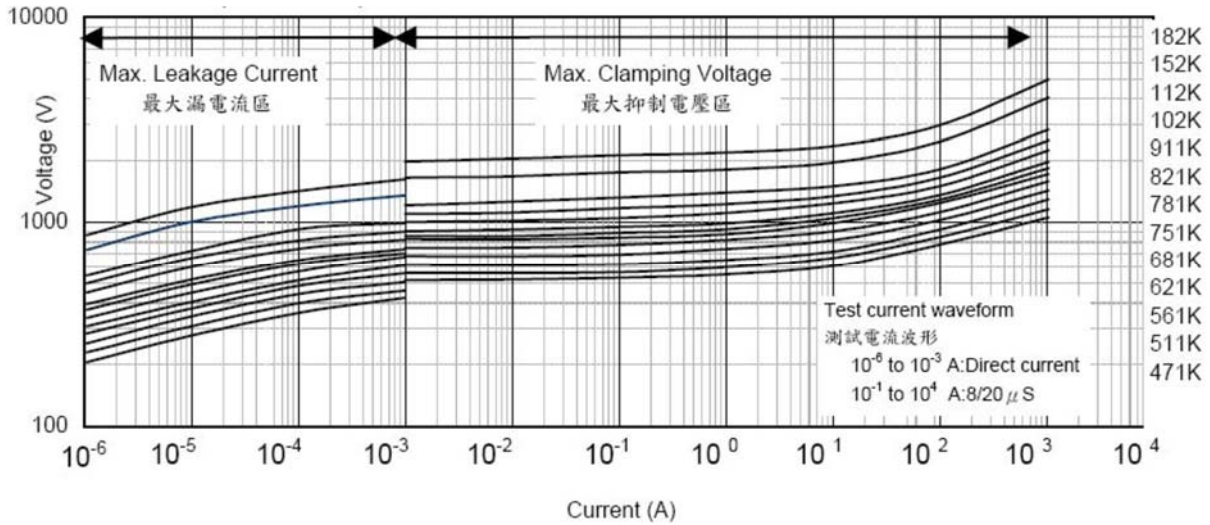
JJV20D180L-20D680K (N/J/S series)



JJV20D820K-20D431K (N/J/S series)



JJV20D471K-20D182K (N/J/S series)



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