



JJV14D Disc Varistors

Rev.3.3

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)
- 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 182K(1800V)							
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 at 1mA	Max clamping voltage at 10A	Capacitance 1KHz
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	V	V	pF
JJV14D180L	JJV14D180LJ	11	14	6.6	7.0	1000	500	2000	1000	0.1	18(15-21)	38	11100
JJV14D220K	JJV14D220KJ	14	18	7.6	8.0	1000	500	2000	1000	0.1	22(20-24)	43	9100
JJV14D270K	JJV14D270KJ	17	22	9.7	10.0	1000	500	2000	1000	0.1	27(24-30)	53	7400
JJV14D330K	JJV14D330KJ	20	26	12.3	12.5	1000	500	2000	1000	0.1	33(30-36)	65	6100
JJV14D390K	JJV14D390KJ	25	31	13.2	13.0	1000	500	2000	1000	0.1	39(35-43)	77	5100
JJV14D470K	JJV14D470KJ	30	38	16.8	17.0	1000	500	2000	1000	0.1	47(42-52)	93	4300
JJV14D560K	JJV14D560KJ	35	45	19.6	20	1000	500	2000	1000	0.1	56(50-62)	110	3600
JJV14D680K	JJV14D680KJ	40	56	23.8	24	1000	500	2000	1000	0.1	68(61-75)	135	2900

JJV14D 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 50A	1KHz
		V	V	J	J	1 TIME	2 TIME	1 TIME	2 TIME		V	V	pF
JJV14D820K	JJV14D820KJ	50	65	29.4	30.0	4500	2500	6000	5000	0.6	82(74-90)	135	2400
JJV14D101K	JJV14D101KJ	60	85	33.6	35.0	4500	2500	6000	5000	0.6	100(90-110)	165	2000
JJV14D121K	JJV14D121KJ	75	100	40.6	42.0	4500	2500	6000	5000	0.6	120(108-132)	200	1700
JJV14D151K	JJV14D151KJ	95	125	51.8	53.0	4500	2500	6000	5000	0.6	150(135-165)	250	1300
JJV14D181K	JJV14D181KJ	115	150	58.8	74.0	4500	2500	6000	5000	0.6	180(162-198)	300	1100
JJV14D201K	JJV14D201KJ	130	170	75.2	78.6	4500	2500	6000	5000	0.6	200(185-225)	330	1000
JJV14D221K	JJV14D221KJ	140	180	79.8	80.5	4500	2500	6000	5000	0.6	220(198-242)	360	900
JJV14D241K	JJV14D241KJ	150	200	82.6	86.0	4500	2500	6000	5000	0.6	240(216-264)	395	830
JJV14D271K	JJV14D271KJ	175	225	84.0	94.0	4500	2500	6000	5000	0.6	270(243-297)	455	740
JJV14D301K	JJV14D301KJ	190	250	103	105	4500	2500	6000	5000	0.6	300(270-330)	505	670
JJV14D331K	JJV14D331KJ	210	275	112	115	4500	2500	6000	5000	0.6	330(297-363)	550	610
JJV14D361K	JJV14D361KJ	230	300	123	130	4500	2500	6000	5000	0.6	360(324-396)	595	560
JJV14D391K	JJV14D391KJ	250	320	135	140	4500	2500	6000	5000	0.6	390(351-429)	650	510
JJV14D431K	JJV14D431KJ	275	350	145	155	4500	2500	6000	5000	0.6	430(387-473)	710	460
JJV14D471K	JJV14D471KJ	300	385	147	175	4500	2500	6000	5000	0.6	470(423-517)	775	430
JJV14D511K	JJV14D511KJ	320	415	148	180	4500	2500	6000	5000	0.6	510(459-561)	845	390
JJV14D561K	JJV14D561KJ	350	460	150	186	4500	2500	6000	5000	0.6	560(504-616)	920	360
JJV14D621K	JJV14D621KJ	385	505	155	188	4500	2500	6000	5000	0.6	620(558-682)	1025	320
JJV14D681K	JJV14D681KJ	420	560	160	190	4500	2500	6000	5000	0.6	680(612-748)	1120	290
JJV14D751K	JJV14D751KJ	460	615	180	210	4500	2500	6000	5000	0.6	750(675-825)	1240	270
JJV14D781K	JJV14D781KJ	485	640	190	211	4500	2500	6000	5000	0.6	780(702-858)	1290	260
JJV14D821K	JJV14D821KJ	510	670	203	235	4500	2500	6000	5000	0.6	820(738-902)	1355	230
JJV14D911K	JJV14D911KJ	550	745	208	255	4500	2500	6000	5000	0.6	910(819-1001)	1500	220
JJV14D102K	JJV14D102KJ	625	825	212	280	4500	2500	6000	5000	0.6	1000(900-1100)	1650	200
JJV14D112K	JJV14D112KJ	680	895	217	310	4500	2500	6000	5000	0.6	1100(990-1210)	1815	180
JJV14D152K	JJV14D152KJ	900	1200	266	420	4500	2500	6000	5000	0.6	1500(1350-1650)	2475	130
JJV14D182K	JJV14D182KJ	1000	1465	336	510	4500	2500	6000	5000	0.6	1800(1620-1980)	2970	110

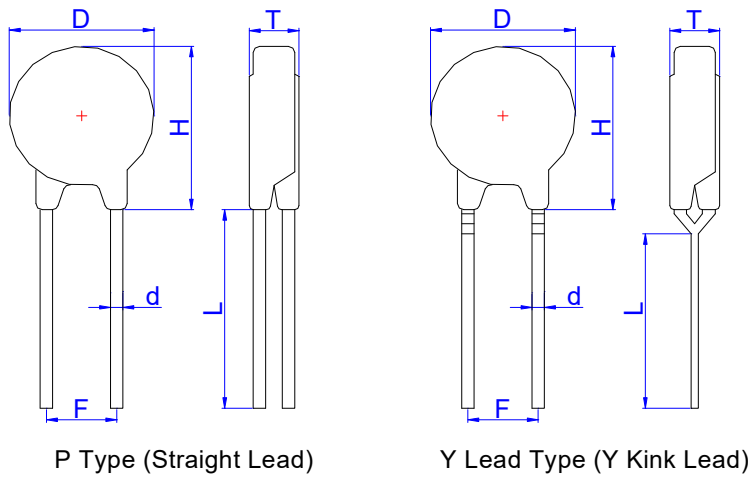
RELIABILITY TESTS - Mechanical ratings

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. JJV14D751K
 Y Lead Type: Special type
 e.g. JJV14D751KY

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D			17.0			0.669
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		18.0			0.709
	CB/IB/YB		22.0			0.866
T	JJV14D182K		12.5			0.492
	JJV14D152K		11.0			0.433
	JJV14D112K		8.5			0.335
	JJV14D102K		7.8			0.307
	JJV14D911K		7.6			0.299
	JJV14D821K		7.2			0.283
	JJV14D781K		6.8			0.268
	JJV14D751K		6.5			0.256
	JJV14D681K		6.4			0.252
	JJV14D621K		6.4			0.252
	JJV14D561K		6.2			0.244
	JJV14D511K		5.8			0.228
	JJV14D471K		5.6			0.220
	JJV14D431K		5.3			0.209
	JJV14D391K		5.1			0.201
	JJV14D361K		5.0			0.197
	JJV14D331K		4.8			0.190
	JJV14D301K		4.7			0.185
	JJV14D271K		4.5			0.177
	JJV14D241K		4.3			0.169
	JJV14D221K		4.2			0.165
	JJV14D201K		4.1			0.161
	JJV14D181K		4.1			0.161
	JJV14D151K		4.8			0.190
	JJV14D121K		4.5			0.177
	JJV14D101K		4.3			0.169
	JJV14D820K		4.1			0.161
	JJV14D680K		4.1			0.161
	JJV14D560K		4.1			0.161
	JJV14D470K		4.5			0.177
	JJV14D390K		4.5			0.177
	JJV14D330K		4.2			0.165
	JJV14D270K		4.0			0.157
JJV14D220K		4.0			0.157	
JJV14D180L		4.0			0.157	

MARKING

	Trademark	
	Part No.	14D180L~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)**




Dimension	Part No.	Bag	Box	Carton
JJV14D	180L to 431K	500	1000	6000
JJV14D	471K to 781K	400	800	4800
JJV14D	821K to 112K	300	600	3600

- Dimension of bulk packing method (mm)

Part No.	Bag	Box	Carton
JJV14D180L~ JJV14D112K	195*230	240*180*60	370*260*210

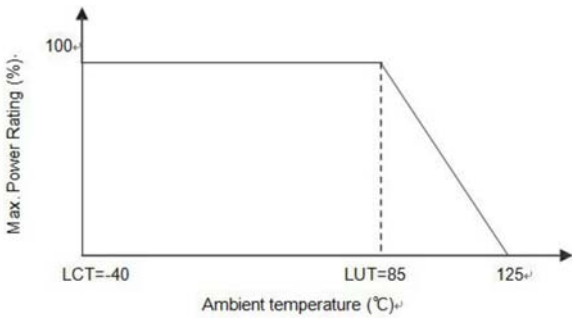
NOTE: Dimension is length*width*height.

APPROVAL STANDARD AND FILE NUMBER

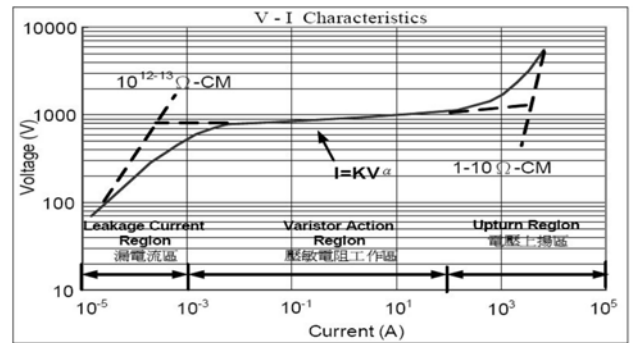
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	YES	3ka/6kv	YES	3ka/6kv	YES	3ka/6kv	
JJV14D180L	YES				YES		YES
JJV14D220K	YES				YES		YES
JJV14D270K	YES				YES		YES
JJV14D330K	YES		YES		YES		YES
JJV14D390K	YES		YES		YES		YES
JJV14D470K	YES		YES		YES		YES
JJV14D560K	YES		YES		YES		YES
JJV14D680K	YES		YES		YES		YES
JJV14D820K	YES	3ka/6kv	YES		YES		YES
JJV14D101K	YES	3ka/6kv	YES		YES		YES
JJV14D121K	YES	3ka/6kv	YES		YES		YES
JJV14D151K	YES	3ka/6kv	YES		YES		YES
JJV14D181K	YES	3ka/6kv	YES	3ka/6kv	YES		YES
JJV14D201K	YES	3ka/6kv	YES	3ka/6kv	YES		YES
JJV14D221K	YES	3ka/6kv	YES	3ka/6kv	YES		YES
JJV14D241K	YES	3ka/6kv	YES	3ka/6kv	YES		YES
JJV14D271K	YES	3ka/6kv	YES	3ka/6kv	YES		YES
JJV14D301K	YES	3ka/6kv	YES	3ka/6kv	YES		YES
JJV14D331K	YES	3ka/6kv	YES	3ka/6kv	YES		YES
JJV14D361K	YES	3ka/6kv	YES	3ka/6kv	YES		YES
JJV14D391K	YES	3ka/6kv	YES	3ka/6kv	YES		YES
JJV14D431K	YES	3ka/6kv	YES	3ka/6kv	YES	3ka/6kv	YES
JJV14D471K	YES	3ka/6kv	YES	3ka/6kv	YES	3ka/6kv	YES
JJV14D511K	YES	3ka/6kv	YES	3ka/6kv	YES	3ka/6kv	YES
JJV14D561K	YES	3ka/6kv	YES	3ka/6kv	YES	3ka/6kv	YES
JJV14D621K	YES	3ka/6kv	YES	3ka/6kv	YES	3ka/6kv	YES
JJV14D681K	YES	3ka/6kv	YES	3ka/6kv	YES	3ka/6kv	YES
JJV14D751K	YES	3ka/6kv	YES	3ka/6kv	YES	3ka/6kv	YES
JJV14D821K	YES	3ka/6kv			YES	3ka/6kv	YES
JJV14D911K	YES	3ka/6kv			YES	3ka/6kv	YES
JJV14D102K	YES	3ka/6kv			YES	3ka/6kv	YES
JJV14D112K	YES	3ka/6kv			YES	3ka/6kv	YES
JJV14D152K	YES	3ka/6kv			YES	3ka/6kv	YES
JJV14D182K	YES	3ka/6kv			YES	3ka/6kv	YES

VARISTOR CHARACTERISTICS CURVE

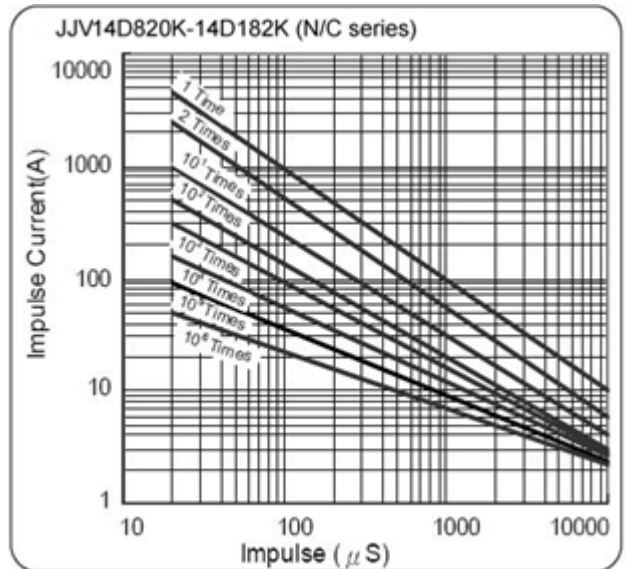
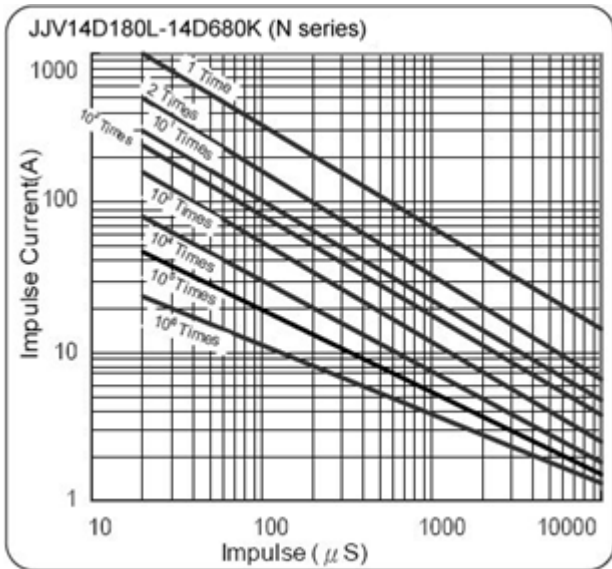
Power derating curve



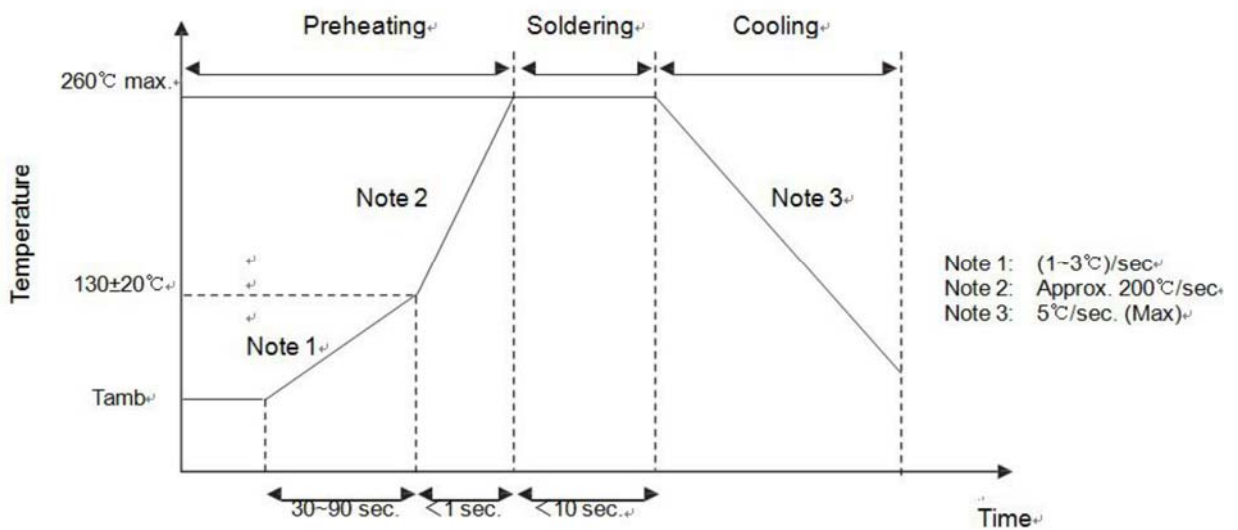
Varistor V-I characteristics curve



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



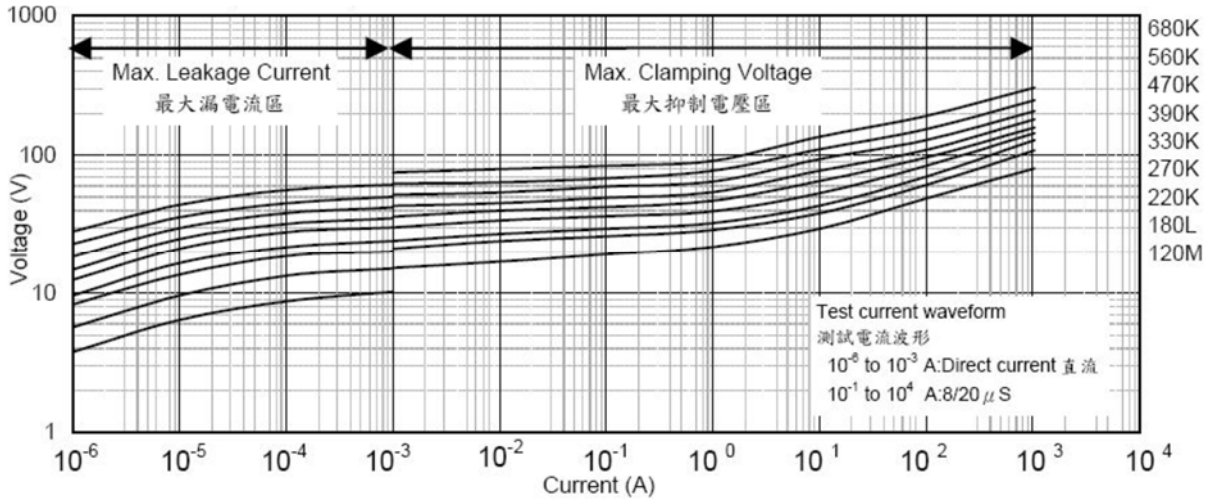
Soldering recommendation - wave soldering profile



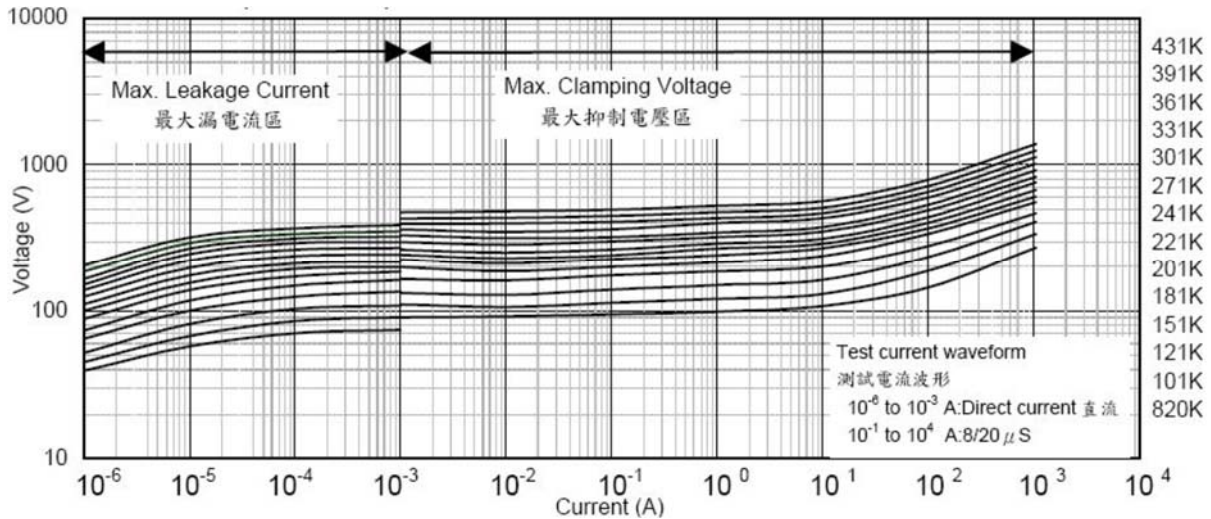


V-I curves

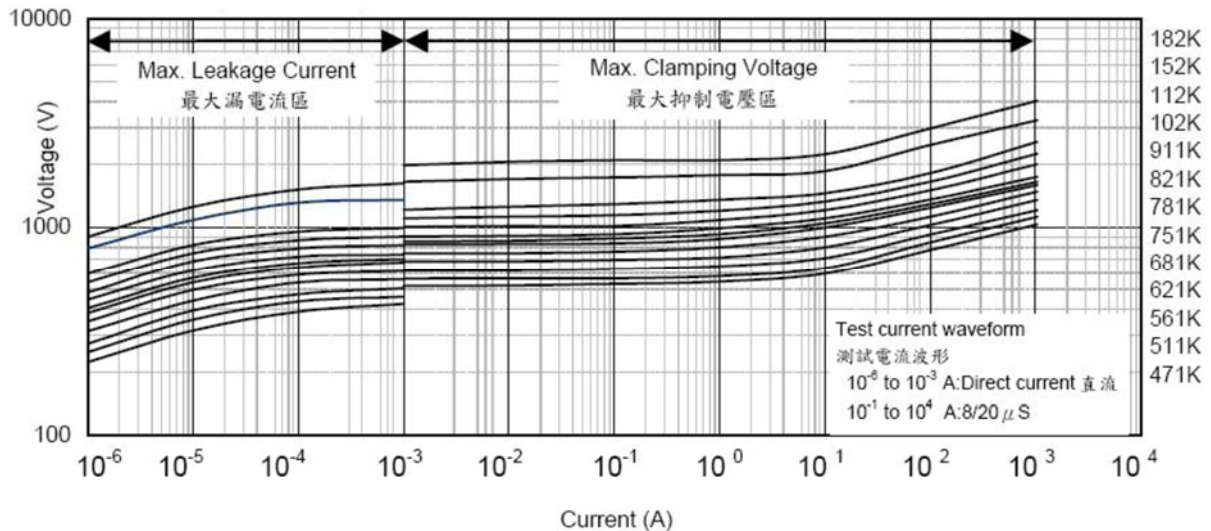
JJV14D120M-14D180L-14D680K (N/J/S series)



JJV14D820K-14D431K (N/J/S series)



JJV14D471K-14D182K (N/J/S series)



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