

- Wide operating voltages ranging from 5 to 510 V_{RMS}
- Fast response time of less than 25 ns, 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 arcing to the adjacent devices or circuits



- 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

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

JJV: JieJie Semiconductor Varistors Size(mm): 05mm to 32mm Type: D: Disk; S: Square Varistor voltage: 180L(18V) to 821K(820V) Tolerance: K±10%, L±15%, M±20%	JJV ☐☐ D ☐☐☐ K ☐ ☐ ☐ H:epoxy coating 125°C S:short leg; No: ☐☐ 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
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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)	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
	AC V _{RMS}	DC	Standard	High surge	Standard (A)		High surge (A)		W	at 1mA	at 2.5A	1KHz
	V	V	J	J	1 TIME	2 TIME	1 TIME	2 TIME		V	V	PF
07D180L	11	14	2.1	2.4	250	125	500	250	0.02	18(15-21)	38	1400
07D220K	14	18	2.4	2.8	250	125	500	250	0.02	22(20-24)	43	1150
07D270K	17	22	2.8	3.0	250	125	500	250	0.02	27(24-30)	53	930
07D330K	20	26	3.5	4.0	250	125	500	250	0.02	33(30-36)	65	760
07D390K	25	31	4.2	4.6	250	125	500	250	0.02	39(35-43)	77	640
07D470K	30	38	5.0	5.2	250	125	500	250	0.02	47(42-52)	93	530
07D560K	35	45	6.2	6.5	250	125	500	250	0.02	56(50-62)	110	450
07D680K	40	56	7.2	7.5	250	125	500	250	0.02	68(61-75)	135	370



Part No	Maximum allowable voltage		Energy 10/1000μs		Withstanding surge current 8/20μs				Rated POWER	Varistor voltage	Max clamping voltage	Capacitance
	AC V _{RMS}	DC	Standard	High surge	Standard (A)		High surge (A)			at 1mA	at 10A	1KHz
	V	V	J	J	1 TIME	2 TIME	1 TIME	2 TIME		W	V	V
07D820K	50	65	9.8	10.0	1200	600	1750	1250	0.25	82(74-90)	135	600
07D101K	60	85	11.6	12.0	1200	600	1750	1250	0.25	100(90-110)	165	500
07D121K	75	100	14.0	14.2	1200	600	1750	1250	0.25	120(108-132)	200	420
07D151K	95	125	16.8	17.0	1200	600	1750	1250	0.25	150(135-165)	250	330
07D181K	115	150	18.2	22.0	1200	600	1750	1250	0.25	180(162-198)	300	280
07D201K	130	170	25.2	27.0	1200	600	1750	1250	0.25	200(185-225)	330	250
07D221K	140	180	26.5	29.0	1200	600	1750	1250	0.25	220(198-242)	360	230
07D241K	150	200	28.0	30.0	1200	600	1750	1250	0.25	240(216-264)	395	210
07D271K	175	225	32.2	33.0	1200	600	1750	1250	0.25	270(243-297)	455	185
07D301K	190	250	35.0	36.0	1200	600	1750	1250	0.25	300(270-330)	505	165
07D331K	210	275	37.8	38.0	1200	600	1750	1250	0.25	330(297-363)	550	150
07D361K	230	300	42.0	43.0	1200	600	1750	1250	0.25	360(324-396)	595	140
07D391K	250	320	46.2	47.0	1200	600	1750	1250	0.25	390(351-429)	650	130
07D431K	275	350	50.4	51.0	1200	600	1750	1250	0.25	430(387-473)	710	115
07D471K	300	385	56.0	57.0	1200	600	1750	1250	0.25	470(423-517)	775	105
07D511K	320	415	57.0	58.0	1200	600	1750	1250	0.25	510(459-561)	845	100
07D561K	350	460	58.0	61.0	1200	600	1750	1250	0.25	560(504-616)	920	90
07D621K	385	505	61.6	68.0	1200	600	1750	1250	0.25	620(558-682)	1025	80
07D681K	420	560	62.5	75.0	1200	600	1750	1250	0.25	680(612-748)	1120	75
07D751K	460	615	67.2	80.0	1200	600	1750	1250	0.25	750(675-825)	1240	65
07D821K	510	670	72.0	87.0	1200	600	1750	1250	0.25	820(738-902)	1355	60



RELIABILITY TESTS - Mechanical Ratings

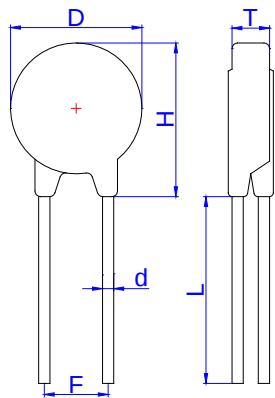
Parameter	Condition			Requirements
Terminal Pull Strength	After gradually applying the load specified below and keeping the unit fixed for ten seconds, the terminal shall be visually examined for any damage.	Diameter	Loading	No visible damage
		0.6mm	1.0Kg	
		0.8mm	1.0Kg	
		1.0mm	2.0Kg	
Terminal Bending 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 $\Delta V_{1mA}/V_{1mA} \leq \pm 5\%$
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_{1mA} and mechanical damage shall be examined.			No visible damage $\Delta V_{1mA}/V_{1mA} \leq \pm 5\%$



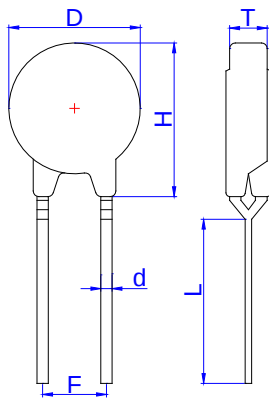
RELIABILITY TESTS - Environmental ratings

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_{1mA} and mechanical damage shall be examined. Ambient temp.: $125\pm 2^{\circ}\text{C}$; Period: 1000 ± 24 hours.				$\Delta V_{1mA}/V_{1mA} \leq \pm 10\%$
High Temperature Storage	In a drying oven without load. Ambient temp.: $125\pm 2^{\circ}\text{C}$; period: 1000 ± 24 hours				$\Delta V_{1mA}/V_{1mA} \leq 5\%$
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_{1mA} and mechanical damage shall be examined. Ambient condition: $40\pm 2^{\circ}\text{C}$, 90 to 95% R.H.; period: 56 days				$\Delta V_{1mA}/V_{1mA} \leq \pm 10\%$
Temperature Cycle	Condition the specimen to each temperature from step 1 to step 4 in this order for the period shown in the table of specifications. The change of V_{1mA} and mechanical damage shall be examined after 2 hours. Repeat 5 cycles.	Step	Temp($^{\circ}\text{C}$)	Period	Novisible damage $\Delta V_{1mA}/V_{1mA} \leq \pm 10\%$
		1	$-40\pm 3^{\circ}\text{C}$	30 min.	
		2	RoomTemp.	15 min.	
		3	$85\pm 2^{\circ}\text{C}$	30 min.	
		4	RoomTemp.	15 min.	
Surge Lifetime Rating	The change of V_{1mA} shall be measured after the impulse listed below is applied 10,000 times continuously with the interval often seconds at room temperature.				Novisible damage $\Delta V_{1mA}/V_{1mA} \leq \pm 10\%$
Voltage Proof	Voltage: $2500V_{AC}$; Leakage Current $\leq 0.5\text{mA}$; Time: 60 Seconds				No Breakdown

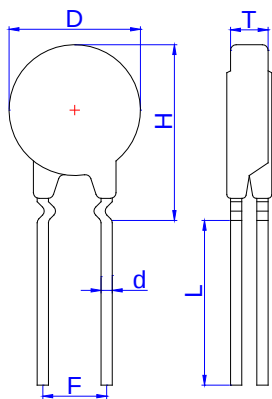
DIMENSIONAL DRAWINGS



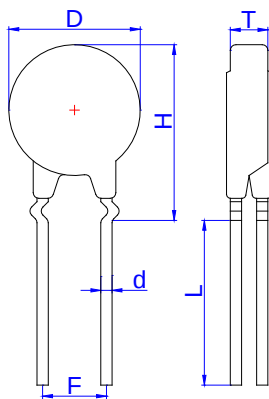
S Type (Straight Lead)



Y Lead Type (Y Kink Lead)



I Type (Inner Crimped Lead)



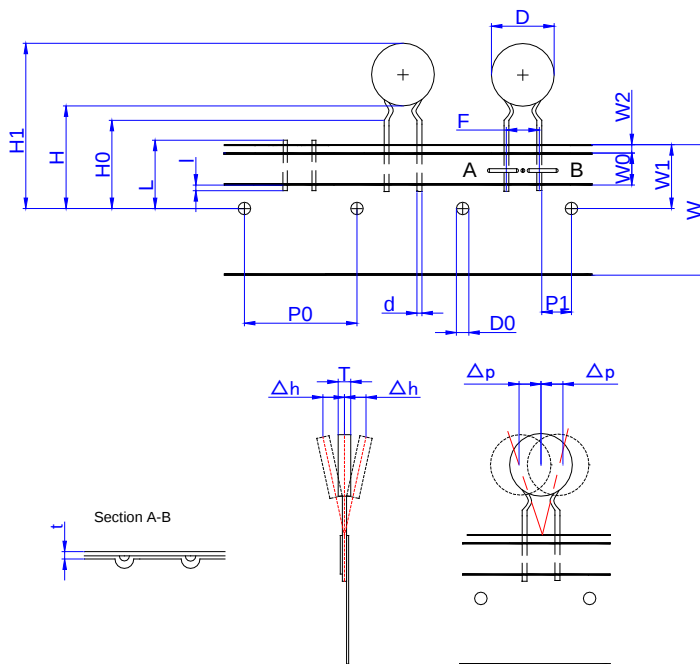
C Type (Out Crimped Lead)

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D			9.0			0.354
L	15.0			0.591		
d	0.55	0.6	0.65	0.022	0.024	0.026
F	4.2	5.0	5.8	0.165	0.197	0.228
H	SB		12.0			0.472
	CB/IB/YB		15.0			0.591
T	07D821K		6.9			0.272
	07D751K		6.5			0.256
	07D681K		6.4			0.252
	07D621K		6.4			0.252
	07D561K		6.2			0.244
	07D511K		5.8			0.228
	07D471K		5.6			0.220
	07D431K		5.3			0.209
	07D391K		5.1			0.201
	07D361K		5.0			0.197
	07D331K		4.8			0.190
	07D301K		4.7			0.185
	07D271K		4.5			0.177
	07D241K		4.3			0.169
	07D221K		4.1			0.161
	07D201K		4.1			0.161
	07D181K		4.1			0.161
	07D151K		4.1			0.161
	07D121K		4.1			0.161
	07D101K		4.1			0.161
	07D820K		4.1			0.161
	07D680K		5.2			0.205
	07D560K		5.1			0.201
	07D470K		5.0			0.197
	07D390K		4.9			0.193
	07D330K		4.8			0.189
	07D270K		4.9			0.193
	07D220K		4.6			0.181
	07D180L		4.5			0.177

MARKING

	Trademark	
	Part No.	07D180L~821K
	Standard for safety	UL/ VDE/ CQC
	Date Code	Y: Year M: Month
	J	High surge

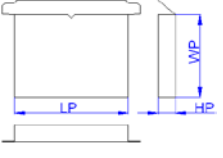
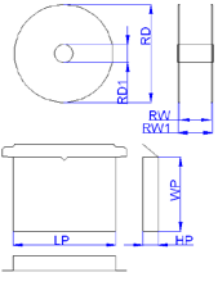
TAPING AND PACKAGING SPECIFICATION OF LEADED VARISTORS

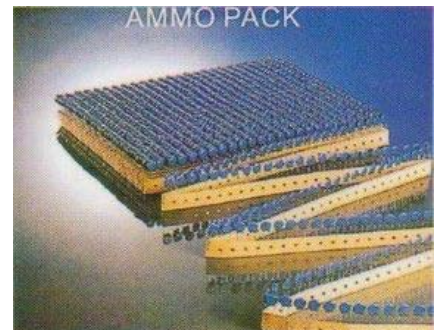


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
D	Refer to "Dimensional drawings"					
T	Refer to "Dimensional drawings"					
d	0.55	0.6	0.65	0.021	0.024	0.026
P0	12.4	12.7	13.0	0.49	0.5	0.51
P1	3.15	3.85	4.55	0.12	0.15	0.18
F	4.90	5.00	5.60	0.19	0.20	0.22
Δh	Depends on T					
Δp		0	1.3		0	0.051
W	17.5	18.0	18.5	0.69	0.71	0.73
W0	5.5			0.22		
W1	8.5	9.0	9.5	0.33	0.35	0.37
W2			3.0			0.12
H	18.0	18.0	18.2	0.71	0.71	0.72
H0	15.5	16.0	16.5	0.61	0.63	0.65
H1			32.2			1.27
D0	3.8	4.0	4.2	0.15	0.16	0.17
t			0.9			0.04
L			11.0			0.43
l			4.0			0.04

- 1) The value of H applies only to uninked types
- 2) H₀ = 18 mm upon request applies only to kinked types.

- Taping mode

Packing	Dimensions	Symbol	07D
AMMO		LP	330mm
		WP	310mm
		HP	50mm
		Carton	350×270×330
REEL		RD	360mm
		RD1	30±0.5mm
		RW	45mm
		RW1	50mm
		LP	365mm
		WP	365mm
		HP	57mm
		Carton	380×380×480

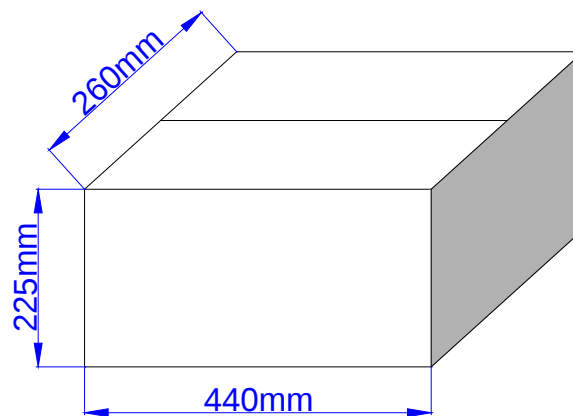


- Quantity of taping packing(pcs)

Dimension	Part No.	Ammo		Reel	
		Box	Carton	Box	Carton
07D	180L to 561K	1500	15000	2000	20000
07D	621K to 821K	1300	13000	1500	15000

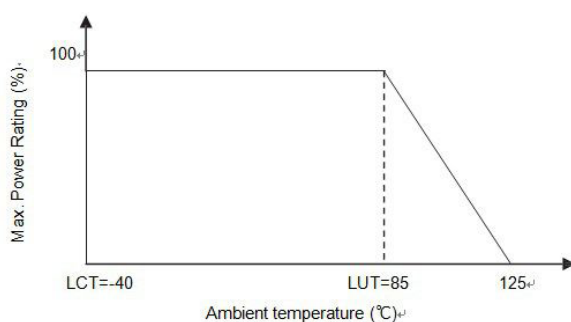
- Quantity of bulk packing method (pcs)

Dimension	Part No.	Bag	Small Carton	Carton
07D	180L to 821K	1000	10000	20000
07D (short leg)	180L to 821K	1000	15000	30000

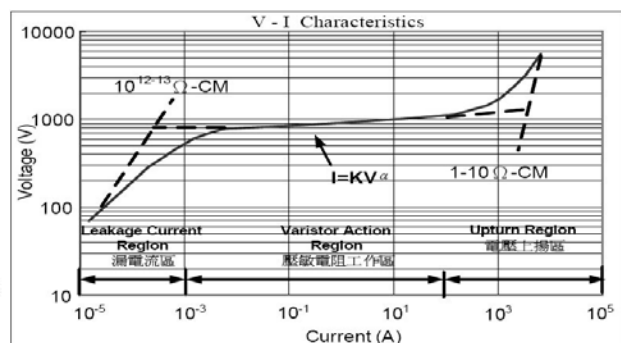


VARISTOR CHARACTERISTICS CURVE

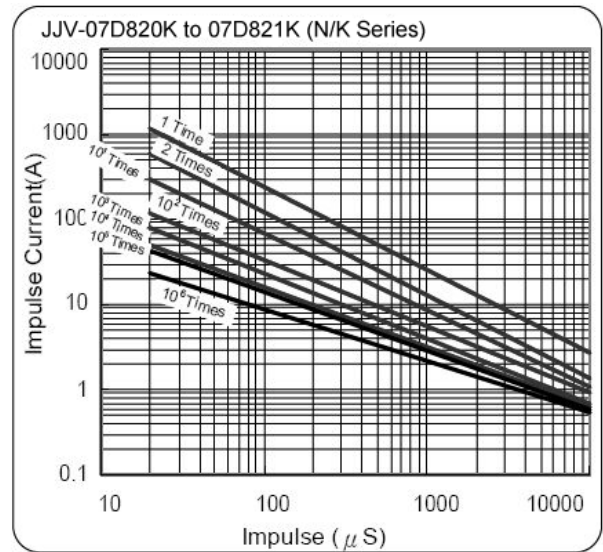
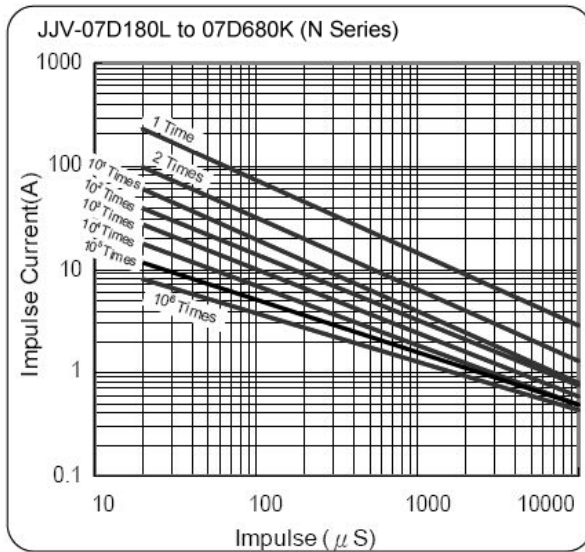
Power derating curve



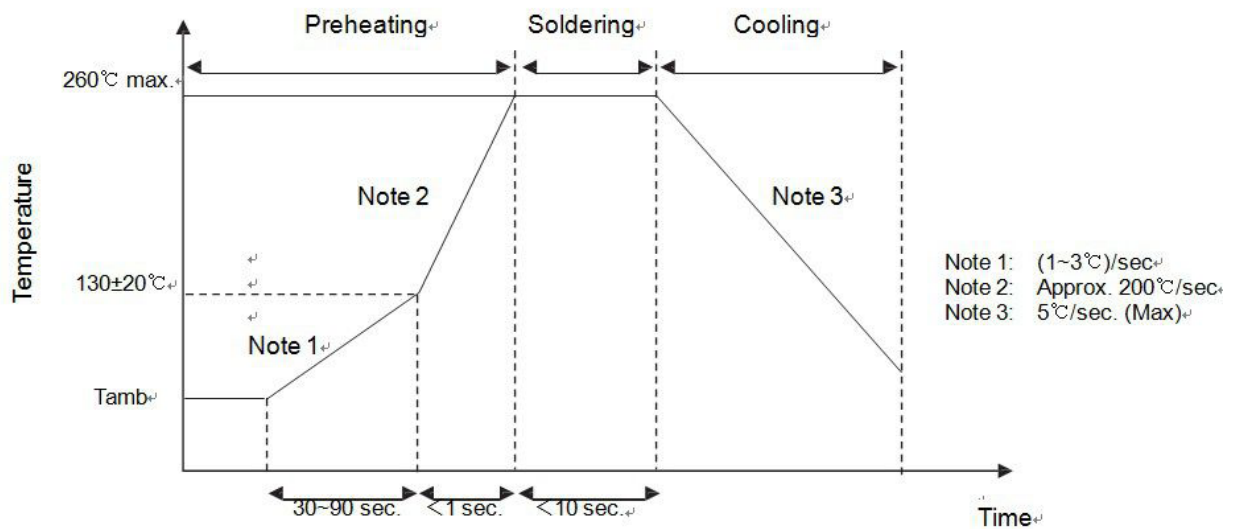
Varistor V-I characteristics curve



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

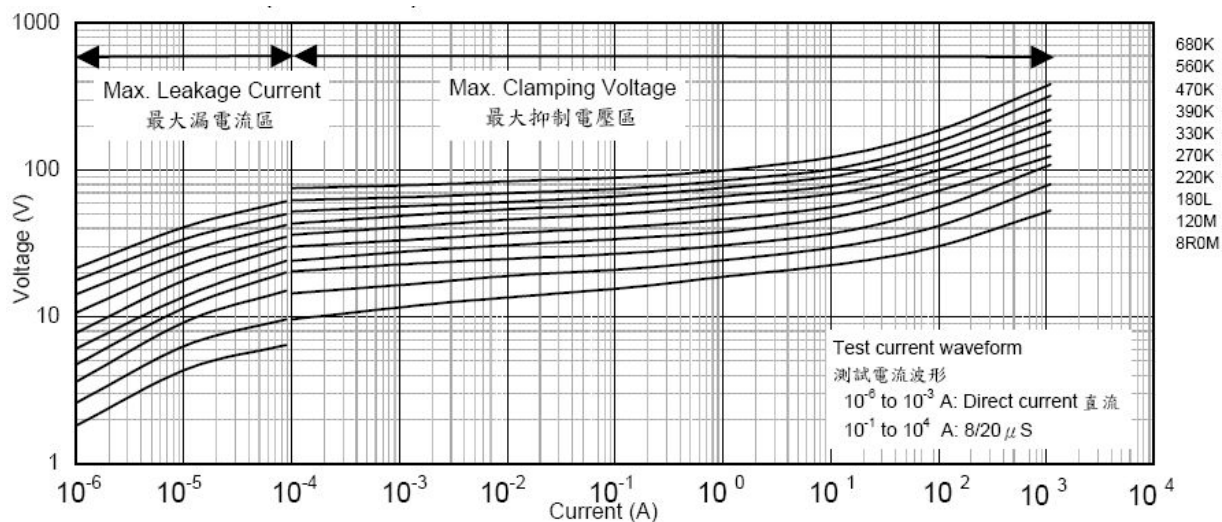


Soldering recommendation - wave soldering profile

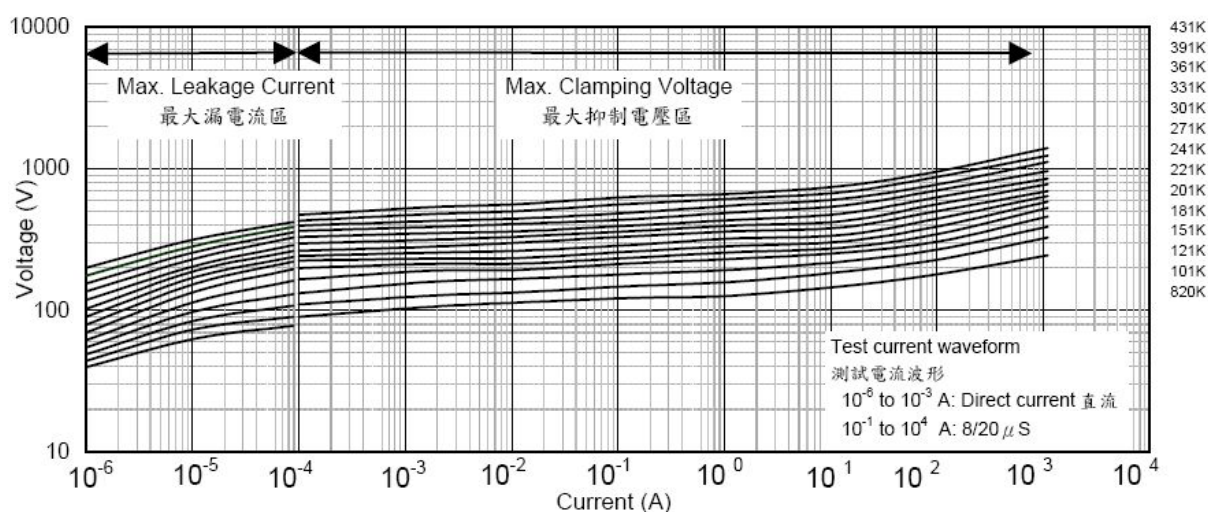


V-I curves

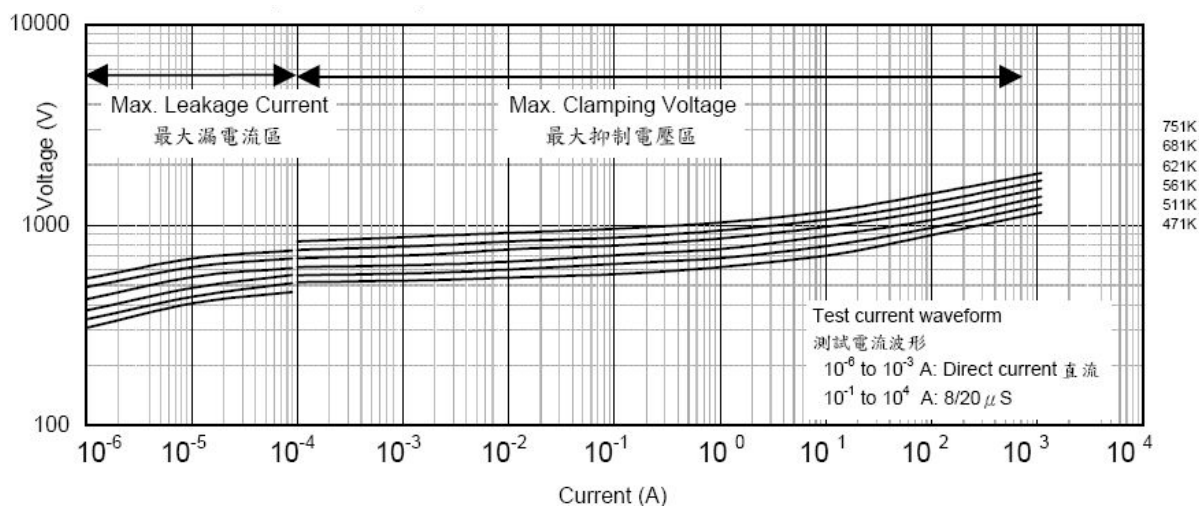
JJV-07D080M-07D180L-07D680K (N/J series)



JJV-07D820K-07D431K (N/J series)



JJV-07D471K-07D821K (N/J series)





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