07D Disc Varistor

FEATURES

* Wide operating voltages ranging from 5Vrms to 1000Vrms (6Vdc to 1465Vdc).
* 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.

General Characteristics Definition

*Operating Temperature:	-40 °C ~ +85 °C
*Storage Temperature:	-40 °C ~ +125 °C
*Working Surface Temperature:	+115 °C
*Insulation Resistance:	> 100M Ω
*Coating (Epoxy Resin):	Flame-Retardant to UL 94 V-0

Material

*Coating:	Epoxy Resin
*Lead Wire:	The Copper Wire
*Electrode:	Silver Solder
*Disk:	Zinc Oxide

Ordering Information

VDR □□ D □□□ K □ □ □

Brand Mark :

Size(mm) : 05mm to 32mm

Type: D: Disk , S: Square

Varistor Voltage : 180L(18V) to 821K(820V)

Tolerance : K±10%, L±15%, M±20%

Coating : H:Epoxy Coating 125

Short leg : NO : □.□

Lead Form :

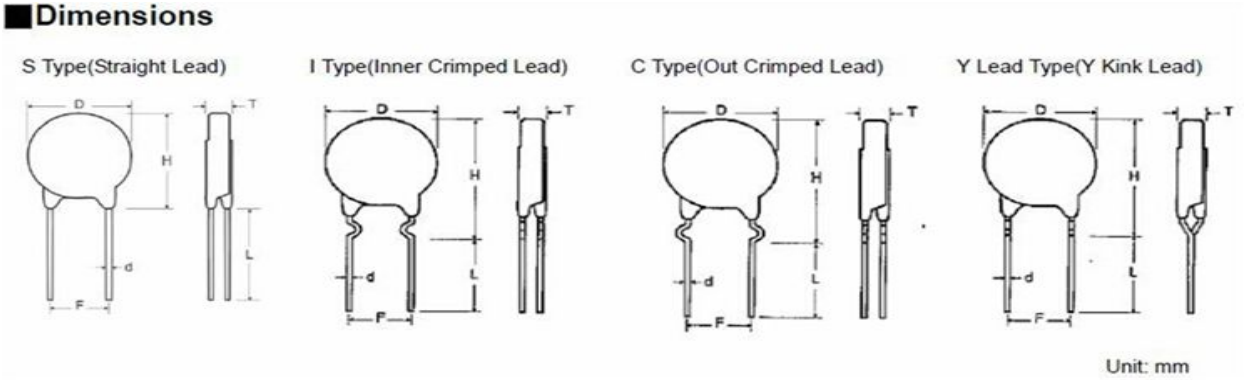
P:Straight, C:Crimped, I:Inner, Y:Y kink

E: 4KV2KA S:6KV/3KA Y:10KV/5KA

J:High Surge & High Energy

Taping Mode : TA : Ammo, TR : Reel

■Dimensions



Part No.	D Max.	H Max.		L min.	F ±0.8	d ± 0.05	T Max.
		SB	CB / IB / YB				
07D821K	9.0	11.0	14.0	20.0	5.0	0.6	6.9
07D751K	9.0	11.0	14.0	20.0	5.0	0.6	6.5
07D681K	9.0	11.0	14.0	20.0	5.0	0.6	6.4
07D621K	9.0	11.0	14.0	20.0	5.0	0.6	6.4
07D561K	9.0	11.0	14.0	20.0	5.0	0.6	6.2
07D511K	9.0	11.0	14.0	20.0	5.0	0.6	5.8
07D471K	9.0	11.0	14.0	20.0	5.0	0.6	5.6
07D431K	9.0	11.0	14.0	20.0	5.0	0.6	5.3
07D391K	9.0	11.0	14.0	20.0	5.0	0.6	5.1
07D361K	9.0	11.0	14.0	20.0	5.0	0.6	5.0
07D331K	9.0	11.0	14.0	20.0	5.0	0.6	4.8
07D301K	9.0	11.0	14.0	20.0	5.0	0.6	4.7
07D271K	9.0	11.0	14.0	20.0	5.0	0.6	4.5
07D241K	9.0	11.0	14.0	20.0	5.0	0.6	4.3
07D221K	9.0	11.0	14.0	20.0	5.0	0.6	4.2
07D201K	9.0	11.0	14.0	20.0	5.0	0.6	4.1
07D181K	9.0	11.0	14.0	20.0	5.0	0.6	4.1
07D151K	9.0	11.0	14.0	20.0	5.0	0.6	4.8
07D121K	9.0	11.0	14.0	20.0	5.0	0.6	4.5
07D101K	9.0	11.0	14.0	20.0	5.0	0.6	4.3
07D820K	9.0	11.0	14.0	20.0	5.0	0.6	4.1
07D680K	9.0	11.0	14.0	20.0	5.0	0.6	4.5
07D560K	9.0	11.0	14.0	20.0	5.0	0.6	4.5
07D470K	9.0	11.0	14.0	20.0	5.0	0.6	4.1
07D390K	9.0	11.0	14.0	20.0	5.0	0.6	4.1
07D330K	9.0	11.0	14.0	20.0	5.0	0.6	3.9
07D270K	9.0	11.0	14.0	20.0	5.0	0.6	3.9
07D220K	9.0	11.0	14.0	20.0	5.0	0.6	3.8
07D180L	9.0	11.0	14.0	20.0	5.0	0.6	3.8

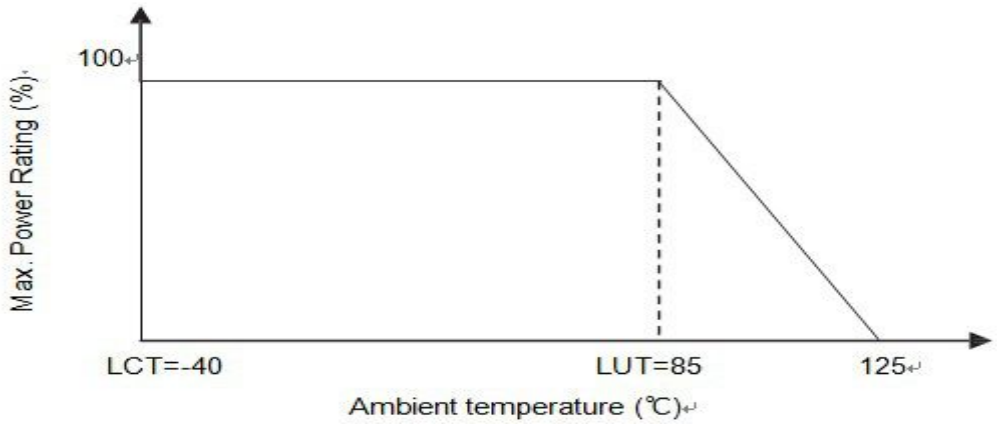
07D Standard & High Surge

Part No.	Maximum Allowable Voltage		Energy 10/1000μS		Withstanding Surge Current 8/20μS				Rated POWER	Varistor Voltage	Max Clamping Voltage	Capacitance
	ACrms	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	10	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	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
	ACrms	DC	Standard	High Surge	Standard (A)		High Surge(A)		(W)	AT 1mA	AT 10A	1KHz
	(V)	(V)	(J)	(J)	1 TIME	2 TIME	1 TIME	2 TIME		(V)	(V)	PF
07D820K	50	65	9.8	10	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

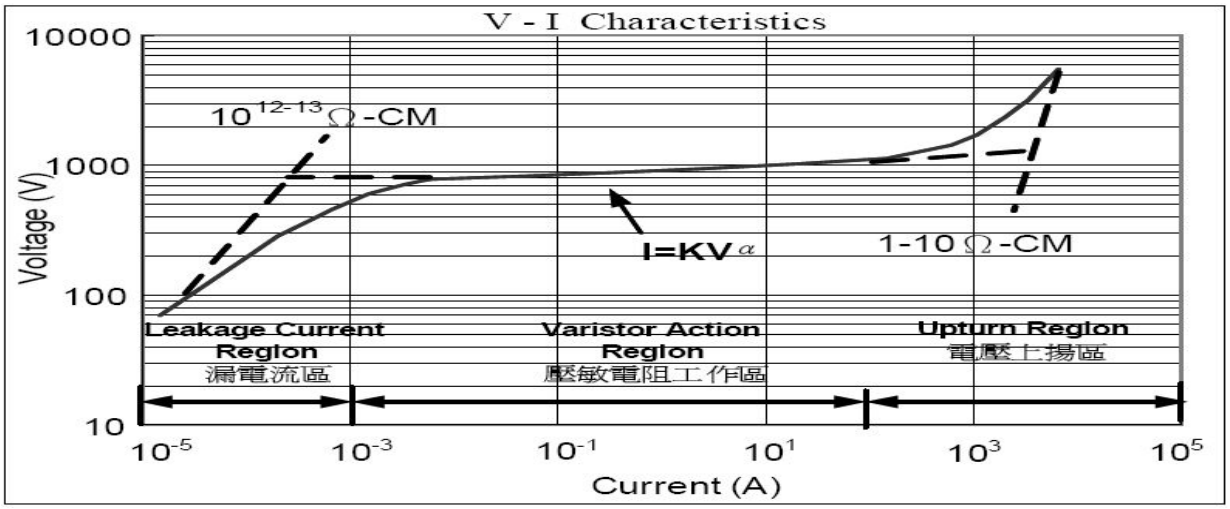
Approval Standard And File Number

Certified Model No.	c UL us E317616	VDE 40028836	CQC 12001076478	CSA & cUL E317616
07D180L	YES	YES	YES	YES
07D220K	YES	YES	YES	YES
07D270K	YES	YES	YES	YES
07D330K	YES	YES	YES	YES
07D390K	YES	YES	YES	YES
07D470K	YES	YES	YES	YES
07D560K	YES	YES	YES	YES
07D680K	YES	YES	YES	YES
07D820K	YES	YES	YES	YES
07D101K	YES	YES	YES	YES
07D121K	YES	YES	YES	YES
07D151K	YES	YES	YES	YES
07D181K	YES	YES	YES	YES
07D201K	YES	YES	YES	YES
07D221K	YES	YES	YES	YES
07D241K	YES	YES	YES	YES
07D271K	YES	YES	YES	YES
07D301K	YES	YES	YES	YES
07D331K	YES	YES	YES	YES
07D361K	YES	YES	YES	YES
07D391K	YES	YES	YES	YES
07D431K	YES	YES	YES	YES
07D471K	YES	YES	YES	YES
07D511K	YES		YES	YES
07D561K	YES		YES	YES
07D621K	YES		YES	YES
07D681K	YES		YES	YES
07D751K			YES	
07D821K			YES	

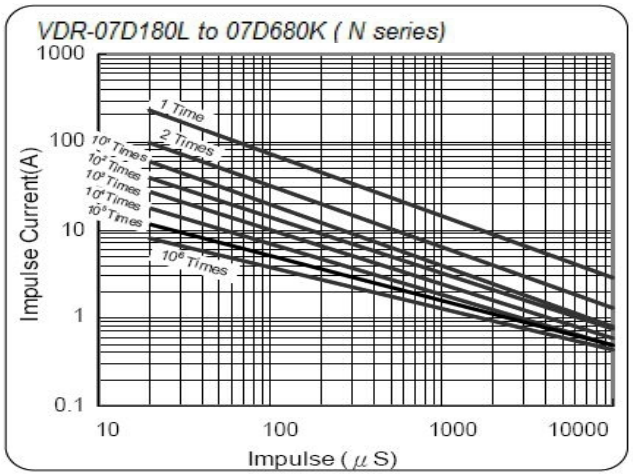
Power Derating Curve

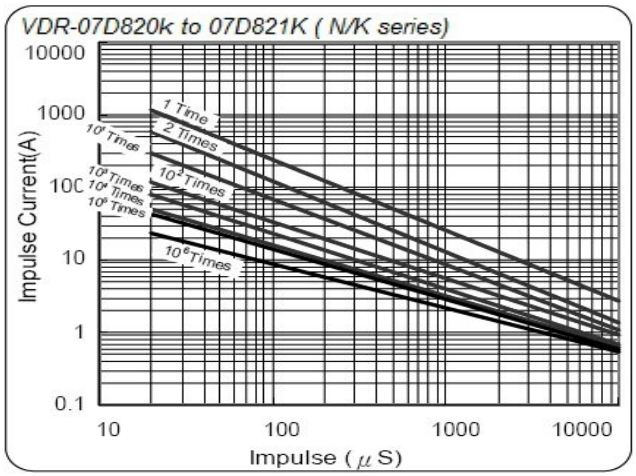


VARISTOR V - I CHARACTERISTICS



Surge Life Time Ratings N (Standard) / K (Low Capacitance) Series

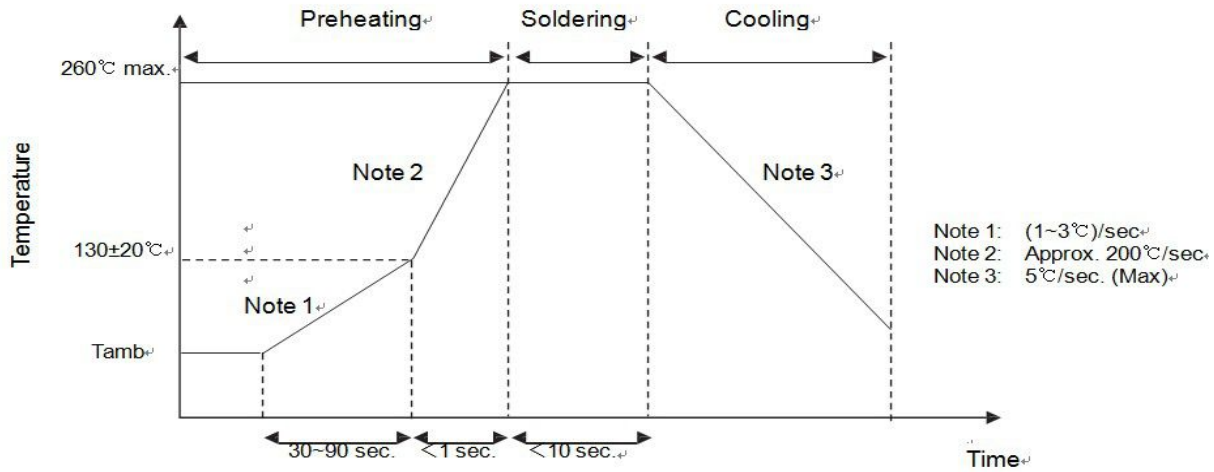




Current (A)

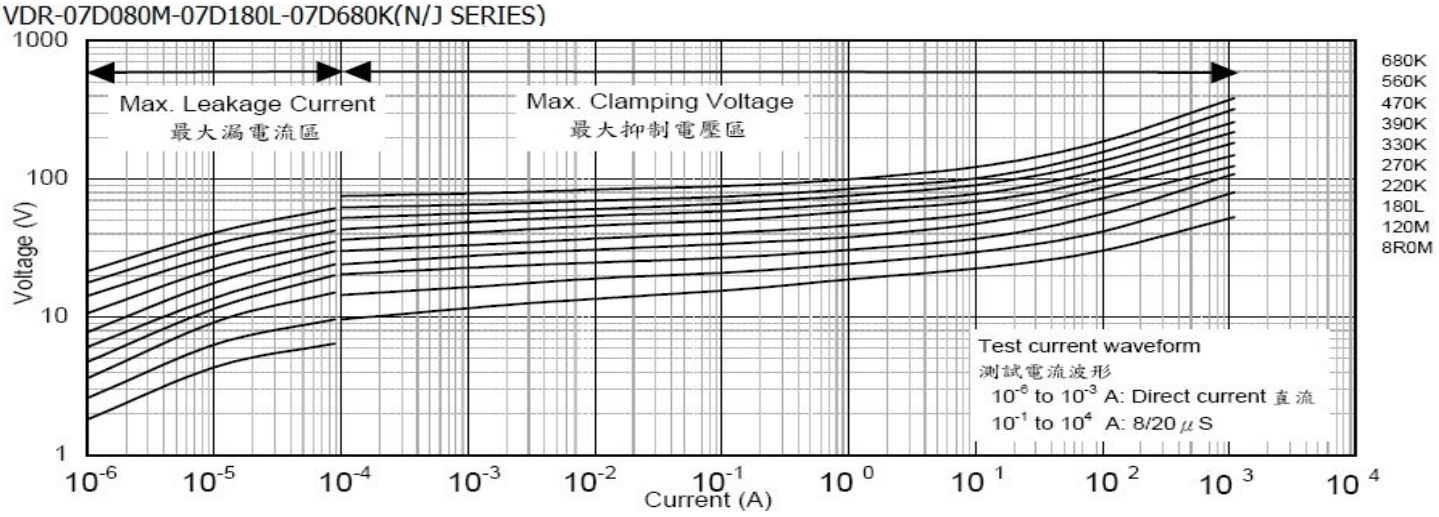
Soldering Recommendation

Wave Soldering Profile

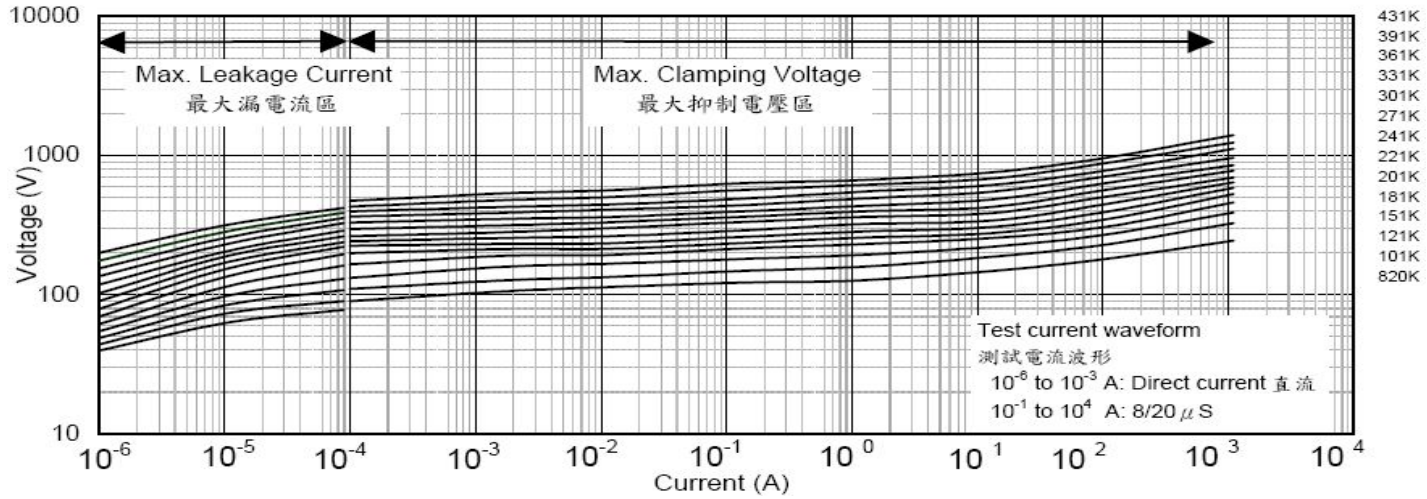


V-I CURVE

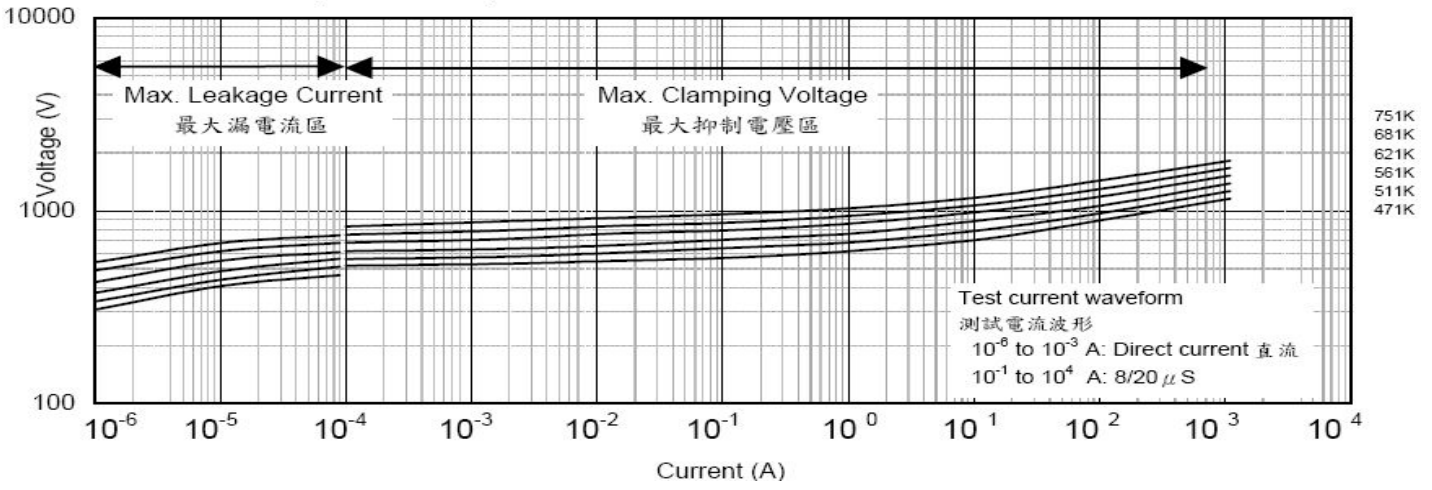
VDR-07D080M-07D180L-07D680K(N/J SERIES)



VDR-07D820k-07D431k (N/J SERIES)

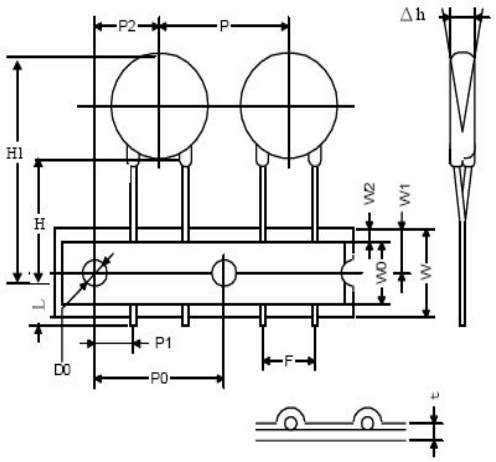


VDR-07D471k-07D821k (N/J SERIES)

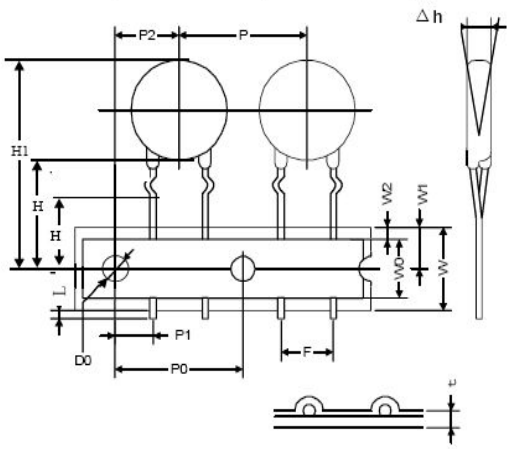


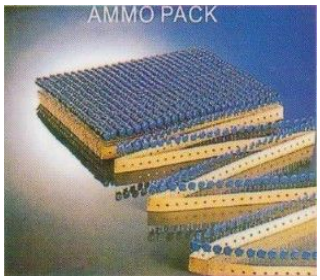
Dimension - TA / TR / CA / CR Ammo & Reel Series

Straight Leads (5D,7D,10D)

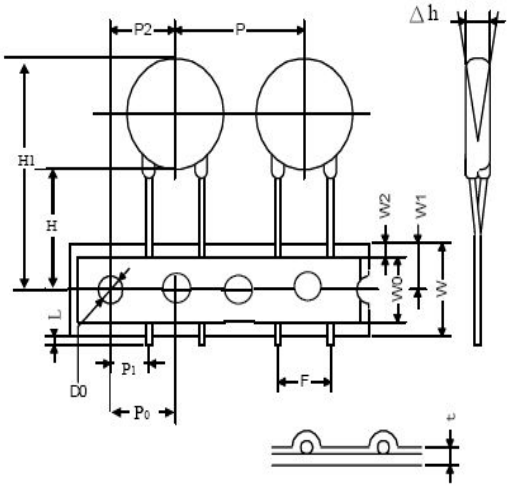


Crimped Leads (5D,7D,10D)

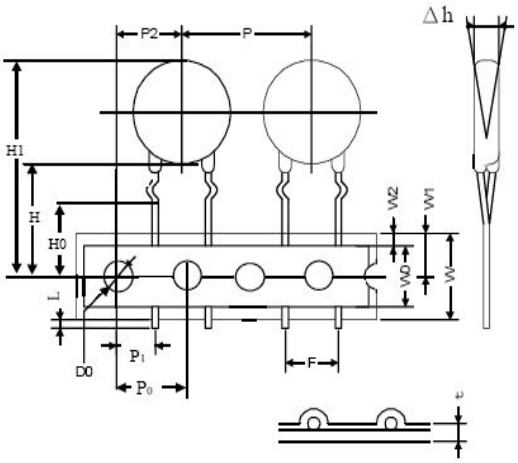


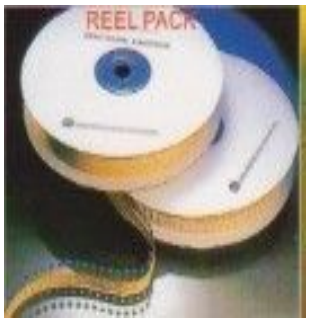


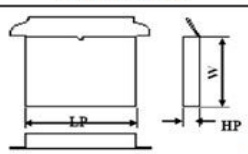
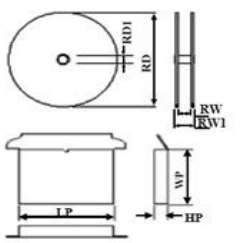
Straight Leads (10D,14D,20D)



Crimped Leads (10D,14D,20D)





Packing	Dimensions	Symbol	5D	7D	9/10D	14D	18/20D
AMMO		LP	330mm		335mm		345mm
		WP	310mm		243mm		345mm
		HP	50mm		50mm		65mm
		Carton	350x270x330		355x260x537		360x360x480
REEL		RD	360mm		340mm		
		RD1	30±0.5mm		30±0.5mm		
		RW	45mm		51mm		53mm
		RW1	50mm		56mm		58mm
		LP	365mm		345mm		
		WP	365mm		345mm		
		HP	57mm		65mm		
		Carton	380x380x480		360x360x480		

Unit: pcs

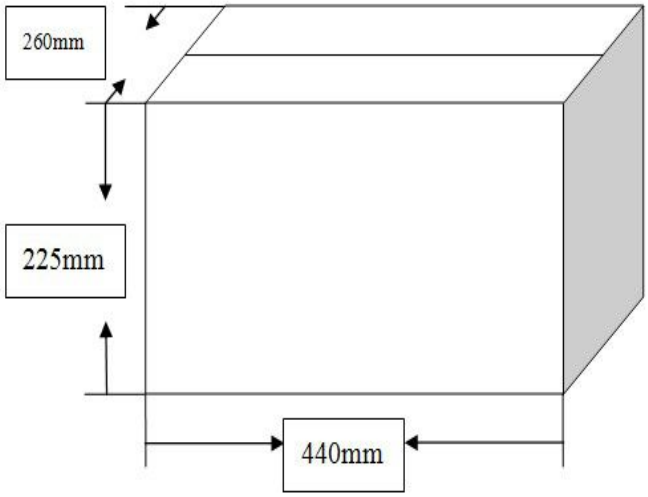
Reel		Ammo	
Box	Carton	Box	Carton
2000	16000	2000	10000
		1500	7500
2000	16000	2000	10000
		1500	7500
500	3500	500	5000
500	3500	500	5000
400	2800	500	5000
400	2800	400	2800
300	2100	300	2100

Qualtity Per Packing Method

Unit:Pcs

Dimension	Part No.	Ammo		Reel	
		Box	Carton	Box	Carton
07D	180L to 561K	1,500	15,000	2,000	20,000
07D	621k to 821K	1,300	13,000	1,500	15,000

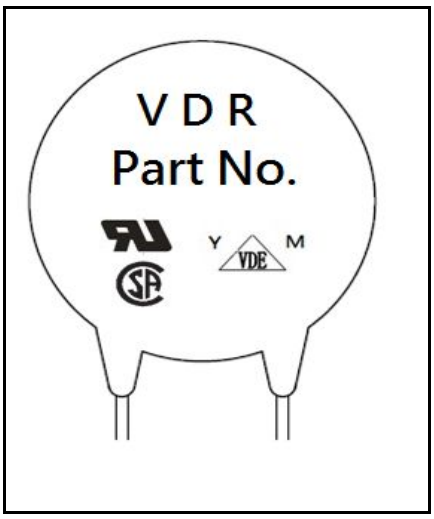
Packing Specifications /Bulk Packing Dimension /Quantity per Packing Method



Unit:Pcs

Dimension	Part No.	Bag	Small Carton	Carton
07D	180L to 821K	1,000	10,000	20,000
07D (Short leg)	180L to 821K	1,000	15,000	30,000

Marking



Marking	
Trademark	**VDR**
Part No.	**07D180L-821K**
Standard for Safety	**UL / VDE / CQC**
Date Code:	**Y : Year M : Month**
J	**High Surge**

Reliability Test

Mechanical Ratings

Test Parameter	Test Condition / Description			Performance 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	1.0 Kg	
		0.8mm	1.0 Kg	
		1.0mm	2.0 Kg	
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	0.5 Kg	
		0.8mm	0.5 Kg	
		1.0mm	1.0 Kg	
Vibration	The Specimen shall be vibrated by its lead wires with a total amplitude of 1.5㎜ and a varying frequency of 10~55~10HZ(each minutes) for a period of 2 hours respectively in each X,Yand Z directions.			No visible damage △ VB/VB%≦±5%
Soldering-solderability	After dipping the terminal to depth of approximately 3㎜ from the specimen in a soldering bath of 260℃ 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℃ for 10±1 (D5: 5±1) seconds or iron of 400±5℃ for 3±0.5 seconds. There after the change of Vb and mechanical damage shall be examined.			No visible damage △ VB/VB%≦±5%

ENVIRONMENTAL RATINGS

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 Vb and mechanical damage shall be examined. Ambient temp：125±2℃ ; Period：1000±24hours.				△VB/VB%≦±10%
High Temperature Storage	In a drying oven without load. Ambient temp：125±2℃ ; period：1000±24hours				△VB/VB%≦±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 Vb and mechanical damage shall be examined. Ambient condition：40±2℃ , 90 to 95%R.H. ; period：1000±24 hours				△VB/VB%≦±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 Vb and mechanical damage shall be examined after 2 hours.	Step	Temp°C	Period	No visible damage △VB/VB% ≦±10%
		1	-40±3°C	30 min.	
		2	Room Temp	15 min.	
		3	85±2°C	30 min.	
		4	Room Temp	15 min.	
Surge Lifetime Rating	The change of Vb 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 △VB/VB% ≦±10%
Voltage Proof	Voltage：2500VAC Leakage Current≦0.5mA Time：60 Seconds				No Breakdown