

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 arcing 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

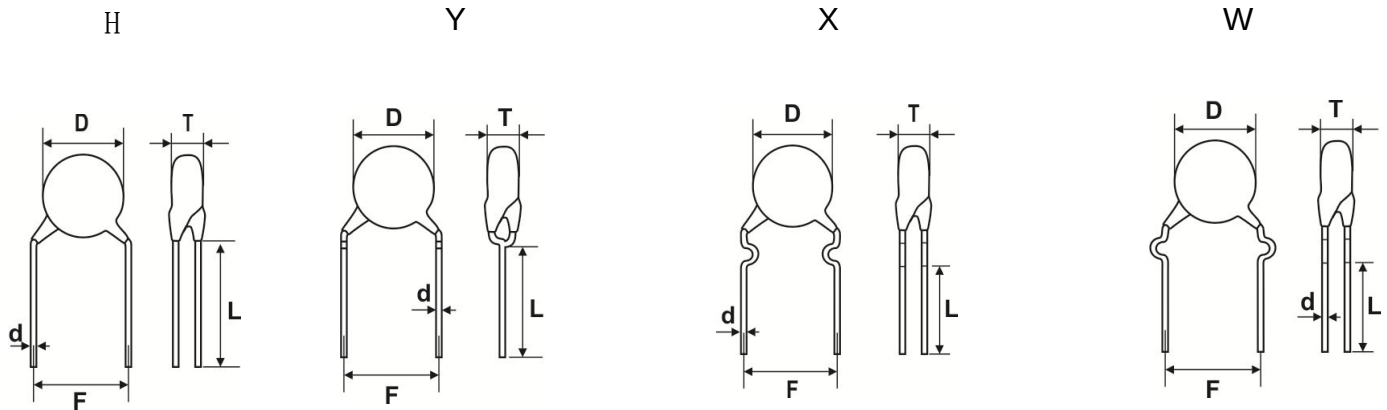
Material

*Coating:	Epoxy Resin
*Lead Wire:	Lead (Pd)-Free
*Electrode:	Copper
*Disk:	Zinc Oxide

Ordering Information

Brand Mark :	WNR	07	D	471					
WNR (Welson Varistor)									
Size(mm)									
Φ 7.0mm									
Type									
D: Disk									
Varistor Voltage									
180L(18V) to 821K(820V)									
									J: High Surge
									Lead length and Package style:
									L: long lead & bulk packaging;
									S: Short lead & bulk packaging;
									TB: Taping Box TR: Taping Reel
									Lead style
									H , Y , X, W
									Lead spacing(F)
									5: 5.0±0.8mm; 7: 7.5±0.8mm
									Tolerance
									K±10%, L±15%

Dimensions



Part No.	D Max.	L min.	F ± 1.0	d ± 0.05	T Max.
07D751K	9.0	15.0	5.0	0.6	6.5
07D681K	9.0	15.0	5.0	0.6	6.4
07D621K	9.0	15.0	5.0	0.6	6.4
07D561K	9.0	15.0	5.0	0.6	6.2
07D511K	9.0	15.0	5.0	0.6	5.8
07D471K	9.0	15.0	5.0	0.6	5.6
07D431K	9.0	15.0	5.0	0.6	5.3
07D391K	9.0	15.0	5.0	0.6	5.1
07D361K	9.0	15.0	5.0	0.6	5.0
07D331K	9.0	15.0	5.0	0.6	4.8
07D301K	9.0	15.0	5.0	0.6	4.7
07D271K	9.0	15.0	5.0	0.6	4.5
07D241K	9.0	15.0	5.0	0.6	4.3
07D221K	9.0	15.0	5.0	0.6	4.2
07D201K	9.0	15.0	5.0	0.6	4.1
07D181K	9.0	15.0	5.0	0.6	4.1
07D151K	9.0	15.0	5.0	0.6	4.8
07D121K	9.0	15.0	5.0	0.6	4.5
07D101K	9.0	15.0	5.0	0.6	4.3
07D820K	9.0	15.0	5.0	0.6	4.1
07D680K	9.0	15.0	5.0	0.6	4.5
07D560K	9.0	15.0	5.0	0.6	4.5
07D470K	9.0	15.0	5.0	0.6	4.1
07D390K	9.0	15.0	5.0	0.6	4.1
07D330K	9.0	15.0	5.0	0.6	3.9
07D270K	9.0	15.0	5.0	0.6	3.9
07D220K	9.0	15.0	5.0	0.6	3.8
07D180L	9.0	15.0	5.0	0.6	3.8

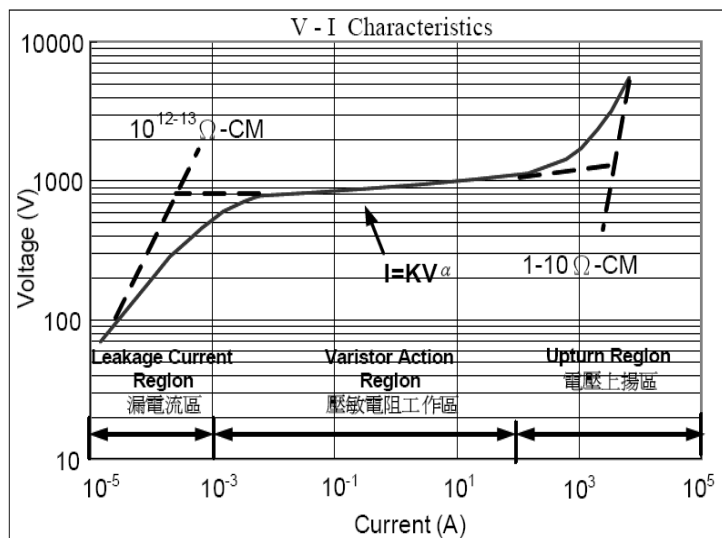
07D Standard & High Surge

Part No.	Maximum Allowable		Energy 10/1000μS		Withstanding Surge Current 8/20μS				Rated Power	Varistor Voltage	Max Clamping	Capacitance
	ACrms	DC	Standard	High Surge	Standard (A)		High Surge(A)					
	(V)	(V)	(J)	(J)	1 TIME	2 TIMES	1 TIME	2 TIMES		(V)	(V)	pF
07D180L	11	14	2.1	2.4	250	120	500	250	0.02	18(15-21)	38	1400
07D220K	14	18	2.4	2.8	250	120	500	250	0.02	22(20-24)	43	1150
07D270K	17	22	2.8	3.0	250	120	500	250	0.02	27(24-30)	53	930
07D330K	20	26	3.5	4	250	120	500	250	0.02	33(30-36)	65	760
07D390K	25	31	4.2	4.6	250	120	500	250	0.02	39(35-43)	77	640
07D470K	30	38	5.0	5.2	250	120	500	250	0.02	47(42-52)	93	530
07D560K	35	45	6.2	6.5	250	120	500	250	0.02	56(50-62)	110	450
07D680K	40	56	7.2	7.5	250	120	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)					
	(V)	(V)	(J)	(J)	1 TIME	2 TIMES	1 TIME	2 TIMES		(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(180-220)	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

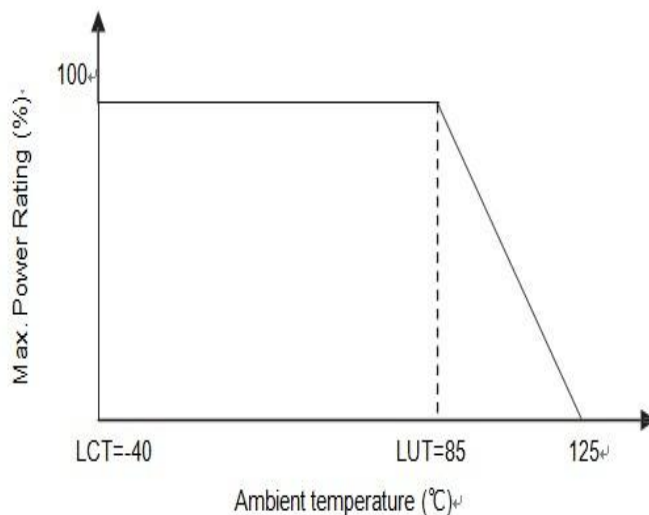
Approval Standard And File Number

Certified Model No.	 UL1449 3rd & CUL E317616	 IEC-60950-1 & Annex Q 40028836	 CSA & cUL E317616
07D180L	YES	YES	YES
07D220K	YES	YES	YES
07D270K	YES	YES	YES
07D330K	YES	YES	YES
07D390K	YES	YES	YES
07D470K	YES	YES	YES
07D560K	YES	YES	YES
07D680K	YES	YES	YES
07D820K	YES	YES	YES
07D101K	YES	YES	YES
07D121K	YES	YES	YES
07D151K	YES	YES	YES
07D181K	YES	YES	YES
07D201K	YES	YES	YES
07D221K	YES	YES	YES
07D241K	YES	YES	YES
07D271K	YES	YES	YES
07D301K	YES	YES	YES
07D331K	YES	YES	YES
07D361K	YES	YES	YES
07D391K	YES	YES	YES
07D431K	YES	YES	YES
07D471K	YES	YES	YES
07D511K	YES	YES	YES
07D561K	YES	YES	YES
07D621K	YES		YES
07D681K	YES		YES
07D751K			
07D821K			

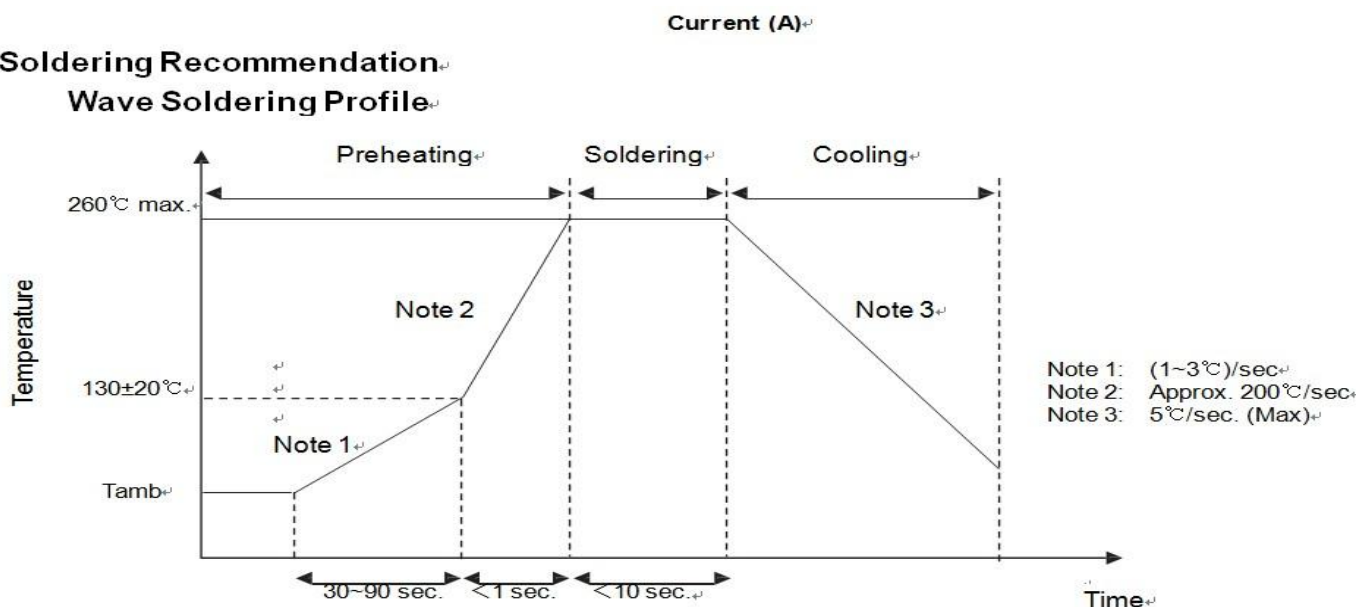
VARISTOR V - I CHARACTERISTICS



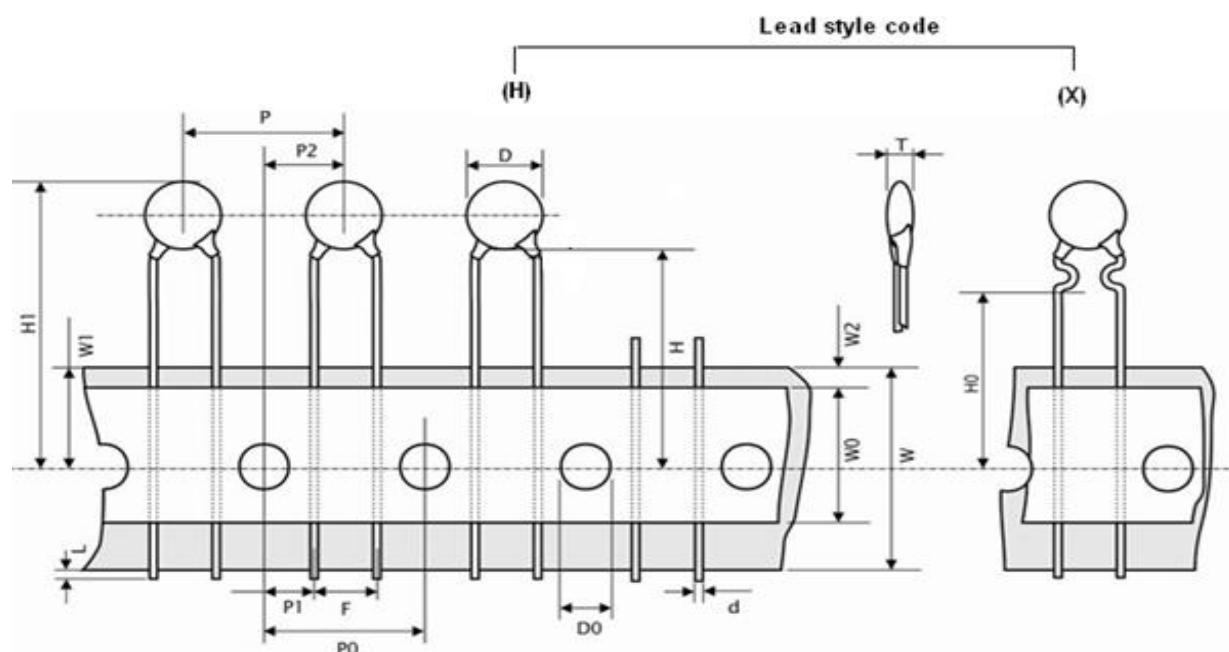
Power Derating Curve



Soldering Recommendation Wave Soldering Profile



Dimension - Ammo TB & Reel TR Series



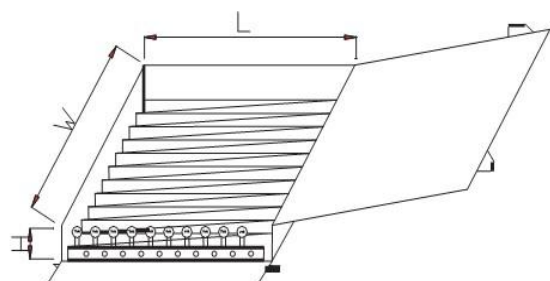
Unit: mm

Symbol	P	P0	P1	P2	F	W	W0	W1
07D	12.7±1.0	12.7±0.3	3.85±0.7	6.35±1.3	5.0±0.8	18.0±1.0	12.5max.	9.0±0.5

Symbol	W2	H	H0	H1	△h	L	D0	d
07D	3.0max.	20.0±2.0	16.0±1.0	32.25max.	0±0.2	1.0max.	4.0±0.2	0.6±0.05

Packing Specifications Ammo & Reel Packing Dimension

Ammo & Reel Box

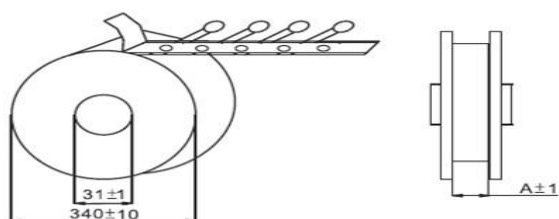


Symbol Ammo

Series	W±5	L±5	H±5
05D-10D	348	340	45
14D-20D	348	340	50

Symbol Reel

Series	05D	07D	10D	14D	20D
A	46	46	46	55	55

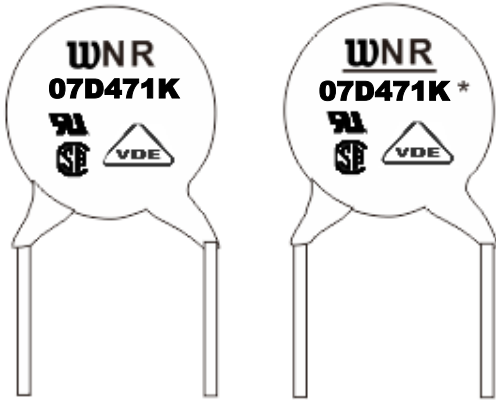


(Unit: mm)

Unit:Pcs

Dimension	Part No.	Ammo / TB		Reel / TR	
		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

Marking & DIMENSIONS



Trademark :

WNR (Welson Varistor)

Part No. :

07D180L-112K

621K-182K No VDE

CUL / VDE

Standard for Safety:

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

Reliability Test

Mechanical Ratings

Test Parameter	Test Condition / Description			Performance
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 1.5mm 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 $\Delta V_b/V_b\% \leq \pm 5\%$
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. There after the change of Vb and mechanical damage shall be examined.			No visible damage $\Delta V_b/V_b\% \leq \pm 5\%$

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.				$\triangle Vb/Vb\% \leq \pm 10\%$
High Temperature Storage	In a drying oven without load. Ambient temp : 125±2℃ ; period : 1000±24hours				$\triangle Vb/Vb\% \leq \pm 5\%$
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 Vb and mechanical damage shall be examined. Ambient condition : 40±2℃ , 90 to 95%R.H. ; period : 1000±24 hours				$\triangle Vb/Vb\% \leq \pm 10\%$
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 Vb and mechanical damage shall be examined after 2 hours.	Step	Temp ^o C	Period	No visible damage $\triangle Vb/Vb\% \leq \pm 10\%$
		1	-40±3 ^o C	30 min.	
		2	Room Temp	15 min.	
		3	85±2 ^o 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 $\triangle Vb/Vb\% \leq \pm 10\%$
Voltage Proof	Voltage : 2500VAC Leakage Current≤0.5mA Time : 60 Seconds				No Breakdown