



**DONGGUAN NANJING ELECTRONICS LTD.,**  
**VDR Varistor ALL SERIES**  
**METAL OXIDE VARISTOR**

**FEATURES**

- \* Wide operating voltage (V1mA) range from 18V to 1800V.
- \* Fast responding to transient over-voltage.
- \* Large absorbing transient energy capability.
- \* Low clamping ratio and no follow-on current.
- \* Meets MSL level 1, per J-STD-020 ISO9001-2018
- \* Safety number UL E317616

**APPLICATION**

- \* 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.

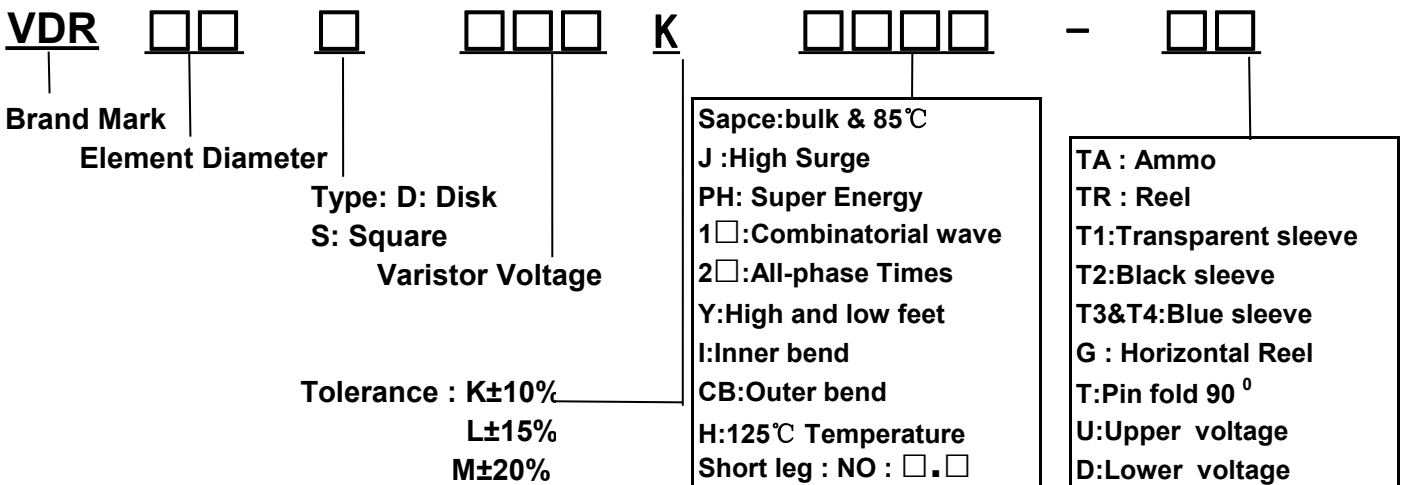
**General Characteristics Definition**

- \* Operating Temperature: (-40 °C ~+85 °C ) & ( -40 °C ~+125 °C )
- \* Storage Temperature: (-40 °C ~ +125 °C~ ) & ( -40 °C ~+150 °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

**PART NUMBER CODE**



# VDR Varistor ALL SERIES

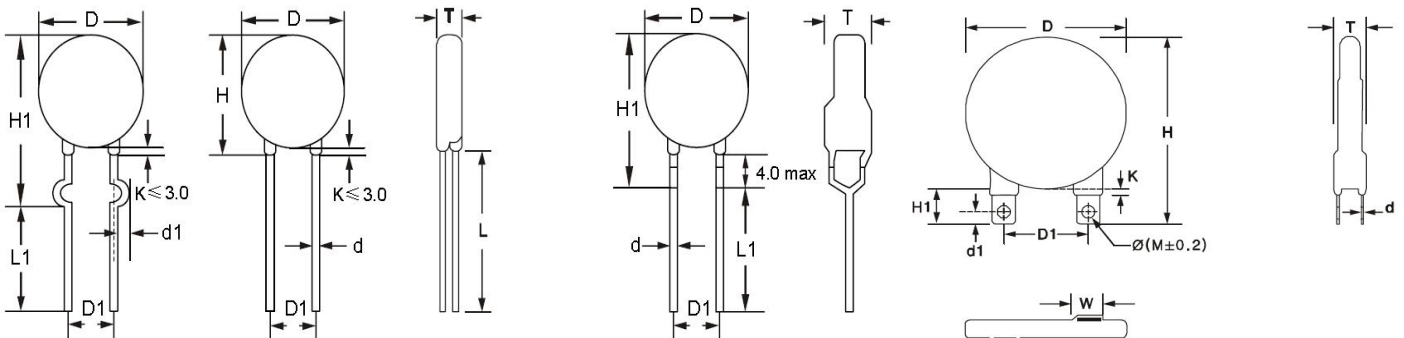
## ELECTRICAL CHARACTERISTIC

Part Number		Maximum Allowable Voltage		Varistor Voltage	Maximum Clamping Voltage		Withstanding Surge Current		Energy 10/1000 $\mu$ S		Rated Power	Typical Capacitance (Reference)
Standard	High Surge	AC (V)	DC (V)	V1mA(V)	IP(A)	VC(V)	I(A) Standard	I(A) High Surge	(J) Standard	(J) High Surge	(W)	@1KHzPF
32D201K	32D201KJ	130	170	200(185~225)	200	340	25000	30000	250	275	1.6	5200
32D221K	32D221KJ	140	180	220(198~242)	200	360	25000	30000	270	297	1.6	5150
32D241K	32D241KJ	150	200	240(216~264)	200	395	25000	30000	290	319	1.6	5100
32D271K	32D271KJ	175	225	270(243~297)	200	455	25000	30000	300	330	1.6	4800
32D301K	32D301KJ	190	250	300(270~330)	200	505	25000	30000	330	363	1.6	4550
32D331K	32D331KJ	210	275	330(297~363)	200	550	25000	30000	360	396	1.6	4300
32D361K	32D361KJ	230	300	360(324~396)	200	595	25000	30000	380	418	1.6	3900
32D391K	32D391KJ	250	320	390(351~429)	200	650	25000	30000	400	440	1.6	3200
32D431K	32D431KJ	275	350	430(387~473)	200	710	25000	30000	430	473	1.6	3100
32D471K	32D471KJ	300	385	470(423~517)	200	775	25000	30000	460	506	1.6	2800
32D511K	32D511KJ	320	415	510(459~561)	200	845	25000	30000	510	561	1.6	2700
32D561K	32D561KJ	350	460	560(504~616)	200	920	25000	30000	540	594	1.6	2550
32D621K	32D621KJ	385	505	620(558~682)	200	1025	25000	30000	570	627	1.6	2400
32D681K	32D681KJ	420	560	680(612~748)	200	1120	25000	30000	600	660	1.6	2200
32D751K	32D751KJ	460	615	750(675~825)	200	1240	25000	30000	620	682	1.6	2000
32D781K	32D781KJ	485	640	780(702~858)	200	1290	25000	30000	660	726	1.6	1900
32D821K	32D821KJ	510	670	820(738~902)	200	1355	25000	30000	700	770	1.6	1800
32D911K	32D911KJ	550	745	910(819~1001)	200	1500	25000	30000	750	825	1.6	1300
32D102K	32D102KJ	625	825	1000(900~1100)	200	1650	25000	30000	780	858	1.6	1200
32D112K	32D112KJ	680	895	1100(990~1210)	200	1815	25000	30000	810	891	1.6	1000
32D122K	32D122KJ	750	990	1200(1080~1320)	200	1980	25000	30000	910	1001	1.6	920
32D142K	32D142KJ	880	1140	1400(1260~1540)	200	2310	25000	30000	960	1056	1.6	800
32D162K	32D162KJ	1000	1280	1600(1400~1760)	200	2640	25000	30000	1020	1122	1.6	700
32D182K	32D182KJ	1100	1465	1800(1620~1980)	200	2970	25000	30000	1080	1188	1.6	600

1. 32D201K-32D182K UL+CUL Security Certification

No: E317616

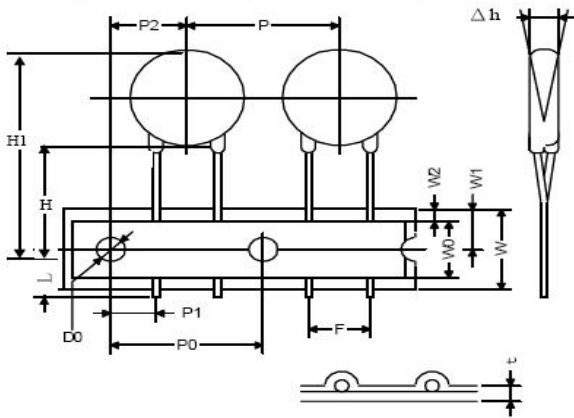
2. 32D The standard line diameter is 1.2 mm and the foot distance is 20 mm.



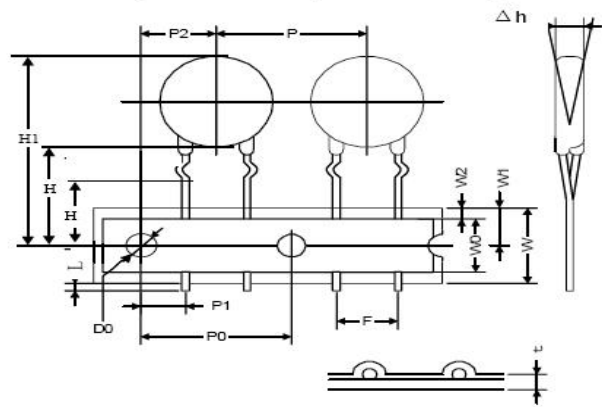
# VDR Varistor ALL SERIES

Packing details								
规格	批号	型号	单位	每袋数量	小箱装数量	大箱包装数量		
05D	全部	180L~751K	pcs	1000	*10袋	10000	2小箱	2000
07D	全部	180L~821K	pcs	1000	*10袋	10000	2小箱	20000
10D	全部	180L~112K	pcs	500	*10袋	5000	2小箱	10000
14D	全部	180L~182K	pcs	500	*10袋	5000	2小箱	10000
20D	全部	180L~821K	pcs	250	*10袋	2500	2小箱	5000
25D	全部	820K~182K	pcs	100	*5袋	500	2小箱	1000
32D	全部	201K~182K	pcs	100	*5袋	500	2小箱	1000
34S	全部	201K~182K	pcs		1小箱	16	5小箱	80
40D	全部	201K~182K	pcs		1小箱	16	5小箱	80
05D-G	全部	180L~751K	pcs		1小箱	1000	20小箱	20000
07D-G	全部	180L~821K	pcs		1小箱	1000	16小箱	16000
10D-G	全部	180L~112K	pcs		1小箱	1000	12小箱	12000

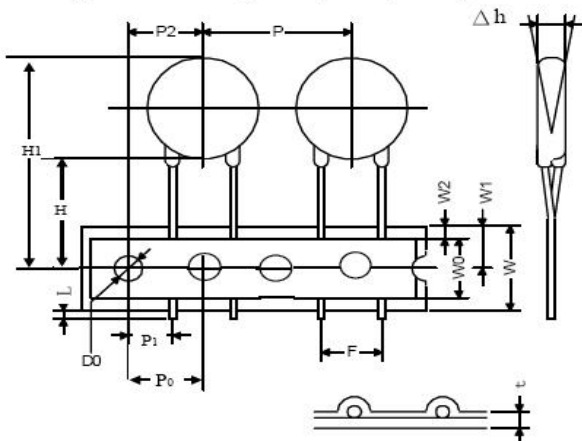
Straight Leads (5D,7D,10D)



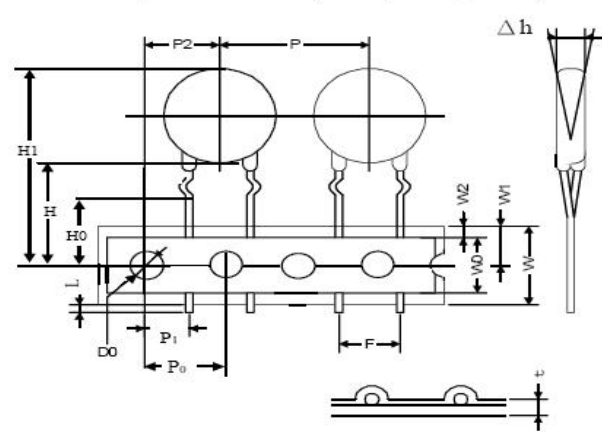
Crimped Leads (5D,7D,10D)



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



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



**Quantities Per Packaging**

包装数量  
Unit: pcs

Part No.	Reel		Ammo		
	Box	Carton	Box	Carton	
5D	8R0M-391K	2000	16000	2000	10000
	431K-751K			1500	7500
7D	8R0M-391K	2000	16000	2000	10000
	431K-821K			1500	7500
10D	ALL	500	3500	500	5000
14D	120M-471K	500	3500	500	5000
	511K-182K	400	2800	500	5000
20D	180L-471K	400	2800	400	2800
	511K-182K	300	2100	300	2100

# VDR Varistor ALL SERIES

## Reliability Test

### Mechanical Ratings

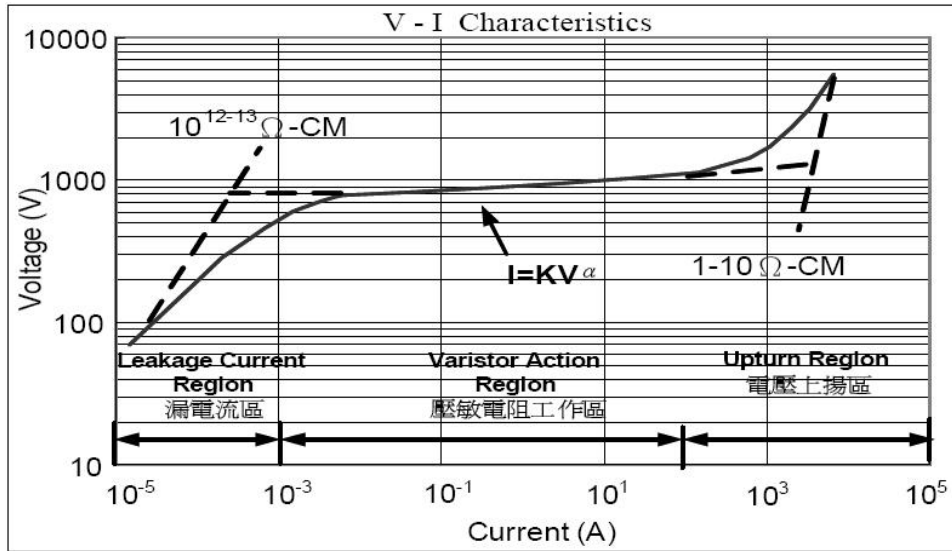
Test Parameter	Test Condition / Description		Performance Requirements	
Terminal Pull Strength	After gradually applying the load specified below and keeping the unit fixed for ten seconds, the terminal shall be visually examined for any damage.	Diameter	Loading	No visible damage
		0.6mm	1.0 Kg	
		0.8mm	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 1.5mm 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 $\Delta VB/VB\% \leq \pm 5\%$	
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 $\Delta VB/VB\% \leq \pm 5\%$	

### 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°C ; Period : 1000±24hours.		$\Delta VB/VB\% \leq \pm 10\%$	
High Temperature Storage	In a drying oven without load. Ambient temp : 125±2°C ; period : 1000±24hours		$\Delta VB/VB\% \leq \pm 5\%$	
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°C , 90 to 95%R.H. ; period : 1000±24 hours		$\Delta VB/VB\% \leq \pm 10\%$	
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.	Temp°C	Period	No visible damage $\Delta VB/VB\% \leq \pm 10\%$
		-40±3°C	30 min.	
		Room Temp	15 min.	
		85±2°C	30 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 $\Delta VB/VB\% \leq \pm 10\%$	
Service temperature range	-40°C ~ + 85°C(+125°C)		No visible damage $\Delta VB/VB\% \leq \pm 10\%$	
Storage temperature range	-40°C ~ +125°C (+150°C)		No visible damage $\Delta VB/VB\% \leq \pm 10\%$	
Voltage Proof	Voltage : 2500VAC Leakage Current ≤ 0.5mA Time : 60 Seconds		No Breakdown	

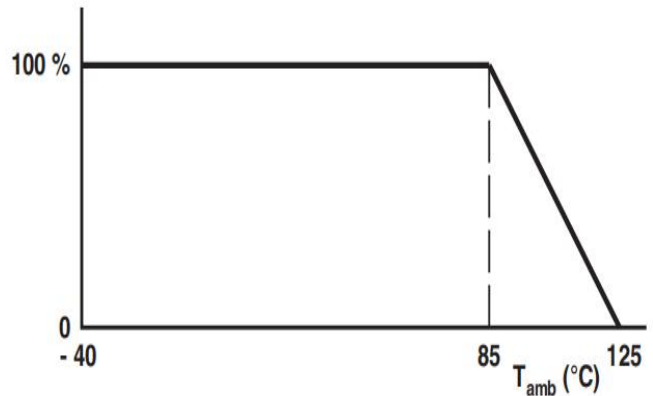
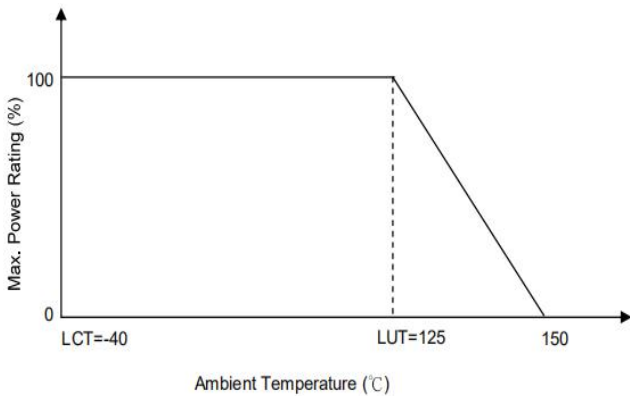
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The maximum voltage between two terminals with the specification standard impulse current.



When operating temperature exceeds 125, the power, the Max. continuous operation Voltage, the Max. Surge Current and the Max. Energy should be derated as below figure, the derated coefficient is -4%

Maximum Voltage  
 Maximum Dissipation  
 Maximum Energy  
 Maximum Transient Current



## Wave Soldering Profile

