Aillen®
EXPERT IN PASSIVE PARTS

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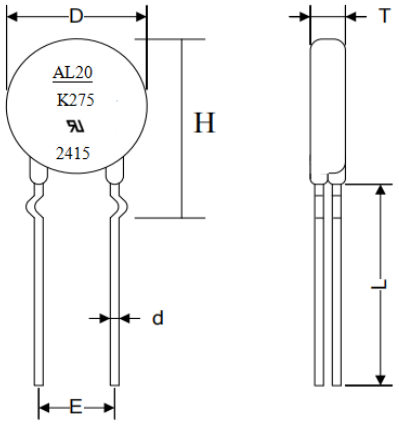
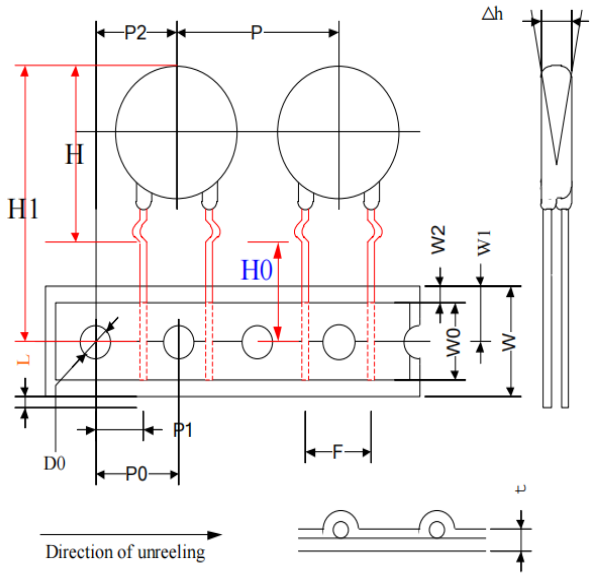
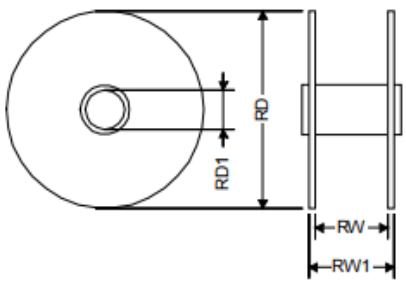
Subject	Aillen Surge Absorber	Date	2024/5/13
Part Number	**AL20K275CT7**	**Version**	A

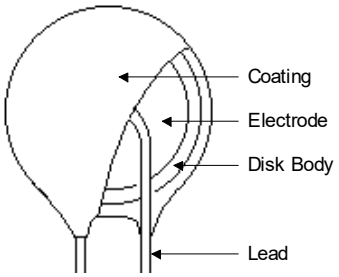
1 Dimension

1.1	Appearance	No visible scarp. Clear marking.		
1.2	Disk Dimension		D	23.0 max.
			H	28.0 max.
			T	5.8 max.
			d	1.0 ± 0.10
			E	10 ± 0.8
			L	20.0min
			unit : mm	
1.3	Marking	Trade Mark , Spec.,UL recognized		
1.4	Taping Dimension		P	25.4 ± 1.0
			P0	12.7 ±0.2
			P1	7.77 ± 0.7
			P2	12.7 ±0.7
			F	10.0 ±0.8
			Δh	4.0 max.
			W	18.0 ± 0.5
			W0	12.0 ±0.8
			W1	9.0 ± 0.5
			W2	3.0 max.
			H	28.0 max.
			H0	16.0 ±1.0
			H1	47.0 max.
			L	2.0 min.
			D0	4.0 ± 0.2
		unit : mm	t	0.6 ± 0.3

2 Packing

2.1	Quantity	**400PCS**		
2.2	Reel Dimension		RD	355 max.
			RD1	30 ± 0.1
			RW	55 ± 1
			RW1	63 max..
			unit : mm	

3 Material List

3.1	Drawing		
3.2	Material Chart RoHs	Item	Composition
		Coating	Epoxy Resin
		Lead	Cp/Cu Wire
		Electrode	Silver
		Disk	Zinc Oxide
		Solder	Sn:100%

4 Electrical Test Method

4.1	Varistor Voltage	The voltage between two terminals with the specified measuring current 1 mA DC applied is call Vb.
4.2	Maximum Allowable Voltage	The recommended maximum sine wave voltage (rms) or the maximum DC voltage can be applied continuously.
4.3	Maximum Clamping Voltage	The maximum voltage between two terminal with the specification standard impulse current (8/20 μsec).
4.4	Rated Wattage	The maximum power that can be applied within the specified ambient temperature.
4.5	Energy	The maximum energy within the varistor voltage change of ±10% when one impulse of 2msec. is applied.
4.6	Withstanding Surge Current	The maximum current within the varistor voltage change of ±10% with the standard impulse current (8/20 μsec) applied one time.
4.7	Varistor Voltage Temp. Coefficient	$\frac{Vb \text{ at } 20^{o}C(68^{o}F) - Vb \text{ at } 70^{o}C(158^{o}F)}{Vb \text{ at } 20^{o}C(68^{o}F)} \times \frac{1}{50} \times 100\ (\%/^{o}C)$

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4.8	Surge Life	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.		
		5 series	K11A to K40A	0.5A (2 msec)
			K50A to K300	20A(8/20μsec)
		7 series	K11A to K40A	1.5A (2 msec)
			K50A to K300	50A(8/20μsec)
		10 series	K11A to K40A	50A(8/20μsec)
			K50A to K510	100A(8/20μsec)
		14 series	K11A to K40A	75A(8/20μsec)
			K50A to K510	150A(8/20μsec)
		20 series	K11A to K40A	100A(8/20μsec)
			K50A to K510	200A(8/20μsec)
5	Mechanical Test Method			
5.1	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.		
		Terminal diameter	Load	
		0.6mm (.024")	0.5kg (1.1 lbs)	
		0.8mm (.031")	1.0kg (2.2 lbs)	
		1.0mm (.039")	2.0kg (4.4 lbs)	
5.2	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.		
		Terminal diameter	Load	
		0.6mm (.024")	0.5kg (1.1 lbs)	
		0.8mm (.031")	1.0kg (2.2 lbs)	
		1.0mm (.039")	2.0kg (4.4 lbs)	
5.3	Vibration	Subjected to simple harmonic motion of 0.75 mm (0.029") amplitude 1.5mm (0.058") maximum total excursion-between limits of 10 ~ 55 Hz. frequency scan shall then be applied for period of two hours in each of three mutually perpendicular direction , Thereafter , the unit shall be visually examined.		
5.4	Solderability	After dipping the terminal to a depth of approximately 3 mm (0.118") from the body in a soldering bath of 260℃ (500°F) for two seconds , the terminal shall be visually examined.		
5.5	Resistance to Soldering Heat	The terminal shall be dipped into a soldering bath having a temperature of 350℃ (660 °F) to a point 3 mm (0.118") from the body of the unit and then be held there for three seconds. The change of Vb and mechanical damage shall be examined.		

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6 Environmental Test Method

6.1	High Temperature Storage	The specimen shall be subjected to 125℃ (257℉) for 1000 hours in a thermostatic bath without load and then stored at room temperature and humidity for one to two hours. Thereafter , The change of Vb Shall be measured.
6.2	Humidity	The specimen shall be subjected to 40℃ (104℉) , 90 to 95 % R.H. for 1000 hours without load and then stored at room temperature and humidity for one to two hours. Thereafter , the change of Vb shall be measured.
6.3	Thermal Shock	The temperature cycle shown below shall be repeated five times and then stored at room temperature and humidity for one to two hours. The change of Vb as well as mechanical damage shall be examined.

Step	Temperature	Period
1	-40℃(-40℉)	30 min.
2	105℃(221℉)	30 min.

6.4	High Temperature Operation	After being continuously applied the Maximum Allowable Voltage at 85℃ (185℉) for 1000 hours , the specimen shall be stored at room temperature and humidity for one to two hours. Thereafter , the change of Vb shall be measured.

7 Electrical Test Requirements

7.1	Varistor voltage	Vb : 387 V~ 473 V		Measuring current : 1 mA DC
7.2	Maximum Allowable Voltage	AC : 275 V rms DC : 350 V		
7.3	Clamping Voltage	710 V max.		Measuring current : 100 A Impulse waveform : 8/20 µsec
7.4	Rated Wattage	1 W		
7.5	Energy	190.0 J		Impulse waveform : 8/20µsec
7.6	Withstanding Surge Current	1 Pulse	6500 A	Impulse waveform : 8/20 µsec 8/20 µsec , interval 5 min.
		2 Pulse	4500 A	
7.7	Varistor Voltage Temp. Coefficient	0 to 0.05% / ℃		Temp. range : +25℃ ~ +85℃
7.8	Surge Life	△Vb / Vb ≦ 10% at2100 A		Impulse waveform : 8/20 µsec 10000 times by interval 10 sec
7.9	Capacitance	930 pF (reference)		Measure frequency : 1 KHz

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8 Mechanical Test Requirement

8.1	Terminal Pull Strength	No outstanding damage	Load : 21.0 kg(4.4 lbs)		
8.2	Terminal Bending Strength	No outstanding damage	Load : 2.0 kg(4.4 lbs)		
8.3	Vibration	No outstanding damage	Frequency : 10 ~55 Hz Amplitude : 0.75 mm		
8.4	Solderability	Almost all the surface should be covered with solder uniformly	Solder Temp. : 260℃ ± 2℃ Immersed time : 3 sec		
8.5	Resistance to soldering heat	△Vb / Vb ≦ ±5% No outstanding damage	Solder Temp. : 350℃ ± 2℃ Immersed time : 3 sec		

9 ıvironmental Test Requiremen

9.1	High Temperature Storage	△Vb / Vb ≦ ±5%	Ambient temp. : 125℃ ± 2℃ Time : 1000 hours		
9.2	Humidity	△Vb / Vb ≦ ±5%	Ambient temp. : 40℃ ± 2℃ Humidity : 90 to 95 % R.H. Time : 1000 hours		
9.3	Thermal Shock	△Vb / Vb ≦ ±5%	Step	Temp.	Period
			1	-40 ℃	30 min.
			2	105 ℃	30 min.
			5 Cycles		
9.4	High Temperature Operation	△Vb / Vb ≦ ±10%	Ambient temp. : 105℃ ± 2℃ Time : 1000 hours		