

# 規格承認書

## SPECIFICATION FOR APPROVAL

Rev1.0	SPECIFICATION	NO.			
PART NO.	ZOV07D180K~911KP/Z	PAGE: 1 OF 7			
		DATE: 2017年10月18日			
UL	E315524	CSA	LR115266	VDE	40005858

### 1.OUTLINE

#### 1.1 DIMENSIONS

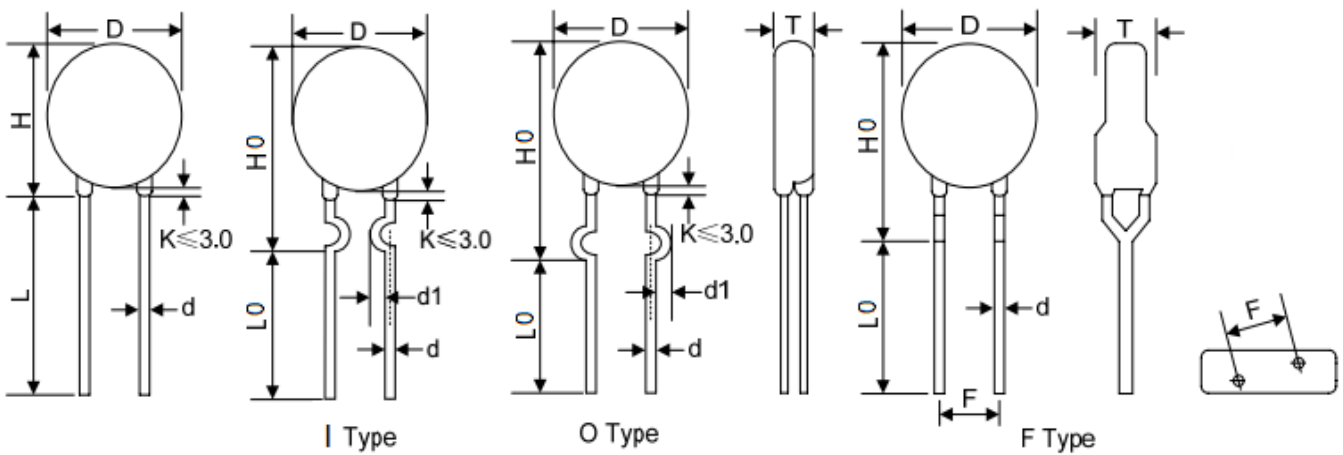


Table1	
Unit:mm	
Symbol	Dimension
D(max.)	9.0
H(max.)	12.0
H0(max.)	13.5
F(±0.8)	5.0
T	Table2
d(±0.05)	0.6
d1(±0.4)	1.2
L(min.)	20.0
L0(min.)	15.0
Epoxy Colour : Green	

Table2			
Unit:mm			
Model	T	Model	T
180K	2.03-3.35	271K	2.57-4.21
220K	2.13-3.48	301K	2.66-4.38
270K	2.23-3.67	331K	2.76-4.56
330K	2.36-3.85	361K	2.86-4.74
390K	2.31-3.66	391K	2.95-4.92
470K	2.44-3.87	431K	3.08-5.16
560K	2.58-4.10	471K	3.21-5.39
680K	2.77-4.38	511K	3.34-5.63
820K	2.18-3.39	561K	3.50-5.93
101K	2.28-3.56	621K	3.69-6.29
121K	2.40-3.76	681K	3.89-6.64
151K	2.18-3.49	751K	4.11-7.06
181K	2.28-3.67	781K	4.21-7.24
201K	2.36-3.82	821K	4.34-7.48
221K	2.41-3.91	911K	4.63-8.01
241K	2.47-4.03		

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### Electrical characteristics

ZOV Part Number	Maximum Allowable Voltage		Varistor voltage V <sub>1.0mA</sub>	IR3 @ μA		Clamping voltage		Maximum Peak Current (8/20μs)		Maximum Ebergt 10/1000μs		Reted Power (w)	Typical Capacitance (Reference) @1KHz (pf)
	Ac.rms	DC				VC	IP	Standard	High Surge	Standard	High Surge		
	(V)	(V)	(V)	(V)	(V)	(A)	(A)	(A)	(A)	(JOULE)	(w)	(pf)	
07D180KP/Z	11	14	18(15-21.6)	50	10	36	2.5	250/125 *2	500/250 *2	0.9	2	0.02	2800
07D220KP/Z	14	18	22(19.5-26)		10	43				1.1	2.4		2300
07D270KP/Z	17	22	27(24-31)		10	53				1.4	3		1800
07D330KP/Z	20	26	33(29.5-36.5)		10	65				1.7	3.5		1500
07D390KP/Z	25	31	39(35-43)		15	77				2.1	4		1300
07D470KP/Z	30	38	47(42-52)		15	93				2.5	5		1100
07D560KP/Z	35	45	56(50-62)		15	110				3.1	6		890
07D680KP/Z	40	56	68(61-75)		15	135				3.6	7		740
07D820KP/Z	50	65	82(74-90)	16	28	135	10	1200/60 0*2	1750/12 000*2	5.5	10	0.25	600
07D101KP/Z	60	85	100(90-110)		28	165				6.5	12		500
07D121KP/Z	75	100	120(108-132)		28	200				7.8	13		420
07D151KP/Z	95	125	150(135-165)		28	250				9.7	15		330
07D181KP/Z	115	150	180(162-198)		38	300				11.7	16		280
07D201KP/Z	130	170	200(185-225)		38	340				13	17		250
07D221KP/Z	140	180	220(198-242)		38	360				14	19		230
07D241KP/Z	150	200	240(216-264)		38	395				15	21		210
07D271KP/Z	175	225	270(243-297)		38	455				18	24		185
07D301KP/Z	190	250	300(270-330)		38	500				20	26		165
07D331KP/Z	210	275	330(297-363)		38	550				23	28		150
07D361KP/Z	230	300	360(324-396)		38	595				24	32		140
07D391KP/Z	250	320	390(351-429)		38	650				26	35		130
07D431KP/Z	275	350	430(387-473)		38	710				28	40		115
07D471KP/Z	300	385	470(423-517)		38	775				29	42		105
07D511KP/Z	320	415	510(459-561)		38	845				31	45		100
07D561KP/Z	350	460	560(504-616)		38	925				35	49		90
07D621KP/Z	385	505	620(558-682)		35	1025				38	55		80
07D681KP/Z	420	560	680(612-748)		35	1120				42	60		75
07D751KP/Z	460	615	750(675-825)		35	1240				45	64		70
07D781KP/Z	485	640	780(702-858)	35	1290	48	69	65					
07D821KP/Z	510	670	820(738-902)	30	1355	52	73	60					
07D911KP/Z	550	745	910(819-1001)	30	1500	57	78	55					

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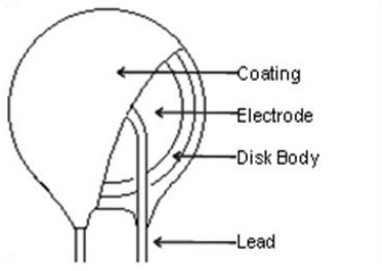
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<b>2.ELETRICAL PARAMETER</b>					
2.1	Max. Allowable Voltage	Reference p2*	At 1.0mA DC		
2.2	Varistor Voltage(Test Time For 30ms)		V0.1mA □ V1mA ■		
2.3	Rated Wattage				
2.4	Max. Clamping Voltage		Test Current Waveform 8/20μs		
2.5	Withstanding Surge Current		Test Current Waveform 8/20μs		
2.6	Max. Energy		Test Current Waveform 10/1000μs		
2.7	Typical Capacitance		@1KHz		
2.8	Leakage Current		At 80% of Varistor Voltage		
2.9	Nonlinear Exponent (α)		$\alpha = \log \frac{I_1^\alpha}{I_2^\alpha} / \log \frac{V_1^\alpha}{V_2^\alpha}$		
2.10	Temperature Coefficient of Varistor Voltage	-0.05≤Tc≤0.05(% °C)	$\left  \frac{V_{1mA@85^\circ C} - V_{1mA@25^\circ C}}{V_{1mA@25^\circ C}} \times \frac{1}{60} \times 100\% (\%/^\circ C) \right $		
			$\left  \frac{V_{1mA@-40^\circ C} - V_{1mA@25^\circ C}}{V_{1mA@25^\circ C}} \times \frac{1}{65} \times 100\% (\%/^\circ C) \right $		
2.11	Impulse Life	≒±10%(V1mA)	Test Current Waveform 8/20μs		

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### 3.MATERIAL LIST

3.1	Drawing				
3.2	Material Chart RoHs	Item	Composition	Manufacturer	
		Coating	Silicone	In line with the UL 94-V0 testing, meet the environmental requirements	
		Lead	Cp/Cu wire	Made in China, meet the environmental requirements	
		Electrode	Silver	Made in China, meet the environmental requirements	
		Disk	Zinc Oxide	Made in China, meet the environmental requirements	
		Solder	Sn:96.5%CU 0.5%Ag3.0%	Made in China, meet the environmental requirements	

### 4.MECHANICAL REQUIREMENTS

4.1	Tensile of Terminations	No Outstanding Damage	1.0Kgf; 10Sec.
4.2	Bending of Terminations	No Outstanding Damage	0.5Kgf; 90° ,3 Times
4.3	Vibration	No Outstanding Damage	Freq:10-55hz;Amp:0.75mm,1Min
4.4	Solderability	Min. 95% of The Terminal Should Be Covered With Solder Uniformly	Solder Temp:245±5℃ Immersed Time: ≤5Sec.
4.5	Resistance of soldering heat	△ V1mA/V1mA ≅ ±5%	Solder Temp: 260±5℃ Immersed Time: 10±1Sec.

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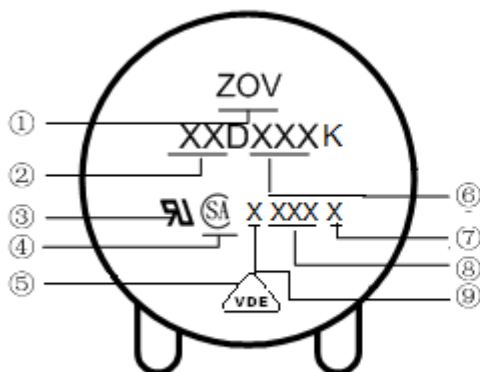
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### 5.ENVIRONMENTAL REQUIREMENTS

5.1	High Temperature Storage	$\Delta V1mA/V1mA$ $\cong \pm 5\%$	Ambient Temp: 125±2°C Duration:1000h		
5.2	Low Temperature Storage	$\Delta V1mA/V1mA$ $\cong \pm 5\%$	Ambient Temp: -40±2°C Duration:1000h		
5.3	High Humidity Storage/Damp Heat	$\Delta V1mA/V1mA$ $\cong \pm 5\%$	Ambient Temp: 40±2°C 90-95% R.H. Duration:1000h		
5.4	Temperature Cycle	$\Delta V1mA/V1mA$ $\cong \pm 5\%$	Step	Temperature (°C)	Period (min)
			1	-40±3	30 ±3
			2	Room Temp	15 ±3
			3	85±3	30 ±3
4	Room Temp	15 ±3			
5.5	High Temperature Load	$\Delta V1mA/V1mA$ $\cong \pm 10\%$	Ambient temp:85±2°C Duration:1000h Load: MAX. Allowable Voltage		
5.6	High Humidity Load	$\Delta V1mA/V1mA$ $\cong \pm 10\%$	Ambient Temp: 40±2°C 90-95%R.H.Duration:1000H Load: MAX. Allowable Voltage		
5.7	Operating Temperature Range	-40°C ~ +85°C			
5.8	Storage Temperature Range	-40°C ~ +125°C			

### 6.MARKING CODE



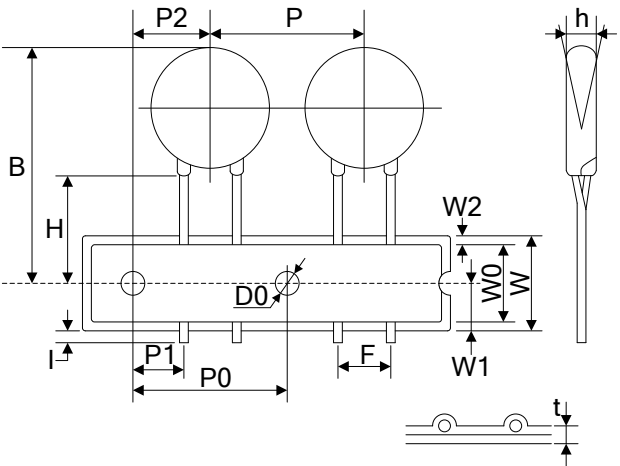
- ① ZOV Logo
- ② Disk Size
- ③ UL Accreditation Logo
- ④ CSA Accreditation Logo
- ⑤ VDE Accreditation Logo
- ⑥ Varistor Voltage
- ⑦ Special standard P: Normal code Z: High surge code
- ⑧ Date Code
- ⑨ c: cp line; copper wire: no print (space)

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### 7. TAPING DIMENSIONS

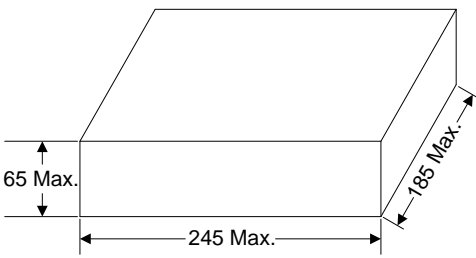
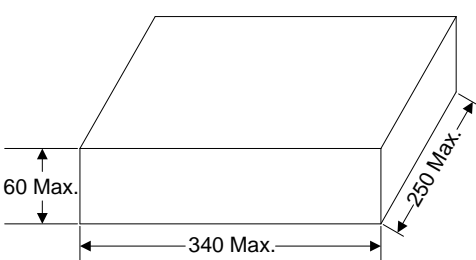
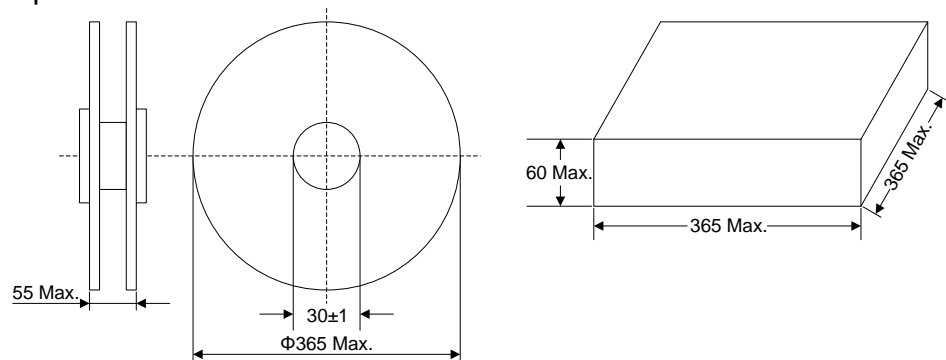
	Symbol	Dimension (mm)
		P
	P0	12.7±0.3
	P1	3.85±0.7
	P2	6.35±1.3
	F	5.0±0.8
	h	0±2
	W	18.0±1.0
	W0	12.0±1.0
	W1	9.0±0.5
	W2	3.0max
	H	20.0±2.0
	I	1.0max
	D0	4.0±0.2
	t	0.6±0.3
	B	32max

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### 8. QUANTITY

Packaging Dimensions (Unit: mm)		Quantity
Bulk		1000pcs/bag 2bags/box (180K~471K)
		1000pcs/bag 2bags/box (561K~911K)
Tape & Box		1500pcs/box (180K~471K)
		1000pcs/box (561K~911K)
Tape & Reel		2000pcs/reel (180K~331K)
		1500pcs/reel (391K~911K)