

# 規格承認書

## SPECIFICATION FOR APPROVAL

Rev1.0	SPECIFICATION	NO.			
PART NO.	ZOV14D180K~182KP/Z	PAGE: 1 OF 7			
		DATE: 2017年10月18日			
UL	E315524	CSA	LR115266	VDE	40005858

### 1.OUTLINE

#### 1.1 DIMENSIONS

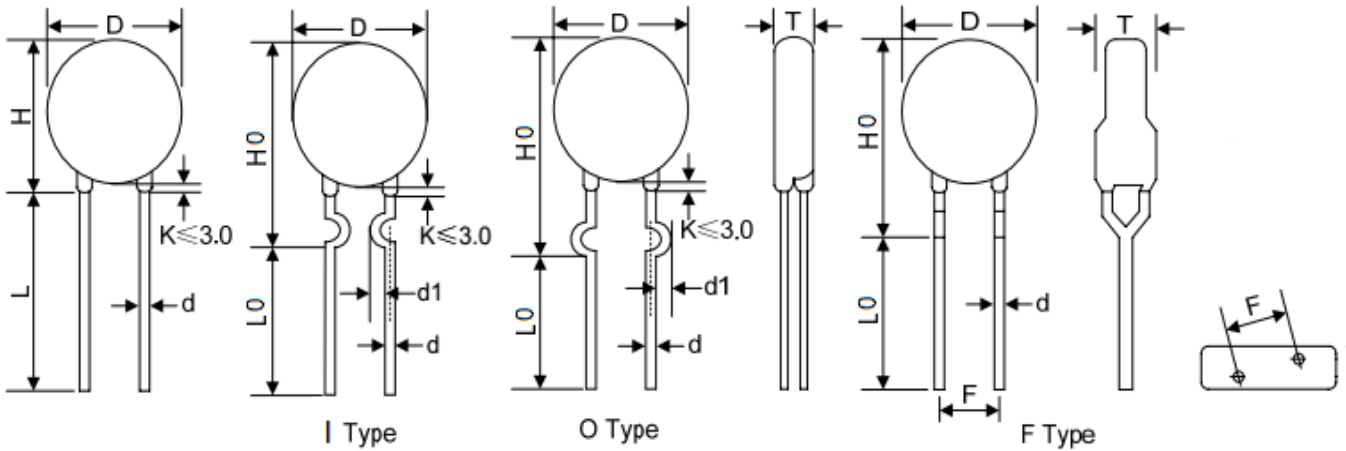


Table1	
Unit:mm	
Symbol	Dimension
D(max.)	16.5
H(max.)	20.0
H0(max.)	21.0
F(±0.8)	7.5
T	Table2
d(±0.05)	0.8
d1(±0.4)	1.4
L(min.)	20.0
L0(min.)	15.0
Epoxy Colour : Green	

Table2			
Unit:mm			
Model	T	Model	T
180K	2.55-3.80	361K	3.38-5.20
220K	2.65-3.94	391K	3.48-5.38
270K	2.76-4.14	431K	3.61-5.63
330K	2.89-4.33	471K	3.74-5.87
390K	2.84-4.11	511K	3.87-6.12
470K	2.96-4.33	561K	4.03-6.42
560K	3.11-4.58	621K	4.23-6.79
680K	3.31-4.87	681K	4.43-7.16
820K	2.64-3.81	751K	4.65-7.23
101K	2.74-3.98	781K	4.75-7.29
121K	2.84-4.18	821K	4.88-7.51
151K	2.69-3.97	911K	5.18-7.55
181K	2.79-4.16	102K	5.47-8.00
201K	2.87-4.32	112K	5.80-8.50
221K	2.92-4.34	122K	6.13-9.00
241K	2.99-4.47	142K	7.11-10.50
271K	3.08-4.65	162K	7.44-11.00
301K	3.18-4.83	182K	8.09-12.00
331K	3.28-5.02		

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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 (V)	DC (V)			VC (V)	IP (A)	Standard (A)	High Surge	Standard (JOULE)	High Surge			
14D180KP/Z	11	14	18(15-21.6)	50	10	36	10	1000/500*2	2000/1000*2	4	7	0.1	11100
14D220KP/Z	14	18	22(19.5-26)		10	43				5	8		9100
14D270KP/Z	17	22	27(24-31)		10	53				6	10		7400
14D330KP/Z	20	26	33(29.5-36.5)		10	65				7.5	12		6100
14D390KP/Z	25	31	39(35-43)		15	77				8.6	13		5100
14D470KP/Z	30	38	47(42-52)		15	93				10	17		4300
14D560KP/Z	35	45	56(50-62)		15	110				11	20		3600
14D680KP/Z	40	56	68(61-75)		15	135				14	24		2900
14D820KP/Z	50	65	82(74-90)	24	28	135	50	4500/2500*2	6000/4500*2	22	27	0.6	2400
14D101KP/Z	60	85	100(90-110)		28	165				28	33		2000
14D121KP/Z	75	100	120(108-132)		28	200				32	40		1700
14D151KP/Z	95	125	150(135-165)		28	250				40	53		1300
14D181KP/Z	115	150	180(162-198)		38	300				50	60		1100
14D201KP/Z	130	170	200(185-225)		38	340				57	70		1000
14D221KP/Z	140	180	220(198-242)		38	360				60	78		900
14D241KP/Z	150	200	240(216-264)		38	395				63	84		830
14D271KP/Z	175	225	270(243-297)		38	455				70	99		740
14D301KP/Z	190	250	300(270-330)		38	500				77	108		670
14D331KP/Z	210	275	330(297-363)		38	550				85	115		610
14D361KP/Z	230	300	360(324-396)		38	595				93	130		560
14D391KP/Z	250	320	390(351-429)		38	650				100	140		510
14D431KP/Z	275	350	430(387-473)		38	710				115	155		460
14D471KP/Z	300	385	470(423-517)		38	775				118	175		430
14D511KP/Z	320	415	510(459-561)		38	845				121	180		390
14D561KP/Z	350	460	560(504-616)		38	925				125	185		360
14D621KP/Z	385	505	620(558-682)		35	1025				128	190		320
14D681KP/Z	420	560	680(612-748)		35	1120				130	200		290
14D751KP/Z	460	615	750(675-825)		35	1240				143	210		270
14D781KP/Z	485	640	780(702-858)		35	1290				148	220		260
14D821KP/Z	510	670	820(738-902)		30	1355				157	235		240
14D911KP/Z	550	745	910(819-1001)		30	1500				175	255		220
14D102KP/Z	625	825	1000(900-1100)		30	1650				190	280		200
14D112KP/Z	680	895	1100(990-1210)	30	1815	213	310	180					
14D122KP/Z	750	990	1200(1080-1320)	30	1980	232	324	160					
14D142KP/Z	880	1140	1400(1260-1540)	30	2310	238	327	150					
14D162KP/Z	1000	1280	1600(1440-1760)	30	2640	243	331	140					
14D182KP/Z	1100	1465	1800(1620-1980)	30	2970	5000	250	335	130				

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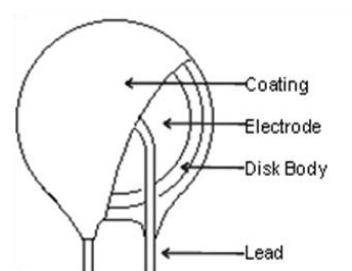
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<b>2.ELETRICAL PARAMETER</b>					
2.1	Max. Allowable Voltage	Reference p2*	At 1.0mA DC		
2.2	Varistor Voltage(Test Time For 30ms)		V0.1mA □ V1mA ■		
2.3	Rated Wattage				
2.4	Max. Clamping Voltage		Test Current Waveform 8/20μs		
2.5	Withstanding Surge 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	Epoxy Resin	Made in China, and 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	$\Delta$ V1mA/V1mA ≅ ±5%	Solder Temp: 260±5℃ Immersed Time: 10±1Sec.

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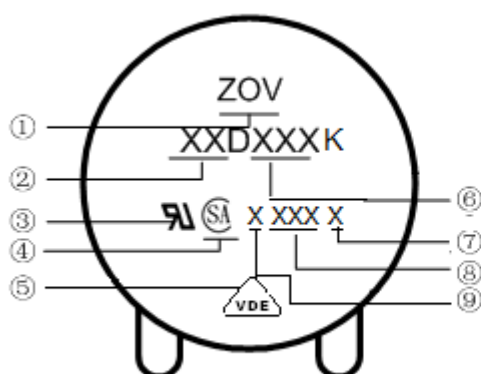
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### 5.ENVIRONMENTAL REQUIREMENTS

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



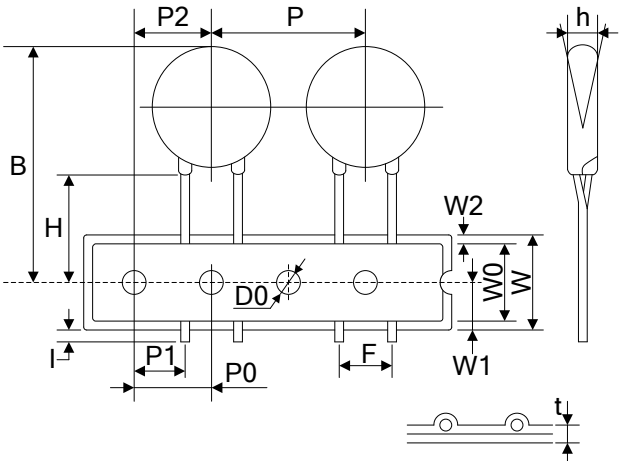
- ① ZOV Logo
- ② Disk Size
- ③ UL Accreditation Logo
- ④ CSA Accreditation Logo
- ⑤ VDE Accreditation Logo
- ⑥ Varistor Voltage
- ⑦ Special standard P: Normal code Z: High surge code
- ⑧ Date Code
- ⑨ c: cp line; copper wire: no print (space)

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### 7. TAPING DIMENSIONS

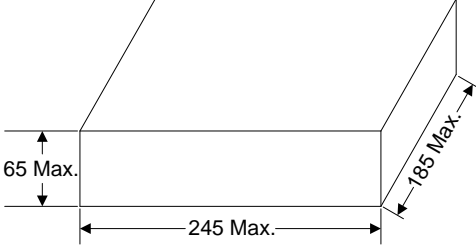

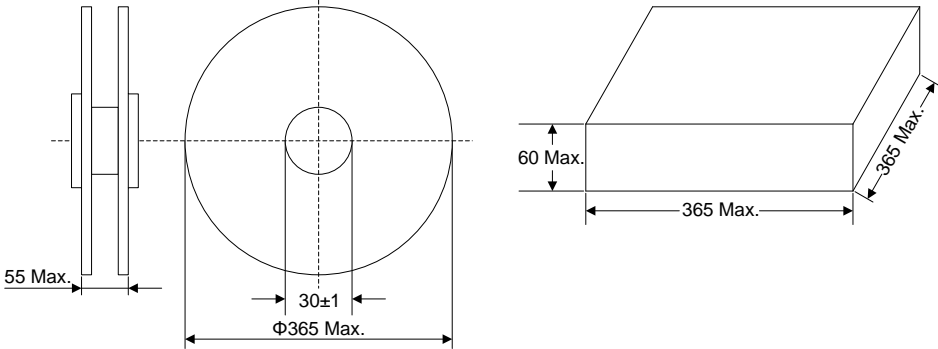
	Symbol	Dimension (mm)
		P
	P0	12.7±1.0
	P1	8.95±0.7
	P2	12.7±1.3
	F	7.5±0.8
	h	0±4
	W	18.0±1.0
	W0	12.0±1.0
	W1	9.0±0.5
	W2	3.0max
	H	20.0±2.0
	I	1.0max
	D0	4.0±0.2
	t	0.6±0.3
	B	40max

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### 8. QUANTITY

Packaging Dimensions (Unit: mm)	Quantity
<b>Bulk</b> 	400pcs/bag 2bags/box (180K~331K)
	300pcs/bag 2bags/box (361K~621K)
	250pcs/bag 2bags/box (681K~112K)
	150pcs/bag 2bags/box (122K~182K)
<b>Tape &amp; Box</b> 	750pcs/box (180K~331K)
	500pcs/box (361K~621K)
	300pcs/box (681K~182K)
<b>Tape &amp; Reel</b> 	750pcs/reel (180K~331K)
	500pcs/reel (361K~621K)
	500pcs/reel (681K~182K)