

# VAR Series Zinc Oxide Varistor

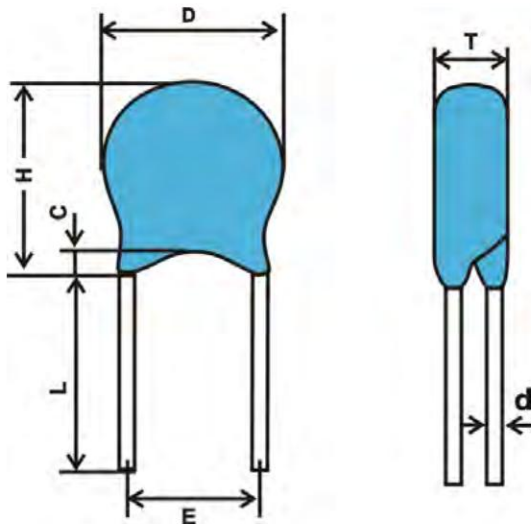
## FEATURES

- ◆ Round Zinc Oxide Varistor, leaded
- ◆ Coating: epoxy resin, flame-retardant material
- ◆ Operating Temperature Range: -40°C~+105°C
- ◆ Wide operating voltage
- ◆ Approvals: CQC, UL, VDE
- ◆ RoHS 2011/65/EU; REACH Compliant
- ◆ High energy & 6KV3KA elements on request

## Thickness(max.)

Code	05D	07D	10D	14D	20D
182K	--	--	--	10.5	11.0
162K	--	--	--	9.5	10.5
152K	--	--	--	9.5	10.0
142K				9.0	9.5
122K				8.0	9.0
112K	--	--	8.0	8.0	8.5
102K	--	--	7.5	7.5	8.5
911K	--	--	7.0	7.0	8.0
821K	--	--	6.5	6.5	7.5
781K	--	--	6.5	6.5	7.5
751K	--	6.0	6.5	6.5	7.5
681K	5.5	5.5	6.0	6.0	7.0
621K	5.5	5.5	6.0	6.0	7.0
561K	5.0	5.0	5.5	5.5	6.5
511K	5.0	5.0	5.5	5.5	6.5
471K	5.0	5.0	5.5	5.5	6.0
431K	4.5	4.5	5.0	5.0	6.0
391K	4.5	4.5	5.0	5.0	6.0
361K	4.5	4.5	5.0	5.0	6.0
331K	4.5	4.5	5.0	5.0	5.5
301K	4.0	4.0	4.5	4.5	5.5
271K	4.0	4.0	4.5	4.5	5.5
241K	4.0	4.0	4.5	4.5	5.5
221K	4.0	4.0	4.5	4.5	5.0
201K	4.0	4.0	4.5	4.5	5.0
181K	4.5	4.5	5.0	5.0	5.5
151K	4.5	4.5	5.0	5.0	5.5
121K	4.5	4.5	5.0	5.0	5.5
101K	4.5	4.5	5.0	5.0	5.5
820K	4.5	4.5	5.0	5.0	5.0
680K	5.0	5.0	5.5	5.5	6.0
560K	4.5	4.5	5.0	5.0	5.5
470K	4.5	4.5	5.0	5.0	5.5
390K	4.5	4.5	5.0	5.0	5.5
330K	4.5	4.5	5.0	5.0	5.5
270K	4.5	4.5	5.0	5.0	5.5
220K	4.5	4.5	4.5	4.5	5.0
180K	4.0	4.5	4.5	4.5	5.0

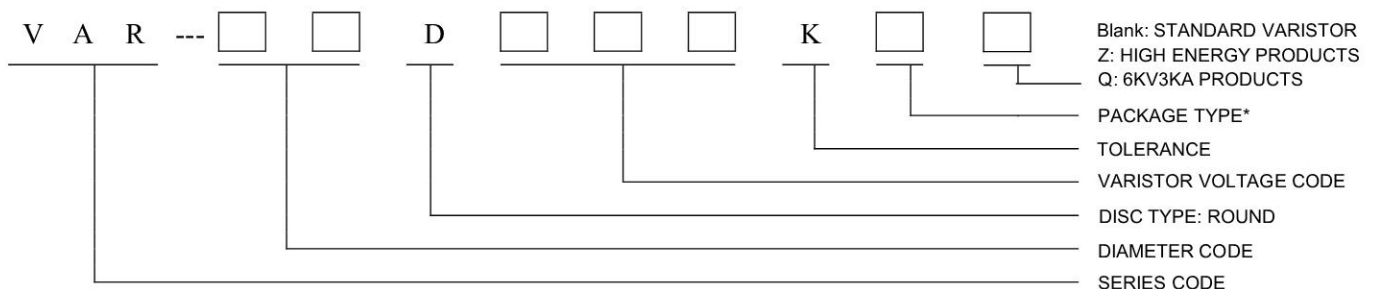
## DIMENSION



L:16mm min

SIZE	D MAX	H MAX	d+/-0.05	E	c max
05D	8	11	0.5	5±0.8	2.5
07D	10	12.5	0.5	5±0.8	2.5
10D	13.5	16	0.7	7.5±0.8	2.5
14D	17.5	20	0.7	7.5±0.8	2.5
20D	24	26.5	1.0	10±1.0	2.5

## HOW TO ORDER



\*Packing Type: Code B means bulk package, standard leg length;  
 Code C means bulk package, cut leg  
 Code A means Ammo Taped in box  
 Code R means Taped & Reel  
 Code L means Long Leads

# VAR Series Zinc Oxide Varistor

## ZINC OXIDE VARISTOR 05D

### SPECIFICATION (for Standard MOVs)

Part No	Maximum allowable Voltage		Maximum Energy (10/1000 $\mu$ s) (J)	Maximum Peak Current (8/20 $\mu$ s)	Rated Power (W)	Varistor Voltage $V_{1.0mA}$ (V)	Clamping Voltage (Max.)		Typical Capacitance (reference) @1KHz (pF)
	AC rms (V)	DC rms (V)					VC (V)	Ip (A)	
VAR05D681K*	420	560	19.4	400 / 200x2	0.1	680(612-748)	1120	5	38
VAR05D621K*	385	505	17.7			620(558-682)	1025		40
VAR05D561K*	350	460	16.8			560(504-616)	920		45
VAR05D511K*	320	415	16.0			510(459-561)	845		50
VAR05D471K*	300	385	15.0			470(423-517)	810		55
VAR05D431K*	275	350	13.0			430(387-473)	745		60
VAR05D391K*	250	320	12.0			390(351-429)	675		65
VAR05D361K*	230	300	10.0			360(324-396)	620		70
VAR05D331K*	210	275	9.5			330(297-363)	570		75
VAR05D301K*	190	250	9.0			300(270-330)	520		85
VAR05D271K*	175	225	8.5			270(243-297)	475		95
VAR05D241K*	150	200	8.0			240(216-264)	415		100
VAR05D221K*	140	180	7.0			220(198-242)	380		110
VAR05D201K*	130	170	6.5			200(180-220)	355		125
VAR05D181K*	115	150	5.9			180(162-198)	320		140
VAR05D151K*	95	125	4.8			150(135-165)	260		165
VAR05D121K*	75	100	4.0			120(108-132)	210		210
VAR05D101K*	60	85	3.0			100(90-110)	175		250
VAR05D820K*	50	65	2.5			82(73.8-90.2)	150		300
VAR05D680K*	40	56	1.6			100 / 50x2	0.01		68(61.2-74.8)
VAR05D560K*	35	45	1.3	56(50.4-61.6)	123			450	
VAR05D470K*	30	38	1.1	47(42.3-51.7)	104			530	
VAR05D390K*	25	31	0.9	39(35.1-42.9)	80			640	
VAR05D330K*	20	26	0.8	33(29.7-36.3)	73			760	
VAR05D270K*	17	22	0.6	27(24.3-29.7)	60			930	
VAR05D220K*	14	18	0.5	22(19.8-24.2)	48			1150	
VAR05D180K*	11	14	0.4	18(16.2-19.8)	40			1400	

#680K—180K Max. Clamping Voltage testing current 1A.

Remark: "\*" mean package type: B= bulk, standard leg; A= Ammo Taped; R=T&R; C=Cut leg; L= Long leads

# VAR Series Zinc Oxide Varistor

## ZINC OXIDE VARISTOR 07D

### SPECIFICATION (for Standard MOVs)

Part No	Maximum allowable Voltage		Maximum Energy (10/1000 $\mu$ s) (J)	Maximum Peak Current (8/20 $\mu$ s)	Rated Power (W)	Varistor Voltage V <sub>1.0mA</sub> (V)	Clamping Voltage (Max.)		Typical Capacitance (reference) @1KHz (pF)
	AC rms (V)	DC rms (V)					VC (V)	I <sub>p</sub> (A)	
VAR07D911K*	550	745	57.0	1200 / 600x2	0.25	910(819-1001)	1500	10	55
VAR07D821K*	510	670	52.0			820(738-902)	1355		60
VAR07D781K*	485	640	48.0			780(702-858)	1290		65
VAR07D751K*	460	615	45.0			750(675-825)	1240		70
VAR07D681K*	420	560	42.0			680(612-748)	1120		75
VAR07D621K*	385	505	38.0			620(558-682)	1025		80
VAR07D561K*	350	460	35.0			560(504-616)	925		90
VAR07D511K*	320	415	31.0			510(459-561)	845		100
VAR07D471K*	300	385	29.0			470(423-517)	775		105
VAR07D431K*	275	350	28.0			430(387-473)	710		115
VAR07D391K*	250	320	26.0			390(351-429)	650		130
VAR07D361K*	230	300	24.0			360(324-396)	595		140
VAR07D331K*	210	275	23.0			330(297-363)	550		150
VAR07D301K*	190	250	20.0			300(270-330)	500		165
VAR07D271K*	175	225	18.0			270(243-297)	455		185
VAR07D241K*	150	200	15.0			240(216-264)	395		210
VAR07D221K*	140	180	14.0			220(198-242)	360		230
VAR07D201K*	130	170	13.0			200(180-220)	340		250
VAR07D181K*	115	150	11.7			180(162-198)	300		280
VAR07D151K*	95	125	9.7			150(135-165)	250		330
VAR07D121K*	75	100	7.8	120(108-132)	200	420			
VAR07D101K*	60	85	6.5	100(90-110)	165	500			
VAR07D820K*	50	65	5.5	82(73.8-90.2)	135	600			
VAR07D680K*	40	56	3.6	250 / 125x2	0.02	68(61.2-74.8)	135	2.5	740
VAR07D560K*	35	45	3.1			56(50.4-61.6)	110		890
VAR07D470K*	30	38	2.5			47(42.3-51.7)	93		1100
VAR07D390K*	25	31	2.1			39(35.1-42.9)	77		1300
VAR07D330K*	20	26	1.7			33(29.7-36.3)	65		1500
VAR07D270K*	17	22	1.4			27(24.3-29.7)	53		1800
VAR07D220K*	14	18	1.1			22(19.8-24.2)	43		2300
VAR07D180K*	11	14	0.9			18(16.2-19.8)	36		2800

#680K—180K Max. Clamping Voltage testing current 2.5A.

Remark: “\*” mean package type: B= bulk, standard leg; A= Ammo Taped; R=T&R; C=Cut leg; L= Long leads

# VAR Series Zinc Oxide Varistor

## ZINC OXIDE VARISTOR 10D

### SPECIFICATION (for Standard MOVs)

Part No	Maximum allowable Voltage		Maximum Energy (10/1000 $\mu$ s) (J)	Maximum Peak Current (8/20 $\mu$ s)	Rated Power (W)	Varistor Voltage $V_{1.0mA}$ (V)	Clamping Voltage (Max.)		Typical Capacitance (reference) @1KHz (pF)
	AC rms (V)	DC rms (V)					$V_c$ (V)	$I_p$ (A)	
VAR10D112K*	680	895	115.0	2500 / 1250x2	0.4	1100(990-1210)	1815	25	90
VAR10D102K*	625	825	102.0			1000(900-1100)	1650		100
VAR10D911K*	550	745	93.0			910(819-1001)	1500		110
VAR10D821K*	510	670	85.0			820(738-902)	1355		120
VAR10D781K*	485	640	80.0			780(702-858)	1290		125
VAR10D751K*	460	615	77.0			750(675-825)	1240		130
VAR10D681K*	420	560	75.0			680(612-748)	1120		150
VAR10D621K*	385	505	72.0			620(558-682)	1025		160
VAR10D561K*	350	460	70.0			560(504-616)	925		180
VAR10D511K*	320	415	69.0			510(459-561)	845		200
VAR10D471K*	300	385	67.0			470(423-517)	775		210
VAR10D431K*	275	350	65.0			430(387-473)	710		230
VAR10D391K*	250	320	60.0			390(351-429)	650		260
VAR10D361K*	230	300	47.0			360(324-396)	595		280
VAR10D331K*	210	275	43.0			330(297-363)	550		300
VAR10D301K*	190	250	40.0			300(270-330)	500		330
VAR10D271K*	175	225	37.0			270(243-297)	455		370
VAR10D241K*	150	200	35.0			240(216-264)	395		420
VAR10D221K*	140	180	32.0			220(198-242)	360		450
VAR10D201K*	130	170	30.0			200(180-220)	340		500
VAR10D181K*	115	150	27.0	180(162-198)	300	560			
VAR10D151K*	95	125	22.0	150(135-165)	250	670			
VAR10D121K*	75	100	18.0	120(108-132)	200	830			
VAR10D101K*	60	85	15.0	100(90-110)	165	1000			
VAR10D820K*	50	65	12.0	82(73.8-90.2)	135	1200			
VAR10D680K*	40	56	8.2	500 / 250x2	0.05	68(61.2-74.8)	135	5	1500
VAR10D560K*	35	45	7.0			56(50.4-61.6)	110		1800
VAR10D470K*	30	38	5.5			47(42.3-51.7)	93		2100
VAR10D390K*	25	31	4.6			39(35.1-42.9)	77		2400
VAR10D330K*	20	26	4.0			33(29.7-36.3)	65		3000
VAR10D270K*	17	22	3.0			27(24.3-29.7)	53		3700
VAR10D220K*	14	18	2.5			22(19.8-24.2)	43		4500
VAR10D180K*	11	14	2.1			18(16.2-19.8)	36		5600

#680K—180K Max. Clamping Voltage testing current 5A.

Remark: "\*" mean package type: B= bulk, standard leg; A= Ammo Taped; R=T&R; C=Cut leg; L= Long leads

# VAR Series Zinc Oxide Varistor

## ZINC OXIDE VARISTOR 14D

### SPECIFICATION (for Standard MOVs)

Part No	Maximum allowable Voltage		Maximum Energy (10/1000 $\mu$ s) (J)	Maximum Peak Current (8/20 $\mu$ s)	Rated Power (W)	Varistor Voltage $V_{1.0mA}$ (V)	Clamping Voltage (Max.)		Typical Capacitance (reference) @1KHz (pF)
	AC rms (V)	DC rms (V)					Vc (V)	Ip (A)	
VAR14D182K*	1100	1465	250	4500 / 2500x2	0.6	1800(1620-1980)	2970	50	130
VAR14D162K*	1000	1280	243			1600(1440-1760)	2640		140
VAR14D152K*	930	1200	240			1500(1350-1650)	2475		145
VAR14D142K*	880	1140	238			1400(1260-1540)	2310		150
VAR14D122K*	750	990	232			1200(1080-1320)	1980		160
VAR14D112K*	680	895	213			1100(990-1210)	1815		180
VAR14D102K*	625	825	190			1000(900-1100)	1650		200
VAR14D911K*	550	745	175			910(819-1001)	1500		220
VAR14D821K*	510	670	157			820(738-902)	1355		240
VAR14D781K*	485	640	148			780(702-858)	1290		260
VAR14D751K*	460	615	143			750(675-825)	1240		270
VAR14D681K*	420	560	130			680(612-748)	1120		290
VAR14D621K*	385	505	128			620(558-682)	1025		320
VAR14D561K*	350	460	125			560(504-616)	925		360
VAR14D511K*	320	415	121			510(459-561)	845		390
VAR14D471K*	300	385	118			470(423-517)	775		430
VAR14D431K*	275	350	115			430(387-473)	710		460
VAR14D391K*	250	320	100			390(351-429)	650		510
VAR14D361K*	230	300	93.0			360(324-396)	595		560
VAR14D331K*	210	275	85.0			330(297-363)	550		610
VAR14D301K*	190	250	77.0			300(270-330)	500		670
VAR14D271K*	175	225	70.0			270(243-297)	455		740
VAR14D241K*	150	200	63.0			240(216-264)	395		830
VAR14D221K*	140	180	60.0			220(198-242)	360		900
VAR14D201K*	130	170	57.0			200(180-220)	340		1000
VAR14D181K*	115	150	50.0			180(162-198)	300		1100
VAR14D151K*	95	125	40.0			150(135-165)	250		1300
VAR14D121K*	75	100	32.0			120(108-132)	200		1700
VAR14D101K*	60	85	28.0			100(90-110)	165		2000
VAR14D820K*	50	65	22.0			82(73.8-90.2)	135		2400
VAR14D680K*	40	56	14.0	68(61.2-74.8)	135	2900			
VAR14D560K*	35	45	11.0	56(50.4-61.6)	110	3600			
VAR14D470K*	30	38	10.0	47(42.3-51.7)	93	4300			
VAR14D390K*	25	31	8.6	39(35.1-42.9)	77	5100			
VAR14D330K*	20	26	7.5	33(29.7-36.3)	65	6100			
VAR14D270K*	17	22	6.0	27(24.3-29.7)	53	7400			
VAR14D220K*	14	18	5.0	22(19.8-24.2)	43	9100			
VAR14D180K*	11	14	4.0	18(16.2-19.8)	36	11100			

#680K—180K Max. Clamping Voltage testing current 10A.

Remark: “\*” mean package type: B= bulk, standard leg; A= Ammo Taped; R=T&R; C=Cut leg; L= Long leads

# VAR Series Zinc Oxide Varistor

## ZINC OXIDE VARISTOR 20D

### SPECIFICATION (for Standard MOVs)

Part No	Maximum allowable Voltage		Maximum Energy (10/1000 $\mu$ s) (J)	Maximum Peak Current (8/20 $\mu$ s)	Rated Power (W)	Varistor Voltage $V_{1.0mA}$ (V)	Clamping Voltage (Max.)		Typical Capacitance (reference) @1KHz (pF)
	AC rms (V)	DC rms (V)					$V_c$ (V)	$I_p$ (A)	
VAR20D182K*	1100	1465	625	6500 / 4500x2	1.0	1800(1620-1980)	2970	100	320
VAR20D162K*	1000	1280	606			1600(1440-1760)	2640		330
VAR20D152K*	930	1200	569			1500(1350-1650)	2475		335
VAR20D142K*	880	1140	532			1400(1260-1540)	2310		340
VAR20D122K*	750	990	408			1200(1080-1320)	1980		350
VAR20D112K*	680	895	383			1100(990-1210)	1815		360
VAR20D102K*	625	825	342			1000(900-1100)	1650		400
VAR20D911K*	550	745	310			910(819-1001)	1500		440
VAR20D821K*	510	670	282			820(738-902)	1355		500
VAR20D781K*	485	640	265			780(702-858)	1290		510
VAR20D751K*	460	615	255			750(675-825)	1240		530
VAR20D681K*	420	560	230			680(612-748)	1120		600
VAR20D621K*	385	505	224			620(558-682)	1025		650
VAR20D561K*	350	460	215			560(504-616)	925		710
VAR20D511K*	320	415	210			510(459-561)	845		780
VAR20D471K*	300	385	204			470(423-517)	775		850
VAR20D431K*	275	350	190			430(387-473)	710		930
VAR20D391K*	250	320	180			390(351-429)	650		1000
VAR20D361K*	230	300	163			360(324-396)	595		1100
VAR20D331K*	210	275	150			330(297-363)	550		1200
VAR20D301K*	190	250	136			300(270-330)	500		1300
VAR20D271K*	175	225	127			270(243-297)	455		1500
VAR20D241K*	150	200	108			240(216-264)	395		1650
VAR20D221K*	140	180	100			220(198-242)	360		1800
VAR20D201K*	130	170	95			200(180-220)	340		2000
VAR20D181K*	115	150	85			180(162-198)	300		2200
VAR20D151K*	95	125	70			150(135-165)	250		2700
VAR20D121K*	75	100	55			120(108-132)	200		3300
VAR20D101K*	60	85	50			100(90-110)	165		4000
VAR20D820K*	50	65	45			82(73.8-90.2)	135		4900
VAR20D680K*	40	56	41			68(61.2-74.8)	135		5800
VAR20D560K*	35	45	38			56(50.4-61.6)	110		6500
VAR20D470K*	30	38	30			47(42.3-51.7)	93		7400
VAR20D390K*	25	31	26	39(35.1-42.9)	77	8500			
VAR20D330K*	20	26	23	33(29.7-36.3)	65	11500			
VAR20D270K*	17	22	16	27(24.3-29.7)	53	13000			
VAR20D220K*	14	18	14	22(19.8-24.2)	43	18500			
VAR20D180K*	11	14	11	18(16.2-19.8)	36	28500			

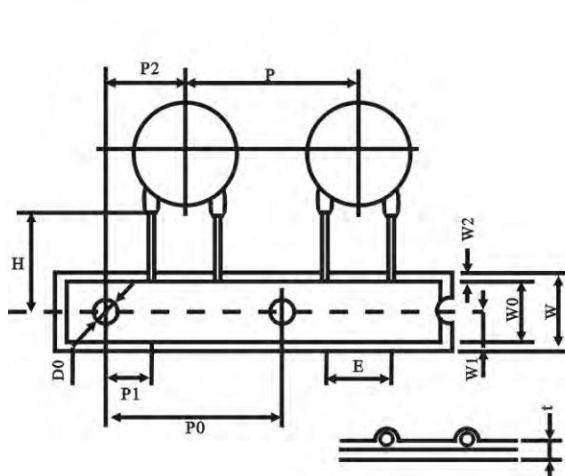
#680K—180K Max. Clamping Voltage testing current 20A.

Remark: “\*” mean package type: B= bulk, standard leg; A= Ammo Taped; R=T&R; C=Cut leg; L= Long leads

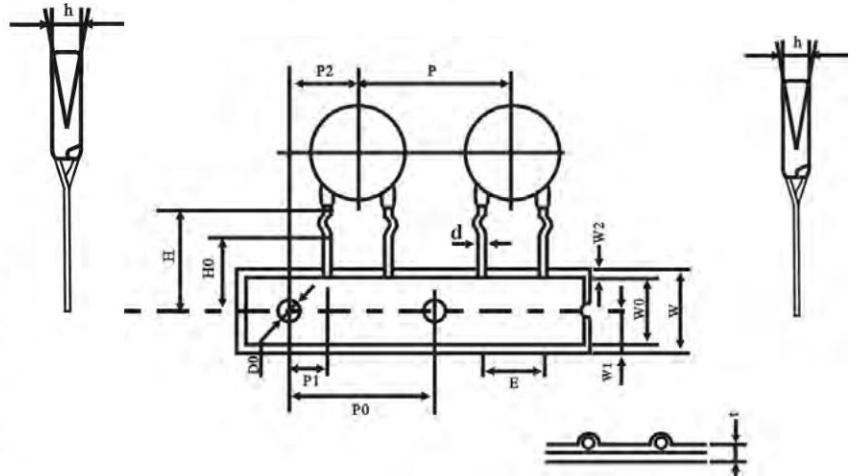
# VAR Series Zinc Oxide Varistor

## TAPING SPECIFICATION

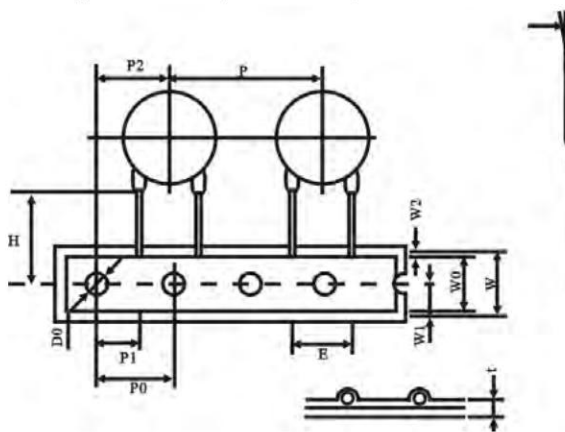
### Straight Leads (05D, 07D)



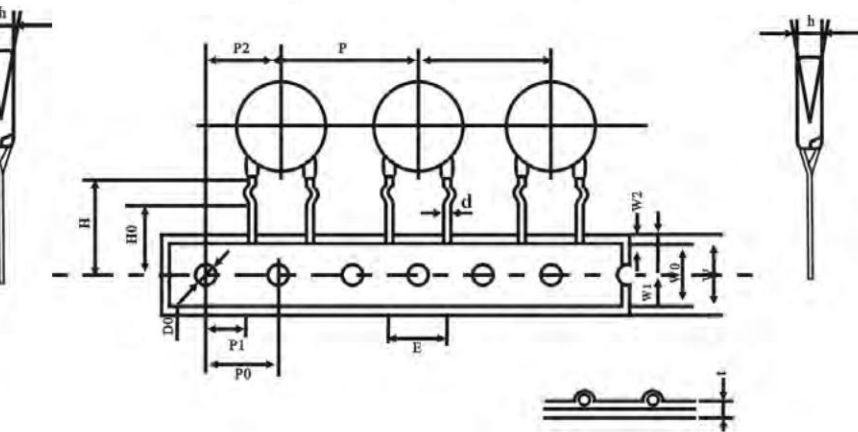
### Crimped Leads (05D, 07D)



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



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



# VAR Series Zinc Oxide Varistor

## TAPING SPECIFICATION

Symbol	Parameter	05D	07D	10D	14D
<b>P</b>	Pitch Component	12.7±1.0	12.7±1.0	25.4±1.0	25.4±1.0
<b>P0</b>	Feed Hold	12.7±0.3	12.7±0.3	12.7±1.0	12.7±1.0
<b>P1</b>	Feed Hold Center to Lead	3.85±0.7	3.85±0.7	8.95±1.5	8.95±1.5
<b>P2</b>	Hold Center to Component Center	6.35±1.3	6.35±1.3	12.7±1.5	12.7±1.5
<b>E</b>	Lead to Lead Distance	5.0±0.8	5.0±0.8	7.5±0.8	7.5±0.8
<b>W</b>	Tape Width	18.0+1.5/-1.0	18.0+1.5/-1.0	18.0+1.0/-0.5	18.0+1.0/-0.5
<b>W0</b>	Hold Down Tape Width	10±0.5	10±0.5	10±0.5	10±0.5
<b>W1</b>	Hold Position	9.0+0.75/-0.5	9.0+0.75/-0.5	9.0±0.75	9.0±0.75
<b>W2</b>	Hold Down Tape Position	3.0max	3.0max	3.0max	3.0max
<b>H</b>	Height from Tape Center to Component	20.0±2.0	20.0±2.0	20.0±2.0	20.0±2.0
<b>H0</b>	Height from Tape Center to Component	16.0±1.0	16.0±1.0	16.0±1.0	16.0±1.0
<b>t</b>	Total Tape Thickness	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3
<b>Δh</b>	Component Alignment	0±2.0	0±2.0	0±2.0	0±4.0
<b>D0</b>	Feed Hold Diameter	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2
Unit : mm					

## Bulk Package SPQ:

Diameter Code:	Quantity per bag
VAR-05D, VAR-07D	1000 pcs
VAR-10D	500pcs
VAR-14D, 20D	250pcs