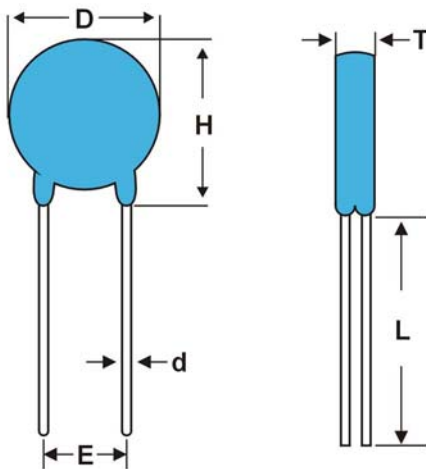


TSV



DIMENSION



L: 16mm min

SIZE	D MAX	H MAX	d	E
D05	7.5	10.5	0.6	5±0.8
D07	9	12 14	0.6	5±0.8 5.5±0.8
D10	14	17 19	0.8	7.5±0.8 8±0.8
D14	17	20 22	0.8	7.5±0.8 8±0.8 15±1.0
D20	25	28 30	0.8 1.0	7.5±0.8 8±0.8 15±1.0

T Thickness(max.)

Part Code	D05	D07	D10	D14	D20
182K	--	--	--	14.4	14.8
152K	--	--	--	12.0	12.4
112K	--	--	9.7	9.7	10.1
102K	--	--	9.1	9.1	9.5
911K	--	--	8.6	8.6	9.0
821K	--	--	8.1	8.1	8.5
781K	--	--	7.9	7.9	8.3
751K	--	--	7.8	7.8	8.2
681K	--	7.3	7.4	7.4	7.8
621K	--	7.1	7.1	7.1	7.5
561K	--	6.4	6.5	6.5	7.0
511K	--	6.4	6.5	6.5	7.0
471K	6.0	6.0	6.5	6.5	7.0
431K	5.7	5.7	6.2	6.2	6.7
391K	5.4	5.4	5.8	5.8	6.4
361K	5.2	5.2	5.7	5.7	6.2
331K	5.1	5.1	5.6	5.6	6.0
301K	5.0	5.0	5.3	5.3	5.7
271K	4.9	4.9	5.2	5.2	5.6
241K	4.6	4.6	5.0	5.0	5.4
221K	4.5	4.5	4.9	4.9	5.3
201K	4.4	4.4	4.8	4.8	5.2
181K	4.3	4.3	4.8	4.8	5.2
151K	4.8	4.8	5.2	5.2	5.6
121K	4.5	4.5	4.9	4.7	5.3
101K	4.3	4.3	4.7	4.9	5.1
820K	4.1	4.1	4.5	4.5	4.9
680K	4.5	5.2	5.3	5.3	5.8
560K	4.5	5.0	5.1	5.1	5.7
470K	4.5	4.9	5.0	5.0	5.6
390K	4.5	4.8	4.9	4.9	5.5
330K	4.5	4.9	5.0	5.0	--
270K	4.5	4.7	4.8	4.8	--
220K	4.5	4.6	4.7	4.7	--
180L	4.5	4.5	4.6	4.6	--

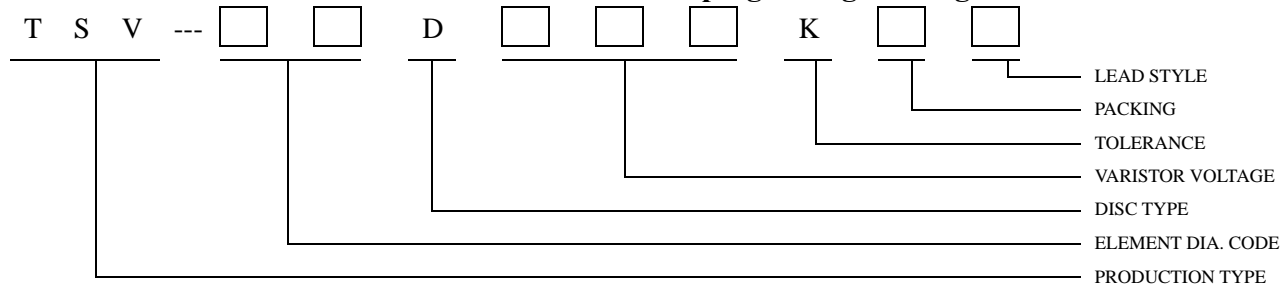
TSV

ZINC OXIDE VARISTOR 5D

SPECIFICATION

Part No	Maximum allowable Voltage		Maximum Energy		Withstanding Surge Current		Rated Wattage (W)	Varistor Voltage V1mA (V)	Maximum Clamping Voltage		Typical Capacitance (reference) @1KHz (pF)
	ACrms (V)	DC (V)	(10/1000us) (J)	(2ms) (J)	1 time	2 times			Vc (V)	Ip (A)	
					(A)						
TSV05D471K	300	385	21	15	800	600	0.1	470(423-517)	810	5	55
TSV05D431K	275	350	20	13.5				430(387-473)	745		60
TSV05D391K	250	320	17	12				390(351-429)	675		65
TSV05D361K	230	300	16	11				360(324-396)	620		70
TSV05D331K	210	275	13	9.5				330(297-363)	600		75
TSV05D301K	190	250	12	8.8				300(270-330)	505		85
TSV05D271K	175	225	11	8				270(243-297)	475		95
TSV05D241K	150	200	10.5	7.5				240(216-264)	415		100
TSV05D221K	140	180	9	6.5				220(198-242)	380		110
TSV05D201K	130	170	8.5	6.0				200(185-225)	355		125
TSV05D181K	115	150	7.5	5.2				180(162-198)	325		140
TSV05D151K	95	125	6.5	4.5				150(135-165)	265		165
TSV05D121K	75	100	5.5	3.5				120(108-132)	210		210
TSV05D101K	60	85	4.5	3.0				100(90-110)	175		250
TSV05D820K	50	65	3.5	2.5				82(74-90)	145		300
TSV05D680K	40	56	2.2	1.6	250	125	0.01	68(61-75)	150	1	370
TSV05D560K	35	45	1.8	1.3				56(50-62)	123		450
TSV05D470K	30	38	1.5	1.1				47(42-52)	104		530
TSV05D390K	25	31	1.2	0.9				39(35-43)	86		640
TSV05D330K	20	26	1.1	0.8				33(30-36)	73		760
TSV05D270K	17	22	0.9	0.7				27(24-30)	60		930
TSV05D220K	14	18	0.7	0.5				22(18.7-26)	48		1150
TSV05D180L	11	14	0.6	0.4				18(14.4-21.6)	40		1400

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



TSV

ZINC OXIDE VARISTOR 7D

SPECIFICATION

Part No	Maximum allowable Voltage		Maximum Energy		Withstanding Surge Current		Rated Wattage (W)	Varistor Voltage V1mA (V)	Maximum Clamping Voltage		Typical Capacitance (reference) @1KHz (pF)
	ACrms (V)	DC (V)	(10/1000us) (J)	(2ms) (J)	1 time	2 times			Vc (V)	Ip (A)	
							(A)				
TSV07D681K	420	560	45	35	1750	1250	0.25	680(612-748)	1120	10	75
TSV07D621K	385	505	45	32				620(558-682)	1025		80
TSV07D561K	350	460	45	32				560(504-616)	920		90
TSV07D511K	320	415	45	32				510(459-561)	845		100
TSV07D471K	300	385	42	30				470(423-517)	775		105
TSV07D431K	275	350	40	27.5				430(387-473)	710		115
TSV07D391K	250	320	35	25				390(351-429)	650		130
TSV07D361K	230	300	32	23				360(324-396)	595		140
TSV07D331K	210	275	28	20				330(297-363)	550		150
TSV07D301K	190	250	26	18.5				300(270-330)	500		165
TSV07D271K	175	225	24	17				270(243-297)	455		185
TSV07D241K	150	200	21	15				240(216-264)	395		210
TSV07D221K	140	180	19	13.5				220(198-242)	360		230
TSV07D201K	130	170	17.5	12.5				200(185-225)	340		250
TSV07D181K	115	150	15	10.4				180(162-198)	300		280
TSV07D151K	95	125	13	9.0				150(135-165)	250		330
TSV07D121K	75	100	10	7.0				120(108-132)	200		420
TSV07D101K	60	85	8.5	6.0				100(90-110)	165		500
TSV07D820K	50	65	7	5.0				82(74-90)	135		600
TSV07D680K	40	56	4.1	3.3				500	250		0.02
TSV07D560K	35	45	3.4	2.7	56(50-62)	110	890				
TSV07D470K	30	38	2.8	2.3	47(42-52)	93	1100				
TSV07D390K	25	31	2.4	1.9	39(35-43)	77	1300				
TSV07D330K	20	26	2.0	1.6	33(30-36)	65	1500				
TSV07D270K	17	22	1.6	1.3	27(24-30)	53	1800				
TSV07D220K	14	18	1.3	1.0	22(18.7-26)	43	2300				
TSV07D180L	11	14	1.1	0.9	18(14.4-21.6)	36	2800				

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

TSV

ZINC OXIDE VARISTOR 10D

SPECIFICATION

Part No	Maximum allowable Voltage		Maximum Energy		Withstanding Surge Current		Rated Wattage (W)	Varistor Voltage V1mA (V)	Maximum Clamping Voltage		Typical Capacitance (reference) @1KHz (pF)
	ACrms (V)	DC (V)	(10/1000us) (J)	(2ms) (J)	1 time (A)	2 times (A)			Vc (V)	Ip (A)	
TSV10D112K	680	895	155	110	3500	2500	0.4	1100(990-1210)	1815	25	90
TSV10D102K	625	825	140	100				1000(900-1100)	1650		100
TSV10D911K	550	745	130	90				910(819-1001)	1500		110
TSV10D821K	510	670	110	80				820(738-902)	1355		120
TSV10D781K	485	640	105	75				780(702-858)	1290		130
TSV10D751K	460	615	100	70				750(675-825)	1240		130
TSV10D681K	420	560	92	67				680(612-748)	1120		150
TSV10D621K	385	505	92	67				620(558-682)	1025		160
TSV10D561K	350	460	92	67				560(504-616)	920		180
TSV10D511K	320	415	92	67				510(459-561)	845		200
TSV10D471K	300	385	85	60				470(423-517)	775		210
TSV10D431K	275	350	80	55				430(387-473)	710		230
TSV10D391K	250	320	70	50				390(351-429)	650		260
TSV10D361K	230	300	65	45				360(324-396)	595		280
TSV10D331K	210	275	58	42				330(297-363)	550		300
TSV10D301K	190	250	53	38				300(270-330)	500		330
TSV10D271K	175	225	49	35				270(243-297)	455		370
TSV10D241K	150	200	42	30				240(216-264)	395		420
TSV10D221K	140	180	39	27.5				220(198-242)	360		450
TSV10D201K	130	170	35	25				200(185-225)	340		500
TSV10D181K	115	150	32	21				180(162-198)	300		560
TSV10D151K	95	125	25	18				150(135-165)	250		670
TSV10D121K	75	100	20	14.5				120(108-132)	200		830
TSV10D101K	60	85	17	12				100(90-110)	165		1000
TSV10D820K	50	65	14	10	82(74-90)	135	1200				
TSV10D680K	40	56	9.8	8.2	68(61-75)	135	1500				
TSV10D560K	35	45	8.1	6.7	56(50-62)	110	1800				
TSV10D470K	30	38	6.8	5.6	47(42-52)	93	2100				
TSV10D390K	25	31	5.6	4.7	39(35-43)	77	2600				
TSV10D330K	20	26	4.8	4.0	33(30-36)	65	3000				
TSV10D270K	17	22	3.9	3.2	27(24-30)	53	3700				
TSV10D220K	14	18	2.5	2.6	22(18.7-26)	43	4500				
TSV10D180L	11	14	2.1	2.2	18(14.4-21.6)	36	5600				

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

TSV

ZINC OXIDE VARISTOR 14D

SPECIFICATION

Part No	Maximum allowable Voltage		Maximum Energy		Withstanding Surge Current		Rated Wattage (W)	Varistor Voltage V1mA (V)	Maximum Clamping Voltage		Typical Capacitance (reference) @1KHz (pF)
	ACrms (V)	DC (V)	(10/1000us) (J)	(2ms) (J)	1 time	2 times			Vc (V)	Ip (A)	
					(A)						
TSV14D182K	1000	1465	510	360	5000	4500	0.6	1800(1620-1980)	2970	50	110
TSV14D152K	750	1300	420	290				1500(1350-1650)	2475		130
TSV14D112K	680	895	310	220				1100(990-1210)	1815		180
TSV14D102K	625	825	280	200				1000(900-1100)	1650		200
TSV14D911K	550	745	255	180				910(819-1001)	1500		220
TSV14D821K	510	670	235	165				820(738-902)	1355		240
TSV14D781K	485	640	225	160				780(702-858)	1290		260
TSV14D751K	460	615	210	150				750(675-825)	1240		270
TSV14D681K	420	560	190	136				680(612-748)	1120		290
TSV14D621K	385	505	190	136				620(558-682)	1025		320
TSV14D561K	350	460	190	136				560(504-616)	920		360
TSV14D511K	320	415	190	136				510(459-561)	845		390
TSV14D471K	300	385	175	125				470(423-517)	775		430
TSV14D431K	275	350	155	110				430(387-473)	710		460
TSV14D391K	250	320	140	100				390(351-429)	650		510
TSV14D361K	230	300	130	90				360(324-396)	595		560
TSV14D331K	210	275	115	80				330(297-363)	550		610
TSV14D301K	190	250	108	78				300(270-330)	500		670
TSV14D271K	175	225	99	70	270(243-297)	455	740				
TSV14D241K	150	200	84	60	240(216-264)	395	830				
TSV14D221K	140	180	78	55	220(198-242)	360	900				
TSV14D201K	130	170	70	50	200(185-225)	340	1000				
TSV14D181K	115	150	65	42	180(162-198)	300	1100				
TSV14D151K	95	125	53	37.5	150(135-165)	250	1300				
TSV14D121K	75	100	42	30	120(108-132)	200	1700				
TSV14D101K	60	85	35	25	100(90-110)	165	2000				
TSV14D820K	50	65	28	20	82(74-90)	135	2400				
TSV14D680K	40	56	20	16	68(61-75)	135	2900				
TSV14D560K	35	45	16	13	56(50-62)	110	3600				
TSV14D470K	30	38	14	11	47(42-52)	93	4300				
TSV14D390K	25	31	11	9.4	39(35-43)	77	5100				
TSV14D330K	20	26	9.5	7.9	33(30-36)	65	6100				
TSV14D270K	17	22	7.8	6.5	27(24-30)	53	7400				
TSV14D220K	14	18	6.3	5.3	22(18.7-26)	43	9100				
TSV14D180L	10	14	5.2	3.3	18(14.4-21.6)	36	11100				

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

TSV

ZINC OXIDE VARISTOR 20D

SPECIFICATION

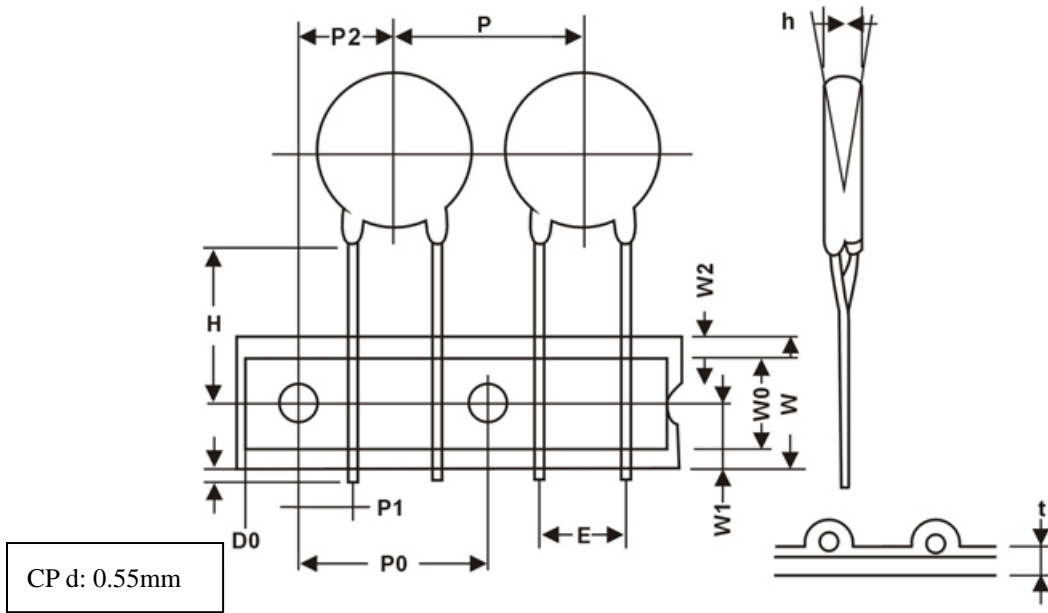
Part No	Maximum allowable Voltage		Maximum Energy		Withstanding Surge Current		Rated Wattage (W)	Varistor Voltage V1mA (V)	Maximum Clamping Voltage		Typical Capacitance (reference) @1KHz (pF)
	ACrms (V)	DC (V)	(10/1000us) (J)	(2ms) (J)	1 time (A)	2 times (A)			Vc (V)	Ip (A)	
TSV20D182K	1000	1465	1020	720	7500	6500	1.0	1800(1620-1980)	2970	100	220
TSV20D152K	750	1300	885	650				1500(1350-1650)	2475		260
TSV20D112K	680	895	620	440				1100(990-1210)	1815		360
TSV20D102K	625	825	565	400				1000(819-1001)	1650		400
TSV20D911K	550	745	510	360				910(819-1001)	1500		440
TSV20D821K	510	670	460	325				820(738-902)	1355		500
TSV20D781K	485	640	445	315				780(702-858)	1290		510
TSV20D751K	460	615	420	300				750(675-825)	1240		530
TSV20D681K	420	560	382	273				680(612-748)	1120		600
TSV20D621K	385	505	382	273				620(558-682)	1025		650
TSV20D561K	350	460	382	273				560(504-616)	920		710
TSV20D511K	320	415	382	273				510(459-561)	845		780
TSV20D471K	300	385	350	250				470(423-517)	775		850
TSV20D431K	275	350	303	215				430(387-473)	710		930
TSV20D391K	250	320	275	195				390(351-429)	650		1000
TSV20D361K	230	300	255	180				360(324-396)	595		1100
TSV20D331K	210	275	228	160				330(297-363)	550		1200
TSV20D301K	190	250	216	148				300(270-330)	500		1300
TSV20D271K	175	225	190	135				270(243-297)	455		1500
TSV20D241K	150	200	168	120				240(216-264)	395		1650
TSV20D221K	140	180	155	110	220(198-242)	360	1800				
TSV20D201K	130	170	140	100	200(185-225)	340	2000				
TSV20D181K	115	150	130	84	180(162-198)	300	2200				
TSV20D151K	95	125	106	75	150(135-165)	250	2700				
TSV20D121K	75	100	85	60	120(108-132)	200	3300				
TSV20D101K	60	85	70	50	100(90-110)	165	4000				
TSV20D820K	50	65	56	40	82(74-90)	135	4900				
TSV20D680K	40	56	49	44	68(61-75)	135	5800				
TSV20D560K	35	45	41	36	56(50-62)	110	6500				
TSV20D470K	30	38	35	30	47(42-52)	93	7400				
TSV20D390K	25	31	28	25	39(35-43)	77	8500				
TSV20D330K	20	26	24	21	33(30-36)	65	10000				

#680K—330K Max. Clamping Voltage testing current 20A.

TSV

ZINC OXIDE VARISTOR

TAPING SPECIFICATION



Straight Leads (D05, D07, D09, D10)

Symbol	Parameter	Series			
		05D	07D	09D	10D
P	Pitch Component	12.7±1.0	12.7±1.0	12.7±1.0	12.7±1.0
P0	Feed Hold	12.7±0.3	12.7±0.3	12.7±0.3	12.7±0.3
P1	Feed Hold Center to Lead	3.85±0.7	3.85±0.7	3.85±0.7	3.75±0.7
P2	Hold Center to Component Center	6.35±1.3	6.35±1.3	6.35±1.3	7.5±1.3
E	Lead to Lead Distance	5.0±0.5	5.0±0.5	5.0±0.5	7.5±0.5
Δh	Component Alignment	0±2	0±2	0±2	0±2
W	Tape Width	18.0±1.0	18.0±1.0	18.0±1.0	18.0±1.0
W0	Hold Down Tape Width	8±0.5	8±0.5	8±0.5	8±0.5
W1	Hold Position	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5
W2	Hold Down Tape Position	3.0max	3.0max	3.0max	3.0max
H	Height from Tape Center to Component	20.0±2.0	20.0±2.0	20.0±2.0	20.0±2.0
l	Length of Clipped Lead	1.0max	1.0max	1.0max	1.0max
D0	Feed Hold Diameter	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2
t	Total Tape Thickness	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3

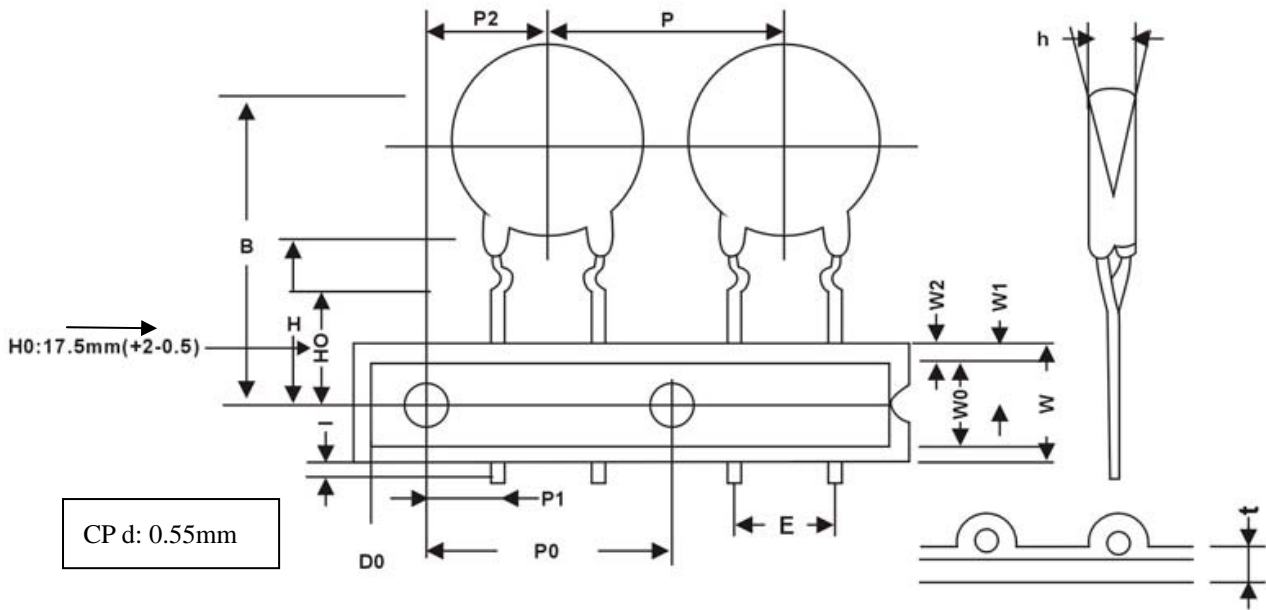
Unit : mm

TSV

ZINC OXIDE VARISTOR

TAPING SPECIFICATION

Crimped Leads (D05, D07, D09, D10)



Symbol	Parameter	Series			
		05D	07D	09D	10D
P	Pitch Component	12.7±1.0	12.7±1.0	12.7±1.0	12.7±1.0
P0	Feed Hold	12.7±0.3	12.7±0.3	12.7±0.3	12.7±0.3
P1	Feed Hold Center to Lead	3.85±0.7	3.85±0.7	3.85±0.7	3.75±0.7
P2	Hold Center to Component Center	6.35±1.3	6.35±1.3	6.35±1.3	7.5±1.3
E	Lead to Lead Distance	5.0±0.5	5.0±0.5	5.0±0.5	7.5±0.5
Δh	Component Alignment	0±2	0±2	0±2	0±2
W	Tape Width	18.0±1.0	18.0±1.0	18.0±1.0	18.0±1.0
W0	Hold Down Tape Width	8±0.5	8±0.5	8±0.5	8±0.5
W1	Hold Position	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5
W2	Hold Down Tape Position	3.0max	3.0max	3.0max	3.0max
H	Height from Tape Center to Component	20.0±2.0	20.0±2.0	20.0±2.0	20.0±2.0
l	Length of Clipped Lead	1.0max	1.0max	1.0max	1.0max
D0	Feed Hold Diameter	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2
T	Total Tape Thickness	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3

Unit : mm

TSV

ZINC OXIDE VARISTOR

APPROVAL

	CQC	UL	UL/CUL	VDE
5D	820K,101K,121K,151K,181K,201K,221K,241K,271K,301K,331K,361K,391K,431K,471K,511K,561K	151K,181K,201K,221K,241K,271K,301K,331K,361K,391K,431K,471K	180K,220K,270K,330K,390K,820K,101K,121K,561K,	ND
7D	820K,101K,121K,151K,181K,201K,221K,241K,271K,301K,331K,361K,391K,431K,471K,511K,561K,621K,681K,821K	151K,181K,201K,221K,241K,271K,301K,331K,361K,391K,431K,471K	180K,220K,270K,330K,390K,470K,560K,680K,820K,101K,121K,511K,561K,621K,681K,	820K,101K,121K,151K,181K,201K,221K,241K,271K,301K,331K,361K,391K,431K,471K,511K,561K,621K,681K
10D	820K,101K,121K,151K,181K,201K,221K,241K,271K,301K,331K,361K,391K,431K,471K,511K,561K,621K,681K,751K,821K,911K,102K,112K	181K,201K,221K,241K,271K,301K,331K,361K,391K,431K,471K,511K,911K,102K,112K	180K,220K,270K,330K,390K,470K,560K,680K,820K,101K,121K,151K,561K,621K,681K,751K,781K,821K	820K,101K,121K,151K,181K,201K,221K,241K,271K,301K,331K,361K,391K,431K,471K,511K,561K,621K,681K,751K,821K,911K,102K
14D	820K,101K,121K,151K,181K,201K,221K,241K,271K,301K,331K,361K,391K,431K,471K,511K,561K,621K,681K,751K,821K,911K,102K,112K	ND	180K,220K,270K,330K,390K,470K,560K,680K,820K,101K,121K,151K,181K,201K,221K,241K,271K,301K,331K,361K,391K,431K,471K,511K,561K,621K,681K,751K,781K,821K,911K,102K,112K,182K	820K,101K,121K,151K,181K,201K,221K,241K,271K,301K,331K,361K,391K,431K,471K,511K,561K,621K,681K,751K,821K,911K,102K
20D	820K,101K,121K,151K,181K,201K,221K,241K,271K,301K,331K,361K,391K,431K,471K,511K,561K,621K,681K,751K,821K,911K,102K,112K	ND	180K,220K,270K,330K,390K,470K,560K,680K,820K,101K,121K,151K,181K,201K,221K,241K,271K,301K,331K,361K,391K,431K,471K,511K,561K,621K,681K,751K,781K,821K,911K,102K,112K,182K	820K,101K,121K,151K,181K,201K,221K,241K,271K,301K,331K,361K,391K,431K,471K,511K,561K,621K,681K,751K,821K,911K,102K

Note: Specification are subject to change without notice. For more detail and update, please visit our website.