

SCV Zinc Oxide Varistor

Semec

RoHS

Features

- Wide range of varistor voltage
- Fast response speed (ns grade)
- Low limiting voltage
- Long life time
- Different sizes are available (5D, 7D, 10D, 14D, 20D)



Specifications

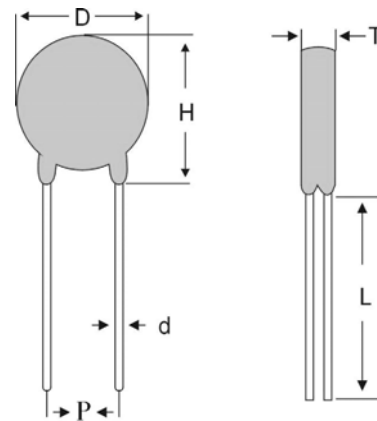
Working temperature	-40°C ~ + 85°C
Insulation resistance	> 1000MΩ
Varistor voltage temperature coefficient	-0.5% °C

Thickness (max)

Unit: mm

Item Code	D05	D07	D09	D10	D14	D18	D20
182K	--	--	--	--	14.4	14.8	14.8
152K	--	--	--	--	12.0	12.4	12.4
112K	--	--	9.6	9.7	9.7	10.1	10.1
102K	--	--	9.0	9.1	9.1	9.5	9.5
911K	--	--	8.4	8.6	8.6	9.0	9.0
821K	7.9	7.9	7.9	8.1	8.1	8.5	8.5
781K	--	7.7	7.7	7.9	7.9	8.3	8.3
751K	7.3	7.5	7.5	7.8	7.8	8.2	8.2
681K	7.1	7.3	7.3	7.4	7.4	7.8	7.8
621K	7.1	7.1	7.1	7.1	7.1	7.5	7.5
561K	6.2	6.4	6.4	6.5	6.5	7.0	7.0
511K	6.2	6.4	6.4	6.5	6.5	7.0	7.0
471K	6.0	6.0	6.2	6.5	6.5	7.0	7.0
431K	5.7	5.7	6.0	6.2	6.2	6.7	6.7
391K	5.4	5.4	5.6	5.8	5.8	6.4	6.4
361K	5.2	5.2	5.5	5.7	5.7	6.2	6.2
331K	5.1	5.1	5.3	5.6	5.6	6.0	6.0
301K	5.0	5.0	5.1	5.3	5.3	5.7	5.7
271K	4.9	4.9	5.1	5.2	5.2	5.6	5.6
241K	4.6	4.6	4.9	5.0	5.0	5.4	5.4
221K	4.5	4.5	4.8	4.9	4.9	5.3	5.3
201K	4.4	4.4	4.7	4.8	4.8	5.2	5.2
181K	4.3	4.3	4.6	4.8	4.8	--	5.2
151K	4.8	4.8	5.0	5.2	5.2	--	5.6
121K	4.5	4.5	4.7	4.9	4.7	--	5.3
101K	4.3	4.3	4.5	4.7	4.9	--	5.1
820K	4.1	4.1	4.3	4.5	4.5	--	4.9
680K	4.5	5.2	5.2	5.3	5.3	--	5.8
560K	4.5	5.0	5.1	5.1	5.1	--	5.7
470K	4.5	4.9	5.0	5.0	5.0	--	5.6
390K	4.5	4.8	4.9	4.9	4.9	--	5.5
330K	4.5	4.9	4.9	5.0	5.0	--	--
270K	4.5	4.7	4.7	4.8	4.8	--	--
220K	4.5	4.6	4.6	4.7	4.7	--	--
180L	4.5	4.5	4.5	4.6	4.6	--	--

Dimension



L:16mm MIN

SIZE	D MAX	H MAX	d	P
D05	7.5	10.5	0.6	5±0.8
D07	9	12	0.6	5±0.8
		14		5.5±0.8
D10	14	17	0.8	7.5±0.8
		19		8.0±0.8
D14	17	20	0.8	7.5±0.8
		22		8.0±0.8
				15 ±1.0
D20	25	28	0.8	7.5±0.8
		30		1

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How to order

series code	dimension	varistor voltage	tolerance	packing
SCV	05D	471	K	B
	07D	471=470V		B: Bulk
	10D	681=680V		A: Ammo
	14D	330=33V		T: T&R
	20D			

Specifications for 5D

Item	Maximum allowable Voltage		Maximum Energy		Withstanding Surge Current		Rated wattage (W)	Varistor Voltage V1mA (V)	Max Clamping Voltage Vc (V)	Typical Capacitance (reference) 1KHz (pF)
	ACrms (V)	DC (V)	(10/100 0us)/(J)	(2ms) (J)	1 time (A)	2 times				
05D751K	460	651	22.4	16	400	200	0.1	750(675-825)	1240	30
05D681K	420	560	21	15				680(621-748)	1120	35
05D621K	385	505	21	15				620(558-682)	1025	40
05D561K	350	460	19.6	14				560(504-616)	920	45
05D511K	320	415	19.6	14				510(459-561)	845	50
05D471K	300	385	18.2	13				470(423-517)	810	55
05D431K	275	350	16.8	12				430(387-473)	745	60
05D391K	250	320	15.4	11				390(351-429)	675	65
05D361K	230	300	14	10				360(324-396)	620	70
05D331K	210	275	14	10				330(297-363)	600	75
05D301K	190	250	11.8	8.4				300(270-330)	505	85
05D271K	175	225	10.2	7.3				270(243-297)	475	95
05D241K	150	200	9.9	7.1				240(216-264)	415	100
05D221K	140	180	8.8	6.3				220(198-242)	380	110
05D201K	130	170	7.7	5.5				200(185-225)	355	125
05D181K	115	150	5.6	4				180(162-198)	325	140
05D151K	95	125	4.2	3				150(135-165)	265	165
05D121K	75	100	4.2	3				120(108-132)	210	210
05D101K	60	85	2.8	2				100(90-110)	175	250
05D820K	50	65	2.8	2				82(74-90)	145	300
05D680K	40	56	1.8	1.3	100	50	0.01	68(61-75)	150	370
05D560K	35	45	1.5	1.1				56(50-62)	123	450
05D470K	30	38	1.4	1				47(42-52)	104	530
05D390K	25	31	1.1	0.8				39(35-43)	86	640
05D330K	20	26	0.8	0.6				33(30-36)	73	760
05D270K	17	22	0.7	0.5				27(24-30)	60	930
05D220K	14	18	0.6	0.4				22(18.7-26)	48	1150
05D180L	11	14	0.4	0.3				18(14.4-21.6)	40	1400

Specifications for 7D

Item	Maximum allowable Voltage		Maximum Energy		Withstanding Surge Current		Rated wattage (W)	Varistor Voltage V1mA (V)	Max Clamping Voltage Vc (V)	Typical Capacitance (reference) 1KHz (pF)
	ACrms (V)	DC (V)	(10/1000us)/(J)	(2ms) (J)	1 time	2 times				
					(A)					
07D821K	510	670	67.2	48	1200	600	0.25	820(738-902)	1355	60
07D781K	485	640	67.2	48				780(702-858)	1290	65
07D751K	460	615	67.2	48				750(675-825)	1240	65
07D681K	420	560	61.6	44				680(612-748)	1120	75
07D621K	385	505	61.6	44				620(558-682)	1025	80
07D561K	350	460	56	40				560(504-616)	920	90
07D511K	320	415	56	40				510(459-561)	845	100
07D471K	300	385	56	40				470(423-517)	775	105
07D431K	275	350	50.4	36				430(387-473)	710	115
07D391K	250	320	46.2	33				390(351-429)	650	130
07D361K	230	300	42	30				360(324-396)	595	140
07D331K	210	275	37.8	27				330(297-363)	550	150
07D301K	190	250	35	25				300(270-330)	500	165
07D271K	175	225	32.2	23				270(243-297)	455	185
07D241K	150	200	28	20				240(216-264)	395	210
07D221K	140	180	28	20				220(198-242)	360	230
07D201K	130	170	25.2	18				200(185-225)	340	250
07D181K	115	150	18.2	13	180(162-198)	300	280			
07D151K	95	125	16.8	12	150(135-165)	250	330			
07D121K	75	100	14	10	120(108-132)	200	420			
07D101K	60	85	11.6	8.3	250	125	0.02	100(90-110)	165	500
07D820K	50	65	9.8	7				82(74-90)	135	600
07D680K	40	56	7.3	5.2				68(61-75)	135	740
07D560K	35	45	6.2	4.4				56(50-62)	110	890
07D470K	30	38	5	3.6				47(42-52)	93	1100
07D390K	25	31	4.2	3				39(35-43)	77	1300
07D330K	20	26	3.5	2.5				33(30-36)	65	1500
07D270K	17	22	2.8	2				27(24-30)	53	1800
07D220K	14	18	2.4	1.7				22(18.7-26)	43	2300
07D180L	11	14	2.1	1.5				18(14.4-21.6)	36	2800

Specifications for 10D

Item	Maximum allowable Voltage		Maximum Energy		Withstanding Surge Current		Rated wattage (W)	Varistor Voltage V1mA (V)	Max Clamping Voltage Vc (V)	Typical Capacitance (reference) 1KHz (pF)
	ACrms (V)	DC (V)	(10/100 0us)/(J)	(2ms) (J)	1 time	2 times				
					(A)					
10D112K	680	895	133	95	2500	1250	0.4	1120(1008-1232)	1815	90
10D102K	625	825	133	95				1000(900-1100)	1650	100
10D911K	550	745	133	95				910(819-1001)	1500	110
10D821K	510	670	124.6	89				820(738-902)	1355	120
10D781K	485	640	124.6	89				780(702-858)	1290	130
10D751K	460	615	124.6	89				750(675-825)	1240	130
10D681K	420	560	102.2	73				680(612-748)	1120	150
10D621K	385	505	102.2	73				620(558-682)	1025	160
10D561K	350	460	99.4	71				560(504-616)	920	180
10D511K	320	415	99.4	71				510(459-561)	845	200
10D471K	300	385	99.4	71				470(423-517)	775	210
10D431K	275	350	88.2	63				430(387-473)	710	230
10D391K	250	320	81.2	58				390(351-429)	650	260
10D361K	230	300	74.2	53				360(324-396)	595	280
10D331K	210	275	68.6	49				330(297-363)	550	300
10D301K	190	250	63	45				300(270-330)	500	330
10D271K	175	225	57.4	41				270(243-297)	455	370
10D241K	150	200	50.4	36	240(216-264)	395	420			
10D221K	140	180	46.2	33	220(198-242)	360	450			
10D201K	130	170	42	30	200(185-225)	340	500			
10D181K	115	150	30.8	22	500	250	0.05	180(162-198)	300	560
10D151K	95	125	25.2	18				150(135-165)	250	670
10D121K	75	100	21	15				120(108-132)	200	830
10D101K	60	85	18.2	13				100(90-110)	165	1000
10D820K	50	65	16.8	12				82(74-90)	135	1200
10D680K	40	56	15.4	11				68(61-75)	135	1500
10D560K	35	45	12.9	9.2				56(50-62)	110	1800
10D470K	30	38	10.8	7.7				47(42-52)	93	2100
10D390K	25	31	9.1	6.5				39(35-43)	77	2600
10D330K	20	26	7.4	5.3				33(30-36)	65	3000
10D270K	17	22	6	4.3				27(24-30)	53	3700
10D220K	14	18	4.5	3.2				22(18.7-26)	43	4500
10D180L	11	14	2.8	2	18(14.4-21.6)	36	5600			

Specifications for 14D

Item	Maximum allowable Voltage		Maximum Energy		Withstanding Surge Current		Rated wattage (W)	Varistor Voltage V1mA (V)	Max Clamping Voltage Vc (V)	Typical Capacitance (reference) 1KHz (pF)
	ACrms (V)	DC (V)	(10/1000us)/(J)	(2ms) (J)	1 time	2 times				
					(A)					
14D182K	1000	1465	336	240	4500	2500	0.6	1800(1620-1980)	2970	110
14D152K	750	1300	266	190				1500(1350-1650)	2475	130
14D112K	680	895	217	155				1100(990-1210)	1815	180
14D102K	625	825	217	155				1000(900-1100)	1650	200
14D911K	550	745	217	155				910(819-1001)	1500	220
14D821K	510	670	203	145				820(738-902)	1355	240
14D781K	485	640	203	145				780(702-858)	1290	260
14D751K	460	615	203	145				750(675-825)	1240	270
14D681K	420	560	168	120				680(612-748)	1120	290
14D621K	385	505	168	120				620(558-682)	1025	320
14D561K	350	460	149.8	107				560(504-616)	920	360
14D511K	320	415	149.8	107				510(459-561)	845	390
14D471K	300	385	149.8	107				470(423-517)	775	430
14D431K	275	350	145.6	104				430(387-473)	710	460
14D391K	250	320	134.4	96				390(351-429)	650	510
14D361K	230	300	123.2	88				360(324-396)	595	560
14D331K	210	275	112	80				330(297-363)	550	610
14D301K	190	250	103.6	74				300(270-330)	500	670
14D271K	175	225	93.8	67				270(243-297)	455	740
14D241K	150	200	82.6	59				240(216-264)	395	830
14D221K	140	180	79.8	57	220(198-242)	360	900			
14D201K	130	170	79.8	57	200(185-225)	340	1000			
14D181K	115	150	58.8	42	180(162-198)	300	1100			
14D151K	95	125	51.8	37	150(135-165)	250	1300			
14D121K	75	100	40.6	29	120(108-132)	200	1700			
14D101K	60	85	33.6	24	100(90-110)	165	2000			
14D820K	50	65	29.4	21	82(74-90)	135	2400			
14D680K	40	56	23.8	17	1000	500	0.1	68(61-75)	135	2900
14D560K	35	45	19.6	14				56(50-62)	110	3600
14D470K	30	38	16.8	12				47(42-52)	93	4300
14D390K	25	31	13.2	9.4				39(35-43)	77	5100
14D330K	20	26	12.3	8.8				33(30-36)	65	6100
14D270K	17	22	9.7	6.9				27(24-30)	53	7400
14D220K	14	18	7.6	5.4				22(18.7-26)	43	9100
14D180L	11	14	6.6	4.7				18(14.4-21.6)	36	11100

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Specifications for 20D

Item	Maximum allowable Voltage		Maximum Energy		Withstanding Surge Current		Rated wattage (W)	Varistor Voltage V1mA (V)	Max Clamping Voltage Vc (V)	Typical Capacitance (reference) 1KHz (pF)
	ACrms (V)	DC (V)	(10/1000us)/(J)	(2ms) (J)	1 time	2 times				
					(A)					
20D182K	1000	1465	560	400	6500	4000	1	1800(1620-1980)	2970	220
20D152K	750	1300	420	300				1500(1350-1650)	2475	260
20D112K	680	895	280	200				1100(990-1210)	1815	360
20D102K	625	825	280	200				1000(819-1001)	1650	400
20D911K	550	745	280	200				910(819-1001)	1500	440
20D821K	510	670	266	190				820(738-902)	1355	500
20D781K	485	640	266	190				780(702-858)	1290	510
20D751K	460	615	266	190				750(675-825)	1240	530
20D681K	420	560	224	160				680(612-748)	1120	600
20D621K	385	505	224	160				620(558-682)	1025	650
20D561K	350	460	210	150				560(504-616)	920	710
20D511K	320	415	210	150				510(459-561)	845	780
20D471K	300	385	210	150				470(423-517)	775	850
20D431K	275	350	196	140				430(387-473)	710	930
20D391K	250	320	182	130				390(351-429)	650	100
20D361K	235	300	168	120				360(324-396)	595	1100
20D331K	210	275	140	100				330(297-363)	550	1200
20D301K	190	250	133	95				300(270-330)	500	1300
20D271K	175	225	126	90				270(243-297)	455	1500
20D241K	150	200	112	80				240(216-264)	395	1650
20D221K	140	180	105	75				220(198-242)	360	1800
20D201K	130	170	98	70				200(185-225)	340	2000
20D181K	115	150	84	60				180(162-198)	300	2200
20D151K	95	125	70	50				150(135-165)	250	2700
20D121K	75	100	56	40				120(108-132)	200	3300
20D101K	60	85	42	30				100(90-110)	165	4000
20D820K	50	65	37.8	27	82(74-90)	135	4900			
20D680K	40	56	23.8	17	68(61-75)	135	5800			
20D560K	35	45	19.6	14	56(50-62)	110	6500			
20D470K	30	38	16.8	12	47(42-52)	93	7400			
20D390K	25	31	13.2	9.4	39(35-43)	77	8500			
20D330K	20	26	11.2	7.9	33(30-36)	65	10000			