

SVC Varistor High Surge

Introduction

The SAMWHA High Surge Varistor Provides an Ideal circuit protection solution for DC Voltage Application. This Varistor High Surge are zinc-oxide nonlinear resistor whose resistance changes as a function of the applied voltage. know with S-Type.

S-Type available for size 07, 10, 14 & 20mm.

This item have been used to great advance in many important application in the electrical power, medical, communication and electronic industries

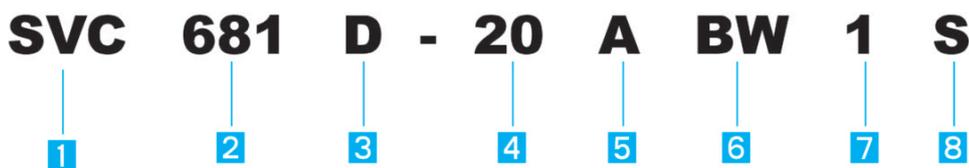
Features

- Improve product safety
- Wide operating temperature range
- Fast response time
- Lead-free, Halogen Free and RoHS Compliant
- High peak current surge rating
- Remarkably symmetrical V-I characteristics

Applications

- Surge Protective Device
- Semiconductor protector
- Home Appliance
- Lighting Product
- Industrial Equipment
- Power Supply
- Medical Equipment

How to Order(Product Identification)



1 Basic Type

SVC : Basic type Zinc Oxide (ZnO)

2 Varistor Nominal Voltage

- The first two digit indicate significant digits
- The 3rd digit indicate the number of zeros following

3 Style

D : Disk Type Varistor

4 Chip Element Size(Dia)

07 : Ø7mm, 10 : Ø10mm
14 : Ø14mm, 20 : Ø20mm

5 Classification

A : High Voltage

6 Packing Style & Lead Variation

Packing Style		Lead Variation	
F	Taping Flat Pack	F	Out-Kink Type
		S	Straight Type
B	Bulk	W	Out-kink Short Type
		K	Out-kink Long Type
		N	Straight Short Type
		S	Straight Long Type

7 Lead Spacing & Pitch of Component

Taping			Bulk	
Code	Lead Spacing(mm)	Pitch of Component(mm)	Code	Lead Spacing(mm)
5	5.0	12.7	5	5.0
7	7.5	15.0	7	7.5
8	7.5	30.0	1	10
1	10	25.4		

8 Optional Suffix

S: Superior Type

Approval Standard & Recognized No.

Agency	Standard	Recognized No.
	UL 1449	File No E332621
	C222101	1513084
	DIN EN 61051-1:2009	116012

Marking Specification.

S - Type

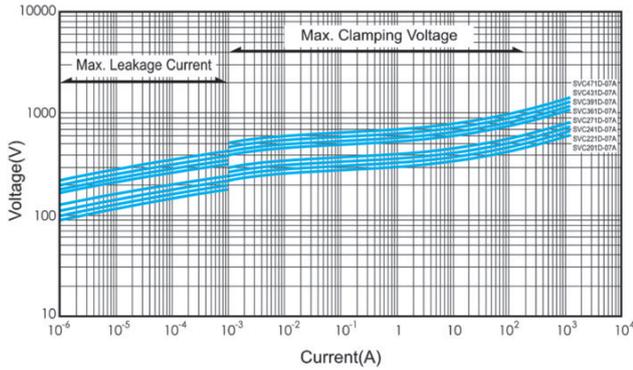
Size \emptyset	Body Mark	Remarks
07~14	<p>SVC.</p> <p>□□□-■</p> <p>  </p>	<p>□ Varistor Nominal Voltage</p> <p>■ Chip Element Size</p>
20	<p>SVC..</p> <p>□□□-■</p> <p> </p>	

Characteristics, Curve and Lifetime

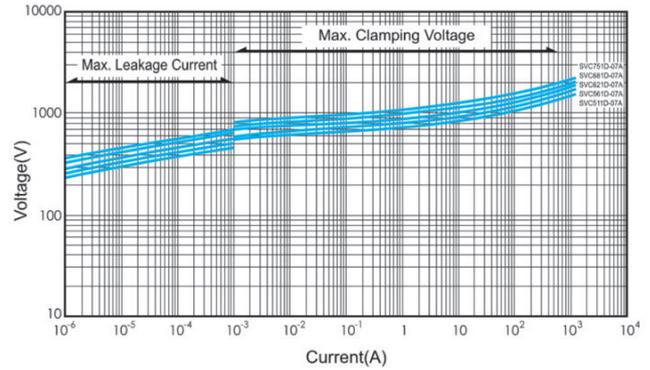
Transient V-I Charactic Curves

Current waveform under 10^{-2} A : DC over 10^{-1} A : $8/20\mu\text{s}$

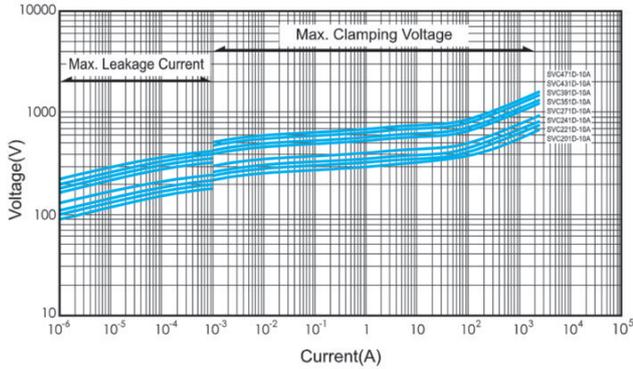
07A (SVC201D~471D)



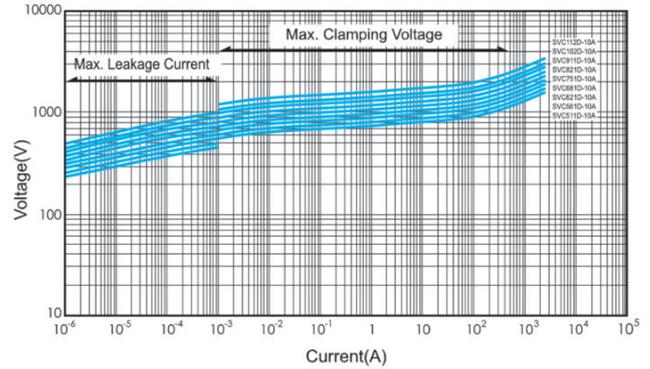
07A (SVC511D~751D)



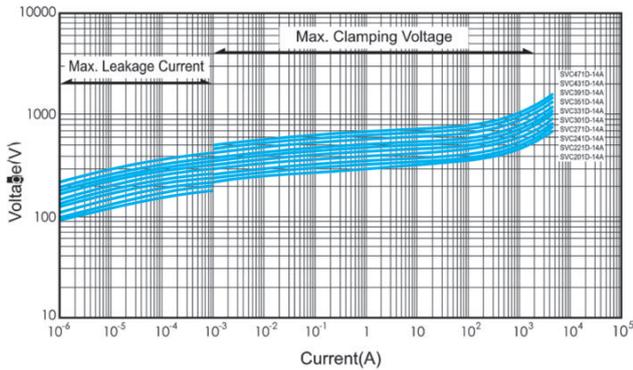
10A (SVC201D~471D)



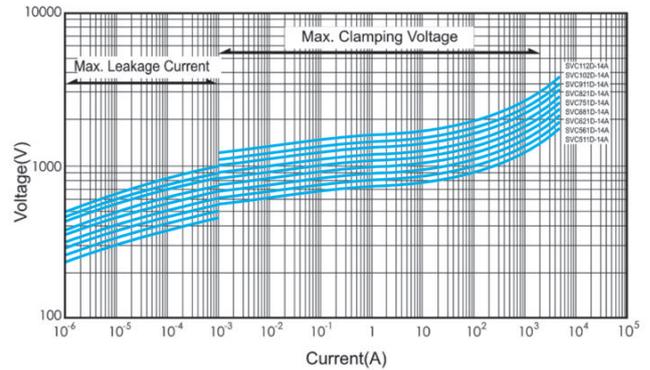
10A (SVC511D~112D)



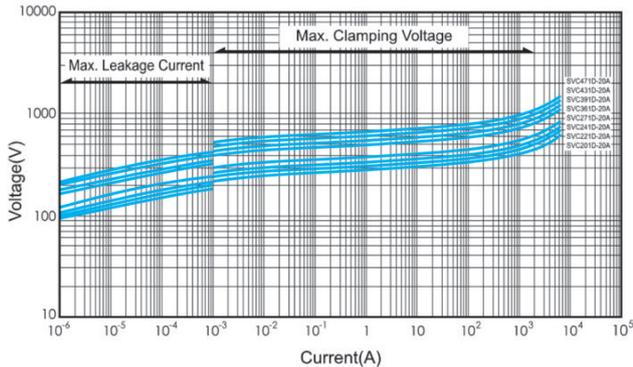
14A (SVC201D~471D)



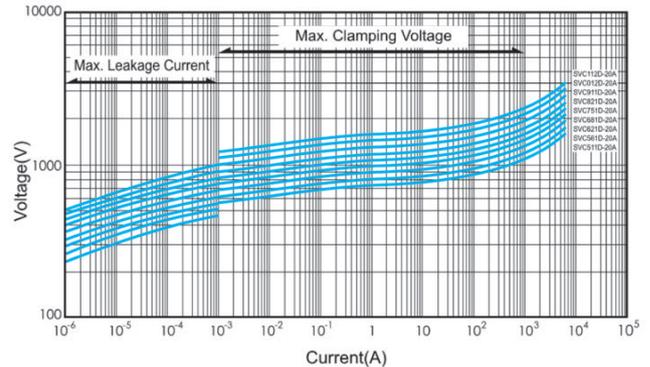
14A (SVC511D~112D)



20A (SVC201D~SVC471D)



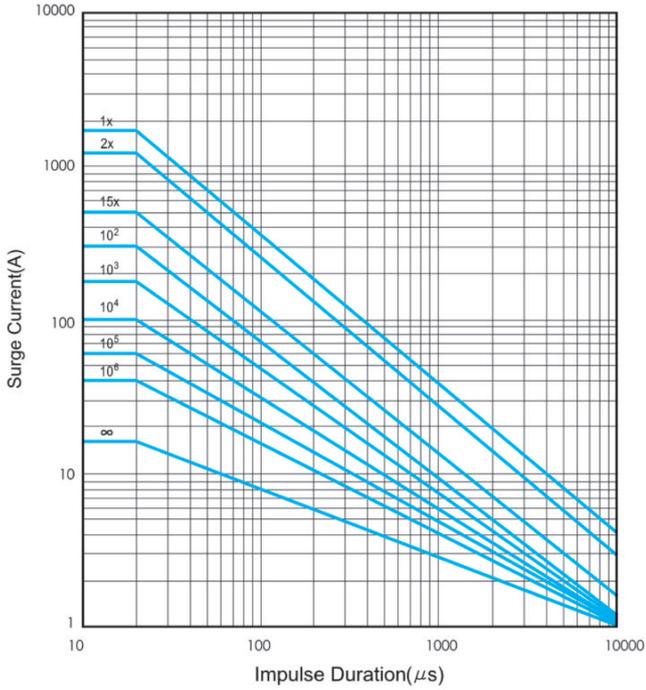
20A (SVC511D~SVC112D)



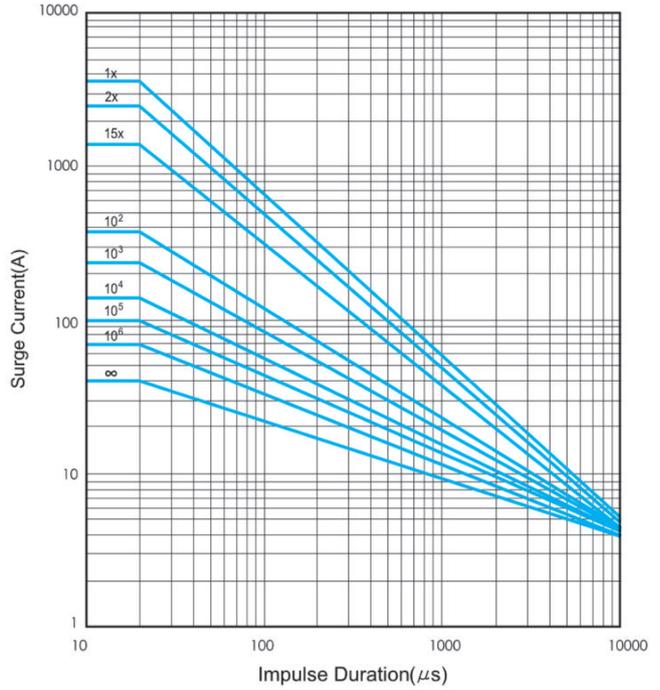
Pulse Lifetime Rating

Notes : 2-pulse : 5-minutes interval

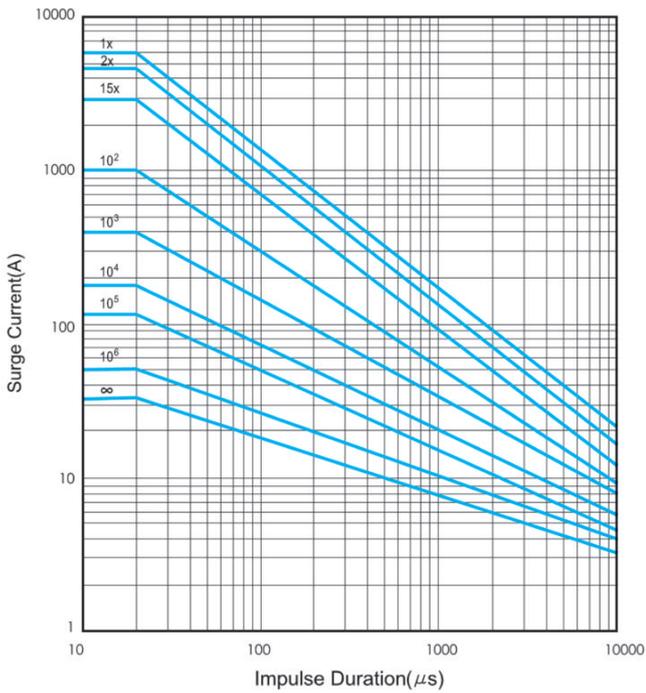
07A (SVC201D~751D) - S-Type



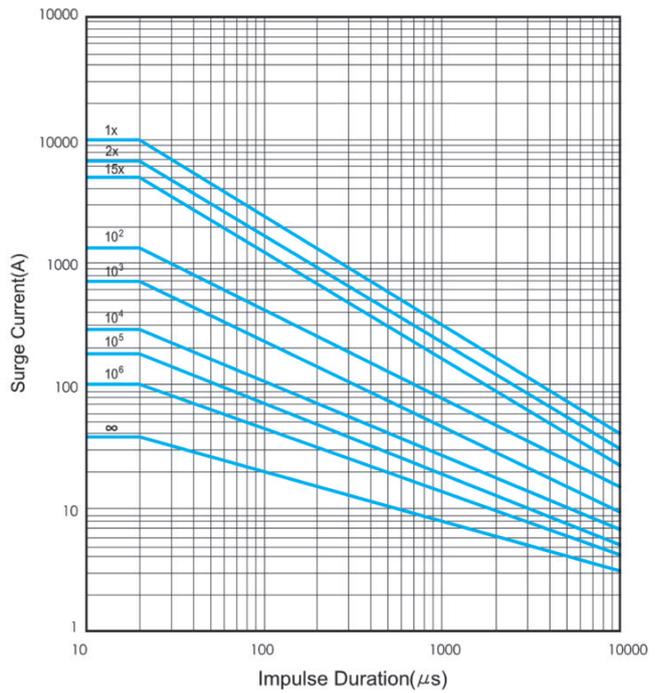
10A (SVC201D~112D) - S-Type



14A (SVC201D~112D) - S-Type

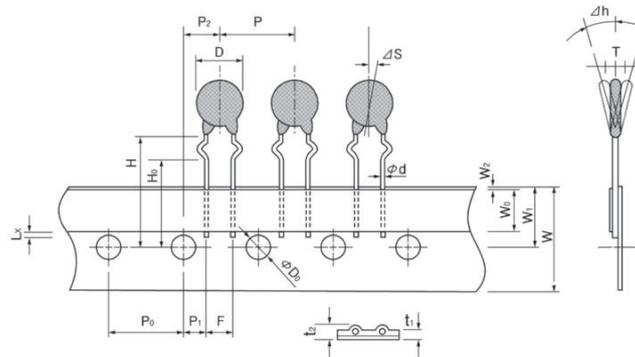


20A (SVC201D~112D) - S-Type



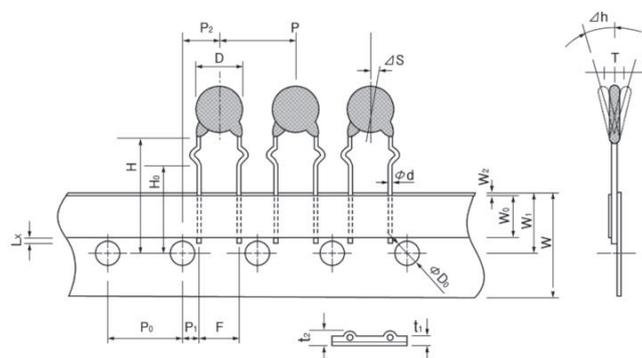
Packing Style

Taping Type (FF5 – for $\varnothing 7$)



(Unit:mm)

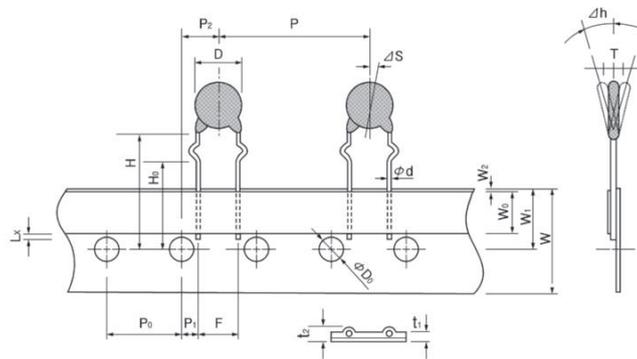
Item	Symbol	Taping Specification	Note
		FF5	
Body Diameter r	D	12.5 Max	
Body Thickness	T	5.0 Max	
Lead Diameter	$\varnothing d$	0.60 ± 0.05	
Pitch of Sprocket Hole	Po	12.7 ± 0.3	Accumulative pitch error : $\pm 1\text{mm}/20\text{pitch}$
Pitch of Component	P	12.7 ± 1.0	
Lead Length from Hole Center to Lead	P1	3.85 ± 0.7	
Lead Length from Hole Center to Center	P2	6.35 ± 1.3	
Lead Spacing	F	$5.0^{+0.8}_{-0.2}$	
Deviation Along Tape	ΔS	0 ± 1.0	
Deviation Across Tape	Δh	0 ± 2.0	
Carrier Tape Width	W	$18.0^{+1.0}_{-0.5}$	
Hold Down Tape Width	W0	6.0 ± 0.5	
Position of Sprocket Hole	W1	9.0 ± 0.5	
Hold Down Tape Position	W2	3.0 Max	
Diameter of Sprocket Hole	$\varnothing D_o$	4.0 ± 0.2	
Lead-Wire Clinch Height	Ho	16.0 ± 0.5	
Total Tape Thickness	t ₁	0.7 ± 0.2	
Total Thickness, Tape and Lead Wire	t ₂	1.5 Max	

Taping Type (FF7 – for $\phi 7\sim 10$)

(Unit:mm)

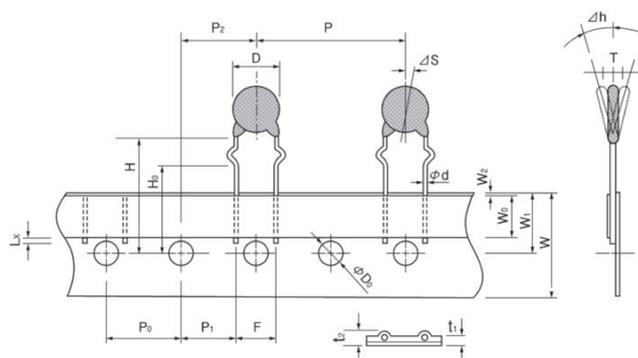
Item	Symbol	Taping Specification	Note
		FF7	
Body Diameter	D	$6.3 \leq D \leq 14.0$	
Body Thickness	T	6.0 Max	
Wire Diameter	$d\phi$	0.70 ± 0.05	
Pitch of Sprocket Hole	Po	15.0 ± 0.3	
Pitch of Component	P	15.0 ± 1.0	
Lead Length from Hole Center to Lead	P1	3.75 ± 1.0	
Lead Length from Hole Center to Component Center	P2	7.5 ± 1.5	
Wire Spacing	F	7.5 ± 1.0	
Deviation Along Tape.Left or Right	ΔS	0 ± 1.0	
Deviation Across Tape	Δh	0 ± 2.0	
Carrier Tape Width	W	$18.0^{+1.0}_{-0.5}$	
Hold Down Tape Width	W0	8.0 Min	
Position of Sprocket Hole	W1	9.0 ± 0.5	
Hold Down Tape Position	W2	3.0 Max	
Wire Clinch Height	Ho	16.0 ± 0.5	
Height of Component Hole	H	$20.0^{+1.5}_{-1.0}$	
Diameter of Sprocket Hole	ϕDo	4.0 ± 0.2	
Total Tape Thickness	t ₁	0.7 ± 0.2	
Total Thickness, Tape and Wire	t ₂	1.7 Max	
Length of Snipped Lead	L _x	1.0 Max	

Taping Type (FF8 – for $\varnothing 14$)



(Unit:mm)

Item	Symbol	Taping Specification	Note
		FF8	
Body Diameter	D	$15.0 \leq D \leq 20.0$	
Body Thickness	T	6.0 Max	
Wire Diameter	d \varnothing	0.80 ± 0.05	
Pitch of Sprocket Hole	Po	15.0 ± 0.3	
Pitch of Component	P	30.0 ± 1.0	
Lead Length from Hole Center to Lead	P1	3.75 ± 1.0	
Lead Length from Hole Center to Component Center	P2	7.5 ± 1.5	
Wire Spacing	F	7.5 ± 1.0	
Deviation Along Tape.Left or Right	ΔS	0 ± 1.0	
Deviation Across Tape	Δh	0 ± 2.0	
Carrier Tape Width	W	$18.0^{+1.0}_{-0.5}$	
Hold Down Tape Width	W0	8.0 Min	
Position of Sprocket Hole	W1	9.0 ± 0.5	
Hold Down Tape Position	W2	3.0 Max	
Wire Clinch Height	Ho	16.0 ± 0.5	
Height of Component Hole	H	$20.0^{+1.5}_{-1.0}$	
Diameter of Sprocket Hole	$\varnothing D_o$	4.0 ± 0.2	
Total Tape Thickness	t ₁	0.7 ± 0.2	
Total Thickness, Tape and Wire	t ₂	1.7 Max	
Length of Snipped Lead	L _x	1.0 Max	

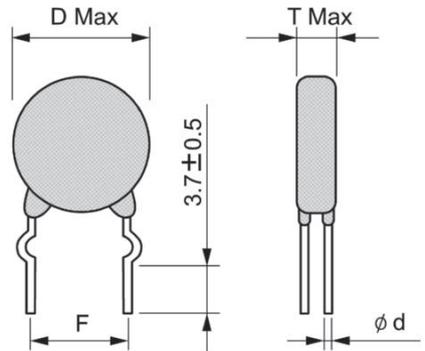
Taping Type (FF1 – for $\varnothing 20$)

(Unit:mm)

Item	Symbol	Taping Specification	Note
		FF1	
Body Diameter	D	$6.3 \leq D \leq 20.0$	
Body Thickness	T	11 Max	
Wire Diameter	d \varnothing	1.00 ± 0.05	
Pitch of Sprocket Hole	Po	12.7 ± 0.3	
Pitch of Component	P	25.4 ± 1.0	
Lead Length from Hole Center to Lead	P1	7.7 ± 1.0	
Lead Length from Hole Center to Component Center	P2	12.7 ± 1.5	
Wire Spacing	F	10.0 ± 1.0	
Deviation Along Tape. Left or Right	ΔS	0 ± 1.0	
Deviation Across Tape	Δh	0 ± 2.0	
Carrier Tape Width	W	$18.0^{+1.0}_{-0.5}$	
Hold Down Tape Width	W0	13.0 Min	
Position of Sprocket Hole	W1	9.0 ± 0.5	
Hold Down Tape Position	W2	3.0 Max	
Wire Clinch Height	Ho	16.0 ± 0.5	
Height of Component Hole	H	$20.0^{+1.5}_{-1.0}$	
Diameter of Sprocket Hole	$\varnothing D_o$	4.0 ± 0.2	
Total Tape Thickness	t ₁	0.7 ± 0.2	
Total Thickness, Tape and Wire	t ₂	1.7 Max	
Length of Snipped Lead	L _x	1.0 Max	

Packing Style Bulk Type (BW)

07Ø (S-TYPE) – 1750A



Kink Short

(Unit:mm)

Type	Dmax	Tmax	L±0.5	F±1.0	ød±0.05
SVC201D-07A	9.0	4.5	3.7	5.0	0.60
SVC221D-07A	9.0	4.5	3.7	5.0	0.60
SVC241D-07A	9.0	4.5	3.7	5.0	0.60
SVC271D-07A	9.0	4.5	3.7	5.0	0.60
SVC361D-07A	9.0	5.0	3.7	5.0	0.60
SVC391D-07A	9.0	5.0	3.7	5.0	0.60
SVC431D-07A	9.0	6.0	3.7	5.0	0.60
SVC471D-07A	9.0	6.0	3.7	5.0	0.60
SVC511D-07A	9.0	6.0	3.7	5.0	0.60
SVC561D-07A	9.0	7.5	3.7	5.0	0.60
SVC621D-07A	9.0	7.5	3.7	5.0	0.60
SVC681D-07A	9.0	7.5	3.7	5.0	0.60
SVC751D-07A	9.0	8.5	3.7	5.0	0.60

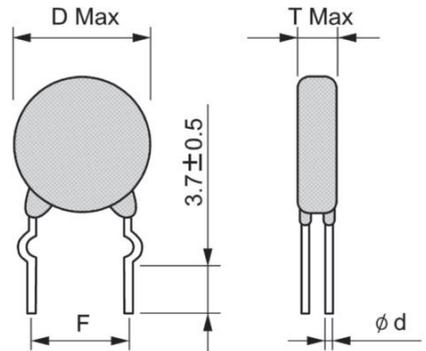
If the F value is 7.5 mm, the thickness of ød is 0.70 ± 0.05 mm.

10Ø (A-TYPE) – 3500A

(Unit:mm)

Type	Dmax	Tmax	L±0.5	F±1.0	Ød±0.05
SVC201D-10A	14.0	4.5	3.7	7.5	0.70
SVC221D-10A	14.0	4.5	3.7	7.5	0.70
SVC241D-10A	14.0	4.5	3.7	7.5	0.70
SVC271D-10A	14.0	4.5	3.7	7.5	0.70
SVC361D-10A	14.0	5.0	3.7	7.5	0.70
SVC391D-10A	14.0	5.0	3.7	7.5	0.70
SVC431D-10A	14.0	6.0	3.7	7.5	0.70
SVC471D-10A	14.0	6.0	3.7	7.5	0.70
SVC511D-10A	14.0	6.0	3.7	7.5	0.70
SVC561D-10A	14.0	7.5	3.7	7.5	0.70
SVC621D-10A	14.0	7.5	3.7	7.5	0.70
SVC681D-10A	14.0	7.5	3.7	7.5	0.70
SVC751D-10A	14.0	8.5	3.7	7.5	0.70
SVC781D-10A	14.0	8.5	3.7	7.5	0.70
SVC821D-10A	14.0	8.5	3.7	7.5	0.70
SVC911D-10A	14.0	10.5	3.7	7.5	0.70
SVC102D-10A	14.0	10.5	3.7	7.5	0.70
SVC112D-10A	14.0 1	0.5	3.7	7.5	0.70

14Ø (S-TYPE) – 6000A

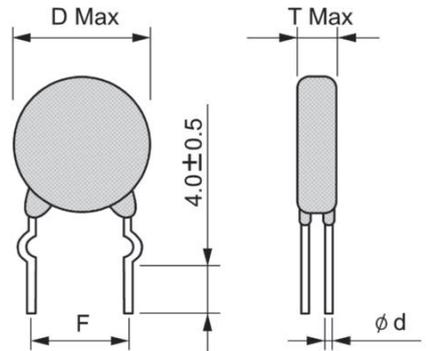


Kink Short

(Unit:mm)

Type	Dmax	Tmax	L±0.5	F±1.0	ød±0.05
SVC201D-14A	17.5	4.5	3.7	7.5	0.80
SVC221D-14A	17.5	4.5	3.7	7.5	0.80
SVC241D-14A	17.5	4.5	3.7	7.5	0.80
SVC271D-14A	17.5	4.5	3.7	7.5	0.80
SVC361D-14A	17.5	5.0	3.7	7.5	0.80
SVC391D-14A	17.5	5.0	3.7	7.5	0.80
SVC431D-14A	17.5	6.0	3.7	7.5	0.80
SVC471D-14A	17.5	6.0	3.7	7.5	0.80
SVC511D-14A	17.5	6.0	3.7	7.5	0.80
SVC561D-14A	17.5	7.5	3.7	7.5	0.80
SVC621D-14A	17.5	7.5	3.7	7.5	0.80
SVC681D-14A	17.5	7.5	3.7	7.5	0.80
SVC751D-14A	17.5	8.5	3.7	7.5	0.80
SVC781D-14A	17.5	8.5	3.7	7.5	0.80
SVC821D-14A	17.5	10.5	3.7	7.5	0.80
SVC911D-14A	17.5	10.5	3.7	7.5	0.80
SVC102D-14A	17.5	10.5	3.7	7.5	0.80
SVC112D-14A	17.5	7.5	3.7	7.5	0.80

20Ø (S-TYPE) - 10000A



Kink Short

(Unit:mm)

Type	Dmax	Tmax	L±0.5	F±1.0	ød±0.05
SVC201D-20A	24.0	4.5	4.0	10.0	1.00
SVC221D-20A	24.0	4.5	4.0	10.0	1.00
SVC241D-20A	24.0	4.5	4.0	10.0	1.00
SVC271D-20A	24.0	4.5	4.0	10.0	1.00
SVC361D-20A	24.0	5.0	4.0	10.0	1.00
SVC391D-20A	24.0	5.0	4.0	10.0	1.00
SVC431D-20A	24.0	6.0	4.0	10.0	1.00
SVC471D-20A	24.0	6.0	4.0	10.0	1.00
SVC511D-20A	24.0	6.0	4.0	10.0	1.00
SVC561D-20A	24.0	7.5	4.0	10.0	1.00
SVC621D-20A	24.0	7.5	4.0	10.0	1.00
SVC681D-20A	24.0	7.5	4.0	10.0	1.00
SVC751D-20A	24.0	8.5	4.0	10.0	1.00
SVC781D-20A	24.0	8.5	4.0	10.0	1.00
SVC821D-20A	24.0	8.5	4.0	10.0	1.00
SVC911D-20A	24.0	10.5	4.0	10.0	1.00
SVC102D-20A	24.0	10.5	4.0	10.0	1.00
SVC112D-20A	24.0	0.5	4.0	10.0	1.00

Specification Table-Superior Type

Device Type	Chip Element Size	Maximum Ratings						Characteristics						SAFETY APPROVAL		
		Applied Voltage		Transient				Nominal Varistor Peak Voltage			Max. Clamping Voltage @ Test Current(8/20 μ s)		Nominal Discharge Current			
		RMS 50/60Hz (25 $^{\circ}$ C)	DC (25 $^{\circ}$ C)	Energy (2mS)	Average Power Dissipation	Peak Current (8/20 μ s)					Vc (Volts)	Ip (Amps)		In (Amps)		
		Dia (mm)	Vacm (Volts)	Vdcm (Volts)	Wim (Joules)	Ptam (Watts)	I _{tm} (Amps)		Vnom (Volts)	Tolerance		Vc (Volts)	Ip (Amps)	In (Amps)	UL	CSA
SVC 201D-07A****	7			10.0	0.25	1750	1250				340	10.0	500	●	●	●
SVC 201D-10A****	10	130	170	20.0	0.40	3500	2500	200	180	220	340	25.0	1500	●	●	●
SVC 201D-14A****	14			35.0	0.60	6000	4500				340	50.0	3000	●	●	●
SVC 201D-20A****	20			70.0	1.00	10000	7000				340	100.0	5000	●	●	●
SVC 221D-07A****	7			10.0	0.25	1750	1250				360	10.0	500	●	●	●
SVC 221D-10A****	10	140	180	23.0	0.40	3500	2500	200	198	242	360	25.0	1500	●	●	●
SVC 221D-14A****	14			40.0	0.60	6000	4500				360	50.0	3000	●	●	●
SVC 221D-20A****	20			75.0	1.00	10000	7000				360	100.0	5000	●	●	●
SVC 241D-07A****	7			10.0	0.25	1750	1250				395	10.0	500	●	●	●
SVC 241D-10A****	10	150	200	25.0	0.40	3500	2500	240	216	264	395	25.0	1500	●	●	●
SVC 241D-14A****	14			40.0	0.60	6000	4500				395	50.0	3000	●	●	●
SVC 241D-20A****	20			75.0	1.00	10000	7000				395	100.0	5000	●	●	●
SVC 271D-07A****	7			12.0	0.25	1750	1250				455	10.0	500	●	●	●
SVC 271D-10A****	10	175	225	30.0	0.40	3500	2500	270	243	297	455	25.0	1500	●	●	●
SVC 271D-14A****	14			50.0	0.60	6000	4500				455	50.0	3000	●	●	●
SVC 271D-20A****	20			90.0	1.00	10000	7000				455	100.0	5000	●	●	●
SVC 361D-07A****	7			15.0	0.25	1750	1250				596	10.0	500	●	●	●
SVC 361D-10A****	10	230	300	35.0	0.40	3500	2500	360	324	396	596	25.0	1500	●	●	●
SVC 361D-14A****	14			65.0	0.60	6000	4500				596	50.0	3000	●	●	●
SVC 361D-20A****	20			120.0	1.00	10000	7000				596	100.0	5000	●	●	●
SVC 391D-07A****	7			17.0	0.25	1750	1250				650	10.0	500	●	●	●
SVC 391D-10A****	10	250	320	40.0	0.40	3500	2500	390	351	429	650	25.0	1500	●	●	●
SVC 391D-14A****	14			70.0	0.60	6000	4500				650	50.0	3000	●	●	●
SVC 391D-20A****	20			130.0	1.00	10000	7000				650	100.0	5000	●	●	●
SVC 431D-07A****	7			20.0	0.25	1750	1250				710	10.0	500	●	●	●
SVC 431D-10A****	10	275	350	45.0	0.40	3500	2500	430	387	479	710	25.0	1500	●	●	●
SVC 431D-14A****	14			75.0	0.60	6000	4500				710	50.0	3000	●	●	●
SVC 431D-20A****	20			140.0	1.00	10000	7000				710	100.0	5000	●	●	●
SVC 471D-07A****	7			20.0	0.25	1750	1250				775	10.0	500	●	●	●
SVC 471D-10A****	10	300	385	45.0	0.40	3500	2500	470	423	517	775	25.0	1500	●	●	●
SVC 471D-14A****	14			80.0	0.60	6000	4500				775	50.0	3000	●	●	●
SVC 471D-20A****	20			150.0	1.00	10000	7000				775	100.0	5000	●	●	●
SVC 511D-07A****	7			20.0	0.25	1750	1250				840	10.0	500	●	●	●
SVC 511D-10A****	10	320	420	45.0	0.40	3500	2500	510	459	561	840	25.0	1500	●	●	●
SVC 511D-14A****	14			85.0	0.60	6000	4500				840	50.0	3000	●	●	●
SVC 511D-20A****	20			150.0	1.00	10000	7000				840	100.0	5000	●	●	●
SVC 561D-07A****	7			20.0	0.25	1750	1250				920	10.0	500	●	●	●
SVC 561D-10A****	10	350	460	45.0	0.40	3500	2500	560	504	616	920	25.0	1500	●	●	●
SVC 561D-14A****	14			85.0	0.60	6000	4500				920	50.0	3000	●	●	●
SVC 561D-20A****	20			150.0	1.00	10000	7000				920	100.0	5000	●	●	●

Device Type	Chip Element Size	Maximum Ratings						Characteristics						SAFETY APPROVAL		
		Applied Voltage		Transient				Nominal Varistor Peak Voltage			Max. Clamping Voltage @ Test Current(8/20 μ S)		Nominal Discharge Current			
		RMS 50/60Hz (25 $^{\circ}$ C)	DC (25 $^{\circ}$ C)	Energy (2mS)	Average Power Dissipation	Peak Current (8/20 μ S)		Vnom (Volts)	Tolerance		Vc (Volts)	Ip (Amps)	In (Amps)	UL	CSA	VDE
		Vacm (Volts)	Vdcm (Volts)	Wtm (Joules)	Ptam (Watts)	1 Pulse	2 Pulse		Min.(Volts)	Max.(Volts)						
SVC 621D-07A***S	7			20.0	0.25	1750	1250				1025	10.0	500		●	●
SVC 621D-10A***S	10	385	550	45.0	0.40	3500	2500	620	558	682	1025	25.0	1500	●	●	●
SVC 621D-14A***S	14			85.0	0.60	6000	4500				1025	50.0	3000	●	●	●
SVC 621D-20A***S	20			150.0	1.00	10000	7000				1025	100.0	5000	●	●	●
SVC 681D-07A***S	7			25.0	0.25	1750	1250				1120	10.0	500		●	●
SVC 681D-10A***S	10	420	560	45.0	0.40	3500	2500	680	612	748	1120	25.0	1500	●	●	●
SVC 681D-14A***S	14			90.0	0.60	6000	4500				1120	50.0	3000	●	●	●
SVC 681D-20A***S	20			160.0	1.00	10000	7000				1120	100.0	5000	●	●	●
SVC 751D-07A***S	7			30.0	0.25	1750	1250				1240	10.0	500		●	●
SVC 751D-10A***S	10	460	615	50.0	0.40	3500	2500	750	675	825	1240	25.0	1500	●	●	●
SVC 751D-14A***S	14			100.0	0.60	6000	4500				1240	50.0	3000	●	●	●
SVC 751D-20A***S	20			175.0	1.00	10000	7000				1240	100.0	5000	●	●	●
SVC 781D-10A***S	10			50.0	0.40	3500	2500				1290	25.0	1500	●	●	●
SVC 781D-14A***S	14	485	640	105.0	0.60	6000	4500	780	702	858	1290	50.0	3000	●	●	●
SVC 781D-20A***S	20			180.0	1.00	10000	7000				1290	100.0	5000	●	●	●
SVC 821D-10A***S	10			50.0	0.40	3500	2500				1355	25.0	1500	●	●	●
SVC 821D-14A***S	14	510	670	110.0	0.60	6000	4500	820	738	902	1355	50.0	3000	●	●	●
SVC 821D-20A***S	20			190.0	1.00	10000	7000				1355	100.0	5000	●	●	●
SVC 911D-10A***S	10			60.0	0.40	3500	2500				1500	25.0	1500	●	●	●
SVC 911D-14A***S	14	550	745	120.0	0.60	6000	4500	910	819	1001	1500	50.0	3000	●	●	●
SVC 911D-20A***S	20			215.0	1.00	10000	7000				1500	100.0	5000	●	●	●
SVC 102D-10A***S	10			65.0	0.40	3500	2500				1650	25.0	1500	●	●	●
SVC 102D-14A***S	14	625	825	130.0	0.60	6000	4500	1000	900	1100	1650	50.0	3000	●	●	●
SVC 102D-20A***S	20			230.0	1.00	10000	7000				1650	100.0	5000	●	●	●
SVC 112D-10A***S	10			70.0	0.40	3500	2500				1815	25.0	1500	●	●	●
SVC 112D-14A***S	14	680	895	140.0	0.60	6000	4500	1000	900	1210	1815	50.0	3000	●	●	●
SVC 112D-20A***S	20			250.0	1.00	10000	7000				1815	100.0	5000	●	●	●