

## Description

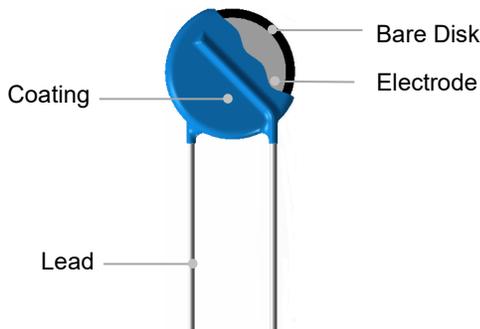


Metal Oxide Varistor (MOV) is a nonlinear resistance component with zinc oxide (ZnO) as its main constituent. The resistance of an MOV is sensitive to changes in the applied voltage. Below the threshold voltage, the MOV exhibits high resistance, allowing only a negligibly small leakage current to flow. Once the threshold voltage is exceeded, the resistance of the MOV drops sharply, enabling the conduction of a large current. This characteristic makes the MOV suitable for detecting and suppressing surge voltage and overvoltage, thereby protecting the circuit from damage caused by excessive voltage.

The Metal Oxide Varistor (MOV) finds wide application in various fields such as photovoltaics, communication, lightning protection, power supply, and power strips. It serves to suppress transient overvoltage and absorb surge energy within the circuit.

SETsafe | SETfuse offers Metal Oxide Varistors (MOV) with maximum peak current ratings ranging from 0.75 kA to 70 kA, and maximum continuous voltage ratings from 14VAC to 750 VAC. Safety certification includes UL, cUL, TUV, and CQC, and complies with RoHS and REACH requirements.

## Product Structure



## Lead Types

Lead Types		Codes
Straight Lead		A
Outward Crimp Lead		C
Little Straight Lead		I
Inline Crimp Lead		D

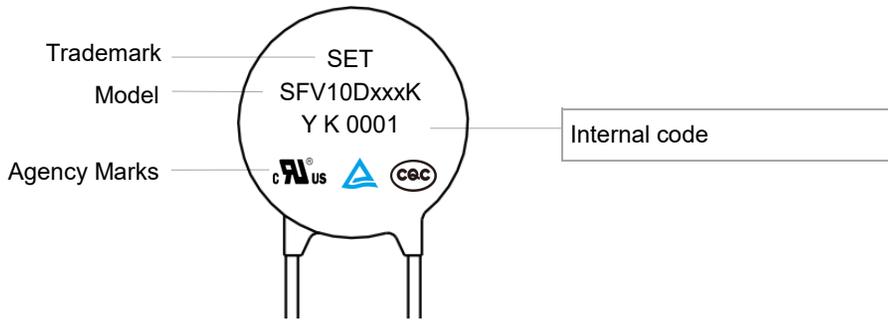
## Agency Information

Agency	Standards	No.
	UL 1449 4 <sup>th</sup> Edition	E322662
	CSA C22.2 NO.269.5-17	E322662
	EN 61051-1:2008 IEC 61051-1:2007 IEC 61051-2:1991+A1 IEC 61051-2-2:1991 Annex G.8.1 of IEC 62368-1:2018	J 50254627
	GB/T 10193-1997 GB/T 10194-1997 GB 4943.1-2022 IEC 61051-2-1991+Amd1:2009	CQC12001084353

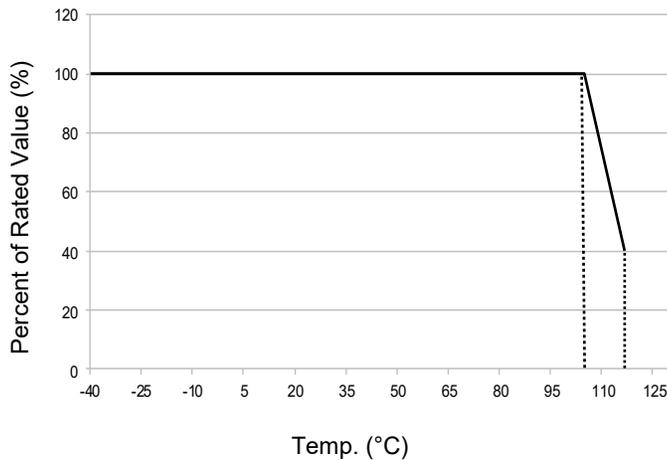
## Applications

- Power Supplies
- Home Electrical Appliances
- Industrial Devices
- Surge Protectors
- Telecom Devices

### Marking



### Temp. Derating Curve



**Note:**

When ambient Temp. exceeds 105 °C, the peak surge current and energy rating should be reduced as shown in left curve.

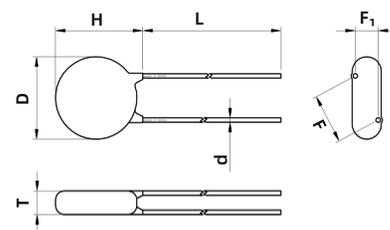
For Normal Temp. Series

### General Technical Data

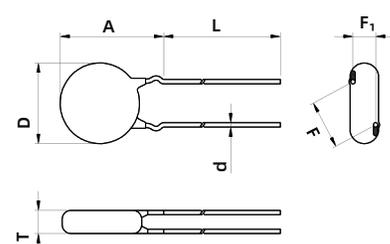
Item	Value	Unit
Operating Temperature	-40 to +105	°C
Storage Temperature	-40 to +125	°C
Voltage Proof	≥2500	V <sub>ac</sub>
Insulation Resistance	≥100	MΩ

**Dimensions (mm)**

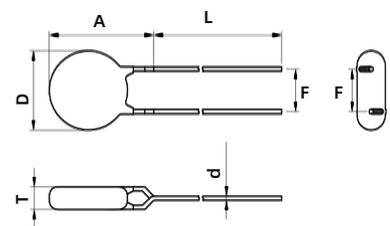
Model	L (Min.)	H (Max.)	T (Max.)	D (Max.)	d	F	F <sub>1</sub>	A (Max.)
SFV10D220K	20	15.5	4.5	12.5	0.80±0.05	7.5±0.6	1.1 ~ 2.5	17.5
SFV10D270K	20	15.5	4.8	12.5	0.80±0.05	7.5±0.6	1.2 ~ 2.7	17.5
SFV10D330K	20	15.5	5.1	12.5	0.80±0.05	7.5±0.6	1.3 ~ 2.9	17.5
SFV10D390K	20	15.5	5.4	12.5	0.80±0.05	7.5±0.6	1.4 ~ 3.1	17.5
SFV10D470K	20	15.5	4.6	12.5	0.80±0.05	7.5±0.6	1.2 ~ 2.7	17.5
SFV10D560K	20	15.5	4.8	12.5	0.80±0.05	7.5±0.6	1.3 ~ 2.9	17.5
SFV10D680K	20	15.5	5.1	12.5	0.80±0.05	7.5±0.6	1.5 ~ 3.2	17.5
SFV10D820K	20	15.5	4.4	12.5	0.80±0.05	7.5±0.6	1.2 ~ 2.6	17.5
SFV10D101K	20	15.5	4.6	12.5	0.80±0.05	7.5±0.6	1.3 ~ 2.8	17.5
SFV10D121K	20	15.5	4.8	12.5	0.80±0.05	7.5±0.6	1.4 ~ 3.0	17.5
SFV10D151K	20	15.5	5.1	12.5	0.80±0.05	7.5±0.6	1.6 ~ 3.3	17.5
SFV10D181K	20	15.5	4.4	12.5	0.80±0.05	7.5±0.6	1.0 ~ 2.6	17.5
SFV10D201K	20	15.5	4.6	12.5	0.80±0.05	7.5±0.6	1.1 ~ 2.7	17.5
SFV10D221K	20	15.5	4.7	12.5	0.80±0.05	7.5±0.6	1.2 - 2.8	17.5
SFV10D241K	20	15.5	4.8	12.5	0.80±0.05	7.5±0.6	1.3 ~ 2.9	17.5
SFV10D271K	20	15.5	4.9	12.5	0.80±0.05	7.5±0.6	1.4 ~ 3.1	17.5
SFV10D301K	20	15.5	5.1	12.5	0.80±0.05	7.5±0.6	1.5 ~ 3.2	17.5
SFV10D331K	20	15.5	5.3	12.5	0.80±0.05	7.5±0.6	1.6 ~ 3.3	17.5
SFV10D361K	20	15.5	5.4	12.5	0.80±0.05	7.5±0.6	1.7 ~ 3.5	17.5
SFV10D391K	20	15.5	5.6	12.5	0.80±0.05	7.5±0.6	1.8 ~ 3.6	17.5
SFV10D431K	20	15.5	5.8	12.5	0.80±0.05	7.5±0.6	1.8 ~ 3.8	17.5
SFV10D471K	20	15.5	6.1	12.5	0.80±0.05	7.5±0.6	2.0 ~ 4.0	17.5
SFV10D511K	20	15.5	6.3	12.5	0.80±0.05	7.5±0.6	2.2 ~ 4.2	17.5
SFV10D561K	20	15.5	6.6	12.5	0.80±0.05	7.5±0.6	2.4 ~ 4.4	17.5
SFV10D621K	20	15.5	6.9	12.5	0.80±0.05	7.5±0.6	2.7 ~ 4.7	17.5
SFV10D681K	20	15.5	7.2	12.5	0.80±0.05	7.5±0.6	3.0 ~ 5.0	17.5
SFV10D751K	20	15.5	7.6	12.5	0.80±0.05	7.5±0.6	3.3 ~ 5.3	17.5
SFV10D821K	20	15.5	8.0	12.5	0.80±0.05	7.5±0.6	3.6 ~ 5.6	17.5
SFV10D911K	20	15.5	8.5	12.5	0.80±0.05	7.5±0.6	4.0 ~ 6.0	17.5
SFV10D102K	20	15.5	9.0	12.5	0.80±0.05	7.5±0.6	4.5 ~ 6.5	17.5
SFV10D112K	20	15.5	9.6	12.5	0.80±0.05	7.5±0.6	4.9 ~ 6.9	17.5
SFV10D122K	20	15.5	10.1	12.5	0.80±0.05	7.5±0.6	5.4 ~ 7.4	17.5



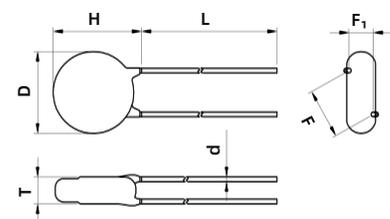
Straight Lead (A)



Outward Crimp (C)



Inline Crimp (D)



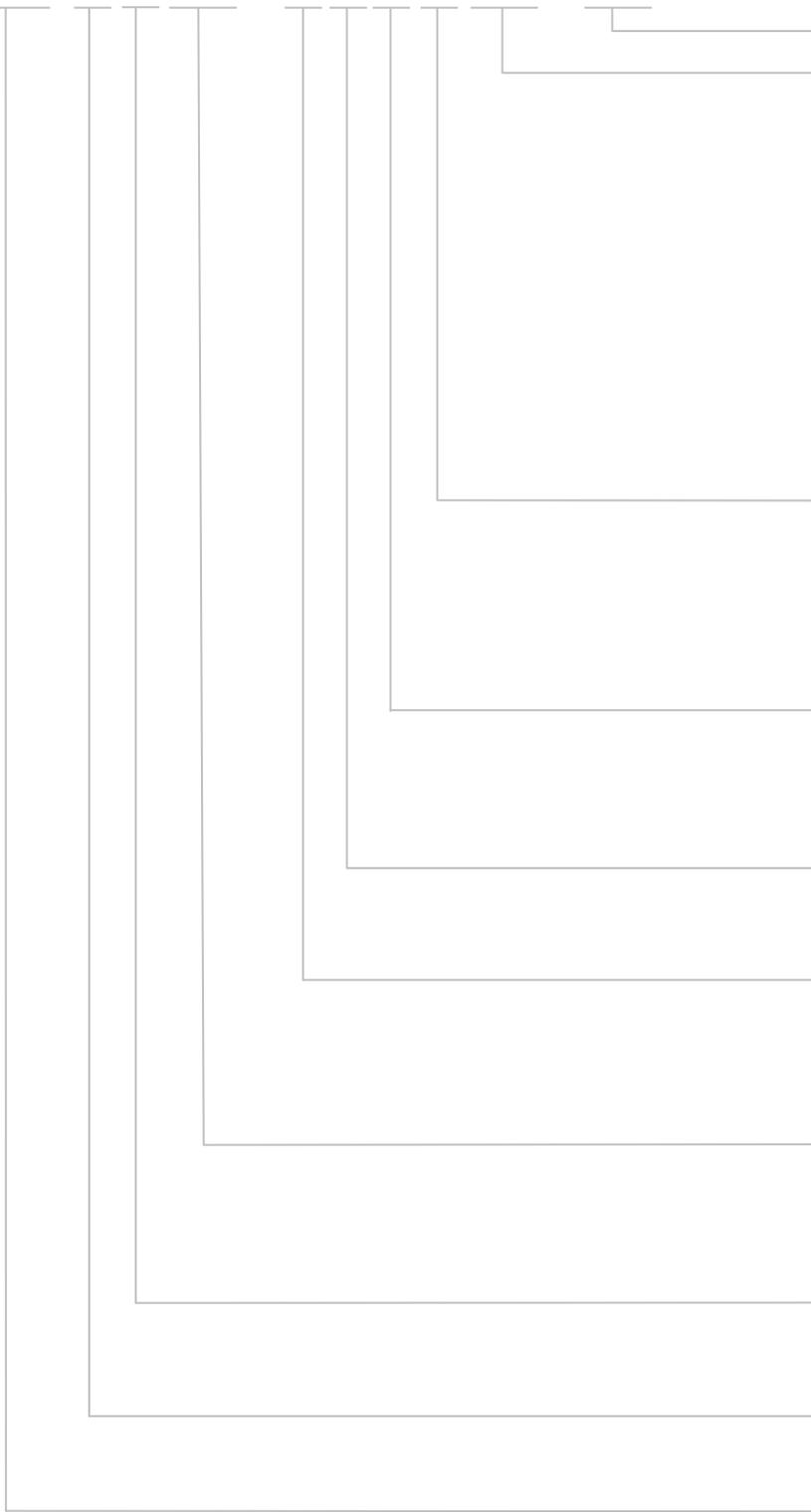
Little Straight Lead (I)

Note:

The above data is for reference only.

**Part Numbering System**

SFV 10 D 471 - K P K A BUL - 001



**Other Options**

**\*Packaging & Lead Length**

BUL: Bulk + Standard Lead Length (Normal L28)  
 C35: Bulk + Cut to 3.5 mm  
 (Range:2.5 mm to 6 mm)  
 L30: Bulk + Special Lead Length 30 mm  
 (28 mm to 32 mm)  
 (0/1)AB: Taping + Box (Hole Pitch 12.7 mm)  
 (0/1)EB: Taping + Box (Hole Pitch 15.0 mm)  
 (0/1)AR: Taping + Reel (Hole Pitch 12.7 mm)  
 (0/1)ER: Taping + Reel (Hole Pitch 15.0 mm)  
 Note:0/1 Means Product Position  
 0: In Middle of Two Holes; 1: Across the Hole

**Lead Types**

A: Straight Lead  
 C: Outward Crimp Lead  
 D: Inline Crimp Lead  
 I: Little Straight Lead

**Surge Level**

S: Normal Type  
 K: Standard Type  
 Q: Advanced Type

**Operating Temp.**

P: Epoxy Coating 105 °C

**Voltage Tolerance**

K: ±10%  
 J: ±5%  
 S: Special Tolerance

**Nominal Varistor Voltage**

220:  $22 \times 10^0 = 22 \text{ V}$   
 471:  $47 \times 10^1 = 470 \text{ V}$   
 122:  $12 \times 10^2 = 1200 \text{ V}$

**Disk Shape**

D: Round

**Bare Disk Dimension**

10: 10 mm

**Product Category**

SETfuse Varistor

**Reminder:**

Part numbering system in the datasheet is only for selecting correct parameter and product features. Before placing order, please contact us for specifications and use the part number and product code in the specifications to place order to ensure the part is correct. Product code is the unique identification.

**Specification**

Model	Surge Level	Max. Continuous Operating Voltage		Varistor Voltage @1 mA DC		Clamping Voltage (Max.)		Max. Peak Current (1 time, 8/20 μs)	Max. Energy (10/1000 μs)	Typical Capacitance (For reference only) @1 kHz	Agency Information						
		VAC	VDC	Min.	Max.	V <sub>C</sub>	I <sub>P</sub>				S		(pF)				
		(V)	(V)	(V)	(V)	(V)	(A)				(kA)	(J)		UL	cUL	TUV	CQC
SFV10D220K	S	14	18	20	24	43	5	0.5	2.5	4500	●	●	●	●			
SFV10D270K	S	17	22	24	31	53	5	0.5	3.0	3700	●	●	●	●			
SFV10D330K	S	20	26	30	36	65	5	0.5	4.0	3000	●	●	●	●			
SFV10D390K	S	25	31	35	43	77	5	0.5	4.6	2400	●	●	●	●			
SFV10D470K	S	30	38	42	52	93	5	0.5	5.5	2100	●	●	●	●			
SFV10D560K	S	35	45	50	62	110	5	0.5	7.0	1800	●	●	●	●			
SFV10D680K	S	40	56	61	75	135	5	0.5	8.2	1500	●	●	●	●			
SFV10D820K	S	50	65	74	90	135	25	2.5	12	1200	●	●	●	●			
SFV10D101K	S	60	85	90	110	165	25	2.5	15	1000	●	●	●	●			
SFV10D121K	S	75	100	108	132	200	25	2.5	18	830	●	●	●	●			
SFV10D151K	S	95	125	135	165	250	25	2.5	22	670	●	●	●	●			
SFV10D181K	S	115	150	162	198	300	25	2.5	27	560	●	●	●	●			
SFV10D201K	S	130	170	180	220	340	25	2.5	30	500	●	●	●	●			
SFV10D221K	S	140	180	198	242	360	25	2.5	32	450	●	●	●	●			
SFV10D241K	S	150	200	216	264	395	25	2.5	35	420	●	●	●	●			
SFV10D271K	S	175	225	243	297	455	25	2.5	40	370	●	●	●	●			
SFV10D301K	S	190	250	270	330	500	25	2.5	40	330	●	●	●	●			
SFV10D331K	S	210	275	297	363	550	25	2.5	43	300	●	●	●	●			
SFV10D361K	S	230	300	324	396	595	25	2.5	47	280	●	●	●	●			
SFV10D391K	S	250	320	351	429	650	25	2.5	60	260	●	●	●	●			
SFV10D431K	S	275	350	387	473	710	25	2.5	65	230	●	●	●	●			
SFV10D471K	S	300	385	423	517	775	25	2.5	70	210	●	●	●	●			
SFV10D511K	S	320	415	459	561	845	25	2.5	70	200	●	●	●	●			
SFV10D561K	S	350	460	504	616	925	25	2.5	70	180	●	●	●	●			
SFV10D621K	S	385	505	558	682	1025	25	2.5	70	160	●	●	●	●			
SFV10D681K	S	420	560	612	748	1120	25	2.5	70	150	●	●	●	●			
SFV10D751K	S	460	615	675	825	1240	25	2.5	75	130	●	●	○	●			
SFV10D821K	S	510	670	738	902	1355	25	2.5	85	120	●	●	○	●			
SFV10D911K	S	550	745	819	1001	1500	25	2.5	93	110	●	●	○	●			
SFV10D102K	S	625	825	900	1100	1650	25	2.5	102	100	●	●	○	●			
SFV10D112K	S	680	895	990	1210	1815	25	2.5	115	90	●	●	○	●			
SFV10D122K	S	750	990	1080	1320	1980	25	2.5	125	55	●	●	○	●			

● : Approved      ○ : Unauthorized      ● : RoHS & REACH Compliant

**Specification**

Model	Surge Level	Max. Continuous Operating Voltage		Varistor Voltage @1 mA DC		Clamping Voltage (Max.)		Max. Peak Current (1 time, 8/20 μs)	Max. Energy (10/1000 μs)	Typical Capacitance (For reference only) @1 kHz	Agency Information						
		VAC	VDC	Min.	Max.	V <sub>C</sub>	I <sub>P</sub>				K		(pF)				
		(V)	(V)	(V)	(V)	(V)	(A)				(kA)	(J)		UL	cUL	TUV	CQC
SFV10D220K	K	14	18	20	24	43	5	1.0	3.2	4500	●	●	●	●			
SFV10D270K	K	17	22	24	31	53	5	1.0	3.9	3700	●	●	●	●			
SFV10D330K	K	20	26	30	36	65	5	1.0	4.8	3000	●	●	●	●			
SFV10D390K	K	25	31	35	43	77	5	1.0	5.6	2400	●	●	●	●			
SFV10D470K	K	30	38	42	52	93	5	1.0	6.8	2100	●	●	●	●			
SFV10D560K	K	35	45	50	62	110	5	1.0	8.1	1800	●	●	●	●			
SFV10D680K	K	40	56	61	75	135	5	1.0	9.8	1500	●	●	●	●			
SFV10D820K	K	50	65	74	90	135	25	3.5	14	1200	●	●	●	●			
SFV10D101K	K	60	85	90	110	165	25	3.5	17	1000	●	●	●	●			
SFV10D121K	K	75	100	108	132	200	25	3.5	20	830	●	●	●	●			
SFV10D151K	K	95	125	135	165	250	25	3.5	25	670	●	●	●	●			
SFV10D181K	K	115	150	162	198	300	25	3.5	30	560	●	●	●	●			
SFV10D201K	K	130	170	180	220	340	25	3.5	35	500	●	●	●	●			
SFV10D221K	K	140	180	198	242	360	25	3.5	39	450	●	●	●	●			
SFV10D241K	K	150	200	216	264	395	25	3.5	42	420	●	●	●	●			
SFV10D271K	K	175	225	243	297	455	25	3.5	49	370	●	●	●	●			
SFV10D301K	K	190	250	270	330	500	25	3.5	54	330	●	●	●	●			
SFV10D331K	K	210	275	297	363	550	25	3.5	58	300	●	●	●	●			
SFV10D361K	K	230	300	324	396	595	25	3.5	65	280	●	●	●	●			
SFV10D391K	K	250	320	351	429	650	25	3.5	70	260	●	●	●	●			
SFV10D431K	K	275	350	387	473	710	25	3.5	80	230	●	●	●	●			
SFV10D471K	K	300	385	423	517	775	25	3.5	85	210	●	●	●	●			
SFV10D511K	K	320	415	459	561	845	25	3.5	90	200	●	●	●	●			
SFV10D561K	K	350	460	504	616	925	25	3.5	92	180	●	●	●	●			
SFV10D621K	K	385	505	558	682	1025	25	3.5	95	160	●	●	●	●			
SFV10D681K	K	420	560	612	748	1120	25	3.5	98	150	●	●	●	●			
SFV10D751K	K	460	615	675	825	1240	25	3.5	100	130	●	●	○	●			
SFV10D821K	K	510	670	738	902	1355	25	3.5	110	120	●	●	○	●			
SFV10D911K	K	550	745	819	1001	1500	25	3.5	130	110	●	●	○	●			
SFV10D102K	K	625	825	900	1100	1650	25	3.5	140	100	●	●	○	●			
SFV10D112K	K	680	895	990	1210	1815	25	3.5	155	90	●	●	○	●			
SFV10D122K	K	750	990	1080	1320	1980	25	3.5	170	55	●	●	○	●			

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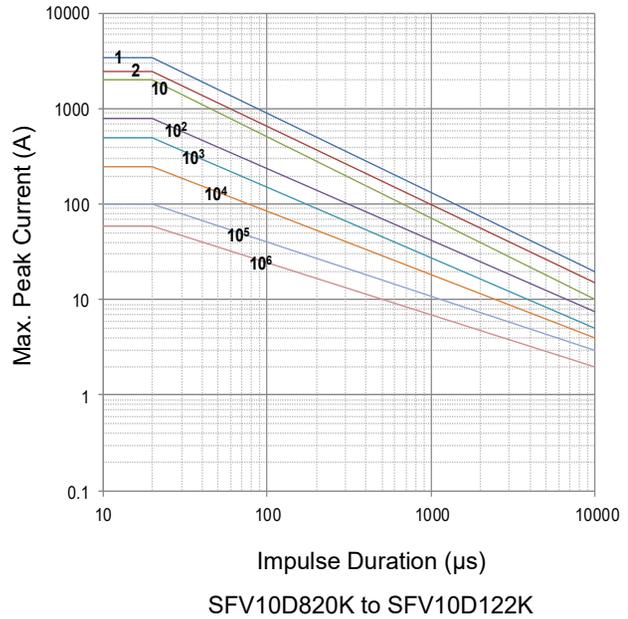
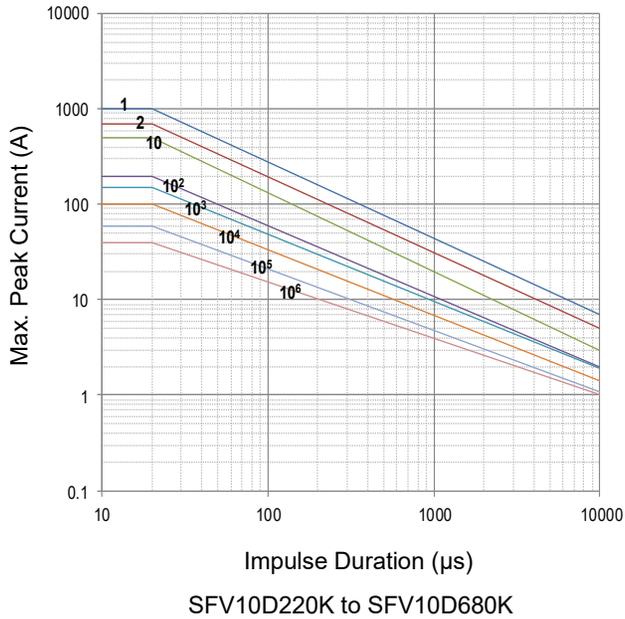
**Specification**

Model	Surge Level	Max. Continuous Operating Voltage		Varistor Voltage @1 mA DC		Clamping Voltage (Max.)		Pulse Impact Performance (40 times) (1.2/50 $\mu$ s & 8/20 $\mu$ s)	Max. Energy (10/1000 $\mu$ s)	Typical Capacitance (For reference only) @1 kHz	Agency Information						
		VAC	VDC	Min.	Max.	$V_C$	$I_P$				Q		(pF)				
		(V)	(V)	(V)	(V)	(V)	(A)				(kV)	(J)		UL	cUL	TUV	CQC
SFV10D201K	Q	130	170	180	220	340	25	4.5	35	500	●	●	●	●			
SFV10D221K	Q	140	180	198	242	360	25	4.5	39	450	●	●	●	●			
SFV10D241K	Q	150	200	216	264	395	25	4.5	42	420	●	●	●	●			
SFV10D271K	Q	175	225	243	297	455	25	4.5	49	370	●	●	●	●			
SFV10D301K	Q	190	250	270	330	500	25	4.5	54	330	●	●	●	●			
SFV10D331K	Q	210	275	297	363	550	25	4.5	58	300	●	●	●	●			
SFV10D361K	Q	230	300	324	396	595	25	4.5	65	280	●	●	●	●			
SFV10D391K	Q	250	320	351	429	650	25	4.5	70	260	●	●	●	●			
SFV10D431K	Q	275	350	387	473	710	25	4.5	80	230	●	●	●	●			
SFV10D471K	Q	300	385	423	517	775	25	4.5	85	210	●	●	●	●			
SFV10D511K	Q	320	415	459	561	845	25	4.5	90	200	●	●	●	●			
SFV10D561K	Q	350	460	504	616	925	25	4.5	92	180	●	●	●	●			
SFV10D621K	Q	385	505	558	682	1025	25	4.5	95	160	●	●	●	●			
SFV10D681K	Q	420	560	612	748	1120	25	4.5	98	150	●	●	●	●			

● : Approved      ○ : Unauthorized      ● : RoHS & REACH Compliant

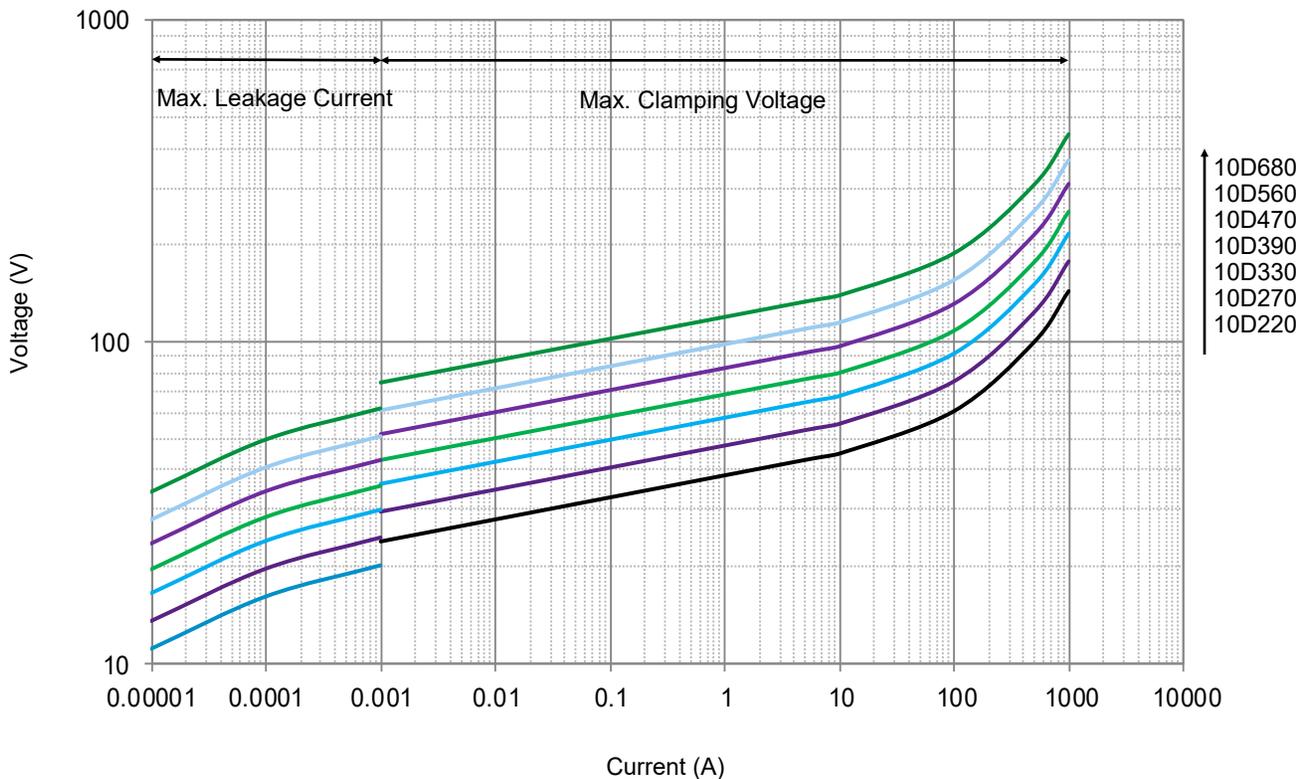
**Performance Curve (For reference only )**

● Max. Peak Current Derating Curves

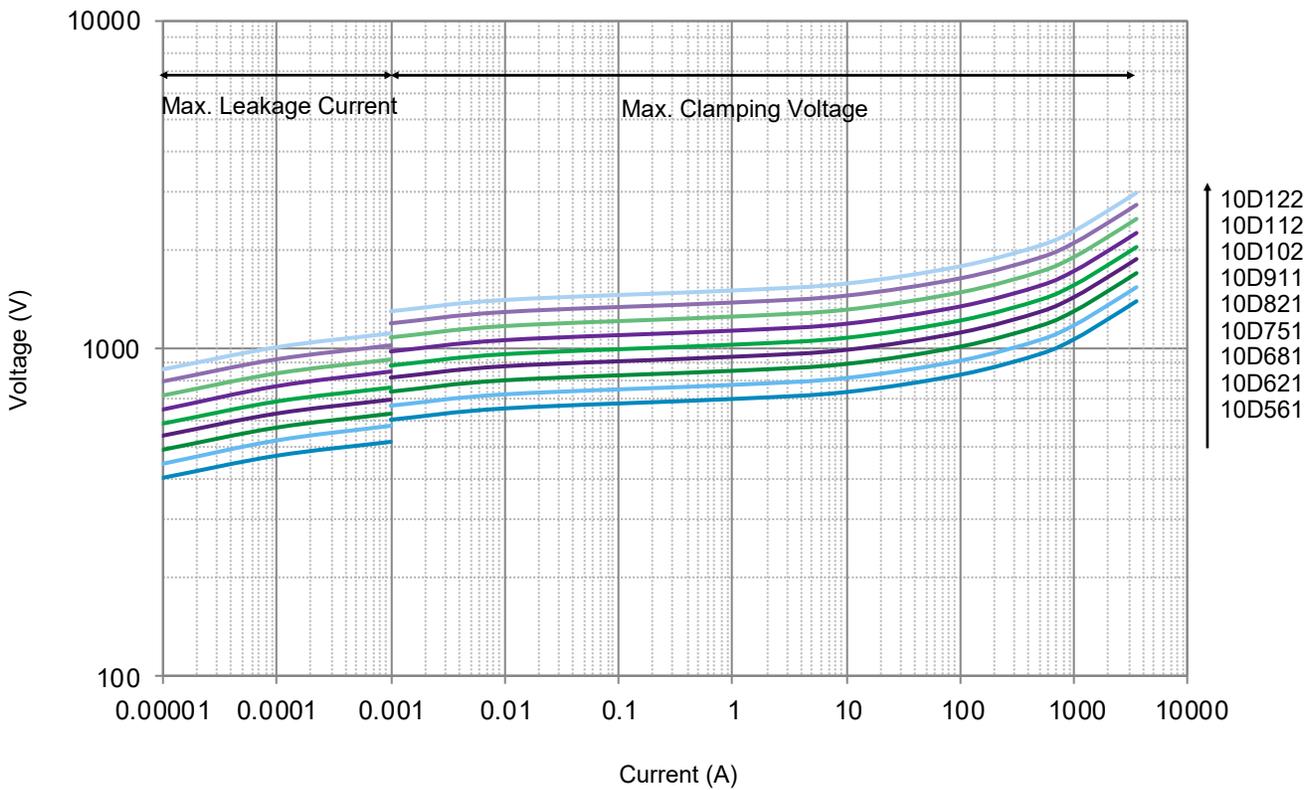
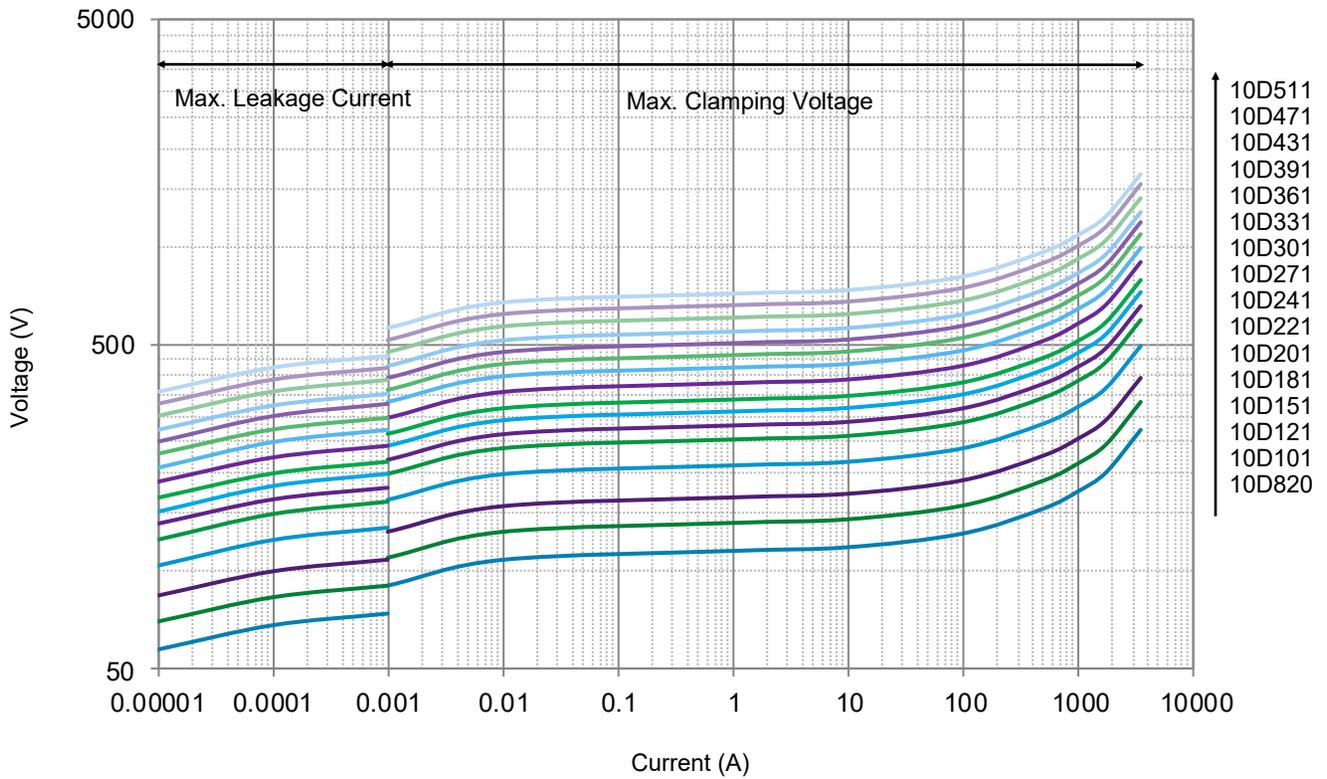


Note: 1, 2, 10, 10<sup>2</sup>, 10<sup>3</sup>, 10<sup>4</sup>, 10<sup>5</sup>, 10<sup>6</sup> Stand for Repetitions.

● Voltage-Current Characteristic Curves



• Voltage-Current Characteristic Curves



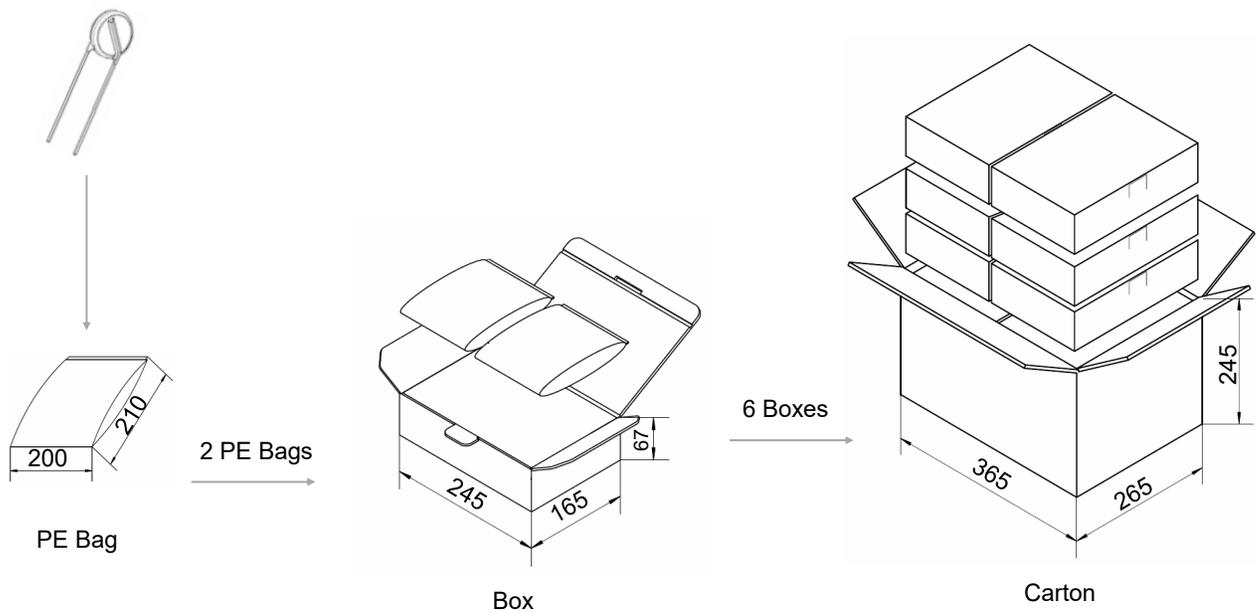
### Packaging Information

- Bulk Packaging (Code: BUL)
- Bulk Packaging Quantity & Weight.

Series	Nominal Varistor Voltage	PE Bag	Box	Carton	G. W / Carton (365 × 265 × 245)
	(V)	(PCS)	(PCS)	(PCS)	(kg)±10%
SFV10D Series	220 ~ 821	500	1000	6000	5 ~ 16
	911 ~ 122	400	800	4800	14 ~ 18

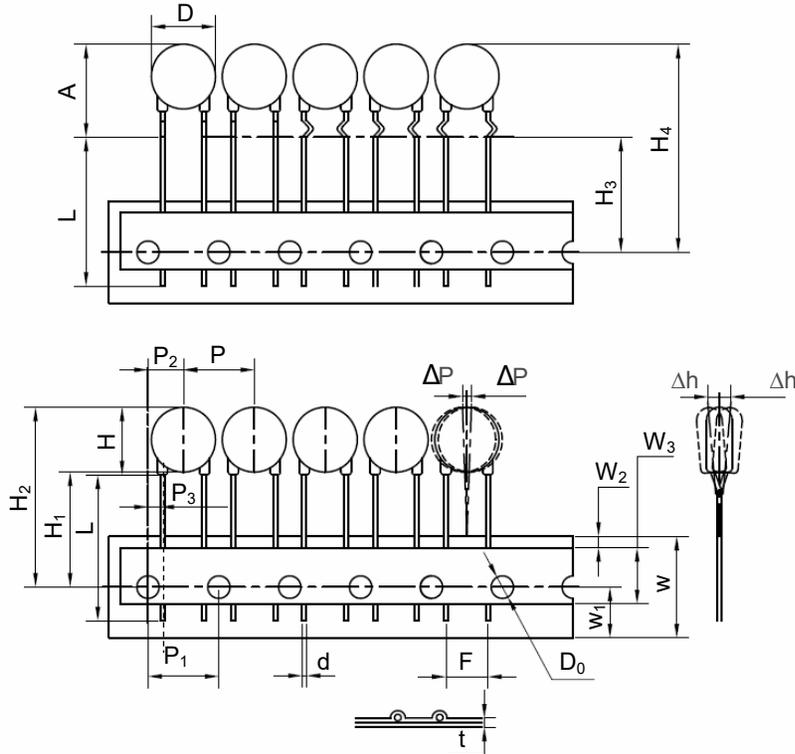
Note:  
Other lead length packaging information, please contact SETsafe | SETfuse.

All Dimensions in mm



**Packaging Information**

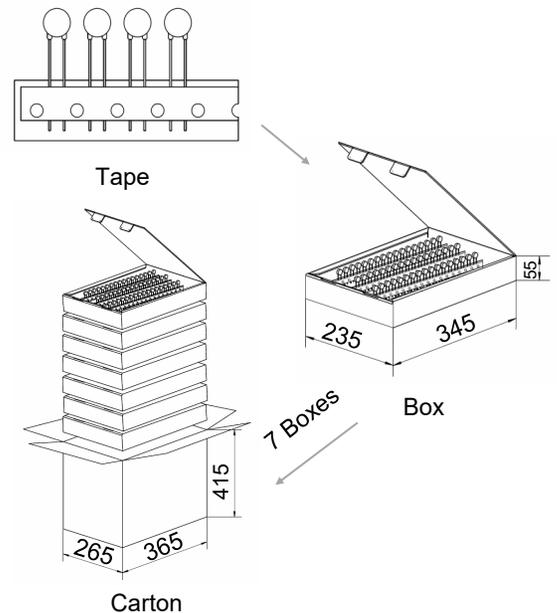
- Tape Packaging (Code: 0AB)



Dimensions (mm)	
P	12.7±1.0
P <sub>1</sub>	12.7±0.3
P <sub>2</sub>	6.35±1.30
P <sub>3</sub>	2.6±0.7
ΔP(max.)	1.0
W	18.0±1.0
W <sub>1</sub>	9.0±1.0
W <sub>2</sub> (max.)	3.0
W <sub>3</sub>	10.0±2.0
H(max.)	15.5
H <sub>1</sub>	18.0
H <sub>2</sub> (max.)	36.0 <sup>+2.0</sup> <sub>-0</sub>
H <sub>3</sub>	18.0
H <sub>4</sub> (max.)	38.0 <sup>+2.0</sup> <sub>-0</sub>
Δh(max.)	2.0
t(max.)	0.6
D(max.)	12.5
D <sub>0</sub>	4.0±0.2
d	0.80±0.05
A(max.)	17.5
F	7.5±1.0
L(min.)	/

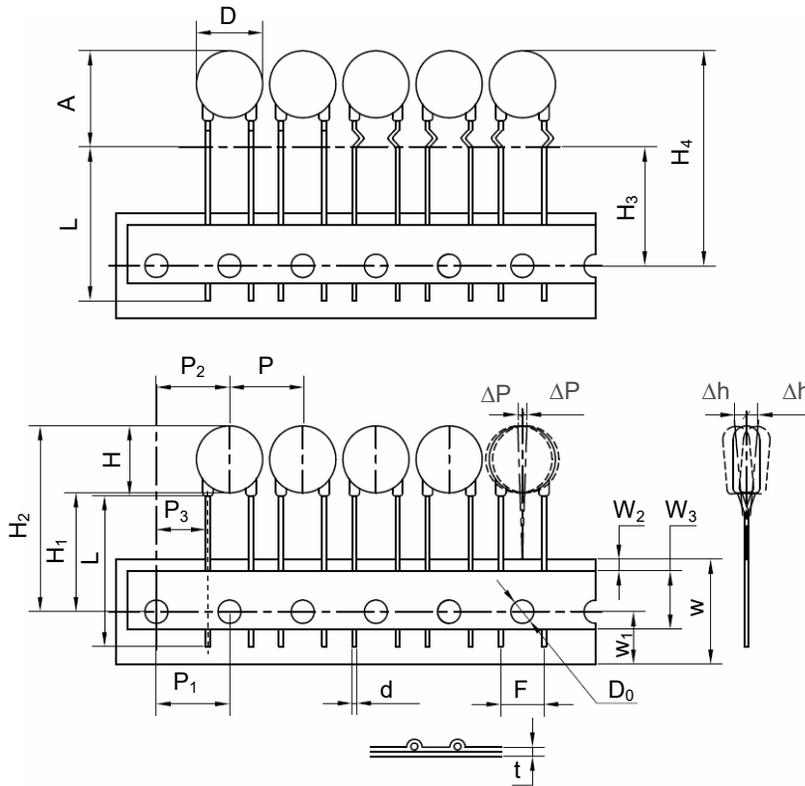
- Tape Packaging Quantity & Weight.

Series	Nominal Varistor Voltage	Box	Carton	G. W / Carton (365 × 265 × 415)
	(V)	(PCS)	(PCS)	(kg)±10%
10D	112 ~ 122	550	3850	12 ~ 13
	911 ~ 102	600	4200	11 ~ 13
	751 ~ 821	700	4900	11 ~ 13
	471 ~ 681	800	5600	9 ~ 13
	391 ~ 431	1000	7000	10 ~ 11
	331 ~ 361	1100	7700	10 ~ 11
	680			
	271 ~ 301	1200	8400	10 ~ 11
	151			
	560			
	180 ~ 241	1300	9100	9 ~ 11
	820 ~ 121			8 ~ 10
	220 ~ 470			7 ~ 11



**Packaging Information**

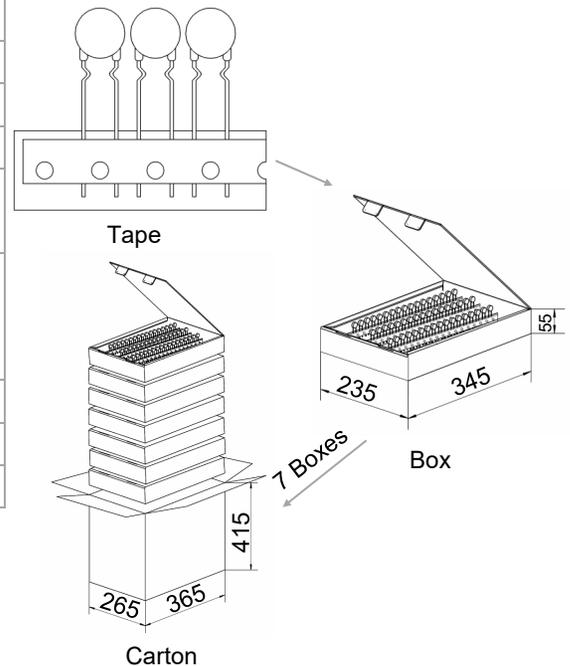
- Tape Packaging (Code: 1AB)



Dimensions (mm)	
P	12.7±1.0
P <sub>1</sub>	12.7±0.3
P <sub>2</sub>	12.7±1.30
P <sub>3</sub>	8.95±0.7
ΔP(max.)	1.0
W	18.0±1.0
W <sub>1</sub>	9.0±1.0
W <sub>2</sub> (max.)	3.0
W <sub>3</sub>	10.0±2.0
H(max.)	15.5
H <sub>1</sub>	18.0
H <sub>2</sub> (max.)	36.0 <sup>+2.0</sup> <sub>-0</sub>
H <sub>3</sub>	18.0
H <sub>4</sub> (max.)	38.0 <sup>+2.0</sup> <sub>-0</sub>
Δh(max.)	2.0
t (max.)	0.6
D(max.)	12.5
D <sub>0</sub>	4.0±0.2
d	0.80±0.05
A(max.)	17.5
F	7.5±1.0
L(min.)	/

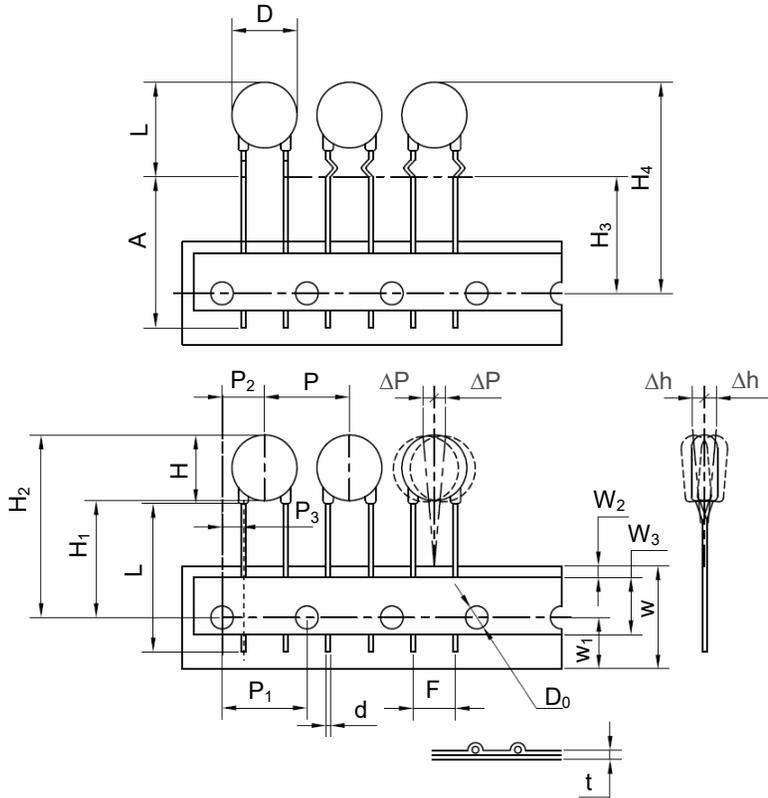
- Tape Packaging Quantity & Weight.

Series	Nominal Varistor Voltage	Box	Carton	G. W / Carton (365 × 265 × 415)
	(V)	(PCS)	(PCS)	(kg)±10%
10D	112 ~ 122	550	3850	12 ~ 13
	911 ~ 102	600	4200	11 ~ 13
	751 ~ 821	700	4900	11 ~ 13
	471 ~ 681	800	5600	9 ~ 13
	391 ~ 431	1000	7000	10 ~ 11
	331 ~ 361	1100	7700	10 ~ 11
	680			
	271 ~ 301	1200	8400	10 ~ 11
	151			
	560			
	180 ~ 241	1300	9100	9 ~ 11
	820 ~ 121			8 ~ 10
	220 ~ 470			7 ~ 11



**Packaging Information**

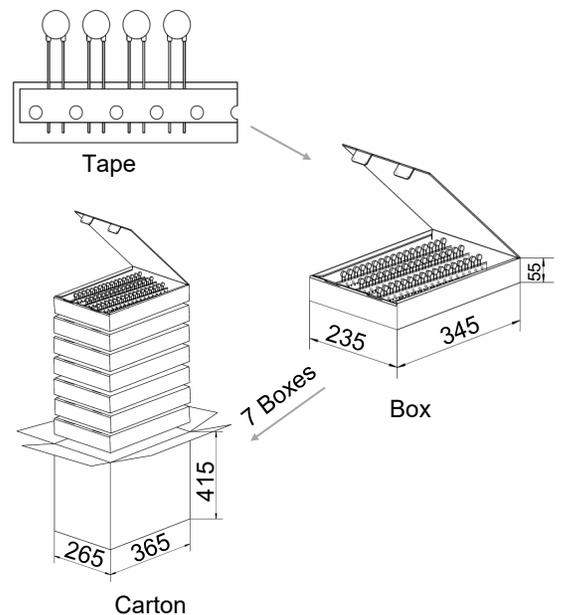
- Tape Packaging (Code: 0EB)



Dimensions (mm)	
P	15.0±1.0
P <sub>1</sub>	15.0±0.3
P <sub>2</sub>	7.5±1.3
P <sub>3</sub>	3.75±1.0
ΔP(max.)	1.0
W	18.0±1.0
W <sub>1</sub>	9.0±1.0
W <sub>2</sub> (max.)	3.0
W <sub>3</sub>	10.0±2.0
H(max.)	15.5
H <sub>1</sub>	18.0
H <sub>2</sub> (max.)	36.0 <sup>+2.0</sup> <sub>-0</sub>
H <sub>3</sub>	18.0
H <sub>4</sub> (max.)	38.0 <sup>+2.0</sup> <sub>-0</sub>
Δh(max.)	2.0
t(max.)	0.6
D(max.)	12.5
D <sub>0</sub>	4.0±0.2
d	0.80±0.05
A(max.)	17.5
F	7.5±1.0
L(min.)	/

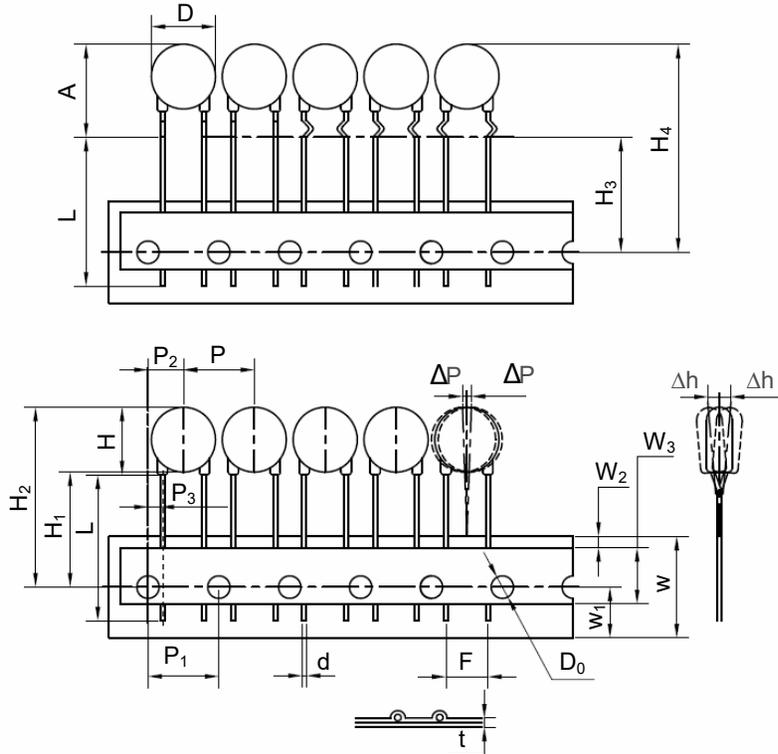
- Tape Packaging Quantity & Weight.

Series	Nominal Varistor Voltage (V)	Box (PCS)	Carton (PCS)	G. W / Carton (365 × 265 × 415) (kg)±10%
10D	911 ~ 122	500	3500	9 ~ 12
	751 ~ 821	600	4200	10 ~ 11
	621 ~ 681	700	4900	10 ~ 11
	431 ~ 561	800	5600	8 ~ 11
	271 ~ 391	1000	7000	8 ~ 10
	151			9
	560 ~ 680			9 ~ 10
	201 ~ 241	1100	7700	8 ~ 9
	121			8 ~ 9
	390 ~ 470			8 ~ 9
	181	1200	8400	7 ~ 8
	820 ~ 101			7 ~ 8
	330			7 ~ 8
	220 ~ 270	1300	9100	7 ~ 8



**Packaging Information**

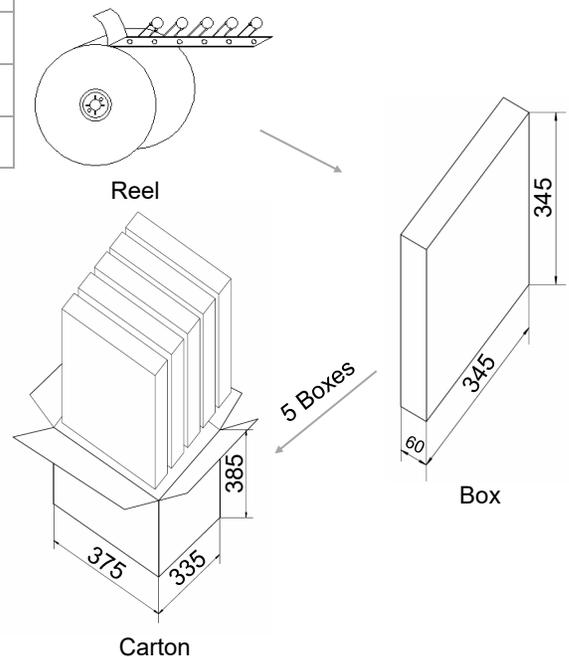
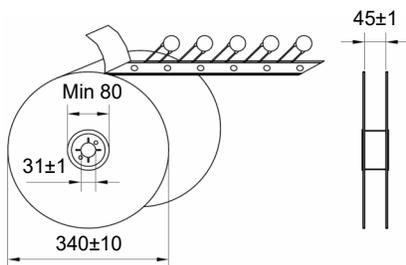
- Reel Packaging (Code:0AR)



Dimensions (mm)	
P	12.7±1.0
P <sub>1</sub>	12.7±0.3
P <sub>2</sub>	6.35±1.30
P <sub>3</sub>	2.6±0.7
ΔP(max.)	1.0
W	18.0±1.0
W <sub>1</sub>	9.0±1.0
W <sub>2</sub> (max.)	3.0
W <sub>3</sub>	10.0±1.0
H(max.)	15.5
H <sub>1</sub>	18.0
H <sub>2</sub> (max.)	36.0 <sup>+2.0</sup> <sub>-0</sub>
H <sub>3</sub>	18.0 <sup>+2.0</sup> <sub>-0</sub>
H <sub>4</sub> (max.)	38.0
Δh(max.)	2.0
t(max.)	0.6
D(max.)	12.5
D <sub>0</sub>	4.0±0.2
d	0.80±0.05
A(max.)	17.5
F	7.5±1.0
L(min.)	/

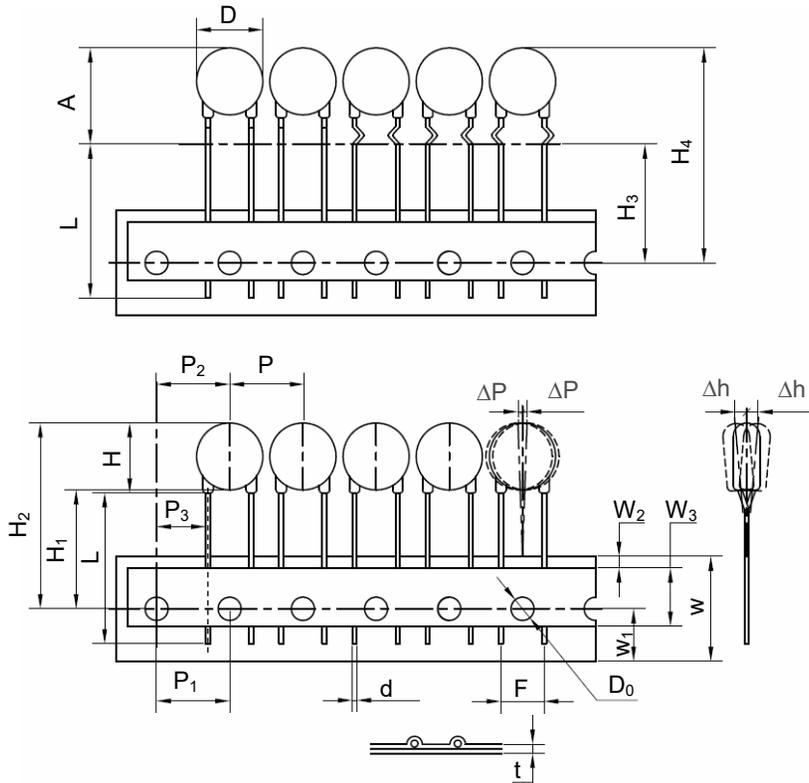
- Reel Packaging Quantity & Weight.

Series	Nominal Varistor Voltage (V)	Box (PCS)	Carton (PCS)	G. W / Carton (375 × 335 × 385) (kg)±10%
10D	220 ~ 391	1500	7500	6 ~ 11
	431 ~ 561	1000	5000	8 ~ 10
	621 ~ 821	800	4000	8 ~ 11
	911 ~ 122	500	2500	7 ~ 9



**Packaging Information**

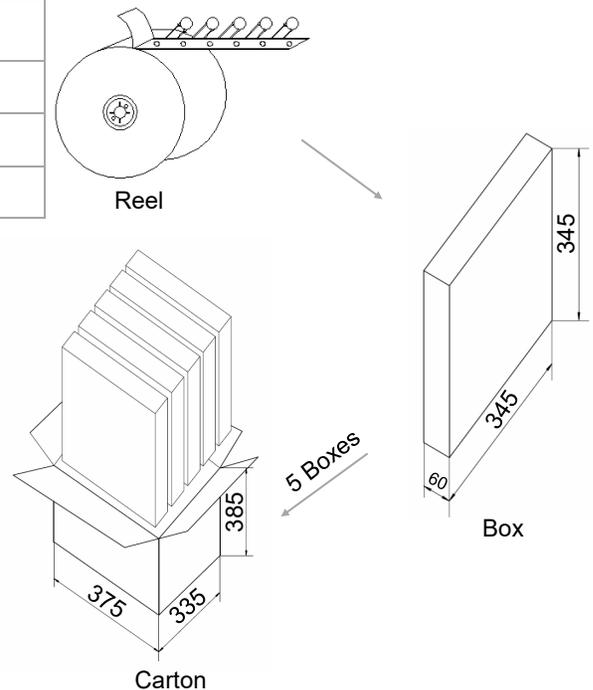
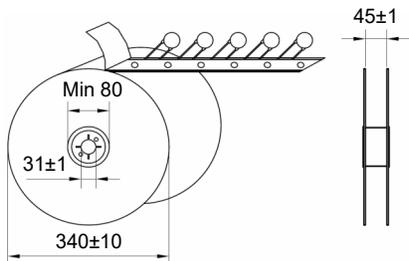
- Reel Packaging (Code:1AR)



Dimensions (mm)	
P	12.7±1.0
P <sub>1</sub>	12.7±0.3
P <sub>2</sub>	12.7±1.30
P <sub>3</sub>	8.95±0.7
ΔP(max.)	1.0
W	18.0±1.0
W <sub>1</sub>	9.0±1.0
W <sub>2</sub> (max.)	3.0
W <sub>3</sub>	10.0±2.0
H(max.)	15.5
H <sub>1</sub>	18.0
H <sub>2</sub> (max.)	36.0 <sup>+2.0</sup> <sub>-0</sub>
H <sub>3</sub>	18.0
H <sub>4</sub> (max.)	38.0 <sup>+2.0</sup> <sub>-0</sub>
Δh(max.)	2.0
t (max.)	0.6
D(max.)	12.5
D <sub>0</sub>	4.0±0.2
d	0.80±0.05
A(max.)	17.5
F	7.5±1.0
L(min.)	/

- Reel Packaging Quantity & Weight.

Series	Nominal Varistor Voltage (V)	Box (PCS)	Carton (PCS)	G. W / Carto (375 × 335 × 385) (kg)±10%
10D	220 ~ 391	1500	7500	6 ~ 11
	431 ~ 561	1000	5000	8 ~ 10
	621 ~ 821	800	4000	8 ~ 11
	911 ~ 122	500	2500	7 ~ 9



## Installation

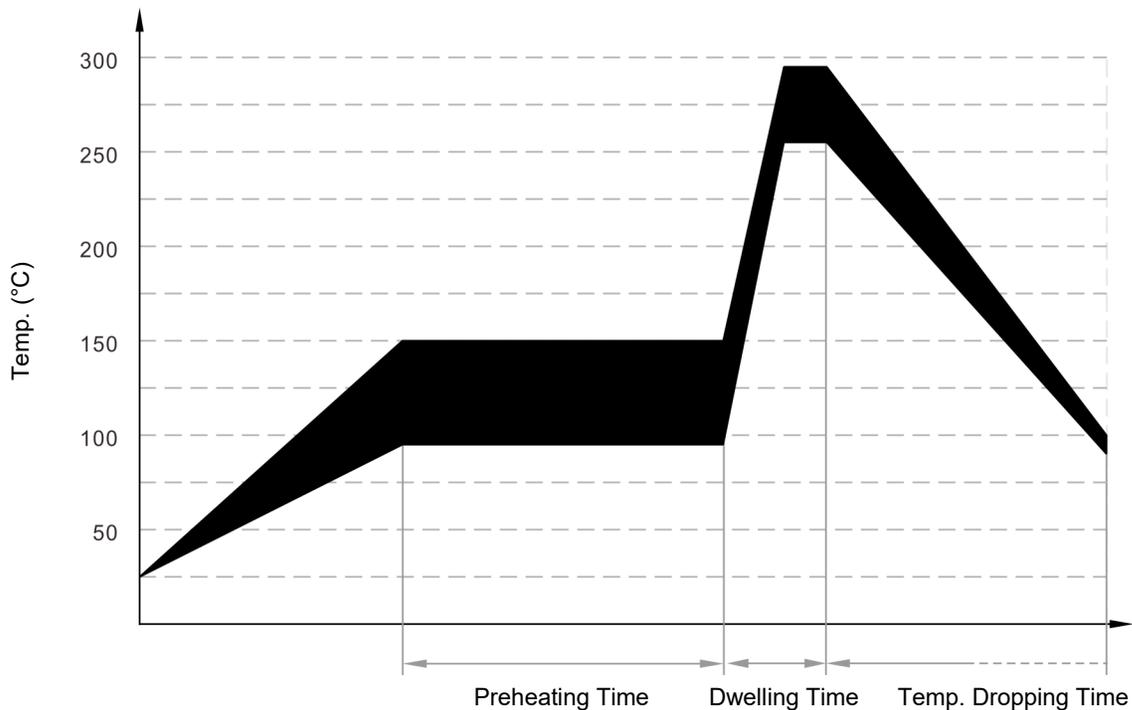
### Mechanical Stress

Do not knock MOV when installing, to avoid mechanical damage.

## Soldering Parameters

### Wave Soldering Parameters

The wave soldering parameters are for reference only. When MOV is for practice use, some related validation is recommended.



Wave Soldering Curve

Item	Temp. (°C)	Time (s)
Preheating	90 to 150	<150
Dwelling	255 to 290	3 to 10

## Recommended Hand-Soldering Parameters

Item	Condition
Temp. of Solder Head	350 °C (max.)
Soldering Time	4 seconds (max.)

## Glossary

Item	Description
$V_N$	<b>Nominal Varistor Voltage</b> Voltage, at specified D.C. current used as a reference point in the component characteristics. — (GB 18802.331) — (IEC 61051-1)
$I_L$	<b>Leakage Current</b> Measuring at 75% of varistor voltage. — (GB/T 10193) — (IEC 61051-1)
UCT	<b>Upper Category Temp.</b> Max. ambient temp. for which a varistor has been designed to operate continuously. — (GB/T 10193) — (IEC 61051-1)
LCT	<b>Lower Category Temp.</b> Minimum ambient temp. at which a varistor has been designed to operate continuously. — (GB/T 10193) — (IEC 61051-1)
Max. Peak Current	<b>Max. Peak Current</b> Max. current per pulse, which may be passed by a varistor at an ambient temp. of 25 °C, for a given number of pulses. — (GB/T 10193) — (IEC 61051-1)
$V_C$	<b>Clamping Voltage</b> Peak voltage developed across the varistor terminations under standard atmospheric conditions, when passing an 8/20 $\mu$ s class current pulse. — (GB 18802.331) — (IEC 61051-1)
Voltage Proof	<b>Voltage Proof</b> Max. peak voltage, which may be applied under continuous operating conditions between the varistor terminations and any conducting mounting surface (Applicable only to insulated varistors). — (GB/T 10193) — (IEC 61051-1)
$C_V$	<b>Capacitance</b> Capacitance across the MOV measured at a specified frequency and voltage. — (GB 18802.331) — (IEC 61051-1)
$V_{ac}$	<b>Max. Continuous a.c. Voltage</b> Max. a.c. r.m.s. voltage of a substantially sinusoidal waveform (less than 5% total harmonic distortion) which can be applied to the component under continuous operating conditions at 25 °C. — (GB/T 10193) — (IEC 61051-1)
$V_{dc}$	<b>Max. Continuous d.c. Voltage</b> Max. d.c. voltage (with less than 5% ripple) which can be applied to the component under continuous operating conditions at an ambient temp. of 25 °C. — (GB/T 10193) — (IEC 61051-1)
$I_{max}$	<b>Max. Discharge Current</b> Crest value of a current through the SPD having an 8/20 $\mu$ s waveshape and magnitude according to the manufacturers specification. $I_{max}$ is equal to or greater than $I_n$ . — (GB 18802.1) — (IEC 61643-11)



# ATTENTION

## Usage

1. Varistor must operated in the specified ambient temp.
2. Do not clean the varistor with strong polar solvent such as ketone, esters, benzene and halogenated hydrocarbon.
3. Please do not apply severe vibration, shock or pressure to MOV.
4. Please fix lead wires when bending or cutting. The distance between the bending point and the sealing of MOV shall be greater than 2 mm.

## Replacement

If varistor is visually damaged, please replace it.

## Storage

1. Storage Temp. Range: (-40 to +125) °C.
2. Relative Humidity : ≤75% RH.
3. Altitude: <2000 m.
4. Do not store the MOV at the high temp., high humidity or corrosive gas environment, to avoid influencing the solder-ability of the lead wires, the product shall be used up within 1 year after receiving the goods.

## Environmental Conditions

1. Varistor should neither be exposed to the open air, nor direct sunshine.
2. Varistor should avoid rain, water vapor or other condition of high temp. and high humidity.
3. Varistor should avoid sand dust, salt spray, or other harmful gases.

## Max. Typical Capacitance of Varistor

The typical capacitance of varistor is listed in the specifications. Designers may refer to it when designing MOV in high frequency circuit.

### Metal Oxide Varistor (MOV) Feature & Model List Overview

Nominal Operating Voltage $U_n$ (V)												Page		Model	Maximum Continuous Operating Voltage $U_n$ (V)
		0.5	1	1.75	2	3	3.5	6	10	20	70	AC	DC		
480V	500V							SFV10D122K(T)	SFV14D122K(T)	SFV20D122K(T)	SFV25D122K(T)	SFV53D122K	750	990	Maximum Continuous Operating Voltage $U_n$ (V)
								SFV10D112K(T)	SFV14D112K(T)	SFV20D112K(T)	SFV25D112K(T)	SFV53D112K	680	895	
415V							SFV10D102K(T)	SFV14D102K(T)	SFV20D102K(T)	SFV25D102K(T)	SFV53D102K	625	825		
380V							SFV10D911K(T)	SFV14D911K(T)	SFV20D911K(T)	SFV25D911K(T)	SFV53D911K	550	745		
				SFV7D821K(T)			SFV10D821K(T)	SFV14D821K(T)	SFV20D821K(T)	SFV25D821K(T)	SFV53D821K	510	670		
100V	250V						SFV10D751K(T)	SFV14D751K(T)	SFV20D751K(T)	SFV25D751K(T)	SFV53D751K	460	615		
							SFV10D681K(T)	SFV14D681K(T)	SFV20D681K(T)	SFV25D681K(T)	SFV53D681K	420	560		
240V							SFV10D621K(T)	SFV14D621K(T)	SFV20D621K(T)	SFV25D621K(T)	SFV53D621K	385	505		
							SFV10D561K(T)	SFV14D561K(T)	SFV20D561K(T)	SFV25D561K(T)	SFV53D561K	350	460		
100V	125V						SFV10D511K(T)	SFV14D511K(T)	SFV20D511K(T)	SFV25D511K(T)	SFV53D511K	320	415		
							SFV10D471K(T)	SFV14D471K(T)	SFV20D471K(T)	SFV25D471K(T)	SFV53D471K	300	385		
220V							SFV10D431K(T)	SFV14D431K(T)	SFV20D431K(T)	SFV25D431K(T)	SFV53D431K	275	350		
							SFV10D391K(T)	SFV14D391K(T)	SFV20D391K(T)	SFV25D391K(T)	SFV53D391K	250	320		
100V	120V						SFV10D361K(T)	SFV14D361K(T)	SFV20D361K(T)	SFV25D361K(T)	SFV53D361K	230	300		
							SFV10D331K(T)	SFV14D331K(T)	SFV20D331K(T)	SFV25D331K(T)	SFV53D331K	210	275		
100V	100V						SFV10D301K(T)	SFV14D301K(T)	SFV20D301K(T)	SFV25D301K(T)	SFV53D301K	190	250		
							SFV10D271K(T)	SFV14D271K(T)	SFV20D271K(T)	SFV25D271K(T)	SFV53D271K	175	225		
48V	24V						SFV10D241K(T)	SFV14D241K(T)	SFV20D241K(T)	SFV25D241K(T)	SFV53D241K	150	200		
							SFV10D221K(T)	SFV14D221K(T)	SFV20D221K(T)	SFV25D221K(T)	SFV53D221K	140	180		
24V	12V						SFV10D201K(T)	SFV14D201K(T)	SFV20D201K(T)	SFV25D201K(T)	SFV53D201K	130	170		
							SFV10D181K(T)	SFV14D181K(T)	SFV20D181K(T)	SFV25D181K(T)	SFV53D181K	115	150		
12V	12V						SFV10D151K(T)	SFV14D151K(T)	SFV20D151K(T)	SFV25D151K(T)	SFV53D151K	95	125		
							SFV10D121K(T)	SFV14D121K(T)	SFV20D121K(T)	SFV25D121K(T)	SFV53D121K	75	100		
12V	12V						SFV10D101K(T)	SFV14D101K(T)	SFV20D101K(T)	SFV25D101K(T)	SFV53D101K	60	85		
							SFV10D820K(T)	SFV14D820K(T)	SFV20D820K(T)	SFV25D820K(T)	SFV53D820K	50	65		
AC	DC						SFV7D680K(T)	SFV10D680K(T)	SFV14D680K(T)	SFV20D680K(T)	SFV25D680K(T)			40	56
							SFV7D560K(T)	SFV10D560K(T)	SFV14D560K(T)	SFV20D560K(T)	SFV25D560K(T)			35	45
AC	DC						SFV7D470K(T)	SFV10D470K(T)	SFV14D470K(T)	SFV20D470K(T)	SFV25D470K(T)			30	38
							SFV7D390K(T)	SFV10D390K(T)	SFV14D390K(T)	SFV20D390K(T)	SFV25D390K(T)			25	31
AC	DC						SFV7D330K(T)	SFV10D330K(T)	SFV14D330K(T)	SFV20D330K(T)	SFV25D330K(T)			20	26
							SFV7D270K(T)	SFV10D270K(T)	SFV14D270K(T)	SFV20D270K(T)	SFV25D270K(T)			17	22
AC	DC						SFV7D220K(T)	SFV10D220K(T)	SFV14D220K(T)	SFV20D220K(T)	SFV25D220K(T)			14	18

**Metal Oxide Varistor (MOV) Feature & Model List Overview**

Nominal Operating Voltage $U_n$ (V)						Page		Model
						AC	DC	
480V	500V	○	SFV10D122KM	SFV14D122KM	SFV20D122KM	SFV25D122KM	750	990
		○	SFV10D112KM	SFV14D112KM	SFV20D112KM	SFV25D112KM	680	895
		○	SFV10D102KM	SFV14D102KM	SFV20D102KM	SFV25D102KM	625	825
		○	SFV10D911KM	SFV14D911KM	SFV20D911KM	SFV25D911KM	550	745
380V	500V	SFV7D821KM	SFV10D821KM	SFV14D821KM	SFV20D821KM	SFV25D821KM	510	670
		SFV7D751KM	SFV10D751KM	SFV14D751KM	SFV20D751KM	SFV25D751KM	460	615
100V	240V	SFV7D681KM	SFV10D681KM	SFV14D681KM	SFV20D681KM	SFV25D681KM	420	560
		SFV7D621KM	SFV10D621KM	SFV14D621KM	SFV20D621KM	SFV25D621KM	385	505
240V	240V	SFV7D561KM	SFV10D561KM	SFV14D561KM	SFV20D561KM	SFV25D561KM	350	460
		SFV7D511KM	SFV10D511KM	SFV14D511KM	SFV20D511KM	SFV25D511KM	320	415
100V	250V	SFV7D471KM	SFV10D471KM	SFV14D471KM	SFV20D471KM	SFV25D471KM	300	385
		SFV7D431KM	SFV10D431KM	SFV14D431KM	SFV20D431KM	SFV25D431KM	275	350
100V	250V	SFV7D391KM	SFV10D391KM	SFV14D391KM	SFV20D391KM	SFV25D391KM	250	320
		SFV7D361KM	SFV10D361KM	SFV14D361KM	SFV20D361KM	SFV25D361KM	230	300
120V	250V	SFV7D331KM	SFV10D331KM	SFV14D331KM	SFV20D331KM	SFV25D331KM	210	275
		SFV7D301KM	SFV10D301KM	SFV14D301KM	SFV20D301KM	SFV25D301KM	190	250
100V	125V	SFV7D271KM	SFV10D271KM	SFV14D271KM	SFV20D271KM	SFV25D271KM	175	225
		SFV7D241KM	SFV10D241KM	SFV14D241KM	SFV20D241KM	SFV25D241KM	150	200
		SFV7D221KM	SFV10D221KM	SFV14D221KM	SFV20D221KM	SFV25D221KM	140	180
		SFV7D201KM	SFV10D201KM	SFV14D201KM	SFV20D201KM	SFV25D201KM	130	170
48V	125V	SFV7D181KM	SFV10D181KM	SFV14D181KM	SFV20D181KM	SFV25D181KM	115	150
		SFV7D151KM	SFV10D151KM	SFV14D151KM	SFV20D151KM	SFV25D151KM	95	125
		SFV7D121KM	SFV10D121KM	SFV14D121KM	SFV20D121KM	SFV25D121KM	75	100
		SFV7D101KM	SFV10D101KM	SFV14D101KM	SFV20D101KM	SFV25D101KM	60	85
24V	12V	SFV7D820KM	SFV10D820KM	SFV14D820KM	SFV20D820KM	SFV25D820KM	50	65
		○	○	SFV25D680KM	○	○	40	56
		○	○	SFV25D560KM	○	○	35	45
12V	12V	○	○	SFV25D470KM	○	○	30	38
		○	○	○	○	○	25	31
AC	DC	○	○	○	○	○	20	26
		○	○	○	○	○	17	22
AC	DC	1.75	3.5	6	10	20	14	18

Maximum Peak Current (8/20  $\mu$ s) (kA)

**Metal Oxide Varistor (MOV) Feature & Model List Overview**

Nominal Operating Voltage $U_n$ (V)												Page				
												AC	DC			
480V	500V									SFV20S122K		SFV25S122K	SFV34S122K	750	990	
										SFV20S112K		SFV25S112K	SFV34S112K	680	895	
415V	500V									SFV20S102K		SFV25S102K	SFV34S102K	625	825	
										SFV20S911K		SFV25S911K	SFV34S911K	550	745	
380V	500V			SFV10S821K					SFV15S821K		SFV20S821K		SFV25S821K	SFV34S821K	510	670
				SFV10S751K					SFV15S751K		SFV20S751K		SFV25S751K	SFV34S751K	460	615
100V	-			SFV10S681K					SFV15S681K		SFV20S681K		SFV25S681K	SFV34S681K	420	560
				SFV10S621K					SFV15S621K		SFV20S621K		SFV25S621K	SFV34S621K	385	505
240V	-			SFV10S561K					SFV15S561K		SFV20S561K		SFV25S561K	SFV34S561K	350	460
				SFV10S511K					SFV15S511K		SFV20S511K		SFV25S511K	SFV34S511K	320	415
100V	250V			SFV10S471K					SFV15S471K		SFV20S471K		SFV25S471K	SFV34S471K	300	385
				SFV10S431K					SFV15S431K		SFV20S431K		SFV25S431K	SFV34S431K	275	350
220V	250V			SFV10S391K					SFV15S391K		SFV20S391K		SFV25S391K	SFV34S391K	250	320
				SFV10S361K					SFV15S361K		SFV20S361K		SFV25S361K	SFV34S361K	230	300
100V	-			SFV10S331K					SFV15S331K		SFV20S331K		SFV25S331K	SFV34S331K	210	275
				SFV10S301K					SFV15S301K		SFV20S301K		SFV25S301K	SFV34S301K	190	250
120V	-			SFV10S271K					SFV15S271K		SFV20S271K		SFV25S271K	SFV34S271K	175	225
				SFV10S241K					SFV15S241K		SFV20S241K		SFV25S241K	SFV34S241K	150	200
100V	125V			SFV10S221K					SFV15S221K		SFV20S221K		SFV25S221K	SFV34S221K	140	180
				SFV10S201K					SFV15S201K		SFV20S201K		SFV25S201K	SFV34S201K	130	170
48V	-			SFV10S181K					SFV15S181K		SFV20S181K		SFV25S181K	SFV34S181K	115	150
				SFV10S151K					SFV15S151K		SFV20S151K		SFV25S151K	SFV34S151K	95	125
24V	-		SFV10S121K						SFV15S121K		SFV20S121K		SFV25S121K	SFV34S121K	75	100
			SFV10S101K						SFV15S101K		SFV20S101K		SFV25S101K	SFV34S101K	60	85
12V	-		SFV10S820K						SFV15S820K		SFV20S820K		SFV25S820K	SFV34S820K	50	65
		SFV10S680K	SFV15S680K	SFV20S680K				SFV25S680K			SFV34S680K				40	56
12V	-	SFV10S560K	SFV15S560K	SFV20S560K				SFV25S560K			SFV34S560K				35	45
		SFV10S470K	SFV15S470K	SFV20S470K			SFV25S470K				SFV34S470K				30	38
12V	-	SFV10S390K	SFV15S390K SFV20S390K				SFV25S390K								25	31
		SFV10S330K	SFV15S330K SFV20S330K				SFV25S330K								20	26
12V	-	SFV10S270K	SFV15S270K SFV20S270K			SFV25S270K									17	22
		SFV10S220K	SFV15S220K SFV20S220K SFV25S220K													14

Model  
Maximum Continuous Operating Voltage  $U_n$  (V)

Maximum Peak Current (8/20  $\mu$ s) (kA)