

## Metal Oxide Varistor (MOV) Data Sheet




### Feature

- Wide operating voltage range from 430V to 1100V
- Operating Temperature: -40°C ~ +125°C
- Storage Temperature: 15°C ~ 35°C

### Applications

- The over-voltage protection for transistors, IC, SCR and semiconductor switching components and a variety of electronic, electrical equipment
- Surge absorption and over-voltage protection for household appliances
- Industrial electrical surge absorption
- Electrostatic discharge and noise signal cancellation
- Surge absorption of relays and solenoid valves
- Over-voltage protection for leakage switch
- The lightning protection and over-voltage protection for Telephone program-controlled switches and communications equipment

### Applicable Standard

Approval		Organization	Safety Standards	Certificate No.
China		CQC	GB/T10193 GB/T10194	7D: CQC07001020533
				10D: CQC07001020532
USA Canada		UL	UL 1449	E330837
Germany		VDE	IEC 61051	40023049

## Part Number Code

Inner Management

STE	10	D	471	K	1	E	N0	F	Z	B	2	R	0
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**Songtian**  
(STE)

**Product Categories**  
D: (Circular)

**Tolerance**  
K:±10%

**Pitch**  
B:5.0mm  
E:7.5mm

**Package**  
B: Bulk  
T:Tape

**Environmental Standard**  
R: RoHS  
F: RoHS+Halogen

**Core Diameter**  
07:7mm  
10:10mm

**Foot Type**  
1:Long straight  
2:Outside Crimped  
3:Short Straight  
8:Vertical Crimped

**Style**  
Z: High Energy

**Lead Material**  
F: Tinned copper clad steel wire  
C:Copper wire

**Nominal Varistor Voltage**  
431:430V  
112:1100V

**Lead Length**  
S0~S9:1.0~1.9mm  
X0~X9:2.0~2.9mm  
A0~A9:3.0~3.9mm  
B0~B9:4.0~4.9mm  
C0~C9:5.0~5.9mm  
D0~D9:6.0~6.9mm  
E0~E9:7.0~7.9mm

**Lead Length**  
F0~F9:8.0~8.9mm  
G0~G9:9.0~9.9mm  
H0~H9:10.0~10.9mm  
J0~J9:11.0~11.9mm  
K0~K9:12.0~12.9mm  
L0~L9:13.0~13.9mm  
M0~M9:14.0~14.9mm

**Lead Length**  
M0~M9:14.0~14.9mm  
N0:16~27.0mm(Bulk)  
H0=16.5(Taped)  
Taping  
PO:17.0mm  
Q0:20.0mm

## Electrical Characteristics

### 7D-Series

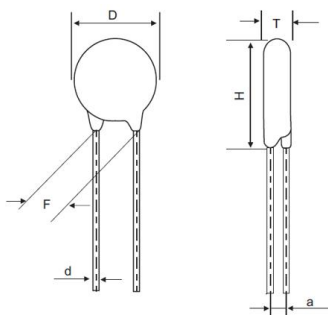
Part Number	Maximum Allowable Voltage		Varistor Voltage	Maximum Clamping Voltage			Peak Current Rating(8/20μs)		Maximum Energy (10/1000μs) (J)	Rated Power (W)	Typical Capacitance (Reference) 1KHz (pF)
	AC <sub>rms</sub> (V)	DC <sub>rms</sub> (V)		V <sub>1mA</sub> (V)	VC (V)	IP (A)	1 pulse (A)	2 pulse (A)			
STE-07D431K	275	350	430(387-473)	710	10	1750	1200	50.4	0.25	120	
STE-07D471K	300	385	470(423-517)	775	10	1750	1200	56.0	0.25	100	
STE-07D511K	320	415	510(459-561)	845	10	1750	1200	56.0	0.25	90	
STE-07D561K	350	460	560(504-616)	925	10	1750	1200	56.0	0.25	90	
STE-07D621K	385	505	620(558-682)	1025	10	1750	1200	61.6	0.25	80	
STE-07D681K	420	560	680(612-748)	1120	10	1750	1200	61.6	0.25	75	

Part Number	Maximum Allowable Voltage		Varistor Voltage $V_{1mA}$ (V)	Maximum Clamping Voltage		Peak Current Rating(8/20 $\mu$ s)		Maximum Energy (10/1000 $\mu$ s) (J)	Rated Power (W)	Typical Capacitance (Reference) 1KHz (pF)
	AC <sub>rms</sub> (V)	DC <sub>rms</sub> (V)		VC (V)	IP (A)	1 pulse (A)	2 pulse (A)			
STE-07D821K	510	670	820(738-902)	1355	10	1750	1200	73.0	0.25	60

## 10D-Series

Part Number	Maximum Allowable Voltage		Varistor Voltage $V_{1mA}$ (V)	Maximum Clamping Voltage		Peak Current Rating(8/20 $\mu$ s)		Maximum Energy (10/1000 $\mu$ s) (J)	Rated Power (W)	Typical Capacitance (Reference) 1KHz (pF)
	AC <sub>rms</sub> (V)	DC <sub>rms</sub> (V)		VC (V)	IP (A)	1 pulse (A)	2 pulse (A)			
STE-10D431K	275	350	430(387-473)	710	25	3500	2500	68.2	0.4	270
STE-10D471K	300	385	470(423-517)	775	25	3500	2500	99.4	0.4	230
STE-10D511K	320	415	510(459-561)	845	25	3500	2500	99.4	0.4	210
STE-10D561K	350	460	560(504-616)	925	25	3500	2500	99.4	0.4	180
STE-10D621K	385	505	620(558-682)	1025	25	3500	2500	102.2	0.4	190
STE-10D681K	420	560	680(612-748)	1120	25	3500	2500	102.2	0.4	170
STE-10D751K	460	615	750(675-825)	1240	25	3500	2500	124.6	0.4	160
STE-10D781K	485	640	780(702-858)	1290	25	3500	2500	124.6	0.4	125
STE-10D821K	510	670	820(738-902)	1355	25	3500	2500	124.6	0.4	140
STE-10D911K	550	745	910(819-1001)	1500	25	3500	2500	133.0	0.4	120
STE-10D102K	625	825	1000(900-1100)	1650	25	3500	2500	133.0	0.4	110
STE-10D112K	680	895	1100(990-1210)	1815	25	3500	2500	155.0	0.4	90

## Dimensions (mm) and Approval



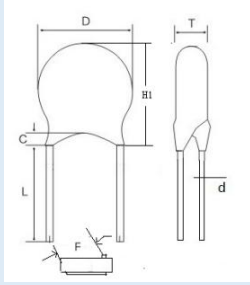
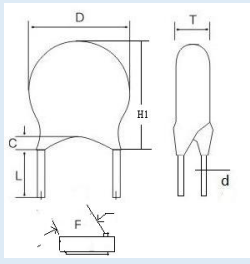
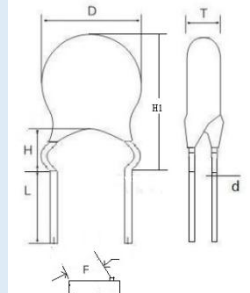
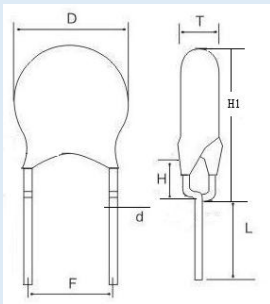
## 07D-Series

Part No.	Size (mm)				Approval			
	D Max.	T Max.	F±0.8	d±0.05	CQC	VDE	UL (USA)	cUL (Canada)
STE-07D431K	9.0	5.0	5.0	0.5	√	√	√	√
STE-07D471K	9.0	5.5	5.0	0.5	√	√	√	√
STE-07D511K	9.0	5.5	5.0	0.5	√	√	√	√
STE-07D561K	9.0	6.0	5.0	0.5	√	√	√	√
STE-07D621K	9.0	6.0	5.0	0.5	√	√	√	√
STE-07D681K	9.0	6.5	5.0	0.5	√	√	√	√
STE-07D821K	9.0	7.0	5.0	0.5	√			

## 10D-Series

Part No.	Size (mm)				Approval			
	D Max.	T Max.	F±0.8	d±0.05	CQC	VDE	UL (USA)	cUL (Canada)
STE-10D431K	12.5	5.5	7.5	0.7	√	√	√	√
STE-10D471K	12.5	6.0	7.5	0.7	√	√	√	√
STE-10D511K	12.5	6.0	7.5	0.7	√	√	√	√
STE-10D561K	12.5	6.5	7.5	0.7	√	√	√	√
STE-10D621K	12.5	6.5	7.5	0.7	√	√	√	√
STE-10D681K	12.5	7.0	7.5	0.7	√	√	√	√
STE-10D751K	12.5	7.0	7.5	0.7	√	√	√	√
STE-10D781K	12.5	7.5	7.5	0.7			√	√
STE-10D821K	12.5	7.5	7.5	0.7	√	√	√	√
STE-10D911K	12.5	8.0	7.5	0.7	√	√	√	√
STE-10D102K	12.5	8.5	7.5	0.7	√	√	√	√
STE-10D112K	12.5	9.0	7.5	0.7	√		√	√

## Lead Configuration

Lead Style	Drawing	Lead Length L (mm)	Coating Lead Length C (mm)	Height H (mm)
Long Straight		16.0 min	3.0 Max	/
Short Straight		①[2.5≤L < 6.0]±0.5; ②[6.0≤L≤10]±1.0	3.0 Max	/
Outside Crimped		①[2.5≤L < 6.0]±0.5; ②[6.0≤L≤10]±1.0	Not exceed the bend point	5.5mm Max
Vertical Crimped		①[2.5≤L < 6.0]±0.5; ②[6.0≤L≤10]±1.0	Not exceed the bend point	4.5mm Max

## Taping Specification (mm)

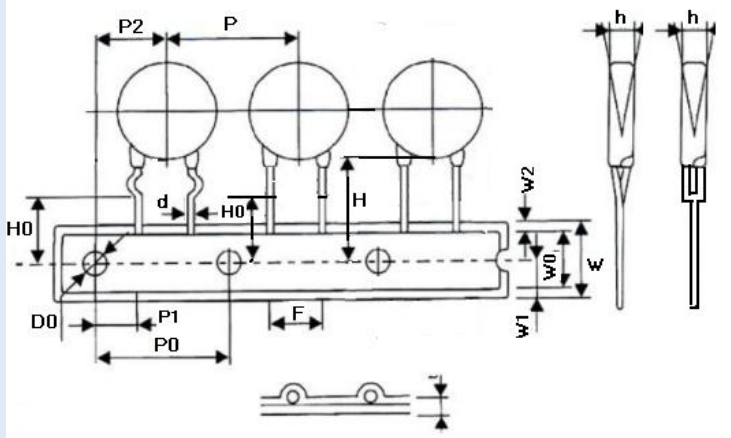
Figure	Fig.1		Fig.2	
	Symbol	P=5.0	P=7.5	
	Po	12.7±0.3	12.7±0.3	
	P	12.7±1.0	25.4±1.0	
	P1	3.85±0.7	8.95±0.7	
	P2	6.35±1.3	12.7±1.3	
	F	5±0.8	7.5±0.8	
	Δh	0±2.0	0±2.0	
	W	18.0+1.5/-1.0	18.0 +1.5/-1.0	
	Wo	10.5 Max	10.5 Max	
	W1	9.0+0.75/-0.5	9.0+0.75/-0.5	
	W2	3.0 Max	3.0 Max	
	Do	4.0±0.2	4.0±0.2	
	H	20+1.5/-1.0	20+1.5/-1.0	
	Ho	16.5&17.0 +1.5/-1.0	16.5&17.0 +1.5/-1.0	
	L	Straight Lead	Crimped Lead	Straight Lead
11.0 Max		9.0 Max	11.0 Max	9.0 Max
t1	0.5±0.2	0.5±0.2		
t2	1.7 Max	1.7 Max		

Fig.1 (P=5.0)

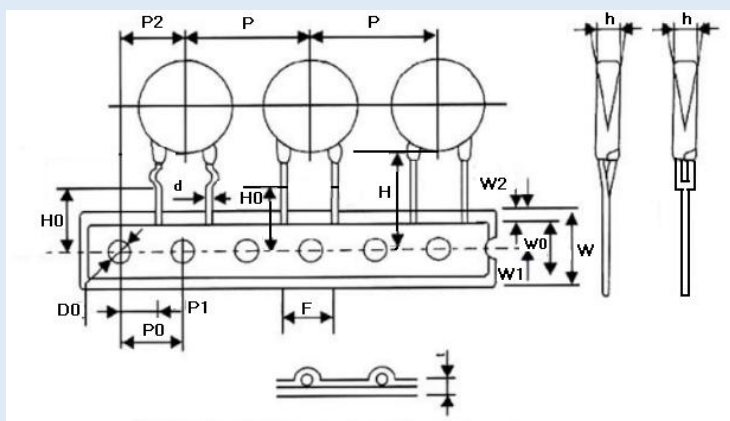


Fig.2 (P=7.5)