

Metal Oxide Varistors-Z2 Series (High Energy)

Data Sheet




Feature

- Wide operating voltage range from 430V to 1100V
- Operating Temperature: $-40^{\circ}\text{C} \sim +105^{\circ}\text{C}$
- Storage Temperature: $15^{\circ}\text{C} \sim 35^{\circ}\text{C}$

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
- 7D is mainly for 2KV surge products, and 10D is mainly for 4KV surge products.

Applicable Standard

Approval		Organization	Safety Standards	Certificate No.
China		CQC	GB/T10193 GB/T10194	7D: CQC19001213190
				10D: CQC19001213188
USA Canada		UL	UL1449	E330837
Germany		VDE	IEC61051 IEC60950-1:2013	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-Free

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)
Crimped Lead Taped
N0:H0=16.5mm
P0:H0=17.0mm
Q0:H0=19.0mm
Straight Lead
Q0:20.0mm

Electrical Characteristics

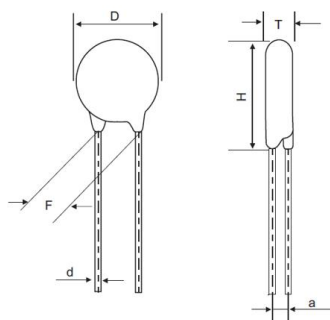
7D-Z2 Series

Part Number	Maximum Allowable Voltage		Varistor Voltage V_{1mA} (V)	Maximum Clamping Voltage		Peak Current Rating(8/20 μ s)		Maximum Energy (10/1000 μ s) (J)	Rated Power (W)	Typical Capacitance (Reference) 1KHz (pF)
	AC _{rms} (V)	DC _{rms} (V)		VC (V)	IP (A)	1 pulse (A)	2 pulse (A)			
STE-07D431KZ2	275	350	430(387-473)	710	10	1750	1200	50.4	0.25	120
STE-07D471KZ2	300	385	470(423-517)	775	10	1750	1200	56.0	0.25	100
STE-07D511KZ2	320	415	510(459-561)	845	10	1750	1200	56.0	0.25	90
STE-07D561KZ2	350	460	560(504-616)	925	10	1750	1200	56.0	0.25	90
STE-07D621KZ2	385	505	620(558-682)	1025	10	1750	1200	61.6	0.25	80
STE-07D681KZ2	420	560	680(612-748)	1120	10	1750	1200	61.6	0.25	75
STE-07D821KZ2	510	670	820(738-902)	1355	10	1750	1200	73.0	0.25	60

10D-Z2 Series

Part Number	Maximum Allowable Voltage		Varistor Voltage V_{1mA} (V)	Maximum Clamping Voltage		Peak Current Rating(8/20 μ s)		Maximum Energy (10/1000 μ s) (J)	Rated Power (W)	Typical Capacitance (Reference) 1KHz (pF)
	AC _{rms} (V)	DC _{rms} (V)		VC (V)	IP (A)	1 pulse (A)	2 pulse (A)			
STE-10D431KZ2	275	350	430(387-473)	710	25	3500	2500	68.2	0.4	270
STE-10D471KZ2	300	385	470(423-517)	775	25	3500	2500	99.4	0.4	230
STE-10D511KZ2	320	415	510(459-561)	845	25	3500	2500	99.4	0.4	210
STE-10D561KZ2	350	460	560(504-616)	925	25	3500	2500	99.4	0.4	180
STE-10D621KZ2	385	505	620(558-682)	1025	25	3500	2500	102.2	0.4	190
STE-10D681KZ2	420	560	680(612-748)	1120	25	3500	2500	102.2	0.4	170
STE-10D751KZ2	460	615	750(675-825)	1240	25	3500	2500	124.6	0.4	160
STE-10D781KZ2	485	640	780(702-858)	1290	25	3500	2500	124.6	0.4	125
STE-10D821KZ2	510	670	820(738-902)	1355	25	3500	2500	124.6	0.4	140
STE-10D911KZ2	550	745	910(819-1001)	1500	25	3500	2500	133.0	0.4	120
STE-10D102KZ2	625	825	1000(900-1100)	1650	25	3500	2500	133.0	0.4	110
STE-10D112KZ2	680	895	1100(990-1210)	1815	25	3500	2500	155.0	0.4	90

Dimensions (mm) and Approval



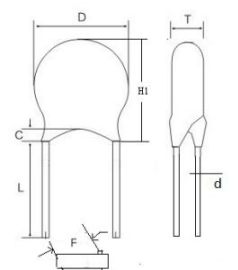
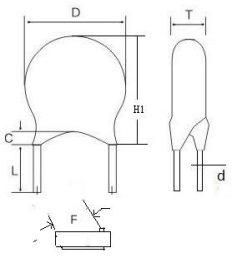
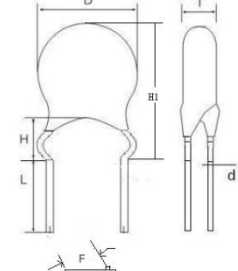
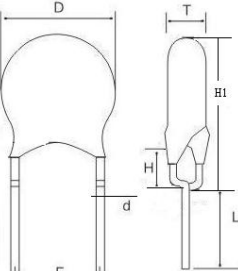
07D-Z2 Series

Part No.	Size (mm)				Approval			
	D Max.	T Max.	F±0.8	d±0.05	CQC	VDE	UL (USA)	cUL (Canada)
STE-07D431KZ2	9.0	5.0	5.0	0.5	√	√	√	√
STE-07D471KZ2	9.0	5.5	5.0	0.5	√	√	√	√
STE-07D511KZ2	9.0	5.5	5.0	0.5	√	√	√	√
STE-07D561KZ2	9.0	6.0	5.0	0.5	√	√	√	√
STE-07D621KZ2	9.0	6.0	5.0	0.5	√	√	√	√
STE-07D681KZ2	9.0	6.5	5.0	0.5	√	√	√	√
STE-07D821KZ2	9.0	7.0	5.0	0.5	√			

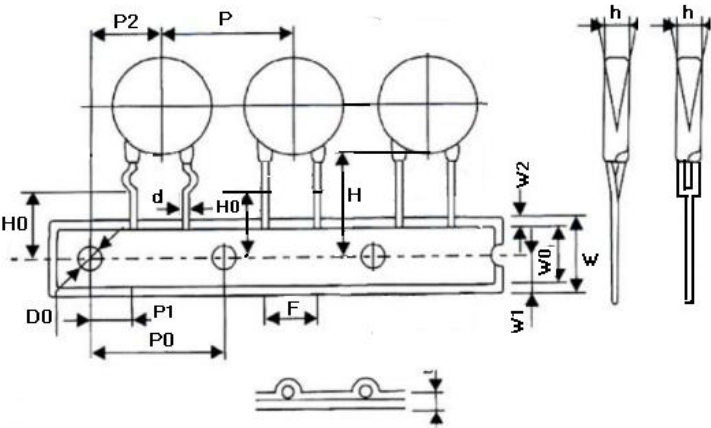
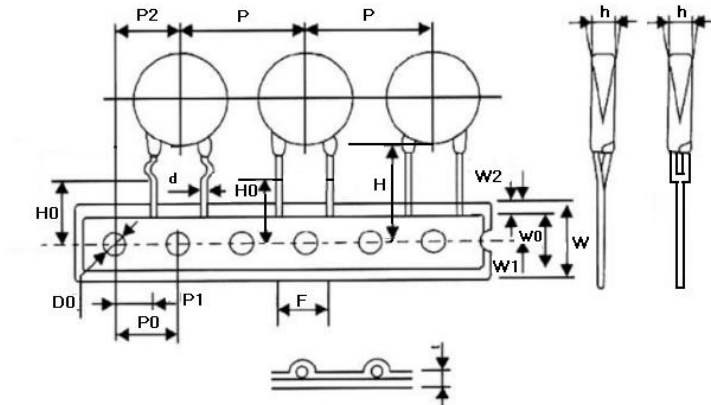
10D-Z2 Series

Part No.	Size (mm)				Approval			
	D Max.	T Max.	F±0.8	d±0.05	CQC	VDE	UL (USA)	cUL (Canada)
STE-10D431KZ2	12.5	5.5	7.5	0.7	√	√	√	√
STE-10D471KZ2	12.5	6.0	7.5	0.7	√	√	√	√
STE-10D511KZ2	12.5	6.0	7.5	0.7	√	√	√	√
STE-10D561KZ2	12.5	6.5	7.5	0.7	√	√	√	√
STE-10D621KZ2	12.5	6.5	7.5	0.7	√	√	√	√
STE-10D681KZ2	12.5	7.0	7.5	0.7	√	√	√	√
STE-10D751KZ2	12.5	7.0	7.5	0.7	√	√	√	√
STE-10D781KZ2	12.5	7.5	7.5	0.7			√	√
STE-10D821KZ2	12.5	7.5	7.5	0.7	√	√	√	√
STE-10D911KZ2	12.5	8.0	7.5	0.7	√	√	√	√
STE-10D102KZ2	12.5	8.5	7.5	0.7	√	√	√	√
STE-10D112KZ2	12.5	9.0	7.5	0.7	√		√	√

Lead Configuration

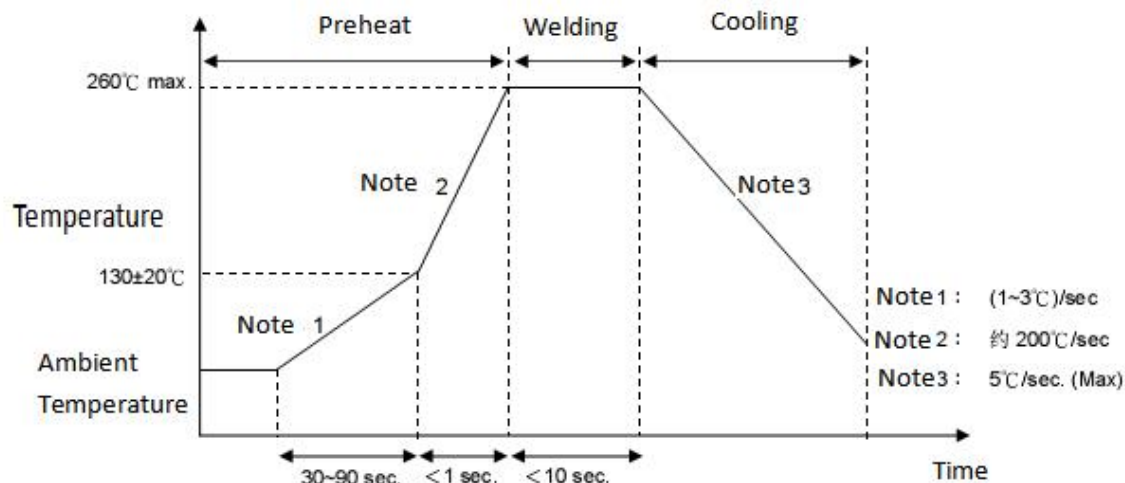
Lead Style	Drawing	Lead Length L (mm)	Coating Lead Length C (mm)	Height H (mm)
Long Straight		16.0 min	3.0 Max	/
Short Straight		①[2.5≤L<6.0]±0.5; ②[6.0≤L≤10]±1.0	3.0 Max	/
Outside Crimped		①[2.5≤L<6.0]±0.5; ②[6.0≤L≤10]±1.0	Not exceed the bend point	5.5mm Max
Vertical Crimped		①[2.5≤L<6.0]±0.5; ②[6.0≤L≤10]±1.0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

Taping And Dimensions (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&19.0 +1.5/-1.0		16.5&17.0&19.0 +1.5/-1.0	
	L	Straight Lead	Crimped Lead	Straight Lead	Crimped 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	

Soldering Condition

Wave Soldering Graph



Note: Film capacitor is not suitable for reflow soldering welding, because it will cause thermal contraction and affect electrical performance.

Iron Soldering Condition

Item	Condition
Temperature of soldering copper bit	360°C (max.)
Soldering duration	3sec (max.)
Space between soldering position and coating layer	2mm (min.)