

Features

- Deal ESD protection for high frequency, low voltage applications.
- Exceeds testing requirements outlined in IEC 61000-4-2
- Ultra low capacitance (3pF typ.)
- Low clamping voltage
- Very low leakage current
- Fast response time
- 2-pin leadless package
- These are Pb-Free Devices
- Response Time is Typically < 1 ns

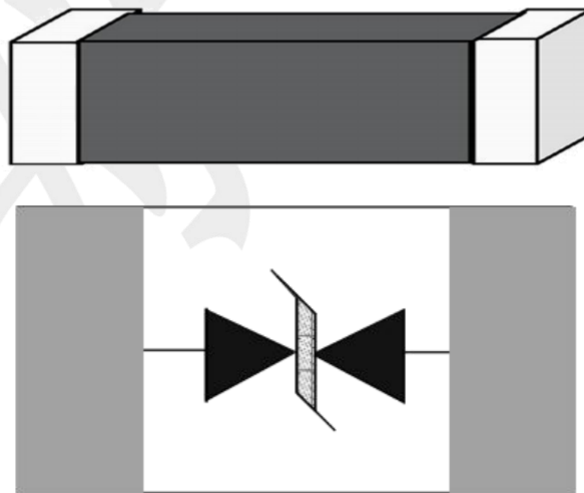
Mechanical Characteristics

- Surface mount
- Lead Finish: Matte Tin
- RoHS Compliant
- Poly mix ESD Suppressor (Multi-Polymer)
- -IEC 61000-4-2 (ESD) immunity test

Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Peripherals

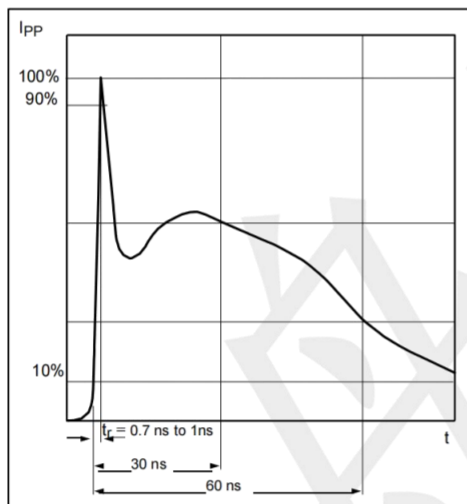
Dimensions and Pin Configuration



Absolute Maximum Ratings (Tamb=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	VESD	±15 ±8	KV
Response time	TRISE	<0.5	nS
Withstanding ESD capability	IEC61000-4-2	Level 4	--
Operating Ambient Temperature	TA	-50 to +85	°C
Storage Temperature Range	Tstg	-50 to +125	°C

ESD Wave Form



Electrical Characteristics

SEVERITY LEVEL	AIR DIRCHARGE	DIRECT DISCHARGE
1	2KV	2KV
2	4KV	4KV
3	8KV	6KV
4	15KV	8KV

IEC61000-4-2 compliant ESD current pulse waveform

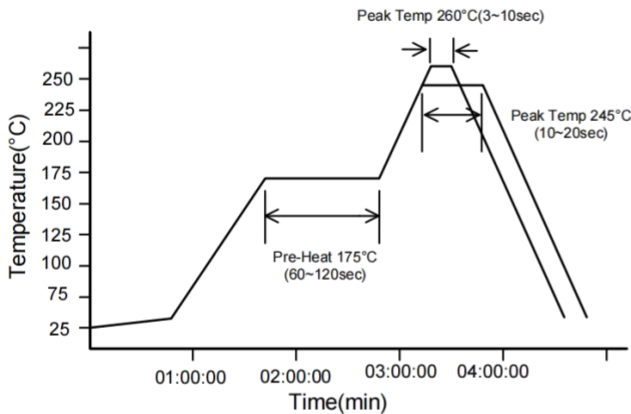
Electrical Characteristics (TA=25°C unless otherwise specified)

Part NO.	Working Voltage	Varistor ¹ voltage measured	Maximum ² ESD allowable clamping Voltage	Leakage ³ Current (at Initial State)	Leakage ³ Current (after ESD Test)	Typical Cap.Value at 1MHz
Symbol	$V_{DC(max.)}$	$V_{trigger}$	V_C	I_{LDC}	I_{LDCA}	C
Unit	V	V	V	μA	μA	pF
0402ESDA-05N-TP	5	100~150	<200	<0.1	<1.0	2~4.5
0402ESDA-09N-TP	9	100~150	<200	<0.1	<1.0	2~4.5
0402ESDA-14N-TP	14	100~150	<200	<0.1	<1.0	2~4.5
0402ESDA-18N-TP	18	100~150	<200	<0.1	<1.0	2~4.5
0402ESDA-24N-TP	24	100~150	<200	<0.1	<1.0	2~4.5

Notes:

1. The varistor voltage was measured at 1 mA current
2. The Clamping voltage was measured at 8*20 us standard current.
3. The Leakage current was measured at working voltage.

Soldering Parameters



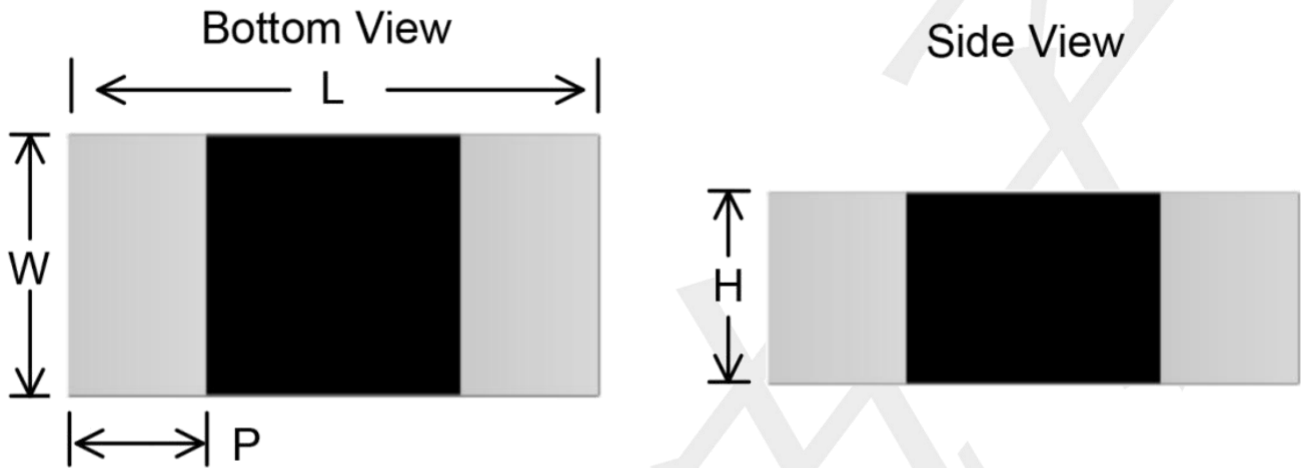
IR reflow Pb free process suggestion profile

- (1) The solder recommend is Sn96.5/Ag3.5 and thickness recommend as shown in table 5.3.
- (2) Ramp-up rate (217°C to peak) + 3°C /second max.
- (3) Temp. maintain at 175±25°C 180 seconds max.
- (4) Temp. maintain above 217°C 60~150 seconds.
- (5) Peak temperature range 245 +20/-10°C within 5°C of actually peak temperature (tp) 10~20 seconds.
- (6) Ramp down rate -6°C/second max.

Environment Reliability Test

Characteristic	Test Method and Description			
High Temperature Storage	The specimen shall be subjected to 125±2°C for 1000±2 hours without load and then stored at room temperature and normal humidity for one or two hours. The change of varistor voltage shall be within 10%.			
Temperature Cycle	The temperature cycle of specified temperature shall be repeated five times and then stored at room temperature and normal humidity for one or two hours. The change of varistor voltage shall be within 10% and mechanical damage shall be examined.	Step	Temperature	Period
		1	-40±3°C	30±3min
		2	room temperature	1 hour
		3	125±3°C	30±3min
	4	room temperature	1 hour	
High Temperature Load	After being continuously applied the maximum allowable voltage at 85±2°C for 1000±2 hours, the specimen shall be stored at room temperature and normal humidity for one or two hours. The change of varistor voltage shall be within 10%.			
Damp Heat Load/Humidity Load	The specimen should be subjected to 40±2°C and 90~95% RH, the maximum allowable voltage applied for 1000±2 hours and then stored at room temperature and normal humidity for one or two hours. The change of varistor voltage shall be within 10%.			
Low Temperature Storage	The specimen should be subjected to -40±2°C for 500±2 hours without load and then stored at room temperature and normal humidity for one or two hours. The change of varistor voltage shall be within 10%.			

Package Outline & Dimensions



SYMBOL	MILLIMETERS
	0402
L	1.00±0.10
W	0.50±0.10
P	0.25±0.10
H	0.60 (Max)