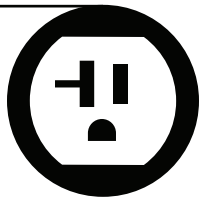
SURGE ABSORBERS

AUTOMOTIVE

INDUSTRIAL

TELECOM

POWER SUPPLY



SURGE PROTECTION

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Table of Contents

Standard Series

Features

1. Fast response time.
2. Low capacitance.
3. Excellent solderability.
4. Nickel Barrier.

Applications

1. Protection from ESD.
2. Car radio, Antenna.

Part Number System

WPSSA	D	-	101	01	-	T
(1)	(2)		(3)	(4)		(5)

(1) Series
WPSSA: IEC-61000-4-2, ESD (1/30ns, HBM) protection.

(2) Material & Design
B, D

(3) Dimensions (inches)*
First two digits: length (inches)
Last two digits: width (inches)

(4) Maximum continuous working voltage
First two digits are integral with the third digit being the number of zeros

(5) Capacitance
01: Max. 1 pF
03: Max. 3 pF
12: Max. 12 pF

(5) Packaging
B: Bulk Package
T: Tape & Reel (Ø 178mm [7 inches])
L: Tape & Reel (Ø 254mm [10 inches])

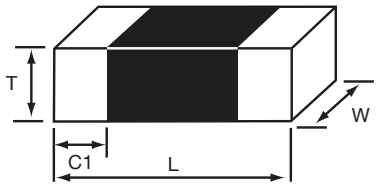
* 0603(inches) is equivalent to 1608(mm).
0805(inches) is equivalent to 2012(mm).
1206(inches) is equivalent to 3216 (mm).

Shape & Dimensions

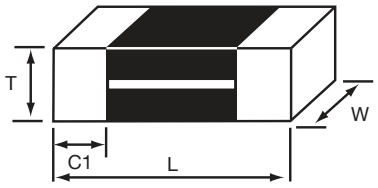
unit : mm [inches]

Size	L	W	T	C1
0603	1.6 ± 0.15 [.063 ± .006]	0.8 ± 0.15 [.031±.006]	0.6 ± 0.2 [.024 ± .008]	0.30 ± 0.20 [.012 ± .008]
0805	2.0 ± 0.2 [.079 ± .008]	1.25 ± 0.2 [.049 ± .008]	0.8 ± 0.2 [.031 ± .008]	0.50 ± 0.30 [.020 ± .012]
1206	3.2 ± 0.2 [.126 ± .008]	1.6 ± 0.2 [.063 ± .008]	1.0 ± 0.2 [.039 ± .008]	0.50 ± 0.30 [.020 ± .012]

B Type



D Type



1pF Series Specifications

Part Number	Maximum Ratings		Electrical Characteristics		
	Working Voltage	Leakage Current	Varistor Voltage @ 1mA DC		Maximum Capacitance
	DC	Maximum Leakage Current	Min.	Max.	@1MHz
	Volts	µA	Volts	Volts	pF
	V_{WDC}	I_L	V_V		C
WPSSAD0805-101-01	100	50	115	150	1.0
WPSSAD0805-201-01	200		230	288	
WPSSAD0805-301-01	300		345	431	
WPSSAD0805-401-01	400		460	574	
WPSSAD0805-501-01	500		576	716	
WPSSAD1206-101-01	100		115	150	
WPSSAD1206-201-01	200		230	288	
WPSSAD1206-301-01	300		345	431	
WPSSAD1206-401-01	400		460	574	
WPSSAD1206-501-01	500		576	716	

3pF Series Specifications

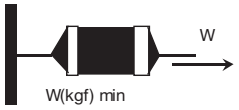
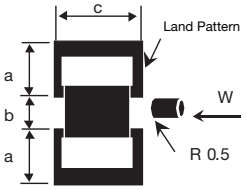
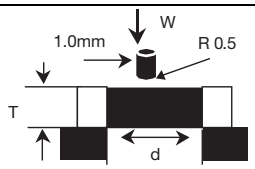
Part Number	Maximum Ratings		Electrical Characteristics		
	Working Voltage	Leakage Current	Varistor Voltage @ 1mA DC		Maximum Capacitance
	DC	Maximum Leakage Current	Min.	Max.	@1MHz
	Volts	µA	Volts	Volts	pF
	V_{WDC}	I_L	V_V		C
WPSSAB0603-101-03	100	50	115	150	3.0
WPSSAB0603-201-03	200		230	288	
WPSSAB0603-301-03	300		345	431	
WPSSAB0805-101-03	100		115	150	
WPSSAB0805-151-03	150		173	216	
WPSSAB0805-201-03	200		230	288	
WPSSAB0805-301-03	300		345	431	
WPSSAB0805-401-03	400		460	574	
WPSSAB0805-501-03	500		576	716	
WPSSAB1206-101-03	100		115	150	
WPSSAB1206-201-03	200		230	288	
WPSSAB1206-301-03	300		345	431	

12pF Series Specifications

Part Number	Maximum Ratings		Electrical Characteristics		
	Working Voltage	Leakage Current	Varistor Voltage @ 1mA DC		Maximum Capacitance
	DC	Maximum Leakage Current	Min.	Max.	@1MHz
	Volts	µA	Volts	Volts	pF
	V_{WDC}	I_L	V_V		C
WPSSAB0805-101-12	100	50	115	150	12
WPSSAB0805-201-12	200		230	288	
WPSSAB1206-101-12	100		115	150	
WPSSAB1206-201-12	200		230	288	

Please note: Parts with other electrical characteristics available upon request.

Reliability and Test Conditions

ITEM		Requirements				Test Condition
		0402	0603	0805	1206	
Operating temp. Range		-55 ~ +125°C				-
Storage temp. & humidity		40°C max, 70% RH max.				Packed Condition
Resistance to solder heat		1. No damage such as cracks should be visible in chip element. 2. More than 75% of the terminal electrode shall be covered with new solder.				Preheat Temperature: 100 to 150°C Preheat time: 1 min. Solder temperature: 260 ± 10°C Dipping time: 10 ± 0.5 sec.
Solderability		1. More than 90% of the terminal electrode shall be covered with new solder. 				Preheat Temperature: 100 to 150°C Preheat time: 1 min. Solder temperature: 260 ± 10°C Dipping time: 3 ± 1 sec.
Re-flow Soldering		1. More than 50% of the terminal electrode shall be covered with new solder. 2. Varistor voltage change: Within ±10%				Preheat Temperature: 150°C Preheat time: 1 min. Solder temperature: 260°C Soldering time: 10 sec. max. (re-flow soldering profile)
Tensile strength		1. The terminal electrode shall break off not the chip element. Unit: Kgf(W)				
	W	-	0.7	1.2	2.0	
Flexure Strength		1. No mechanical damage. Unit: mm (a,b,c), key f (W)				
	a	-	1.0	1.0	1.3	
	b	-	0.8	1.0	1.5	
	c	-	1.3	1.3	3.0	
	W	-	1.0	4.0	5.0	
Bending strength		Body shall not be damaged by forces applied as shown on right. Unit: mm (d), kgf(W)				
	d	-	1.3	1.3	2.0	
	W	-	2.0	3.0	4.0	
Drop		1. No mechanical damage.				Drop 10 times on a concrete floor from a height of 91cm.
Vibration		1. No mechanical damage.				Frequency: 10~55~10Hz Amplitude: 1.52mm Direction and time: X,Y, Z directions for 1 hour
Thermal Shock (Temperature cycle)		1. No mechanical damage. 2. Varistor Voltage change: within ±10%				Temperature: -40 ± 3°C, 85 ± 3°C Cycle: 30 ± 3 min. each 100 cycles then measured at ambient temperature after 24 hours
Heat Load Resistance		1. No mechanical damage. 2. Varistor Voltage change: within ±10%				Temperature: 85 ± 2°C Applied Voltage: Rated Voltage Time: 1000 hours measured at ambient temperature after 24 hours
Low Temperature Resistance		1. No mechanical damage. 2. Varistor Voltage change: within ±10%				Temperature: -40 ± 5°C Time: 1000 hours measured at ambient temperature after 24 hours
Humidity Resistance		1. No mechanical damage. 2. Varistor Voltage change: within ±10%				Temperature: 40 ± 2°C Humidity: 90 ~95% RH Time: 500 hours measured at ambient temperature after 24 hours
Humidity Load Resistance		1. No mechanical damage. 2. Varistor Voltage change: within ±10%				Temperature: 40 ± 2°C Humidity: 90 ~95% RH Applied Voltage: Rated Voltage Time: 500 hours measured at ambient temperature after 24 hours

Labeling

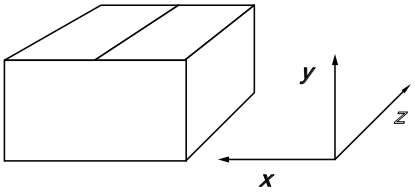
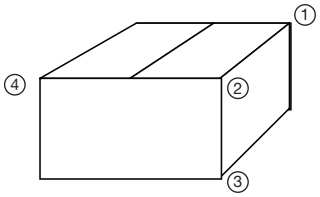
Label
- a) Part name
- b) Lot No.
- c) Quantity

Standard quantity for packaging

Type (EIA)	Reel Size	Tape & Reel			Bulk
		Reel	Inner box	Carton box	Vinyl or Cassette
0603	7 inch	4,000	40,000	160,000	As requested
	10 inch	8,000	80,000	320,000	
0805	7 inch	3,000	30,000	120,000	
	10 inch	7,000	70,000	280,000	
1206	7 inch	3,000	30,000	120,000	
	10 inch	7,000	70,000	280,000	

Please note: Packing method can be changed upon request.

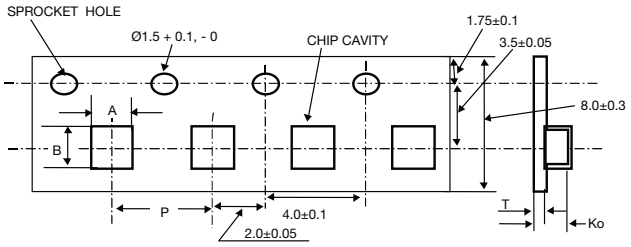
Test

Item	Requirement	Test Condition
Package Drop Test	1. No mechanical damage 	Height: 76.0 cm 10 times: 6 faces-3 edge-1corner, free drop
Package Vibration Test	1. No mechanical damage 	5~150Hz – 1G sweep time 5 min. each x, y, z axis

Tape Dimensions

Embossing 8mm

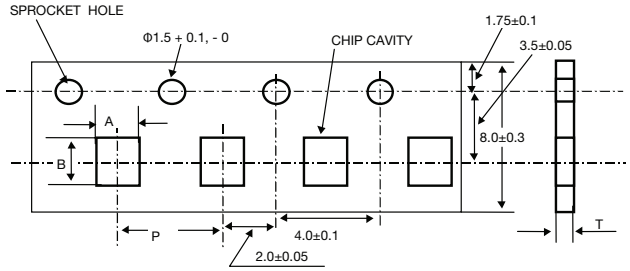
Unit: mm



Type	A ± 0.1	B ± 0.1	P ± 0.1	K0 ± 0.1	T (max.)
0603	1.00	1.80	4.0	0.95	0.3
0805	1.45	2.25	4.0	1.00	0.3
1206	1.90	3.60	4.0	1.35	0.3

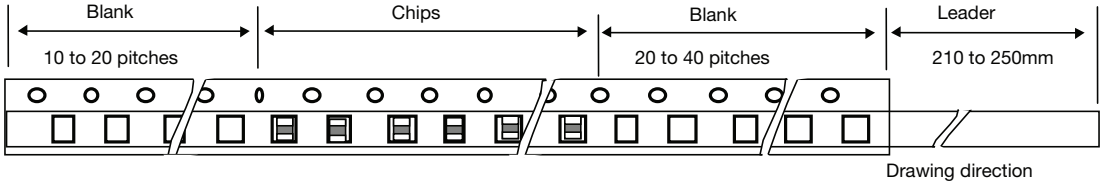
Paper

Unit: mm



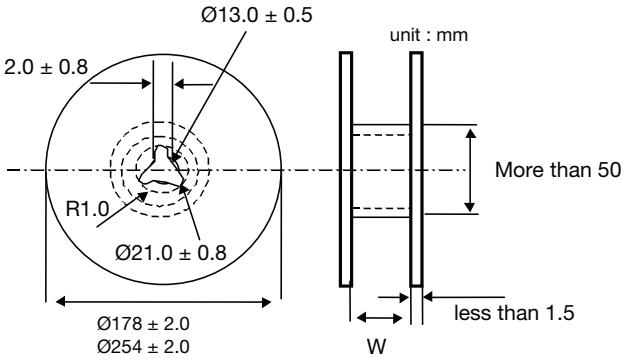
Type	A ± 0.1	B ± 0.1	P ± 0.1	T (max.)
0603	1.00	1.80	2.0	1.1

Leader and Blank Portion



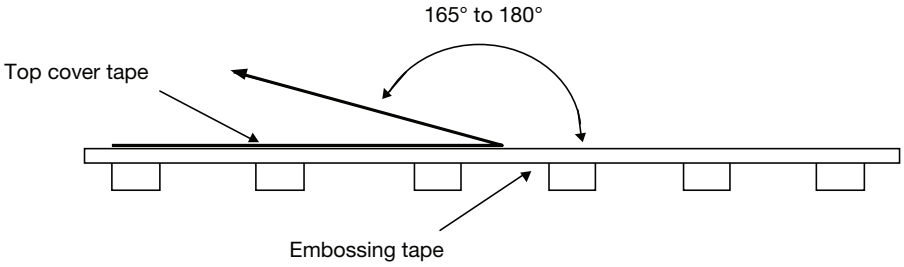
The pitch holes shift within ±0.3mm for cumulative 10 pitches.

Reel Dimensions



Type	W (mm)
0603, 0805, 1206	9.0 ± 0.3

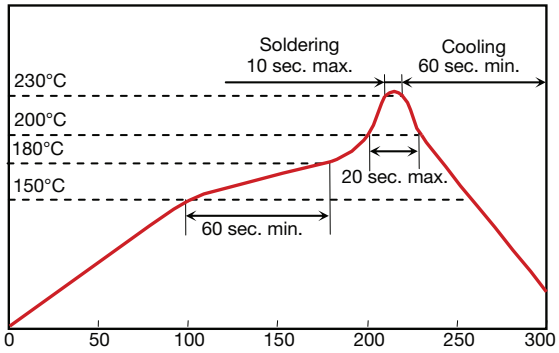
Top Cover Tape Strength



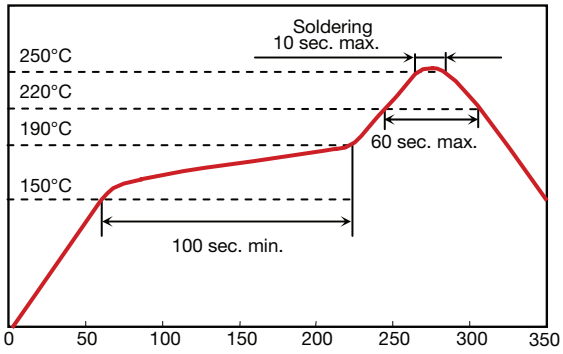
The force for tearing off top cover tape is 20 to 70 grams in the arrow direction.

Soldering Profile

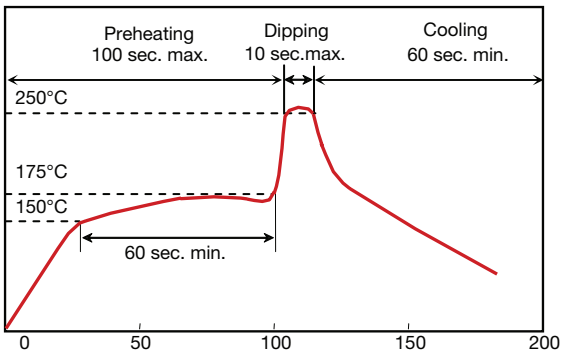
REFLOW SOLDERING PROFILE (Peak 230°C)



REFLOW SOLDERING PROFILE(Peak 250°C)



FLOW SOLDERING



MANUAL SOLDERING