



WORLD PRODUCTS INC.
ELECTRONIC COMPONENT SOLUTIONS
Automotive • Industrial • Telecom • Wireless

SURGE ABSORBERS

AUTOMOTIVE



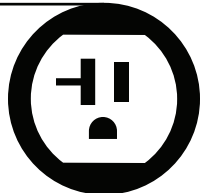
INDUSTRIAL



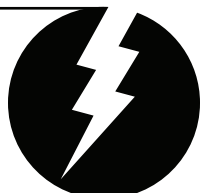
TELECOM



POWER SUPPLY



SURGE PROTECTION



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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

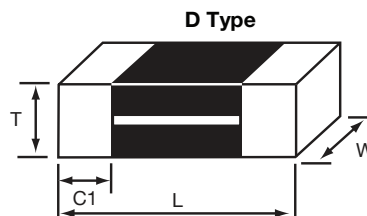
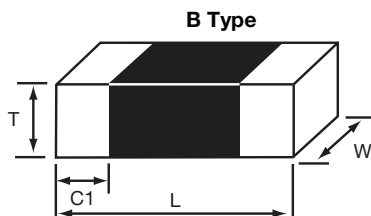
B: Bulk Package
T: Tape & Reel (Ø 178mm [7 inches])
L: Tape & Reel (Ø 254mm [10 inches])

* 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]



SURGE ABSORBERS

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


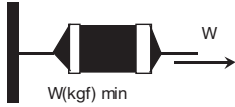
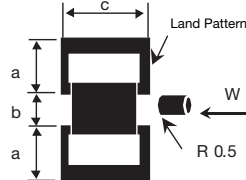
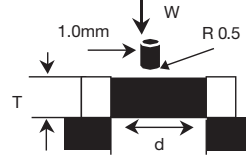
Part Number	Maximum Ratings		Electrical Characteristics		
	Working Voltage	Leakage Current	Varistor Voltage @ 1mA DC		Maximum Capacitance
	DC	Maximum Leakage Current	Min.	Max.	@1MHz
	Volts	μA	Volts	Volts	pF
	V _{WDC}	I _L	V _V		C
WPSSAB0603-101-03	100	50	115	150	3.0
WPSSAB0603-201-03	200		230	288	
WPSSAB0603-301-03	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

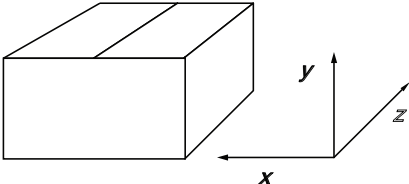
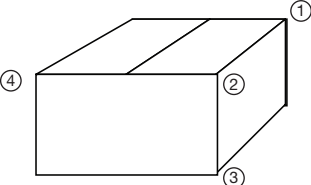
- a) Part name
- b) Lot No.
- c) Quantity

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.

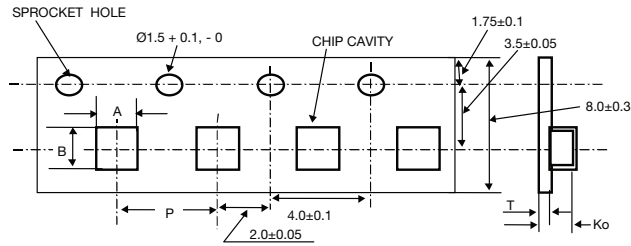
Test

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

Tape Dimensions

Embossing 8mm

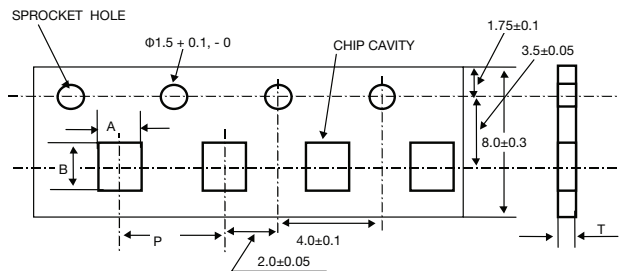
Unit: mm



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

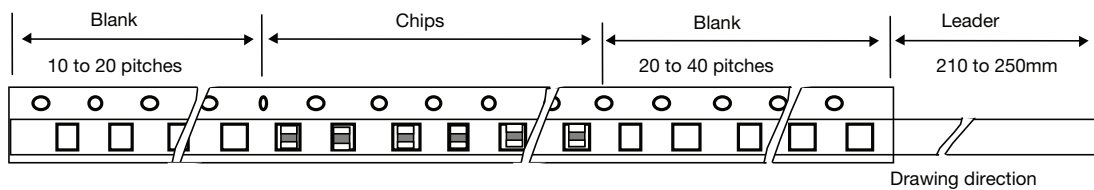
Paper

Unit: mm



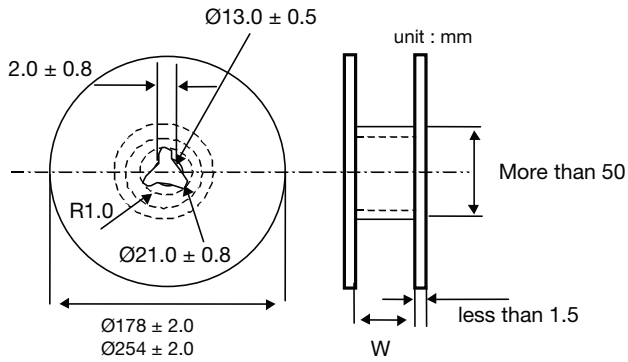
Type	A ± 0.1	B ± 0.1	P ± 0.1	T (max.)
0603	1.00	1.80	2.0	1.1

Leader and Blank Portion



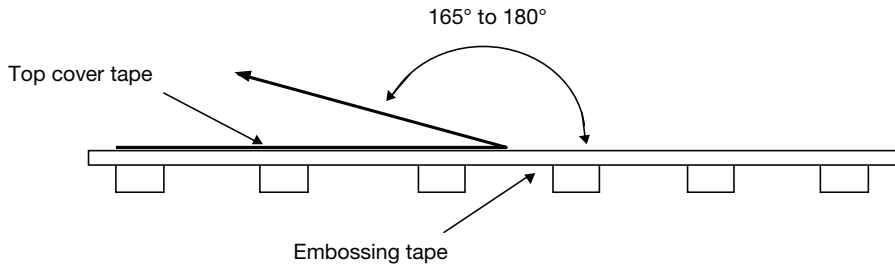
The pitch holes shift within $\pm 0.3\text{mm}$ for cumulative 10 pitches.

Reel Dimensions



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

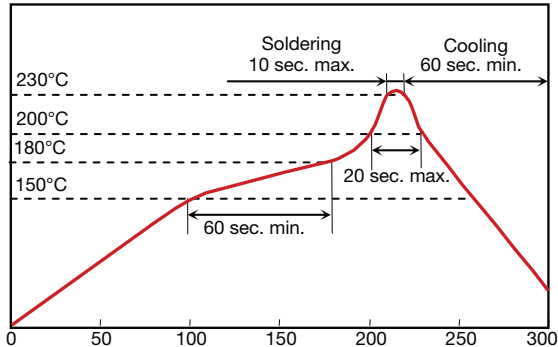
Top Cover Tape Strength



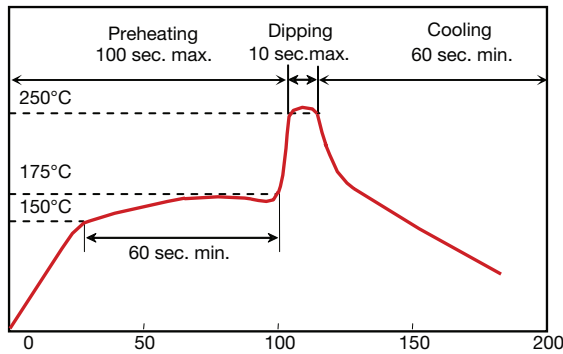
The force for tearing off top cover tape is 20 to 70 grams in the arrow direction.

Soldering Profile

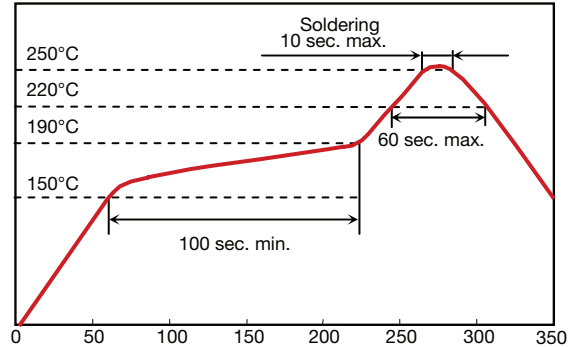
REFLOW SOLDERING PROFILE (Peak 230°C)



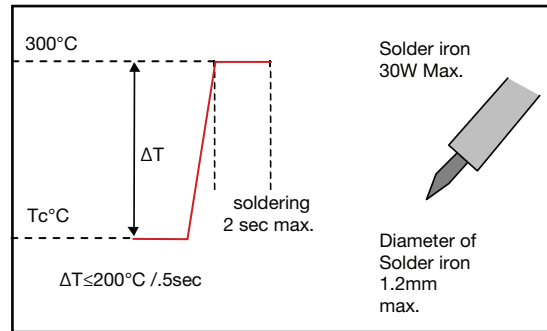
FLOW SOLDERING



REFLOW SOLDERING PROFILE (Peak 250°C)



MANUAL SOLDERING



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