

Kunde / customer :

Artikelnummer / part number : 823 57 120 220

Datum / Date : 2006-10-15

Bezeichnung :

description : 0402 ESD Suppressor

SMD size: 0402

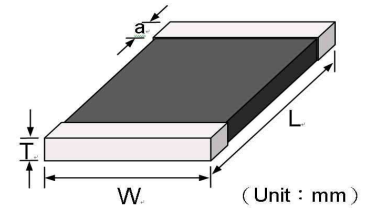
ROHS Compliant

A Mechanische Abmessungen / dimensions :

SIZE

(Unit : mm)

| SISE | W | L | T | a |
|------|------|-----|-----|------|
| 0201 | 0.3 | 0.6 | 0.3 | 0.15 |
| 0402 | 0.5 | 1.0 | 0.6 | 0.25 |
| 0603 | 0.8 | 1.6 | 0.9 | 0.3 |
| 0805 | 1.25 | 2.0 | 1.2 | 0.3 |
| 1206 | 1.6 | 3.2 | 1.5 | 0.5 |
| 1210 | 2.5 | 3.2 | 1.5 | 0.5 |
| 1812 | 3.2 | 4.5 | 2.0 | 0.5 |
| 2220 | 5.0 | 5.7 | 2.5 | 0.5 |



B Elektrische Eigenschaften / electrical properties :

TECHNICAL DATA

| Part Number | Working Voltage | Max. Clamping Voltage | Typ. Clamp. V | Leakage Current | ESD Pulse Withstand | ESD Voltage air discharge | Capacitance |
|----------------|-----------------|-----------------------|---------------|-----------------|---------------------|---------------------------|-------------|
| | DC | V (*1) | V (*2) | µA (*3) | - | kV (*4) | pF |
| 823 57 120 220 | 12 | 55 | - | 1 | - | +/-15 | 22 |

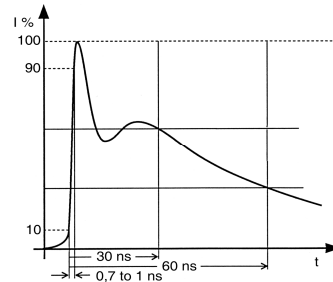
- * 1 Max. Clamping Voltage at 8/20 waveform and 1 A pulse current
- * 2 Typ. Clamping Voltage per 8 kV ESD contact discharge method
- * 3 Leakage Current at max operating voltage, the max leakage current was measured at reliability test
- * 4. ESD Typ. Withstands Voltage design and method guarantee this property

| | |
|--------------------------|--------|
| Capacitance tolerance: | +/-30% |
| Capacitance measured at: | 1MHz |

ESD LEVEL IEC61000-4-2

| Severity Level | Air Discharge | Direct Discharge |
|----------------|---------------|------------------|
| 1 | 2 kV | 2 kV |
| 2 | 4 kV | 4 kV |
| 3 | 8 kV | 6 kV |
| 4 | 15 kV | 8 kV |
| 5 | Special | Special |

WAVE FORM



REFERENCE DATA

| | | | | |
|-------------------------------|------------|---|----------|----|
| Response time | T_{rise} | < | 1 | ns |
| Operating ambient temperature | | | -40~+85 | °C |
| Storage temperature | | | -50~+125 | °C |
| Max. temperature solder | | | 260/10s | °C |

OTHER DATA

| | |
|------------------------|--------------|
| Body | ZnO |
| End termination | Ag/Ni/Sn |
| Packaging | Reel |
| Complies with Standard | IEC61000-4-2 |
| Procedure | Solgel |
| Marking | None |

Würth Elektronik eiSos GmbH & Co.KG - Radialex department

D-74638 Waldenburg · Max-Eyth-Straße 1 - 3 · Germany · Telefon (+49) (0) 7942 - 945 - 0 · Telefax (+49) (0) 7942 - 945 - 400
<http://www.we-online.com>

Kunde / customer :

Artikelnummer / part number : **823 57 120 220**

Bezeichnung :

description : **0402 ESD Suppressor**

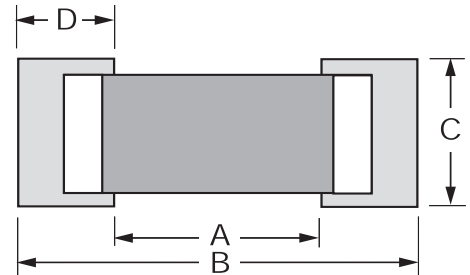
SMD size: **0402**

C Lötpad / soldering spec. :

RECOMMENDED SOLDER PAD LAYOUT

(Unit : mm)

| SISE | A | B | C | D |
|------|-----------|----------|----------|----------|
| 0201 | 0.25 | 0.32 | 0.85 | 0.3 |
| 0402 | 0.4 ~ 0.6 | 1.0 ~1.8 | 0.6 ~0.7 | 0.6 ~1.2 |
| 0603 | 0.8 ~ 1.2 | 1.7 ~3.0 | 1.2 ~1.6 | 0.9 ~1.8 |
| 0805 | 1.0 ~1.5 | 2.1 ~3.8 | 1.5 ~2.1 | 1.1 ~2.3 |
| 1206 | 1.8 ~2.5 | 3.0 ~5.8 | 1.8 ~2.6 | 1.2 ~3.3 |
| 1210 | 1.8 ~2.5 | 3.2 ~6.1 | 2.8 ~3.8 | 1.3 ~3.5 |
| 1812 | 2.5 ~3.5 | 4.0 ~7.3 | 3.3 ~4.5 | 1.5 ~3.8 |
| 2220 | 3.5 ~4.6 | 5.0 ~8.5 | 5.2 ~6.2 | 1.5 ~3.9 |

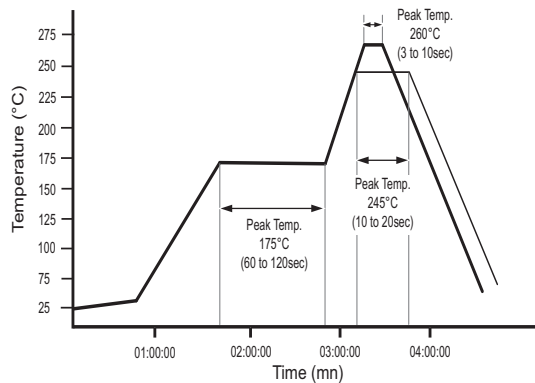


- 1 - The solder paste shall be printed in a thickness of 150 to 200µm.
- 2 - The SIR test of the solder paste shall be done (Based on JIS-Z-3284)
- 3 - IR reflow Pb Free Process suggestin profile (Based on J-STD-020-C):

Rapid heating, partial heating or rapid cooling will easily cause defect of the component. So preheating and gradual cooling process is suggested. IR soldering has the highest yields due to controlled heating rates and solder liquidus times. Make sure that the element is not subjected to a thermal gradient steeper than 3 degrees per second. 2 degrees per second is the ideal gradient. During the soldering process, pre- heating to within 175 degrees of the solders peak temperature is essential to minimize thermal shock.

Soldering recommend paste is Sn 96.5/Ag 3.5

- Preheat
 - 1.The temperature rising speed is suggested to be 2~3°C/s.
 - 2.Appropriate preheat time will be from 60 to 120 seconds.
 - 3.Temp. maintain at 175 +/-25°C 120 seconds.
- Heating
 - 1.Careful about sudden rise in temperature as it may worsen the solder ability.
 - 2.Set the peak temperature in 235°C10-20s or 260°C 3-10s.
- Cooling
 - 1.Ramp down rate 6°C/s max.



※Perform adequate test in advance as the reflow temperature profile will vary according to the conditions of the manufacturing process, and the specification of the reflow furnace

- 4 - Hand Soldering Process
 - Preheating 150°C
 - Temperature of soldering iron tip 380°C max. 3 to 5 sec
 - The Varistorrs shall be cooled gradually at room ambient temperature

- 5 - Ultrasonic cleaning
 - For preventing failures or damages. Frequency 29MHz max - radied Power 20W/l max - Period 5mn max

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Bezeichnung :

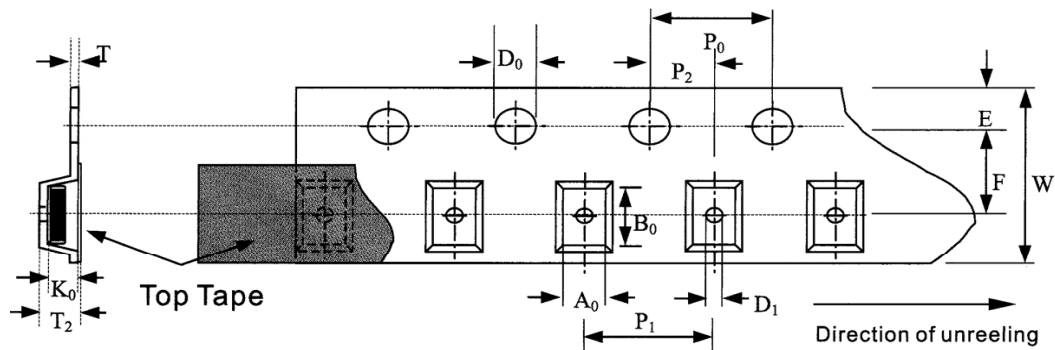
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SMD size: 0402

D Rollenspezifikation / tape and reel specification :

- 1 - Carrier tape and transparent cover tape should be heat-sealed to carry the products, and the reel should be used to reel the carrier tape.
- 2 - The adhesion of the heat-sealed cover tape shall be 40 + 20/ - 15grams.
- 3 - Both the head and the end portion of the taping shall be empty for reel package and SMT auto-pickup machine. And a normal paper tape shall be connected in the head of taping for the operator to handle.

(Unit : mm)



TAPE SPECIFICATION

(Unit : mm)

| Symbol | A_0 | B_0 | K_0 | T_2 | T | D_0 | D_1 | P_1 | P_2 | P_0 | W | E | F |
|-------------|------------|------------|------------|------------|------------|---------|------------|------------|------------|------------|------------|------------|------------|
| | ± 0.10 | ± 0.10 | ± 0.10 | ± 0.05 | ± 0.05 | $+0.10$ | ± 0.05 | ± 0.10 | ± 0.05 | ± 0.05 | ± 0.20 | ± 0.10 | ± 0.05 |
| | | | | | | -0.00 | | | | | | | |
| 0201 | 0.38 | 0.68 | 0.44 | 0.22 | - | 1.50 | - | 2.00 | 2.00 | 4.00 | 8.00 | 1.75 | 3.50 |
| 0402 | 0.85 | 1.25 | 0.65 | 0.22 | 0.10 | 1.50 | 1.00 | 2.00 | 2.00 | 4.00 | 8.00 | 1.75 | 3.50 |
| 0603 | 1.05 | 1.88 | 0.95 | 0.22 | 0.10 | 1.50 | 1.00 | 4.00 | 2.00 | 4.00 | 8.00 | 1.75 | 3.50 |
| 0805 | 1.42 | 2.30 | 1.04 | 0.22 | 0.10 | 1.50 | 1.00 | 4.00 | 2.00 | 4.00 | 8.00 | 1.75 | 3.50 |
| 1206 | 1.88 | 3.50 | 1.27 | 0.22 | 0.10 | 1.50 | 1.00 | 4.00 | 2.00 | 4.00 | 8.00 | 1.75 | 3.50 |
| 1210 | 2.18 | 3.46 | 1.45 | 0.22 | 0.10 | 1.50 | 1.00 | 4.00 | 2.00 | 4.00 | 8.00 | 1.75 | 3.50 |
| 1812 | 3.66 | 4.95 | 1.74 | 0.25 | 0.10 | 1.50 | 1.50 | 8.00 | 2.00 | 4.00 | 12.00 | 1.75 | 5.50 |
| 2220 | 5.10 | 5.97 | 2.80 | 0.25 | 0.10 | 1.50 | 1.50 | 8.00 | 2.00 | 4.00 | 12.00 | 1.75 | 5.50 |

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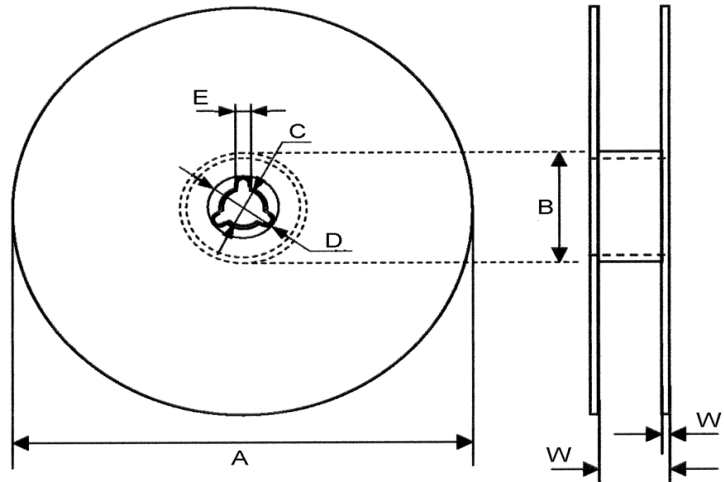
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description : 0402 ESD Suppressor

SMD size: 0402

D Rollenspezifikation / tape and reel specification :

(Unit : mm)



REEL DIMENSION

(Unit : mm)

| Symbol | A | B | C | D | E | W | W ₁ |
|--------|-----------|----------|----------|----------|---------|----------|----------------|
| 0201 | 178.0±2.0 | 50.0 min | 13.0±0.5 | 21.0±0.8 | 2.0±0.5 | 9.0±0.50 | 1.5 max |
| 0402 | 178.0±1.0 | 60.0±0.5 | 13.0±0.2 | 21.0±0.2 | 2.0±0.5 | 9.0±0.50 | 1.5±0.15 |
| 0603 | 178.0±1.0 | 60.0±0.5 | 13.0±0.2 | 21.0±0.2 | 2.0±0.5 | 9.0±0.50 | 1.5±0.15 |
| 0805 | 178.0±1.0 | 60.0±0.5 | 13.0±0.2 | 21.0±0.2 | 2.0±0.5 | 9.0±0.50 | 1.5±0.15 |
| 1206 | 178.0±1.0 | 60.0±0.5 | 13.0±0.2 | 21.0±0.2 | 2.0±0.5 | 9.0±0.50 | 1.5±0.15 |
| 1210 | 178.0±1.0 | 60.0±0.5 | 13.0±0.2 | 21.0±0.2 | 2.0±0.5 | 9.0±0.50 | 1.5±0.15 |
| 1812 | 178.0±1.0 | 60.0±0.5 | 13.5±0.1 | 21.0±0.2 | 2.0±0.5 | 13.6±0.2 | 1.5±0.15 |
| 2220 | 178.0±1.0 | 60.0±0.5 | 13.5±0.1 | 21.0±0.2 | 2.0±0.5 | 13.6±0.2 | 1.5±0.15 |

QUANTITY PER PACKING UNIT

| Type | 0201 | 0402 | 0603 | 0805 | 1206 | 1210 | 1812 | 2220 |
|----------|--------|--------|-------|-------|-------|-------|-------|-------|
| Pcs/reel | 15 000 | 10 000 | 4 000 | 3 000 | 3 000 | 2 000 | 1 000 | 1 000 |

| | | | | | | |
|--|------------------|-------------------------|--------------------------|------------|-------------------------|--------------|
| Freigabe erteilt / general release: | Kunde / customer | | | | | |
| | Datum / date | | Unterschrift / signature | | | |
| Geprüft / checked | 2006-07-31 | Kontrolliert / approved | JP. Penlou | JP. PENLOU | Update Clamping Voltage | 06-10-15 |
| | | | | JP. PENLOU | High Temperature Load | 06-07-31 |
| | | | | JP. PENLOU | New P/N | 06-06-02 |
| | | | | JP. PENLOU | Operating temp. Range | 05-11-30 |
| | | | | JP. PENLOU | Lead free soldering | 05-11-04 |
| | | | | Name | Änderung / modification | Datum / date |

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