



Surge arrester

2-electrode arrester

Series/Type: S20-A500X
Ordering code: B88069X1513T303
Version/Date: Issue 02 / 2014-01-09

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Description

The S20-series has been especially designed to meet data transmission protection requirements. The optimized design features a high level of protection against fast rising transients usually caused by lightning disturbances. For use in high frequency data lines, the series offers ultra low capacitances and shows only marginally signal losses up to high frequencies. The devices are extremely reliable and are able to withstand high surge currents without destruction.

Features

- Very small size (EIA 1206)
- Short response time
- High current handling capability
- Stable performance over service life
- Ultra low capacitance and insertion loss
- High insulation resistance
- Excellent SMD handling
- RoHS-compatible

Applications

Telecommunication:

- Ethernet, PoE, xDSL
- Cable modem, splitters, line cards
- Wireless antenna protection

Others:

- CCTV
- Switching power supply

Product characteristics

| | | |
|--|--------------------------------|------------------|
| Physical dimensions (length x width x height) | 0.126 x 0.063 x 0.063 | in |
| | 3.2 x 1.6 x 1.6 | mm |
| | EIA 1206 / 3216 metric | |
| Weight | ~ 0.05 | g |
| Operating temperature | -40 ... +90 | °C |
| Recommended storage ¹⁾ - temperature - humidity - period | +5 ... +35 45 ... 80 ≤ 2 | °C % years |
| Climatic category (IEC 60068-1) | 40/ 90/ 21 | |
| Moisture sensitivity level ²⁾ | 1 | |
| Marking | without | |

Notes:

¹⁾ Specified in terms of corrosion against Sn-plating

²⁾ Tests according to JEDEC J-STD-020

Electrical specifications and stress test methods

| | | |
|--|--|----------------------------|
| Nominal DC spark-over voltage ^{3) 4)} | 500 | V |
| Tolerance | ±20 | % |
| Min. | 400 | V |
| Max. | 600 | V |
| Impulse spark-over voltage | | |
| at 100 V/μs | - for 99% of measured values - typical values of distribution | < 1050 V < 950 V |
| at 1 kV/μs | - for 99% of measured values - typical values of distribution | < 1200 V < 1050 V |
| Service life ⁵⁾ | | |
| 10 operations [5x (+) & 5x (-)] 8/20 μs | 0.5 | kA |
| 10 operations [5x (+) & 5x (-)] 5/320 μs ⁶⁾ | 150 | A |
| Insulation resistance at 100 V _{DC} | > 1 | GΩ |
| Capacitance at 1 MHz | < 0.3 | pF |
| Arc voltage at 1 A | ~ 10 | V |
| Glow to arc transition current | < 0.1 | A |
| Glow voltage | ~ 65 | V |

³⁾ At delivery AQL 0.65 level II, DIN ISO 2859

⁴⁾ In ionized mode

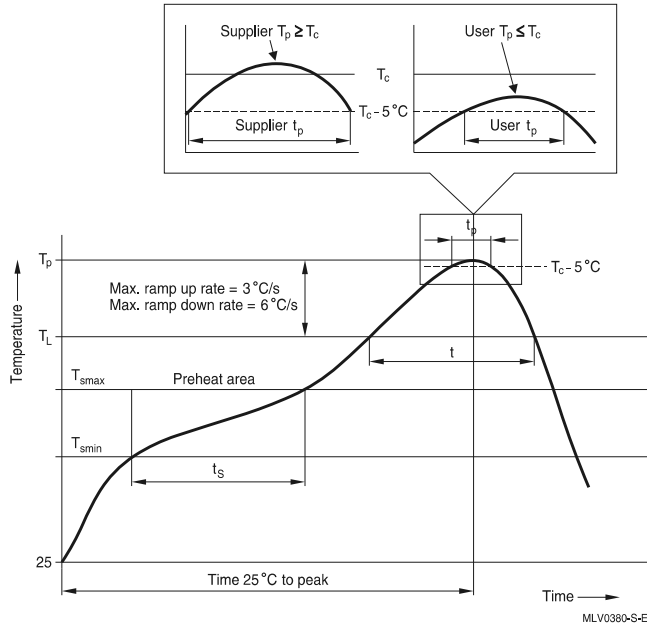
⁵⁾ Tests according to ITU-T Rec. K. 12 and UL 497B

⁶⁾ Test generator 6 kV, 10/700 μs, 40 Ω

Terms and current waveforms in accordance with ITU-T Rec. K. 12; IEC 61643-21; IEC 61643-311 and IEC 61663-2.

Soldering parameters

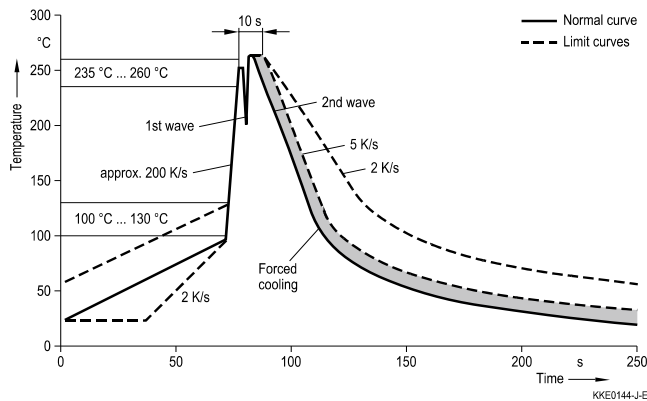
Reflow soldering



| Reflow profile features | | Sn- Pb eutectic assembly | Pb-free assembly |
|--|--|----------------------------------|----------------------------------|
| Preheat and soak - Temperature min - Temperature max - Time | T_{smin} T_{smax} t_{smin} to t_{smax} | 100 °C 150 °C 60 ... 120 s | 150 °C 200 °C 60 ... 180 s |
| Average ramp-up rate | T_{smax} to T_p | max. 3°C/s | max. 3°C/s |
| Liquidous temperature Time at liquidous | T_L t_L | 183 °C 60 ... 150 s | 217 °C 60 ... 150 s |
| Peak package body temperature *, Classification temperature ** | T_p, T_c | 220 ... 235 °C ** | 245 ... 260 °C ** |
| Time (t_p) ** within 5 °C of the specified classification temperature (T_c) | | 20 s *** | 30 s *** |
| Average ramp-down rate | T_p to T_{smax} | max. 6°C/s | max. 6°C/s |
| Time 25°C to peak temperature | | max. 6 min | max. 8 min |

* = Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.
 ** = For details please refer to JEDEC J-STD-020D.
 *** = Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

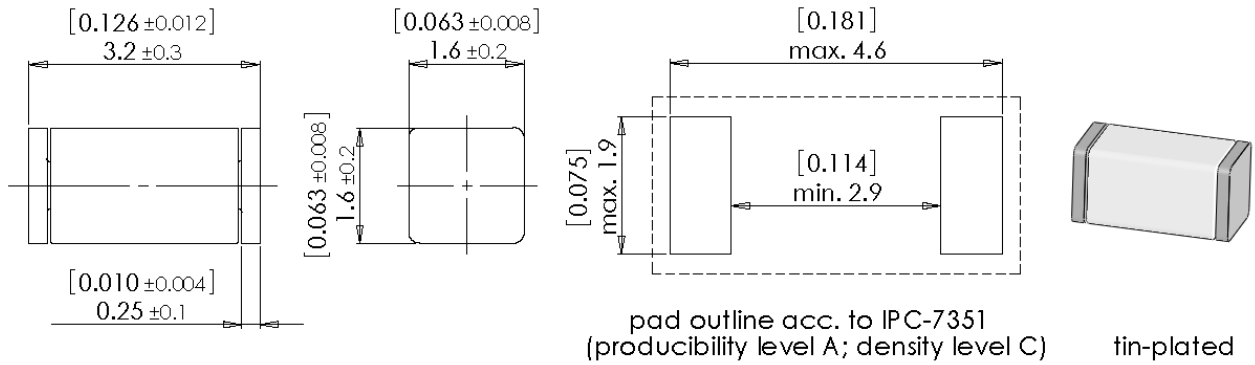
Wave soldering



| Wave profile features | Pb-free assembly |
|-------------------------|---------------------------|
| Solder | Sn 95.5 / Ag 3.8 / Cu 0.7 |
| Solder bath temperature | 263 (± 3) °C |
| Dwell time | < 3 s |

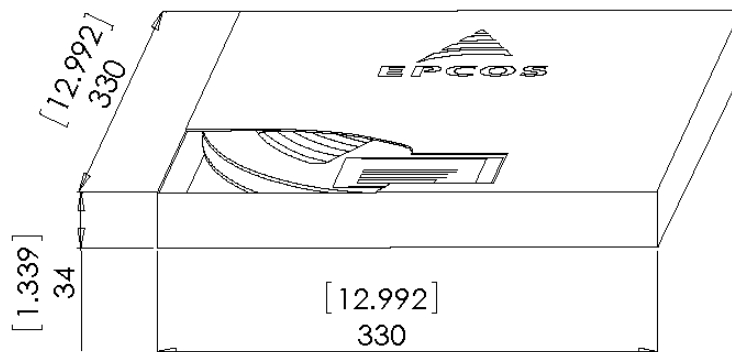
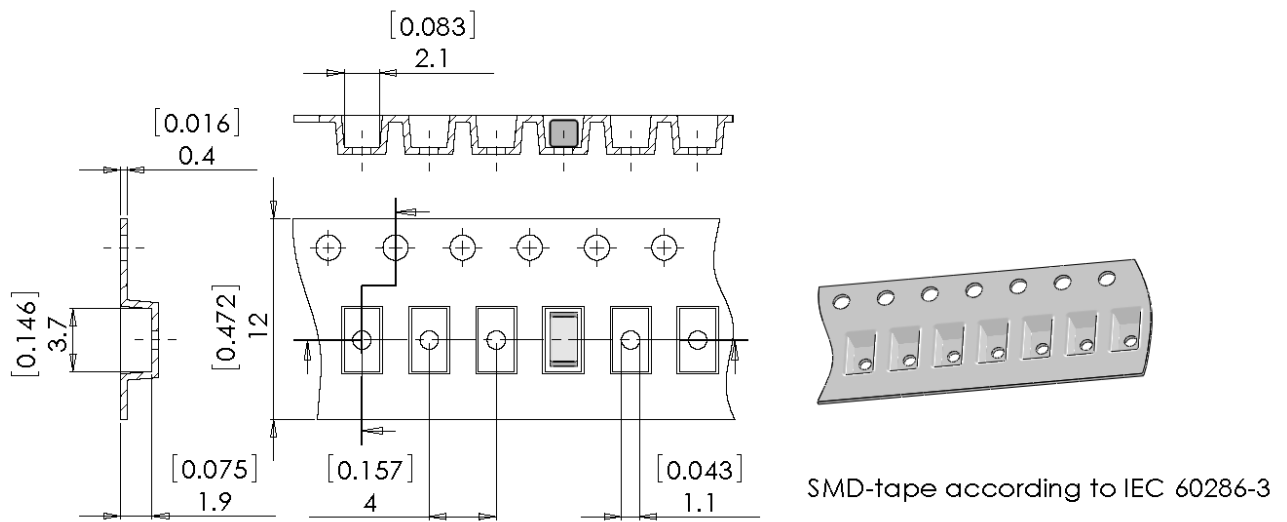
Soldering profile applied to a single soldering process.

Dimensions in mm and inch [...]



Ordering code and packing advice

B88069X1513T303 = 3000 pcs. on SMD-tape



Cautions and warnings

- Surge arresters must not be operated directly in power supply networks.
- Surge arresters may become hot in the event of longer periods of current stress (danger of burning). In the event of thermal overload. The connectors may fail or the component may be destroyed.
- Surge arresters must be handled with care and must not be dropped.
- Damaged surge arresters must not be re-used.

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Release 2018-10