



Surge arrester

3-electrode arrester

Series/Type: TQ90-A90
Ordering code: B88069X1963T902
Date: 2019-02-27
Version: 06

Product description

The TQ90-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

- Small size
- Fast response time
- High current handling capability
- Stable performance over service life
- 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) | 7.6 x 5.0 x 5.0 | mm |
| Weight | ~ 0.9 | g |
| Operation and storage temperature | -40 ... +125 | °C |
| Recommended storage ¹⁾ - temperature - humidity - period | +5 ... +35 45 ... 80 ≤ 2 | °C % years |
| Climatic category (IEC 60068-1) | 40/125/21 | |
| 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) 5)} | 90 | V |
| Tolerance | ±20 | % |
| Min. | 72 | V |
| Max. | 108 | V |
| Impulse spark-over voltage ⁵⁾ | | |
| at 100 V/μs | - for 99% of measured values - typical values of distribution | < 450 < 350 |
| at 1 kV/μs | - for 99% of measured values - typical values of distribution | < 650 < 550 |
| Service life ⁷⁾ | | |
| 10 operations | 50 Hz, 1 s | 10 |
| 1 operation | 50 Hz; 0.18 s ⁸⁾ | 15 |
| 10 operations [5x (+) & 5x (-)] | 8/20 μs | 10 |
| 1 operation | 8/20 μs ⁸⁾ | 15 |
| 1 operation | 10/350 μs ⁸⁾ | 2 |
| 10 operations [5x (+) & 5x (-)] | 10/700 μs | 150 |
| 1 operation | 10/700 μs | 300 |
| 300 operations [150x (+) & 150x (-)] | 10/1000 μs | 200 |
| Insulation resistance at 50 V _{DC} ³⁾ | > 1 | GΩ |
| Capacitance at 1 MHz | < 1.2 ⁵⁾ | < 0.6 ⁶⁾ |
| Arc voltage at 1 A | ~ 9 | V |
| Glow to arc transition current | < 0.2 | A |
| Glow voltage | ~ 55 | V |

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

⁴⁾ In ionized mode

⁵⁾ Tip or ring electrode to center electrodes

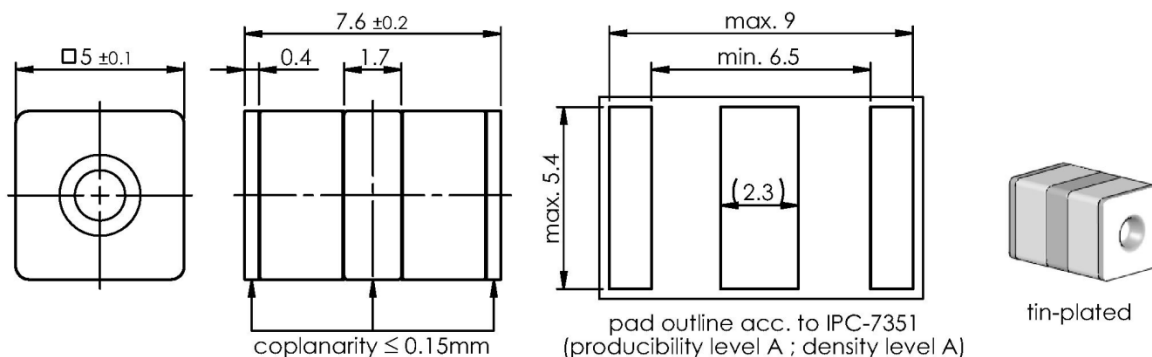
⁶⁾ Tip to ring electrode

⁷⁾ Total current through center electrodes, half value through tip respectively ring electrode.

⁸⁾ After service life: DC spark-over voltage 90 V ±30%

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

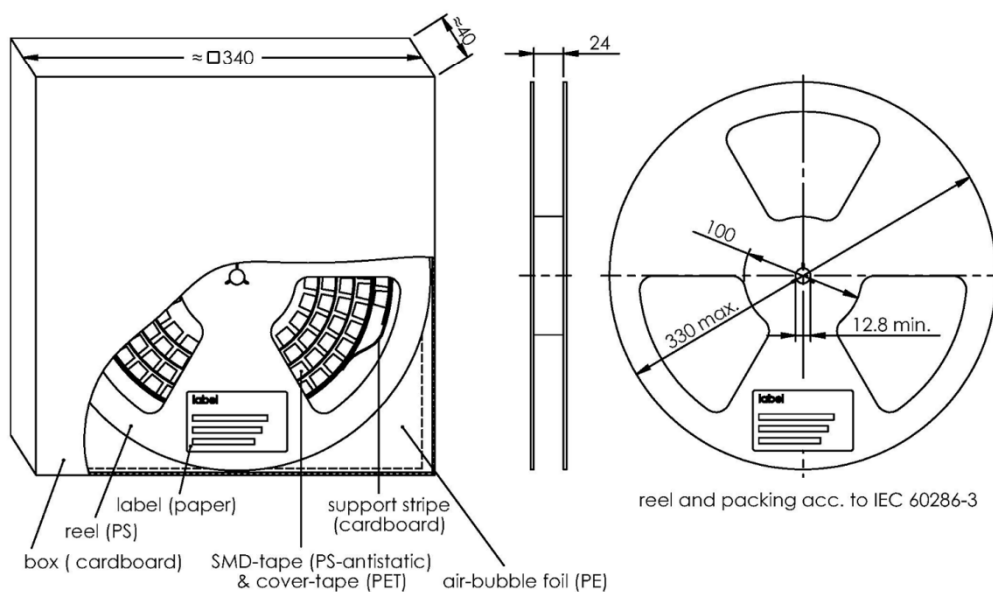
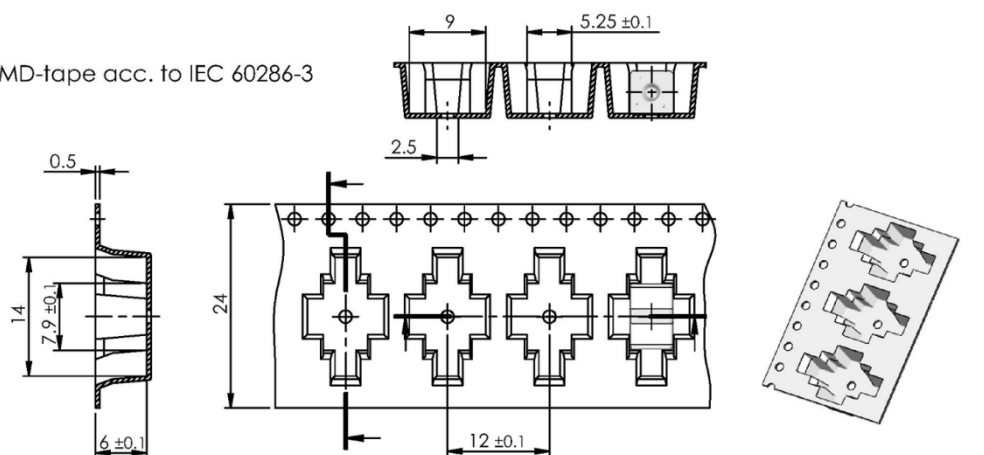
Dimensions in mm



Ordering code and packing advice

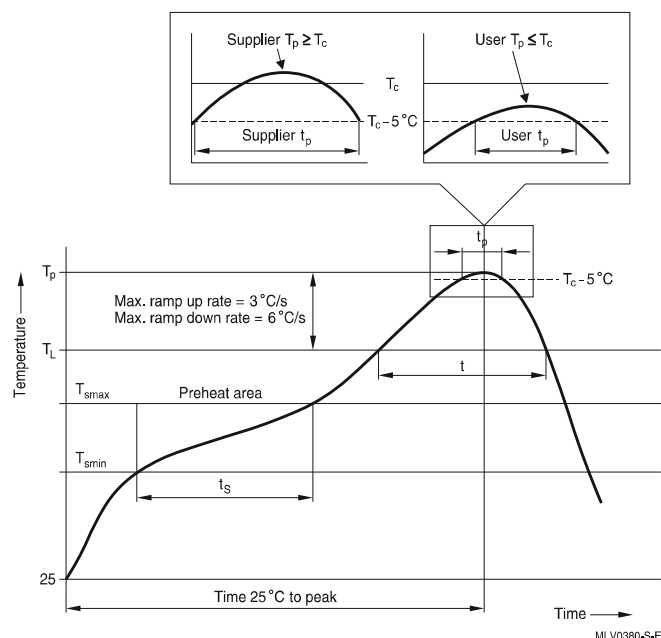
B88069X1963T902 = 900 pcs. on SMD-tape & reel

SMD-tape acc. to IEC 60286-3



Soldering parameter

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.

Cautions and warnings

- Do not operate surge arresters in power supply networks, whose maximum operating voltage exceeds the minimum spark-over voltage of the surge arresters.
- Surge arresters may become hot in the event of longer periods of current stress (burn risk). In the event of overload the connectors may fail or the component may be destroyed.
- Surge arresters must be handled with care and must not be dropped.
- Do not continue to use damaged surge arresters.
- The shown SMD pad dimensions represent a safe way to mount the arrester and are a recommendation of the manufacturer. During the reflow process it must be assured that no solder material reduces the insulation distance between the pads below the arrester.
- SMD surge arresters should be soldered within 24 month after shipment.

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Important notes

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