Surge arrester

2-electrode arrester

Series/Type:	**ES90XSMD**
Ordering code:	**B88069X6241T902**
Date:	2018-11-23
Version:	03

Features

- Extremely small size
- Extremely fast response time
- Stable performance over life
- Extremely low capacitance
- High insulation resistance
- RoHS-compatible

Applications

- Modem
- XDSL-splitter
- Tuner
- Data lines
- Antenna

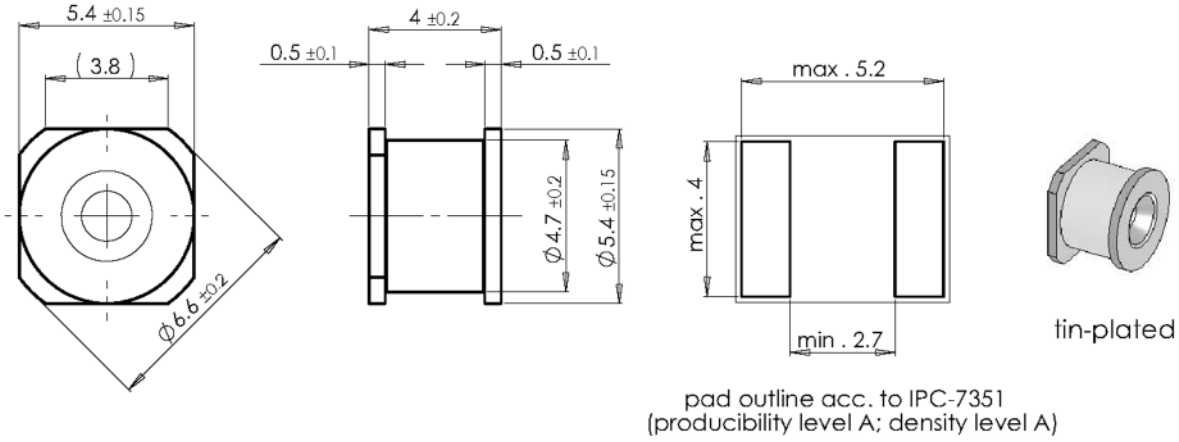
Electrical specifications

DC spark-over voltage [1) 2)] Tolerance Min. Max.	90 ±20 72 108	V % V V
Impulse spark-over voltage at 100 V/µs - for 99% of measured values - typical values of distribution at 1 kV/µs - for 99% of measured values - typical values of distribution	 < 450 < 300 < 600 < 550	 V V V V
Service life 10 operations 8/20 µs 1 operation 8/20 µs	 2.5 5	 kA kA
Insulation resistance at 50 V_{DC}	> 1	GΩ
Capacitance at 1 MHz	< 1	pF
Arc voltage at 1 A Glow to arc transition current Glow voltage	~ 12 ~ 0.5 ~ 70	V A V
Weight	~ 0.3	g
Operation and storage temperature	–40 ... +125	°C
Climatic category (IEC 60068-1)	40/125/21	
Marking, red positive	**EPCOS ES 90 YY O** ES - Series 90 - Nominal voltage YY - Year of production O - Non radioactive	
Certification	UL 497B (E163070)	

1) At delivery AQL 0.65 level II, DIN ISO 2859
2) In ionized mode

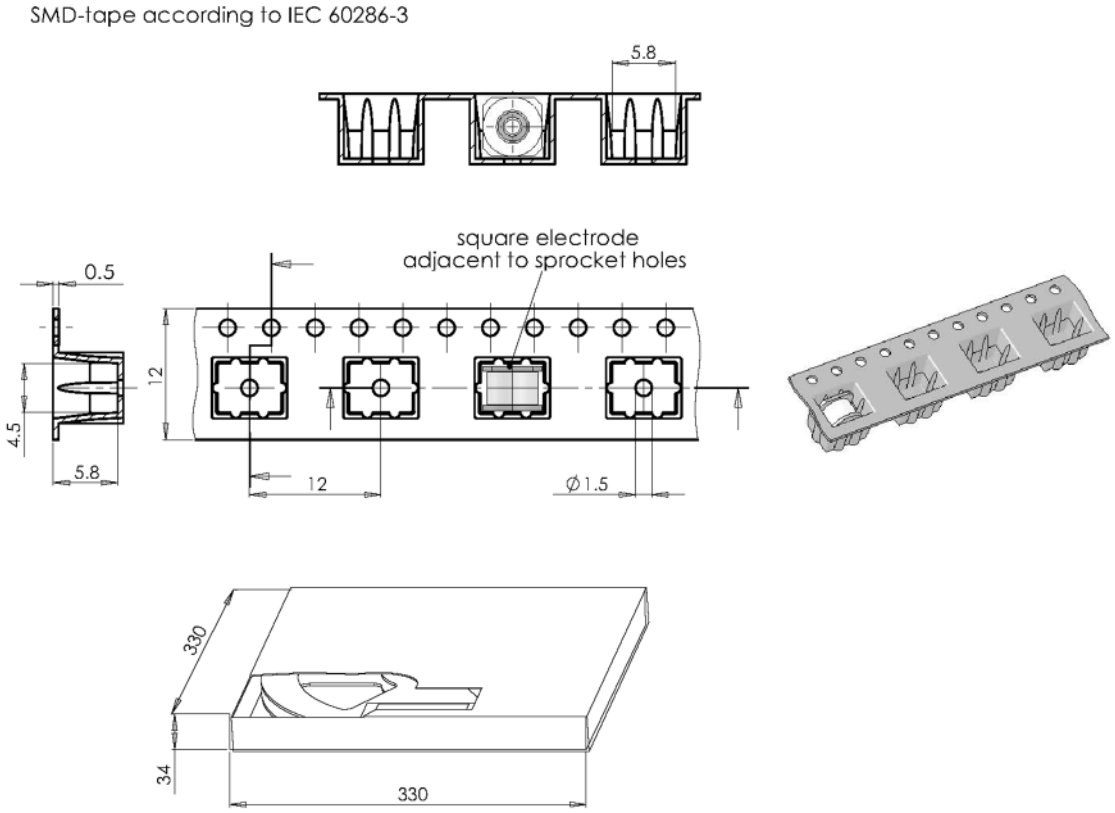
Terms in accordance with ITU-T Rec. K.12 and IEC 61643-311

Dimensional drawing in mm



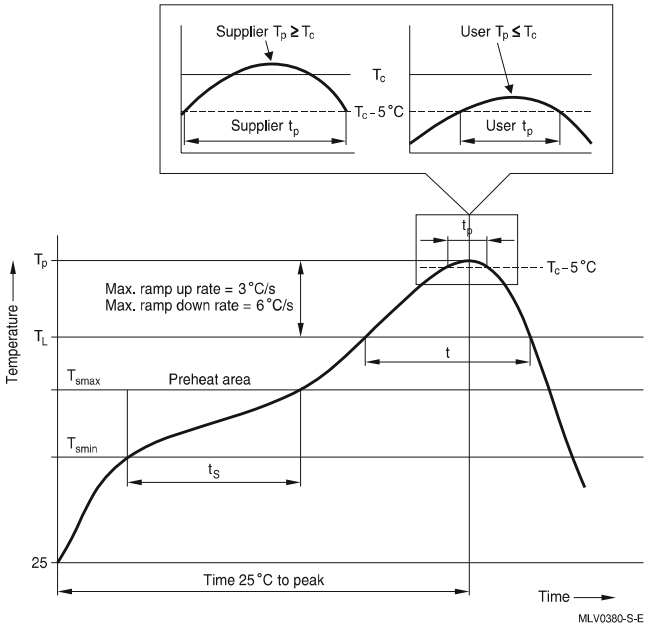
Ordering code and packing advice

*B88069X6241**T902** = 900 pcs. on SMD-tape*



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.

Surface mounted components (SMD) may exhibit a temporary increase in the DC spark-over voltage after the solder reflow process. The components will recover within 24 hours. There is no quality defect nor change in protection levels during the temporary change in DC spark-over voltage.

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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Release 2018-10

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