Surge arrester

3-electrode arrester

Series/Type:	**TQ30F-C420**
Ordering code:	**B88069X2713T203**
Date:	2019-03-12
Version:	05

Product description

The TQ30F 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. For applications with limited space, the TQ30F parts offer a reduced height for optimized PCB – stacking capability.

Features

- Very small size
- 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 × width × height)	0.24 × 0.12 × 0.08	in
	6.2 × 3.2 × 2.0	mm
Weight	~ 0.03	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

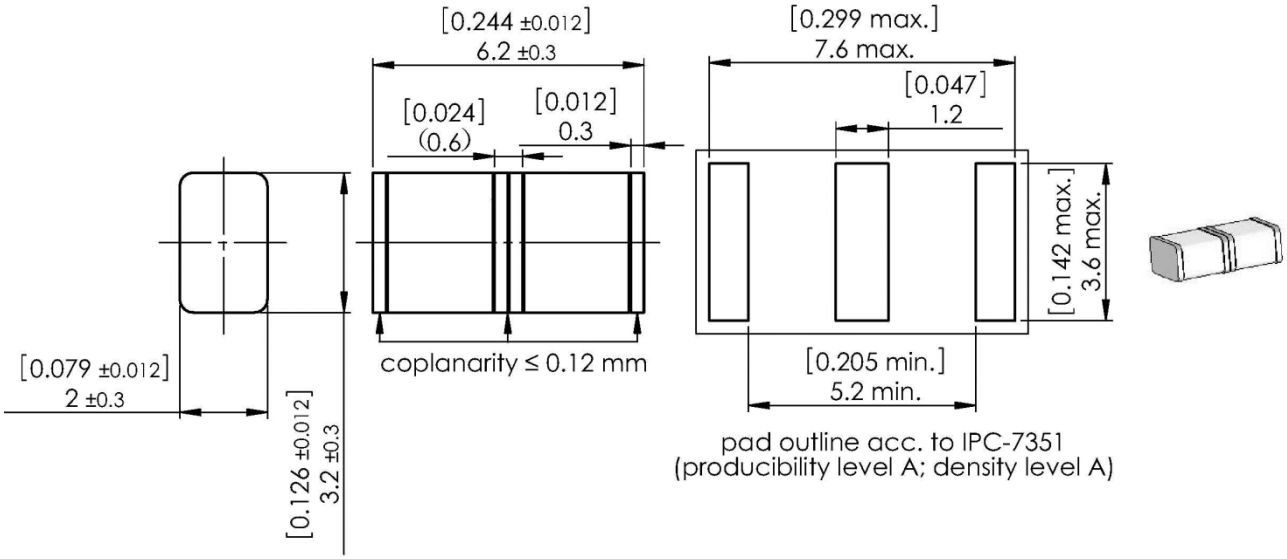
Electrical specifications and stress test methods

Nominal DC spark-over voltage [3) 4) 5)]		420	V
Tolerance		–17 ... +30	%
Min.		350	V
Max.		546	V
Impulse spark-over voltage [5)]			
at 100 V/µs	- for 99% of measured values	< 750	V
	- typical values of distribution	< 700	V
at 1 kV/µs	- for 99% of measured values	< 870	V
	- typical values of distribution	< 800	V
Service life [6) 8) 9)]			
20 operations	[10× (+) & 10× (–)] 5/320 µs [7)]	200	A
+10 operations	50 Hz, 1.2 s	2	A
Insulation resistance at 100 V_{DC} [3)]		> 1	GΩ
Capacitance at 1 MHz [3)]		< 0.5	pF
Arc voltage at 1 A		~ 10	V
Glow to arc transition current		< 0.5	A
Glow voltage		~ 90	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) Total current through center electrodes, half value through tip respectively ring electrode.
7) Test generator 4 kV, 10/700 µs, 40 Ω
8) After service life:
AC withstand test 3 times 230 V_{AC}, 50 Hz, 5 min
9) Tests according to ITU-T Rec. K. 12 and UL 497B

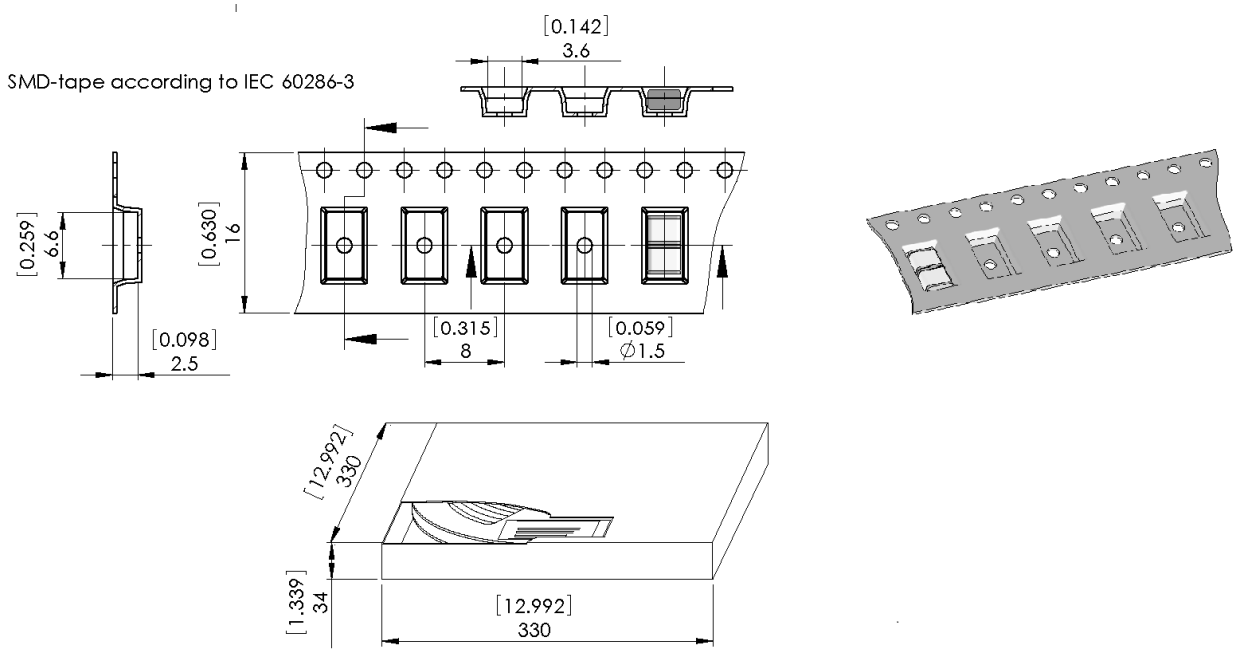
Terms and current waveforms in accordance with ITU-T Rec. K. 12; IEC 61643-21 and IEC 61643-311.

Dimensions in mm and inch [...]



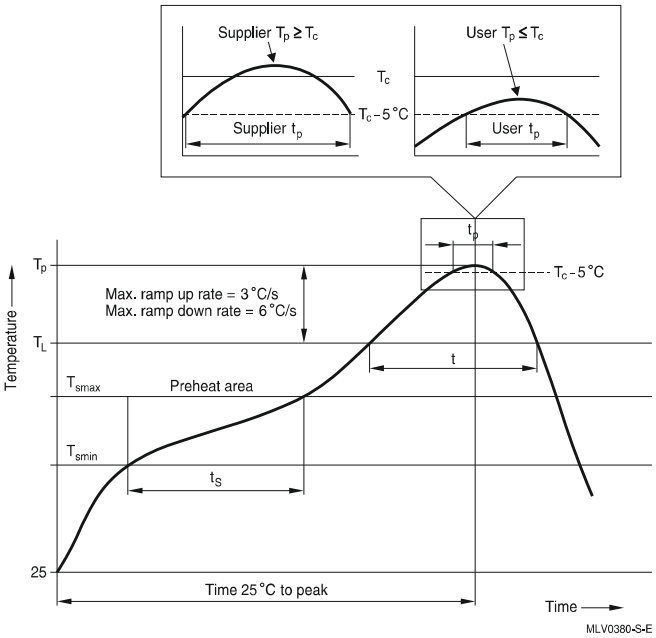
Ordering code and packing advice

*B88069X2713**T203** = SMD-tape with 2000 pcs.*



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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