



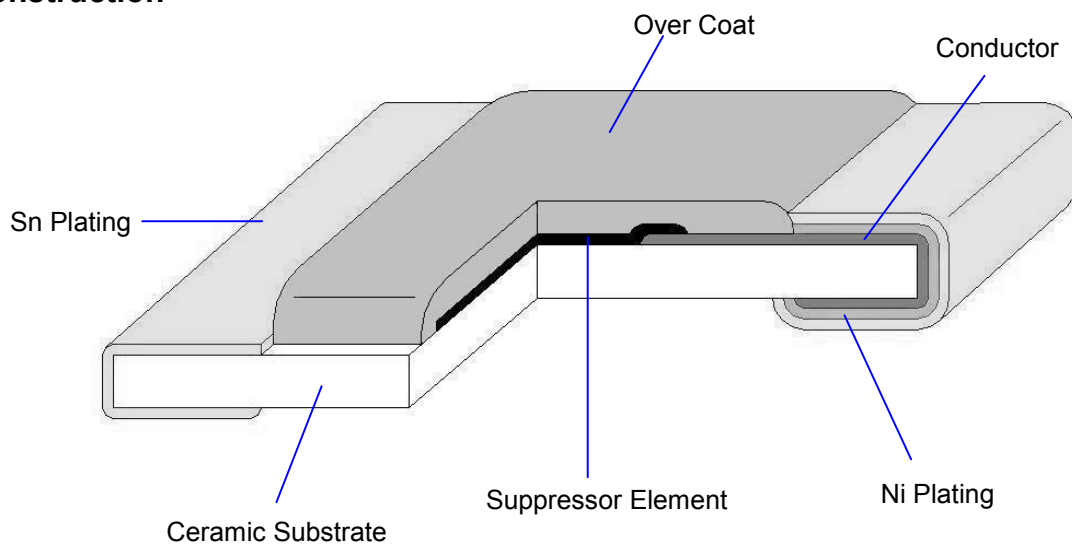
MAX Guard® ESD Suppressor (High Frequency Type)

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1. Scope

Bi-directional MAX Guard ESD suppressors are specifically designed for high frequency circuit applications (Ultra-low capacitance). They are specifically produced to protect sensitive electronic circuit high-speed data lines against electrostatic discharge (ESD, as specified in IEC61000-4-2 and MIL-STD-883C). The extremely low capacitances and leakage currents of these products are contributed by micro air space discharge technology developed by TA-I.

2. Construction



3. Type Designation

UGS	04	A	12	T	3	V3
Ultra-Low Capacitance MAX Guard Suppressor	Size 04:0402(1005)	A:Suit for IEC61000-4-2	Operating Voltage 12:12V Max:24V	Packaging T:Paper tape(10K)	Typical Clamping Voltage 3: 35V	Typical Trigger Voltage V3: 350V



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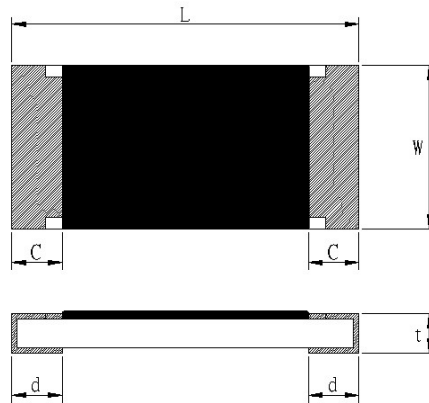
4. Rating and Characteristics:

Type	Continuous Operating Voltage (Max.)	ESD Capability ¹	Trigger Voltage (Typ.) ²	Clamping Voltage (Typ.) ²	Capacitance (Typ.) ³	Leakage Current (Typ.)	ESD Pulse Withstand (Typ.) ⁴
UGS04A03T3V3	3.3 VDC	Direct Discharge: 8KV	350V	35V	<0.12 pF	<10nA	>500 pulses
UGS04A05T3V3	5.5 VDC						
UGS04A12T3V3	12 VDC	Air Discharge: 15KV					
UGS04A24T3V3	24 VDC						

Note:

- (1)The function meets with the requirement of IEC 61000-4-2 specification.
- (2)Trigger measurement made using Transmission Line Pulse method.
- (3)Capacitance measured at 1 M~3 GHz.
- (4)Performing under IEC 61000-4-2 level 4 (8KV contact discharge, 15KV air discharge). Leakage current <1μA.

5. Dimensions



Type (Inch Size Code)	Dimensions (mm)				
	L	W	C	d	t
UGS04 (0402)	1.0±0.1	0.52±0.05	0.2±0.1	0.25±0.1	0.36±0.05



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6. Reliability Test

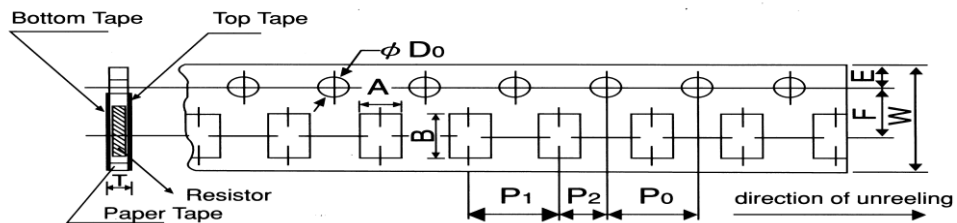
Environmental Specification	Reference Standard	Test Condition	Specification
Operating temperature		-55°C to 125°C	IL < 1μA ¹
Full load voltage		85°C for 1000 hrs at working voltage	
Resistance of solder heat	MIL-STD-202 Method 210	260 ± 5°C for 10 ± 1 sec	
Thermal shock	MIL-STD-202 Method 107	-55°C to 125°C, 5 cycles	
Moisture resistance	MIL-STD-883, Method 1004.7	85%RH, 85°C for 1000hrs at working voltage	
Solderability	MIL-STD-202, Method 208	245 ± 5°C solder, 2 ± 0.5 sec dwell. Solder: Sn96.5/Ag3.0/Cu0.5	95% coverage

Note: 1. IL is the simplification of Leakage Current

7. Taping and Reel

7.1 Taping Dimensions

4 mm pitch paper



Packing	Type	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	T
Paper Tape	UGS04	0.7±0.05	1.2±0.05	8.0±0.2	3.5±0.05	1.75±0.1	2.0±0.1	2.0±0.05	4.0±0.1	$\phi 1.5$ +0.1 0	0.45±0.1

Unit: mm

Type	Size	Paper Tape
UGS	04	Paper Tape
		2 mm Pitch
		180mm/R
		10000

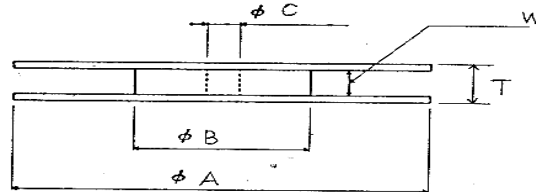
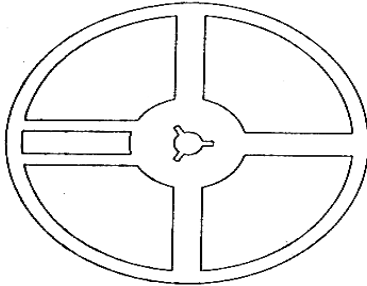
Unit: pcs



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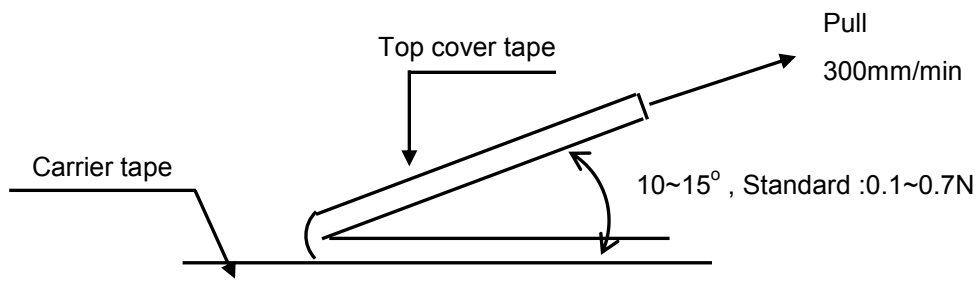
7.2 Reel Specifications



Unit: mm

Series	φA	φB	φC	W	T
UGS04	180 ⁺⁰ ₋₃	60 min	13.0±1.0	9.0±1.0	11.4±2.0

7.3 Peel –off force



8. Storage Conditions:

Temperature: 5°C~35°C, Humidity: 40%~75%

9. Shelf Life:

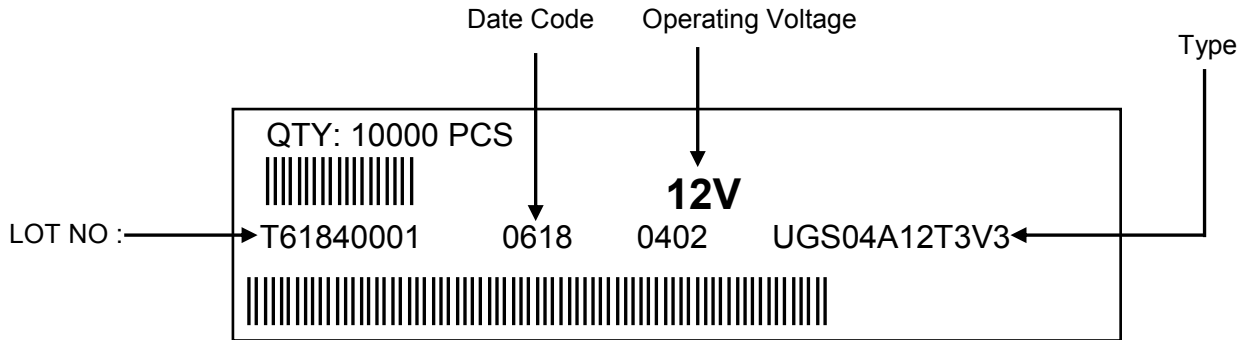
2 years from manufacturing date



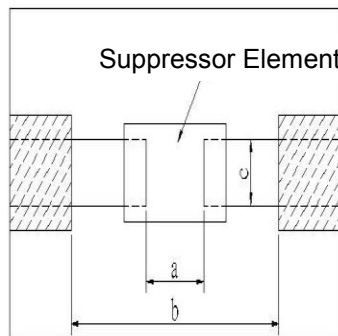
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10. Label



11. Recommended land patterns



Unit: mm

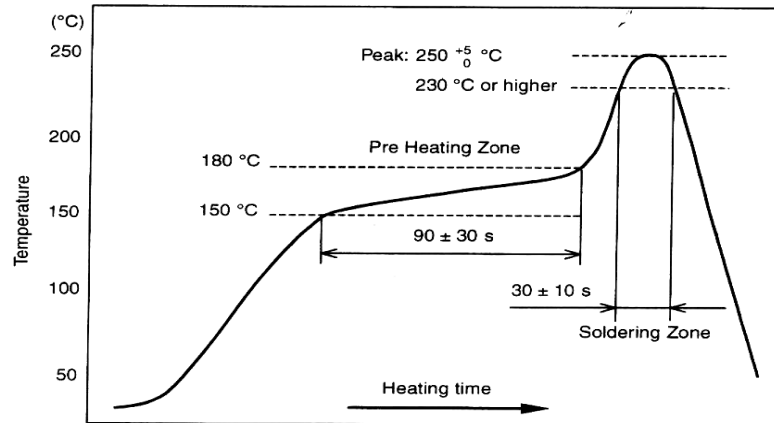
Type	Land Pattern Size	Dimension		
		a	b	c
UGS	04 (0402)	0.5~0.6	1.4~1.6	0.4~0.6



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12. Recommend IR – Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Peak : $250 \begin{smallmatrix} +5 \\ -0 \end{smallmatrix} \text{ } ^\circ\text{C}$, 5 sec

Pre – heat Zone : $150 \text{ to } 180 \text{ } ^\circ\text{C}$, $90 \pm 30 \text{ sec}$

Soldering Zone : $230 \text{ } ^\circ\text{C}$ or higher , $30 \pm 10 \text{ sec}$

13. ECN

Engineering Change Notice: The customer will be informed with ECN if there is significant modification on the characteristics and materials described in Approval Sheet.

14. Manufacturing Country & City :

TA-I TECHNOLOGY CO., LTD. (Taiwan – Tao Yuan)
Tel: 886-3-3246169 Fax : 886-3-3246167

Associated companies :

(1) FORTUNE TASK RESISTOR FACTORY (China – Dong Guan)
Tel : 86-769-83394790 Fax : 86-769-83394794

(2) TA-I TECHNOLOGY (SU ZHOU) CO., LTD. (China – Su Zhou)
Tel : 86- 512-63457879 Fax : 86-512-63457869

(3) TAI OHM ELECTRONICS (M) SDN. BHD. (Malaysia – Pulaupinang)
Tel : 604- 3900480 Fax : 604-3901481

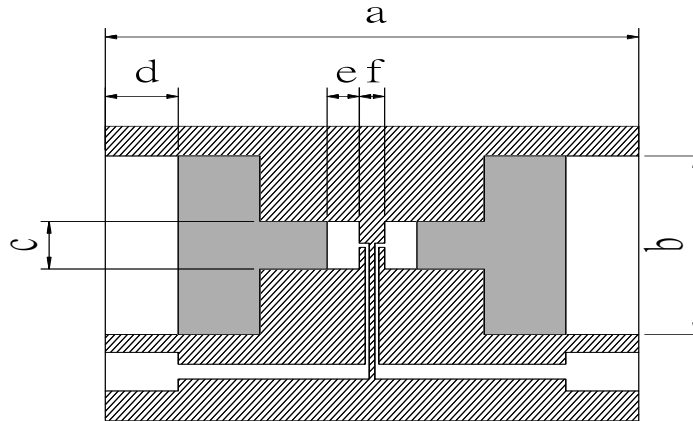
(4) P.T.TAI ELECTRONICS Indonesia (Indonesia – Jakarta)
Tel : 62-21-89830123 Fax : 62-21-89830703



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15. Test Circuit Board



Type	a	b	c	d	e	f
UGS0402	19	6	0.84	2.6	0.61	0.6

Unit: mm