	Ultra-Low Capacitance MAX Guard® ESD Suppressor (High Frequency Type)	Document No	TUMS-040S001B
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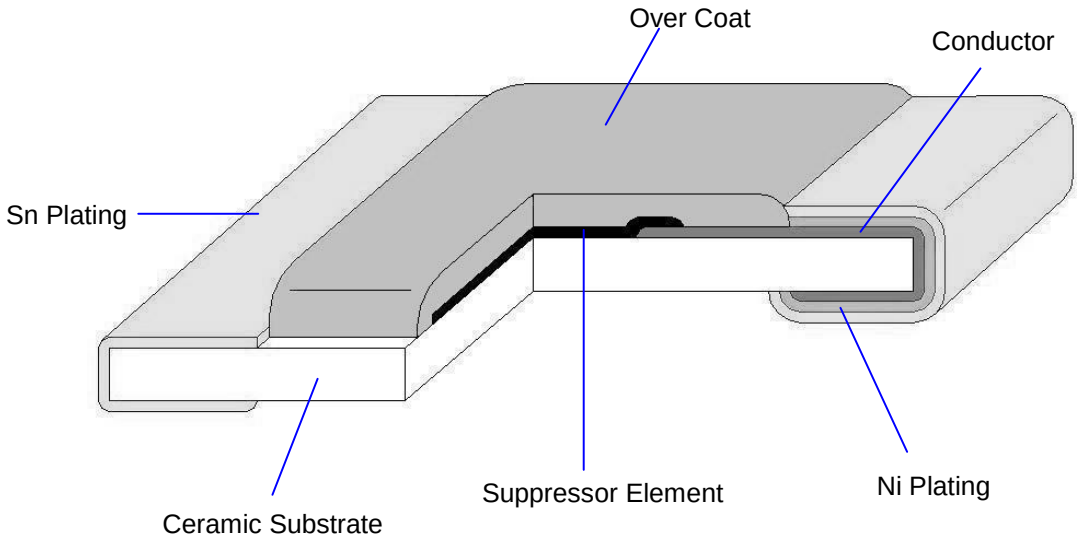
1. Scope

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

UMS	04	A	05	T	1	V1
Ultra-Low Capacitance MAX Guard Suppressor	Size 04:0402(1005)	A: Suit for IEC61000-4-2 C: Suit for IEC61000-4-2 & AEC-Q200	Operating Voltage 03:3.3V 05:5.5V 12:12V 24:24V	Packaging T: Paper tape (5K/10K)	Typical Clamping Voltage 1: 17V 2: 25V	Typical Trigger Voltage V1: 150V V2: 250V

4. Rating and Characteristics:

Type	Continuous Operating Voltage (Max.)	ESD Capability[1]	Trigger Voltage (Typ.)[2]	Clamping Voltage (Typ.)[2]	Capacitance[3]	Leakage Current (Typ.)	Response Time	ESD Pulse Withstand (Typ.)[4]
UMS04A03T1V1	3.3 VDC	Direct Discharge: 8KV Air Discharge:15KV	150 V	17V	<0.05 pF	<1nA	<1ns	>1000 pulses
UMS04A03T2V2			250V	25V				
UMS04A05T1V1	5.5VDC		150 V	17V				
UMS04A05T2V2			250V	25V				
UMS04A12T1V1	12 VDC		150 V	17V				
UMS04A12T2V2			250 V	25V				
UMS04A24T2V2	24 VDC		250 V	25V				

Note:

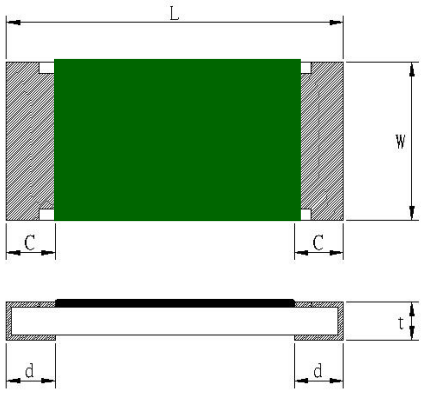
(1)The function meets with the requirement of IEC 61000-4-2 standard.

(2)Trigger measurement made using Transmission Line Pulse method.

(3)Capacitance measured at 1 M~1.8 GHz.

(4)Performing under IEC 61000-4-2 level 4 (8KV contact discharge, 15KV air discharge).

5. Dimensions



Type (Inch Size Code)	Dimensions (mm)				
	L	W	C	d	t
UMS04 (0402)	1.0±0.1	0.52±0.05	0.2±0.1	0.25±0.1	0.36±0.05

6. Reliability Test

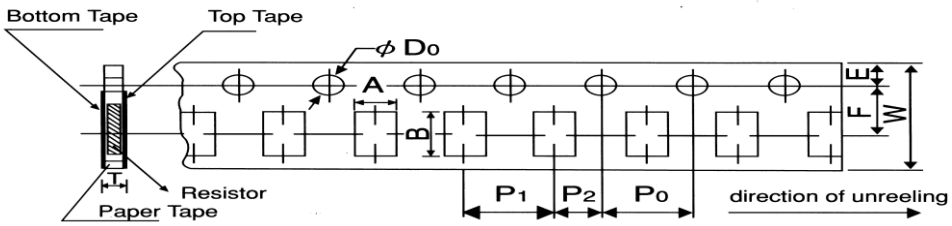
Environmental Specification	Reference Standard	Test Condition	Specification
Operating temperature		-55℃ to 125℃	IL<1μA[1]
Full load voltage		1000 hrs at 85℃	
Bending		3 mm deflection	
Resistance of solder heat	MIL-STD-202 Method 210	260 ± 5℃ for 10 ± 1 sec	
Thermal shock	MIL-STD-202 Method 107	-55℃ to 125℃, 5 cycles	
Moisture resistance, steady state	MIL-STD-883, Method 1004.7	85%RH, 85℃ for 1000hrs	
Solderability	MIL-STD-202, Method 208	245 ± 5℃ 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



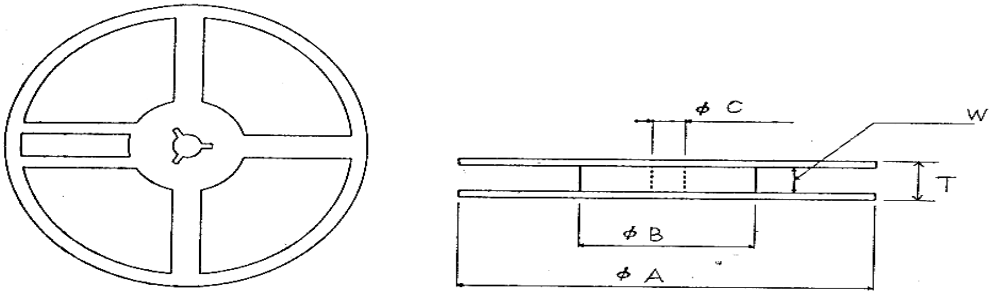
Packing	Type	A	B	W	F	E	P_1	P_2	P_0	D_0	T
Paper Tape	UMS04	0.7±0.05	1.2±0.05	8.0±0.2	3.5±0.05	1.75±0.1	2.0±0.1	2.0±0.05	4.0±0.1	$\psi 1.5^{+0.1}_{0}$	0.45±0.1

Unit: mm

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

Unit: pcs

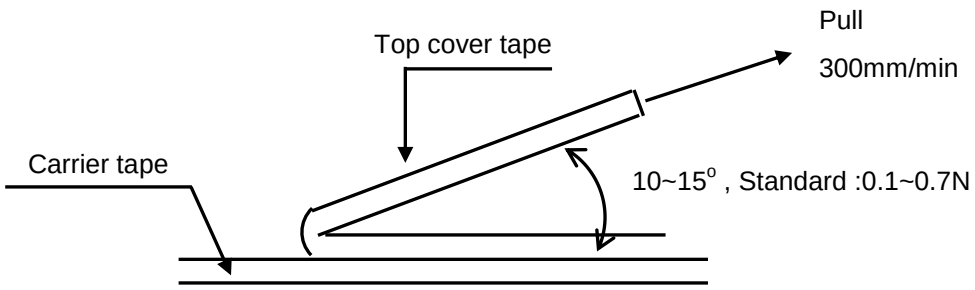
7.2 Reel Specifications



Unit: mm

Series	ψA	ψB	ψC	W	T
UMS04	180^{+0}_{-3}	60 min	13.0±1.0	9.0±1.0	11.4±2.0

7.3 Peel –off force



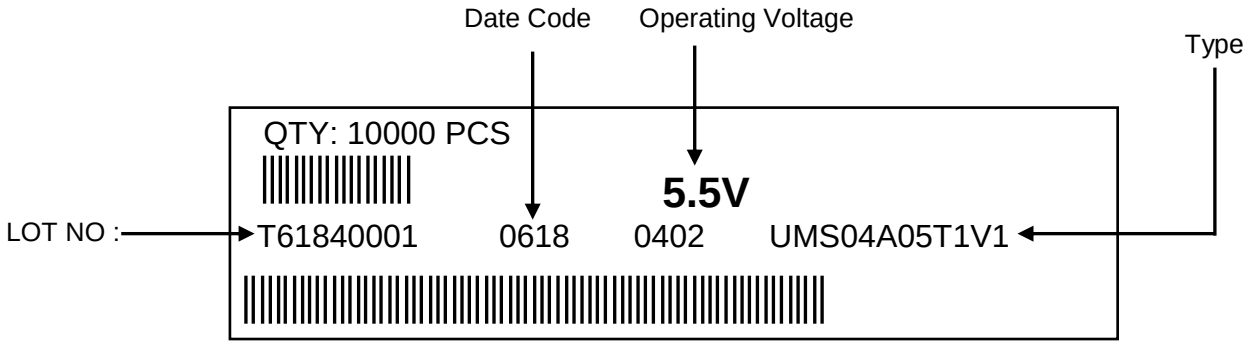
8. Storage Conditions:

Temperature: 5℃~35℃, Humidity: 40%~75%

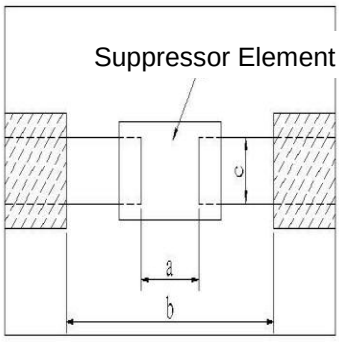
9. Shelf Life:

2 years from manufacturing date

10. Label



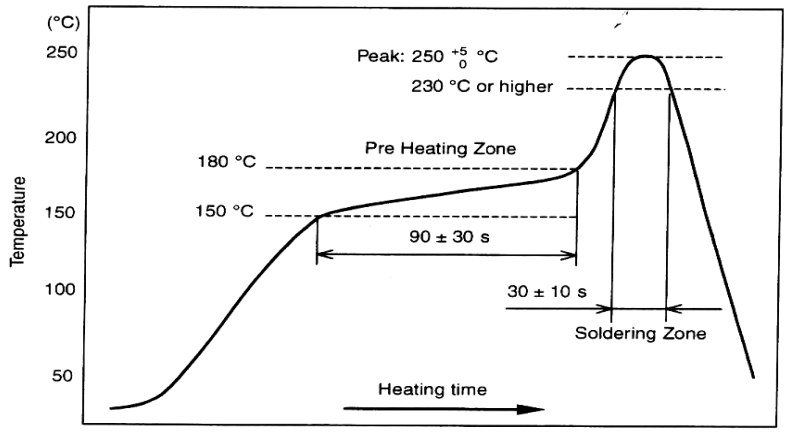
11. Recommended land patterns



Unit: mm

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

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



Peak : 250 $^{+5}_{-0}$ ℃ , 5 sec

Pre – heat Zone : 150 to 180℃, 90±30 sec
Soldering Zone : 230℃ or higher , 30±10 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 :

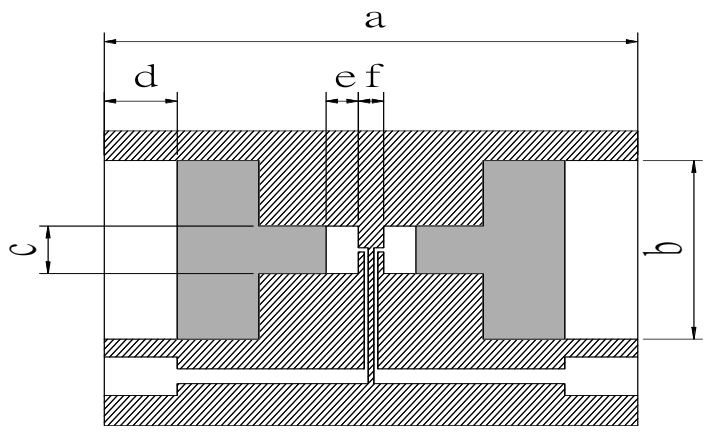
(1) FORTUNE TASK RESISTOR FACTORY (China – Dong Guan)
Tel : (+86)-769-83394790 Fax : (+86)-769-83394794

(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 – Penang)
Tel :(+604)- 3900480 Fax : (+604)-3901481

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

15. Test Circuit Board



Type	a	b	c	d	e	f
UMS0402	19	6	0.84	2.6	0.61	0.6

Unit: mm