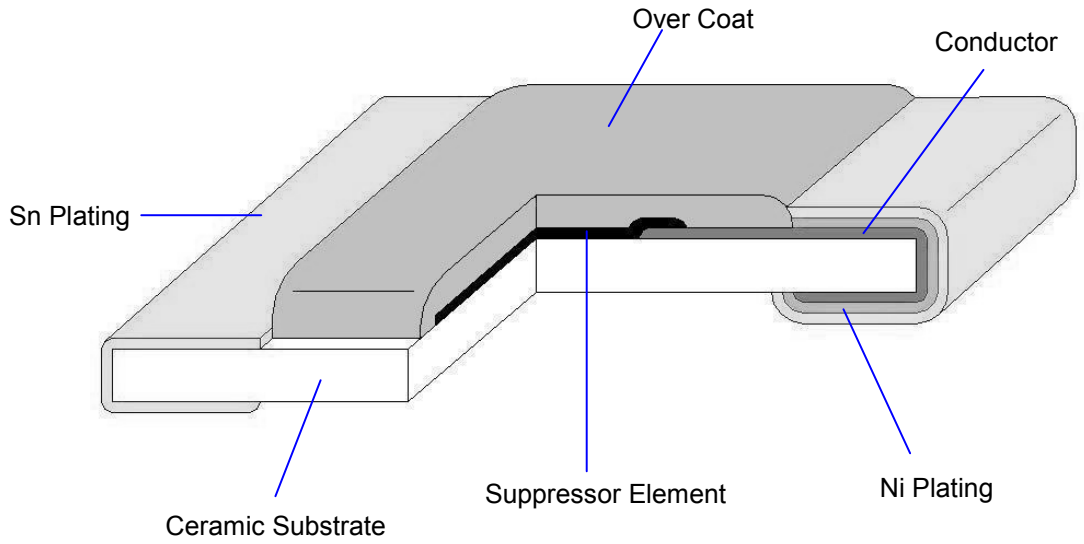
1. Scope

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

2. Construction



3. Type Designation

GS	06	A	12	T	3	V3
MAX Guard Suppressor	Size 04:0402(1005) 06:0603(1608)	A:Suit for IEC61000-4-2	Operating Voltage 12:12V Max:24V	Packaging T:Paper tape(5K/10K)	Typical Clamping Voltage 3: 35V	Typical Trigger Voltage V3: 350V

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]
GS04A03T3V3	3.3 VDC	Direct Discharge: 8KV Air Discharge:15KV	350V	35V	<0.2 pF	<30nA (12VDC)	>500 pulses
GS06A03T3V3							
GS04A05T3V3	5.5 VDC						
GS06A05T3V3							
GS04A12T3V3	12 VDC						
GS06A12T3V3							
GS04A24T3V3	24 VDC						
GS06A24T3V3							

Note:

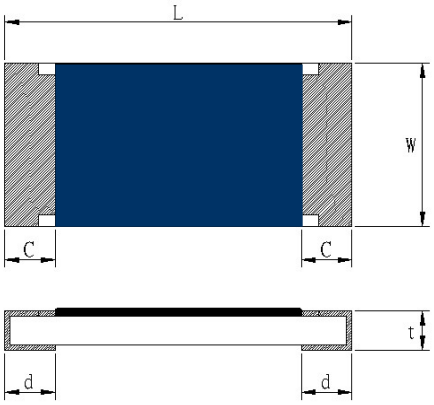
(1)The function meets with the requirement of IEC 61000-4-2 specification.

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

(3)Capacitance measured at 1 MHz.

(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
GS04 (0402)	1.0±0.1	0.52±0.05	0.2±0.1	0.25±0.1	0.36±0.05
GS06 (0603)	1.6±0.1	0.8±0.1	0.3±0.2	0.35±0.2	0.45±0.1

6. Reliability Test

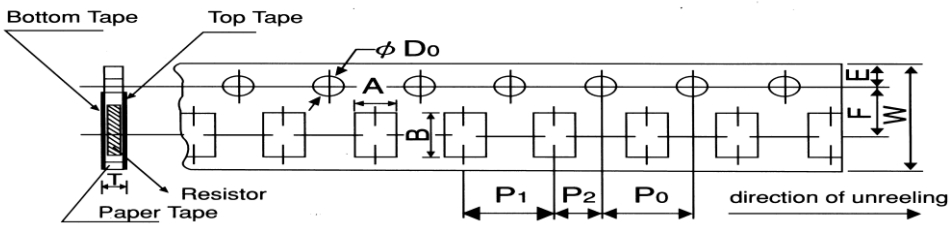
Environmental Specification	Reference Standard	Test Condition	Specification
Operating temperature		-55℃ to 125℃	IL<1μA[1]
Full load voltage		85℃ for 1000 hrs at working voltage	
Resistance of solder heat	MIL-STD-202 Method 210	260 ± 5℃ for 10 ± 1 sec	
Thermal shock	MIL-STD-202 Method 107	-55℃ to 125℃, 5 cycles	
Moisture resistance	MIL-STD-883, Method 1004.7	85%RH, 85℃ for 1000hrs at working voltage	
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	GS04	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
Paper Tape	GS06	1.1±0.1	1.9±0.1	8.0±0.2	3.5±0.05	1.75±0.1	4.0±0.1	2.0±0.05	4.0±0.1	$\phi 1.5^{+0.1}_{-0}$	0.64±0.1

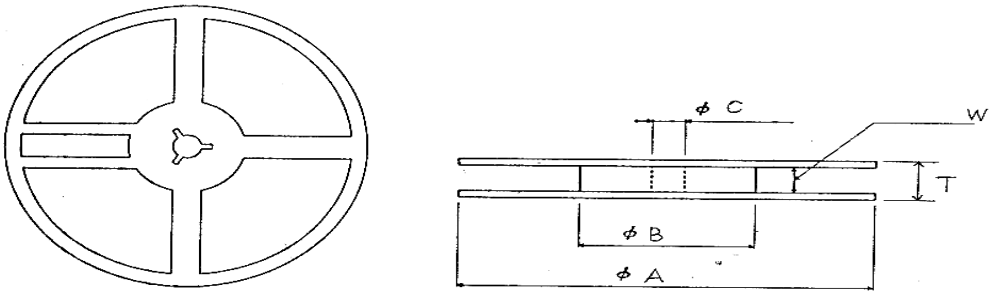
Unit: mm

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

Type series		Paper Tape
		4 mm Pitch
		180mm/R
GS	06	5000

Unit: pcs

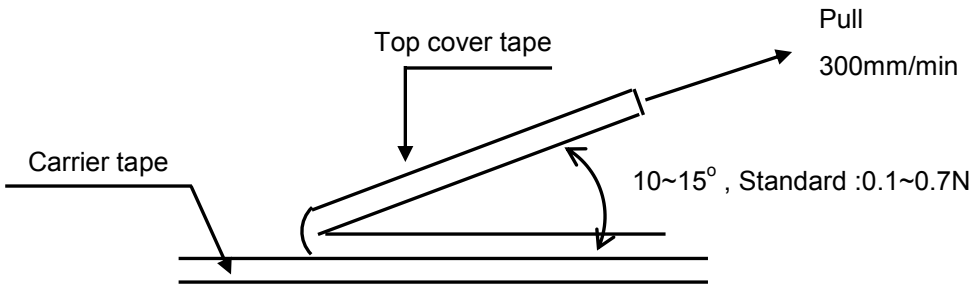
7.2 Reel Specifications



Unit: mm

Series	ϕ A	ϕ B	ϕ C	W	T
GS04 GS06	180 $^{+0}_{-3}$	60 min	13.0±1.0	9.0±1.0	11.4±2.0

7.3 Peel –off force



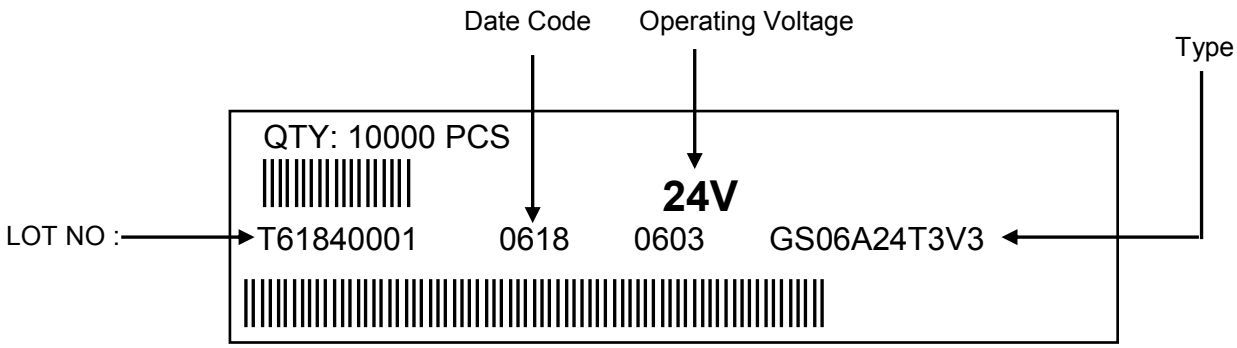
8. Storage Conditions:

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

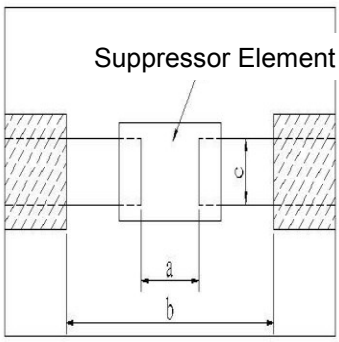
9. Shelf Life:

2 years from manufacturing date

10. Label



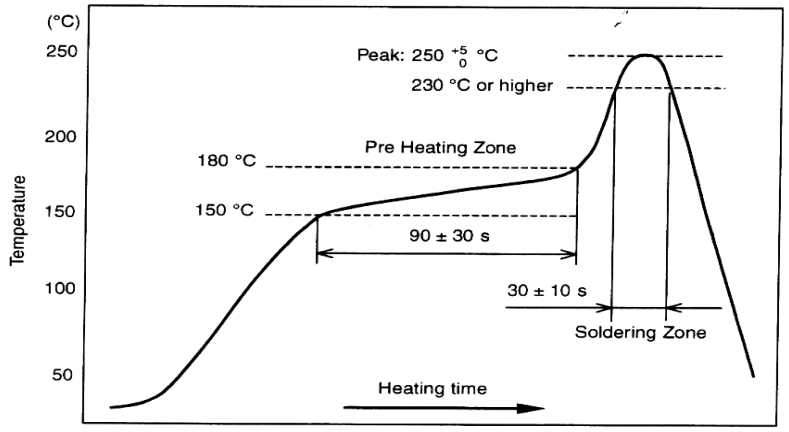
11. Recommended land patterns



Unit: mm

Type \ Size	Land Pattern	Dimension		
		a	b	c
GS	04 (0402)	0.5~0.6	1.4~1.6	0.4~0.6
GS	06 (0603)	0.7~0.9	2.0~2.2	0.8~1.0

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 :

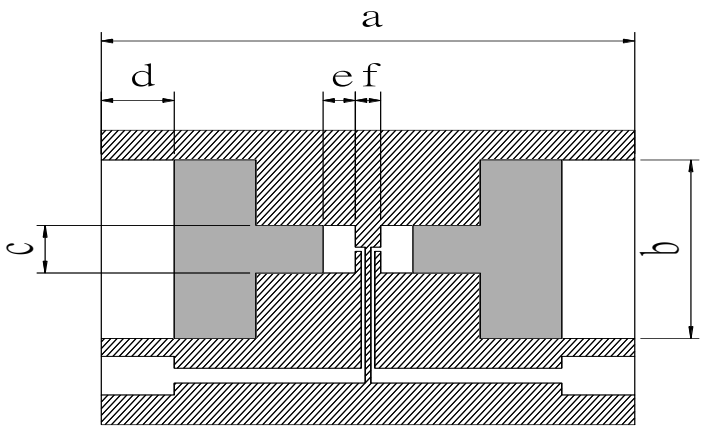
(1) FORTUNE TASK RESISTOR FACTORY (China – Dong Guan)
Tel : 86-769-83394790 Fax : 86-769-83394794

(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 – Pulaupinang)
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
GS0402	19	6	0.84	2.6	0.61	0.6
GS0603	19	6	1.6	2.6	1.15	0.9

Unit: mm