



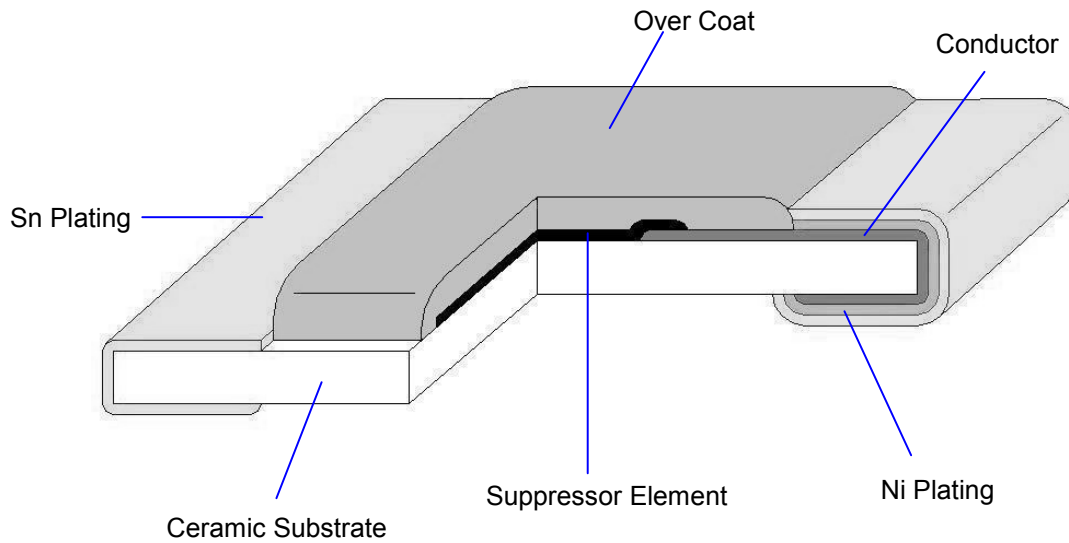
# MAX Guard® Transient Voltage Suppressor (TGS Series)

Document No	TTGS-040S002C
Issued date	2015/03/19
Page	1/7

## 1. Scope

Bi-directional transient voltage suppressor (TGS) produced by Ta-I technology is designed for data line ESD protection in sensitive electronic circuit. This TGS is suitable for high data transmission applications because of its low device capacitance of lower than 1 pF.

## 2. Construction



## 3. Type Designation

<b>TGS</b>	<b>04</b>	<b>A</b>	<b>05</b>	<b>T</b>	<b>30</b>
MAX Guard Suppressor	Size 04:0402(1005)	A: Suit for IEC61000-4-2	Maximum Working Voltage 05:5V	Packaging T: Paper tape (10K)	Typical Clamping Voltage 30V



## MAX Guard® Transient Voltage Suppressor (TGS Series)

Document No	TTGS-040S002C
Issued date	2015/03/19
Page	2/7

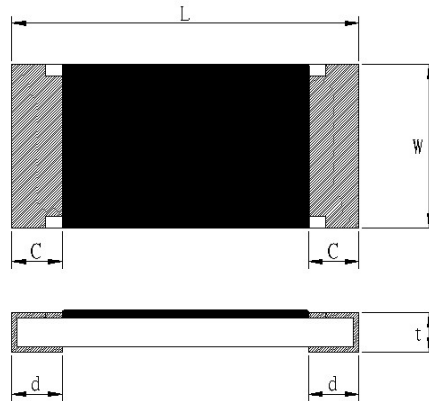
### 4. Rating and Characteristics:

Type	Maximum Working Voltage	ESD Capability <sup>1</sup>	Clamping Voltage (Typ.) <sup>2</sup>	Capacitance (Typ.) <sup>3</sup>	Leakage Current (Typ.)	ESD Pulse Withstand (Typ.) <sup>4</sup>
TGS04A05T30	5V	Direct Discharge: 8KV Air Discharge: 15KV	30V	<1pF	<1 uA	>500 pulses

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 1M Hz.
- (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
TGS04 (0402)	1.0±0.1	0.52±0.05	0.2±0.1	0.25±0.1	0.36±0.05



## MAX Guard® Transient Voltage Suppressor (TGS Series)

Document No	TTGS-040S002C
Issued date	2015/03/19
Page	3/7

### 6. Reliability Test

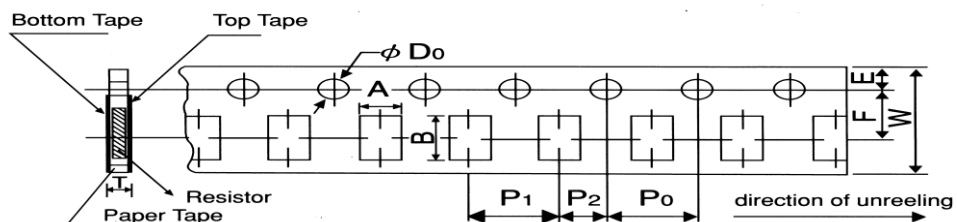
Environmental Specification	Reference Standard	Test Condition	Specification
Operating temperature		-55°C to 125°C	IL < 1μA <sup>1</sup>
Full load voltage		85°C for 1000 hrs at working voltage	
Resistance of solder heat	MIL-STD-202 Method 210	260 ± 5°C for 10 ± 1 sec	
Thermal shock	MIL-STD-202 Method 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 <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D <sub>0</sub>	T
Paper Tape	TGS04	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	$\begin{matrix} +0.1 \\ \psi 1.5 \\ 0 \end{matrix}$	0.45±0.1

Unit: mm

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

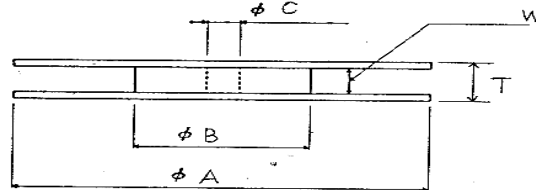
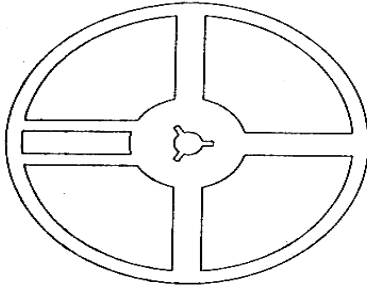
Unit: pcs



## MAX Guard® Transient Voltage Suppressor (TGS Series)

Document No	TTGS-040S002C
Issued date	2015/03/19
Page	4/7

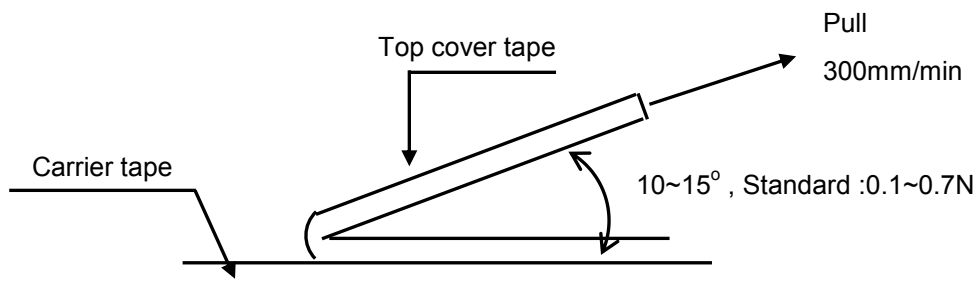
### 7.2 Reel Specifications



Unit: mm

Series	$\psi A$	$\psi B$	$\psi C$	W	T
TGS04	$180^{+0}_{-3}$	60 min	$13.0 \pm 1.0$	$9.0 \pm 1.0$	$11.4 \pm 2.0$

### 7.3 Peel –off force



### 8. Storage Conditions:

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

### 9. Shelf Life:

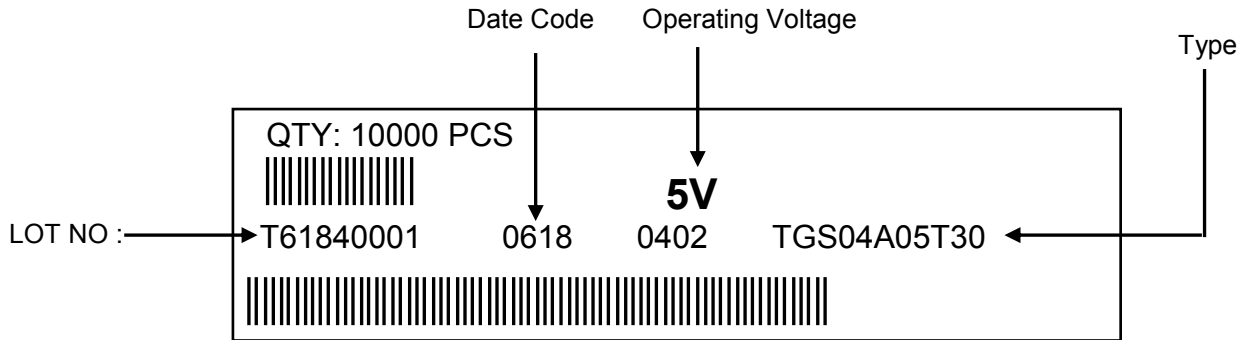
2 years from manufacturing date



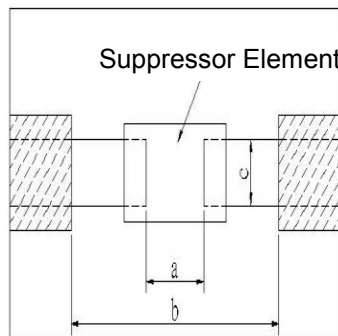
**MAX Guard® Transient Voltage Suppressor  
(TGS Series)**

Document No	TTGS-040S002C
Issued date	2015/03/19
Page	5/7

**10. Label**



**11. Recommended land patterns**



Unit: mm

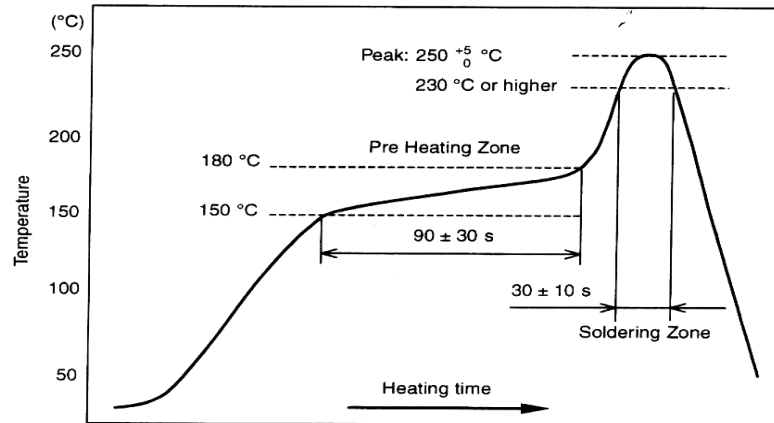
Type	Land Pattern Size	Dimension		
		a	b	c
TGS	04 ( 0402 )	0.5~0.6	1.4~1.6	0.4~0.6



## MAX Guard® Transient Voltage Suppressor (TGS Series)

Document No	TTGS-040S002C
Issued date	2015/03/19
Page	6/7

### 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 to 180°C , 90±30 sec

Soldering Zone : 230°C 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



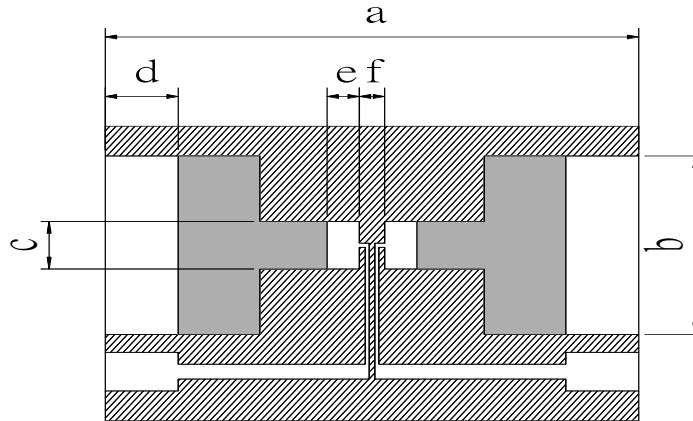
**MAX Guard® Transient Voltage Suppressor  
(TGS Series)**

Document No TTGS-040S002C

Issued date 2015/03/19

Page 7/7

**15. Test Circuit Board**



Type	a	b	c	d	e	f
TGS0402	19	6	0.84	2.6	0.61	0.6

Unit: mm