

# TEPB0R15V05B1X

## ESD SUPPRESSORS

### 1. Generals

- **This specification applies to chip (named ESD Suppressor) for use in RF electronic equipment.**

It can be possible to change the specification under document agreement between design engineers of each party.

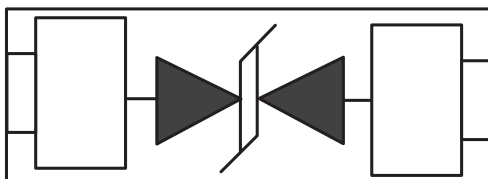
### 2. Features

- ESD protection for high speed data lines to IEC61000-4-2
- ESD contact discharge typical 8KV, max 15KV
- ESD air discharge typical 15KV, max 25KV
- Extremely low capacitance
- Very low leakage current
- Fast response time
- Bi-directional ESD protection
- Lead free solder termination
- The best ESD protection for high frequency, low voltage applications

### 3. Application

- High Definition Multi-Media Interface (HDMI)
- Digital Visual Interface (DVI)
- Display Port Interface (DP)
- Unified Display Interface (UDI)
- Mobile Display Digital Interface (MDDI)
- Gigabit Ethernet
- USB2.0 and USB3.0
- IEEE1394 interface

#### Schematic and Pin configuration



Bidirectional

## 4.Part Numbering Code

T E S B 0R15 V05 B 1X  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

- (1) Company Name: TOP-EMC
- (2) Product Function: ESD
- (3) Material Type: fine ceramic
- (4) Chip Size (EIA): B(0402),C(0603)
- (5) Capacitance: 0R15=0.15PF,1R0=1.0PF,5R0=5.0PF
- (6) Working Voltage: V05=5V,V12=12V,V24=24V
- (7) Direction Type: Bidirectional
- (8) Lines Protected: 1X=1 line

## 5. Specifications

### ■ ESD Suppressor

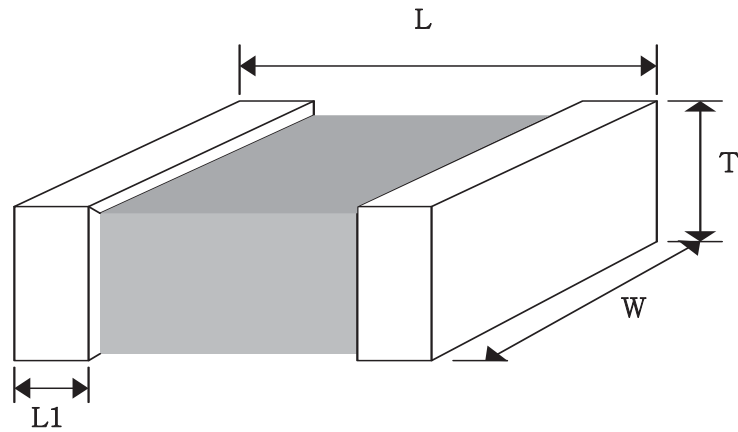
- Ultra Low capacitance(<0.5pF) is required for very high-speed data transmission or Antenna port.
- Low leakage current( $I_L$ ) is necessary for battery operated equipment

Characteristics	Unit	Min.	Typical	Max.
Clamping Voltage ( $V_C$ )	V		30	
Capacitance, @1MHz ( $C_p$ )	pF		0.15	0.5
Response time	ns			1
ESD voltage capability Contact discharge mode	kV		8	15
ESD voltage capability, Air discharge mode	kV		15	25
RF-Power testling, 0-2GHz	dBm			35
Insertion loss, 0-2GHz	dB			0.05
ESD pulse withstand	pulses		100	
Continuous operating voltage	V		5	
Leakage current ( $I_L$ )	uA		0.05	0.1
Trigger voltage ( $V_T$ )	V		300	

### ■ TERMINOLOGY

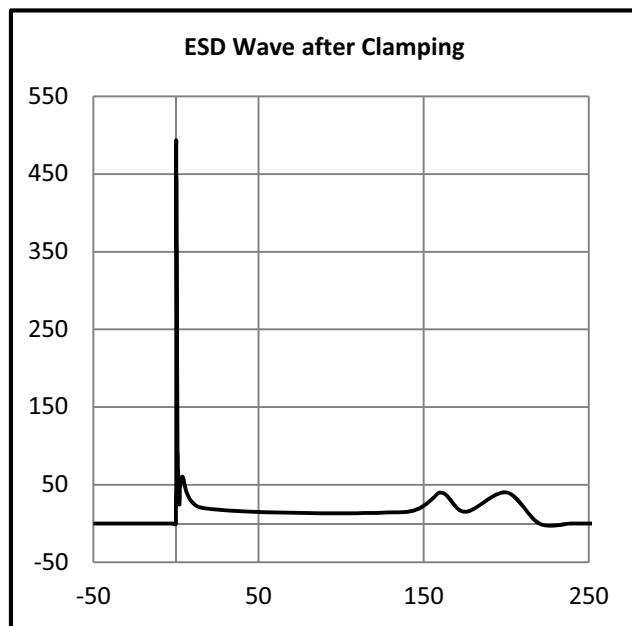
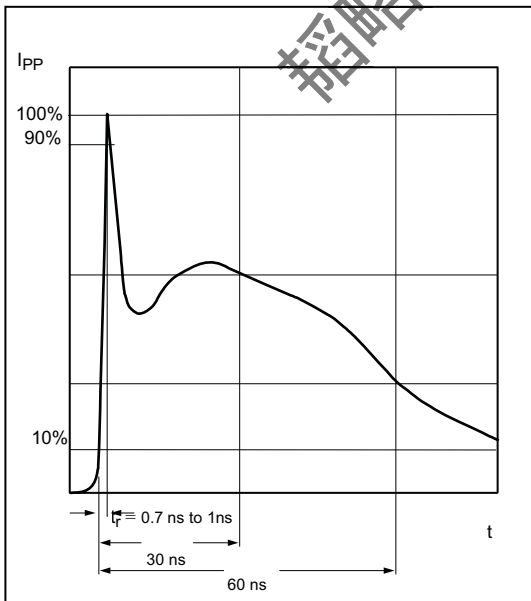
- $V_C$  : Per IEC 61000-4-2, 30A@8kV, level 4, clamp measurement made 30ns after initiation of pulse, all test in contact discharge mode.
- $C_p$  : Device capacitance measured with zero volt bias 1Vrms and 1MHz

## 6. Configuration and dimensions



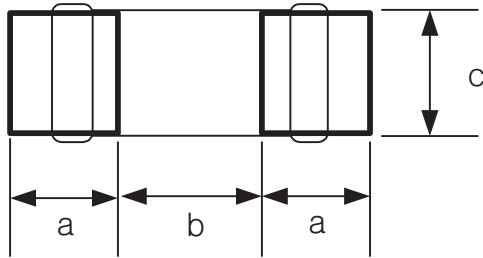
CODE	DIMENSION (mm)			
	L	W	T	L1
0402	1.0±0.05	0.5±0.05	0.5±0.05	0.2+0.15/-0.1

## 7.ESD Clamping Test Waveforms



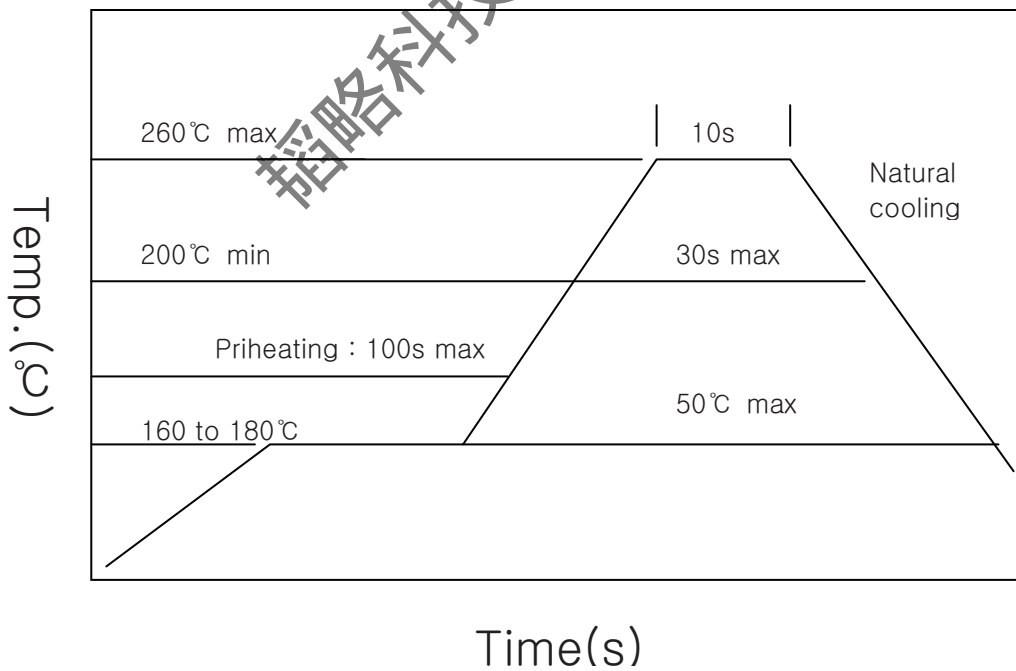
## 8.Land Pattern and Reflow Soldering

### ■ Land Pattern



Size	a	b	c
0402	0.4~0.6	0.4~0.5	0.4~0.6

### ■ Reflow Soldering Profile



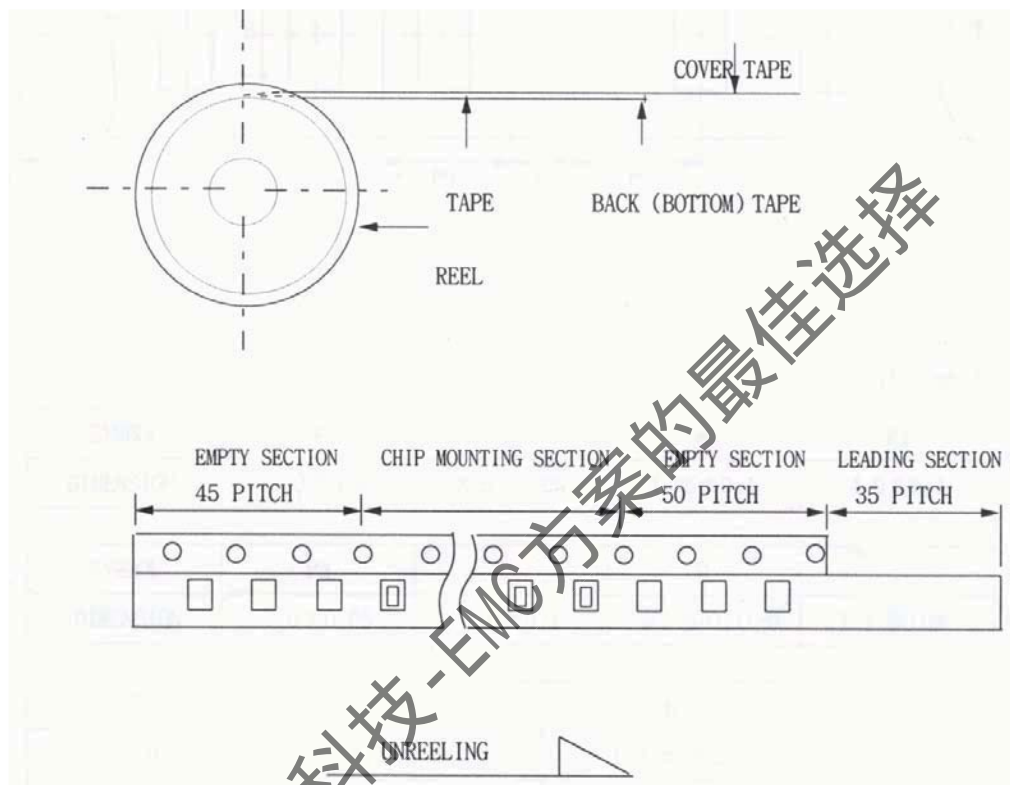
## ■ Taping

### Scope

This specification applies to taping of chip varistor

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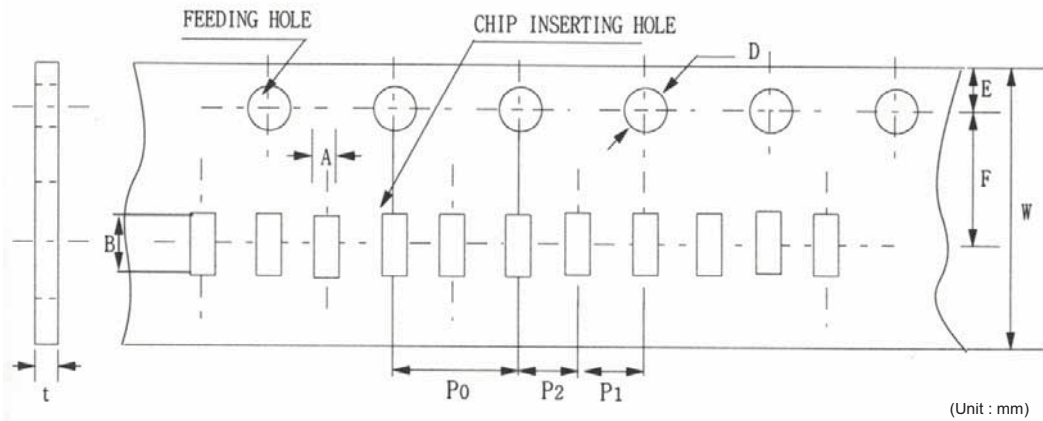
### ■ Taping Figure



### ■ Standard Packaging

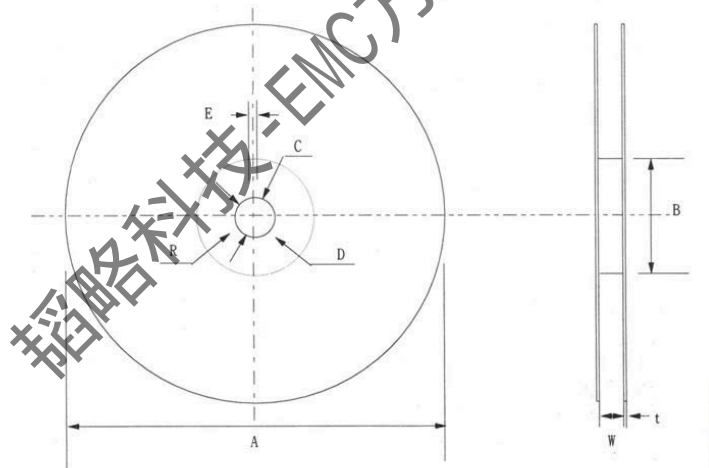
Type	0402
Material	
Paper	10,000 pcs/reel

## Carrier Tape Dimensions



Symbol	A	B	W	F	E	P <sub>1</sub>	P <sub>2</sub>	P <sub>0</sub>	D	t
Dimension	0.65 +0.05 -0.10	1.15 +0.05 -0.10	8.0 ±0.3	3.5 ±0.05	1.75 ±0.1	2.0 ±0.05	2.0 ±0.05	4.0 ±0.1	1.5 ±0.1 -0	1.1 below

## Reel Dimensions



Code	A	B	C	D	E	W	t	R
Dimension	φ178±2	Min. φ50	φ13±0.5	φ21±0.8	2.0±0.5	10±1.5	0.8±0.2	1.0

## Contact Information

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