TEPB0R2V05B1X

POLYMER ESD SUPPRESSORS

TOP-EMC

1. Generals

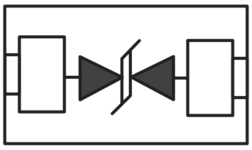
- This device is an ultra low capactiance PESD Prouduct designed to protect very high speed data interfaces TEPB0R2V05B1X has a typical capacitance of only 0.2pf(I/O to GND), and it can be used to meet the ESD immunity requirements of IEC61000-4-2(15KV air,8KV contact discharge)

2. Feature

- 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
- Multilayer structure
- Surface mount
- 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



Bidirectional

4. Part Number System

T E P B 0R2 V12 B 1X
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Company Name: TOP-EMC

② Product Function: ESD

③ Material Type:Polymer

④ Chip Size (EIA): B(0402),C(0603)

⑤ Capacitance: 0R2=0.2PF,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. Absolute Maximum Ratings

Parameter	**Symbol**	**Value**	**Unit**
Maximum Contact discharge voltage Per IEC61000-4-2	---	15KV	V
Maximum Air discharge voltage Per IEC61000-4-2	---	25KV	V
Maximum Operating temperature	T_{OPER}	-40 to +90	℃
Maximum Storage temperature	T_{STG}	-55 to +125	℃
Maximum lead temperature for soldering during 10s	T_L	260	℃

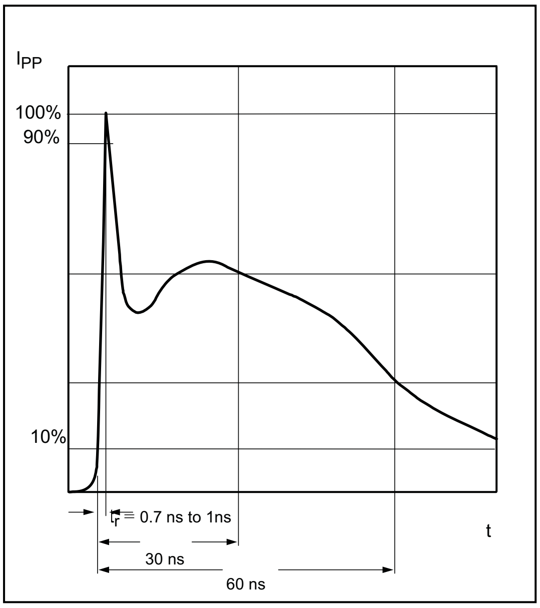
6. Electrical Characteristics(T_A=25℃)

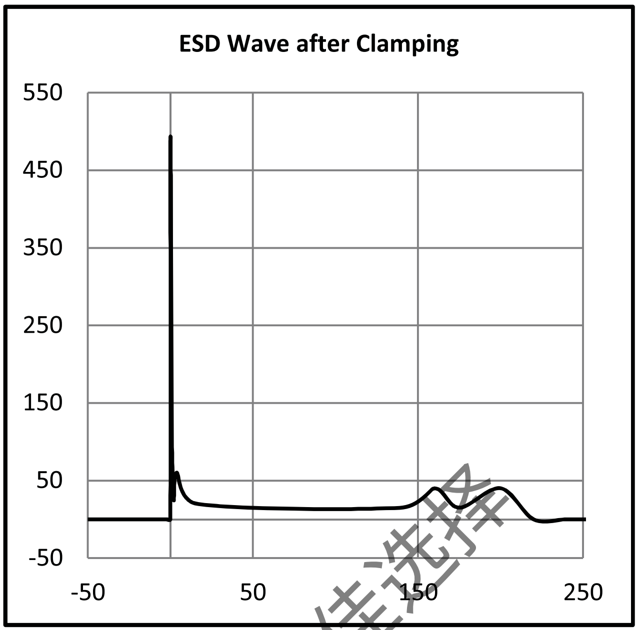
Parameter	**Symbol**	**Typ**	**Max**	**Units**
Rated Voltage	V_R	---	5.5	V
Trigger voltage	V_T	250	---	V
Clamping voltage	V_C	25	---	V
Leakage current	I_L	0.1		uA
Capacitance	C_P	0.20	0.25	pF

Note: 1. Trigger and clamping voltage are measuredper IEC 61000-4-2, 8KV contact discharge method.

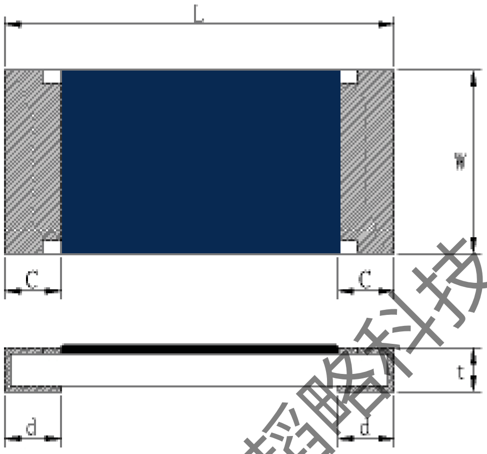
2. After reliability tests such as high tempstorage, temp cycles, continuous ESD strike etc, the maximum leakage current is less than 10uA.

7. ESD Clamping Test Waveforms





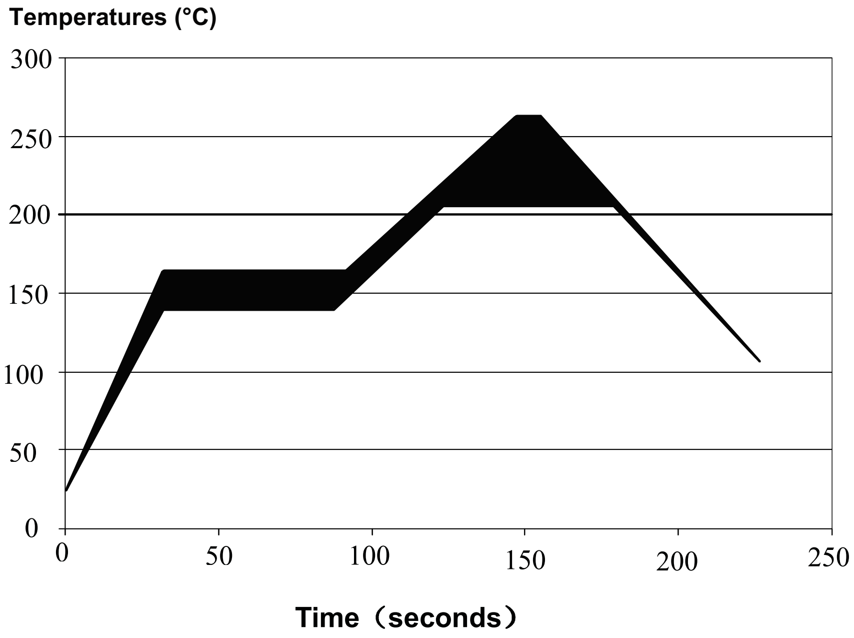
8. Product Dimension



Type	Dimensions(mm)				
	L	W	C	d	t
0402	1.0±0.1	0.52±0.05	0.2±0.1	0.25±0.1	0.36±0.05
0603	1.6±0.1	0.8±0.1	0.3±0.2	0.35±0.2	0.45±0.1

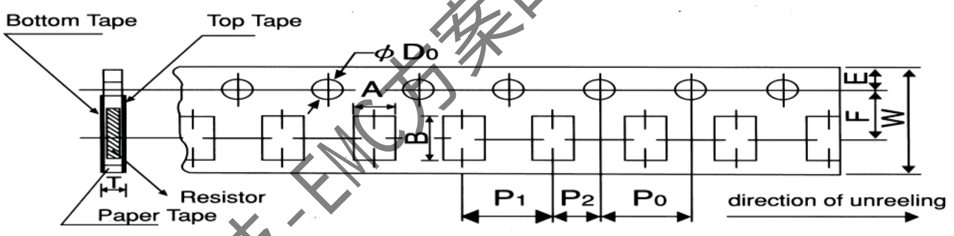
Environmental Specification	Reference Standard	Test Condition	Specification
Operating temperature		-55℃ to 125℃	IL<1μA[1]
Full load voltage		85℃ for 1000 hrs at working voltage	
Resistance of solder heat	MIL-STD-202 Method 210	260 ± 5℃ for 10 ± 1 sec	
Thermal shock	MIL-STD-202 Method 107	-55℃ to 125℃, 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

9. Solder Reflow Recommendations



10. Package Information

4 mm pitch paper



Packing	Type	A	B	W	F	E	P_1	P_2	P_0	D_0	T
Paper Tape	TEPB	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

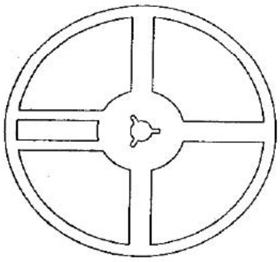
Type	Size	Paper Tape
		2 mm Pitch
		180mm/R
TEPB	04	10000

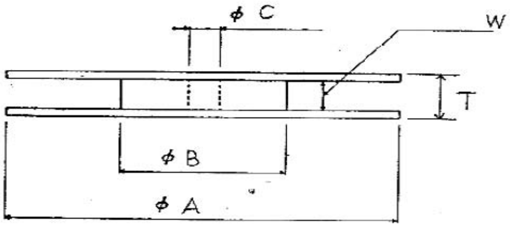
Unit: pcs

6.1 Carrier tape and transparent cover tape should be heat-sealed to carry the products, and the reel should be used to reel the carrier tape.

6.2 The adhesion of the heat-sealed cover tape shall be 40±30grams.

6.3 Both the head and the end portion of the taping shall be empty for reel package and SMT auto-pickup machine. And a normal paper tape shall be connected in the head of taping for the operator to handle.





Series	ϕA	ϕB	ϕC	W	T
0402 0603	180^{+0}_{-3}	60 min	13.0±1.0	9.0±1.0	11.4±2.0

11. Order Information

Device	Package	Quantity	HSF Status
TEPB0R2V05B1X	0402	10 ,000pcs/reel	RoHS compliant

12. Contact Information

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