

## Transient Voltage Suppressors for ESD Protection

### FEATURES:

- ┆ Small Body Outline Dimensions:  
0.039 x 0.024 (1.0 mm x 0.60 mm)
- ┆ Low Body Height: 0.017 (0.43 mm) Max
- ┆ Stand-off Voltage: 3.3 V – 12 V
- ┆ Low Leakage
- ┆ Response Time is Typically < 1 ns
- ┆ ESD Rating of Class 3 (> 16 kV) per Human Body Model
- ┆ IEC61000-4-2 Level 4 ESD Protection
- ┆ These are Pb-Free Devices
- ┆ We declare that the material of product

### Circuit Diagram & Pin Configuration:



SOD-923



PIN 1, CATHODE  
2, ANODE

## DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
TESDN3V31AD92	E	8000/Tape&Reel

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
IEC 61000-4-2 (ESD) Air Contact		±15	kV
Contact discharge		±8	kV
ESD Voltage Per Human Body Model		16	kV
Total Power Dissipation on FR-5 Board (Note 1) @ T <sub>A</sub> =25	PD	150	Mw
Junction and Storage Temperature Range	T <sub>J</sub> ,T <sub>STG</sub>	-55 to 150	
Lead Solder Temperature – Maximum (10 Second Duration)	TL	260	

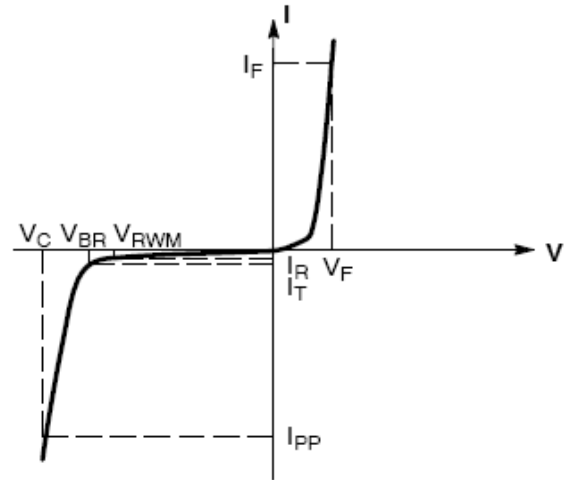
Stresses exceeding Maximum Ratings may damage the device. Maximum Rating are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. FR-5 = 1.0\*0.75\*0.62 in.

### ELECTRICAL CHARACTERISTICS

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$V_{RWM}$	Working Peak Reverse Voltage
$I_R$	Maximum Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_T$	Test Current
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$
$P_{pk}$	Peak Power Dissipation
C	Max. Capacitance @ $V_R = 0$ and $f = 1\text{ MHz}$



Uni-Directional TVS

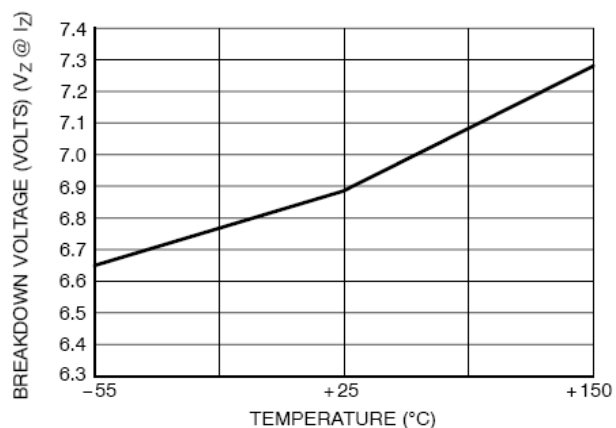
ELECTRICAL CHARACTERISTICS ( $T_A=25$  unless otherwise noted,  $V_F=0.9\text{V}$  Max. @  $I_F=10\text{Ma}$  for all types)

Device	$V_{RWM}$ (V)	$I_R$ ( $\mu\text{A}$ ) @ $V_{RWM}$	$V_{BR}$ (V) @ $I_T$ (Note 2)	$I_T$ (mA)	$I_{PP}$ (A) (Note 3)	$V_C$ (V) @ Max $I_{PP}$ (Note 3)	$P_{PK}$ (W) (8*20 $\mu\text{s}$ )	C (pF)
	Max	Max	Min		Max	Max	Typ	Typ
TESDN3V31AD92	3.3	2.5	5.0	1.0	9.8	10.4	102	80

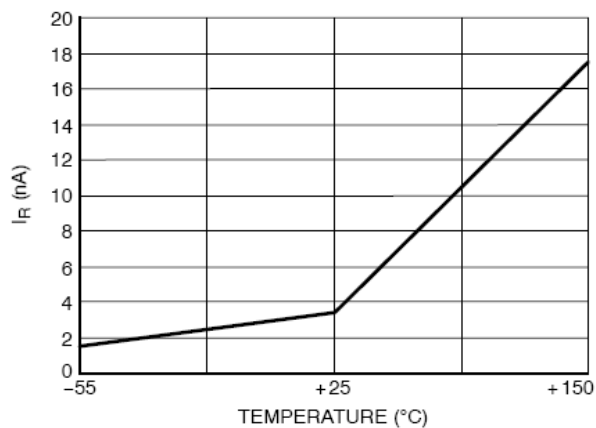
Other voltage available upon request.

- $V_{BR}$  is measured with a pulse test current  $I_T$  at an ambient temperature of  $25^\circ\text{C}$
- Surge current waveform per Figure 3.

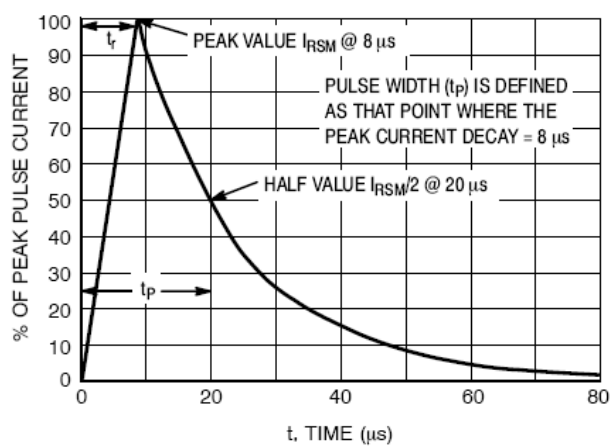
### TYPICAL CHARACTERISTICS



**Figure 1. Typical Breakdown Voltage versus Temperature**

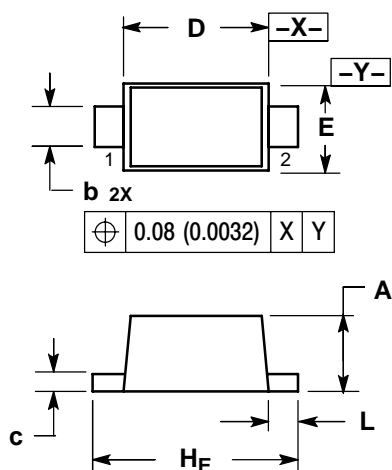


**Fig 2. Typical Leakage Current versus Temperature**



**Figure 3. 8\*20 μs Pulse Waveform**

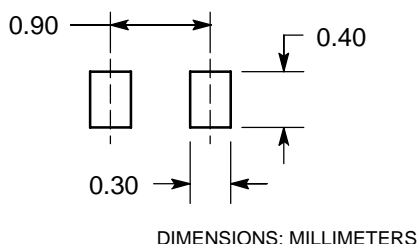
### SOD-923



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: MILLIMETERS.
  3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.34	0.37	0.40	0.013	0.015	0.016
b	0.15	0.20	0.25	0.006	0.008	0.010
c	0.07	0.12	0.17	0.003	0.005	0.007
D	0.75	0.80	0.85	0.030	0.031	0.033
E	0.55	0.60	0.65	0.022	0.024	0.026
H	0.95	1.00	1.05	0.037	0.039	0.041
L	0.05	0.10	0.15	0.002	0.004	0.006

### SOLDERING FOOTPRINT\*



## NOTICE

The information presented in this document is for reference only. Tinysemi reserves the right to make changes without notice for the specification of the products displayed herein.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Tinysemi elec Co., Ltd., or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website <http://www.tinysemi.com>, or consult your nearest Tinysemi's sales office for further assistance.