

1-Line, Uni-directional, Transient Voltage Suppressors

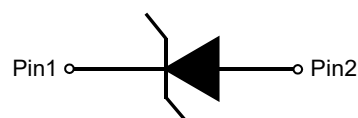
Descriptions

The ESD5A501TR is a uni-directional TVS (Transient Voltage Suppressor). It is specifically designed to protect sensitive electronic components that may be subjected to ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and Lightning. It is particularly well-suited for cellular phones, portable device, digital cameras, power supplies and many other portable applications because of its small package and low weight.

The ESD5A501TR is available in SOD-323 package. Standard products are Pb-free and Halogen-free.



SOD-323



Circuit diagram

Features

- Stand-off voltage: 5.0V Max
- Transient protection for each line according to
IEC61000-4-2 (ESD): $\pm 30\text{kV}$ air discharge $\pm 30\text{kV}$ contact discharge
IEC61000-4-5 (surge): 160A(8/20 μs)
- Solid-state silicon technology

Order information

Applications

- Cell phone handsets and accessories
- Personal Digital Assistants (PDAs)
- Notebooks, Desktops, and Servers
- Portable Instrumentation
- Digital Cameras
- MID/CAR DVD/MP3/MP4/PMP Players

Device	Package	Shipping	Mark
ESD5A501TR	SOD-323	3000/Tape&Reel	C

Absolute maximum ratings

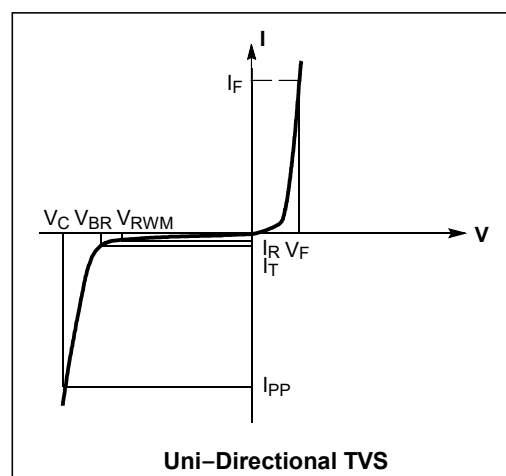
Parameter	Symbol	Rating	Unit
Peak pulse current ($t_p = 8/20\mu s$)	I_{PP}	160.0	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	± 30	kV
ESD according to IEC61000-4-2 contact discharge		± 30	
Operation junction temperature	T_J	-55~150	$^{\circ}C$
Lead temperature	T_L	260	$^{\circ}C$
Storage temperature	T_{STG}	-55~150	$^{\circ}C$

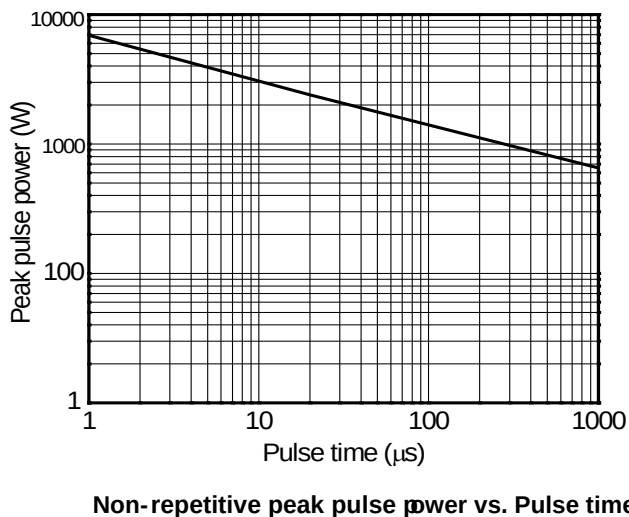
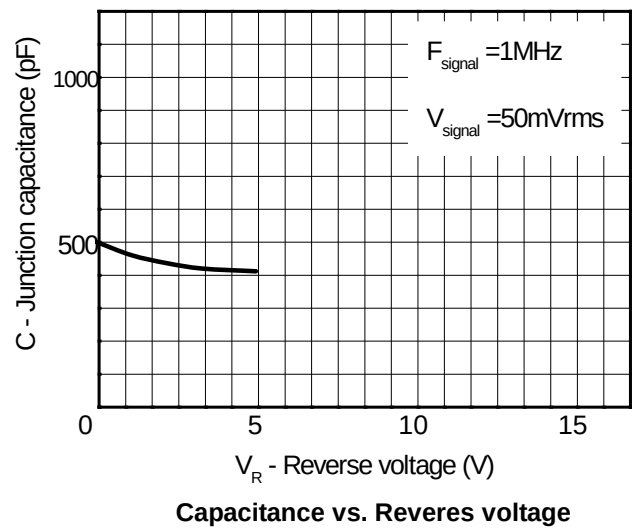
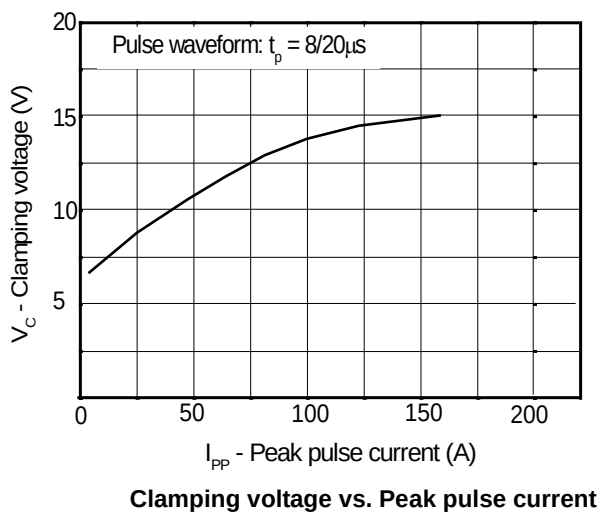
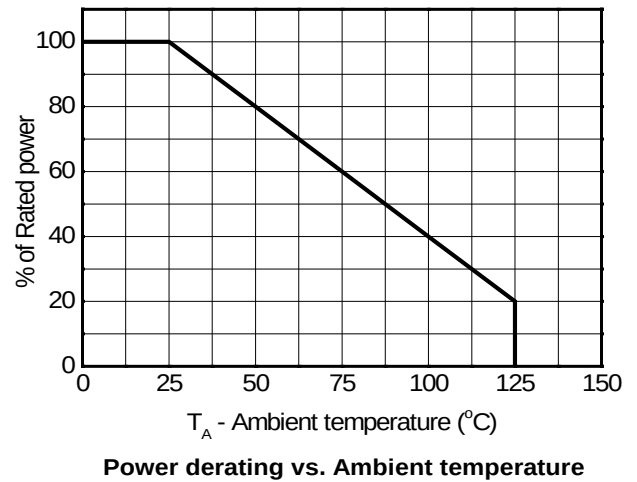
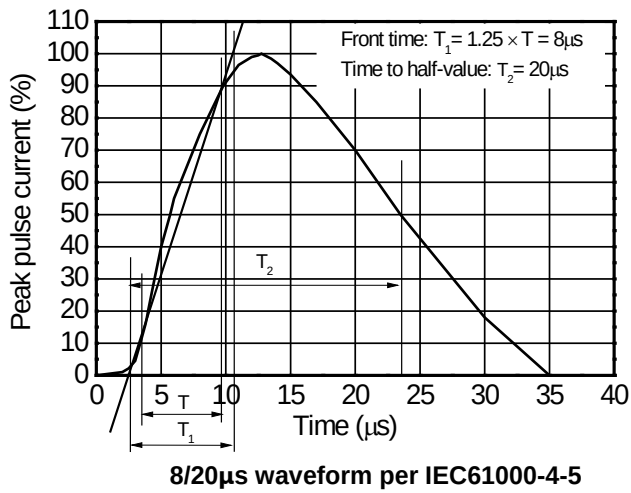
Electrical characteristics (TA=25 $^{\circ}C$,unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				5.0	V
Reverse leakage current	I_R	$V_{RWM} = 5.0V$			0.5	μA
Reveres breakdown voltage	V_{BR}	$I_T = 1mA$	5.2			V
Clamping voltage	V_C	$I_{PP} = 1A$ $t_p = 8/20\mu s$		7.0		V
		$I_{PP} = 160A$ $t_p = 8/20\mu s$			15.5	V
Junction capacitance	C_J	$V_R = 0V$, $f = 1MHz$		500.0	700.0	pF

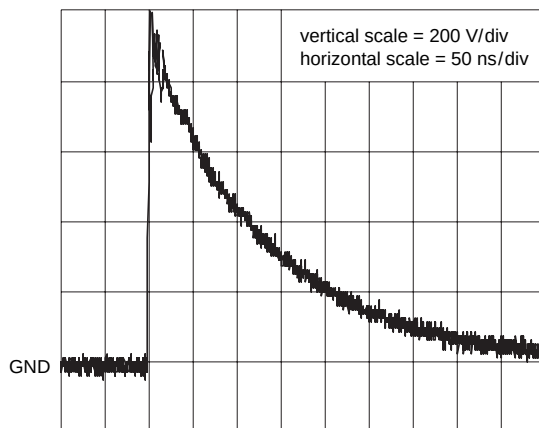
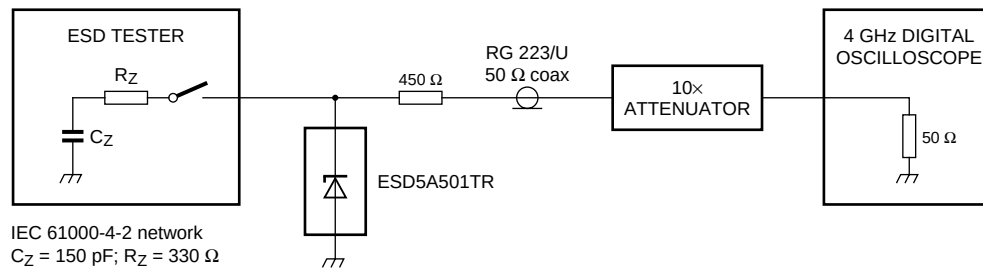
Electrical performance curve

Symbol	Parameter
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
I_F	Forward Current
V_F	Forward Voltage @ I_F

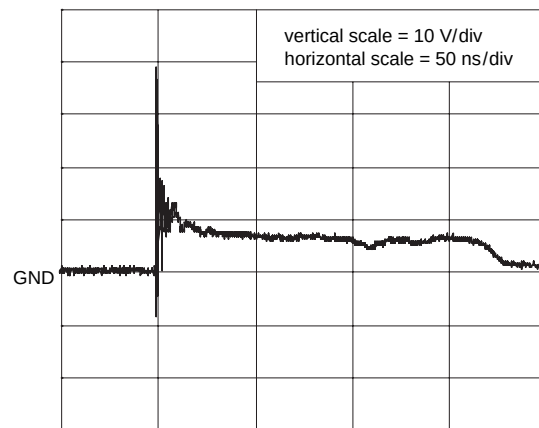




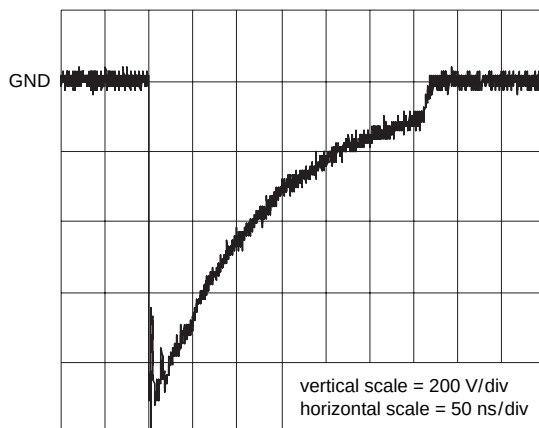
ESD clamping test setup and waveforms



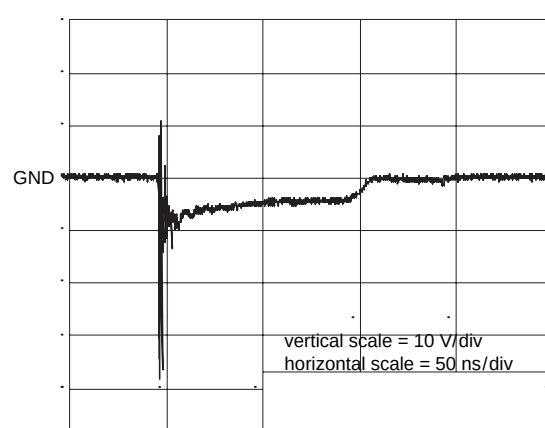
unclamped +1 kV ESD voltage waveform
(IEC61000-4-2 network)



clamped +1 kV ESD voltage waveform
(IEC61000-4-2 network)



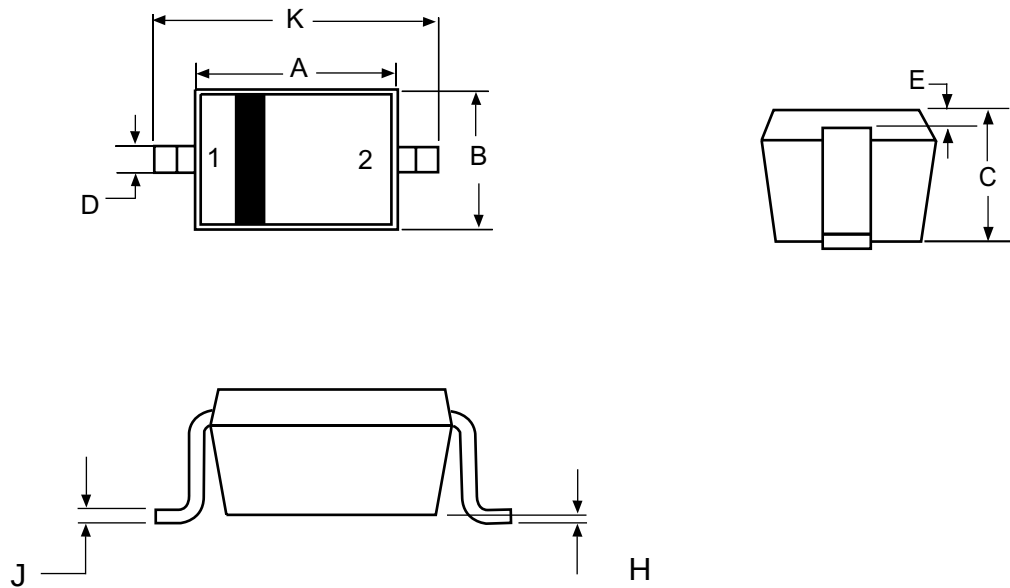
unclamped -1 kV ESD voltage waveform
(IEC61000-4-2 network)



clamped -1 kV ESD voltage waveform
(IEC61000-4-2 network)

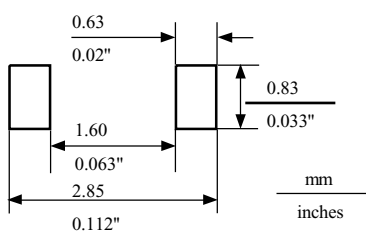
Package outline dimensions

SOD-323



Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	1.60	1.80	0.063	0.071
B	1.15	1.35	0.045	0.053
C	0.80	1.00	0.031	0.039
D	0.25	0.40	0.010	0.016
E	0.15 REF		0.006 REF	
H	0.00	0.10	0.000	0.004
J	0.089	0.177	0.0035	0.0070
K	2.30	2.70	0.091	0.106

Recommend land pattern (Unit: mm)



Note: This land pattern is for your reference only. Actual pad layouts may vary depending on application.