

1-Line, Bi-directional, Transient Voltage Suppressors

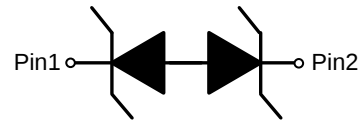
Descriptions

The ESD48B150TA is a bi-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 ESD48B150TA may be used to provide ESD protection up to $\pm 30\text{kV}$ air discharge $\pm 30\text{kV}$ contact discharge according to IEC61000-4-2, and withstand peak pulse current up to 5.0A (8/20 μs) according to IEC61000-4-5.



SOD-523



Circuit diagram

Features

- Stand-off voltage: $\pm 48\text{ VMax}$
- 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): 5.0A(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
ESD48B150TA	SOD-523	3000/Tape&Reel	2P

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse power ($t_p = 8/20\mu s$)	P_{pk}	400	W
Peak pulse current ($t_p = 8/20\mu s$)	I_{pp}	5.0	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	-55~125	$^{\circ}C$
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}				± 48.0	V
Reverse leakage current	I_R	$V_{RWM} = 48V$			0.1	μA
Reveres breakdown voltage	V_{BR}	$I_T = 1mA$	50.0			V
Clamping voltage	V_C	$I_{pp} = 1A$ $t_p = 8/20\mu s$			58.5	V
		$I_{pp} = 5.0A$ $t_p = 8/20\mu s$			80.0	V
Junction capacitance	C_J	$V_R = 0V$, $f = 1MHz$		15.0		pF

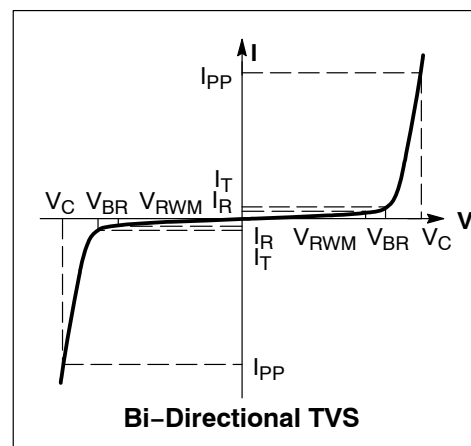
Electrical performance curve

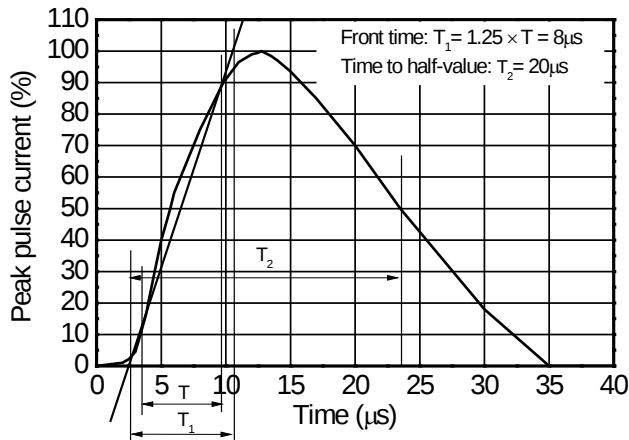
V_C : Maximum clamping voltage

V_{br} : Reverse breakdown voltage

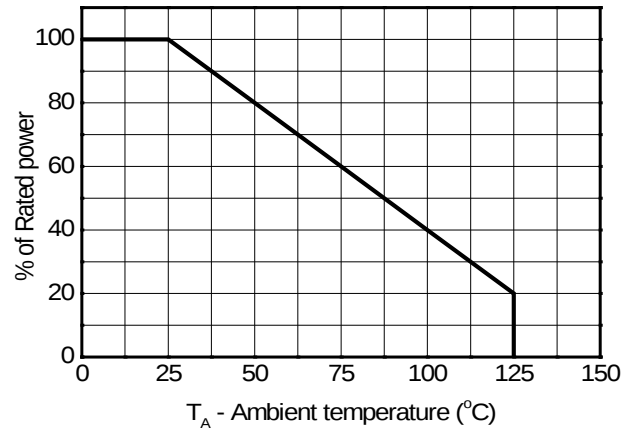
V_{RWM} : Working voltage

I_{pp} : Maximum peak current

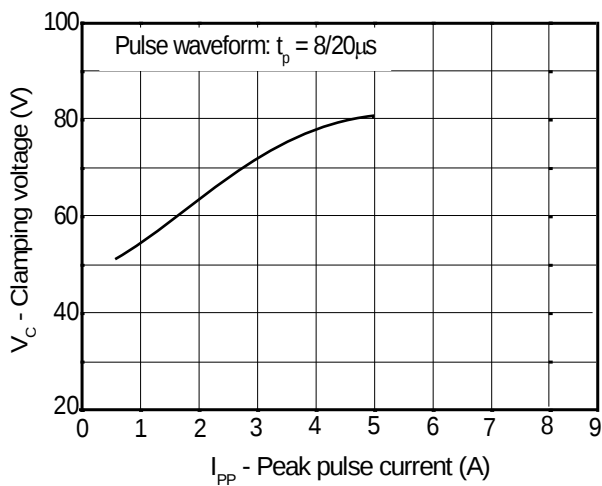




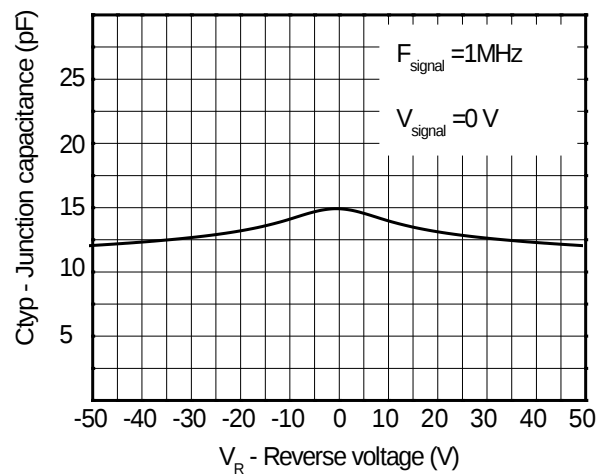
8/20μs waveform per IEC61000-4-5



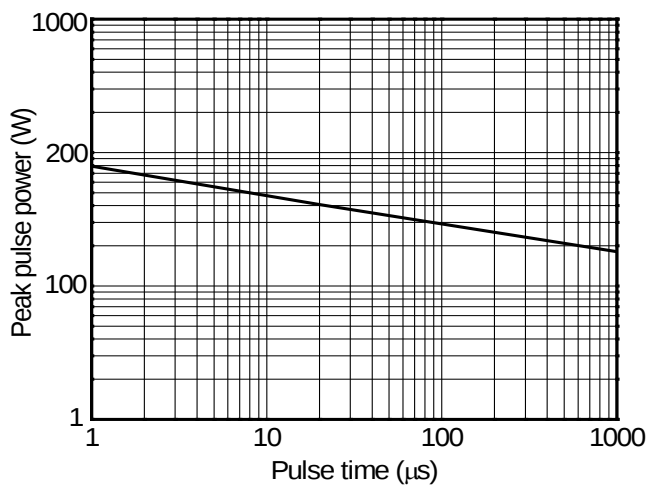
Power derating vs. Ambient temperature



Clamping voltage vs. Peak pulse current

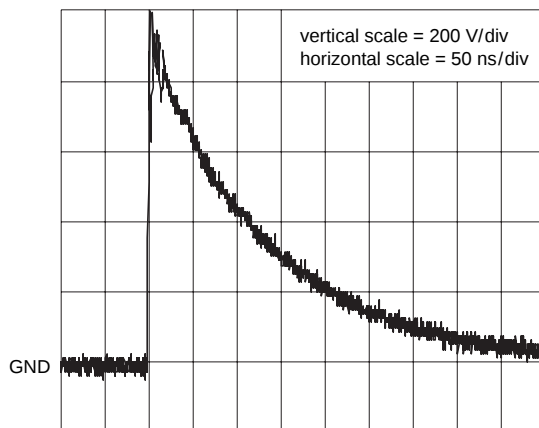
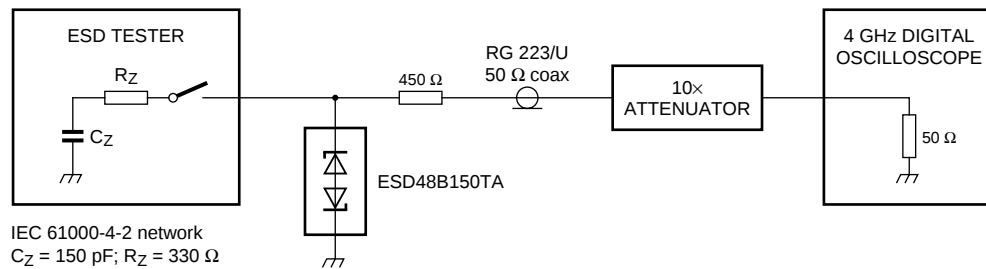


Capacitance vs. Reverse voltage

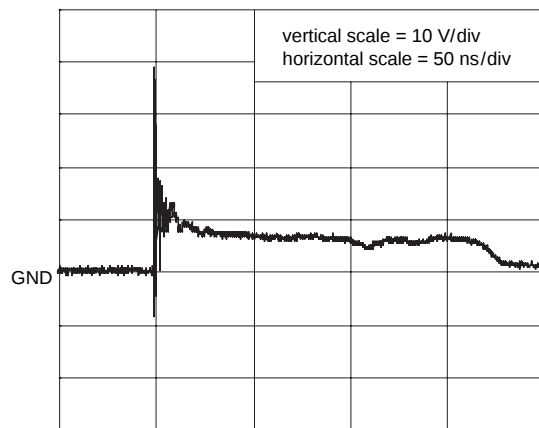


Non-repetitive peak pulse power vs. Pulse time

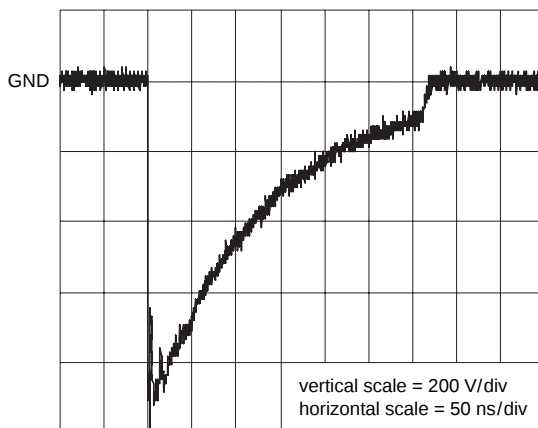
ESD clamping test setup and waveforms



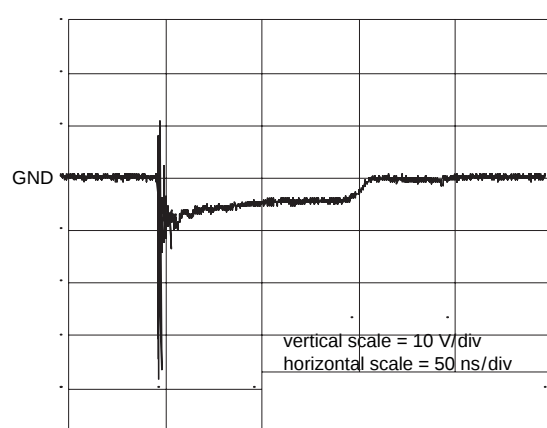
unclamped +1 kV ESD voltage waveform
 (IEC61000-4-2 network)



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



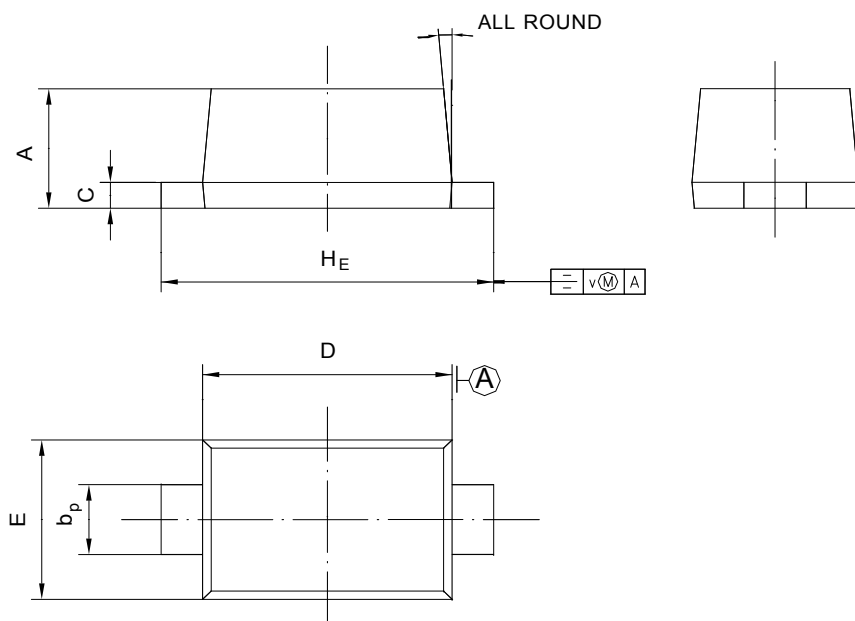
unclamped -1 kV ESD voltage waveform
 (IEC61000-4-2 network)



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

Package outline dimensions

SOD-523



UNIT	A	b _p	C	D	E	H _E	V	
mm	0.70 0.60	0.4 0.3	0.135 0.100	1.25 1.15	0.85 0.75	1.7 1.5	0.1	5°

Recommended Mounting Pad Layout Unit:mm

