ESD Protection Diodes with Ultra–Low Capacitance

1-Line, Bi-directional, Transient Voltage Suppressors

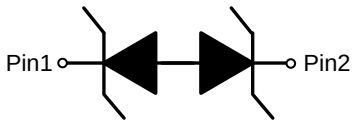
Descriptions

The ESD3V3D005TA 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 ESD3V3D005TA may be used to provide ESD protection up to ±30KV Air, ±15KV contact compliance to IEC61000-4-2 , and withstand peak pulse current up to 4 A (8/20μs) according to IEC61000-4-5.

The ESD3V3D005TA is available in SOD-882 package. Standard products are Pb-free and Halogen-free.

SOD882



Circuit diagram

Features

- Stand-off voltage: ±3.3 V Max
- Transient protection for each line according to
  IEC61000-4-2 (ESD): ±30KV Air, ±15KV contact
  IEC61000-4-4(EFT): 40 A (5/50 ns)
  IEC61000-4-5 (Surge): 4 A (8/20μs)
- Solid-state silicon technology
- Low leakage current

Applications

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

Order information

Device	Marking	Package	Shipping
ESD3V3D005TA	N	SOD-882	10000/Tape&Reel

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse current (t_p = 8/20μs)	I_{PP}	4	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	± 30	kV
ESD according to IEC61000-4-2 contact discharge		± 15	
Operation junction temperature	T_J	-50~125	°C
Lead temperature	T_L	260	°C
Storage temperature	T_{STG}	-65~150	°C

Electrical characteristics (TA=25 °C ,unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				±5	V
Reverse leakage current	I_R	V_{RWM} = 5V			0.5	uA
Reveres breakdown voltage	V_{BR}	I_T=1mA		8.0		V
Clamping voltage	V_C	Ipp=1A tp=8/20us		11		V
Clamping voltage	V_C	Ipp=4A tp=8/20us			25	V
Junction capacitance	C_J	V_R = 0V, f = 1MHz		0.3	0.45	pF

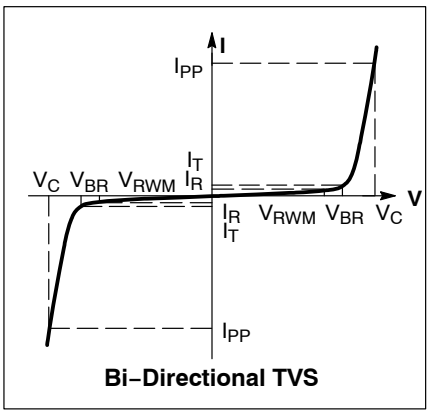
Electrical performance curve

V_C: Maximum clamping voltage

V_{br}: Reverse breakdown voltage

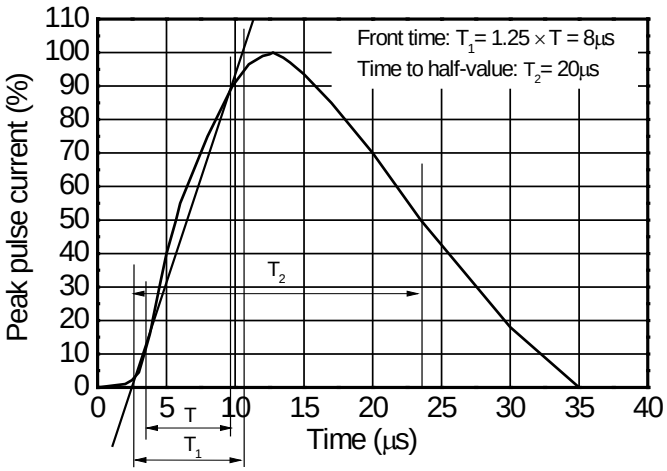
V_{RWM}: Working voltage

I_{PP}: Maximum peak current

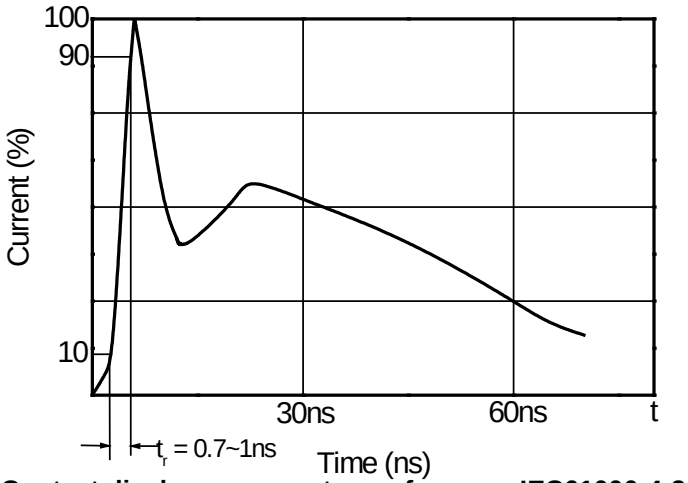


Bi–Directional TVS

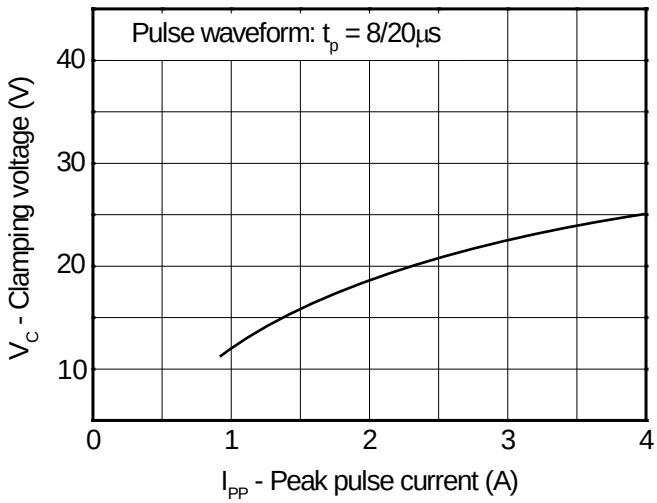
Typical characteristics (T_A=25°C, unless otherwise noted)



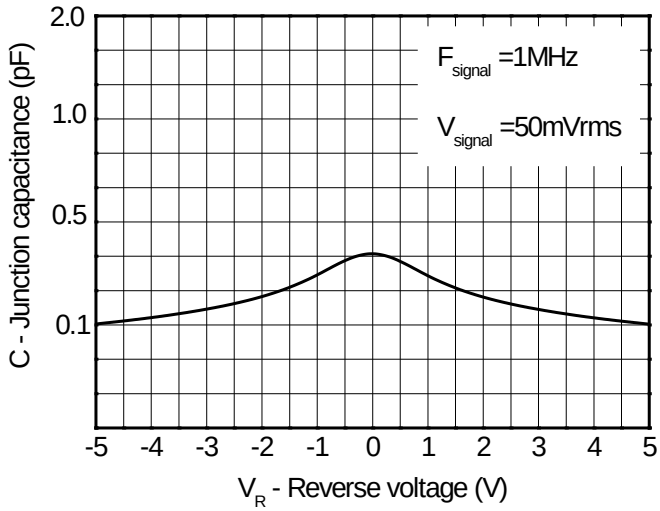
8/20μs waveform per IEC61000-4-5



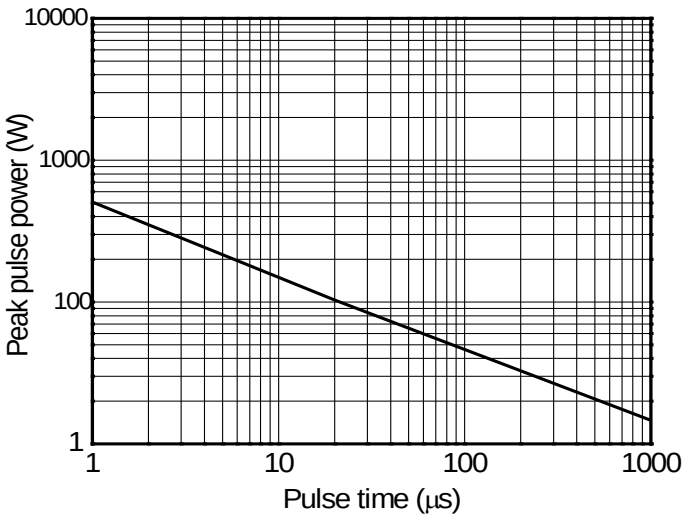
Contact discharge current waveform per IEC61000-4-2



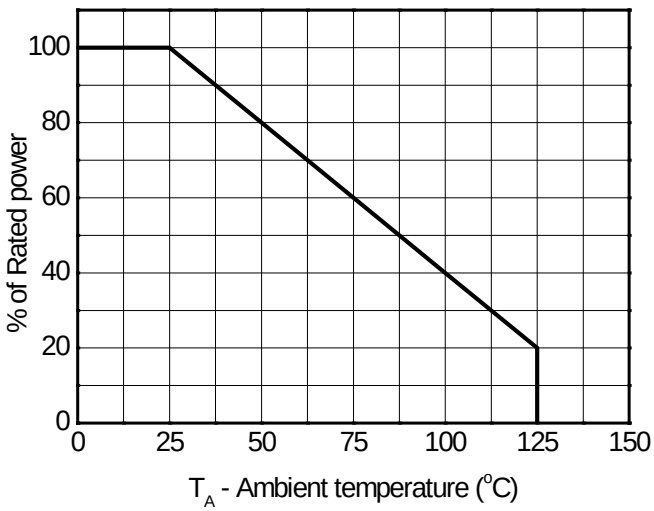
Clamping voltage vs. Peak pulse current



Capacitance vs. Reveres voltage



Non-repetitive peak pulse power vs. Pulse time



Power derating vs. Ambient temperature

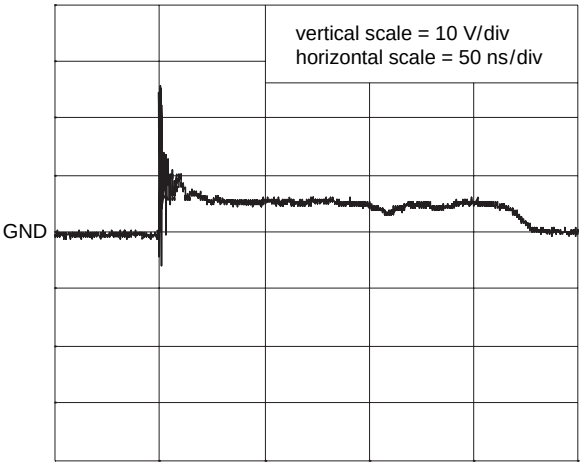


Figure 1. ESD Clamping Voltage Screenshot Positive 8 kV Contact per IEC61000−4−2

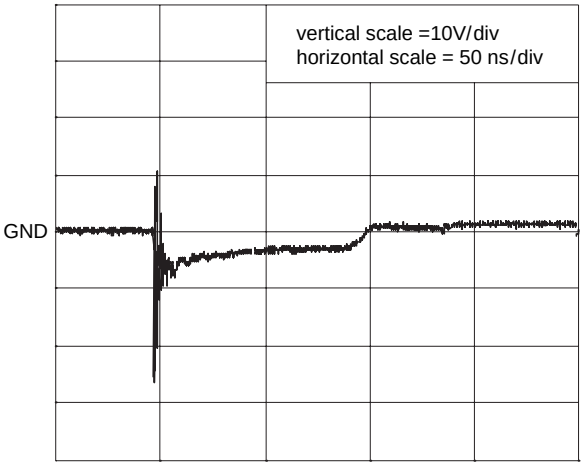
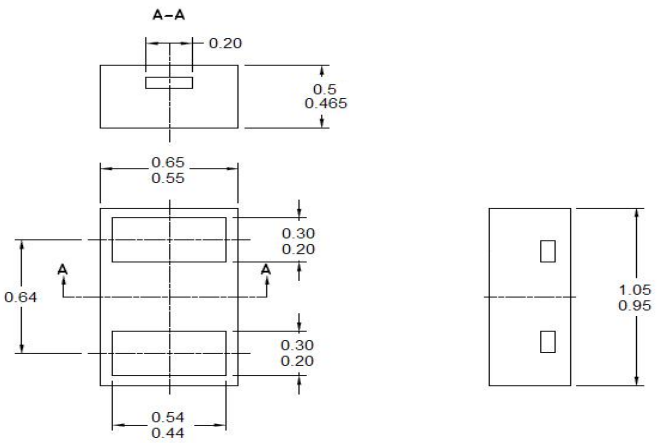
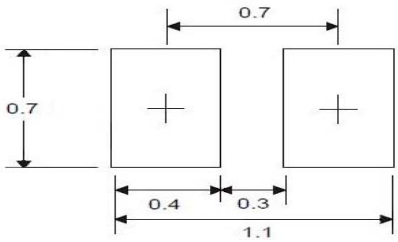


Figure 2. ESD Clamping Voltage Screenshot Negative 8 kV Contact per IEC61000−4−2

Package outline dimensions



DIMENSION OUTLINE: Unit:mm



Recommended Mounting Pad Layout