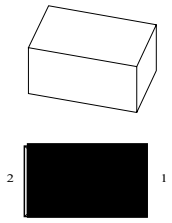
1-Line, Bi-directional, Transient Voltage Suppressors

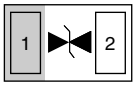


DFN0603-2L

Descriptions

The ESD5E005SA 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 ESD5E005SA may be used to provide ESD protection up to 20KV Air, 15KV contact compliance to IEC61000-4-2, and withstand peak pulse current up to 4.0A (8/20μs) according to IEC61000-4-5.



Circuit diagram

Features

- Stand-off voltage: ±5V Max
- Transient protection for each line according to
  IEC61000-4-2 (ESD): 20KV Air, 15KV contact compliance
  IEC61000-4-5 (surge): 4.0A (8/20μs)
- Solid-state silicon technology
- Low leakage current

Applications

- Cellular handsets and accessories
- Portable electronics
- Communication systems
- Computers and peripherals

Order information

Device	Package	Marking	Shipping
ESD5E005SA	DFN0603-2L	U5	10000/Tape&Reel

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse current (t_p = 8/20μs)	I_{PP}	4.0	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	±20	kV
ESD according to IEC61000-4-2 contact discharge		±15	
Operation junction temperature	T_J	-55~150	^oC
Lead temperature	T_L	260	^oC
Storage temperature	T_{STG}	-65~150	^oC

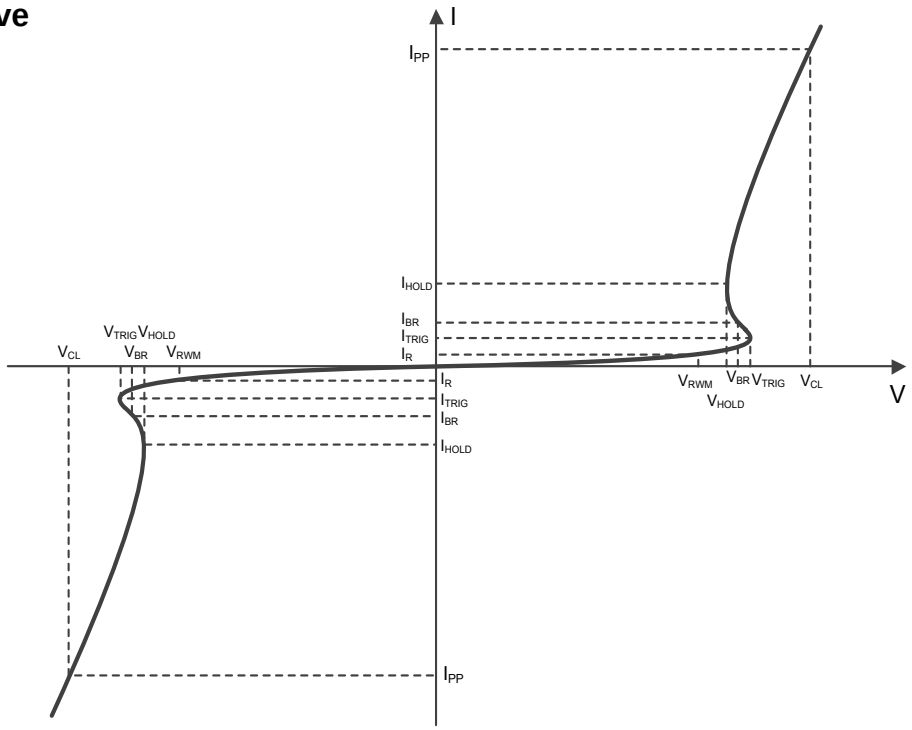
Electrical characteristics (TA=25 oC, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				±5.0	V
Reverse leakage current	I_R	V_{RWM} = 5V			0.2	uA
Reveres breakdown voltage	V_{BR}	I_T=1mA	6.0	8.5		V
Clamping voltage	V_C	Ipp= 1A tp=8/20us			9.0	V
		Ipp=4.0A tp=8/20us		10.0	11.0	V
Junction capacitance	C_J	V_R = 0V, f = 1MHz		0.35	0.5	pF

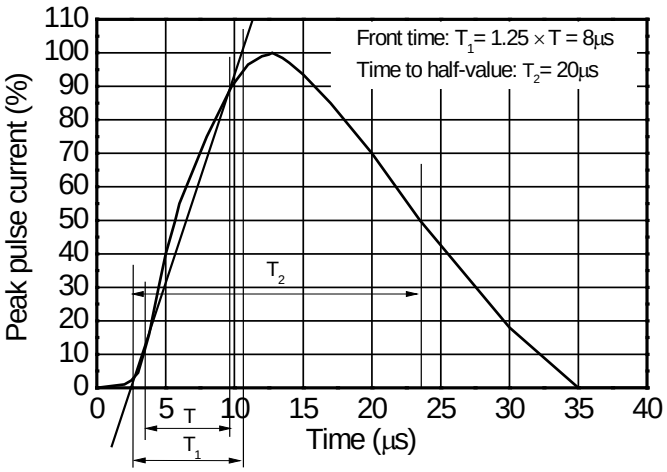
Electrical performance curve

V_{RWM} Reverse stand-off voltage
I_R Reverse leakage current
V_{CL} Clamping voltage
I_{PP} Peak pulse current

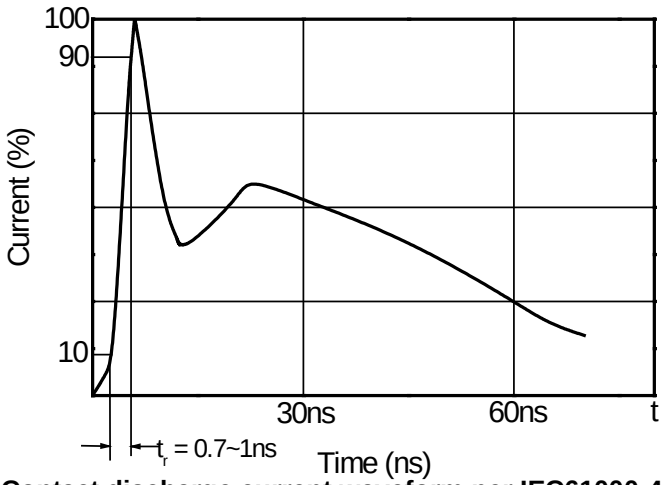
V_{TRIG} Reverse trigger voltage
I_{TRIG} Reverse trigger current
V_{BR} Reverse breakdown voltage
I_{BR} Reverse breakdown current
V_{HOLD} Reverse holding voltage
I_{HOLD} Reverse holding current



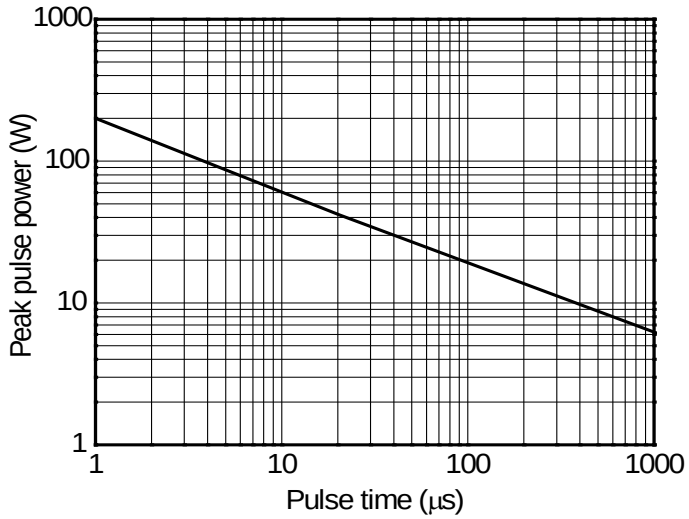
Typical characteristics (T_A=25°C, unless otherwise noted)



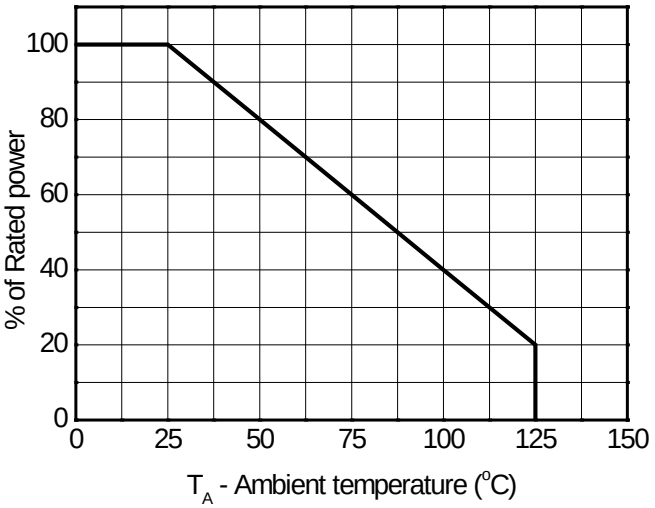
8/20μs waveform per IEC61000-4-5



Contact discharge current waveform per IEC61000-4-2



Non-repetitive peak pulse power vs. Pulse time



Power derating vs. Ambient temperature

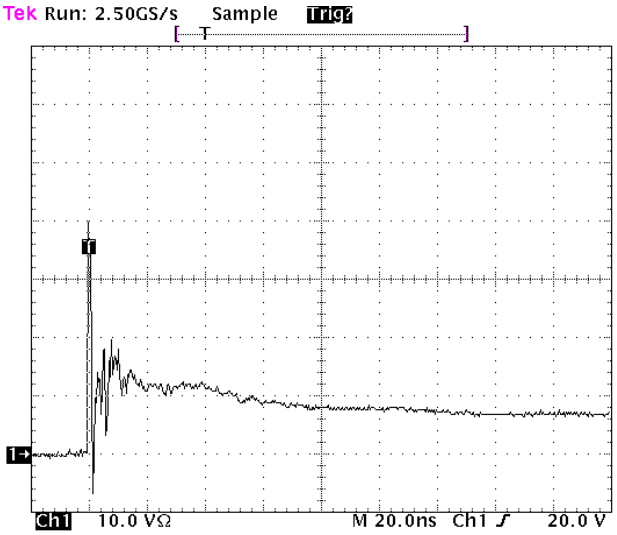


Figure 1. ESD Clamping Voltage Screenshot
Positive 8 kV Contact per IEC61000−4−2

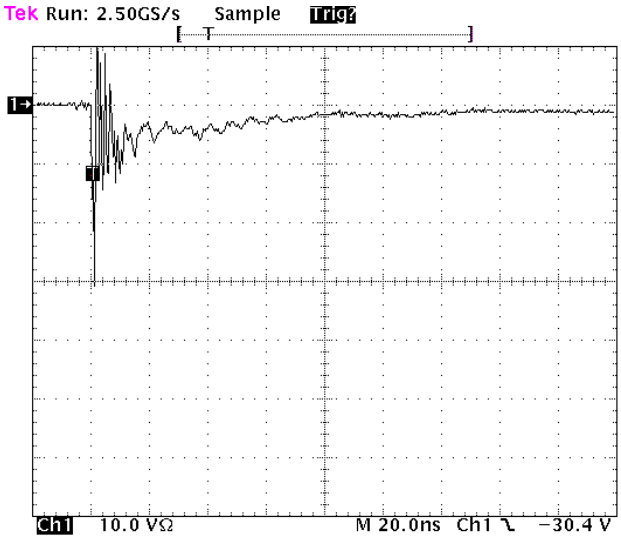
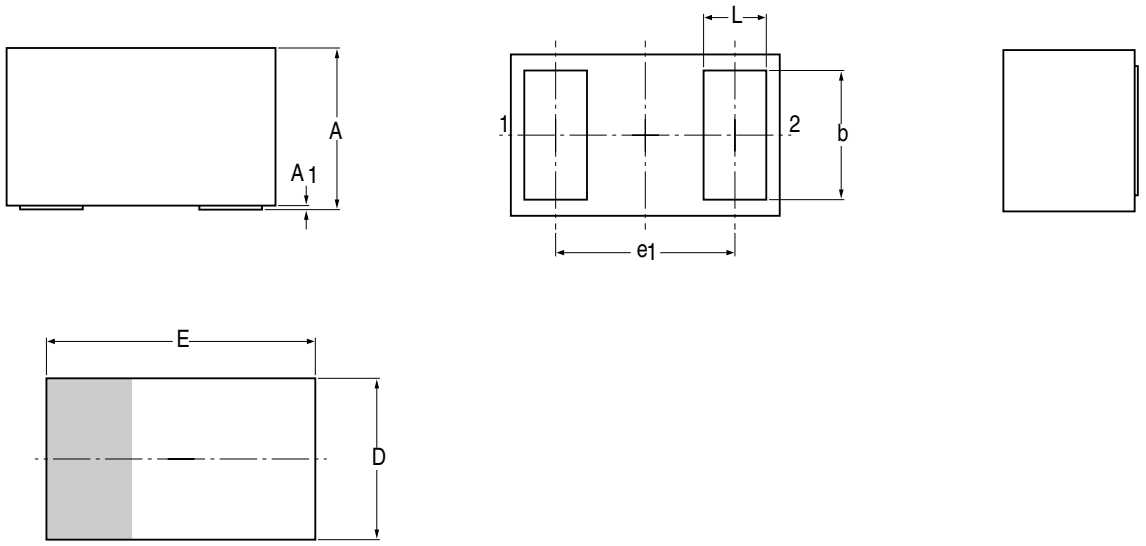


Figure 2. ESD Clamping Voltage Screenshot
Negative 8 kV Contact per IEC61000−4−2

Package outline dimensions

SOD-962



Dimensions

Unit		$A^{(1)}$	A_1	b	D	E	e_1	L
mm	max	0.32	0.0076	0.25	0.325	0.625	0.4	0.15
	nom							
	min	0.28		0.23	0.275	0.575		0.13

Note
1. Dimension A is including coating foil thickness.
2. The marking bar indicates the cathode.

attern (Unit: mm)

Recommened Mounting Pad Layout Unit:mm