ESD Protection Diodes with Ultra–Low Capacitance

1-Line, Bi-directional, Transient Voltage Suppressors

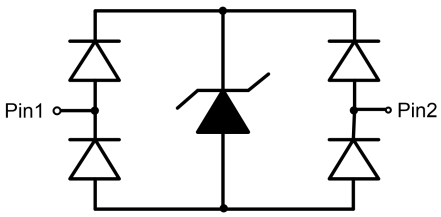
Descriptions

The ESD18D005LA 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 ESD18D005LA may be used to provide ESD protection up to ±15KV Air, ±15KV contact compliance to IEC61000-4-2 , and withstand peak pulse current up to 5 A (8/20μs) according to IEC61000-4-5.



DFN1006-2L



Pin configuration

Features

- Stand-off voltage: ±18.0V Max
- Transient protection for each line according to
  IEC61000-4-2 (ESD): ±15KV Air, ±15KV contact
  IEC61000-4-5 (Surge): 5 A (8/20μs)
- Solid-state silicon technology
- Low leakage current

Order information

Device	Marking	Package	Shipping
ESD18D005LA	18B	DFN1006-2L	10000/Tape&Reel

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

Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Peak pulse current (t_p = 8/20μs)	I_{PP}	5.0	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	±15	kV
ESD according to IEC61000-4-2 contact discharge		±15	
Operating temperature	T_{OP}	-40~125	°C
Storage temperature	T_{STG}	-55~150	°C

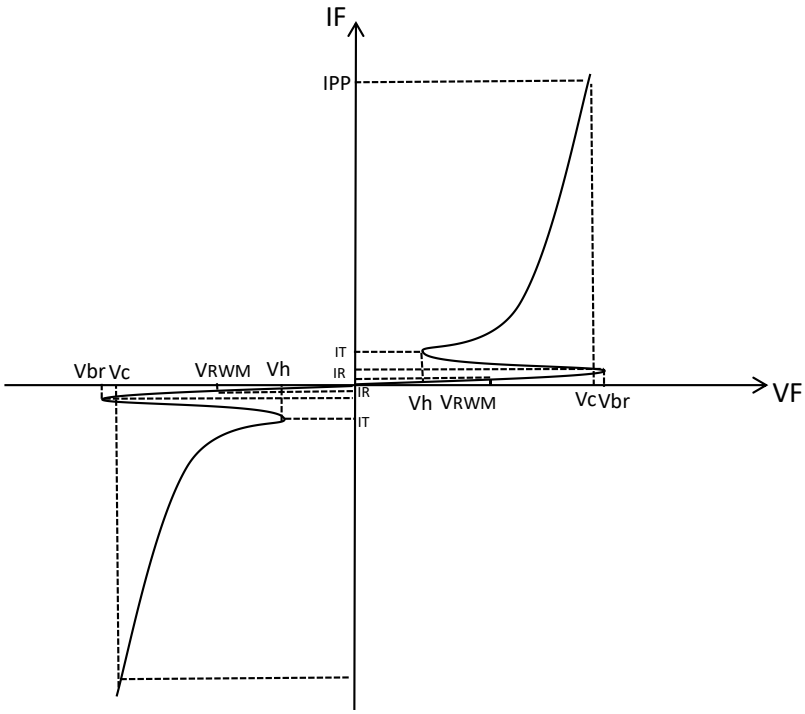
Electrical characteristics (TA=25 °C ,unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}				18.0	V
Breakdown Voltage	V_{BR}	I_T = 1mA	19. 0	22.0		V
Holding Voltage	V_h	I_T = 100mA	2.0	2.9		V
Reverse Leakage Current	I_R	V_{RWM} = 18V			0.2	μA
Clamping Voltage (1)	V_C	I_{PP} = 1A (8 x 20μs pulse)		4.0		V
Clamping Voltage (1)	V_C	I_{PP} = 5A (8 x 20μs pulse)		6.0	8.0	V
Clamping Voltage	V_C	TLP = 16A (ESD=8KV)		8.2		V
Junction Capacitance	C_J	VR = 0V, f = 1MHz		0.5	0.7	pF

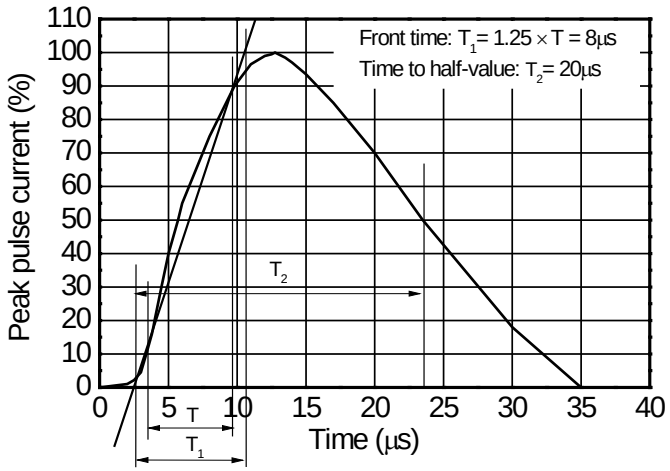
(1) Combination Waveform, RS = 12 Ω

Electrical performance curve

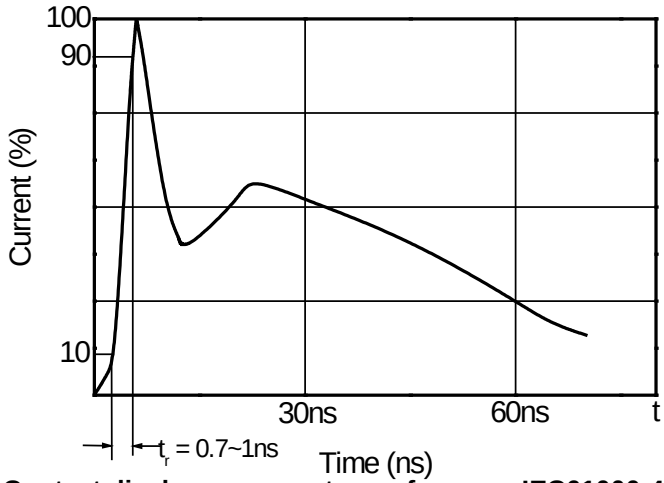
V_F	Forward voltage
I_F	Forward current
V_R	Reverse voltage
I_R	Reverse current
R_{DYN}	Dynamic resistance
V_{RWM}	Reverse working voltage max
V_{t1}	Trigger voltage
V_h	Holding voltage
V_{CL}	Clamping voltage
V_{TLP}	TLP voltage
I_R	Reverse leakage current
I_{PP}	Peak pulse current
I_{TLP}	TLP current
I_T	Test current



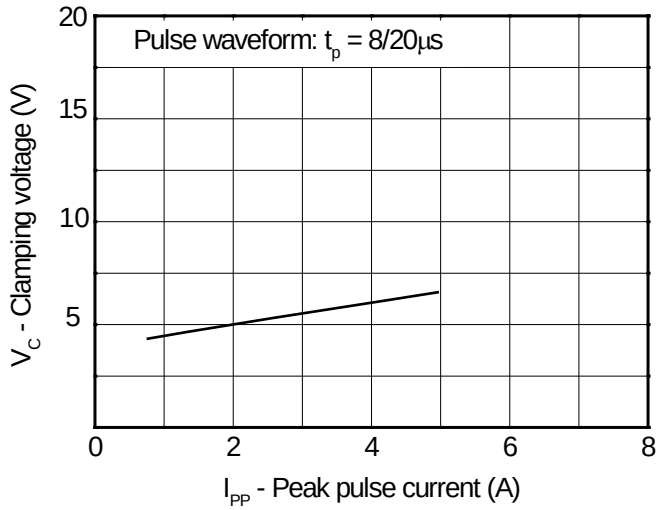
Typical characteristics (T_A=25°C, unless otherwise noted)



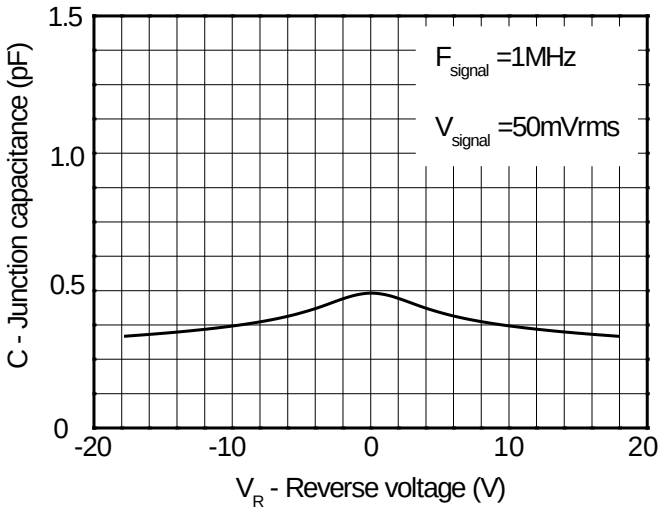
8/20μs waveform per IEC61000-4-5



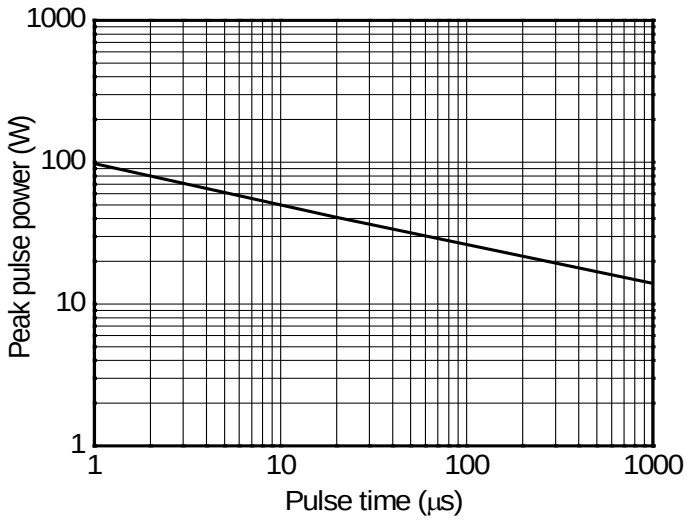
Contact discharge current waveform per IEC61000-4-2



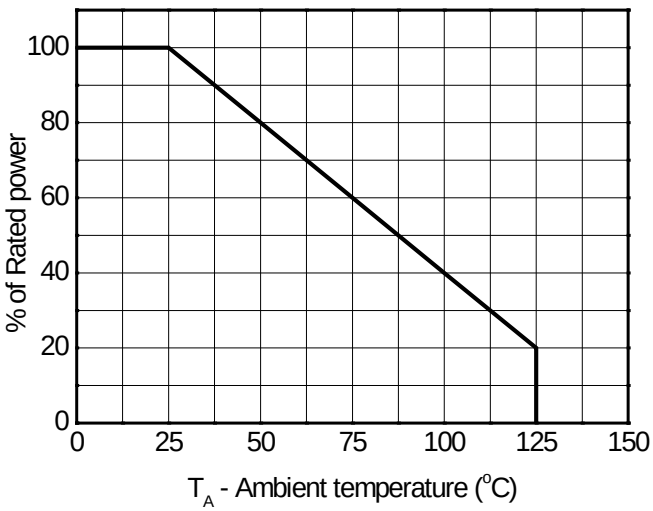
Clamping voltage vs. Peak pulse current



Capacitance vs. Reveres voltage

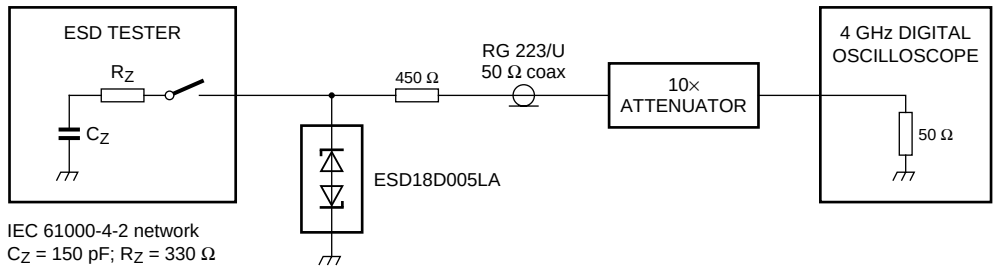


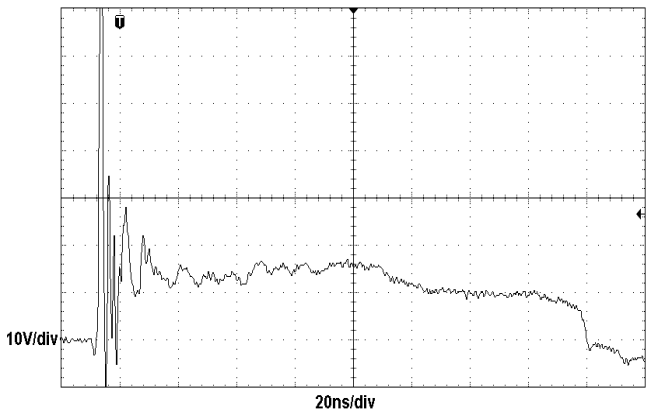
Non-repetitive peak pulse power vs. Pulse time



Power derating vs. Ambient temperature

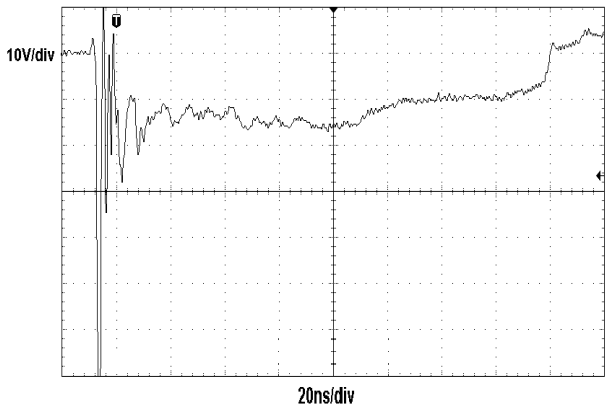
ESD clamping test setup and waveforms





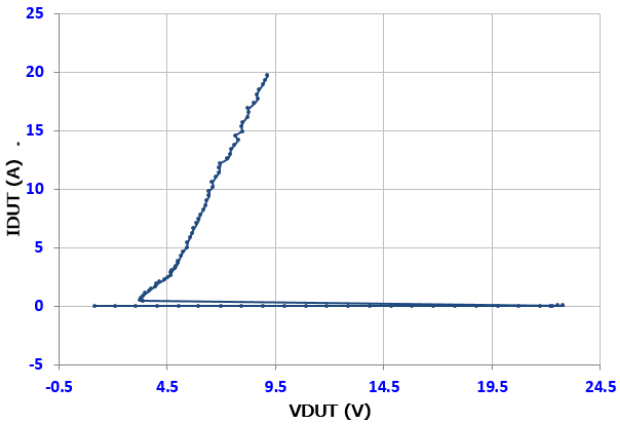
ESD clamping

(+8kV contact discharge per IEC61000-4-2)



ESD clamping

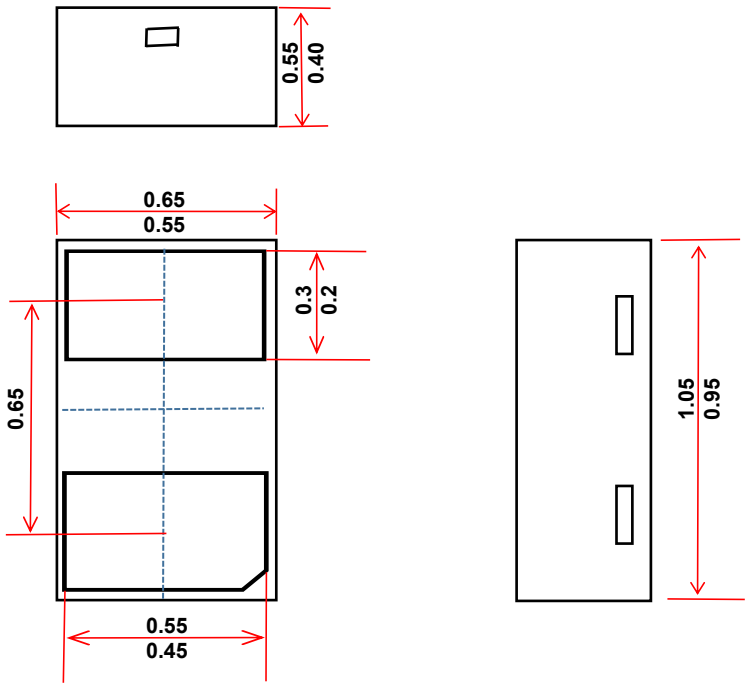
(-8kV contact discharge per IEC61000-4-2)



TLP Measurement

Package outline dimensions

DFN1006-2L



Recommened Mounting Pad Layout Unit:mm

