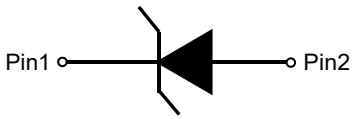
1-Line, Uni-directional, Transient Voltage Suppressors

Descriptions

The ESD5D101UP 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 ESD5D101UP may be used to provide ESD protection up to ±30KV Air, ±30KV contact compliance to IEC61000 -4-2 , and withstand peak pulse current up to 50 A (8/20μs) according to IEC61000-4-5.The is available in DFN1006-2L package. Standard products are Pb-free and Halogen-free.

DFN1006-2L



Circuit diagram

Features

- Stand-off voltage: ±5 V Max
- Transient protection for each line according to
  IEC61000-4-2 (ESD): ±30KV Air, ±30KV contact
  IEC61000-4-4(EFT): 60 A (5/50 ns)
  IEC61000-4-5 (Surge): 50 A (8/20**μ**s)
- Solid-state silicon technology
- Low leakage current

Order information

Device	Marking	Package	Shipping
ESD5D101UP	5V	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

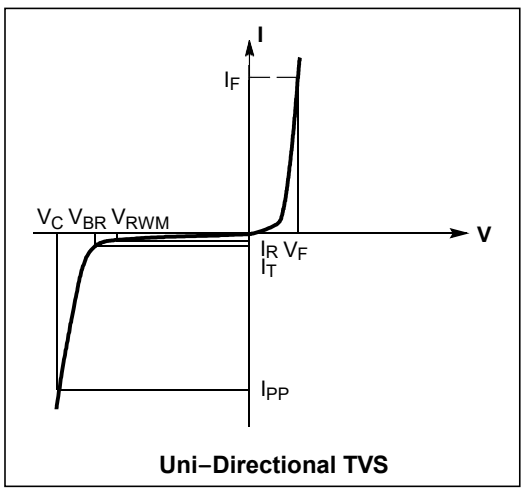
Parameter	Symbol	Rating	Unit
Peak pulse current (t_p = 8/20μs)	I_{PP}	50	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	± 30	kV
ESD according to IEC61000-4-2 contact discharge		± 30	
Operation junction temperature	T_J	-50~125	°C
Lead temperature	T_L	260	°C
Storage temperature	T_{STG}	-65~150	°C

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				±5.0	V
Reverse leakage current	I_R	V_{RWM} = 5.0V			0.5	uA
Reveres breakdown voltage	V_{BR} pin1 to pin2	I_T=1mA	5.5	6.0	7.5	V
Clamping voltage	V_C pin1 to pin2	Ipp=1A tp=8/20us		7.5	8.0	V
		Ipp=50 A tp=8/20us		9.0	10.5	V
Junction capacitance	C_J	V_R = 0V, f = 1MHz		100.0	150.0	pF

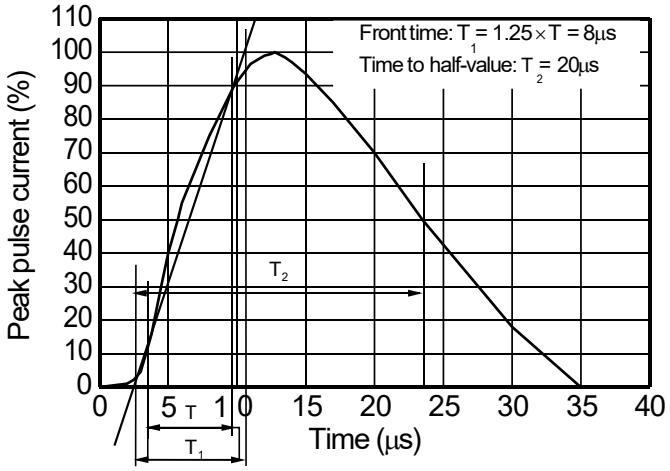
Electrical performance curve

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

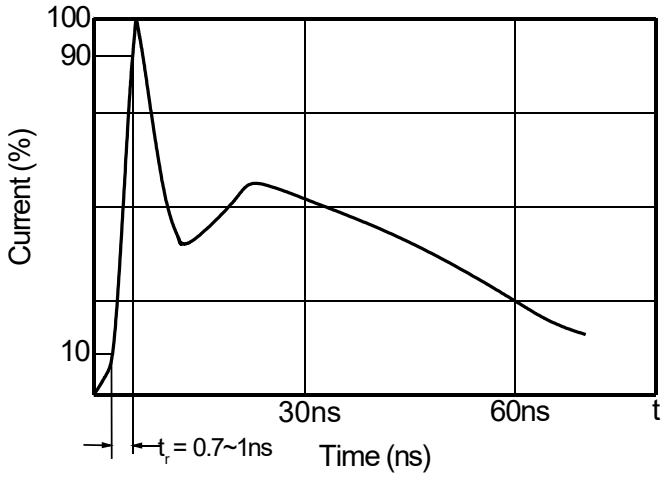


Uni−Directional TVS

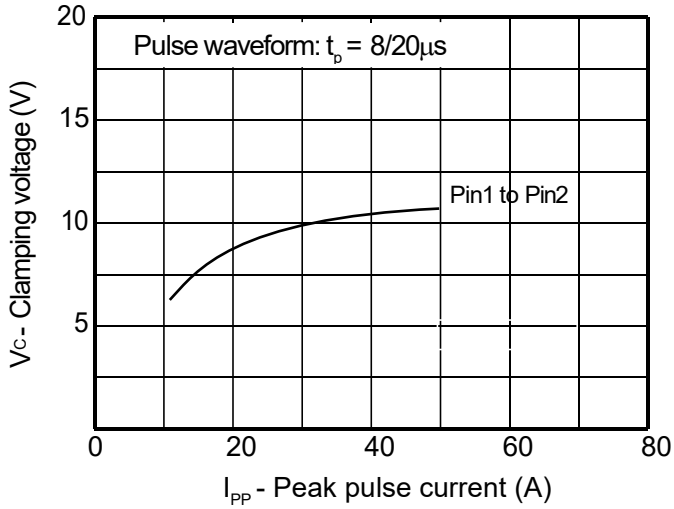
Typical characteristics (T_A=25°C, unless otherwise noted)



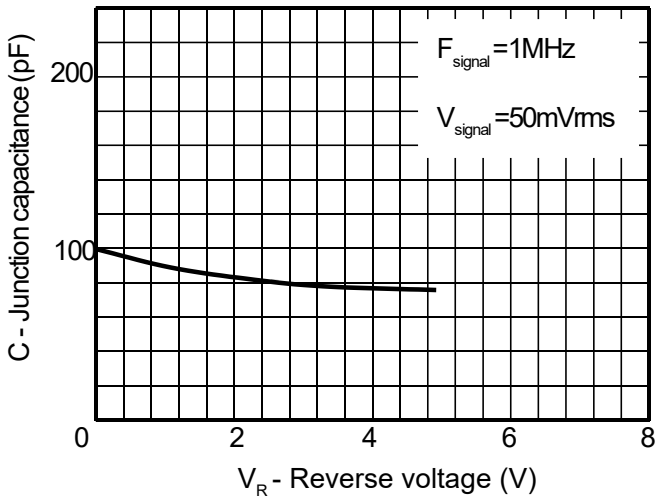
8/20μs waveform per IEC61000-4-5



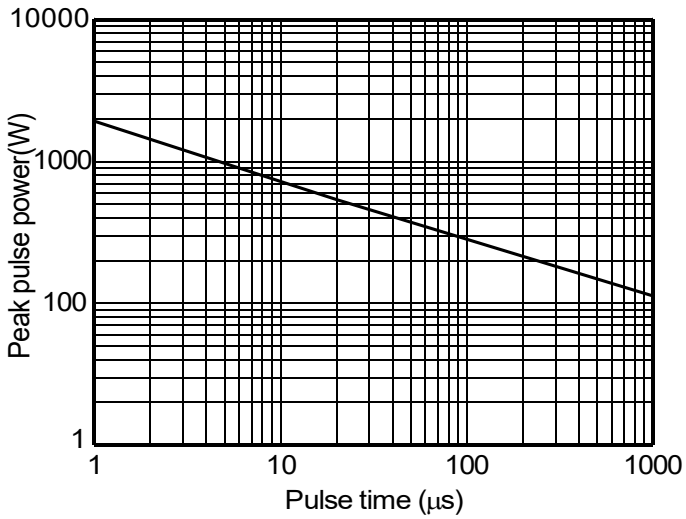
Contact discharge current waveform per IEC61000-4-2



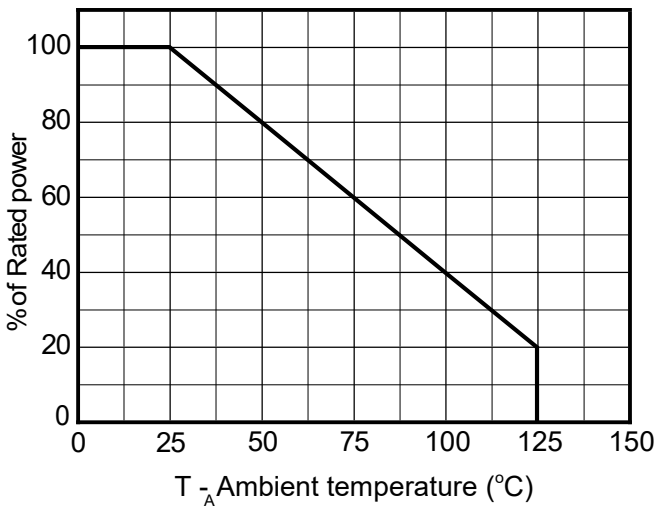
Clamping voltage vs. Peak pulse current



Capacitance vs. Reveres voltage

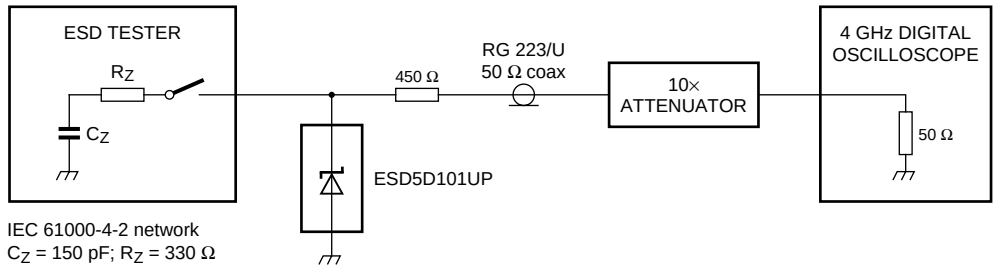


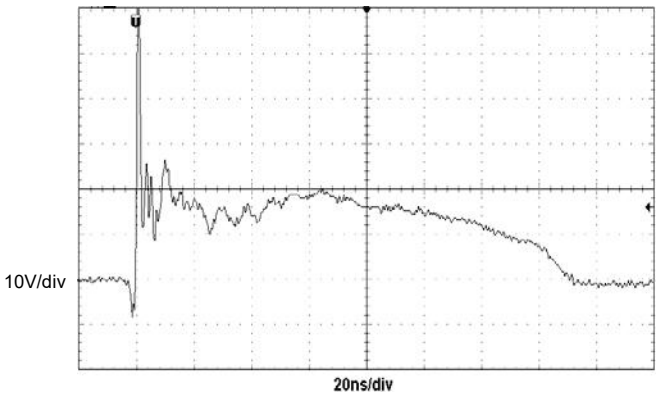
Non-repetitive peak pulse power vs. Pulse time



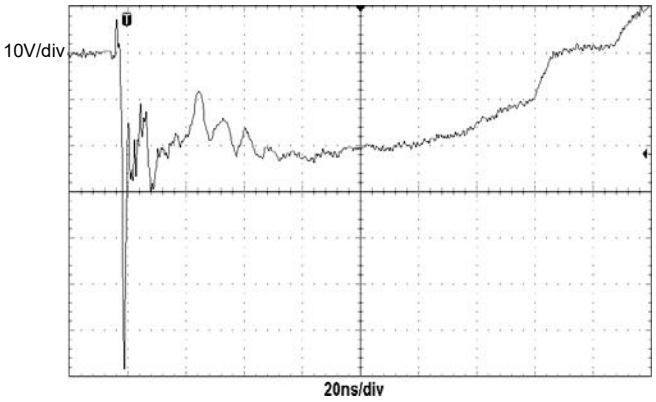
Power derating vs. Ambient temperature

ESD clamping test setup and waveforms





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

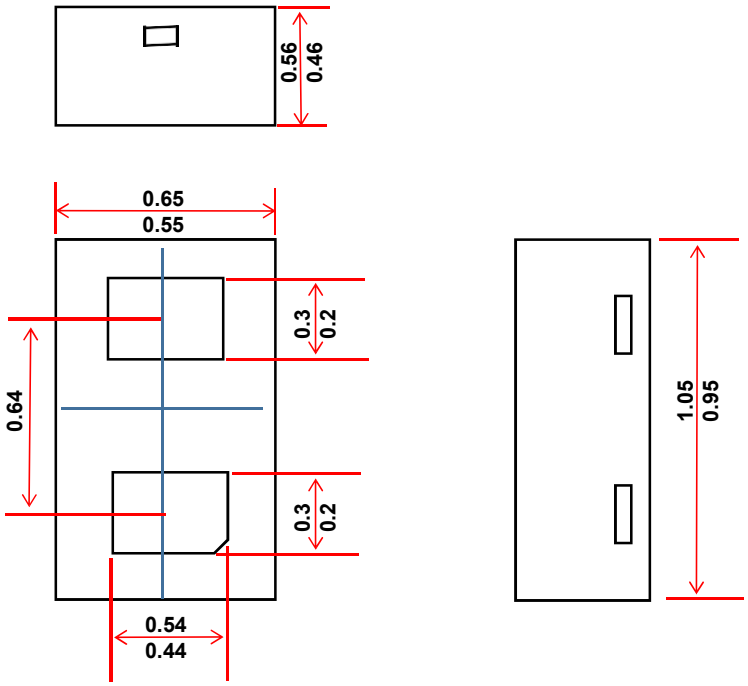


ESD clamping
(-8kV contact discharge per IEC61000-4-2)

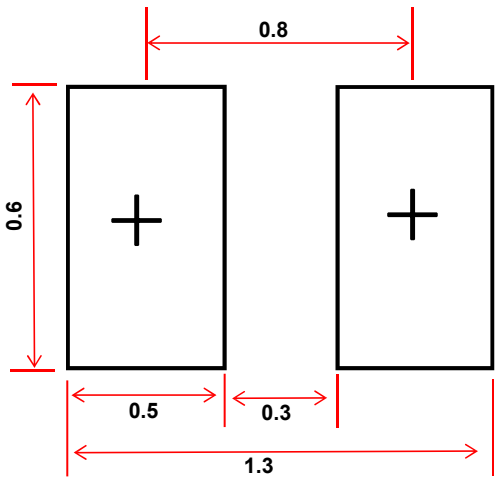
Package outline dimensions

DFN1006-2L

DIMENSION OUTLINE: Unit:mm

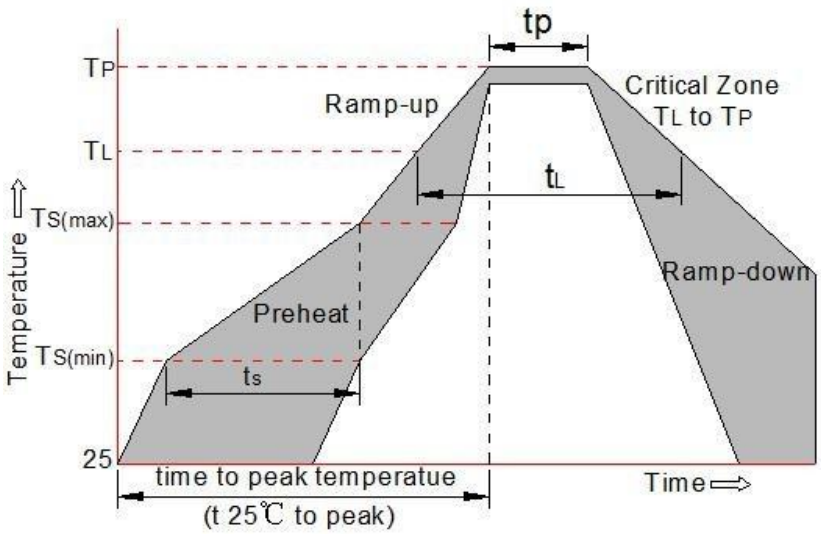


Recommened Mounting Pad Layout Unit:mm

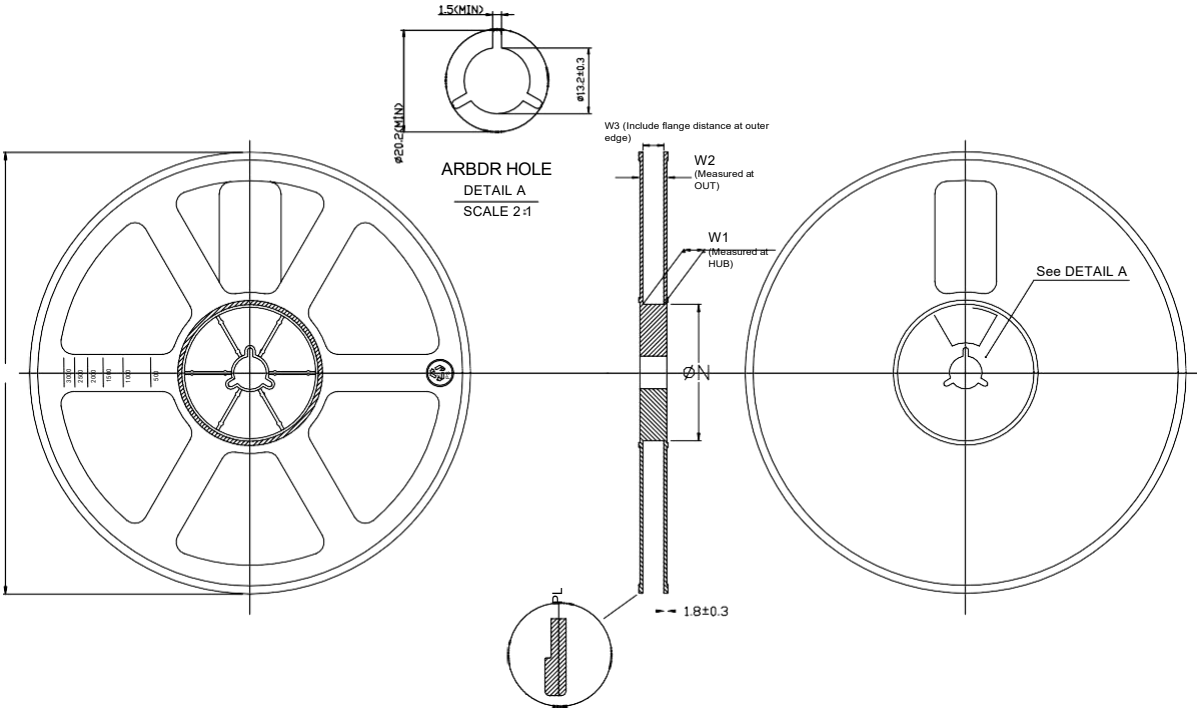


Soldering Parameters

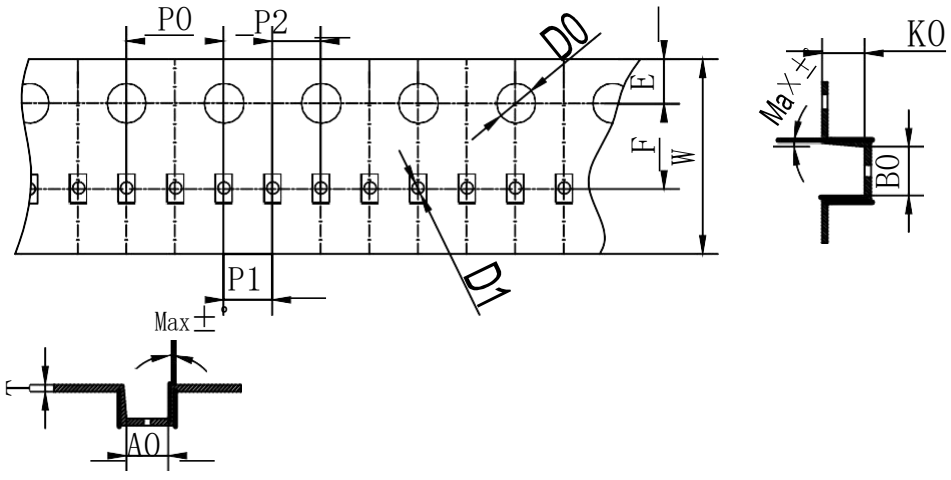
Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L) (Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃



Reel Dimmension&Tape Dimension (mm)



PRODUCT SPECIFICATIONS					
TAPE WIDTH	ØA (±1.0)	ØN (±1.0)	**W1** (+2.0/-0.0)	W2 (MAX)	**W3** (+3.0/-0.0)
MM	180	53.6	8.4	14.4	8.4



SYMBOL	A0	B0	K0	P0	P1	P2
SPEC	0.68±0.0±	1.1±±0.0±	0.63±0.0±	4.00±0.10	².00±0.0±	².00±0.0±
SYMBOL	T	E	F	D0	D1	W
SPEC	0.²0±0.03	1.F±±0.10	3.±0±0.0±	1.±±±0.0±	0.50 $^{+0.1}_{-0}$	8.00 $^{+0.2}_{-0.1}$