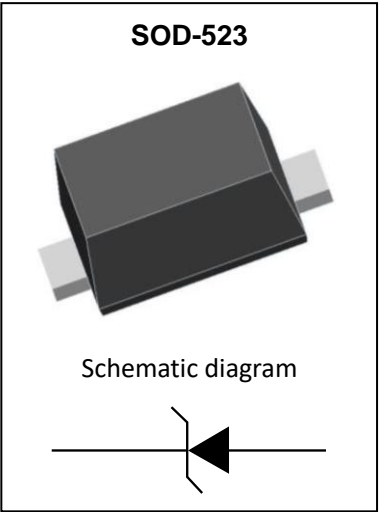


### Product Summary

The GESD7V0D51 is designed to protect voltage sensitive electronic components from ESD and other transients. Excellent clamping capability, low leakage, low capacitance, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium. Because of its small size, it is suited for use in digital cameras, cellular phones, MP3 players and many other portable applications where board space is at a premium.

### Feature

- Low reverse stand-off voltage: 7V
- 12A Peak pulse current per line ( $t_p = 8/20\mu s$ )
- SOD 523 package
- Unidirectional configurations
- Response time is typically  $< 1$  ns
- Protect one I/O or power line
- Low clamping voltage
- RoHS compliant
- Transient protection for data lines to IEC61000-4-2(ESD) $\pm 15kV$ (air),  $\pm 8kV$ (contact)



### Application

- Computers and peripherals
- Portable electronics
- FireWire
- Audio and video equipment
- Cellular handsets and accessories
- Other electronics equipment communication systems

### Marking:



Front Side

ZH=Device Code

## Absolute Maximum Ratings ( $T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
IEC 61000-4-2 ESD Voltage Air Model	$V_{\text{ESD}}^{1)}$	$\pm 30$	KV
IEC 61000-4-2 ESD Voltage Contact Model		$\pm 30$	
JESD22-A114-B ESD Voltage Per Human Body Model		$\pm 16$	
ESD Voltage Machine Model		$\pm 0.4$	
Peak Pulse Power	$P_{\text{PP}}$	180	W
Peak Pulse Current	$I_{\text{PP}}^{2)}$	12	A
Lead Solder Temperature – Maximum (10 Second Duration)	$T_{\text{L}}$	260	$^{\circ}\text{C}$
Junction Temperature	$T_{\text{j}}$	125	$^{\circ}\text{C}$
Storage Temperature	$T_{\text{stg}}$	-45~ +125	$^{\circ}\text{C}$

- 1) Device stressed with ten non-repetitive ESD pulses.
- 2) Non-repetitive current pulse 8/20 $\mu\text{s}$  exponential decay waveform according to IEC61000-4-5.

## ESD standards compliance

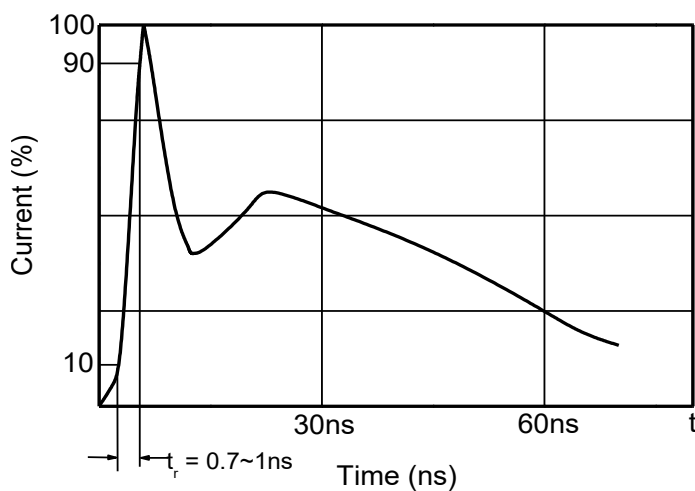
### IEC61000-4-2 Standard

Contact Discharge		Air Discharge	
Level	Test Voltage kV	Level	Test Voltage kV
1	2	1	2
2	4	2	4
3	6	3	8
4	8	4	15

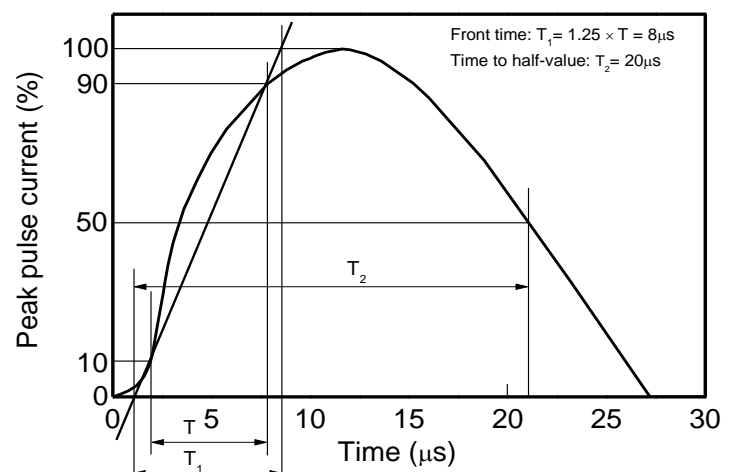
### JESD22-A114-B Standard

ESD Class	Human Body Discharge V
0	0~249
1A	250~499
1B	500~999
1C	1000~1999
2	2000~3999
3A	4000~7999
3B	8000~15999

### Contact discharge current waveform per IEC61000-4-2

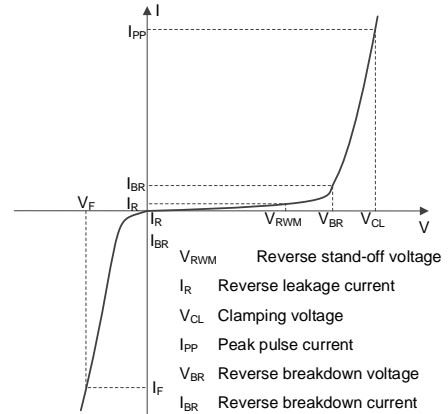


### 8/20 $\mu\text{s}$ waveform per IEC61000-4-5



## Electrical Parameter

Symbol	Parameter
V <sub>C</sub>	Clamping Voltage @ I <sub>PP</sub>
I <sub>PP</sub>	Peak Pulse Current
V <sub>BR</sub>	Breakdown Voltage @ I <sub>T</sub>
I <sub>T</sub>	Test Current
I <sub>R</sub>	Reverse Leakage Current @ V <sub>RWM</sub>
V <sub>RWM</sub>	Reverse Standoff Voltage



V-I characteristics for a Uni-directional TVS

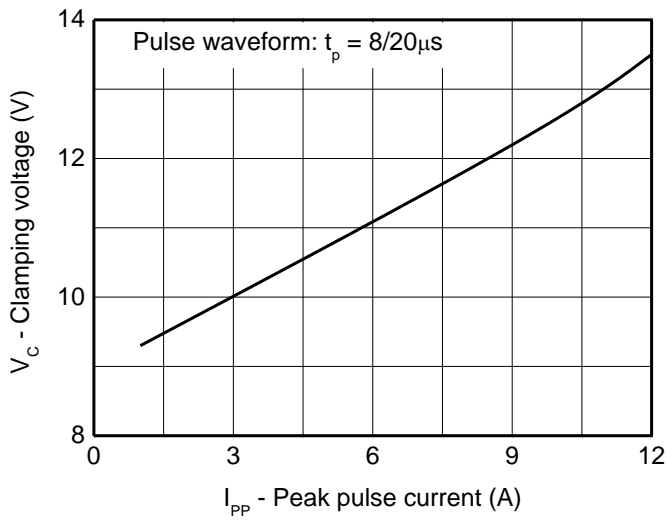
## Electrical Characteristics (T<sub>a</sub>=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reverse stand-off voltage	V <sub>RWM</sub> <sup>1)</sup>				7	V
Reverse leakage current	I <sub>R</sub>	V <sub>RWM</sub> =7V			1	μA
Breakdown voltage	V <sub>BR</sub>	I <sub>T</sub> =1mA	7.5		9.1	V
Clamping voltage	V <sub>C</sub> <sup>2)</sup>	I <sub>PP</sub> =12A		13.5	15	V
Junction capacitance	C <sub>J</sub>	V <sub>R</sub> =0V, f=1MHz		80	110	pF

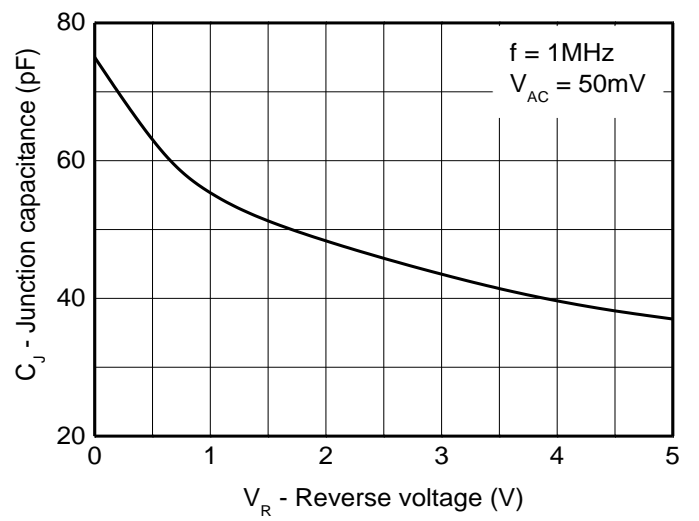
- 1) Other voltages available upon request.
- 2) Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5

**Typical Characteristics**

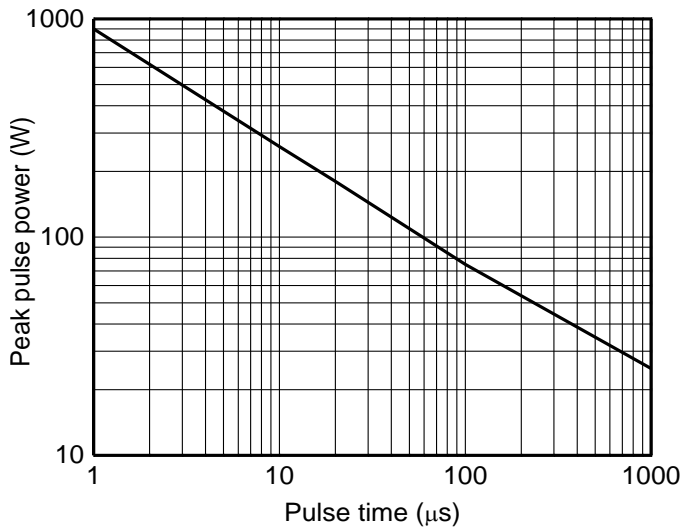
**$V_C$  vs.  $I_{PP}$**



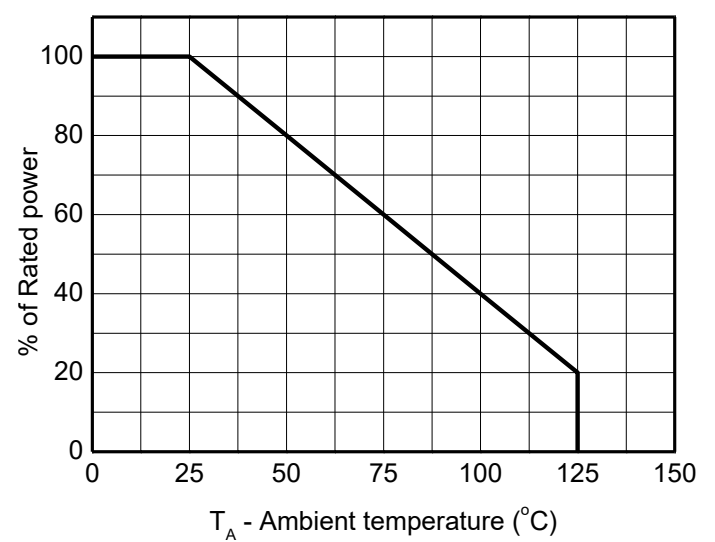
**Capacitance Characteristics**

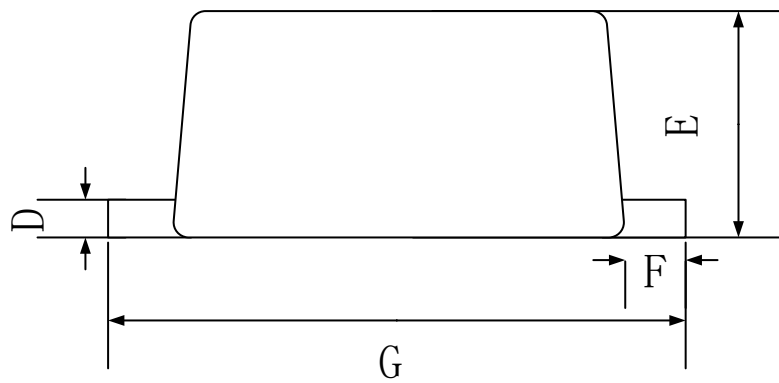
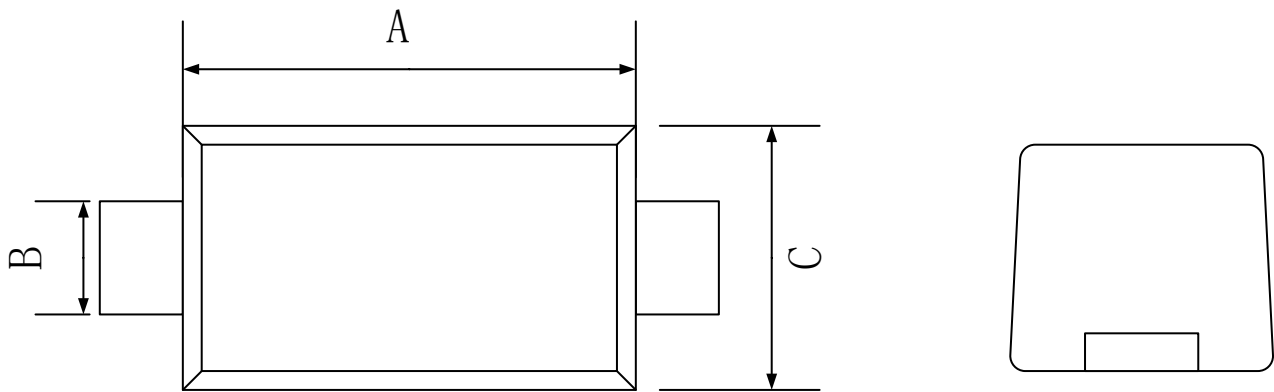


**Peak pulse power vs. Pulse time**



**Power derating vs. Ambient temperature**



**SOD-523 Package Outline Dimensions**


Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	1.10	1.20	1.30
B	0.25	0.30	0.35
C	0.75	0.80	0.85
D	0.08	0.10	0.15
E	0.45	0.65	0.70
F	0.20 REF		
G	1.50	1.60	1.70