

Product Summary

The GESDU3V3AG1 is designed to protect voltage sensitive electronic components from ESD and other transients. Excellent clamping capability, low leakage, low capacitance, and fast response time provide best in class protection on designs that are exposed to ESD.

The combination of small size, low capacitance, and high level of ESD protection makes them a flexible solution for applications such as HDMI, Display Port TM, and MDDI interfaces. It is designed to replace multiplayer varistors (MLV) in consumer equipment applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

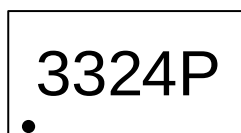
Feature

- Low reverse stand-off voltage: 3.3V
- Low reverse clamping voltage
- Low leakage current
- Fast response time
- JESD22-A114-B ESD Rating of class 3B per human body model
- IEC 61000-4-2 Level 4 ESD protection

Application

- USB 2.0 and USB 3.0
- HDMI 1.3 and HDMI 1.4
- Computers and peripherals
- Portable electronics
- High speed data lines
- Audio and video equipment
- Cellular handsets and accessories
- Other electronics equipment communication systems

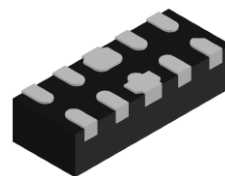
Marking:



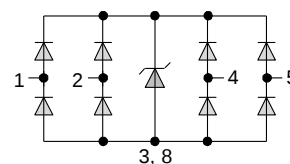
Front Side

3324P=Device Code

DFN2510-10L



Schematic diagram



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

Parameter	Symbol	Value	Unit
IEC 61000-4-2 ESD Voltage Air Model	$V_{\text{ESD}}^{1)}$	± 20	kV
IEC 61000-4-2 ESD Voltage Contact Model		± 20	
JESD22-A114-B ESD Voltage Per Human Body Model		± 16	
ESD Voltage Machine Model		± 0.4	
Peak Pulse Power	$P_{\text{PP}}^{2)}$	80	W
Peak Pulse Current	$I_{\text{PP}}^{2)}$	4	A
Lead Solder Temperature – Maximum (10 Second Duration)	T_L	260	$^{\circ}\text{C}$
Junction Temperature	T_j	150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-55~ +150	$^{\circ}\text{C}$

- 1) Device stressed with ten non-repetitive ESD pulses.
- 2) Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.

ESD standards compliance

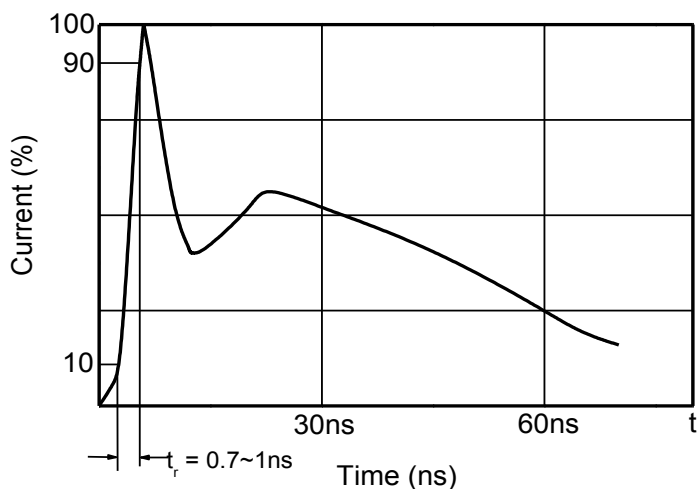
IEC61000-4-2 Standard

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

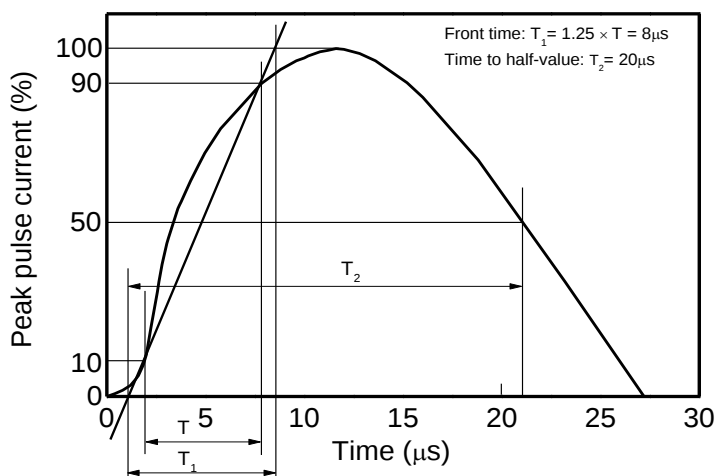
JESD22-A114-B Standard

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

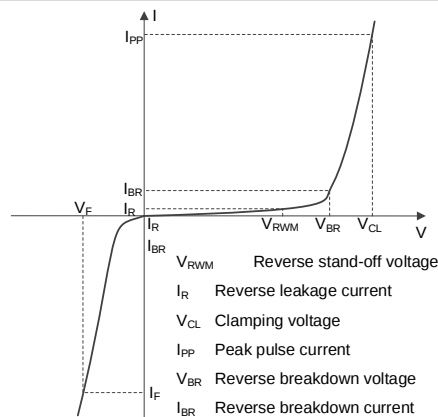


8/20 μs waveform per IEC61000-4-5



Electrical Parameter

Symbol	Parameter
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Peak Pulse Current
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_R	Reverse Leakage Current @ V_{RWM}
V_{RWM}	Reverse Standoff Voltage



V-I characteristics for a Uni-directional TVS

Electrical Characteristics ($T_a=25^\circ\text{C}$ unless otherwise specified)

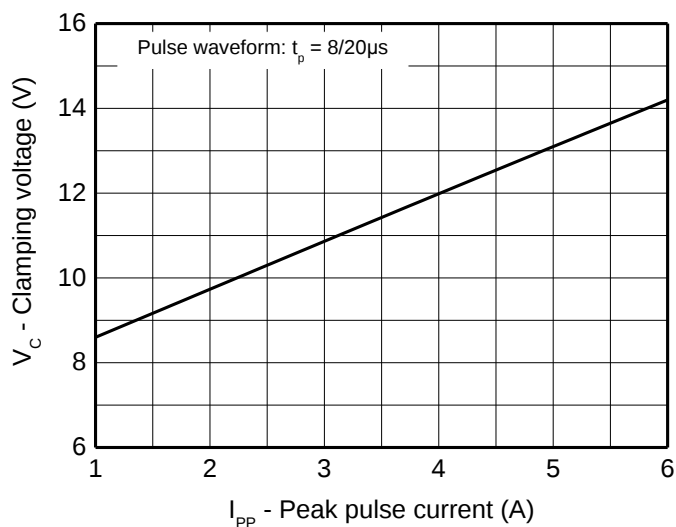
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reverse standoff voltage	$V_{RWM}^{1)}$				3.3	V
Reverse leakage current	I_R	$V_{RWM}=3.3\text{V}$			1	μA
Breakdown voltage	V_{BR}	$I_T=1\text{mA}$	4			V
Clamping voltage	$V_C^{2)}$	$I_{PP}=1\text{A}$		8.6	10.2	V
		$I_{PP}=4\text{A}$		12	18	V
Dynamic resistance	R_{dyn}	Positive transient(8/20 μs)		0.64		Ω
		Negative transient(8/20 μs)		0.59		Ω
Channel Input Capacitance	C_{IN}	$V_{IN}=0\text{V}, f=1\text{MHz}, I/O \text{ to GND}$		0.45	0.6	pF
		$V_{IN}=0\text{V}, f=1\text{MHz}, \text{between I/O}$		0.3	0.4	

1) Other voltages available upon request.

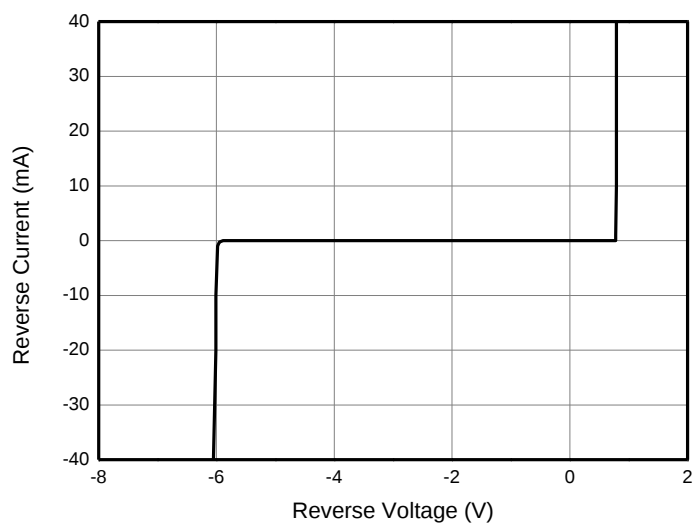
2) Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5

Typical Characteristics

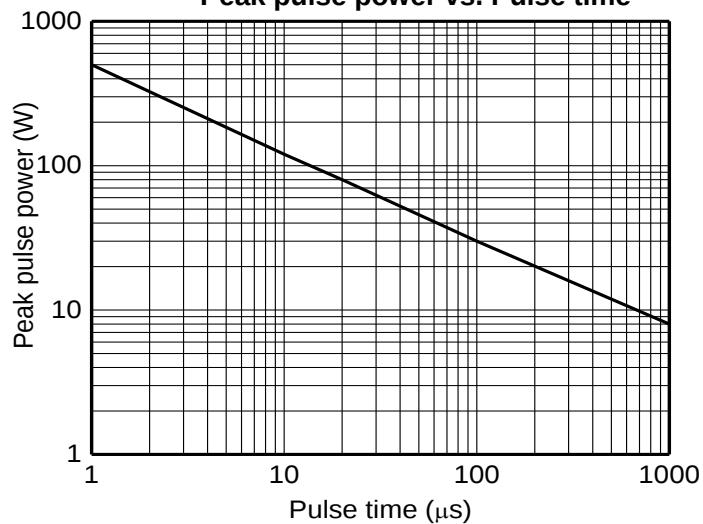
V_C vs. I_{PP}



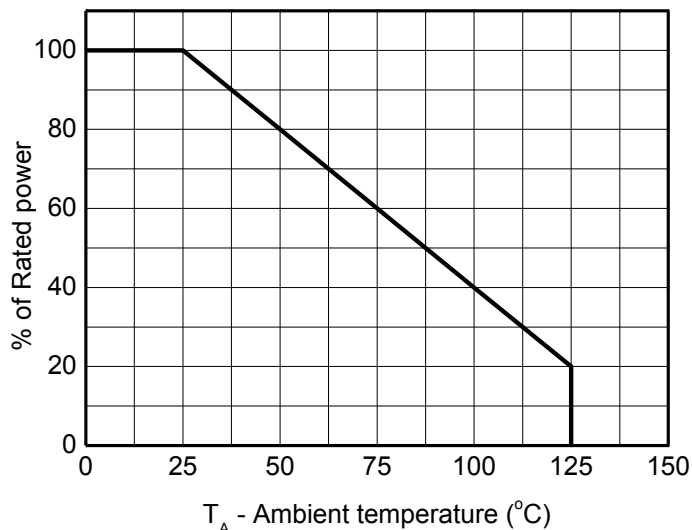
I-V Curve



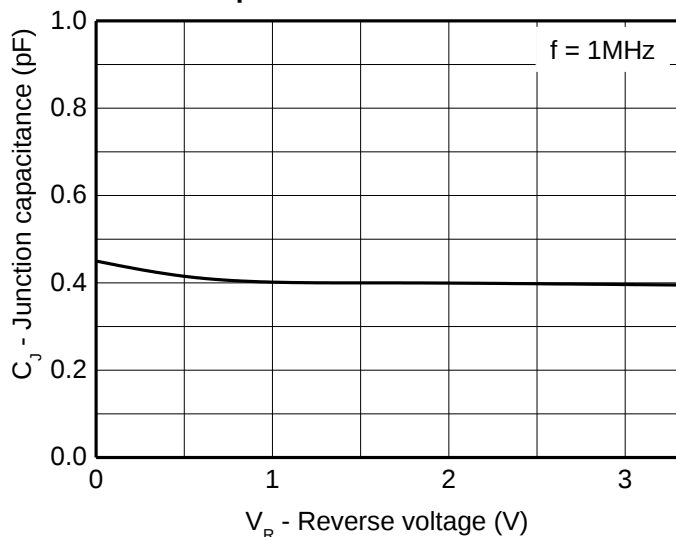
Peak pulse power vs. Pulse time

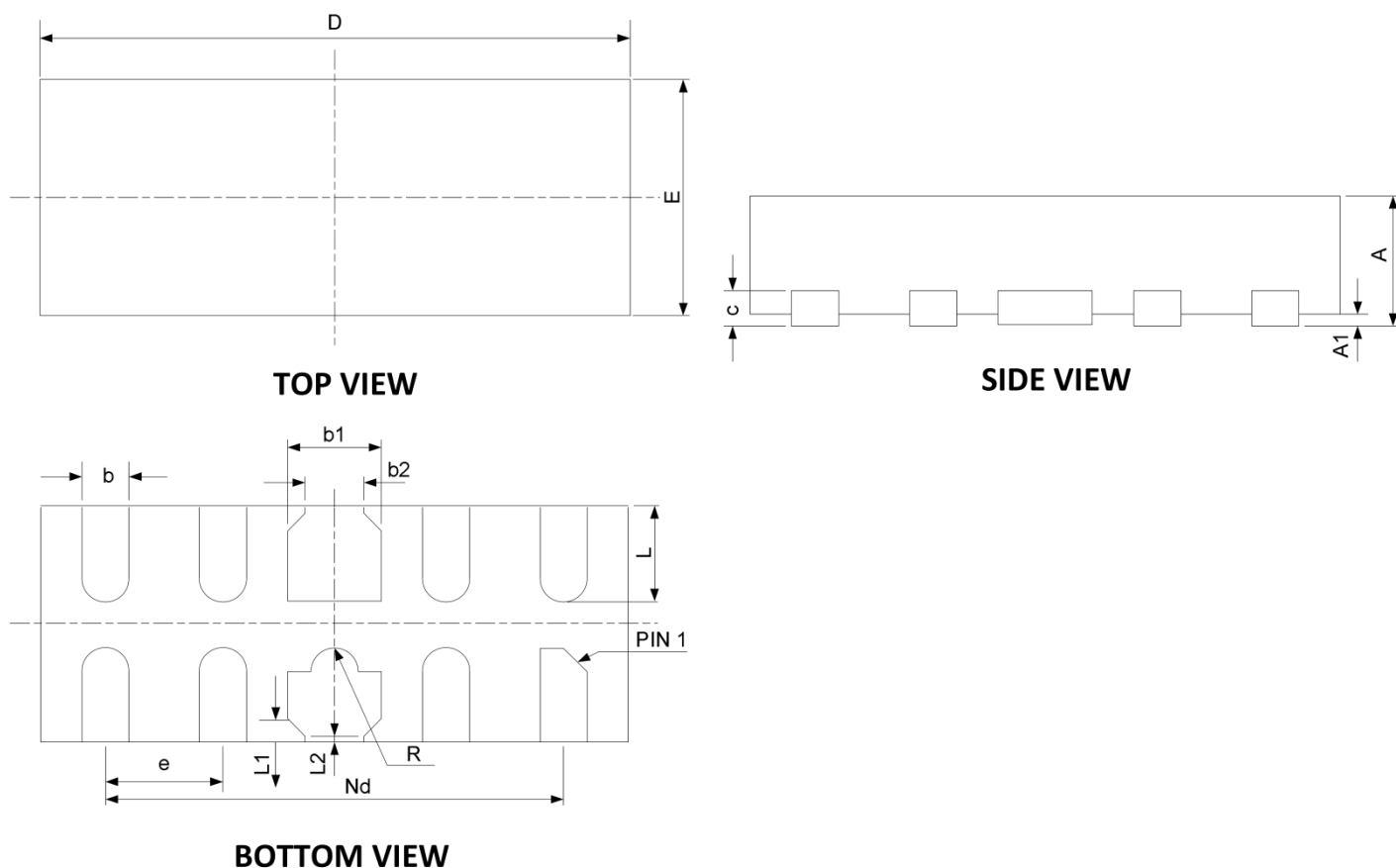


Power derating vs. Ambient temperature



Capacitance Characteristics



DFN2510-10L Package Outline Dimensions


SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.45	0.5	0.65	0.018	0.02	0.022
A1	0	0.02	0.05	0	0.001	0.002
b	0.15	0.2	0.25	0.006	0.008	0.01
b1	0.30	0.4	0.50	0.014	0.016	0.018
b2	0.2	0.25	0.3	0.008	0.01	0.012
c	0.1	0.15	0.2	0.004	0.006	0.008
D	2.45	2.5	2.55	0.098	0.1	0.102
e	0.50BSC			0.020BSC		
Nd	2.00BSC			0.080BSC		
E	0.95	1	1.05	0.038	0.04	0.042
L	0.35	0.4	0.45	0.014	0.016	0.018
L1	0.075REF			0.003REF		
L2	0.050REF			0.002REF		
h	0.08	0.12	0.15	0.003	0.005	0.006
R	0.05	0.1	0.15	0.002	0.004	0.006