

Product Summary

The GESDX70VG34 consists of four, low capacitance, rail-to-rail diodes that provide protection against ESD and lightning surge events. These robust diodes can safely absorb up to 32A ($t_p=8/20\mu s$) and repetitive ESD strikes at the maximum level (Level 4) specified in the IEC 61000-4-2 international standard without performance degradation. Its low loading capacitance makes it ideal for protecting high-speed data lines such as VDSL and VDSL2.

It has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from overvoltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients).

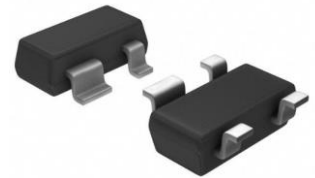
Feature

- Low capacitance
- Protects two I/O lines
- Low leakage current
- Response Time is $< 1\text{ ns}$
- Low capacitance ($< 10\text{pF}$) for high-speed interfaces
- Solid-state silicon avalanche technology
- Device Meets MSL 1 Requirements
- ROHS compliant

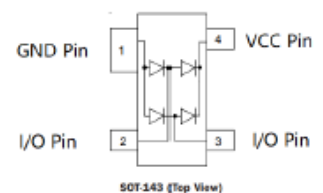
Application

- Comp xDSL
- USB 1.1/2.0/OTG
- IEEE 1394 Firewire Ports
- Projection TV Monitors and Flat Panel Displays
- Notebook Computers
- Set Top Box
- Projection TV users and peripherals

SOT-143



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	$V_{\text{ESD}}^{1)}$	± 30	kV
IEC 61000-4-2 ESD Voltage Contact Model		± 30	
JESD22-A114-B ESD Voltage Per Human Body Model		± 16	
ESD Voltage Machine Model		± 0.4	
Peak Pulse Power	$P_{\text{PP}}^{2)}$	300	W
Peak Pulse Current	$I_{\text{PP}}^{2)}$	25	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

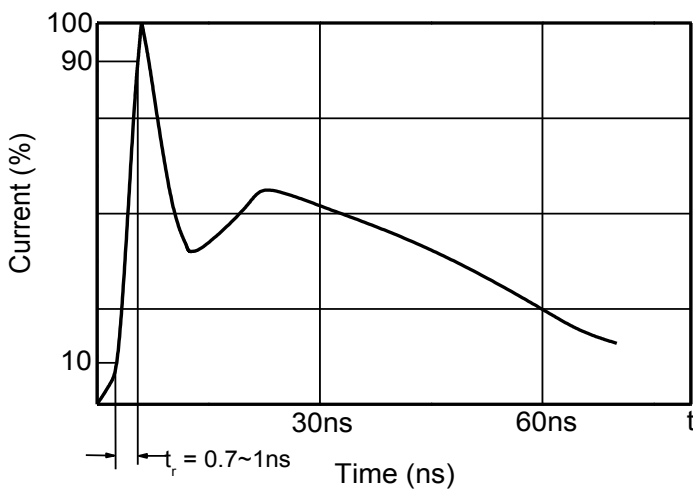
IEC61000-4-2 Standard

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

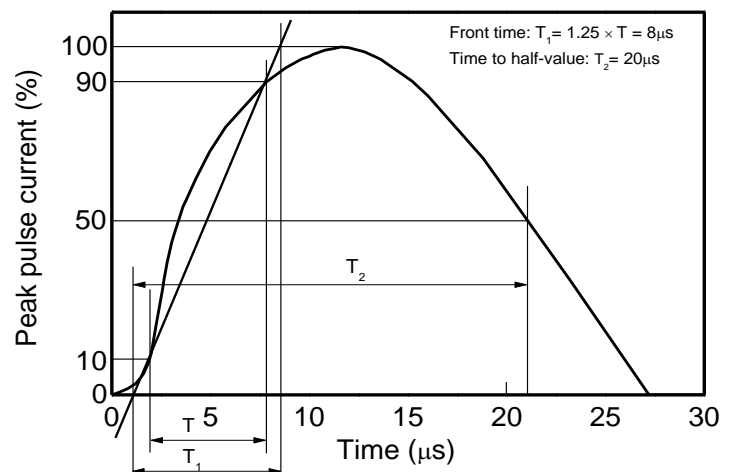
JESD22-A114-B Standard

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

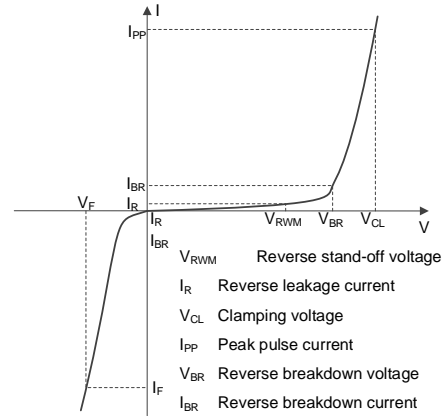


8/20 μs waveform per IEC61000-4-5



Electrical Parameter

Symbol	Parameter
V _C	Clamping Voltage @ I _{PP}
I _{PP}	Peak Pulse Current
V _{BR}	Breakdown Voltage @ I _{BR}
I _{BR}	Test Current
I _R	Reverse Leakage Current @ V _{RWM}
V _{RWM}	Reverse Standoff Voltage



V-I characteristics for a Uni-directional TVS

Electrical Characteristics (Ta=25°C unless otherwise specified)

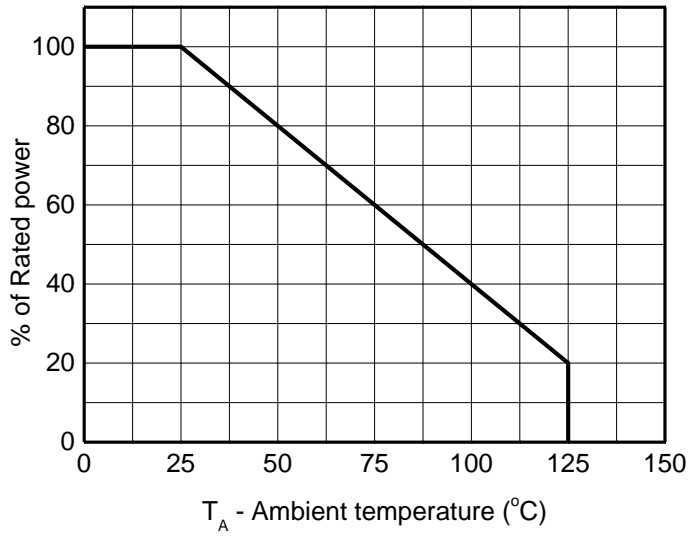
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reverse Standoff Voltage	V _{RWM} ¹⁾	Any I/O to Ground			70	V
Reverse Leakage Current	I _R	V _{RWM} =5V, Any I/O to GND			2	uA
Breakdown Voltage	V _{BR}	I _T =1mA, Any I/O to GND	70			V
Forward Voltage	V _F	I _F =15mA		0.85	1.2	V
Forward Clamping Voltage	V _{FC} ²⁾	I _{PP} =1A, any I/O to GND		1.1		V
		I _{PP} =20A, any I/O to GND		10.5	15	V
Peak Pulse Current	I _{PP}	t _p = 8/20μs			25	A
Channel Input Capacitance	C _{IN}	V _{IN} =0V, f=1MHz, I/O to GND		2.5	4	pF
		V _{IN} =0V, f=1MHz, I/O to I/O		5	10	pF

1) Other voltages available upon request.

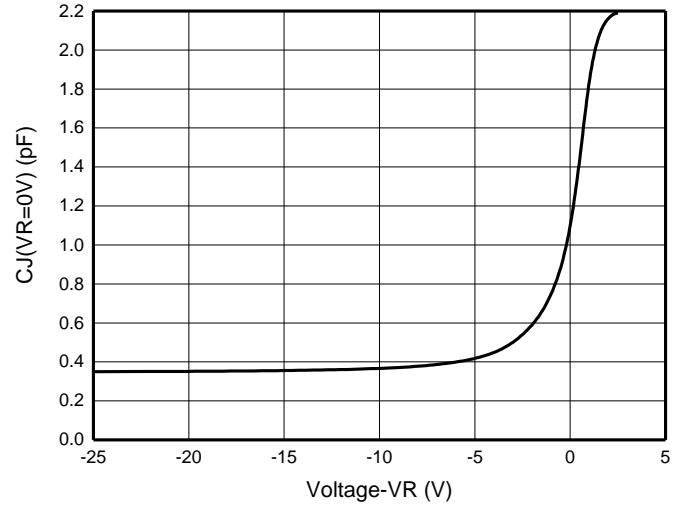
2) Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5

Typical Characteristics

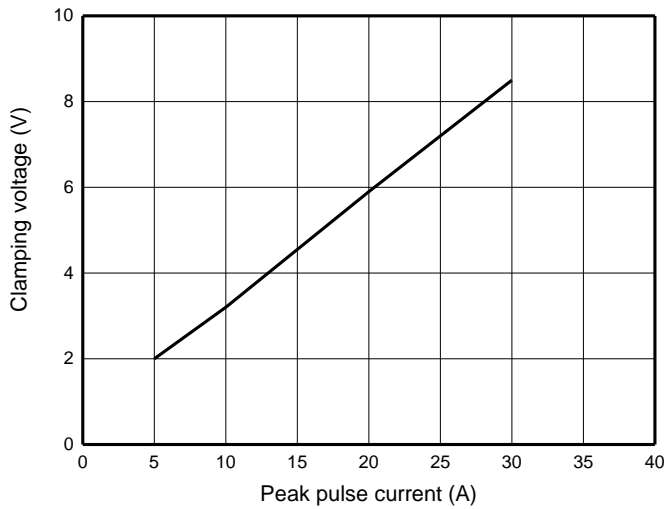
Power derating vs. Ambient temperature



Junction Capacitance vs. Reverse Voltage



V_C vs. I_{PP}

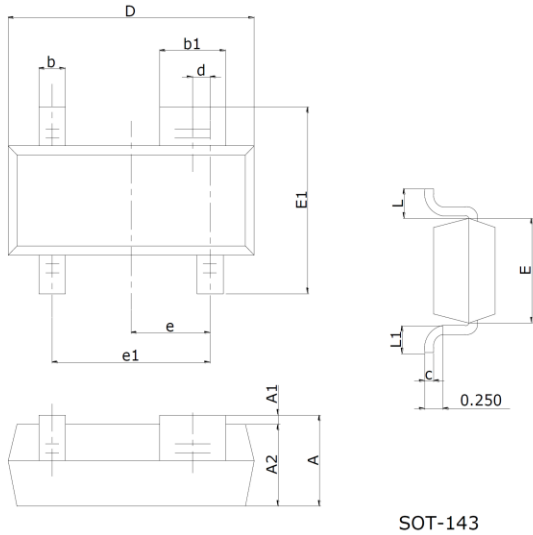


SOT-143 Package Information

Mechanical Data

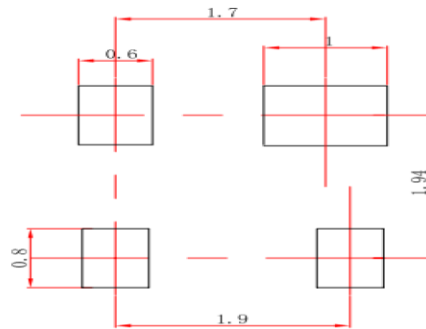
Case: SOT-143

Case Material: Molded Plastic. UL Flammability

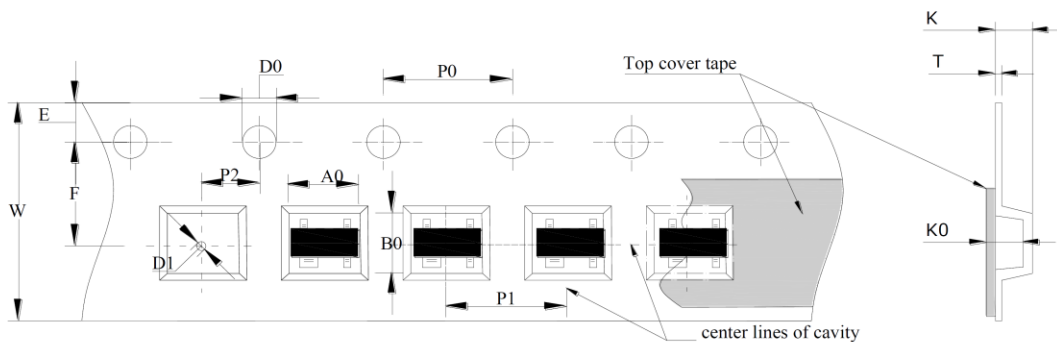


DIM	Millimeters		Inches	
	Min	Max	MIN	MAX
A	0.90	1.15	0.035	0.045
A1	0.00	0.10	0.000	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
b 1	0.75	0.90	0.030	0.035
c	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
d	0.20TYP		0.008TYP	
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.10
e	0.95TYP		0.037TYP	
e1	1.80	2.00	0.071	0.079
L	0.55REF		0.022REF	
L1	0.30	0.50	0.012	0.020

Recommended Pad outline



SOT-143 Reel Dim



Package	Chip Size	Pocket Size B0×A0×K0(mm)	Tape Width	Reel Diameter	Quantity Per Reel	P0	P1
SOT-143	2.9×2.40×1.10	3.05×2.60×1.20	8mm	178mm(7")	3000	4mm	4mm
D0	D1	E	F	K	T	W	
1.5mm	1.0mm	1.75mm	3.5mm	1.00mm	0.2mm	8mm	