GESDBNKPC4

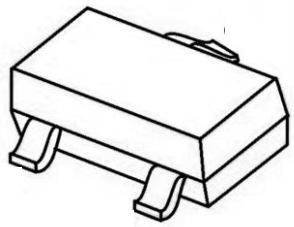
Asymmetrical TVS Diode for Extended Common-Mode RS-485

Product Summary

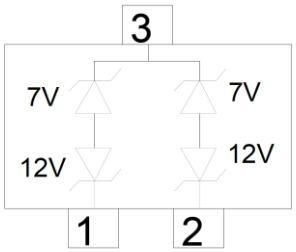
The GESDBNKPC4 replaces four discrete components by integrating two 12V and two 7V TVS diodes in a single package. The integrated design aids in reducing voltage over-shoot associated with trace inductance. The low clamping voltage of the GESDBNKPC4 minimizes the stress on the protected transceiver. The GESDBNKPC4 transient voltage suppressor (TVS) diode is designed for asymmetrical (12V to -7V) protection in multi-point data transmission standard RS-485 applications.

The GESDBNKPC4 has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by ESD(electrostatic discharge), CDE (Cable Discharge Events),and EFT (electrical fast transients).

SOT-23



Schematic diagram



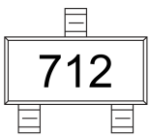
Feature

- ESD protects two +12V to -7V linesLow capacitance
- Low reverse clamping voltage
- Low leakage current
- Fast response time
- Device Meets MSL 1 Requirements
- ROHS compliant

Application

- Data lines
- Industrial Controls
- Computers and peripherals
- Portable instrumentation
- Peripherals
- Security systems
- Protection of RS-485 transceivers with extended common-mode range
- Automatic Teller Machines
- HFC systems
- Networks

Marking:



Front Side

712=Device Code

Absolute Maximum Ratings (T_a=25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
IEC 61000-4-2 ESD Voltage	Air Model	V_{ESD} 1)	±15	kV
JESD22-A114-B ESD Voltage	Contact Model		±15	
ESD Voltage	Per Human Body Model		±8	
ESD Voltage	Machine Model		±0.4	
Peak Pulse Power		P_{PP} 2)	400	W
Peak Pulse Current		I_{PP} 2)	12	A
Lead Solder Temperature − Maximum (10 Second Duration)		T_L	260	℃
Junction Temperature		T_j	-55~ +150	℃
Storage Temperature Range		T_{stg}	-55~ +150	℃

1) Device stressed with ten non-repetitive ESD pulses.

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

ESD Standards Compliance

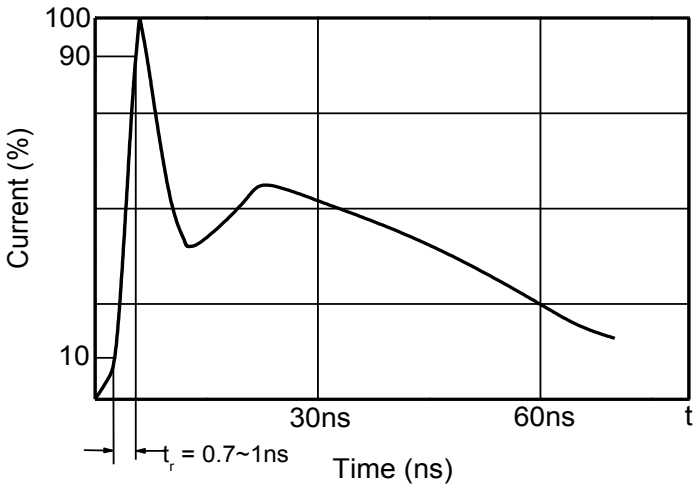
IEC61000-4-2 Standard

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

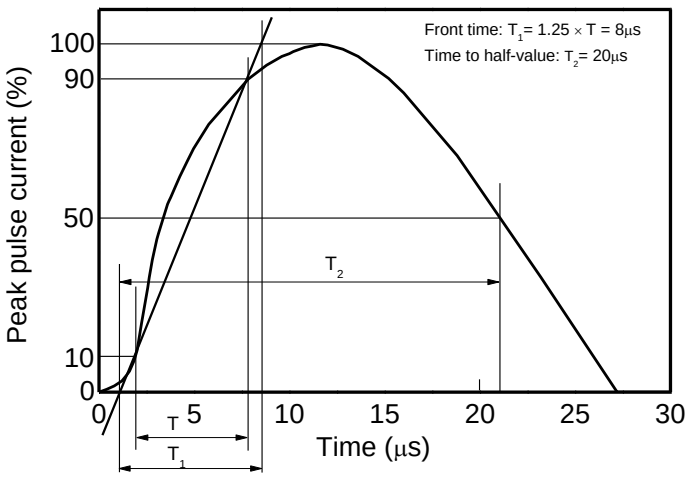
JESD22-A114-B Standard

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

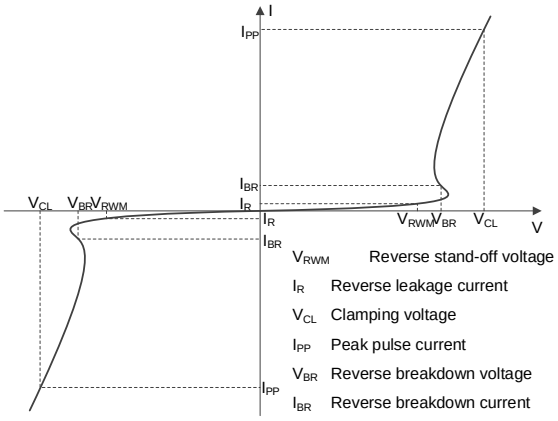


8/20μs waveform per IEC61000-4-5



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 Bi-directional TVS

Electrical Characteristics(T_a=25℃ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reverse stand-off voltage	V_{RWM}[1)]	Pin 1/2 to Pin 3			12	V
Reverse leakage current	I_R	V_R= 12V			1	μA
Breakdown voltage	V_{BR}	I_T=1mA	13.3			V
Clamping voltage	V_C[2)]	IPP=1A			18	V
		IPP=12A			28	V
Junction capacitance	C_J	V_R=0V,f=1MHz		50	65	pF

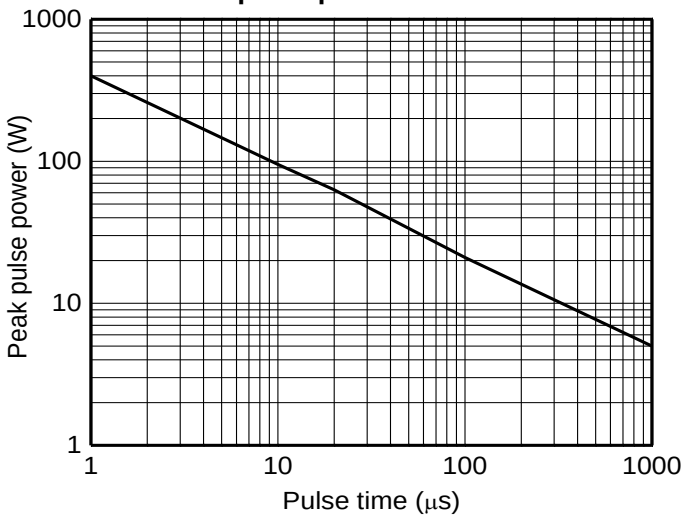
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reverse stand-off voltage	V_{RWM}[1)]	Pin 3 to Pin 1/2			7	V
Reverse leakage current	I_R	V_R= 7V			20	μA
Breakdown voltage	V_{BR}	I_T=1mA	7.5			V
Clamping voltage	V_C[2)]	IPP=1A			10	V
		IPP=12A			15	V
Junction capacitance	C_J	V_R=0V,f=1MHz		50	65	pF

1) Other voltages available upon request.

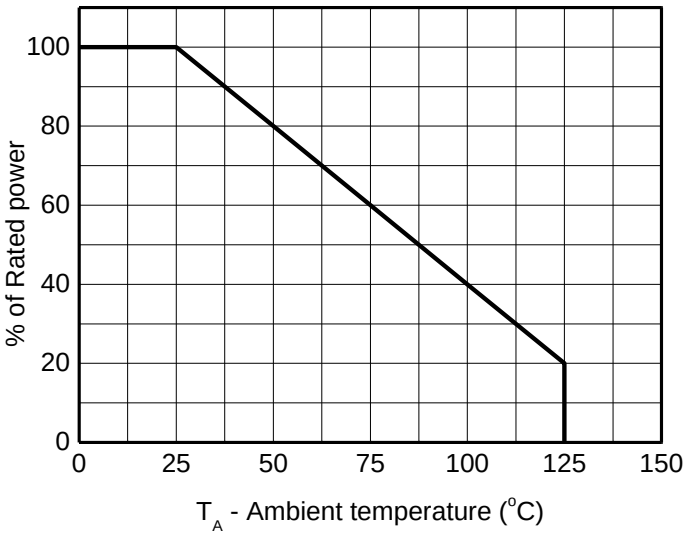
2) Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5.

Typical Characteristics

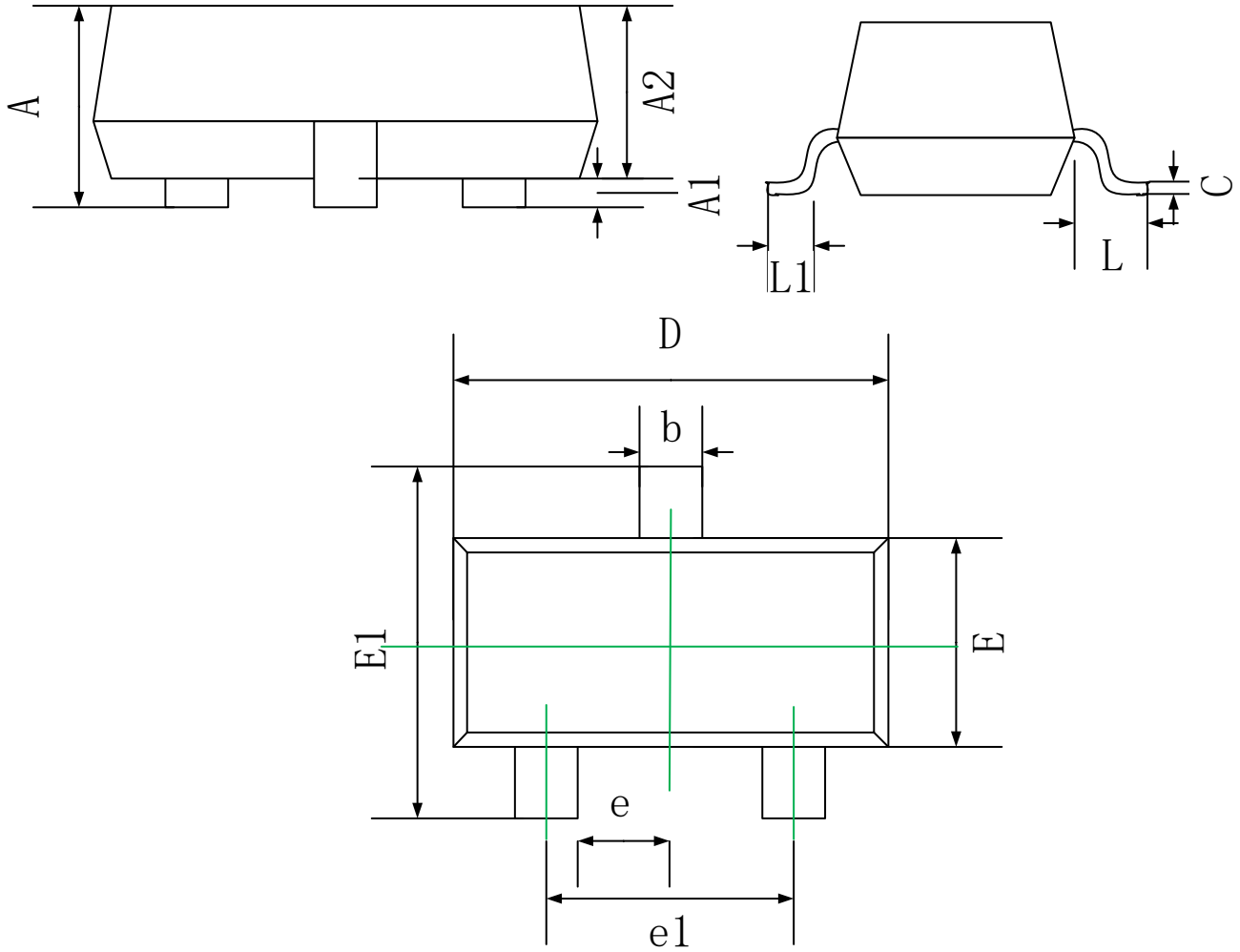
Peak pulse power vs. Pulse time



Power derating vs. Ambient temperature



SOT-23 Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.90	1.15
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	1.20	1.40
E1	2.25	2.55
e	0.95 REF.	
e1	1.80	2.00
L	0.55 REF.	
L1	0.30	0.50