GESDBNKPC4M

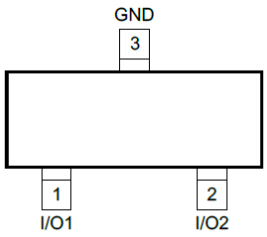
Asymmetrical TVS Diode for Extended Common-Mode RS-485

Product Summary

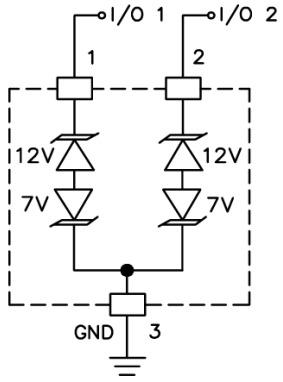
The GESDBNKPC4M features 400W (@8/20us) ofpower handing capability to accommodate the highertransient voltage levels which may be expected inextended common mode applications. This provideshigher equipment reliability and eliminates the "guesswork" required when using zener diodes that are notrated to handle such transient conditions.

The GESDBNKPC4M replaces four discrete components byintegrating two 12V and two 7V TVS diodes in a singlepackage. The integrated design aids in reducingvoltage over-shoot associated with trace inductance.The low clamping voltage of the GESDBNKPC4M minimizes thestress on the protected transceiver.

SOT-23



Schematic Diagram



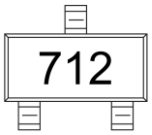
Feature

- Transient protection for each line according to
  IEC61000-4-2 (ESD): ±30kV (air discharge)
  IEC61000-4-2 (ESD): ±30kV (contact discharge)
  IEC61000-4-4 (EFT): 40A (5/50ns)
  IEC61000-4-5 (surge): 17A (8/20μs)
- low capacitance: C_J =75pF typ.
- Low leakage current
- Low clamping voltage
- Solid-state silicon technology

Application

- Security systems
- Protection of RS-485 transceivers with extended common-mode range
- Automatic Teller Machines
- HFC systems
- Networks

Marking:



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

Parameter		Symbol	Value	Unit
IEC 61000-4-2 ESD Voltage	Air Model	V_{ESD} 1)	±30	kV
	Contact Model		±30	
Peak Pulse Power		P_{PP} 2)	400	W
Peak Pulse Current		I_{PP} 2)	17	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

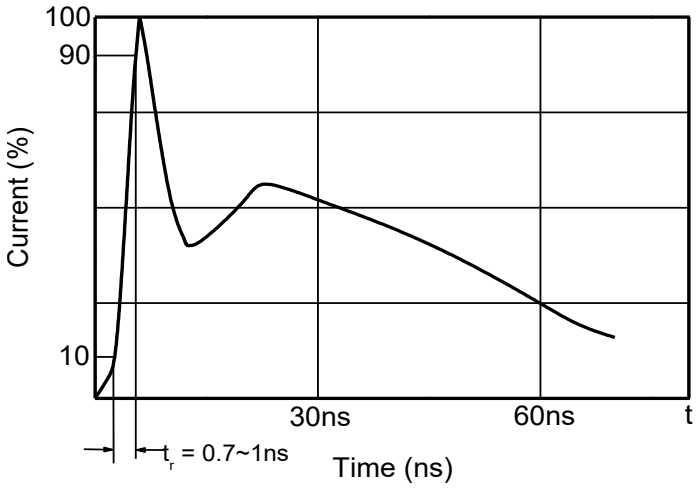
IEC61000-4-2 Standard

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

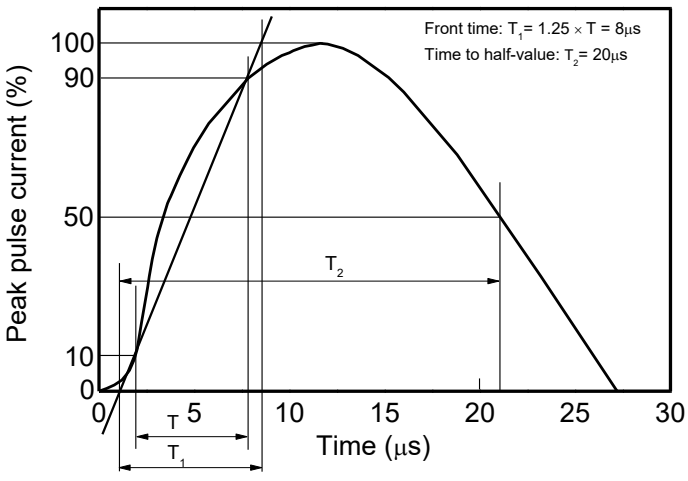
JESD22-A114-B Standard

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

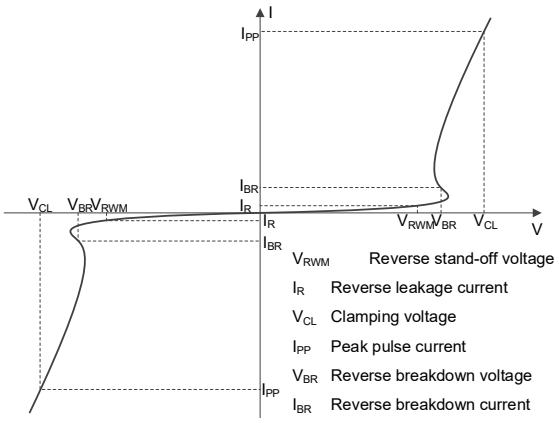


8/20μs waveform per IEC61000-4-5



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	nA
Breakdown Voltage	V_{BR}	I_T=1mA	13.3			V
Clamping Voltage	V_C[2)]	I_{PP}=5A			20	V
		I_{PP}=17A			26	V
Junction Capacitance	C_J	V_R=0V,f=1MHz			75	pF

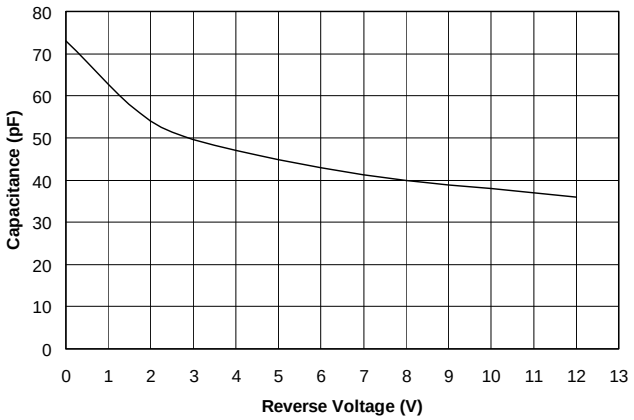
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reverse Stand-Off Voltage	V_{RWM}[1)]	Pin 3 to Pin 1/2			7	V
Reverse Leakage Current	I_R	V_R= 7V			20	nA
Breakdown Voltage	V_{BR}	I_T=1mA	7.5			V
Clamping Voltage	V_C[2)]	I_{PP}=5A			10	V
		I_{PP}=17A			12	V
Junction Capacitance	C_J	V_R=0V,f=1MHz			75	pF

Notes：

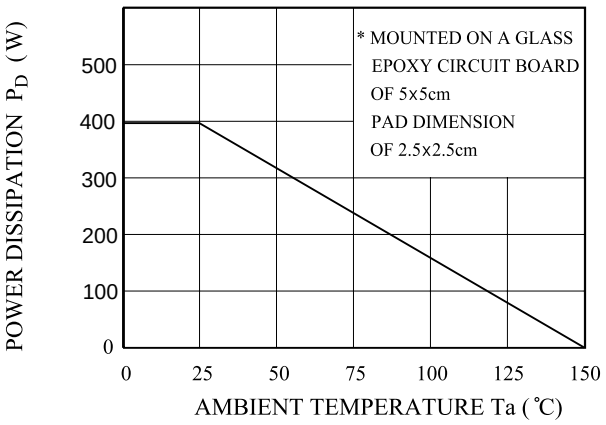
1) Other voltages available upon request.

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

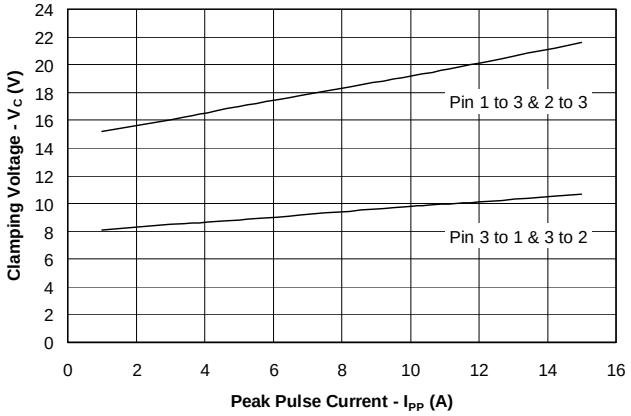
Typical Characteristics



Capacitance vs. Reverse Voltage

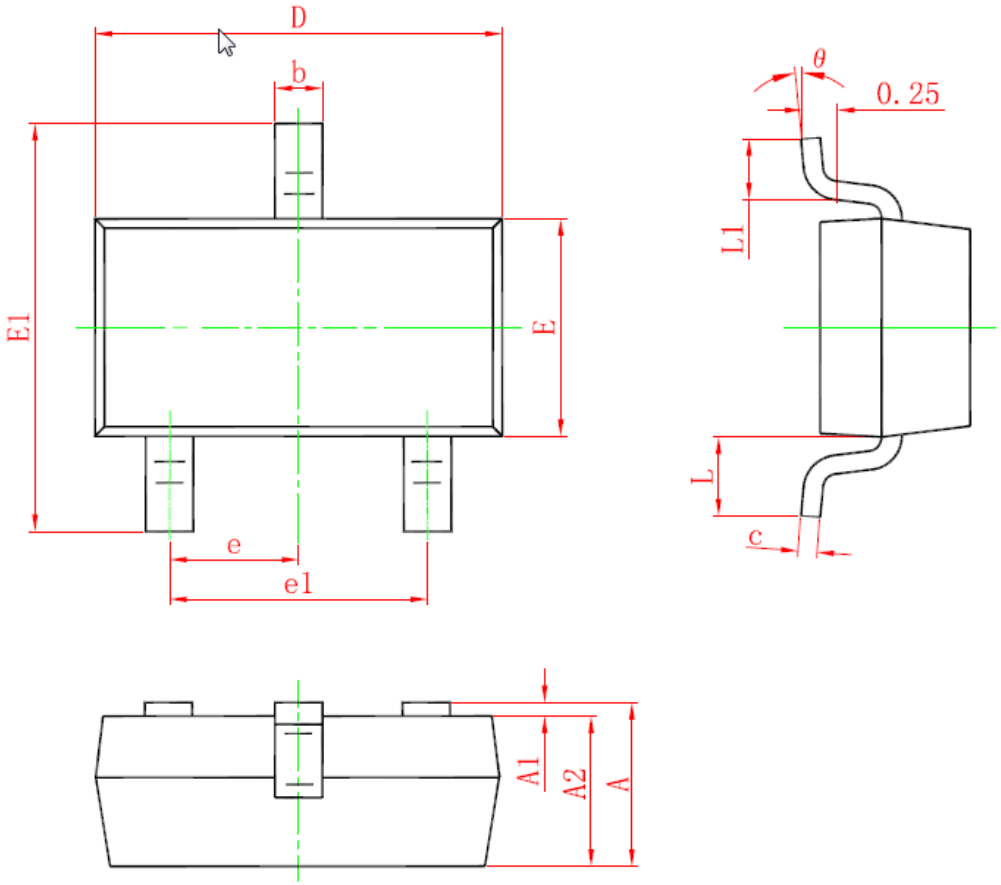


P_D - Ta



Clamping Voltage vs. Peak Pulse Current

SOT-23 Package Information



Symbol	Dimensions in millimeter		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Attention：

- GreenPower Electronics reserves the right to improve product design function and reliability without notice.
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