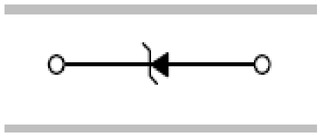
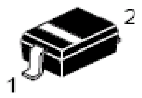
Single Line TVS Diode **GESDXVXD3**

FEATURES

- Suitable replacement for MLV'S ESD protection
- Low leakage current
- Low clamping voltage

Lead-free





SOD-323

APPLICATIONS

- Single line TVS diode
- Computers and peripherals
- Communication systerms
- Audio and video equipment

ORDERING INFORMATION

Type No.	Marking	Package Code
GESD3V3D3	N1	SOD-323
GESD5V0D3	5U	SOD-323
GESD12VD3	N3	SOD-323
GESD15VD3	N4	SOD-323
GESD24VD3	N5	SOD-323

MAXIMUM RATING @ Ta=25℃ unless otherwise specified

Parameter		**Symbol**	**Limits**	**Unit**
Reverse standoff voltage	GESD3V3D3	V_{RWM}	3.3	V
	GESD5V0D3		5	
	GESD12VD3		12	
	GESD15VD3		15	
	GESD24VD3		24	
Peak pulse power dissipation(t_p=8/20μs)	GESD3V3D3	P_{PP}	330	W
	GESD5V0D3		260	
	GESD12VD3		180	
	GESD15VD3		160	
	GESD24VD3		160	
Peak pulse current(t_p=8/20μs)	GESD3V3D3	I_{PP}	18	A
	GESD5V0D3		15	
	GESD12VD3		5	
	GESD15VD3		5	
	GESD24VD3		3	

Parameter		**Symbol**	**Limits**	**Unit**
ESD (electrostatic discharge capability)	GESD3V3D3 GESD5V0D3 GESD12VD3 GESD15VD3 GESD24VD3	V_{PP}	30 30 30 30 23	kV
Junction temperature		T_j	150	℃
Storage and operating temperature		T_{STG} T_{amb}	-65 to+150	℃

ELECTRICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

Parameter	**Symbol**		**Conditions**	**Min**	**Typ**	**Max**	**Units**
Reverse breakdown voltage	V_{BR}		I_R=5mA				V
			GESD3V3D3	5.2	5.6	6.0	
			GESD5V0D3	6.4	6.8	7.2	
			GESD12VD3	14.7	15.0	15.3	
			GESD15VD3	17.6	18.0	18.4	
			GESD24VD3	26.5	27	27.5	
Reverse leakage current	I_R		V_{RWM}=3.3V			2	μA
			V_{RWM}=5V			1	μA
			V_{RWM}=12V			50	nA
			V_{RWM}=15V			50	nA
			V_{RWM}=24V			50	nA
Diode capacitance	C_d		V_R=0V,f=1MHz				pF
			GESD3V3D3		207	300	
			GESD5V0D3		152	200	
			GESD12VD3		38	75	
			GESD15VD3		32	70	
			GESD24VD3		23	50	
Clamping voltage	$V_{(CL)}$	GESD3V3D	I_{PP}=1A			7	V
			I_{PP}=18A			20	
		GESD5V0D3	I_{PP}=1A			9	
			I_{PP}=15A			20	
		GESD12VD3	I_{PP}=1A			19	
			I_{PP}=5A			35	
		GESD15VD3	I_{PP}=1A			23	
			I_{PP}=5A			40	
		GESD24VD3	I_{PP}=1A			36	
			I_{PP}=3A			70	

Differential resistance	R_{diff}	I_R=1mA I_R=1mA I_R=1mA I_R=1mA I_R=0.5mA			400 80 200 225 300	Ω

TYPICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

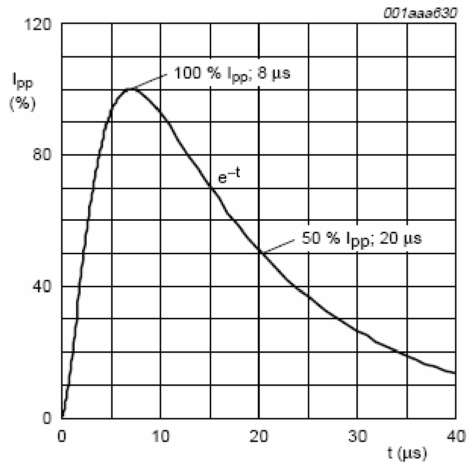


Fig 1. 8/20 us pulse waveform according to IEC 61000-4-5.

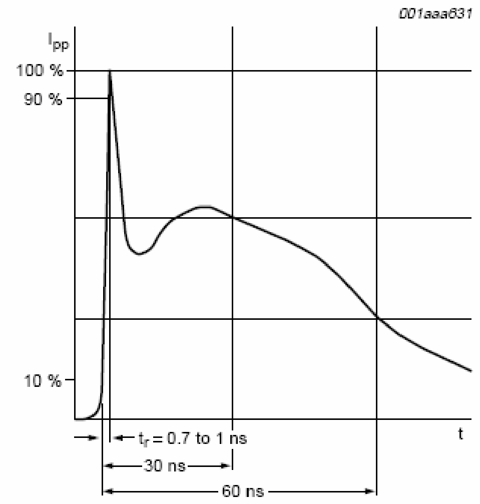
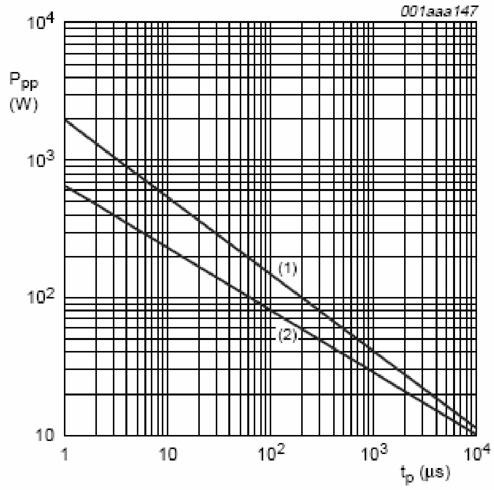


Fig 2. Electro Static Discharge(ESD) pulse waveform according to IEC 61000-4-2.



T_{amb} = 25 °C

t_p = 8/20 µs exponentially decay waveform, see **Figure 1**

(1) PESD3V3S1UB and PESD5V0S1UB.

(2) PESD12VS1UB, PESD15VS1UB; PESD24VS1UB.

Fig 3. Peak pulse power dissipation as a function of pulse time;typical values.

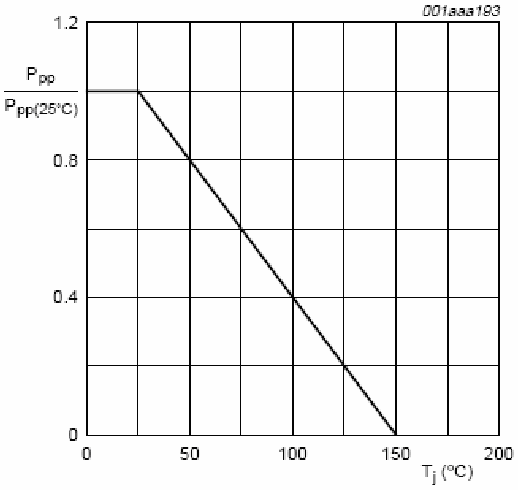
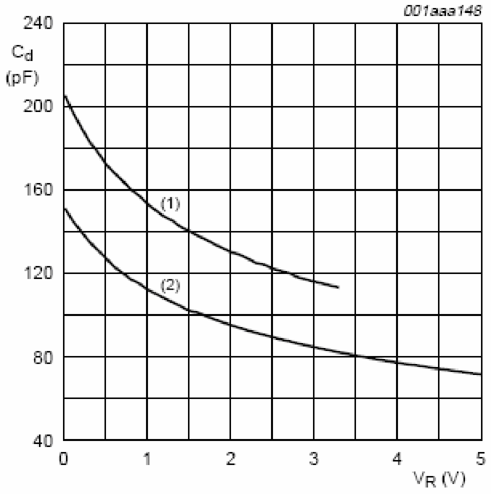


Fig 4. Relative variation of peak pulse power as a function of junction temperature;typical values.

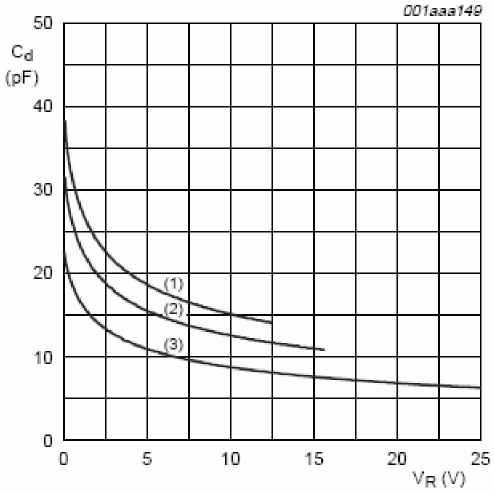


f = 1 MHz; T_{amb} = 25 °C

(1) PESD3V3S1UB.

(2) PESD5V0S1UB.

Fig 5. Diode capacitance as a function of revese voltage;typical values.



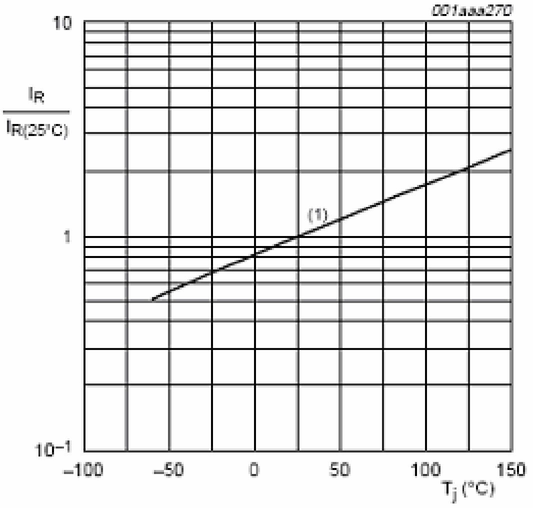
f = 1 MHz; T_{amb} = 25 °C

(1) PESD12VS1UB.

(2) PESD15VS1UB.

(3) PESD24VS1UB.

Fig 6. Diode capacitance as a function of reverse voltage;typical values.

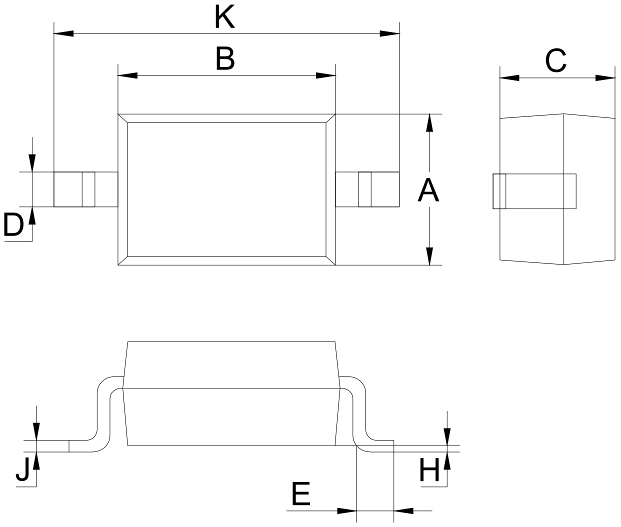


(1) PESD3V3S1UB; V_{RWM} = 3.3 V.
PESD5V0S1UB; V_{RWM} = 5 V.
I_R is less than 10 nA at 150 °C for:
PESD12VS1UB; V_{RWM} = 12 V.
PESD15VS1UB; V_{RWM} = 15 V.
PESD24VS1UB; V_{RWM} = 24 V.

Fig 7. Relative variation of reverse leakage current as a function of junction temperature;typical values.

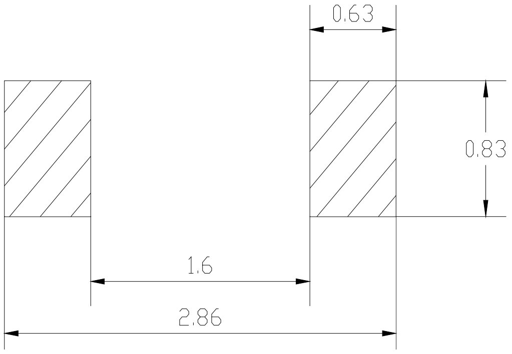
PACKAGE OUTLINE

Plastic surface mounted package SOD-323



SOD-323		
Dim	Min	Max
A	1.275	1.325
B	1.675	1.725
C	0.9 Typical	
D	0.30 Typical	
E	0.27	0.37
H	0.02	0.1
J	0.1 Typical	
K	2.6	2.7
All Dimensions in mm		

SOLDERING FOOTPRINT



Unit ： mm

PACKAGE　INFORMATION

Device	Package	Shipping
GESDXVXD3	SOD-323	3000/Tape&Reel