



Discription

The PESDXXXL1BA protects sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other voltage induced transient events. Excellent clamping capability, low leakage, low capacitance, and fast response time provide best in class protection on designs that are exposed to ESD. It gives designer the flexibility to protect one bi-directional line in applications where arrays are not practical.



SOD-323

Specification Features:

- 500W peak pulse power (8/20 μ s)
- Protects one data or power line
- Ultra low leakage: nA level
- Operating voltage:3.3V, 5V, 12V,15, 24V
- Ultra low clamping voltage
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
Air discharge: \pm 30kV
Contact discharge: \pm 30kV
 - IEC61000-4-4 (EFT) 40A (5/50ns)
- RoHS Compliant



Circuit Diagram

Ordering information

Product ID	Pack	Qty(PCS)
PESDXXXL1BA	SOD-323	3000

Absolute Ratings (T_{amb}=25°C)

Symbol	Parameter	Value	Units
P _{PP}	Peak Pulse Power (t _p = 8/20 μ s)	500	W
T _L	Maximum lead temperature for soldering during 10s	260	°C
T _{stg}	Storage Temperature Range	-55 to +155	°C
T _{op}	Operating Temperature Range	-40 to +125	°C
T _j	Maximum junction temperature	150	°C
	IEC61000-4-2 (ESD)	air discharge contact discharge	\pm 30 \pm 30 KV

Stresses exceeding Maximum Ratings may damage the device. Maximum Rating are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. FR-5 = 1.0*0.75*0.62 in.



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

PESD3V3L1BA						
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			3.3	V	
Breakdown Voltage	VBR	4			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			0.5	μA	$V_{RWM} = 5\text{V}$
Clamping Voltage	VC		5		V	$I_{PP} = 5\text{A}$ (8 x 20 μs pulse)
Clamping Voltage	VC		10		V	$I_{PP} = 36\text{A}$ (8 x 20 μs pulse)
Peak Pulse Current	I_{pp}			18	A	$t_p = 8/20\mu\text{s}$
Junction Capacitance	CJ			200	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

PESD5V0L1BA						
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			5	V	
Breakdown Voltage	VBR	8.5			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			1	μA	$V_{RWM} = 8\text{V}$
Clamping Voltage	VC			11	V	$I_{PP} = 5\text{A}$ (8 x 20 μs pulse)
Clamping Voltage	VC			15	V	$I_{PP} = 34\text{A}$ (8 x 20 μs pulse)
Peak Pulse Current	I_{pp}			15	A	$t_p = 8/20\mu\text{s}$
Junction Capacitance	CJ			180	pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$



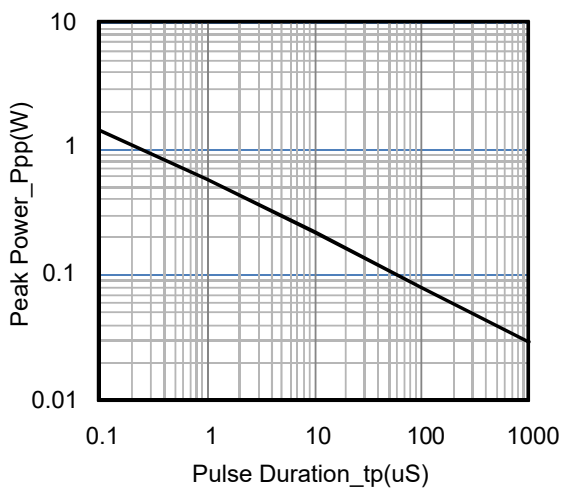
PESD12VL1BA						
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			12	V	
Breakdown Voltage	VBR	13.3			V	IT = 1mA
Reverse Leakage Current	IR			0.5	μA	VRWM = 12V
Clamping Voltage	VC			19	V	I _{PP} = 5A (8 x 20μs pulse)
Clamping Voltage	VC			28	V	I _{PP} = 18A (8 x 20μs pulse)
Peak Pulse Current	I _{pp}			10	A	t _p = 8/20μs
Junction Capacitance	C _J			100	pF	VR = 0V, f = 1MHz

PESD15VL1BA						
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			15	V	
Breakdown Voltage	VBR	16.7			V	IT = 1mA
Reverse Leakage Current	IR			0.5	μA	VRWM = 12V
Clamping Voltage	VC			19	V	I _{PP} = 5A (8 x 20μs pulse)
Clamping Voltage	VC			28	V	I _{PP} = 18A (8 x 20μs pulse)
Peak Pulse Current	I _{pp}			10	A	t _p = 8/20μs
Junction Capacitance	C _J			100	pF	VR = 0V, f = 1MHz

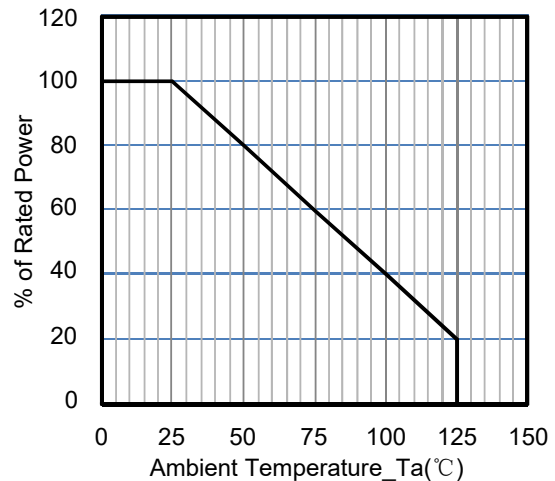


PESD24VL1BA						
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			24	V	
Breakdown Voltage	VBR	27			V	IT = 1mA
Reverse Leakage Current	IR			0.2	μA	VRWM = 24V
Clamping Voltage	VC			40	V	I _{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	VC			62	V	I _{PP} = 8A (8 x 20μs pulse)
Peak Pulse Current	I _{pp}			5	A	tp = 8/20μs
Junction Capacitance	CJ			50	pF	VR = 0V, f = 1MHz

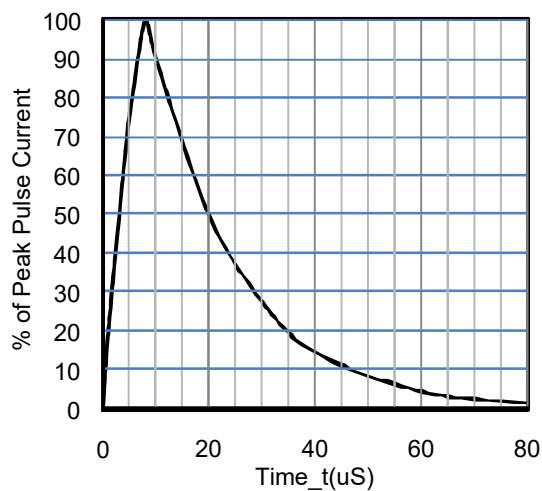
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



Peak Pulse Power vs. Pulse Time



Power Derating Curve



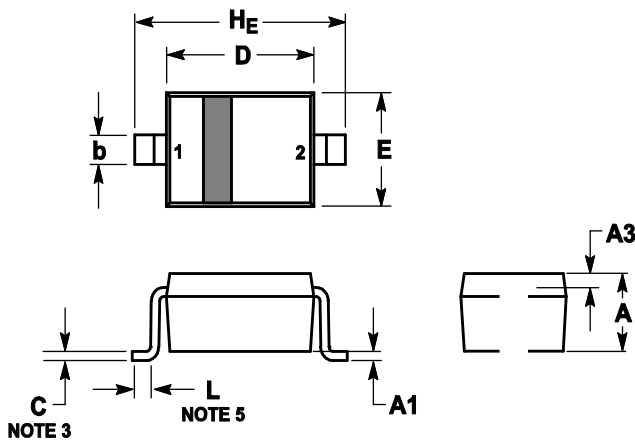
8 X 20uS Pulse Waveform



OUTLINE AND DIMENSIONS

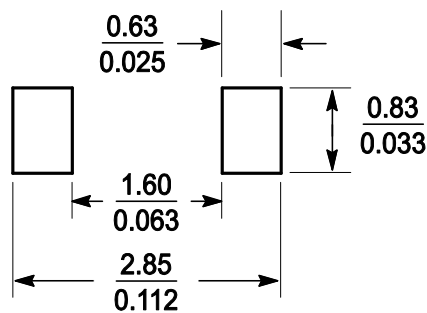
Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.8	0.9	1	0.031	0.035	0.04
A1	0	0.05	0.1	0	0.002	0.004
A3	0.15REF			0.006REF		
b	0.25	0.32	0.4	0.01	0.012	0.016
C	0.089	0.12	0.177	0.003	0.005	0.007
D	1.6	1.7	1.8	0.062	0.066	0.07
E	1.15	1.25	1.35	0.045	0.049	0.053
L	0.08			0.003		
HE	2.3	2.5	2.7	0.09	0.098	0.105

SOLDERING FOOTPRINT





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