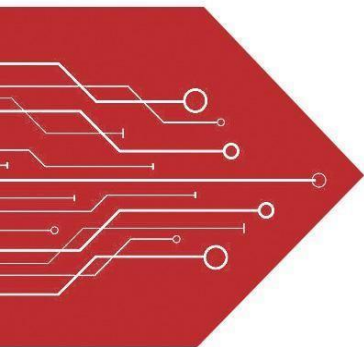


MSKSEMI

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

Product data sheet

Mechanical Characteristics

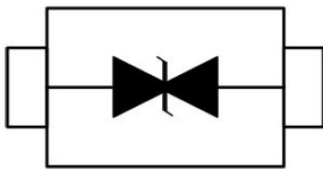
- Package: SOD-323
- Lead Finish: Matte Tin
- Case Material: “Green” Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Peripherals
- Pagers Peripherals
- Desktop and Servers



SOD-323



Features

- 500W peak pulse power (8/20µs)
- 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: ±30kV
Contact discharge: ±30kV
 - IEC61000-4-4 (EFT) 40A (5/50ns)
- RoHS Compliant

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---------------------------------|------------------|-------------|------|
| Peak Pulse Power (8/20µs) | P _{pk} | 500 | W |
| ESD per IEC 61000-4-2 (Air) | V _{ESD} | ±30 | kV |
| ESD per IEC 61000-4-2 (Contact) | | ±30 | |
| Operating Temperature Range | T _J | -55 to +125 | °C |
| Storage Temperature Range | T _{stg} | -55 to +150 | °C |

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

| PESD3V3L1BA-MS | | | | | | |
|-------------------------|-----------|-----|-----|-----|---------------|--|
| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
| Reverse Working Voltage | V_{RWM} | | | 3.3 | V | |
| Breakdown Voltage | V_{BR} | 4 | | | V | $I_T = 1\text{mA}$ |
| Reverse Leakage Current | I_R | | | 0.5 | μA | $V_{RWM} = 5\text{V}$ |
| Clamping Voltage | V_C | | 5 | | V | $I_{PP} = 5\text{A}$ (8 x 20 μs pulse) |
| Clamping Voltage | V_C | | 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 | C_J | | | 200 | pF | $V_R = 0\text{V}$, $f = 1\text{MHz}$ |

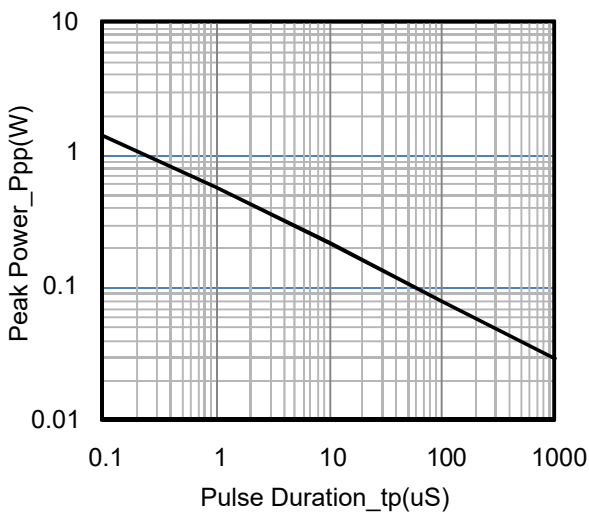
| PESD5V0L1BA-MS | | | | | | |
|-------------------------|-----------|-----|-----|-----|---------------|--|
| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
| Reverse Working Voltage | V_{RWM} | | | 5 | V | |
| Breakdown Voltage | V_{BR} | 8.5 | | | V | $I_T = 1\text{mA}$ |
| Reverse Leakage Current | I_R | | | 1 | μA | $V_{RWM} = 8\text{V}$ |
| Clamping Voltage | V_C | | | 11 | V | $I_{PP} = 5\text{A}$ (8 x 20 μs pulse) |
| Clamping Voltage | V_C | | | 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 | C_J | | | 180 | pF | $V_R = 0\text{V}$, $f = 1\text{MHz}$ |

| PESD12VL1BA-MS | | | | | | |
|-------------------------|-----------------|------|-----|-----|------|--|
| 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 |

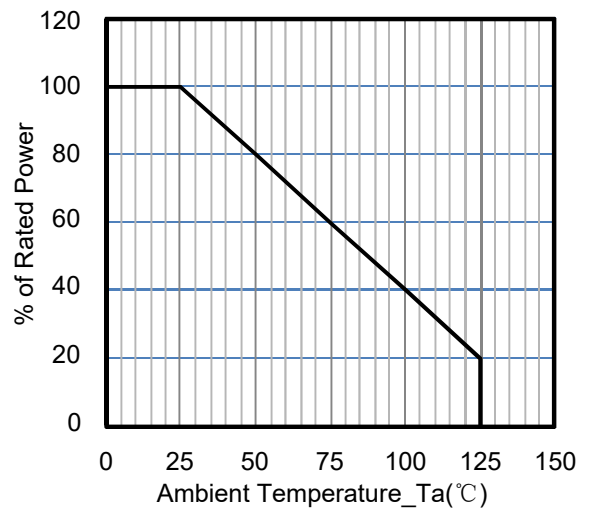
| PESD15VL1BA-MS | | | | | | |
|-------------------------|-----------------|------|-----|-----|------|--|
| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
| Reverse Working Voltage | VRWM | | | 15 | V | |
| Breakdown Voltage | VBR | 16.7 | | | V | IT = 1mA |
| Reverse Leakage Current | 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-MS | | | | | | |
|-------------------------|-----------------|-----|-----|-----|------|---------------------------------------|
| 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 |

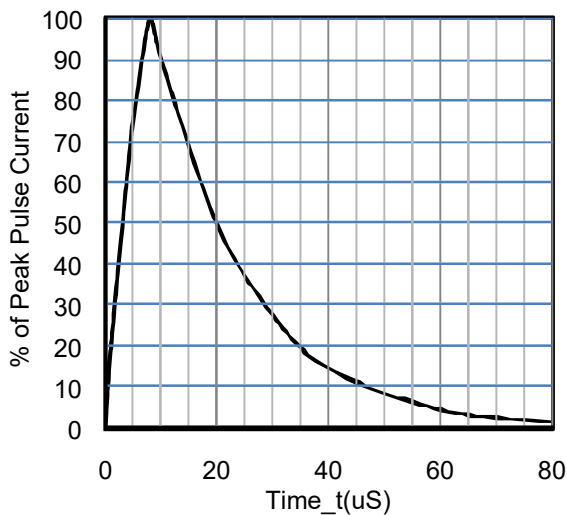
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



Peak Pulse Power vs. Pulse Time

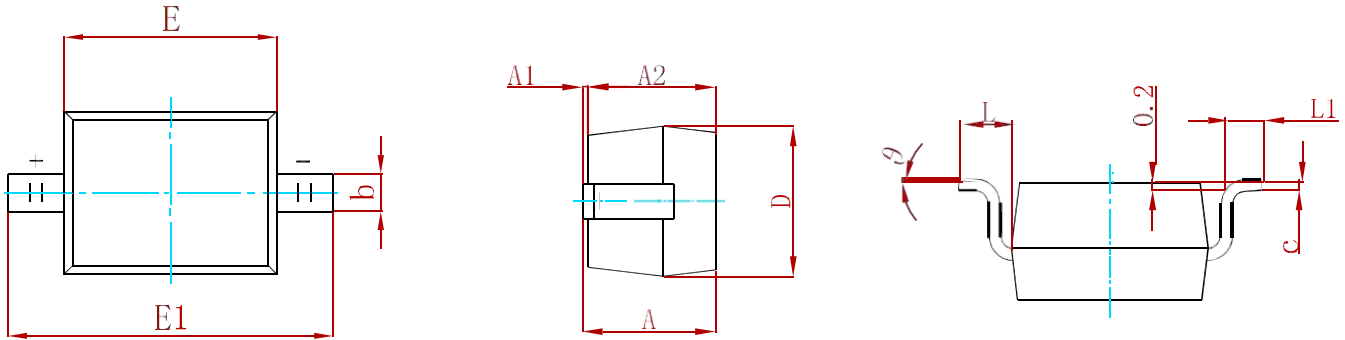


Power Derating Curve



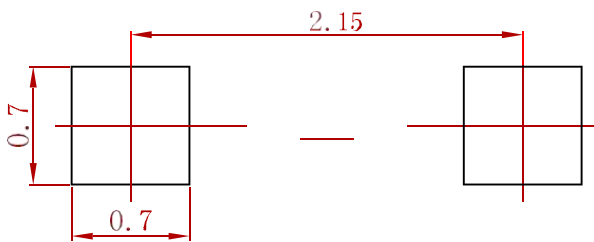
8 X 20uS Pulse Waveform

PACKAGE MECHANICAL DATA



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | | 1.000 | | 0.039 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.800 | 0.900 | 0.031 | 0.035 |
| b | 0.250 | 0.350 | 0.010 | 0.014 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 1.200 | 1.400 | 0.047 | 0.055 |
| E | 1.600 | 1.800 | 0.063 | 0.071 |
| E1 | 2.550 | 2.750 | 0.100 | 0.108 |
| L | 0.475 REF. | | 0.019 REF. | |
| L1 | 0.250 | 0.400 | 0.010 | 0.016 |
| θ | 0° | 8° | 0° | 8° |

Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

REEL SPECIFICATION

| P/N | PKG | QTY |
|----------------|---------|------|
| PESDXXXL1BA-MS | SOD-323 | 3000 |

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