

Features

- Small body outline dimensions
- Low body height
- Stand-off voltage: 3.3V-5.0V
- Low leakage
- Response time is typically < 1ns
- Provide transient protection:
IEC 61000-4-2 (ESD) level 4
IEC 61000-4-4 (EFT) 40A (5/50ns)
IEC 61000-4-5 (Surge) (8/20us)
- Lead-free parts meet environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen-free parts

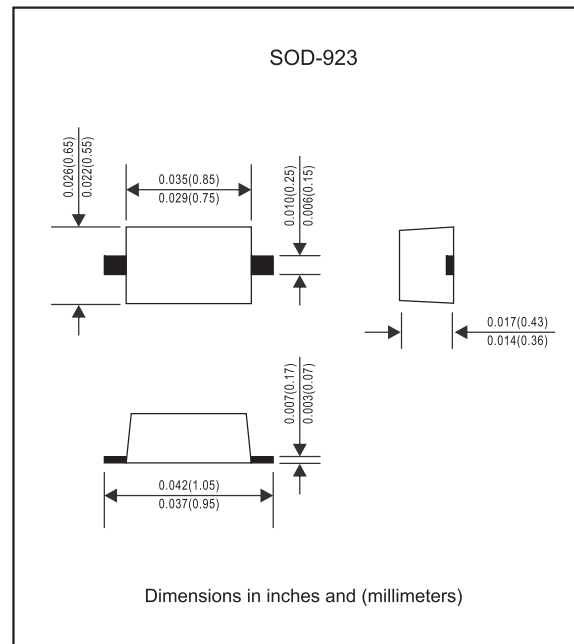
Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-923
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.00044 gram

Applications

- Cellular phones
- Portable devices
- Digital cameras
- Power supplies

Package outline



Maximum ratings (at $T_A=25^\circ\text{C}$ unless otherwise noted)

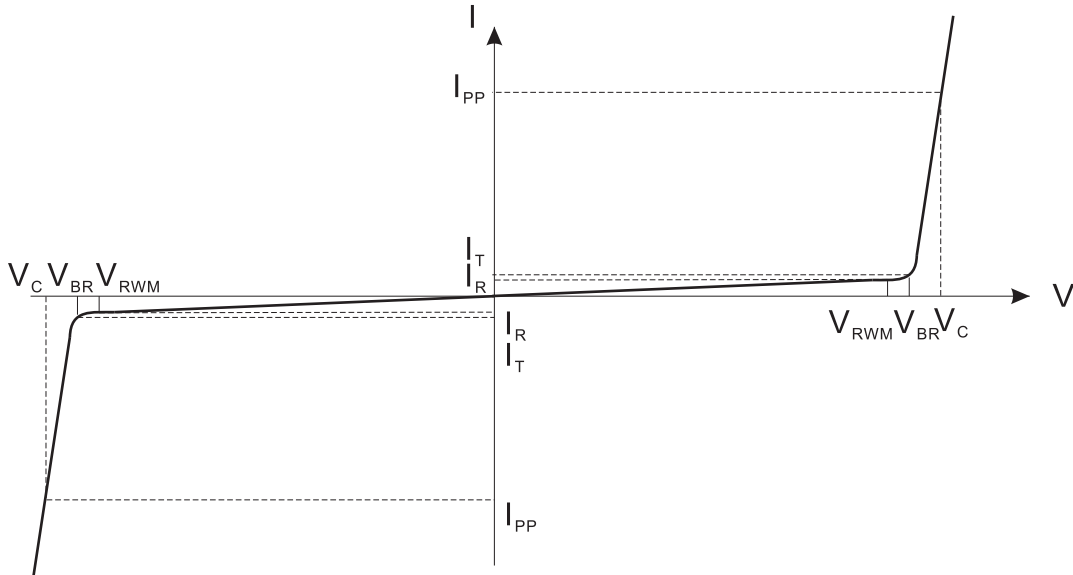
| PARAMETER | CONDITIONS | Symbol | Value | UNIT |
|---------------------------------|------------------------------------|-----------|-----------------------|------------------|
| Peak power dissipation | $t_p = 8/20 \text{ us}$ | P_{PP} | 60 | W |
| IEC61000-4-2(ESD) | air discharge contact discharge | E_{SD} | ± 15 ± 8.0 | kV |
| IEC61000-4-4(EFT) | | E_{FT} | 40 | A |
| ESD voltage | per human body model | E_{SD} | 16 | kV |
| Lead solder temperature-maximum | 10 second duration | T_L | 260 | $^\circ\text{C}$ |
| Operating temperature range | | T_{OP} | -40~ +125 | $^\circ\text{C}$ |
| Maximum junction temperature | | T_J | 150 | $^\circ\text{C}$ |
| Storage temperature range | | T_{STG} | -55~+155 | $^\circ\text{C}$ |

Electrical characteristics (at $T_A=25^\circ\text{C}$ unless otherwise noted)

| Part No. | V_{RWM} (V) | $I_R(\mu\text{A})$ @ V_{RWM} | $V_{BR}(V)@I_T$ (Note 1) | | I_T (mA) | $V_C(V)$ (Note 1) @ $I_{PP}=1.0A^*$ | $V_C(V)$ (Note 1) @Max I_{PP}^* | I_{PP} (A)* | P_{PK} (W)* | $C_J(\text{pF})$ $V_R=0V$ and $f=1\text{MHz}$ Typ. |
|-----------|------------------|-----------------------------------|-----------------------------|-----|---------------|--|--------------------------------------|------------------|------------------|---|
| | Max | Max | Min | Max | | Typ | Max | Max | Max | |
| ESD9Z3.3C | 3.3 | 2.5 | 5.0 | 7.0 | 1.0 | 8.4 | 19.0 | 2.3 | 40 | 18 |
| ESD9Z5.0C | 5.0 | 1.0 | 6.0 | 8.0 | 1.0 | 8.6 | 9.0 | 7.0 | 60 | 13 |

Note *Surge current waveform per Figure 1.
1. V_{BR} is measured with a pulse test current I_T at an ambient temperature of 25°C

Typical characteristics (at $T_A=25^\circ\text{C}$ unless otherwise noted)



Bi-Directional TVS

- V_C : Clamping Voltage @ I_{PP}
- I_{PP} : Maximum Reverse Peak Pulse Current
- V_{RWM} : Maximum Working Peak Reverse voltage
- I_R : Maximum Reverse Leakage Current @ V_{RWM}
- V_{BR} : Breakdown voltage @ I_T
- I_T : Test Current
- C_J : Capacitance @ $V_R = 0\text{V}$ and $f = 1\text{MHz}$

Rating and characteristic curves (ESD9ZxxC SERIES)

FIG.1- PULSE WAVEFORM

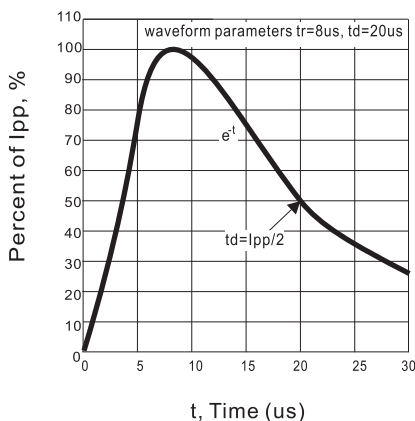
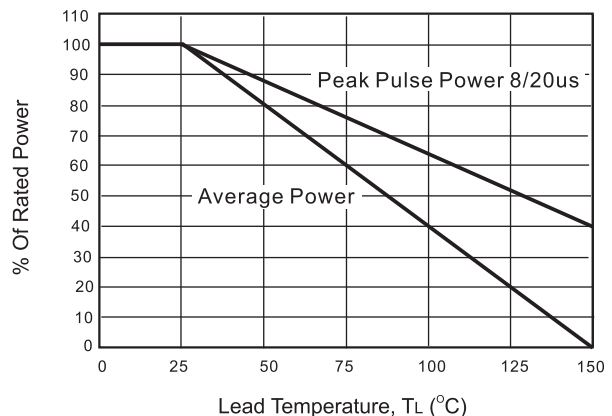



Fig.2- POWER RATING CURVE



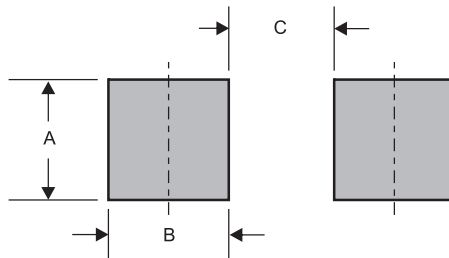
Pinning information

| Pin | Symbol |
|----------------|---|
| Bi-Directional |  |

Marking

| Type number | Marking code |
|-------------|--------------|
| ESD9Z3.3C | B/E4 |
| ESD9Z5.0C | 9C/EA |

Suggested solder pad layout



Dimensions in inches and (millimeters)

| PACKAGE | A | B | C |
|---------|--------------|--------------|--------------|
| SOD-923 | 0.016 (0.40) | 0.012 (0.30) | 0.024 (0.60) |

Reel packing

| PACKAGE | REEL SIZE | REEL (pcs) | COMPONENT SPACING (m/m) | BOX (pcs) | INNER BOX (m/m) | REEL DIA, (m/m) | CARTON SIZE (m/m) | CARTON (pcs) | APPROX. GROSS WEIGHT (kg) |
|---------|-----------|------------|-------------------------|-----------|-----------------|-----------------|-------------------|--------------|---------------------------|
| SOD-923 | 7" | 8,000 | 2.0 | 80,000 | 183*123*183 | 178 | 382*257*387 | 640,000 | 9.50 |