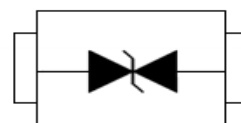


**FEATURES:**

- ✧ Protects one bi-directional I/O line
- ✧ Low clamping voltage
- ✧ Low operating voltage: 12V
- ✧ ROHS compliant



SOD-323



PIN Configuration

**MAIN APPLICATIONS**

- ✧ Cell Phone Handsets and Accessories
- ✧ Personal Digital Assistants (PDA's)
- ✧ Notebooks, Desktops, and Servers
- ✧ Portable Instrumentation
- ✧ Pagers
- ✧ Microprocessor based equipment

**PROTECTION SOLUTION TO MEET**

- ✧ IEC61000-4-2 (ESD)  $\pm 30\text{kV}$  (air),  $\pm 30\text{kV}$  (contact)
- ✧ IEC61000-4-4 (EFT) 40A (5/50ns)

**MECHANICAL CHARACTERISTICS**

- ✧ Package SOD-323
- ✧ Molding Compound Flammability Rating : UL 94V-O
- ✧ Quantity Per Reel : 3,000pcs
- ✧ Lead Finish : Lead Free
- ✧ Marking : 12B

**ABSOLUTE MAXIMUM RATINGS** ( $T_A=25^\circ\text{C}$ , RH=45%-75%, unless otherwise noted)

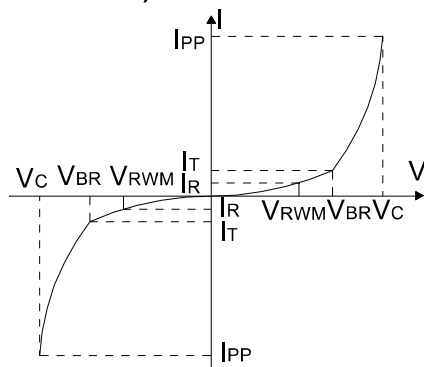
| Parameter                                                      | Symbol           | Value            | Unit             |
|----------------------------------------------------------------|------------------|------------------|------------------|
| Storage temperature range                                      | $T_{\text{stg}}$ | -55 to +150      | $^\circ\text{C}$ |
| Operating junction temperature range                           | $T_j$            | -55 to +125      | $^\circ\text{C}$ |
| Lead Soldering Temperature                                     | $T_L$            | 260 (10 sec.)    | $^\circ\text{C}$ |
| Peak pulse power dissipation on 8/20 $\mu\text{s}$ waveform    | $P_{\text{PP}}$  | 300              | W                |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | $V_{\text{ESD}}$ | +/- 30<br>+/- 30 | kV               |

### ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ )

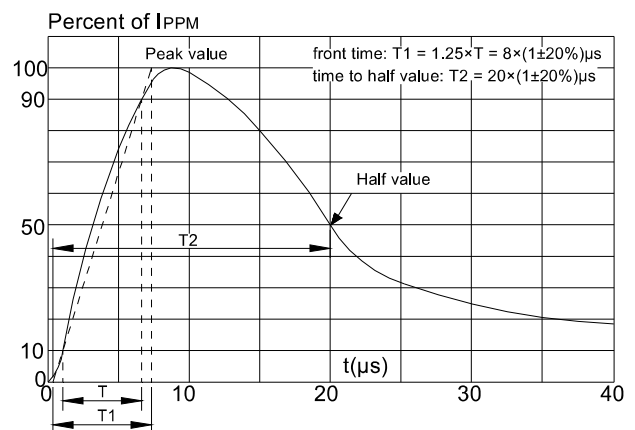
| Parameter                 | Symbol   | Conditions                                   | Min | Typ | Max  | Units         |
|---------------------------|----------|----------------------------------------------|-----|-----|------|---------------|
| Reverse Working Voltage   | $V_R$    |                                              |     |     | 12   | V             |
| Reverse Breakdown Voltage | $V_{BR}$ | $I_T = 1\text{mA}$                           | 14  |     | 17.5 | V             |
| Reverse Leakage Current   | $I_R$    | $V_R = 12\text{V}$                           |     |     | 0.2  | $\mu\text{A}$ |
| Peak Pulse Current        | $I_{PP}$ | $t_p = 8/20\mu\text{s}$                      |     |     | 10   | A             |
| Clamping Voltage          | $V_C$    | $I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$  |     |     | 20   | V             |
|                           |          | $I_{PP} = 10\text{A}, t_p = 8/20\mu\text{s}$ |     |     | 30   | V             |
| Junction Capacitance      | $C_J$    | $V_R = 0\text{V}, f = 1\text{MHz}$           |     | 25  | 40   | pF            |

### RATINGS AND V-I CHARACTERISTICS CURVES ( $T_A=25^\circ\text{C}$ , unless otherwise noted)

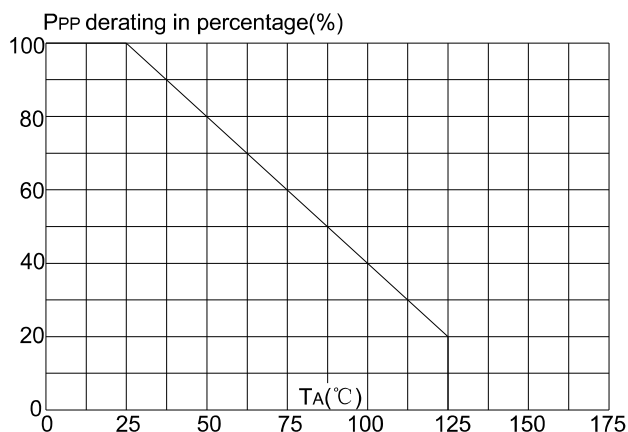
**FIG.1: V- I curve characteristics (Bi-directional)**



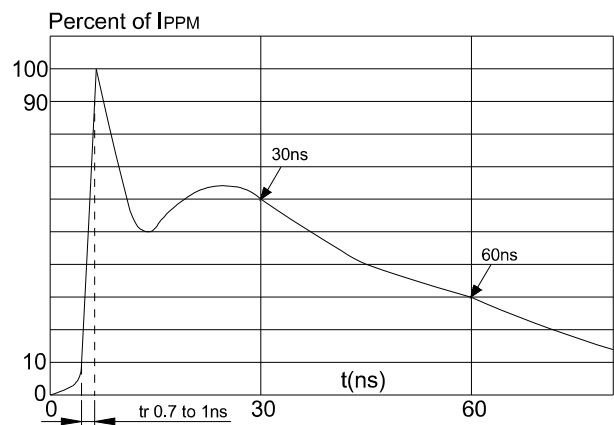
**FIG.2: Pulse waveform (8/20 $\mu\text{s}$ )**



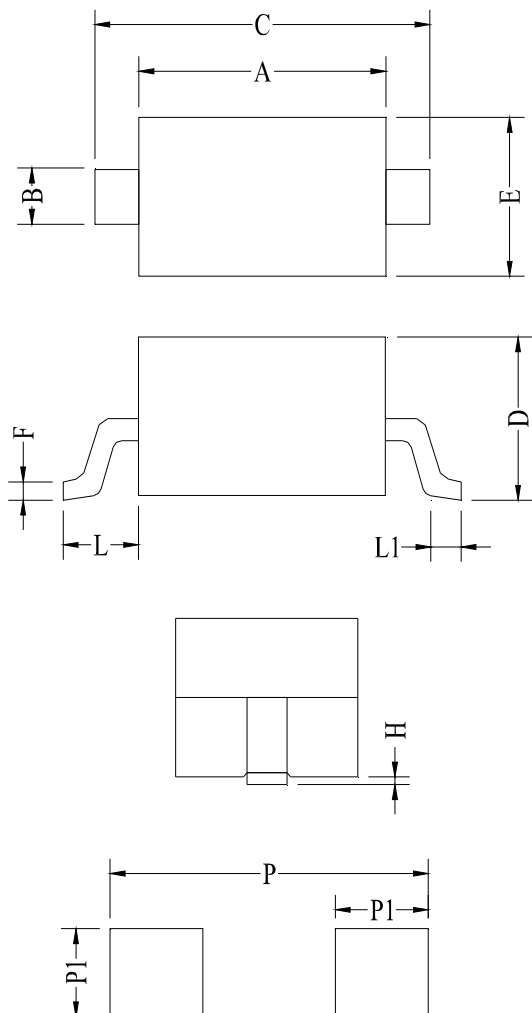
**FIG.3: Pulse derating curve**



**FIG.4: ESD clamping**



## PACKAGE MECHANICAL DATA

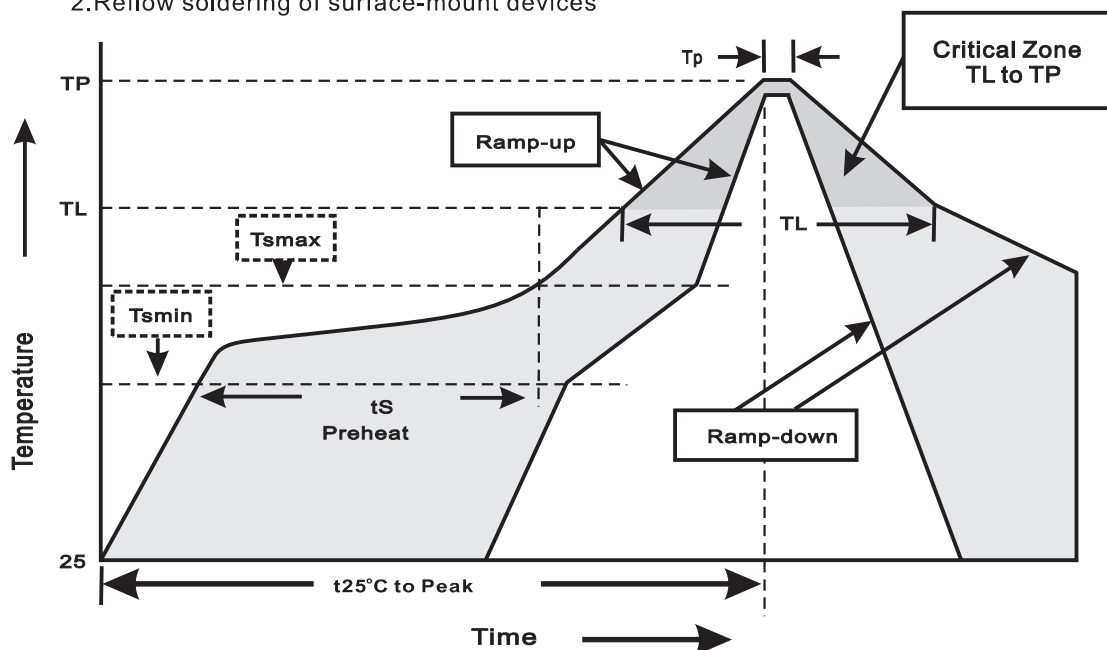


**Land Pattern**

| Symbol | Millimeter |      | Inches   |       |
|--------|------------|------|----------|-------|
|        | Min        | Max  | Min      | Max   |
| A      | 1.60       | 1.80 | 0.063    | 0.071 |
| B      | 0.25       | 0.35 | 0.010    | 0.014 |
| C      | 2.50       | 2.70 | 0.098    | 0.106 |
| D      | 0.00       | 1.00 | 0.000    | 0.039 |
| E      | 1.20       | 1.40 | 0.047    | 0.055 |
| F      | 0.08       | 0.15 | 0.003    | 0.006 |
| L      | 0.475REF   |      | 0.019REF |       |
| L1     | 0.25       | 0.40 | 0.010    | 0.016 |
| H      | 0.00       | 0.10 | 0.000    | 0.004 |
| P      | 3.00       |      | 0.118    |       |
| P1     | 0.80       |      | 0.031    |       |

## Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%  
2.Reflow soldering of surface-mount devices



### 3.Reflow soldering

| Profile Feature                                                                                                       | Soldering Condition                                                      |
|-----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| Average ramp-up rate( $T_L$ to $T_P$ )                                                                                | $<3^{\circ}\text{C}/\text{sec}$                                          |
| Preheat<br>-Temperature Min( $T_{\text{min}}$ )<br>-Temperature Max( $T_{\text{max}}$ )<br>-Time(min to max)( $t_s$ ) | $150^{\circ}\text{C}$<br>$200^{\circ}\text{C}$<br>$60\sim 120\text{sec}$ |
| $T_{\text{max}}$ to $T_L$<br>-Ramp-upRate                                                                             | $<3^{\circ}\text{C}/\text{sec}$                                          |
| Time maintained above:<br>-Temperature( $T_L$ )<br>-Time( $t_L$ )                                                     | $217^{\circ}\text{C}$<br>$60\sim 260\text{sec}$                          |
| Peak Temperature( $T_P$ )                                                                                             | $255^{\circ}\text{C}-0/+5^{\circ}\text{C}$                               |
| Time within $5^{\circ}\text{C}$ of actual Peak Temperature( $t_P$ )                                                   | $10\sim 30\text{sec}$                                                    |
| Ramp-down Rate                                                                                                        | $<6^{\circ}\text{C}/\text{sec}$                                          |
| Time $25^{\circ}\text{C}$ to Peak Temperature                                                                         | $<6\text{minutes}$                                                       |