



### FEATURES

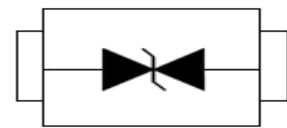
- ◇ Small body outline dimensions:  
0.063" × 0.032" (1.6×0.8 mm)
- ◇ Protects one bi-directional I/O line
- ◇ Low clamping voltage
- ◇ Working voltage: 3.3V
- ◇ Low leakage current
- ◇ RoHS compliant



SOD-523

### MAIN APPLICATIONS

- ◇ Cell phone handsets and accessories
- ◇ Microprocessor based equipment
- ◇ Personal digital assistants (PDA's)
- ◇ Notebooks, desktops, and servers
- ◇ Portable instrumentation
- ◇ Peripherals
- ◇ Digital cameras



Pin Configuration

### PROTECTION SOLUTION TO MEET

- ◇ IEC61000-4-2 (ESD) ±30kV (air), ±25kV (contact)
- ◇ IEC61000-4-4 (EFT) 40A (5/50ns)
- ◇ IEC61000-4-5 (Lightning) 7A (8/20μs)

### MECHANICAL CHARACTERISTICS

- ◇ SOD-523 package
- ◇ Molding compound flammability rating: UL 94V-0
- ◇ Weight 0.5 milligrams (approximate)
- ◇ Quantity per reel: 5,000pcs
- ◇ Lead finish: lead free
- ◇ Marking code: 3DB

**ABSOLUTE MAXIMUM RATINGS** (T<sub>A</sub>=25°C, RH=45%-75%, unless otherwise noted)

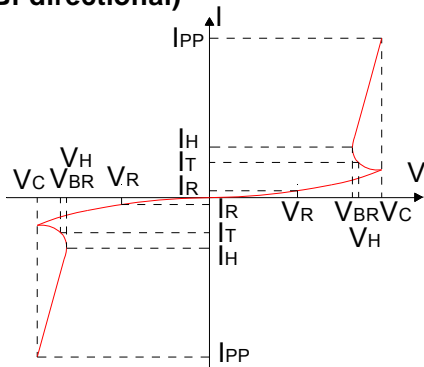
| Parameter  | Symbol           | Value            | Unit |
|--|------------------|------------------|------|
| Peak pulse power dissipation on 8/20μs waveform                | P <sub>PP</sub>  | 80               | W    |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | V <sub>ESD</sub> | +/- 30<br>+/- 25 | kV   |
| Lead soldering temperature                                     | T <sub>L</sub>   | 260 (10 sec.)    | °C   |
| Operating junction temperature range                           | T <sub>J</sub>   | -55 to +125      | °C   |
| Storage temperature range                                      | T <sub>STG</sub> | -55 to +150      | °C   |

**ELECTRICAL CHARACTERISTICS** (T<sub>A</sub>=25°C)

| Parameter                 | Symbol           | Conditions                                  | Min | Typ | Max | Unit |
|---------------------------|------------------|---|-----|-----|-----|------|
| Reverse working voltage   | V <sub>RWM</sub> |   |     |     | 3.3 | V    |
| Reverse breakdown voltage | V <sub>BR</sub>  | I <sub>T</sub> =1mA                         | 3.6 |     |     | V    |
| Reverse holding voltage   | V <sub>H</sub>   | I <sub>H</sub> =50mA                        | 3.5 |     |     | V    |
| Reverse leakage current   | I <sub>R</sub>   | V <sub>RWM</sub> =3.3V                      |     |     | 1   | μA   |
| Clamping voltage          | V <sub>C</sub>   | I <sub>PP</sub> =1A, t <sub>P</sub> =8/20μs |     | 6   | 8   | V    |
|                           |                  | I <sub>PP</sub> =7A, t <sub>P</sub> =8/20μs |     | 9   | 12  | V    |
| Junction capacitance      | C <sub>J</sub>   | V <sub>RWM</sub> =0V, f=1MHz                |     | 15  | 20  | pF   |

**RATINGS AND V-I CHARACTERISTICS CURVES** (T<sub>A</sub>=25°C, unless otherwise noted)

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



**FIG.2: Pulse waveform (8/20μs)**

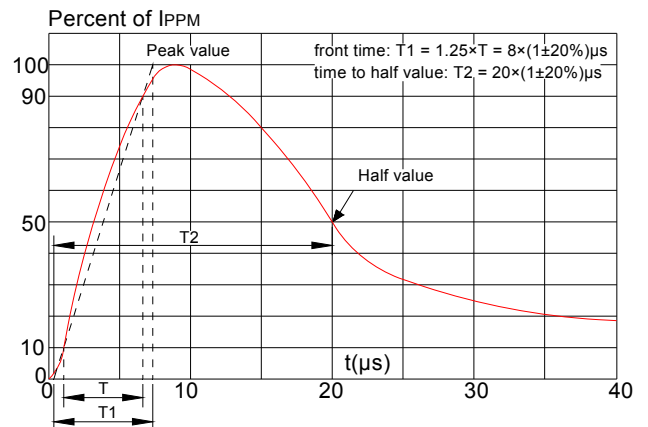


FIG.3: Pulse derating curve

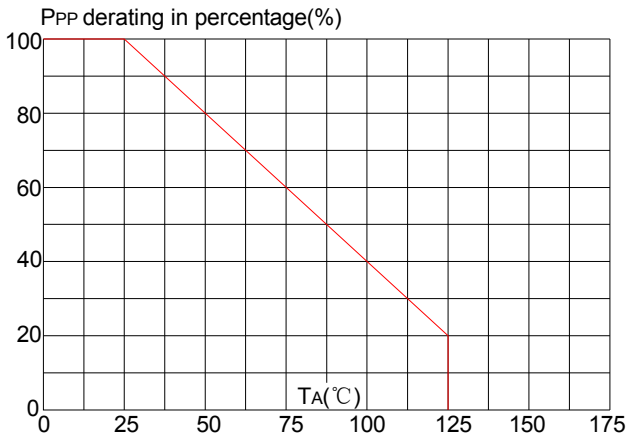
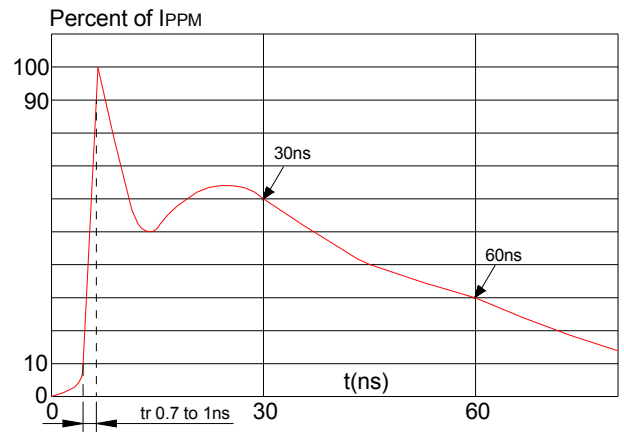
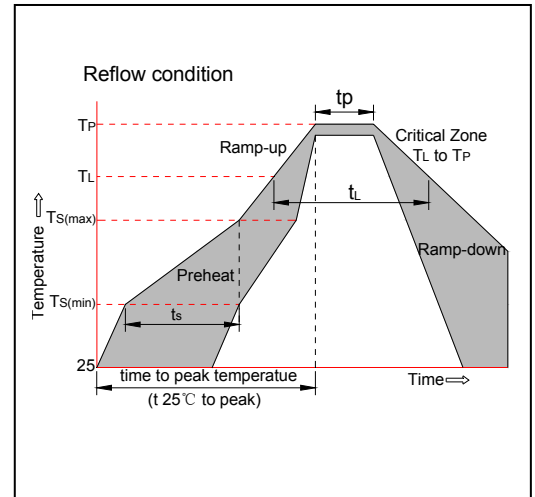


FIG.4: ESD clamping (25kV contact)

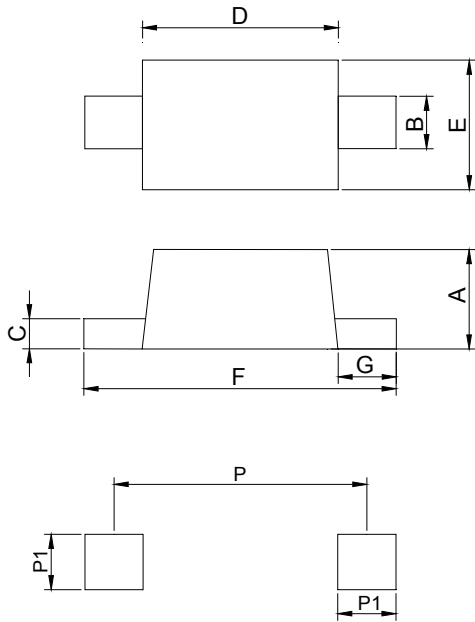


SOLDERING PARAMETERS

|  |                                   |   |
|--|-----------------------------------|---|
| Reflow Condition                                       |                                   | Pb-Free assembly<br>(see figure at right) |
| Pre Heat   | -Temperature Min ( $T_{s(min)}$ ) | +150°C                                    |
|  | -Temperature Max ( $T_{s(max)}$ ) | +200°C                                    |
|  | -Time (Min to Max) (ts)           | 60-180 secs.                              |
| Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak) |                                   | 3°C/sec. Max                              |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                   |                                   | 3°C/sec. Max                              |
| Reflow   | -Temperature ( $T_L$ ) (Liquidus) | +217°C                                    |
|  | -Temperature ( $t_L$ )            | 60-150 secs.                              |
| Peak Temp ( $T_p$ )                                    |                                   | +260(+0/-5)°C                             |
| Time within 5°C of actual Peak Temp ( $t_p$ )          |                                   | 20-40secs.                                |
| Ramp-down Rate   |                                   | 6°C/sec. Max                              |
| Time 25°C to Peak Temp ( $T_p$ )                       |                                   | 8 min. Max                                |
| Do not exceed  |                                   | +260°C                                    |



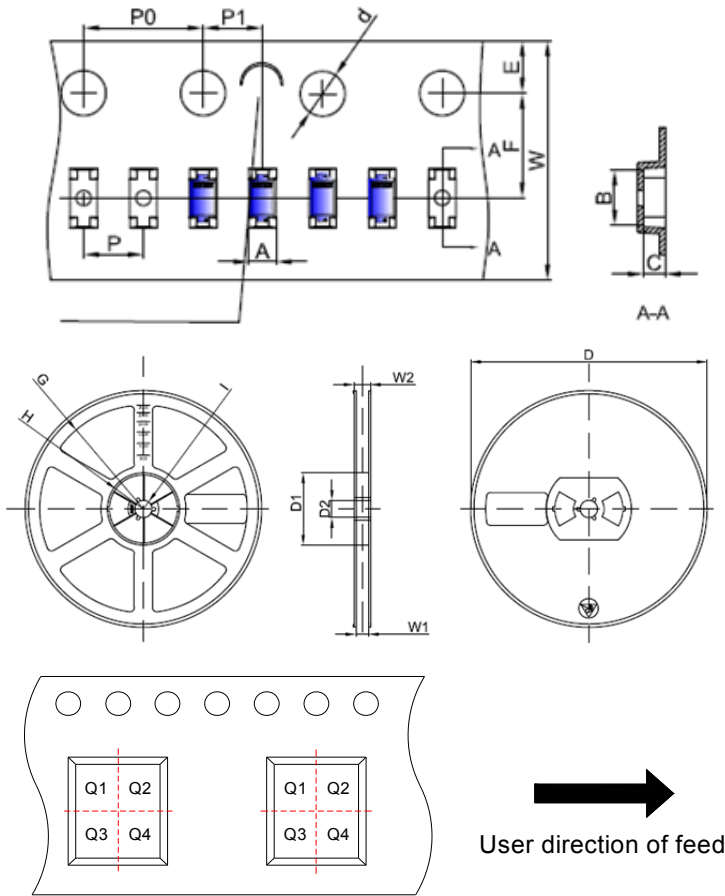
**PACKAGE MECHANICAL DATA**



**Land Pattern**

| Symbol | Millimeters |      |      | Inches |       |       |
|--------|-------------|------|------|--------|-------|-------|
|        | Min         | Typ  | Max  | Min    | Typ   | Max   |
| A      | 0.50        | 0.61 | 0.77 | 0.020  | 0.024 | 0.030 |
| B      | 0.25        | 0.30 | 0.40 | 0.010  | 0.012 | 0.016 |
| C      | 0.07        | 0.13 | 0.20 | 0.003  | 0.005 | 0.008 |
| D      | 1.10        | 1.20 | 1.30 | 0.043  | 0.047 | 0.051 |
| E      | 0.70        | 0.80 | 0.90 | 0.028  | 0.031 | 0.035 |
| F      | 1.50        | 1.60 | 1.70 | 0.059  | 0.063 | 0.067 |
| G      | 0.15        | 0.20 | 0.25 | 0.006  | 0.008 | 0.010 |
| P1     | 0.60        |      |      | 0.024  |       |       |
| P      | 1.42        |      |      | 0.056  |       |       |

TAPE AND REEL SPECIFICATION-SOD-523



Pin 1 quadrant:Q1&Q2

Packaging Description:


SOD-523 parts are shipped in tape. The carrier tape is made from a dissipative(carbon filled) polycarbonate resin. The cover tape is a multilayer film(heat activated adhesive in nature)primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 5,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and made of polystyrene plastic(anti-static coated).

| Symbol | Millimeters | Inches |
|--------|-------------|--------|
|        | Typ.        | Typ.   |
| A      | 0.95        | 0.037  |
| B      | 1.92        | 0.076  |
| C      | 0.73        | 0.029  |
| d      | Φ1.50       | Φ0.059 |
| E      | 1.75        | 0.069  |
| F      | 3.50        | 0.138  |
| P0     | 4.00        | 0.157  |
| P      | 2.00        | 0.079  |
| P1     | 2.00        | 0.079  |
| W      | 8.00        | 0.315  |
| D      | Φ178        | Φ7.008 |
| D1     | 54.40       | 2.142  |
| D2     | 13.00       | 0.512  |
| G      | R78.00      | R3.071 |
| H      | R25.60      | R1.008 |
| I      | R6.50       | R0.256 |
| W1     | 9.50        | 0.374  |
| W2     | 12.30       | 0.484  |

ORDERING INFORMATION

| PART No. | PACKAGE TYPE | QUANTITY(PCS) REEL | DESCRIPTION      |
|----------|--------------|--------------------|------------------|
| JEB03D5  | SOD-523      | 5,000              | 7 inch reel pack |

**MARKING CODE**

| Part Number | Marking Code   |
|-------------|--|
| JEB03D5     |  |

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