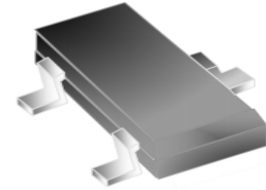




### FEATURES

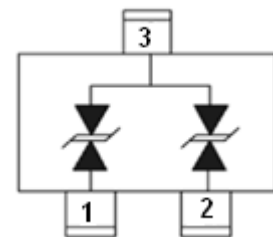
- ◇ 350 Watts peak pulse power per line ( $t_P=8/20\mu s$ )
- ◇ Protect for two I/O lines with bi-directional
- ◇ Low clamping voltage
- ◇ Working voltage: 15V
- ◇ Low leakage current
- ◇ RoHS compliant



SOT-23

### MAIN APPLICATIONS

- ◇ RS-232, RS-422 & RS-485
- ◇ Servers, notebook, and desktop
- ◇ Cellular handsets and accessories
- ◇ Control & monitoring systems
- ◇ Portable electronics
- ◇ Wireless bus protection
- ◇ Set-top box



Pin Configuration

### PROTECTION SOLUTION TO MEET

- ◇ IEC61000-4-2 (ESD)  $\pm 30kV$  (air),  $\pm 30kV$  (contact)
- ◇ IEC61000-4-4 (EFT) 40A (5/50ns)
- ◇ IEC61000-4-5 (Lightning) 10A (8/20 $\mu s$ )

### MECHANICAL CHARACTERISTICS

- ◇ SOT-23 package
- ◇ Molding compound flammability rating : UL 94V-0
- ◇ Weight 8 milligrams (approximate)
- ◇ Quantity per reel : 3,000pcs
- ◇ Lead finish : lead free
- ◇ Marking code: BB2

**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>  | 350              | W    |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | V <sub>ESD</sub> | +/- 30<br>+/- 30 | 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)

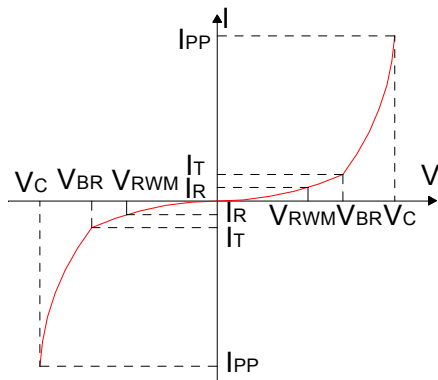
| Parameter                 | Symbol                      | Conditions  | Min  | Typ | Max | Unit |
|---------------------------|-----------------------------|---|------|-----|-----|------|
| Reverse working voltage   | V <sub>RWM</sub>            |   |      |     | 15  | V    |
| Reverse breakdown voltage | V <sub>BR</sub>             | I <sub>T</sub> =1mA   | 16.7 |     |     | V    |
| Reverse leakage current   | I <sub>R</sub>              | V <sub>RWM</sub> = 15V                                      |      |     | 1   | μA   |
| Clamping voltage          | V <sub>C</sub>              | I <sub>PP</sub> <sup>①</sup> = 1A, t <sub>p</sub> = 8/20μs  |      |     | 24  | V    |
|                           |                             | I <sub>PP</sub> <sup>①</sup> = 10A, t <sub>p</sub> = 8/20μs |      |     | 35  | V    |
| Junction capacitance      | C <sub>J</sub> <sup>②</sup> | V <sub>RWM</sub> = 0V, f = 1MHz                             |      | 25  |     | pF   |

① Surge waveform: 8/20μs

② C<sub>J</sub> measured @V<sub>RWM</sub> = 0V, 1MHz (pin 1 to pin3, pin 2 to pin3)

**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)**

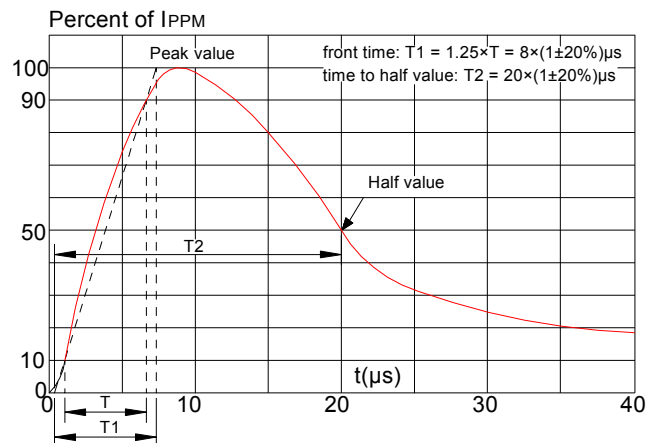


FIG.3: Pulse derating curve

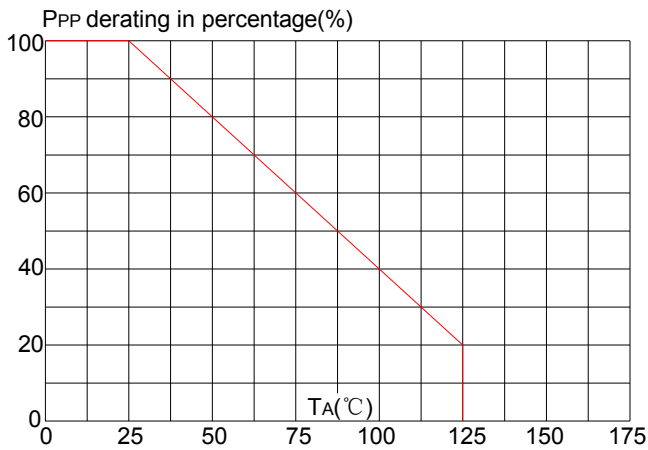
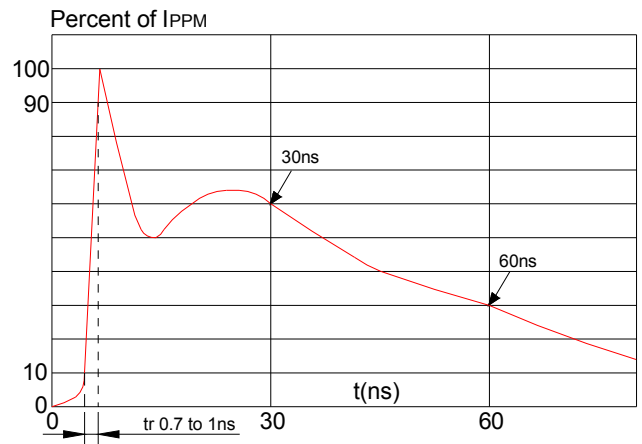
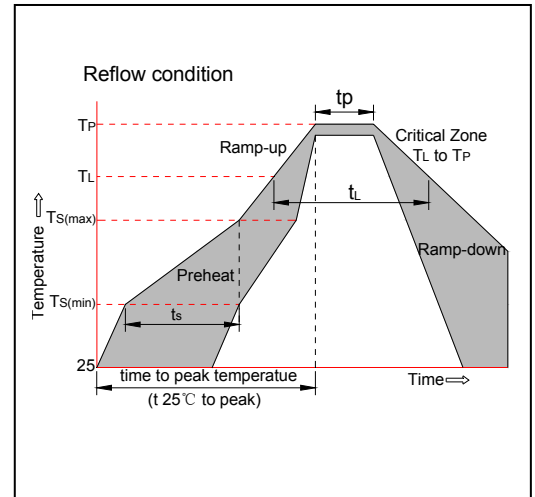


FIG.4: ESD clamping (30kV contact)

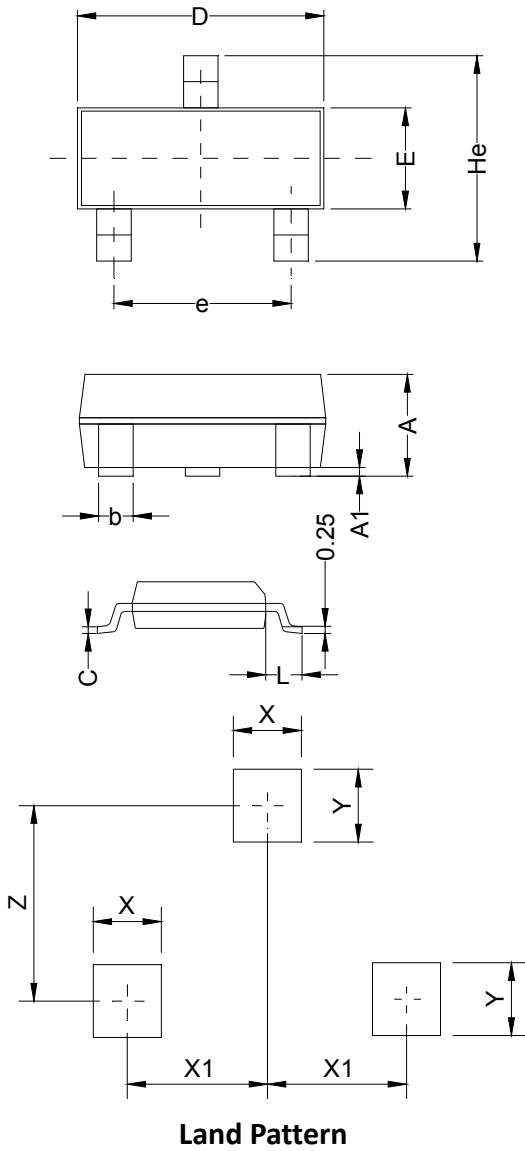


SOLDERING PARAMETERS

| 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                                    |

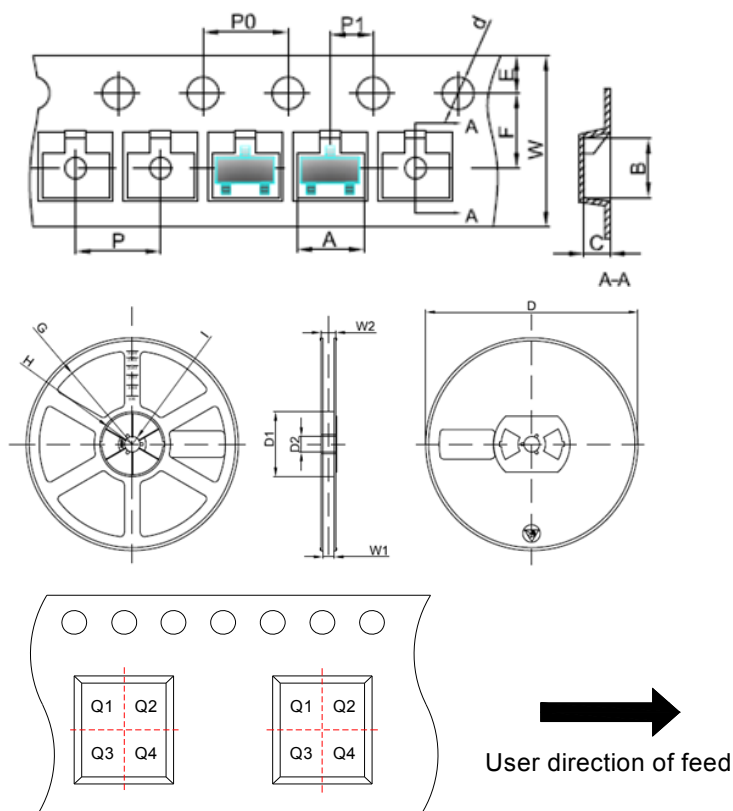


**PACKAGE MECHANICAL DATA**



| Symbol | Millimeters |       |      | Inches   |       |       |
|--------|-------------|-------|------|----------|-------|-------|
|        | Min.        | Typ.  | Max. | Min.     | Typ.  | Max.  |
| A      | 0.90        | 1.063 | 1.15 | 0.035    | 0.042 | 0.045 |
| A1     | 0.00        | 0.075 | 0.14 | 0.000    | 0.003 | 0.006 |
| b      | 0.30        | 0.40  | 0.50 | 0.012    | 0.016 | 0.020 |
| C      | 0.07        | 0.10  | 0.15 | 0.003    | 0.004 | 0.006 |
| D      | 2.80        | 2.90  | 3.00 | 0.110    | 0.114 | 0.118 |
| e      | 1.80        | 1.90  | 2.00 | 0.071    | 0.075 | 0.079 |
| E      | 1.20        | 1.30  | 1.40 | 0.047    | 0.051 | 0.055 |
| L      | 0.55REF     |       |      | 0.022REF |       |       |
| He     | 2.25        | 2.40  | 2.55 | 0.089    | 0.094 | 0.100 |
| X      | 0.80        |       |      | 0.031    |       |       |
| X1     | 0.95        |       |      | 0.037    |       |       |
| Y      | 0.80        |       |      | 0.031    |       |       |
| Z      | 2.02        |       |      | 0.080    |       |       |

TAPE AND REEL SPECIFICATION-SOT-23



Pin 1 quadrant: Q3

Packaging Description:

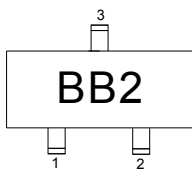
SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative(carbon filled) polycarbonate resin. The cover tape is a multilayer film(heat activated adhesive in nature)primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000units 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      | 3.15        | 0.124  |
| B      | 2.77        | 0.109  |
| C      | 1.22        | 0.048  |
| d      | Φ1.50       | Φ0.059 |
| E      | 1.75        | 0.069  |
| F      | 3.50        | 0.138  |
| P0     | 4.00        | 0.157  |
| P      | 4.00        | 0.157  |
| 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      |
|----------|--------------|--------------------|------------------|
| JEB15T2B | SOT-23       | 3,000              | 7 inch reel pack |

**MARKING CODE**

| Part Number | Marking Code   |
|-------------|--|
| JEB15T2B    |  |

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