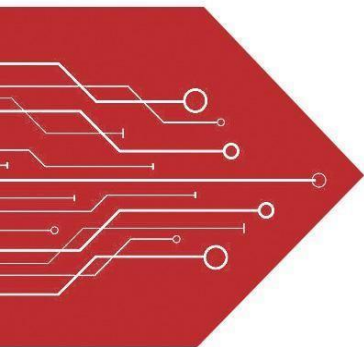


# MSKSEMI

SEMICONDUCTOR



ESD



TVS



TSS



MOV

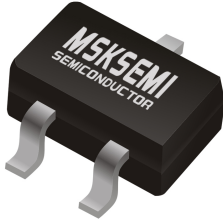
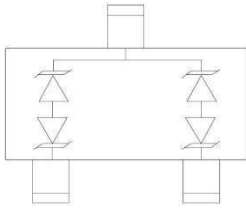


GDT



PLED

Product data sheet



**SOT-23**

### Features

- ◆ 300 Watts peak pulse power ( $t_p = 8/20\mu s$ )
- ◆ Transient protection for high speed data lines to IEC 61000-4-2 (ESD)  $\pm 30kV$  (air),  $\pm 30kV$ (contact)  
IEC 61000-4-4 (EFT) 40A (5/50ns)
- ◆ Working voltages : 3.3V,5V,12V,15V,24V
- ◆ Protects two bidirectional line
- ◆ Low operating and clamping voltages
- ◆ Solid-state silicon avalanche technology

### Applications

- ◆ Notebooks, Desktops, Servers and Video Graphics Cards
- ◆ USB Power & Data Line Protection
- ◆ Monitors and Flat Panel Displays
- ◆ I<sup>2</sup>C Bus Protection
- ◆ Portable Instrumentation
- ◆ Set Top Box

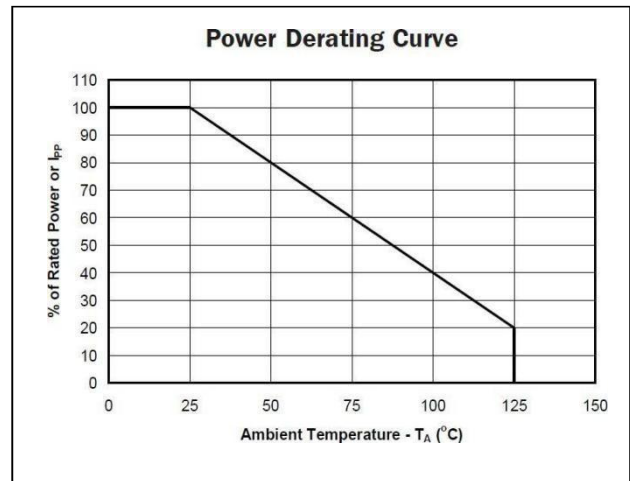
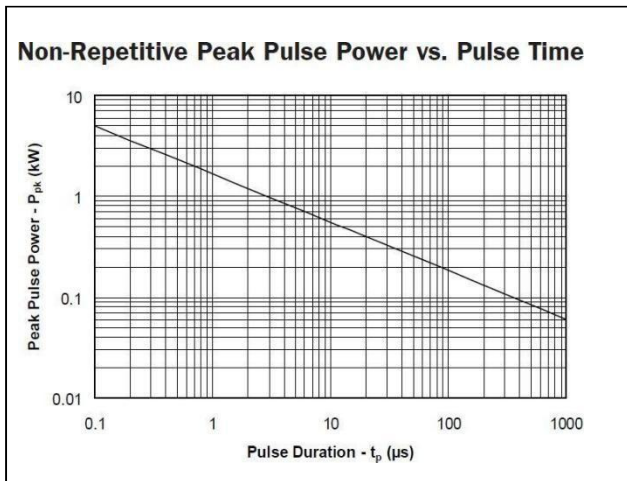
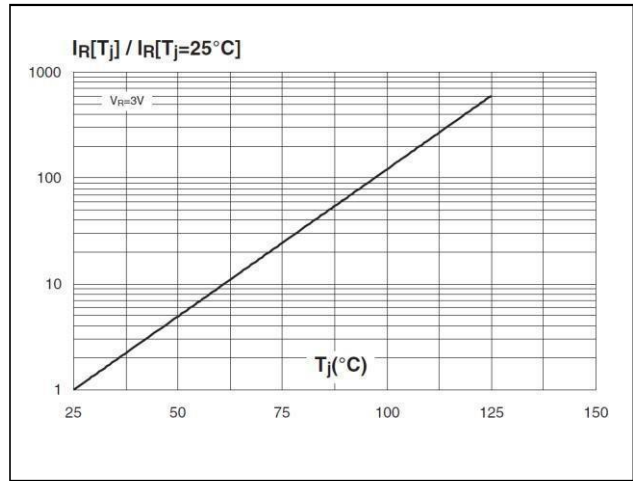
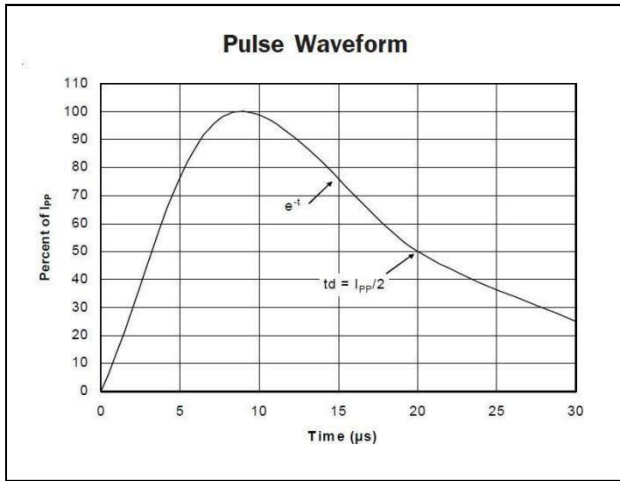
### Electrical Characteristics@ Ta=25°C unless otherwise

| P/N            | V <sub>RWM</sub><br>(V)<br>(max.) | V <sub>B</sub><br>(V)<br>(min.) | I <sub>T</sub><br>(mA) | V <sub>C@1A</sub><br>(V)<br>(max.) | V <sub>C</sub><br>(V) |      | I <sub>R</sub><br>( $\mu$ A)<br>(max.) | C <sub>T</sub><br>(pF)<br>(max.) |
|----------------|-----------------------------------|---------------------------------|------------------------|------------------------------------|-----------------------|------|--|----------------------------------|
|                |                                   |                                 |                        |                                    | (max.)                | (@A) |  |                                  |
| PESD3V3L2BT-MS | 3.3                               | 4                               | 1                      | 7.0                                | 14                    | 18   | 1                                      | 100                              |
| PESD5V0L2BT-MS | 5                                 | 6                               | 1                      | 9.8                                | 18                    | 13   | 1                                      | 75                               |
| PESD12VL2BT-MS | 12                                | 13.3                            | 1                      | 19                                 | 32                    | 5    | 1                                      | 20                               |
| PESD15VL2BT-MS | 15                                | 16.7                            | 1                      | 24                                 | 38                    | 5    | 1                                      | 20                               |
| PESD24VL2BT-MS | 24                                | 26.7                            | 1                      | 43                                 | 52                    | 5    | 1                                      | 35                               |

### Maximum Rating @ Ta=25 °C unless otherwise specified

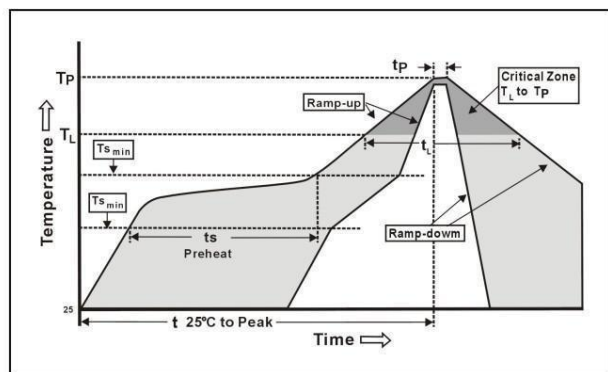
| Symbol           | Parameter                              | Ratings     | Units |
|------------------|--|-------------|-------|
| P <sub>PK</sub>  | Peak Pulse Power ( $t_p = 8/20\mu s$ ) | 300         | Watts |
| T <sub>L</sub>   | Lead Soldering Temperature             | 260(10sec.) | °C    |
| T <sub>J</sub>   | Operating Temperature                  | -55 to +125 | °C    |
| T <sub>STG</sub> | Storage Temperature                    | -55 to +150 | °C    |

Typical Characteristics@ Ta=25°C unless otherwise specified

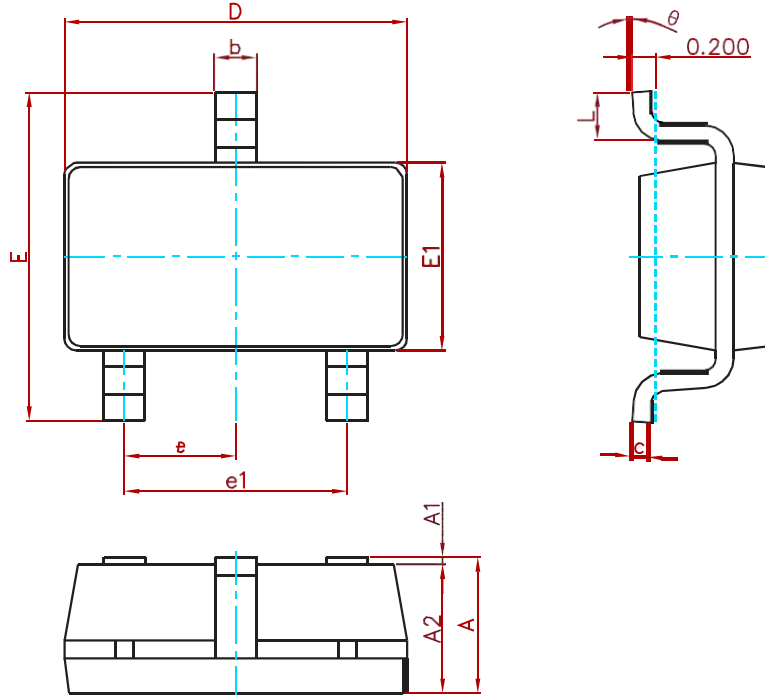


Soldering Parameters

|  |                                    |                         |
|--|------------------------------------|-------------------------|
| Reflow Condition                                       |                                    | Fb – Free assembly      |
| Pre Heat   | - Temperature Min ( $T_{s(Min)}$ ) | 150°C                   |
|  | - Temperature Max ( $T_{s(Max)}$ ) | 200°C                   |
|  | - Time (Min to max) ( $t_s$ )      | 60 – 180 secs           |
| Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak) |                                    | 3°C/second Max          |
| $T_{s(Max)}$ to $T_L$ - Ramp-up Rate                   |                                    | 3°C/second Max          |
| Reflow   | - Temperature ( $T_L$ ) (Liquidus) | 217°C                   |
|  | - Temperature ( $t_r$ )            | 60 – 150 seconds        |
| Peak Temperature ( $T_p$ )                             |                                    | 250 <sup>+0/-5</sup> °C |
| Time within 5°C of actual peak Temperature ( $t_p$ )   |                                    | 20 – 40 seconds         |
| Ramp-down Rate   |                                    | 6°C/second Max          |
| Time 25°C to peak Temperature ( $T_p$ )                |                                    | 8 minutes Max.          |
| Do not exceed  |                                    | 260°C                   |

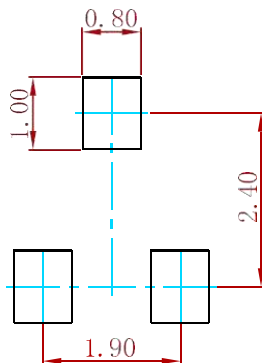


**PACKAGE MECHANICAL DATA**



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 1.050                     | 1.250 | 0.041                | 0.049 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 1.050                     | 1.150 | 0.041                | 0.045 |
| b      | 0.300                     | 0.500 | 0.012                | 0.020 |
| c      | 0.100                     | 0.200 | 0.004                | 0.008 |
| D      | 2.820                     | 3.020 | 0.111                | 0.119 |
| E1     | 1.500                     | 1.700 | 0.059                | 0.067 |
| E      | 2.650                     | 2.950 | 0.104                | 0.116 |
| e      | 0.950(BSC)                |       | 0.037(BSC)           |       |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.300                     | 0.600 | 0.012                | 0.024 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

**Suggested Pad Layout**



Note:  
 1. Controlling dimension: in millimeters.  
 2. General tolerance: ± 0.05mm.  
 3. The pad layout is for reference purposes only.

**REEL SPECIFICATION**

| P/N            | PKG    | QTY  |
|----------------|--------|------|
| PESDXXXL2BT-MS | SOT-23 | 3000 |

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