

# MSKSEMI

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT

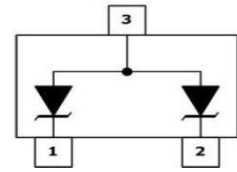


PLED

Product data sheet

## Features

- ◆ 300 Watts peak pulse power (tp = 8/20μs)
- ◆ Transient protection for high speed data lines to IEC 61000-4-2 (ESD) ±30kV (air), ±30kV (contact) IEC 61000-4-4 (EFT) 40A (5/50ns)
- ◆ Working voltages : 3V,5V,12V,15V,24V
- ◆ Protects two bidirectional line
- ◆ Low operating and clamping voltages
- ◆ Solid-state silicon avalanche technology



**SOT-23**

## 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

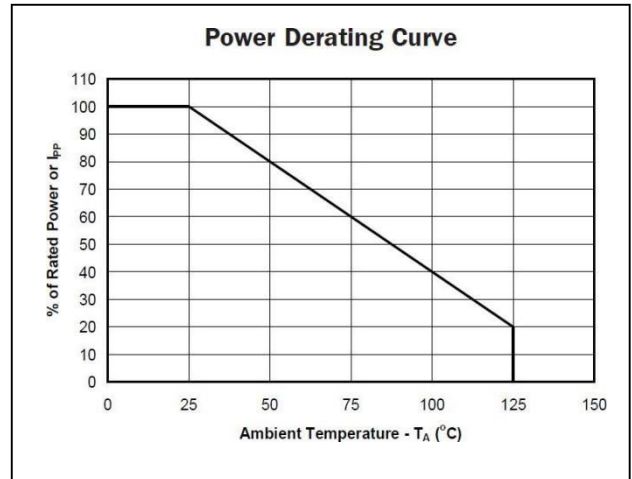
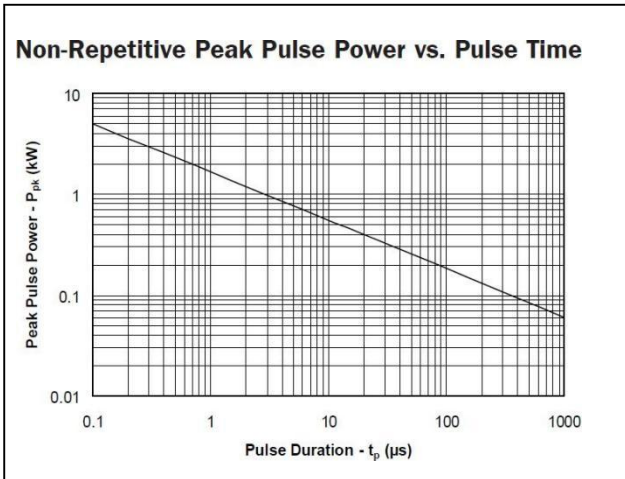
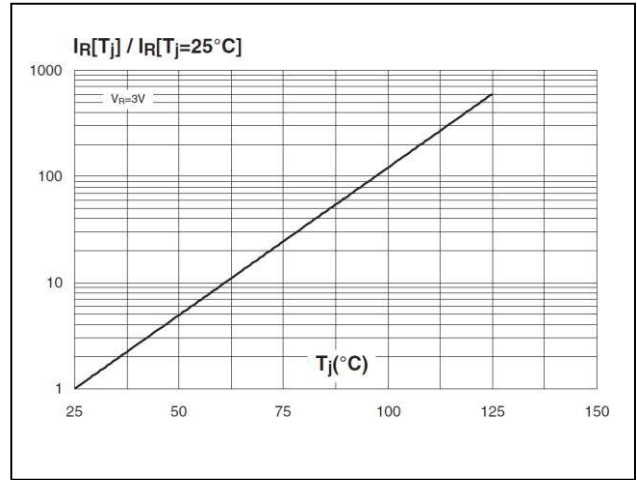
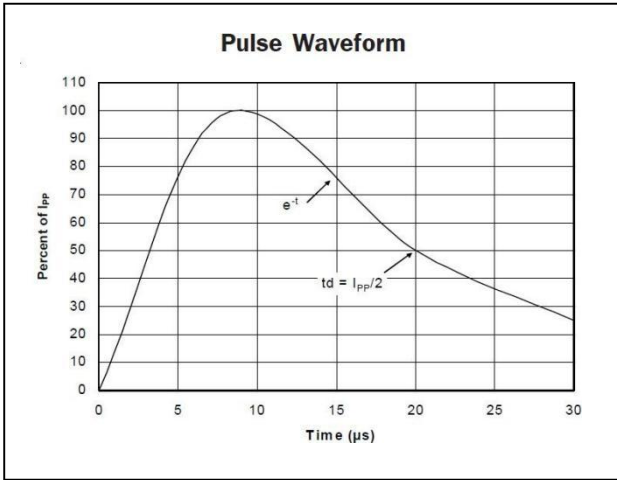
## Maximum Rating @ Ta=25°C unless otherwise specified

| Symbol           | Parameter                      | Ratings     | Units |
|------------------|--------------------------------|-------------|-------|
| P <sub>PK</sub>  | Peak Pulse Power (tp = 8/20μs) | 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    |

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

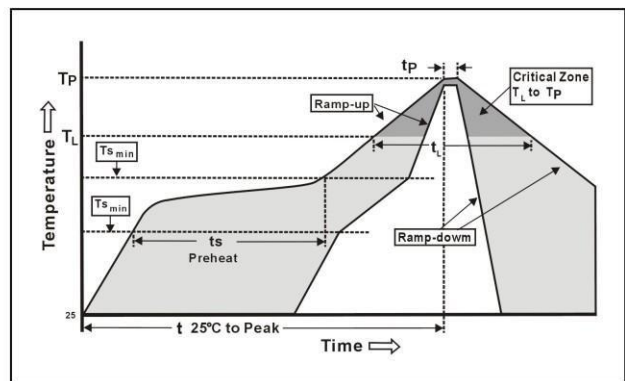
| P/N           | V <sub>RWM</sub><br>(V)<br>(max.) | V <sub>B</sub><br>(V)<br>(min.) | I <sub>T</sub><br>(mA) | V <sub>C@1A</sub><br>(V)<br>(max.) | V <sub>C</sub><br>(V)<br>(max.) (@A) | I <sub>R</sub><br>(μA)<br>(max.) | C <sub>T</sub><br>(pF)<br>(max.) |
|---------------|-----------------------------------|---------------------------------|------------------------|------------------------------------|--------------------------------------|----------------------------------|----------------------------------|
| ESD3V3S2UT-MS | 3.3                               | 4                               | 1                      | 7.0                                | 14    20                             | 40                               | 450                              |
| ESD5V2S2UT-MS | 5                                 | 6                               | 1                      | 9.8                                | 18    17                             | 10                               | 300                              |
| ESD12VS2UT-MS | 12                                | 13.3                            | 1                      | 19                                 | 32    11                             | 1                                | 130                              |
| ESD15VS2UT-MS | 15                                | 16.7                            | 1                      | 24                                 | 38    10                             | 1                                | 120                              |
| ESD24VS2UT-MS | 24                                | 26.7                            | 1                      | 43                                 | 52    7                              | 1                                | 80                               |

Typical Characteristics @ Ta=25°C unless otherwise specified

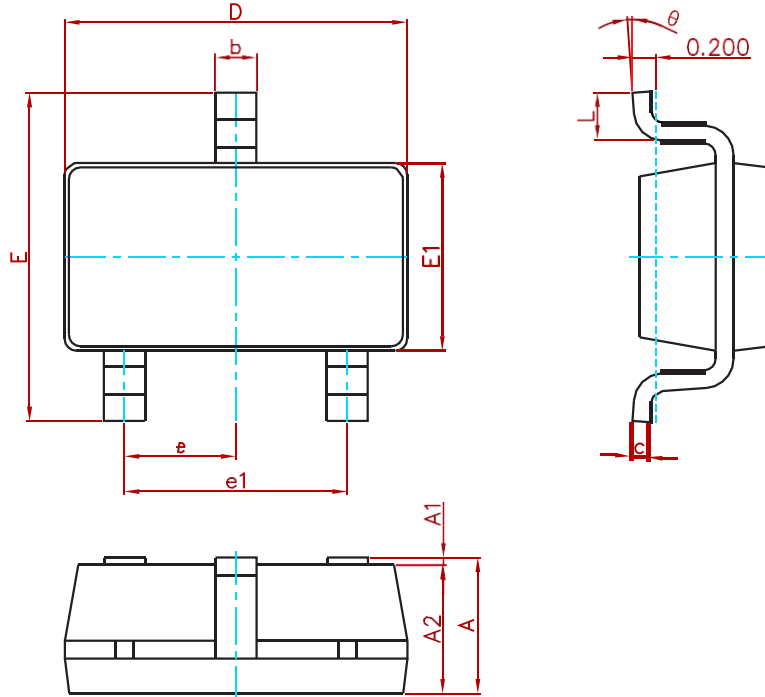


Soldering Parameters

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

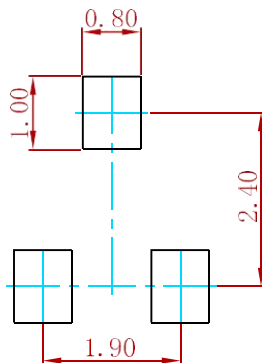


**PACKAGE MECHANICAL DATA**



| 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 |
| 0      | 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  |
|---------------|--------|------|
| ESDXXXS2UT-MS | SOT-23 | 3000 |

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