

# MSKSEMI

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



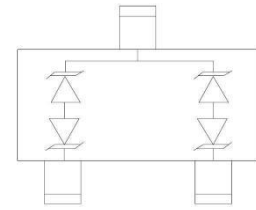
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Product data sheet

[www.msksemi.com](http://www.msksemi.com)

## 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 : 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

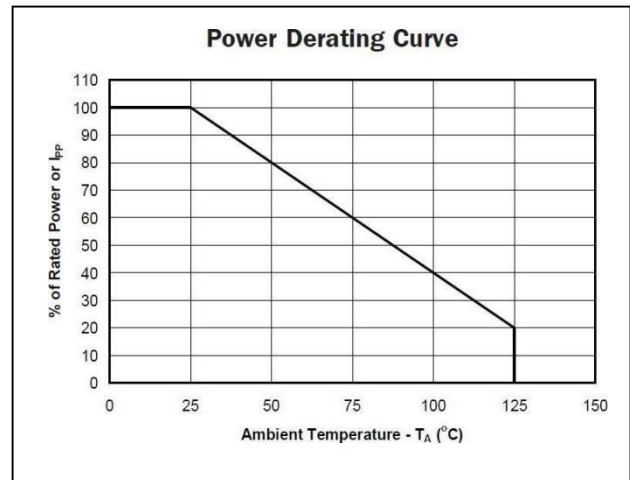
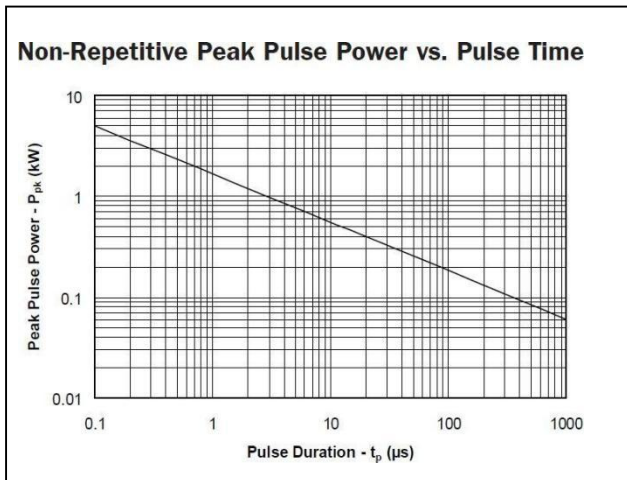
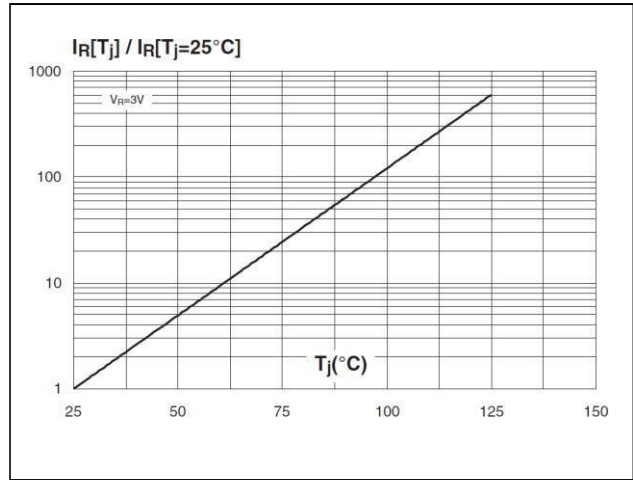
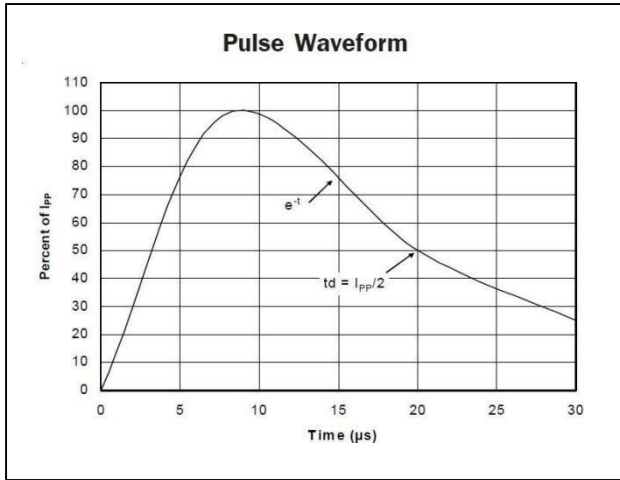
## Electrical Characteristics @ $T_a = 25^\circ C$ unless otherwise

PART NUMBER	$V_{RWM}$	$V_B$	$I_T$	$V_C@1A$	$V_C$		$I_R$	$C_T$
	(V) (max.)	(V) (min.)	(mA)	(V) (max.)	(V) (max.)	(@A)	( $\mu A$ ) (max.)	(pF) (max.)
ESD3V3L2BT-MS	3.3	4	1	7.0	14	18	1	100
ESD5V0L2BT-MS	5	6	1	9.8	18	13	1	75
ESD12VL2BT-MS	12	13.3	1	19	32	5	1	20
ESD15VL2BT-MS	15	16.7	1	24	38	5	1	20
ESD24VL2BT-MS	24	26.7	1	43	52	5	1	35

## Maximum Rating @ $T_a = 25^\circ C$ unless otherwise specified

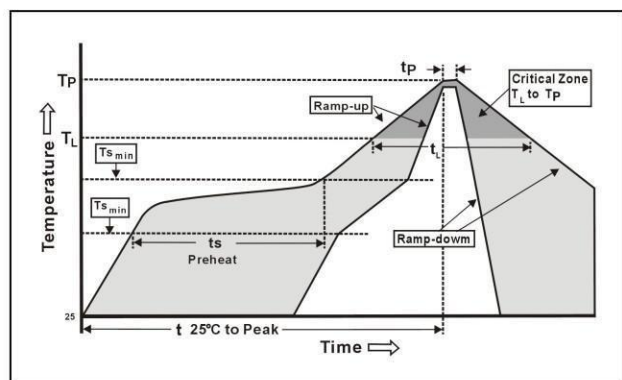
Symbol	Parameter	Ratings	Units
$P_{PK}$	Peak Pulse Power ( $t_p = 8/20\mu s$ )	300	Watts
$T_L$	Lead Soldering Temperature	260(10sec.)	$^\circ C$
$T_J$	Operating Temperature	-55 to +125	$^\circ C$
$T_{STG}$	Storage Temperature	-55 to +150	$^\circ C$

Typical Characteristics @ Ta=25°C unless otherwise specified

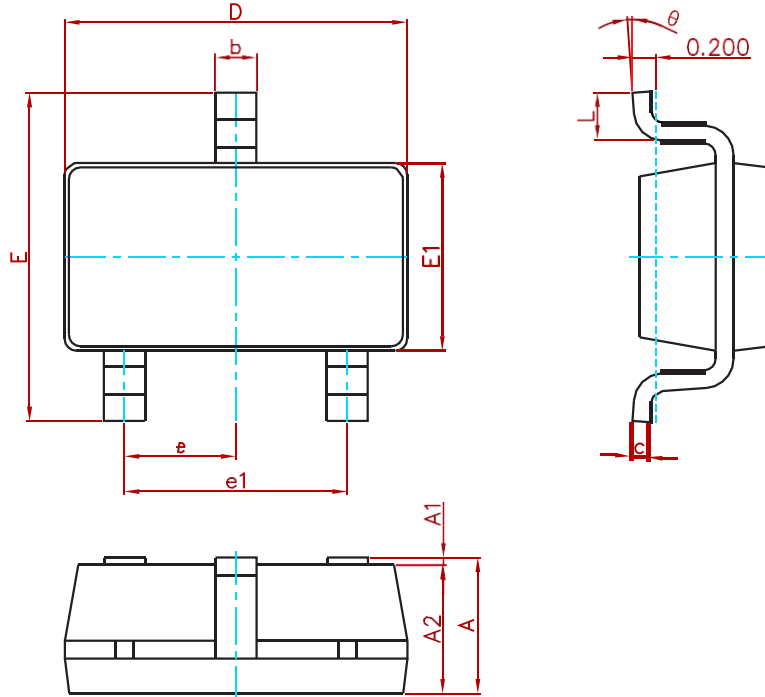


Soldering Parameters

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 ( $t_L$ )	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

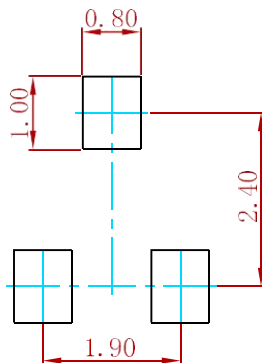


**PACKAGE MECHANICAL DATA**



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
ESDXXVL2BT-MS	SOT-23	3000

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