

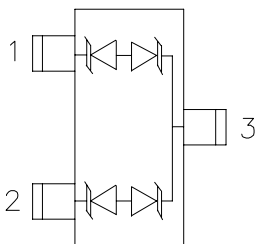
### Features

- ◆ 720W peak pulse power (8/20 $\mu$ s)
- ◆ Protects two bi-directional lines
- ◆ Ultra low leakage: nA level
- ◆ Operating voltage: 5.0V
- ◆ Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm 30$ kV
    - Contact discharge:  $\pm 30$ kV
  - IEC61000-4-4 (EFT) 40A (5/50ns)
  - IEC61000-4-5 (Lightning) 30A (8/20 $\mu$ s)
- ◆ RoHS Compliant
- ◆ Package: SOT-23

### Description

The ESDK5B0L0T1 is a Bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive data and power line. The ESDK5B0L0T1 complies with the IEC 61000-4-2 (ESD) standard with  $\pm 30$  kV air and  $\pm 30$  kV contact discharge. It is assembled into an ultra-small SOT-23 package. The small size and high ESD surge protection make ESDK5B0L0T1 an ideal choice to protect Power and many other portable applications.

### Circuit Diagram



### Applications

- ◆ Wireless System
- ◆ Networks
- ◆ Portable Instrumentation
- ◆ RS485 Ports

**Limiting Values(TA= 25 °C, unless otherwise specified)**

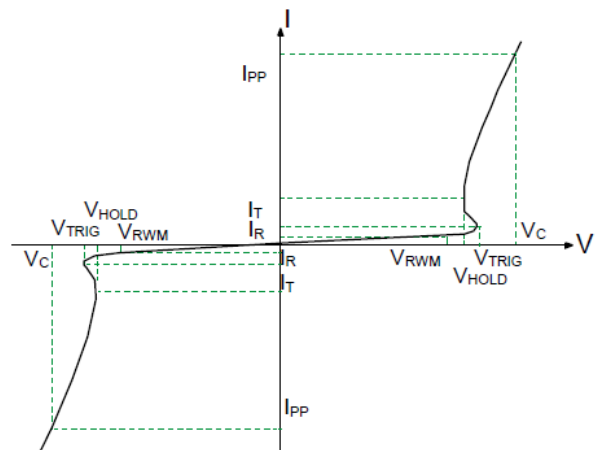
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20µs)	Ppk	720	W
Peak Pulse Current (8/20µs)	IPP	30	A
ESD per IEC 61000-4-2 (Air)	VESD	±30	kV
ESD per IEC 61000-4-2 (Contact)		±30	
Operating Temperature Range	TJ	-55 to +125	°C
Storage Temperature Range	Tstg	-55 to +150	°C

**Electrical Characteristics(TA= 25 °C unless otherwise specified)**

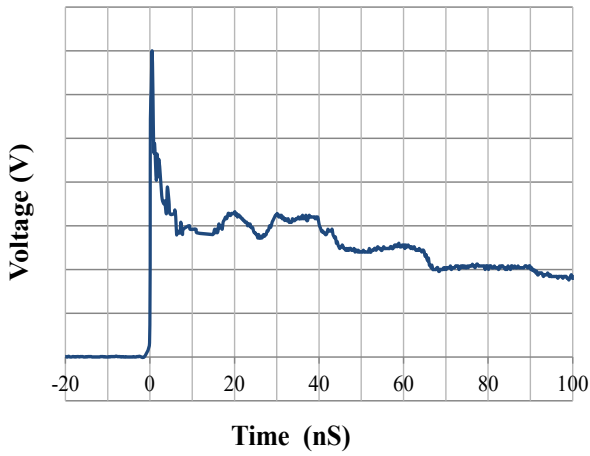
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	VRWM				5.0	V
Breakdown Voltage	VBR	IT = 1mA, Pin1/Pin2-Pin3	5.5	7.2	8.5	V
Breakdown Voltage	VBR	IT = 1mA, Pin1-Pin2	11	14.4	17	V
Reverse Leakage Current	IR	VRWM = 5V			0.1	µA
Clamping Voltage	VC	IPP = 1A (8 / 20µs pulse), Pin1/Pin2-Pin3			9	V
Clamping Voltage	VC	IPP = 30A (8 / 20µs pulse), Pin1/Pin2-Pin3			12	V
Clamping Voltage	VC	IPP = 1A (8 / 20µs pulse), Pin1-Pin2			18	V
Clamping Voltage	VC	IPP = 30A (8 / 20µs pulse), Pin1-Pin2			24	V
Junction Capacitance	CJ	VR = 0V, f = 1MHz		60	100	pF

**Portion Electronics Parameter**

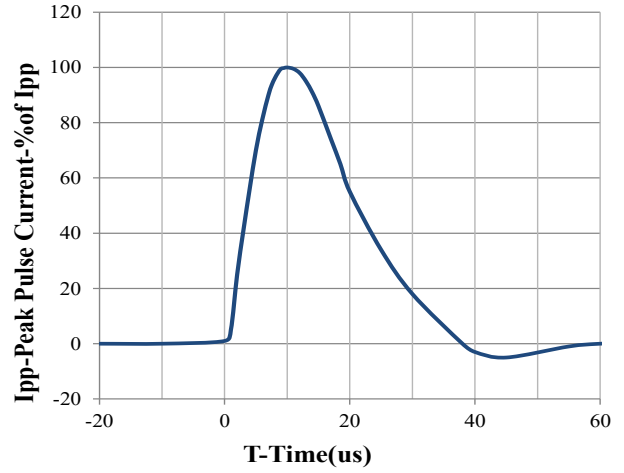
Symbol	Parameter
VRWM	Peak Reverse Working Voltage
IR	Reverse Leakage Current @ VRWM
VBR	Breakdown Voltage @IT
IT	Test Current
IPP	Maximum Reverse Peak Pulse Current
VC	Clamping Voltage @IPP



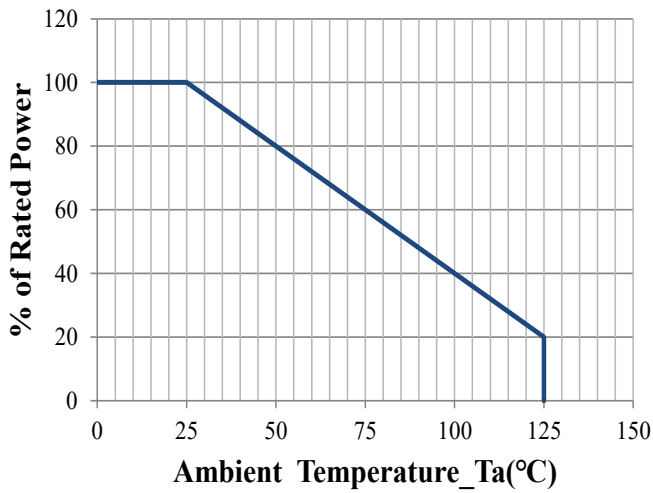
## Typical Characteristics



IEC61000-4-2 Pulse Waveform

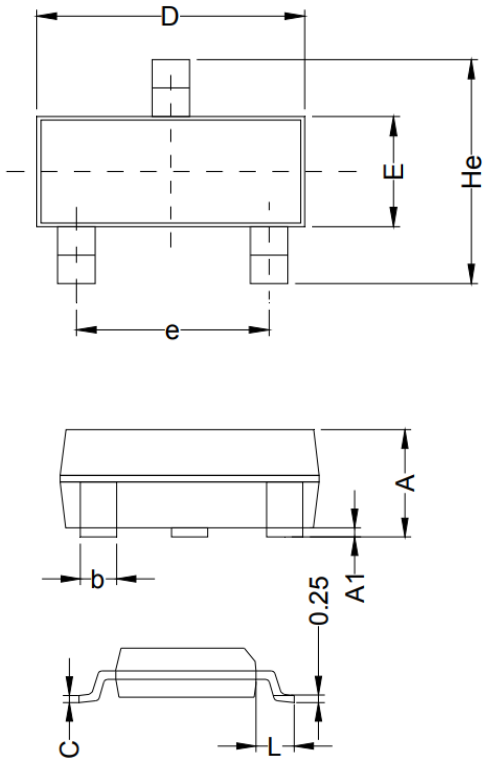


8 / 20us Pulse Waveform



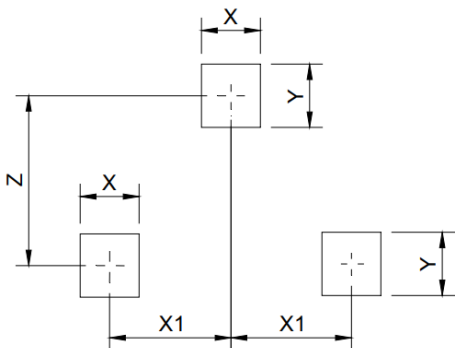
Power Derating Curve

### SOT-23 Package Outline Drawing

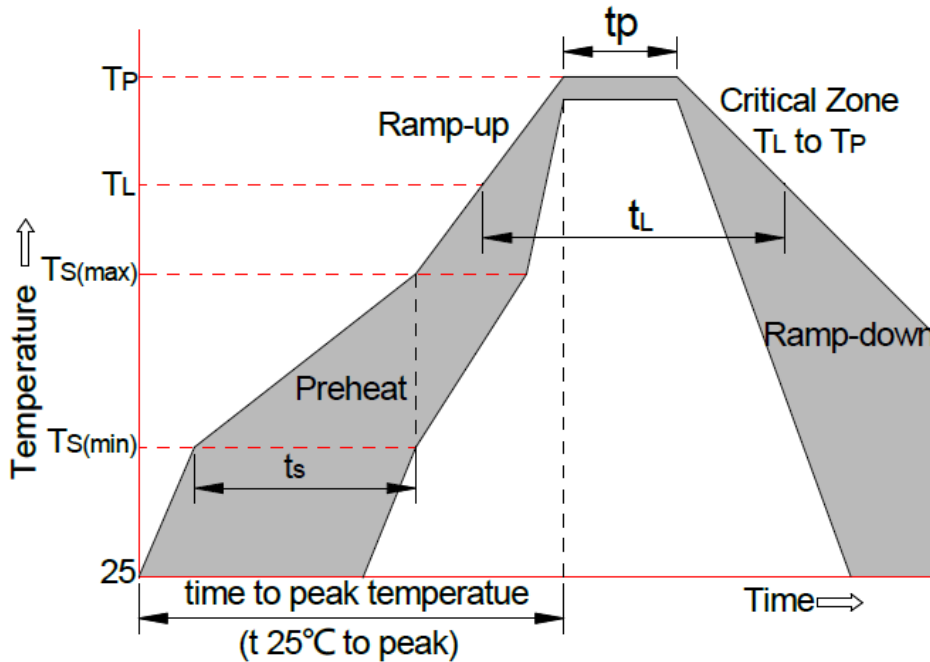


Symbol	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.90	1.063	1.15	0.035	0.042	0.045
A1	0.00	0.075	0.14	0.000	0.003	0.006
b	0.30	0.40	0.50	0.012	0.016	0.020
C	0.07	0.10	0.15	0.003	0.004	0.006
D	2.80	2.90	3.00	0.110	0.114	0.118
e	1.80	1.90	2.00	0.071	0.075	0.079
E	1.20	1.30	1.40	0.047	0.051	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		

### Suggested Land Pattern



## Soldering Parameters



Reflow Condition		Pb-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( Liquid us Temp ( $T_L$ ) to peak)		3°C/sec. Max
$T_s$ (max) to $T_L$ -Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature ( $T_L$ ) (Liquid us)	+217°C
	-Temperature ( $t_L$ )	60-150 secs
Peak Temp ( $T_p$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp ( $t_p$ )		30 secs. Max
Ramp-down Rate		6 °C/secs. Max
xTime 25°C to Peak Temp ( $T_p$ )		8 min. Max
Do not exceed		+260°C