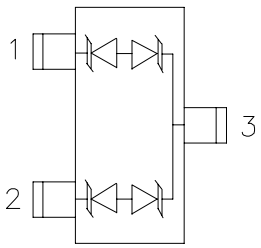
Features

- 280W peak pulse power (8/20μs)
- Protects two bi-directional lines
- Ultra low leakage: nA level
- Operating voltage: 12.0V
- Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±30kV
    - Contact discharge: ±30kV
  - —IEC61000-4-4 (EFT) 40A (5/50ns)
  - —IEC61000-4-5 (Lightning) 10A (8/20μs)
- RoHS Compliant
- Package: SOT-23

Description

The ESDJ12BL1T1 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 ESDJ12BL1T1 complies with the IEC 61000 - 4 -2 standard with ±30 kV air and ±30 kV contact discharge. It is assembled into an ultra-small SOT-23 package. The small size and high ESD surge protection make ESDJ12BL1T1 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)

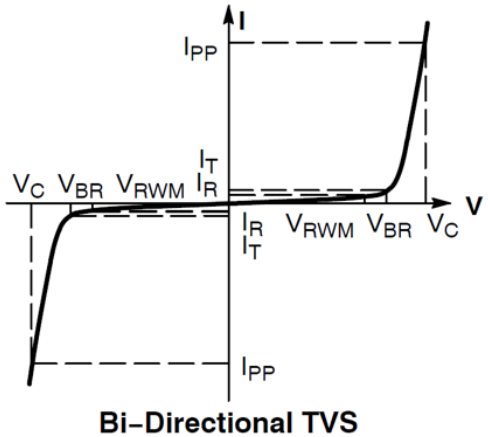
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	280	W
Peak Pulse Current (8/20μs)	IPP	10	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	VESD	±30 ±30	kV
Operating Temperature Range	TJ	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}				12	V
Breakdown Voltage	V_{BR}	I_T = 1mA，Pin1/Pin2-Pin3	14.0	15.0	16.5	V
Breakdown Voltage	V_{BR}	I_T = 1mA, Pin1-Pin2	28.0	30.0	33.0	V
Reverse Leakage Current	I_R	V_{RWM} = 12V			0.5	μA
Clamping Voltage	V_C	I_{PP} = 1A (8 / 20μs pulse)，Pin1/Pin2-Pin3			19	V
Clamping Voltage	V_C	I_{PP} = 10A (8 / 20μs pulse)，Pin1/Pin2-Pin3			28	V
Clamping Voltage	V_C	I_{PP} = 1A (8 / 20μs pulse), Pin1-Pin2			38	V
Clamping Voltage	V_C	I_{PP} = 10A (8 / 20μs pulse), Pin1-Pin2			56	V
Junction Capacitance	C_J	VR = 0V, f = 1MHz，Pin1/Pin2-Pin3		23	35	pF
Junction Capacitance	C_J	VR = 0V, f = 1MHz，Pin1-Pin2		12	18	pF

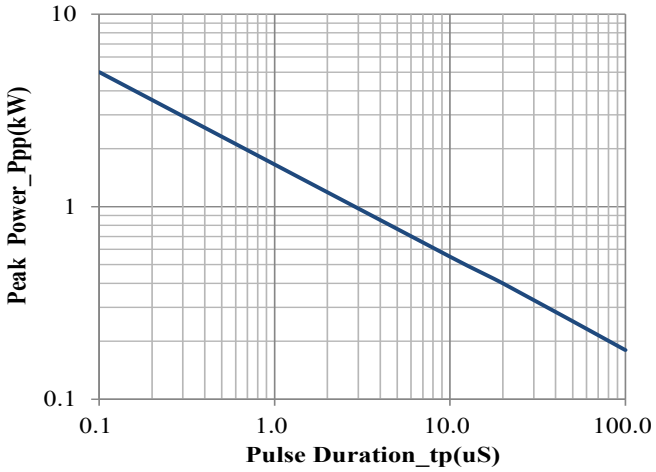
Portion Electronics Parameter

Symbol	Parameter
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @I_{PP}

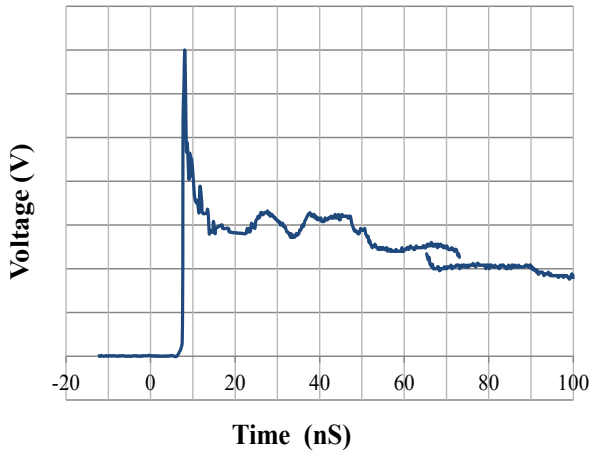


Bi−Directional TVS

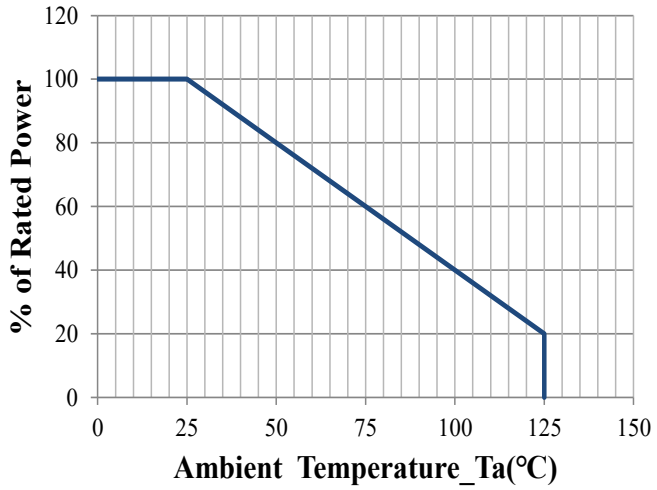
Typical Characteristics



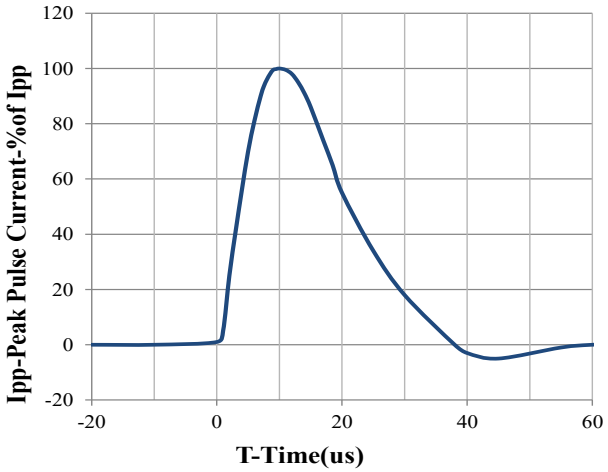
Peak Pulse Power vs. Pulse Time



IEC61000−4−2 Pulse Waveform

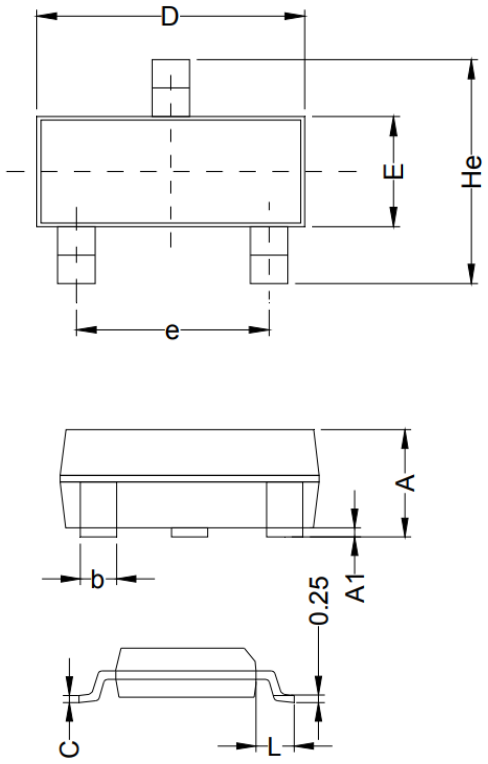


Power Derating Curve



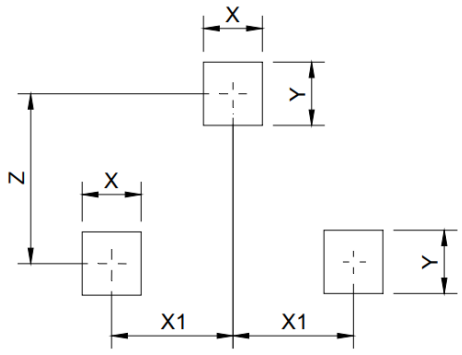
8 / 20us Pulse Waveform

SOT-23 Package Outline Drawing

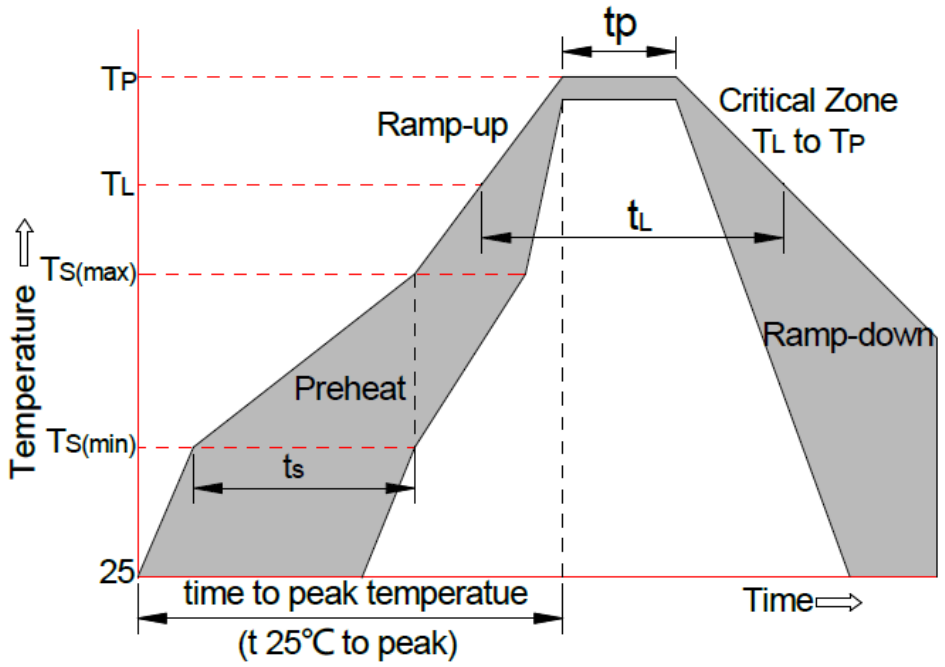


Symbol	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.90	1.063	1.15	0.035	0.042	0.045
A1	0.00	0.075	0.14	0.000	0.003	0.006
b	0.30	0.40	0.50	0.012	0.016	0.020
C	0.07	0.10	0.15	0.003	0.004	0.006
D	2.80	2.90	3.00	0.110	0.114	0.118
e	1.80	1.90	2.00	0.071	0.075	0.079
E	1.20	1.30	1.40	0.047	0.051	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) (ts)	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 (Tp)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (tp)		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