ESDJ24BL1S3

1-Line Bi-directional TVS Diode

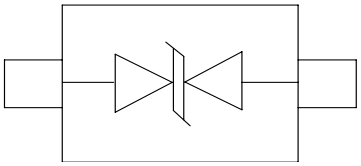
Features

- 450W peak pulse power (8/20 μs)
- Protects one data or power line
- Ultra low leakage: nA level
- Operating voltage: 24V
- Ultra low clamping voltage
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±30kV
    - Contact discharge: ±30kV
  - IEC61000-4-4 (Lightning) 9A (8/20ns)
- RoHS Compliant
- Package: SOD-323

Description

The ESDJ24BL1S3 is designed to replace multilayer varistors in portable applications such as cell phones, notebook computers and PDA's, using monolithic silicon technology to provide fast response time and ultra low ESD clamping voltage, making this device an ideal solution for protecting sensitive semiconductor components from damage.ESDJ24BL1S3 complies with the IEC 61000-4-2 (ESD) standard with ±30kV air and ±30kV contact discharge. ESDJ24BL1S3 is assembled into a lead-free SOD-323 package and will protect one unidirectional line. These devices will fit on the same PCB pad area as an 0805 MLV device.

Circuit Diagram



Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Peripherals
- Pagers Peripherals
- Desktop and Servers

Absolute Maximum Ratings： (T_C=25℃ unless otherwise noted)

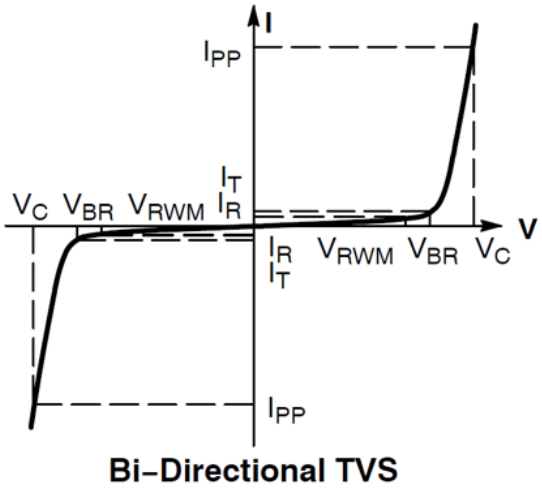
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	450	W
Peak Pulse Current (8/20μs)	IPP	9	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	VESD	±30 ±30	kV
Operating Temperature Range	TJ	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

Electrical Characteristics： (T_C=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}				24.0	V
Breakdown Voltage	V_{BR}	I_T = 1mA	25.5	27.0	30.0	V
Reverse Leakage Current	I_R	V_{RWM} = 24.0V			0.1	μA
Clamping Voltage	V_C	I_{PP} = 1A (8 / 20μs pulse)		31	35	V
Clamping Voltage	V_C	I_{PP} = 9A (8 / 20μs pulse)		40	50	V
Junction Capacitance	C_J	VR = 0V, f = 1MHz		30	50	pF

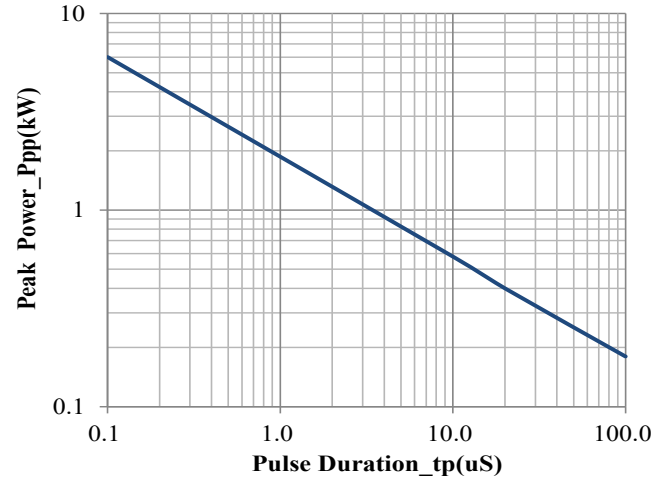
Portion Electronics Parameter

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}

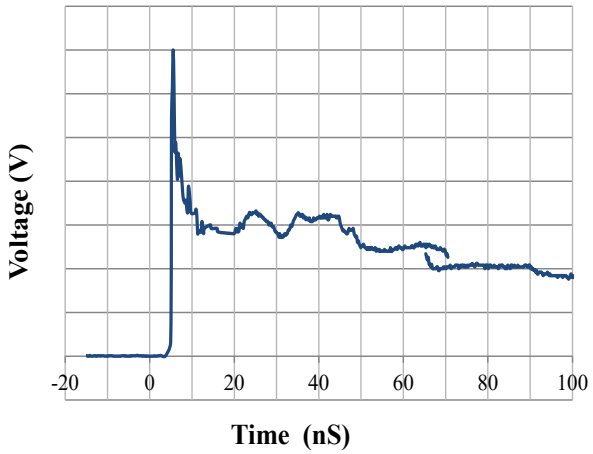


Bi−Directional TVS

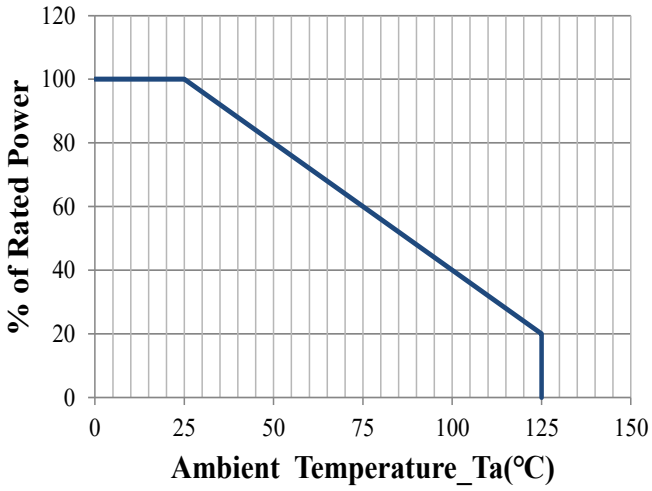
Typical Characteristics： (T_C=25℃ unless otherwise noted)



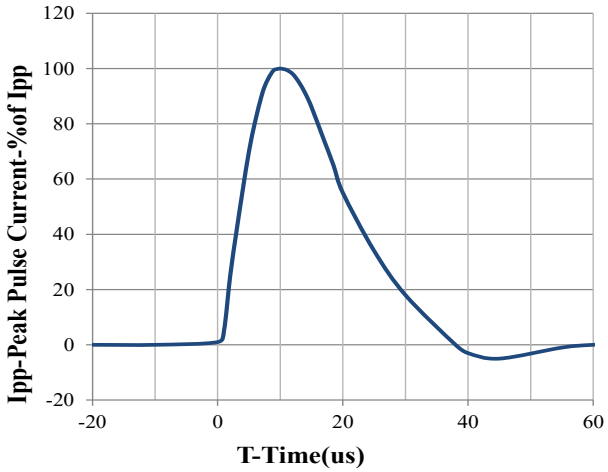
Peak Pulse Power vs. Pulse Time



IEC61000−4−2 Pulse Waveform

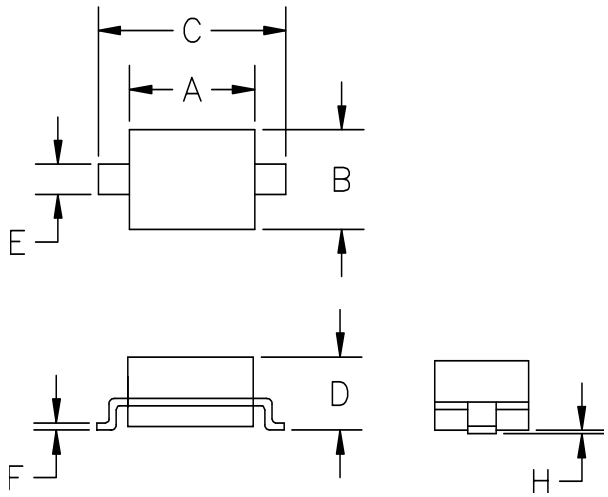


Power Derating Curve



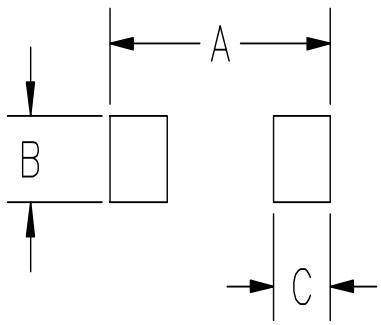
8 / 20us Pulse Waveform

SOD-323 Package Outline Drawing



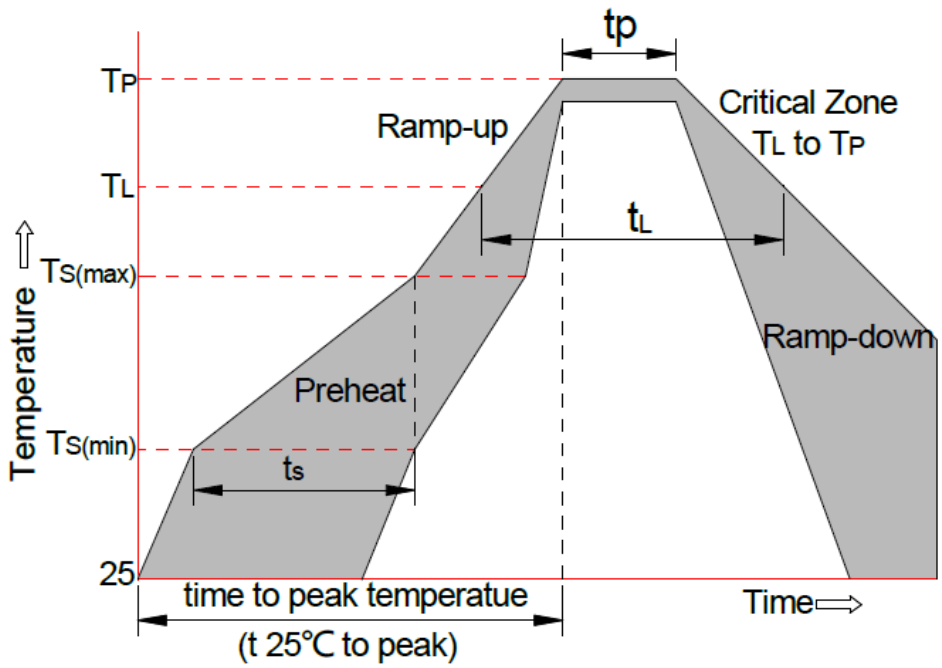
SYM	DIMENSIONS			
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.50	1.80	0.060	0.071
B	1.20	1.40	0.045	0.054
C	2.30	2.70	0.090	0.107
D	-	1.10	-	0.043
E	0.30	0.40	0.012	0.016
F	0.10	0.25	0.004	0.010
H	-	0.10	-	0.004

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
A	3.15	0.120
B	0.80	0.031
C	0.80	0.031

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

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