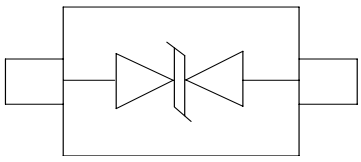
Features

- low capacitance: 15pF typical
- Ultra low leakage: nA level
- Low operating voltage: 5.0V
- Low clamping voltage
- 2-pin leadless package
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±30kV
    - Contact discharge: ±30kV
  - IEC61000-4-5 (Lightning) 8A (8/20μs)
- RoHS Compliant
- Package：SOD-923

Description

The ESD9B5VL 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 an power line. ESD9B5VL complies with the IEC 61000-4-2 (ESD) standard with ±30 kV air and ±30 kV contact discharge. It is assembled into an ultra-small SOD-923 lead-free package. The small size and high ESD surge protection make ESD9B5VL an ideal choice to protect cell phone, digital cameras , audio players and many other portable applications.

Circuit Diagram



Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- Peripherals
- Audio Players
- Keypads, Side Keys, LCD Displays

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

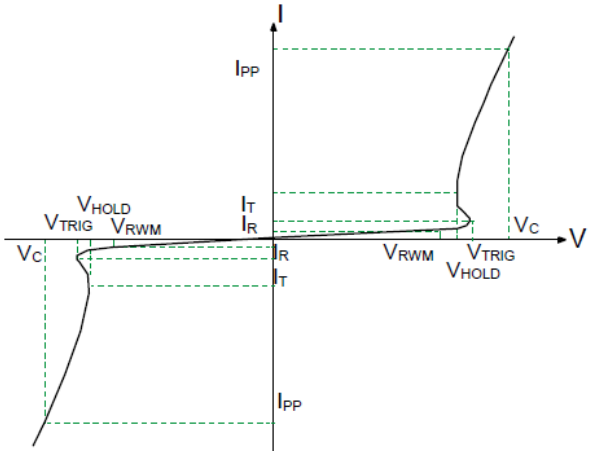
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	112	W
Peak Pulse Current (8/20μs)	IPP	8	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	VESD	±30 ±30	kV
Operating Temperature Range	TJ	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

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

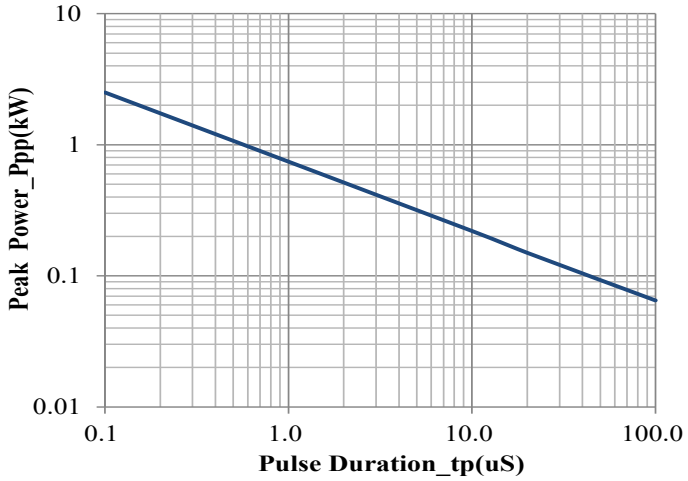
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}				5.0	V
Breakdown Voltage	V_{BR}	I_T = 1mA	6.0	6.5	8.5	V
Reverse Leakage Current	I_R	V_{RWM} = 5.0V			0.2	μA
Clamping Voltage	V_C	I_{PP} = 1A (8 / 20μs pulse)			9.0	V
Clamping Voltage	V_C	I_{PP} = 8A (8 / 20μs pulse)			14.0	V
Junction Capacitance	C_J	VR = 0V, f = 1MHz		15	25	pF

Portion Electronics Parameter

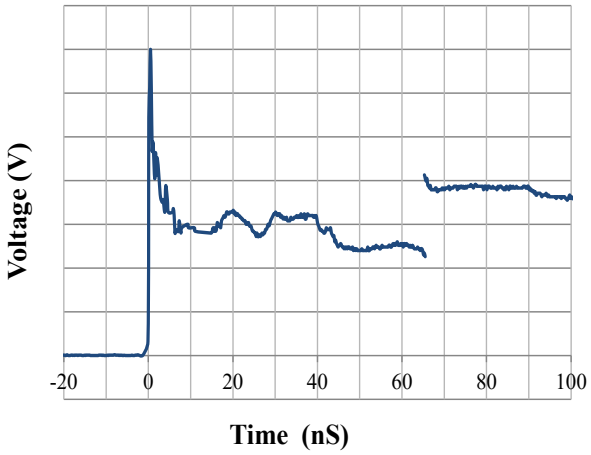
Symbol	Parameter
V_{RWM}	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @I_{PP}



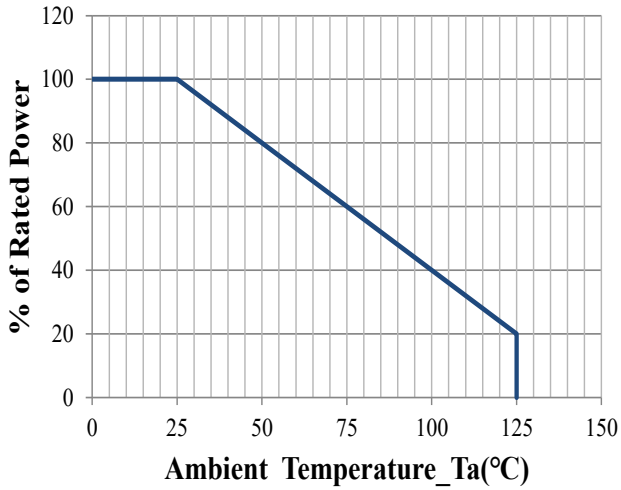
Typical Characteristics



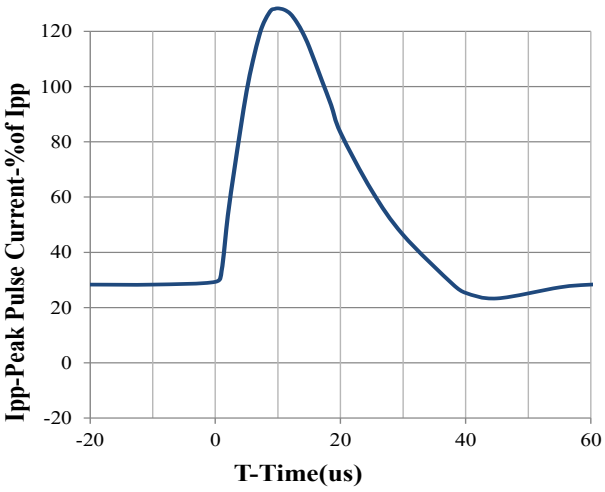
Peak Pulse Power vs. Pulse Time



IEC61000−4−2 Pulse Waveform

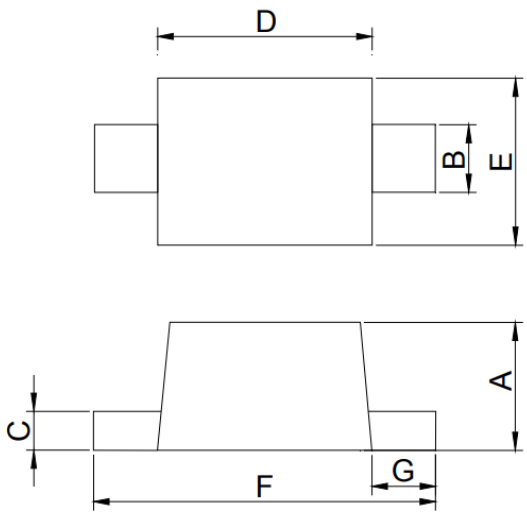


Power Derating Curve



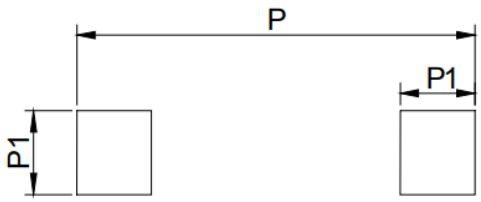
8 / 20us Pulse Waveform

SOD-923 Package Outline Drawing



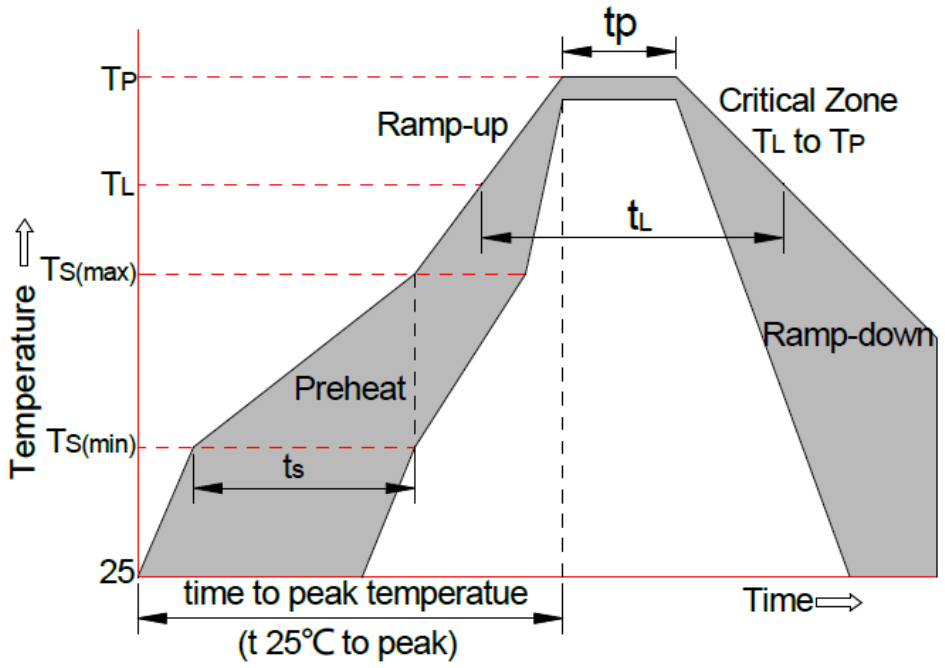
SYM	DIMENSIONS			
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.36	0.45	0.014	0.018
B	0.15	0.30	0.006	0.012
C	0.06	0.20	0.002	0.008
D	0.70	0.90	0.028	0.035
E	0.55	0.65	0.022	0.026
F	0.90	1.10	0.035	0.043
G	0.05	0.15	0.002	0.006

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
P1	0.45	0.018
P	1.40	0.055

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