

Description

The ESD15B is a 15V 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 ESD15B complies with the IEC 61000-4-2 (ESD) standard with $\pm 30\text{kV}$ air and $\pm 30\text{kV}$ contact discharge. It is assembled into an ultra-small 1.0 x 0.6 x 0.5mm lead-free DFN package. The small size and high ESD surge protection make ESD15B an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

Features

- ◆ Ultra small package: 1.0 x0.6 x0.5mm
- ◆ Protects one data or power line
- ◆ Ultra low leakage : nA level
- ◆ Operating voltage : 15V
- ◆ Low clamping voltage
- ◆ 2-pin leadless package
- ◆ Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
Air discharge: $\pm 30\text{kV}$
Contact discharge: $\pm 30\text{kV}$
 - IEC61000-4-5 (Lightning) 6A (8/20 μs)
- ◆ RoHS Compliant

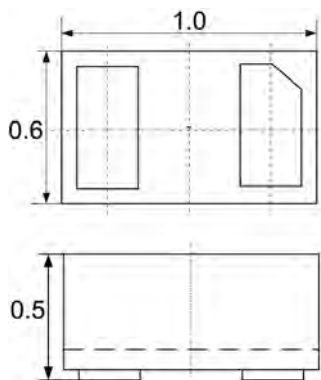
Mechanical Characteristics

- ◆ Package: DFN1006-2 (1.0 x0.6 x0.5mm)
- ◆ Lead Finish: Matte Tin
- ◆ Case Material: “Green” Molding Compound.
- ◆ Moisture Sensitivity: Level 3 per J-STD-020
- ◆ Terminal Connections: See Diagram Below
- ◆ Marking Information: See Below

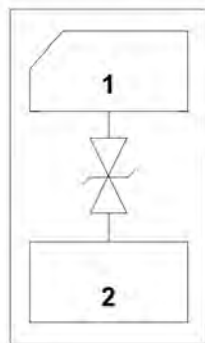
Applications

- ◆ Cellular Handsets and Accessories
- ◆ Personal Digital Assistants
- ◆ Notebooks and Handhelds
- ◆ Portable Instrumentation
- ◆ Digital Cameras
- ◆ Peripherals
- ◆ Audio Players

Dimensions and Pin Configuration



Package Dimensions



Circuit and Pin Schematic

Marking Information



15B = Device Marking Code

Ordering Information

Part Number	Marking	Packaging	Reel Size
ESD15B	15B	10000/Tape & Reel	7 inch



Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

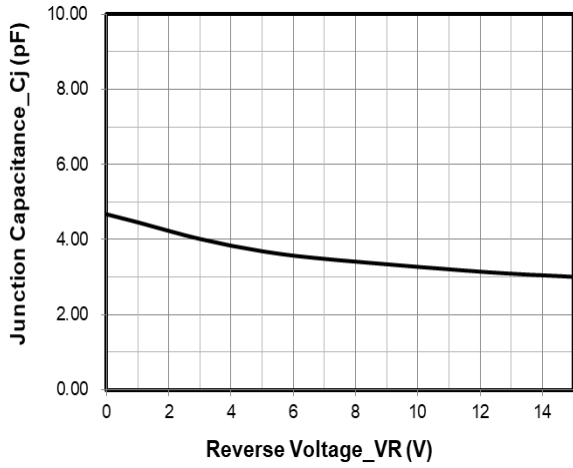
Parameter	Symbol	Value	Unit
Peak Pulse Power(8/20μs)	Ppk	150	W
Peak Pulse Current(8/20μs)	I _{PP}	6	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V _{ESD}	±30 ±30	kV
Operating Temperature Range	T _J	-55 to +125	°C
Storage Temperature Range	T _{stg}	-55 to +150	°C

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

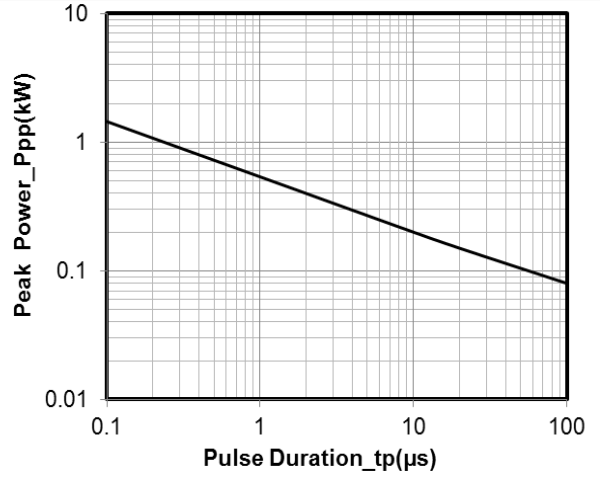
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			15	V	
Breakdown Voltage	V _{BR}	16.2			V	I _T = 1mA
Reverse Leakage Current	I _R			0.2	μA	V _{RWM} = 15V
Clamping Voltage	V _C			18	V	I _{PP} = 1A (8 x 20μs pulse)
Clamping Voltage	V _C			25	V	I _{PP} = 6A (8 x 20μs pulse)
Junction Capacitance	C _J		8		pF	V _R = 0V, f = 1MHz



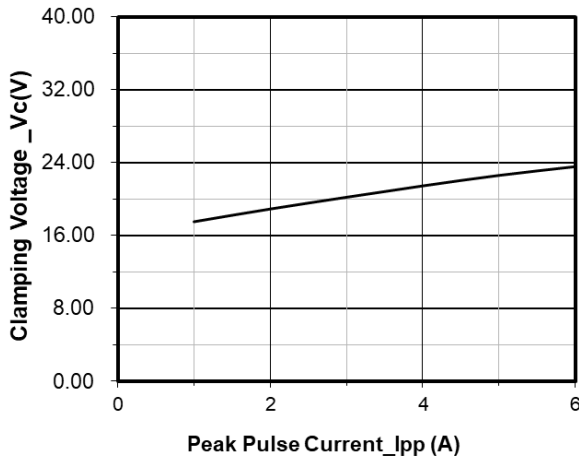
Typical Performance Characteristics (TA=25°C unless otherwise Specified)



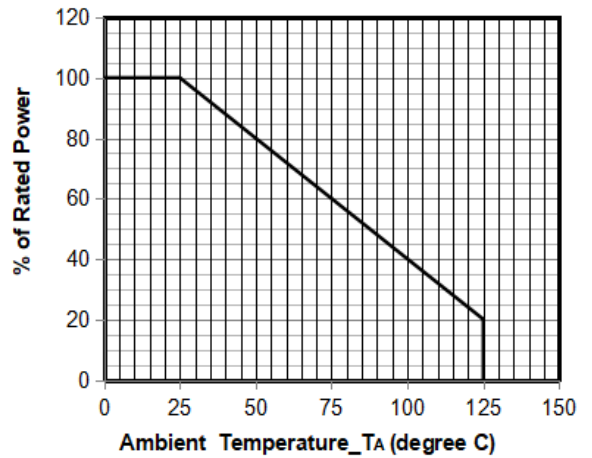
Junction Capacitance vs. Reverse Voltage



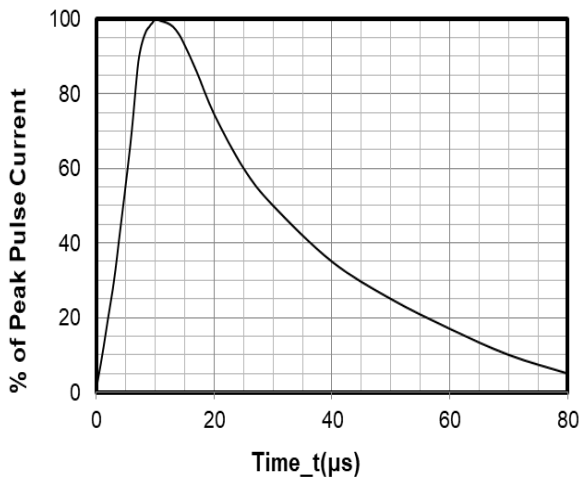
Peak Pulse Power vs. Pulse Time



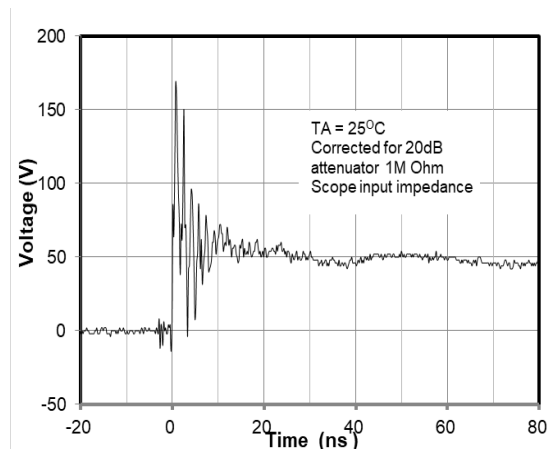
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



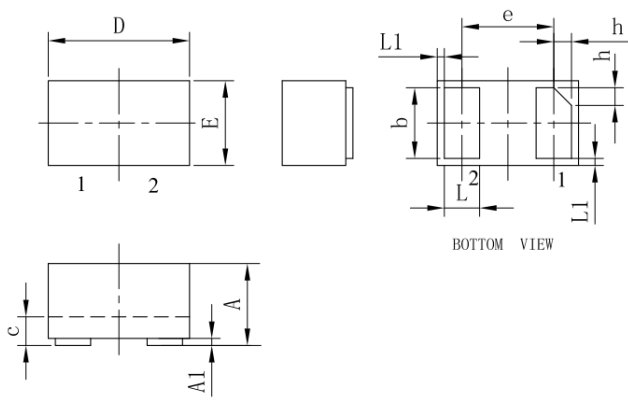
8 X 20μs Pulse Waveform



ESD Clamping Voltage

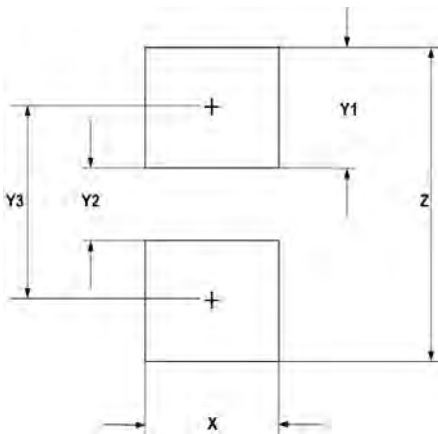
8 kV Contact per IEC61000-4-2

DFN1006-2 Package Outline Drawing



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.450	0.500	0.550	0.018	0.020	0.022
A1	0.000	0.020	0.050	0.000	0.001	0.002
b	0.450	0.50	0.550	0.018	0.020	0.022
c	0.120	0.150	0.180	0.005	0.006	0.007
D	0.950	1.000	1.050	0.037	0.039	0.041
e	0.65 BSC			0.026 BSC		
E	0.55	0.60	0.65	0.022	0.024	0.026
L	0.20	0.25	0.30	0.008	0.010	0.012
L1	0.05REF			0.002REF		
h	0.07	0.12	0.17	0.003	0.005	0.007

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	0.60	0.024
Y1	0.50	0.020
Y2	0.30	0.012
Y3	0.80	0.032
Z	1.30	0.052