



JLE33BRD1-2

1-Line Bi-directional TVS Diode

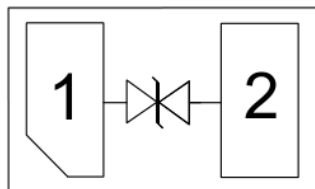
Jialan-Microelectronics

Description

The JLE33BRD1-2 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 high-speed data lines. The

JLE33BRD1-2 has an ultra-low capacitance with a typical value at 0.4pF, and complies with the IEC 61000-4-2 (ESD) standard with 20kV air and ± 15 kV contact discharge. It is assembled into an ultra-small 0.6x0.3x0.3mm lead-free DFN package. The small size, ultra-low capacitance and high ESD surge protection make JLE33BRD1-2 an ideal choice to protect cell phone, digital video interfaces and other high speed ports.

Circuit Diagram



Circuit Diagram

Marking Diagram



Transparent top view

L3 : Device Marking Code

Features

- * Ultra small package: 0.6x0.3x0.3mm
- * Ultra low capacitance: 0.4pF typical
- * Ultra low leakage: nA level
- * Operating voltage: 3.3V
- * Low clamping voltage
- * 2-pin leadless package
- * Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: ± 20 kV
 - Contact discharge: ± 15 kV
 - IEC61000-4-5 (Lightning) 5A (8/20 μ s)
- * RoHS Compliant
- * Package:DFN0603-2

Applications

- * Smart phones
- * Display Ports
- * MDDI Ports
- * USB Ports
- * Digital Video Interface (DVI)
- * PCI Express and Serial SATA Ports

Ordering Information

Part Number	Packaging	Reel Size
JLE33BRD1-2	10000/Tape & Reel	7 inch

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

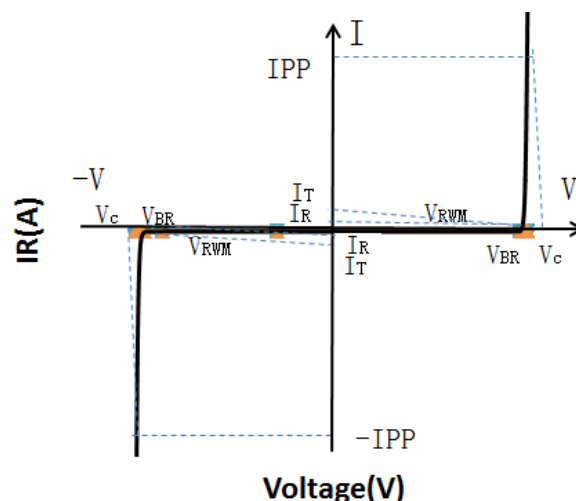
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	80	W
Peak Pulse Current (8/20μs)	IPP	5	A
ESD per IEC 61000-4-2 (Air)	VESD	±20	kV
ESD per IEC 61000-4-2 (Contact)		±15	
Operating Temperature Range	TJ	-55 to +125	°C
Storage Temperature Range	Tstg	-55 to +150	°C

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V _{RWM}				3.3	V
Breakdown Voltage	V _{BR}	I _T = 1mA	4.0	4.5		V
Reverse Leakage Current	I _R	V _{RWM} = 3.3V			0.5	μA
Clamping Voltage	V _C	I _{PP} = 1A (8 x 20μs pulse)			9	V
Clamping Voltage	V _C	I _{PP} = 5A (8 x 20μs pulse)			17	V
Junction Capacitance	C _J	V _R = 0V, f = 1MHz		0.3		pF

Portion Electronics Parameter

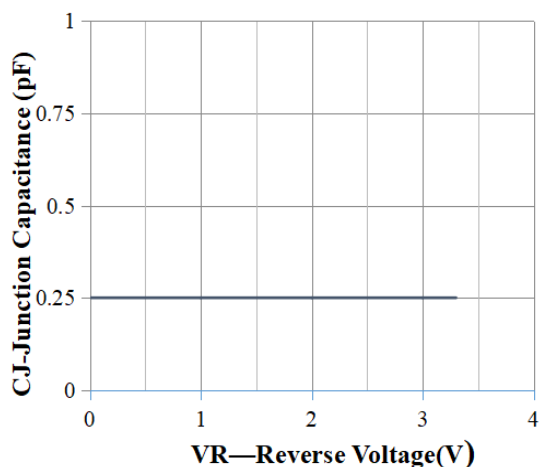
Symbol	Parameter
I _T	Test Current
I _{PP}	Maximum Reverse Peak Pulse Current
V _C	Clamping Voltage @I _C



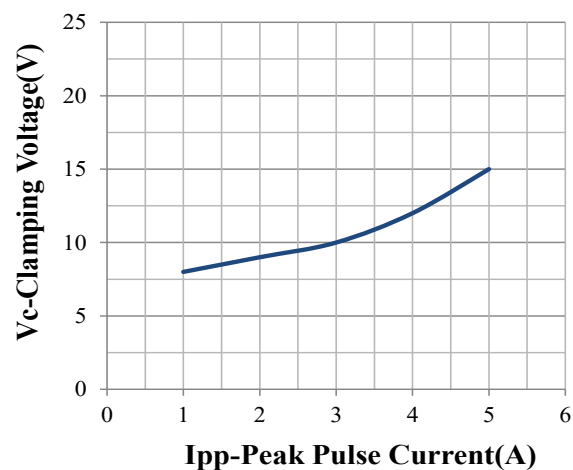


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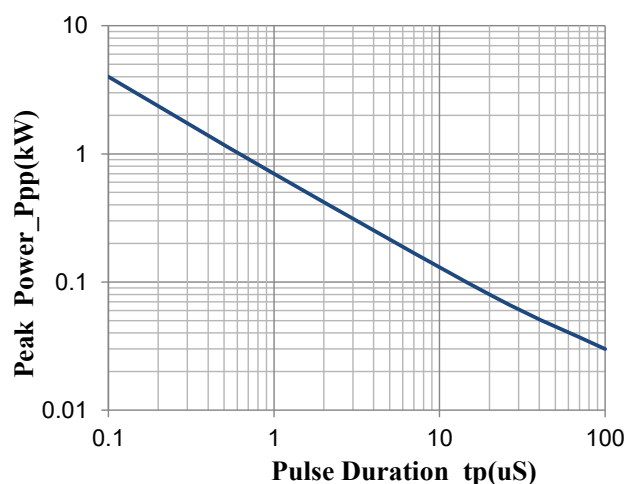
Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)



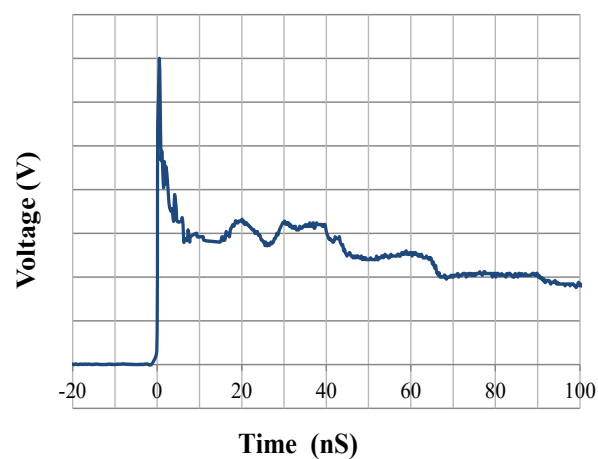
Junction Capacitance vs. Reverse Voltage



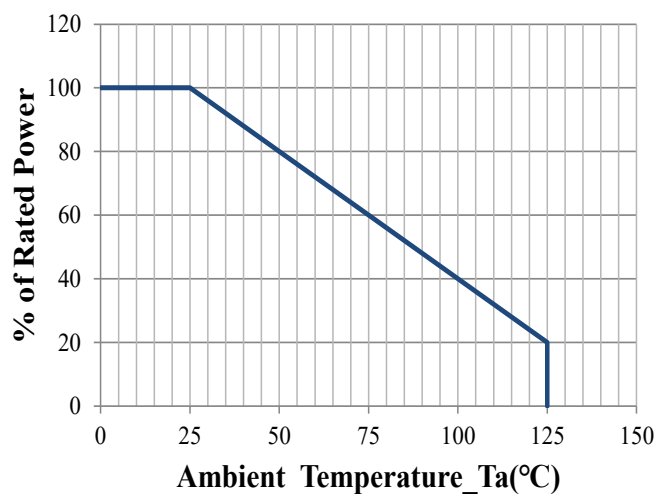
Clamping Voltage vs. Peak Pulse Current



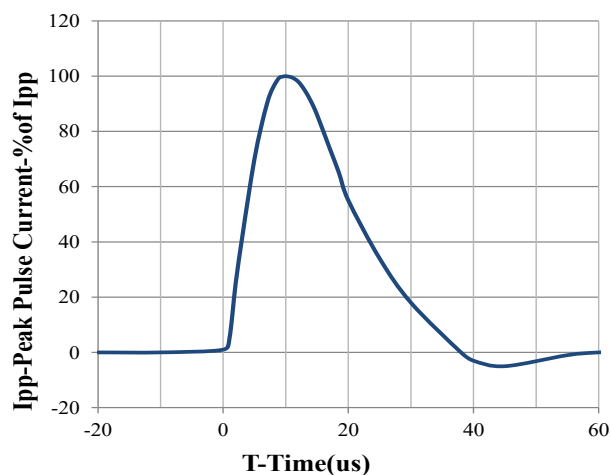
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform



Power Derating Curve

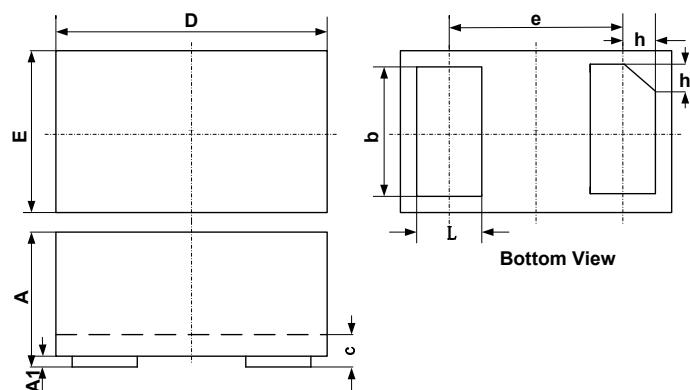


8 X 20us Pulse Waveform



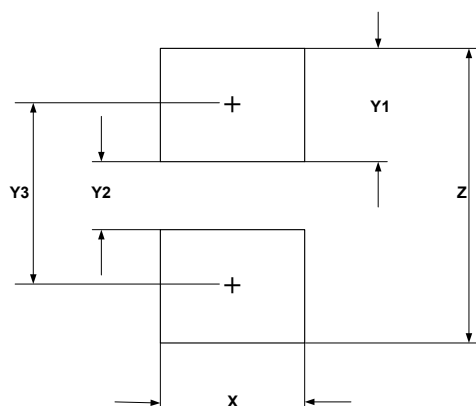
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DFN0603-2(0201) Package Outline Drawing



SYM	DIMENSIONS		
	MILLIMETERS		
	MIN	NOM	MAX
A	0.230		0.330
A1	0.000	0.020	0.050
b	0.215	0.245	0.275
c	0.120	0.150	0.180
D	0.550	0.600	0.650
e	0.355 BSC		
E	0.250	0.300	0.350
L	0.160	0.190	0.220
h	0.079 BSC		

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	0.30	0.012
Y1	0.25	0.010
Y2	0.15	0.006
Y3	0.40	0.016
Z	0.65	0.026

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