

JE05B2RD20-3

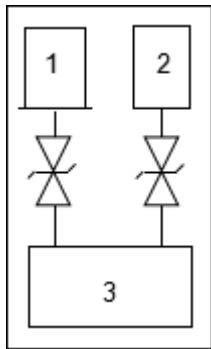
2-Line Bi-directional TVS Diode



Description

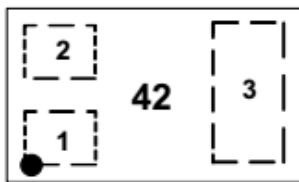
The JE05B2RD20-3 is a 2-line bi-directional low capacitance TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The JE05B2RD20-3 complies with the IEC 61000-4-2 (ESD) standard with $\pm 20\text{kV}$ air and $\pm 20\text{kV}$ contact discharge. It is assembled into an ultra-small 1.0x0.6x0.5mm lead-free DFN package. The small size, very low capacitance and high ESD surge protection make JE05B2RD20-3 an ideal choice to protect cell phone, digital video interfaces, high speed data ports, and many other portable applications.

Circuit Diagram



Circuit and Pin Schematic

Marking Diagram



Transparent top view

42:Device Marking Code

Features

- * 100W peak pulse power (8/20 μs)
- * Low leakage:nA level
- * Operating voltage: 5V
- * Low clamping voltage
- * Two power line protects
- * Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 20\text{kV}$
 - Contact discharge: $\pm 20\text{kV}$
 - IEC61000-4-5 (Lightning) 8A (8/20 μs)
- * RoHS Compliant
- * Package: DFN1006-3

Applications

- * Notebooks and Handhelds
- * Peripherals
- * USB 2.0
- * Personal Digital Assistants
- * Cellular Handsets and Accessories
- * Portable Instrumentation
- * Audio Players ,Keypads,Side Keys,LCD

Ordering Information

Part Number	Packaging	Reel Size
JE05B2RD20-3	10000/Tape & Reel	7 inch

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

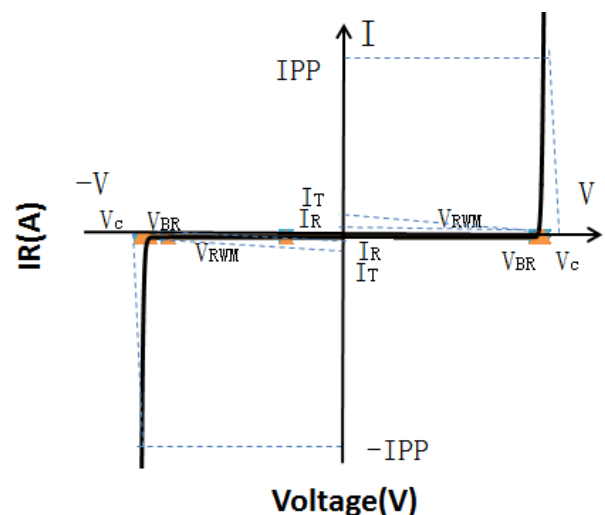
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	Ppk	100	W
Peak Pulse Current (8/20 μs)	IPP	8	A
ESD per IEC 61000-4-2 (Air)	VESD	± 20	kV
ESD per IEC 61000-4-2 (Contact)		± 20	
Operating Temperature Range	TJ	-55to +125	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}\text{C}$

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

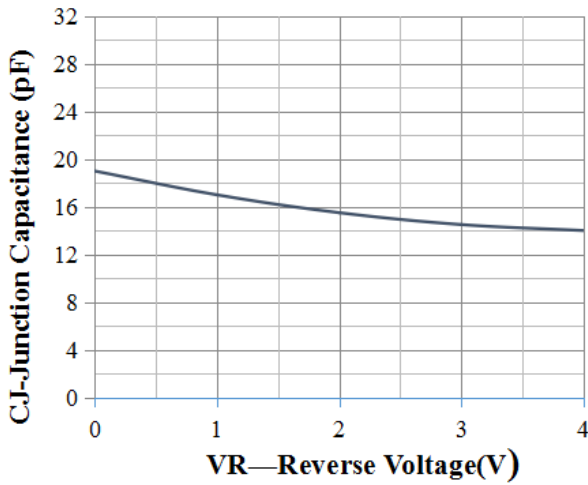
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}	Pin 1 or pin 2 to pin 3 and between pin 1 and pin 2			5	V
Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$, pin 1 or pin 2 to pin 3 and between pin 1 and pin 2	6			V
Reverse Leakage Current	I_R	$V_{RWM} = 5\text{V}$, pin 1 or pin 2 to pin 3 and between pin 1 and pin 2			0.2	μA
Clamping Voltage	V_C	$I_{PP} = 1\text{A}$ (8 x 20 μs pulse), pin 1 to pin 3 or pin 2 to pin 3			8	V
Clamping Voltage	V_C	$I_{PP} = 8\text{A}$ (8 x 20 μs pulse), pin 1 to pin 3 or pin 2 to pin 3			12.5	V
Junction Capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$, pin 1 or pin 2 to pin 3		15		pF

Portion Electronics Parameter

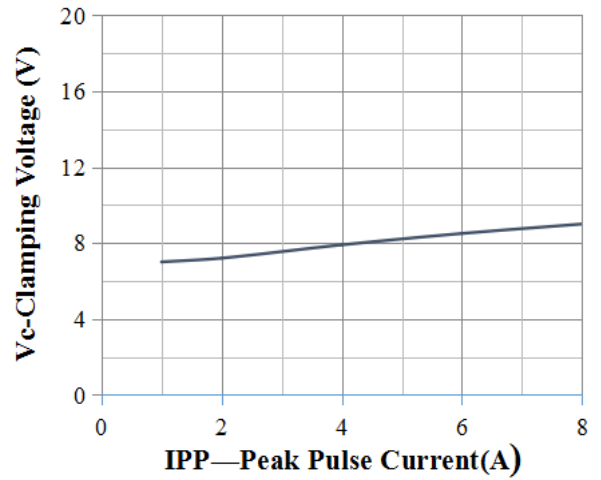
Symbol	Parameter
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_C



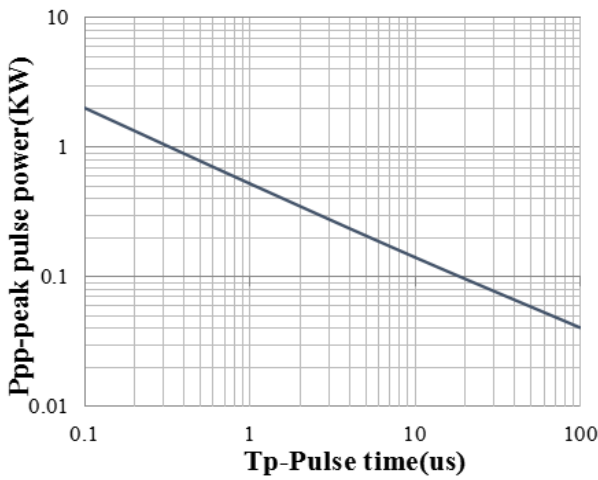
Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise Specified)



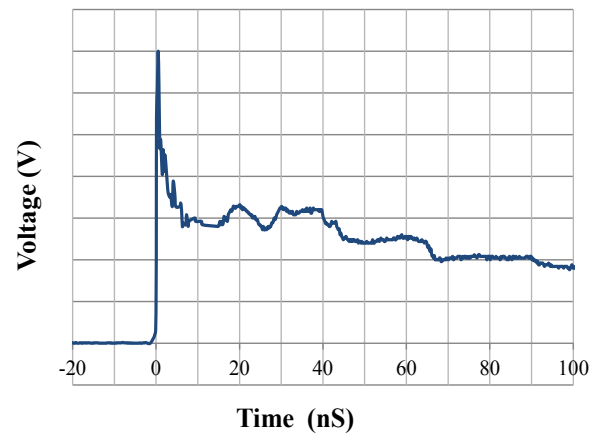
Junction Capacitance vs. Reverse Voltage



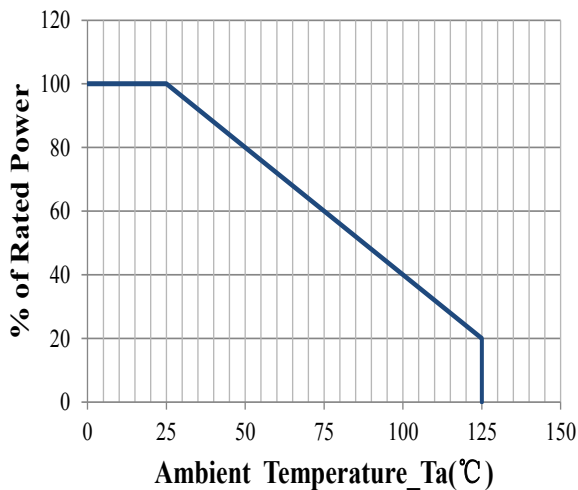
Clamping Voltage vs. Peak Pulse Current



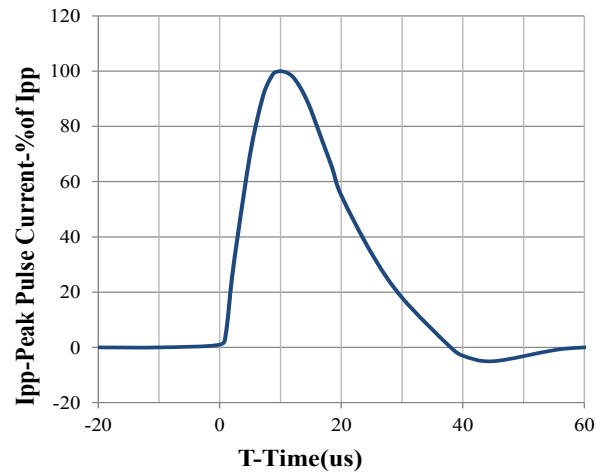
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform

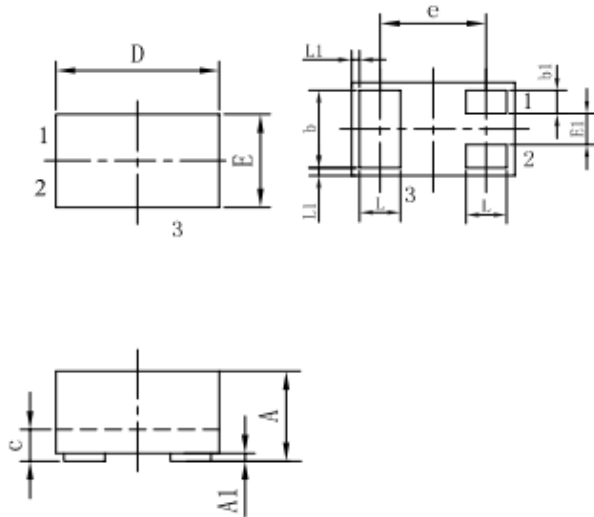


Power Derating Curve



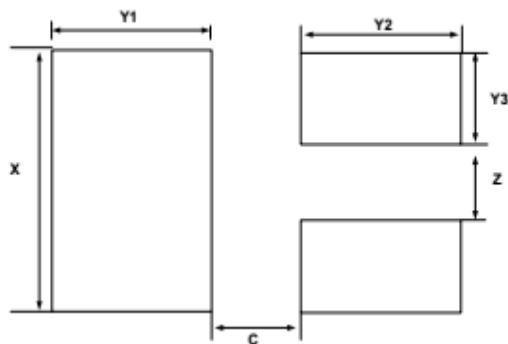
8 X 20us Pulse Waveform

DFN1006-3 Package Outline Drawing (Dimensions in millimeters)



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
b	0.45	0.50	0.55	0.018	0.020	0.022
b1	0.10	0.15	0.20	0.004	0.006	0.008
c	0.12	0.15	0.18	0.005	0.006	0.007
D	0.95	1.00	1.05	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
E1	0.15	0.20	0.25	0.006	0.008	0.010
L	0.20	0.25	0.30	0.008	0.010	0.012
L1	0.05 REF			0.0002 REF		

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	0.25	0.010
X	0.65	0.024
Y1	0.50	0.020
Y2	0.50	0.020
Y3	0.25	0.010
Z	0.20	0.008

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