

JE05B2UD20-3A

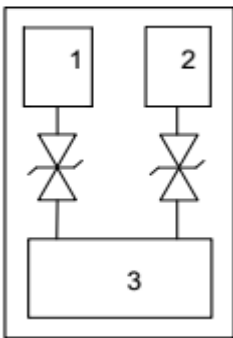
2-Line Bi-directional High Power TVS Diode



Description

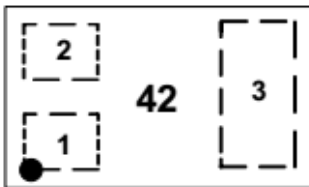
The JE05B2UD20-3A is a 2-line bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The JE05B2UD20-3A complies with the IEC 61000-4-2 (ESD) standard with $\pm 20\text{kV}$ air and $\pm 20\text{kV}$ contact discharge. It is assembled into an ultra-small $1.0 \times 0.6 \times 0.5\text{mm}$ lead-free DFN package. The small size, and high ESD surge protection make JE05B2UD20-3A 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
- * Low operating voltage: 5V
- * Ultra low clamping voltage
- * One 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) 7A (8/20 μs)
- * RoHS Compliant
- * Package: DFN1006-3

Applications

- * Fast-charge battery chargers
- * Power management system
- * Cellular Handsets and Accessories
- * Personal Digital Assistants
- * Notebooks and Handhelds
- * Portable Instrumentation
- * Digital Cameras

Ordering Information

Part Number	Packaging	Reel Size
JE05B2UD20-3A	10000/Tape & Reel	7 inch

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

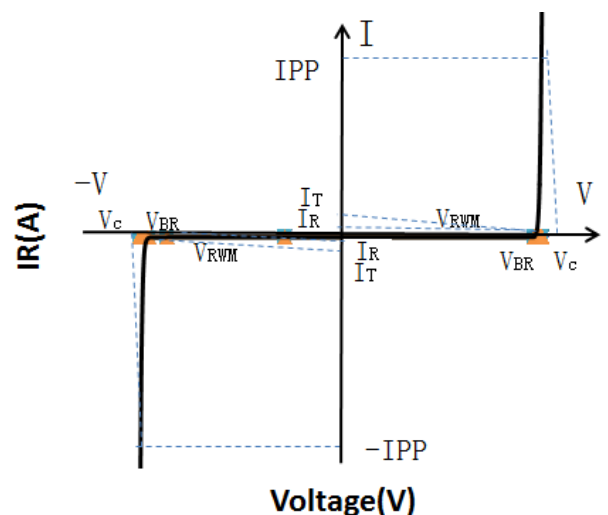
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	Ppk	100	W
Peak Pulse Current (8/20 μs)	IPP	7	A
ESD per IEC 61000-4-2 (Air)	VESD	± 20	kV
ESD per IEC 61000-4-2 (Contact)		± 20	
Operating Temperature Range	TJ	-55to +125	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}\text{C}$

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

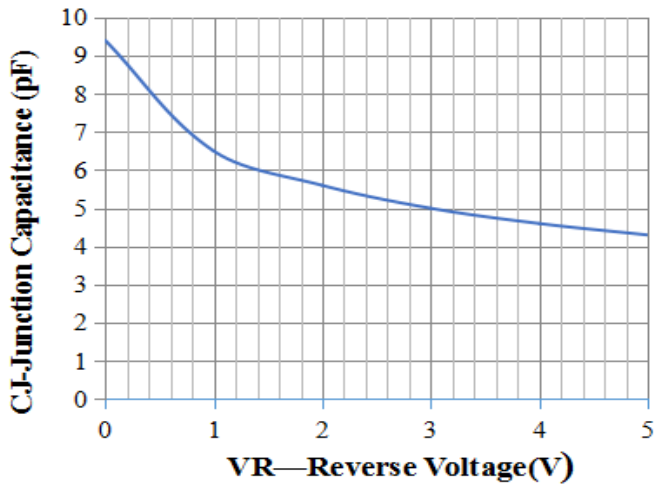
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}	Pin 1 or pin 2 to pin 3 and between pin 1 and pin 2			5	V
Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$, pin 1 or pin 2 to pin 3 and between pin 1 and pin 2	6			V
Reverse Leakage Current	I_R	$V_{RWM} = 5\text{V}$, pin 1 or pin 2 to pin 3 and between pin 1 and pin 2			50	nA
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	$I_{PP} = 7\text{A}$ (8 x 20 μs pulse), pin 1 to pin 3 or pin 2 and pin 3			14	V
Junction Capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$, pin 1 or pin 2 to pin 3		10	15	pF

Portion Electronics Parameter

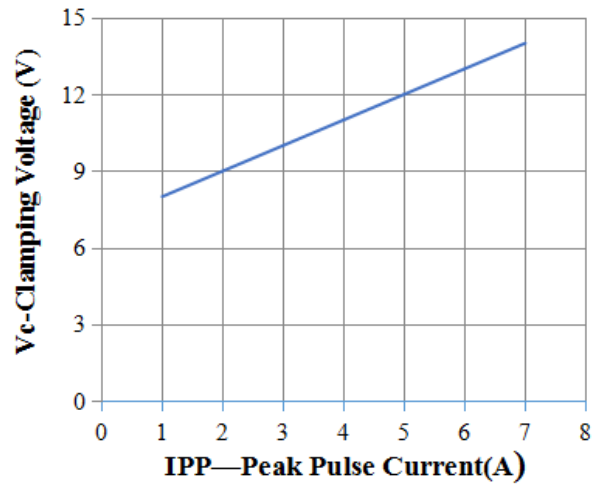
Symbol	Parameter
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_C



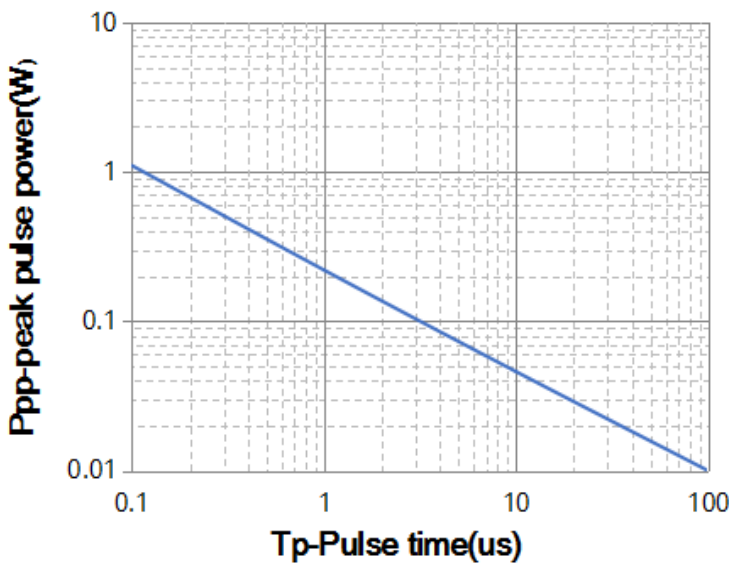
Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise Specified)



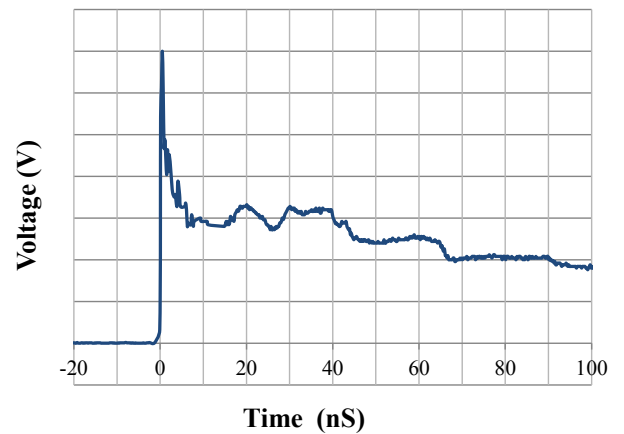
Junction Capacitance vs. Reverse Voltage



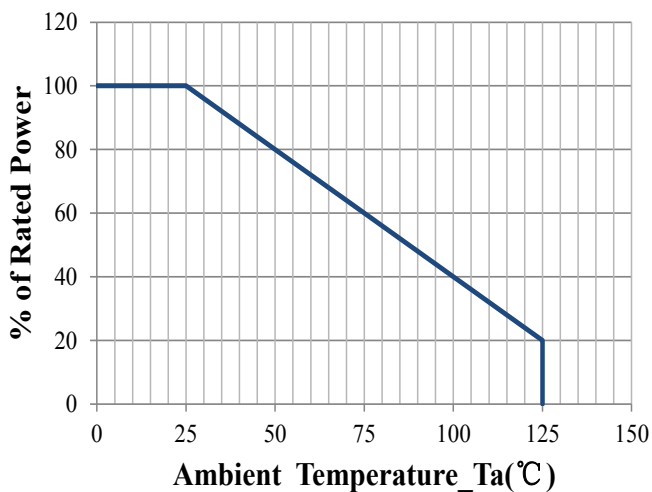
Clamping Voltage vs. Peak Pulse Current



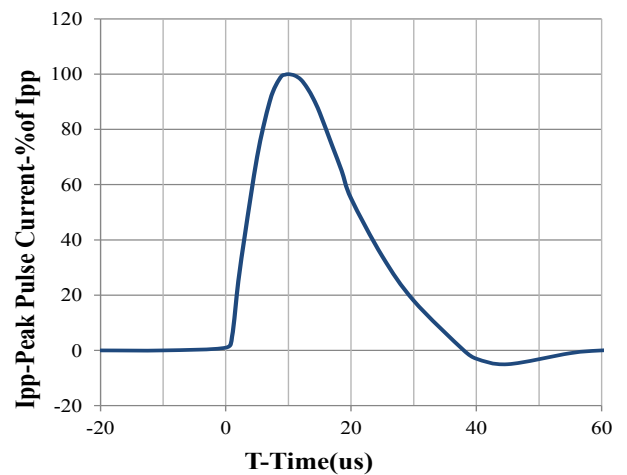
Tp-Pulse time(us)



IEC61000-4-2 Pulse Waveform

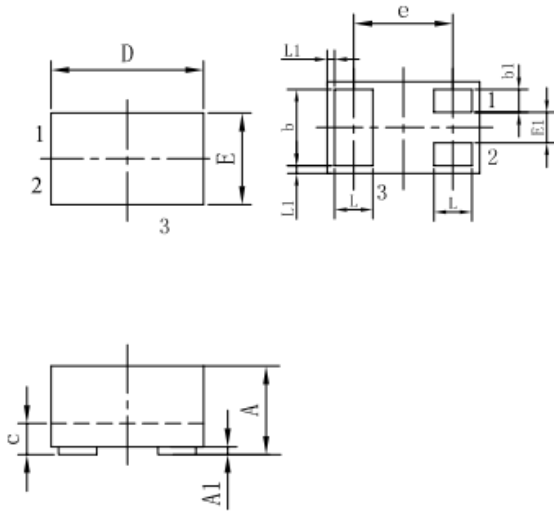


Power Derating Curve



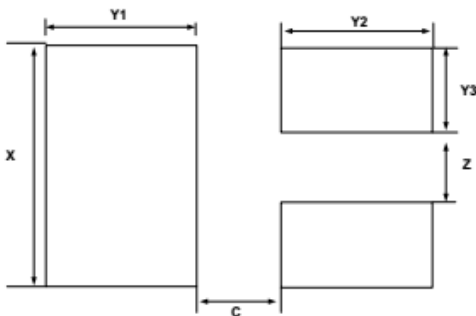
8 X 20us Pulse Waveform

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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