

JS45U1GD60-2

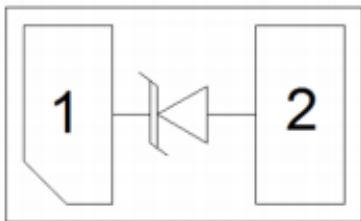
1-Line Uni-directional High Power TVS Diode



Description

The JS45U1GD60-2 is a uni-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 JS45U1GD60-2 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 1.6x1.0x0.5mm lead-free DFN package. The small size and high ESD surge protection make JS45U1GD60-2 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

Circuit Diagram



Circuit and Pin Schematic

Marking Diagram



Transparent top view

47: Device Marking Code

Features

- * 2000W peak pulse power (8/20 μs)
- * Low leakage: μA level
- * Operating voltage: 4.5V
- * Ultra low clamping voltage
- * One power line protects
- * Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 30\text{kV}$
 - Contact discharge: $\pm 30\text{kV}$
 - IEC 61000-4-5 (Lightning) 150A (8/20 μs)
- * RoHS Compliant
- * Package: DFN1610-2

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
JS45U1GD60-2	3000/Tape & Reel	7 inch

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

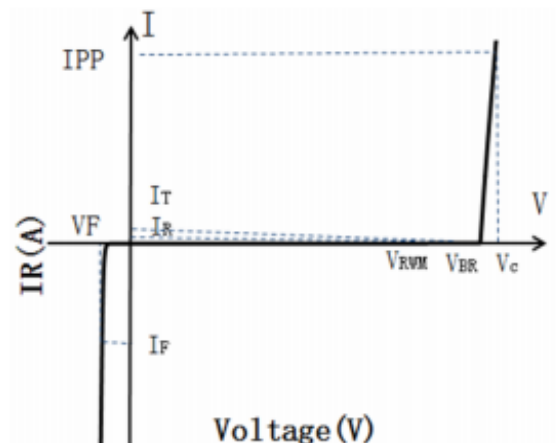
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	Ppk	2000	W
Peak Pulse Current (8/20 μs)	IPP	150	A
ESD per IEC 61000-4-2 (Air)	VESD	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 30	
Operating Temperature Range	TJ	-40to +85	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}\text{C}$

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

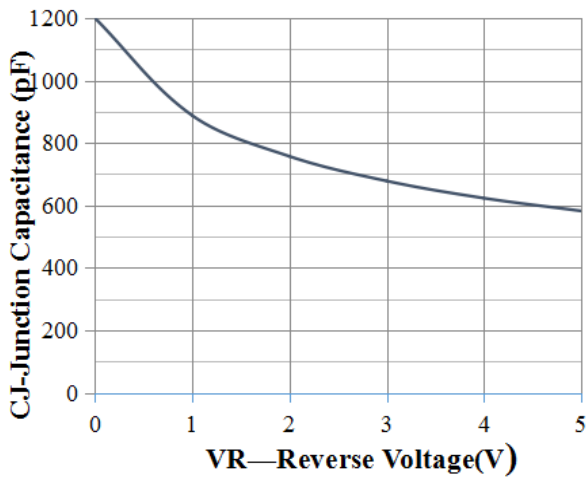
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}				4.5	V
Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	4.8	5.5		V
Reverse Leakage Current	I_R	$V_{RWM} = 4.5\text{V}$			0.5	μA
Clamping Voltage	V_C	$I_{PP} = 100\text{A}$ (8 x 20 μs pulse)			12	V
Clamping Voltage	V_C	$I_{PP} = 150\text{A}$ (8 x 20 μs pulse)			15	V
Junction Capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$		1100	1200	pF

Portion Electronics Parameter

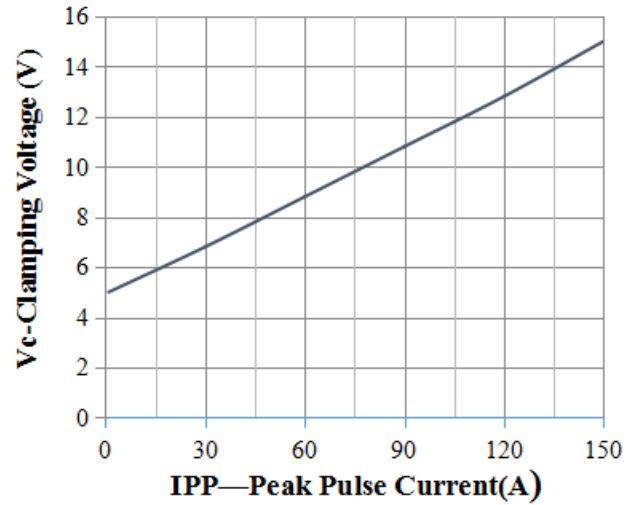
Symbol	Parameter
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_C



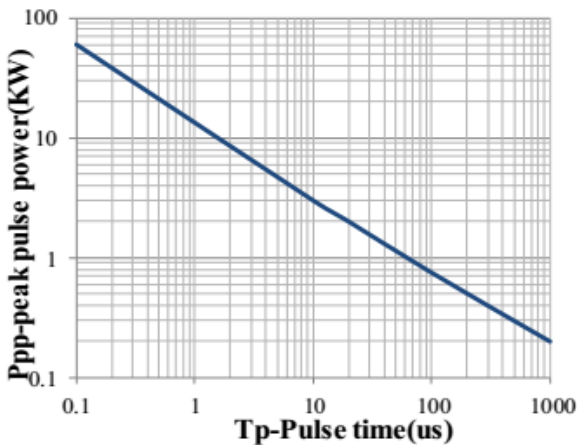
Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise Specified)



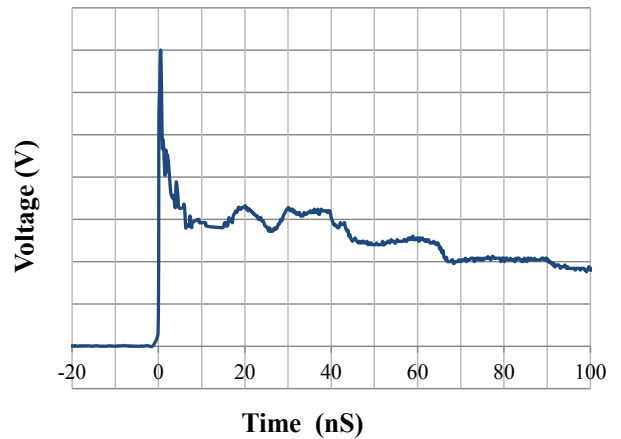
Junction Capacitance vs. Reverse Voltage



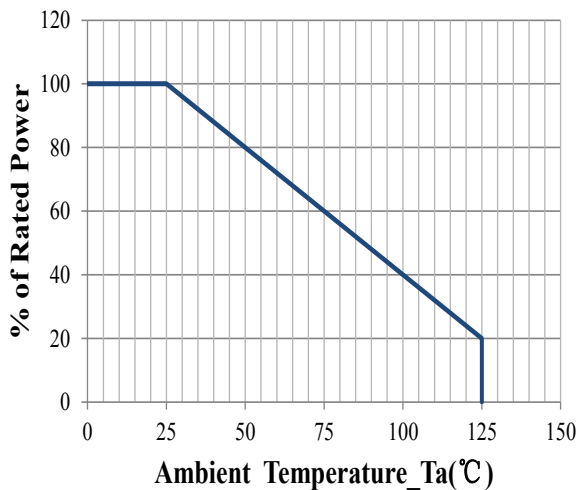
Clamping Voltage vs. Peak Pulse Current



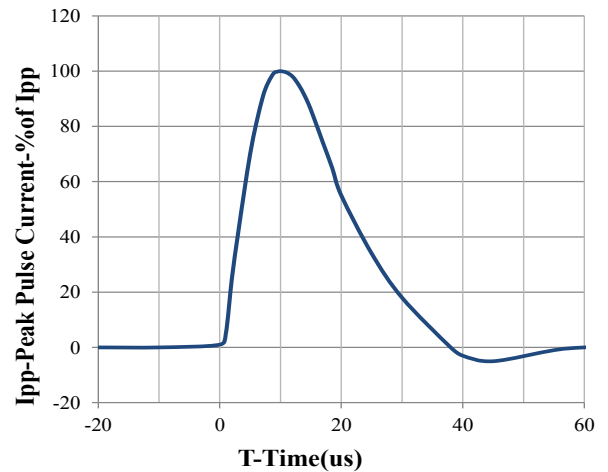
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform

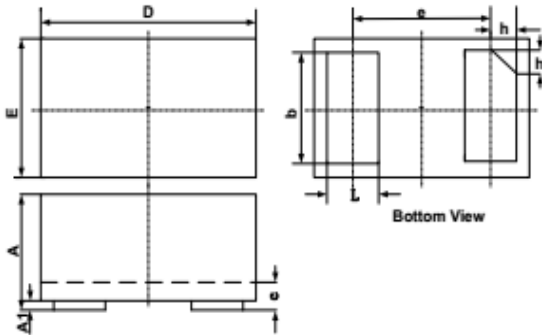


Power Derating Curve



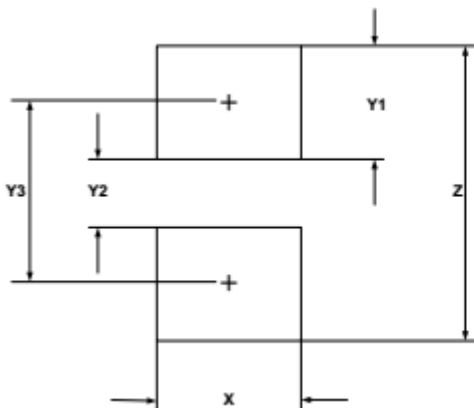
8 X 20us Pulse Waveform

DFN1610-2 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	0.75	0.80	0.85	0.030	0.032	0.034
c	0.10	0.15	0.20	0.004	0.006	0.008
D	1.55	1.60	1.65	0.062	0.064	0.066
e	1.10 BSC			0.044 BSC		
E	0.95	1.00	1.05	0.038	0.040	0.042
L	0.35	0.40	0.45	0.014	0.016	0.018
h	0.15	0.20	0.25	0.006	0.008	0.010

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
X	1.00	0.040
Y1	0.62	0.025
Y2	0.60	0.024
Y3	1.22	0.049
Z	1.85	0.074

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