

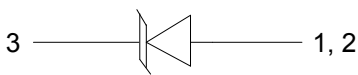
## Description

The DFD2401P4-3 is a high power TVS, 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 lines. The DFD2401P4-3 complies with the IEC 61000-4-2 (ESD) with  $\pm 30\text{kV}$  air and  $\pm 30\text{kV}$  contact discharge. It is assembled into a 3-pin DFN2020-3 lead-free package. Each device will protect one line. The combination of small size, and high surge capability makes them ideal for use in applications such as cellular phones, LCD displays, USB, and multi media card interfaces.

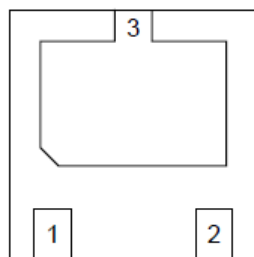
## Mechanical Characteristics

- ◆ Package: DFN2020-3
- ◆ Case Material: "Green" Molding Compound.
- ◆ Moisture Sensitivity: Level 3 per J-STD-020
- ◆ Terminal Connections: See Diagram Below
- ◆ Marking Information: See Below

## Dimensions and Pin Configuration



Circuit Diagram



Transparent top view

Pin Schematic

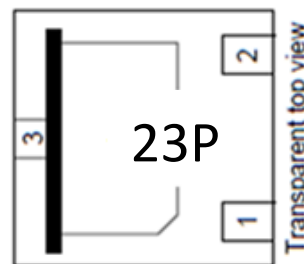
## Features

- ◆ 5500W peak pulse power (8/20 $\mu\text{s}$ )
- ◆ Low leakage: nA level
- ◆ Operating voltage: 24V
- ◆ 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:  $\pm 30\text{kV}$
  - IEC61000-4-5 (Lightning) 140A (8/20 $\mu\text{s}$ )
- ◆ RoHS Compliant

## Applications

- ◆ Power Management
- ◆ Industrial Application
- ◆ Power Supply Protection

## Marking Information


 23P = Device Marking  
 Code Bar denotes cathode

## Ordering Information

Part Number	Marking	Packaging	Reel Size
DFD2401P4-3	23P	3000/Tape & Reel	7 inch

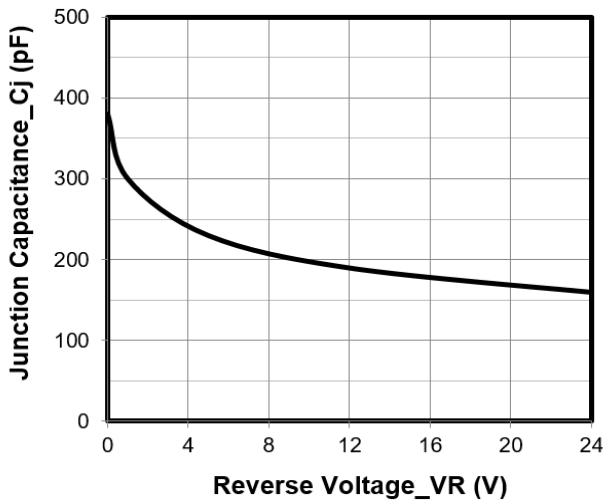
**Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$  unless otherwise specified)**

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 $\mu\text{s}$ )	Ppk	6440	W
Peak Pulse Current (8/20 $\mu\text{s}$ )	I <sub>PP</sub>	140	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V <sub>ESD</sub>	$\pm 30$ $\pm 30$	kV
Operating Temperature Range	T <sub>J</sub>	-55 to +125	$^\circ\text{C}$
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	$^\circ\text{C}$

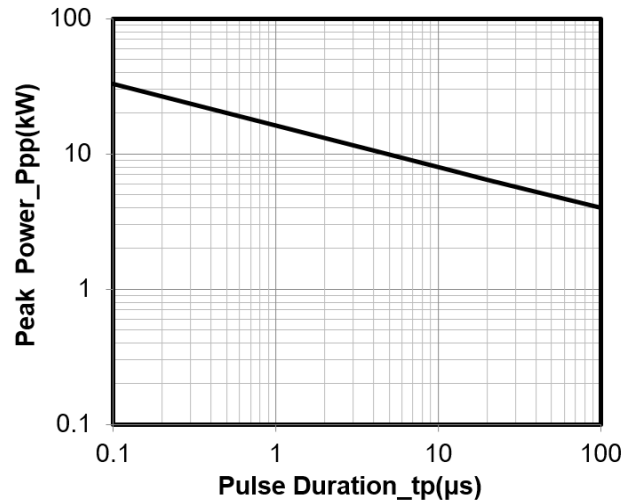
**Electrical Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise specified)**

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V <sub>RWM</sub>		24		V	
Breakdown Voltage	V <sub>BR</sub>	24.8			V	I <sub>T</sub> = 1mA
Reverse Leakage Current	I <sub>R</sub>			1.0	$\mu\text{A}$	V <sub>RWM</sub> = 24V
Clamping Voltage	V <sub>C</sub>			35	V	I <sub>PP</sub> = 50A (8 x 20 $\mu\text{s}$ pulse)
Clamping Voltage	V <sub>C</sub>			46	V	I <sub>PP</sub> = 140A (8 x 20 $\mu\text{s}$ pulse)
Junction Capacitance	C <sub>J</sub>		380		pF	V <sub>R</sub> = 0V, f = 1MHz

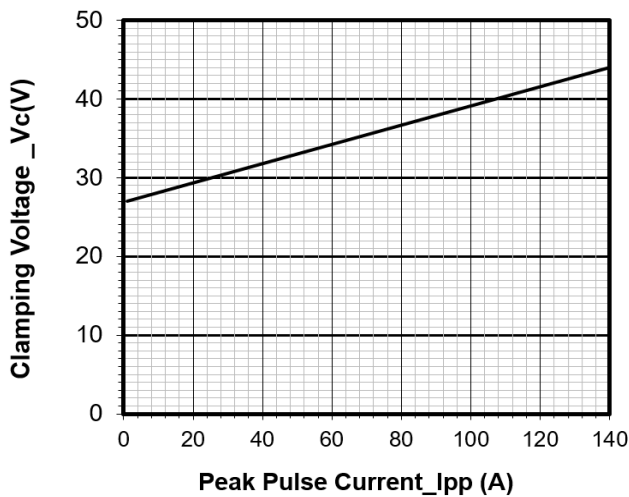
**Typical Performance Characteristics (TA=25°C unless otherwise Specified)**



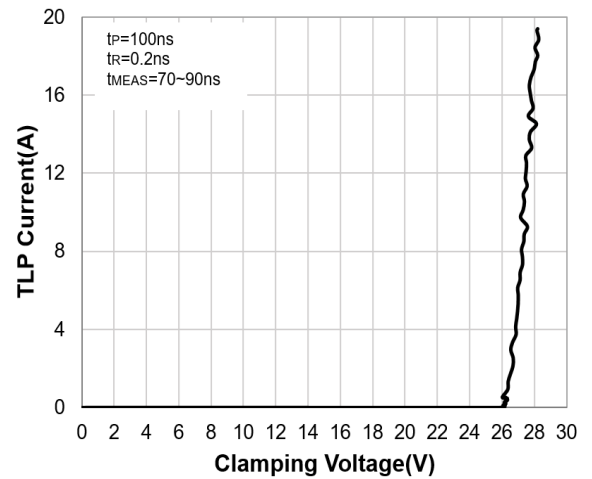
Junction Capacitance vs. Reverse Voltage



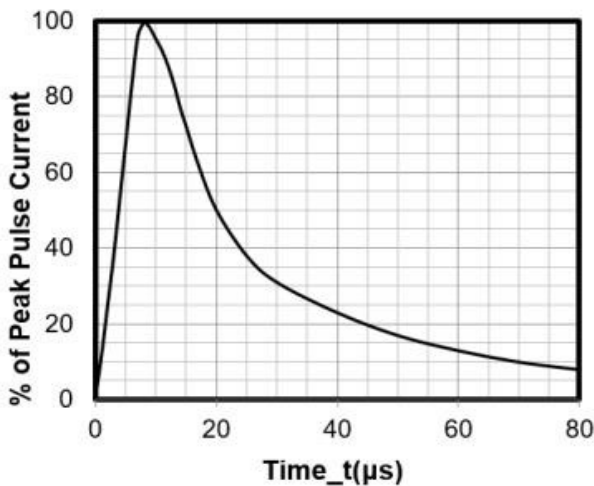
Peak Pulse Power vs. Pulse Time



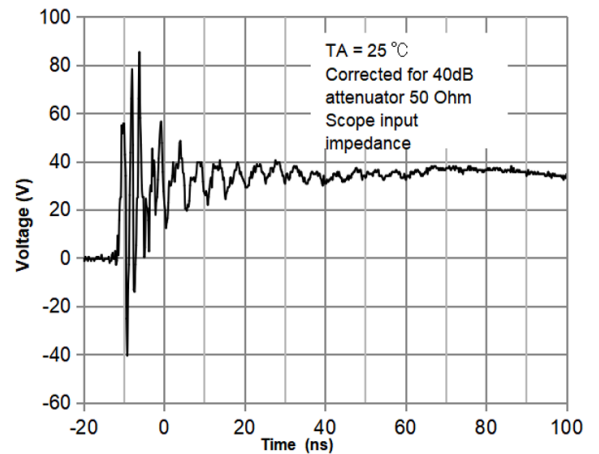
Clamping Voltage vs. Peak Pulse Current



TLP Curve



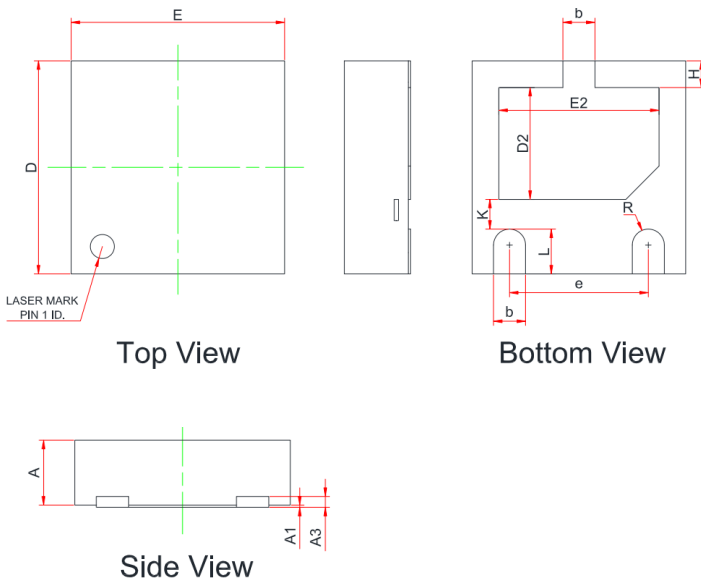
8 X 20μs Pulse Waveform



ESD Clamping Voltage

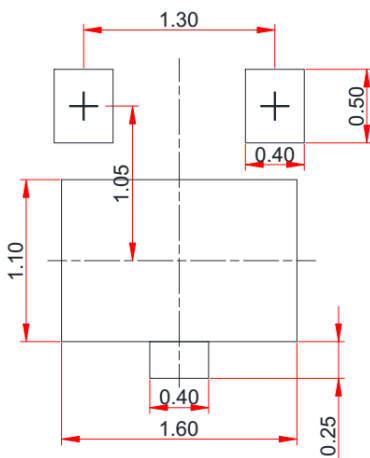
8 kV Contact per IEC61000-4-2

## DFN2020-3 Package Outline Drawing



	MILLIMETERS		
	MIN	NOM	MAX
A	0.45	0.60	0.65
A1	0.00	0.02	0.05
A3	0.10REF.		
b	0.25	--	0.35
D	1.90	--	2.10
E	1.90	--	2.10
D2	0.95	--	1.15
E2	1.40	--	1.60
e	1.20		1.40
H	0.20	--	0.30
K	0.20		0.40
L	0.35	--	0.45
R	0.13	--	--

## Suggested Land Pattern



Unit: mm

## Contact Information

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