

## Description

The ST4521D4-3 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 ST4521D4-3 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. The leads are finished with NiPdAu. 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.

## Features

- ◆ 6000W peak pulse power (8/20 $\mu\text{s}$ )
- ◆ Low leakage: nA 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:  $\pm 30\text{kV}$
  - IEC61000-4-5 (Lightning) 300A (8/20 $\mu\text{s}$ )
- ◆ RoHS Compliant

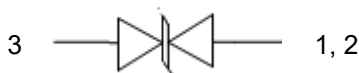
## Mechanical Characteristics

- ◆ Package: DFN2020-3
- ◆ Lead Finish: NiPdAu
- ◆ Case Material: “Green” Molding Compound
- ◆ Moisture Sensitivity: Level 3 per J-STD-020
- ◆ Terminal Connections: See Diagram Below
- ◆ Marking Information: See Below

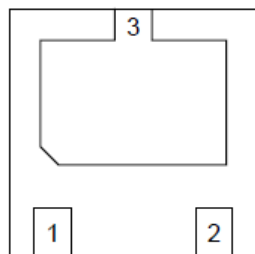
## Applications

- ◆ Power Management
- ◆ Industrial Application
- ◆ Power Supply Protection
- ◆ Notebooks, desktops, and servers

## PIN Identification and Configuration



Circuit Diagram



Transparent top view

Pin Schematic

## Ordering Information

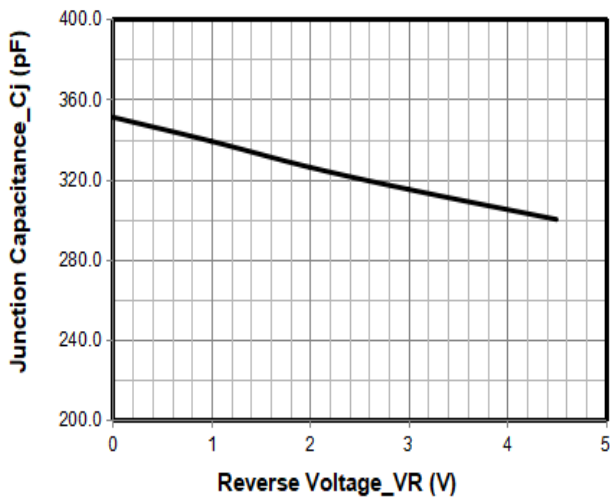
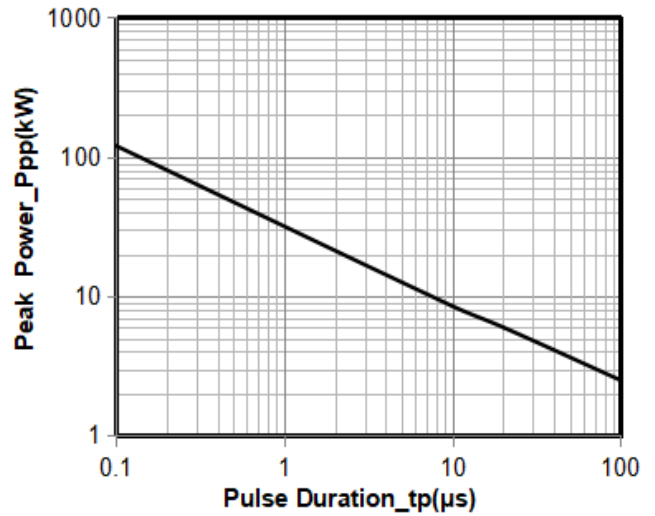
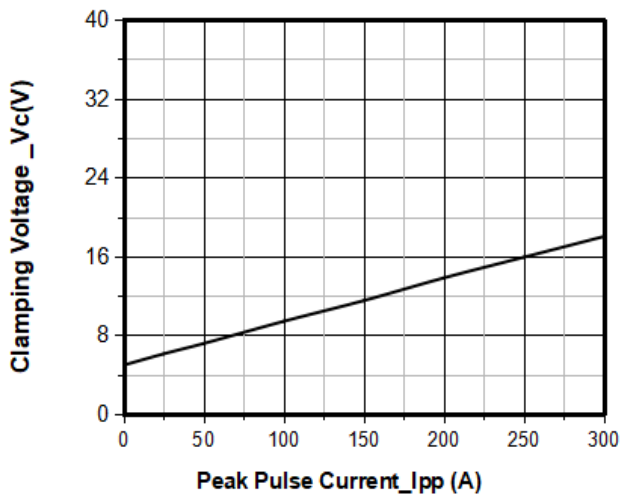
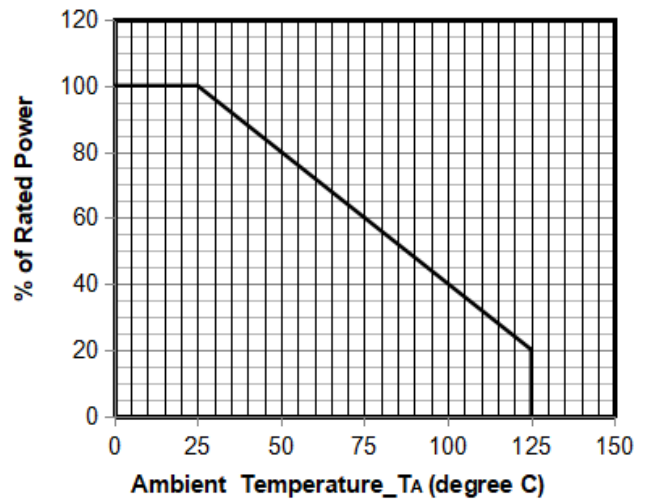
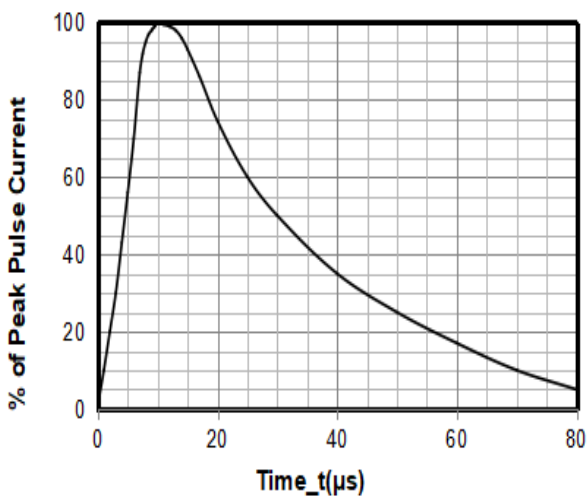
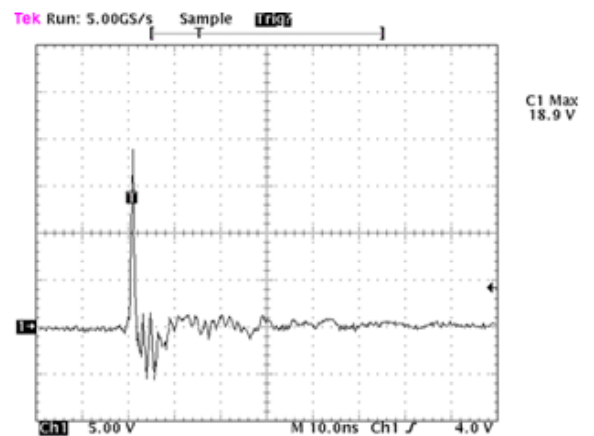
Part Number	Packaging	Reel Size
ST4521D4-3	3000/Tape & Reel	7 inch

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

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	Ppk	6000	W
Peak Pulse Current (8/20μs)	IPP	300	A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	VESD	±30 ±30	kV
Operating Temperature Range	TJ	-55 to +125	°C
Storage Temperature Range	Tstg	-55 to +150	°C

**Electrical Characteristics (TA=25°C unless otherwise specified)**

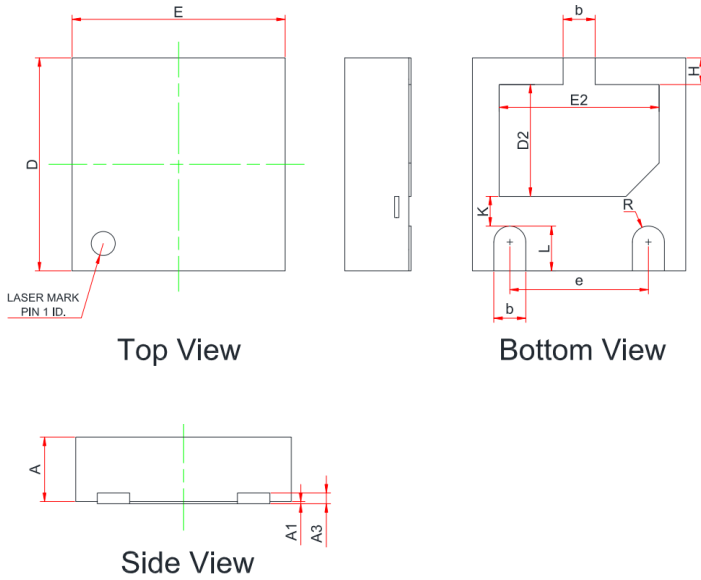
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			4.5	V	
Breakdown Voltage	VBR	5.0	5.2		V	IT = 1mA
Reverse Leakage Current	IR			1.0	μA	VRWM = 4.5V
Clamping Voltage	VC			8.5	V	IPP = 50A (8 x 20μs pulse)
Clamping Voltage	VC			20	V	IPP = 300A (8 x 20μs pulse)
Junction Capacitance	CJ		350		pF	VR = 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**

**Power Derating Curve**

**8 X 20μs Pulse Waveform**


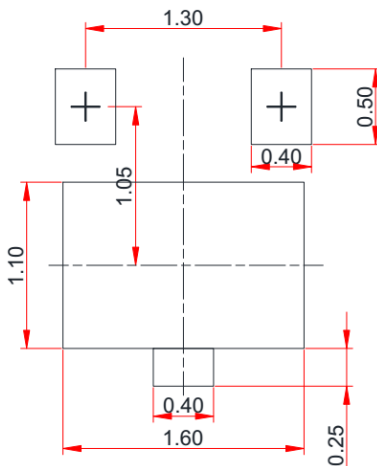
Note: Data is taken with a 10x attenuator

**ESD Clamping Voltage**

**8 kV Contact per IEC61000-4-2**

**DFN2020 Package Outline Drawing**


SYM	MILLIMETERS		
	MIN	NOM	MAX
A	0.55	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**

**Contact Information**

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