

1-Line Bi-directional TVS Diode

Description

The STVSB4V5DNE3 is a high power TVS, utilizing to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive lines. The STVSB4V5DNE3 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, digital cameras, and many other portable applications.

Features

- 4700W peak pulse power (8/20 μs)
- 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) 260A (8/20 μs)
- RoHS Compliant

Mechanical Characteristics

- Package: DFN2020-3
- Case Material: "Green" Molding Compound
- Moisture Sensitivity: Level 1 per J-STD-020

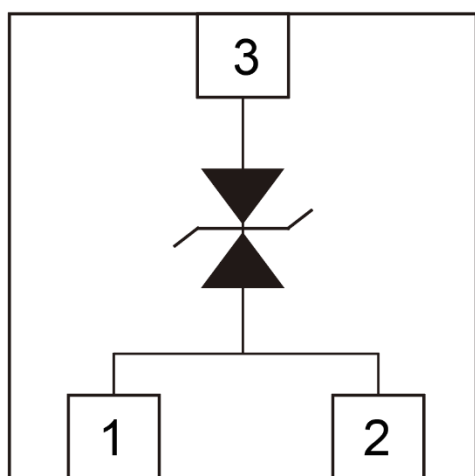
Applications

- Power Management
- Industrial Application
- Power Supply Protection

Ordering Information

Part Number	Shipping	Reel Size
STVSB4V5DNE3	3000/Tape & Reel	7 inch

Dimensions and Pinonfiguration



Circuit Diagram

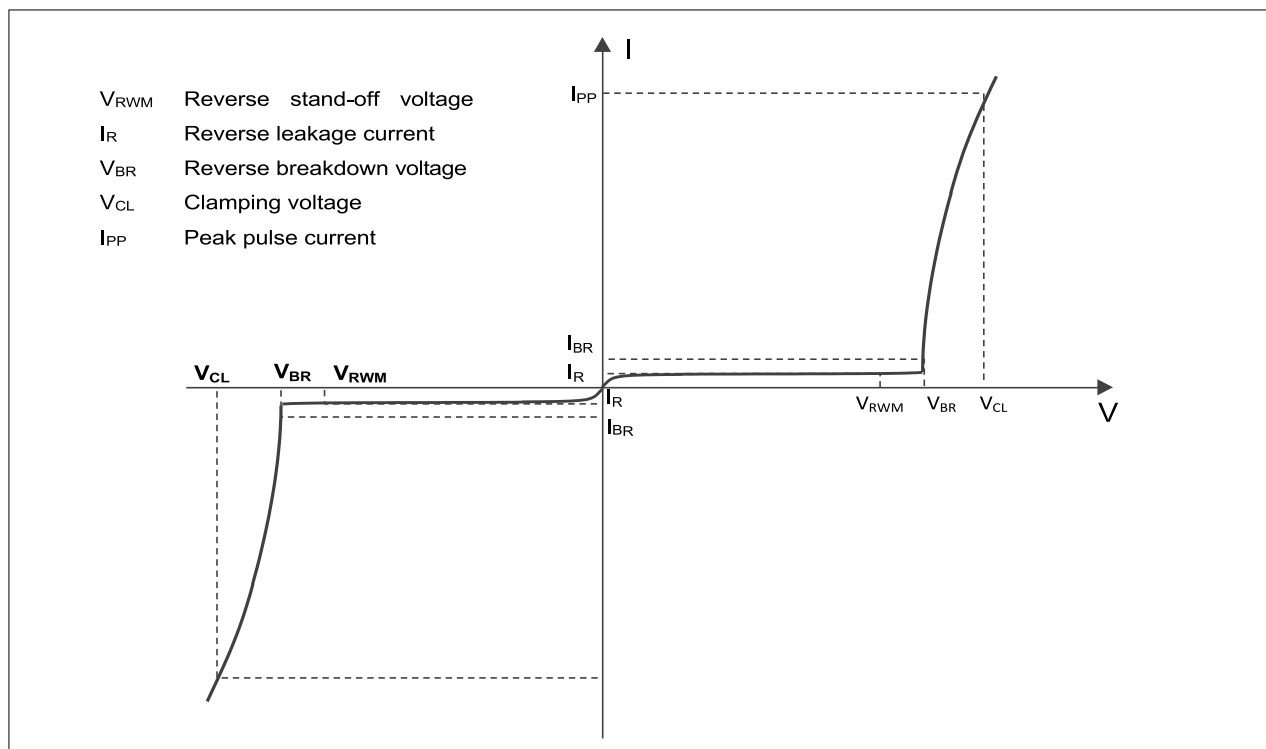
Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20μs)	P _{PK}	4700	W
Peak Pulse Current (8/20μs)	I _{PP}	260	A
ESD per IEC 61000-4-2 (Air)	V _{ESD}	±30	kV
ESD per IEC 61000-4-2 (Contact)		±30	kV
Lead temperature	T _L	260	°C
Junction Temperature	T _J	125	°C
Operating Temperature Range	T _{OP}	-40 ~ +125	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

Electrical Characteristics (T_A=25°C unless otherwise specified)

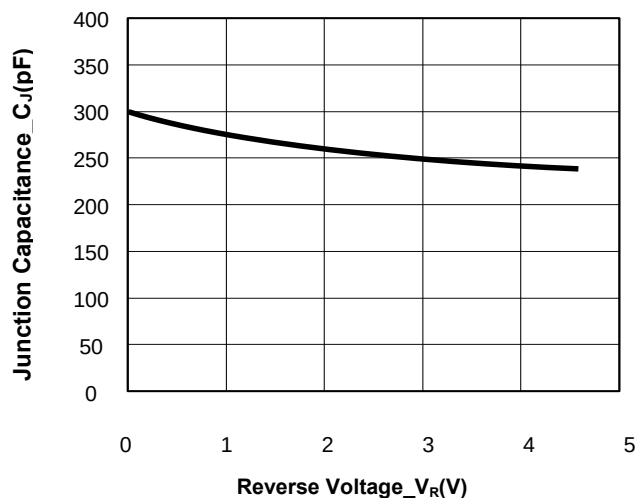
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Reverse Working Voltage	V _{RWM}			4.5	V	
Breakdown Voltage	V _{BR}	4.6			V	I _T = 1mA
Reverse Leakage Current	I _R			1	μA	V _{RWM} = 4.5V
Clamping Voltage	V _C			8.5	V	I _{PP} = 50A (8/20μs pulse)
Clamping Voltage	V _C			18	V	I _{PP} = 260A (8/20μs pulse)
Junction Capacitance	C _J		300		pF	V _R = 0V, f = 1MHz

Electrical characteristics ($T_A = 25^\circ\text{C}$, unless otherwise noted)

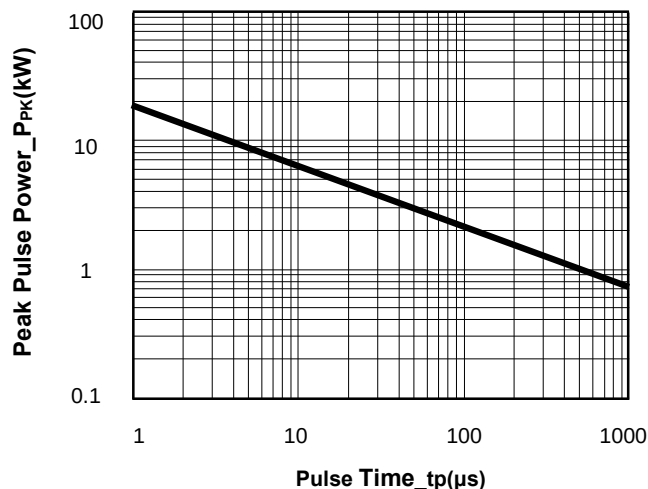


Definitions of electrical characteristics

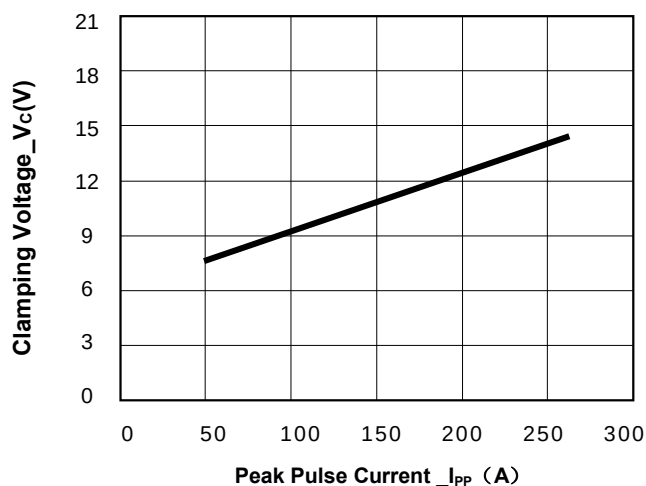
Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise Specified)



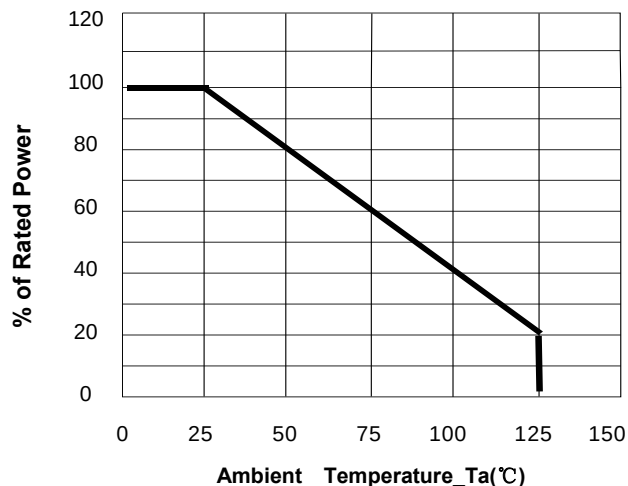
Junction Capacitance vs. Reverse Voltage



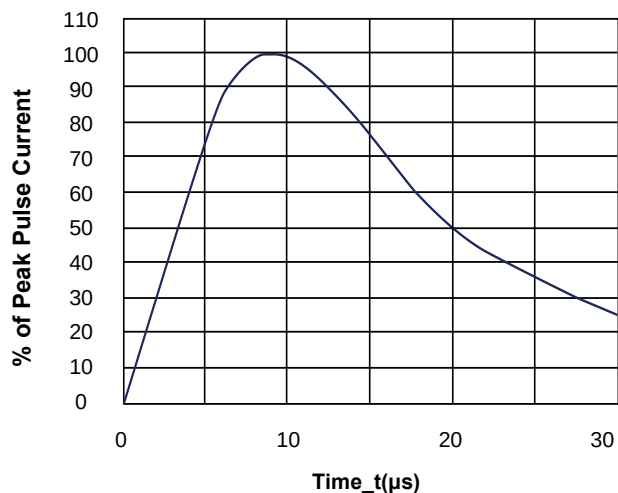
Peak Pulse Power vs. Pulse Time



Clamping Voltage vs. Peak Pulse Current

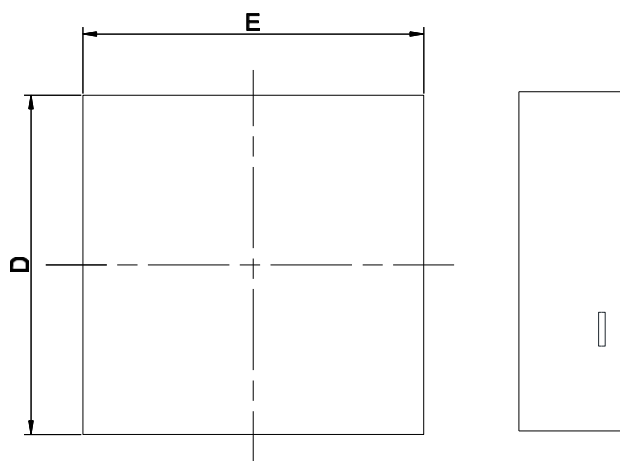


Power Derating Curve

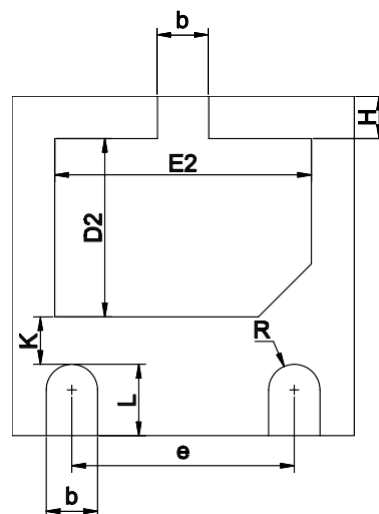


8/20 μs Pulse Waveform

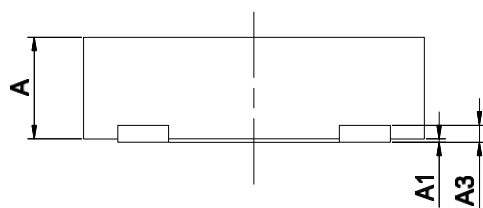
DFN2020-3 Package Outline Drawing



Top View

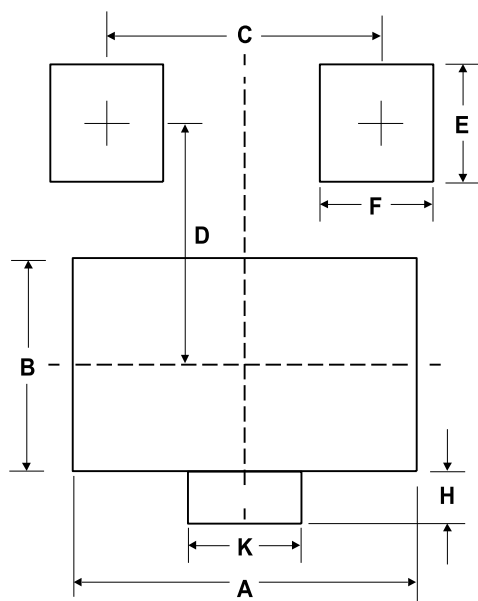


Bottom View



Side View

Suggested Land Pattern

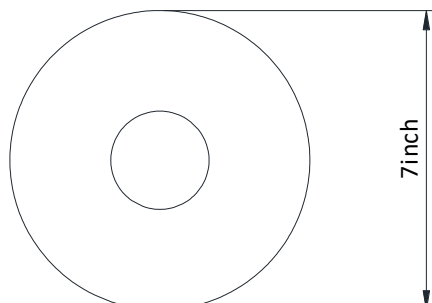


Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max
A	0.50	0.55	0.60
A1	0.00	0.02	0.05
A3	0.10 REF.		
b	0.25	0.30	0.35
D	1.90	2.00	2.10
E	1.90	2.00	2.10
D2	0.95	1.05	1.15
E2	1.40	1.50	1.60
e	1.20	1.30	1.40
H	0.20	0.25	0.30
K	0.20	0.30	0.40
L	0.35	0.40	0.45
R	0.13	-	-

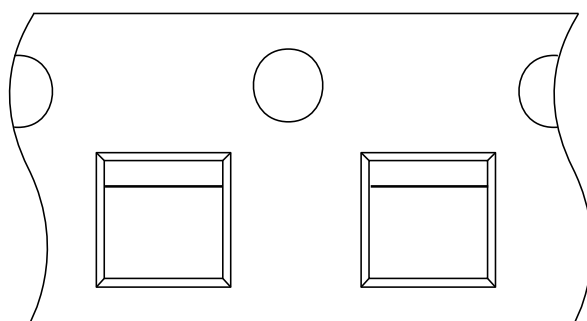
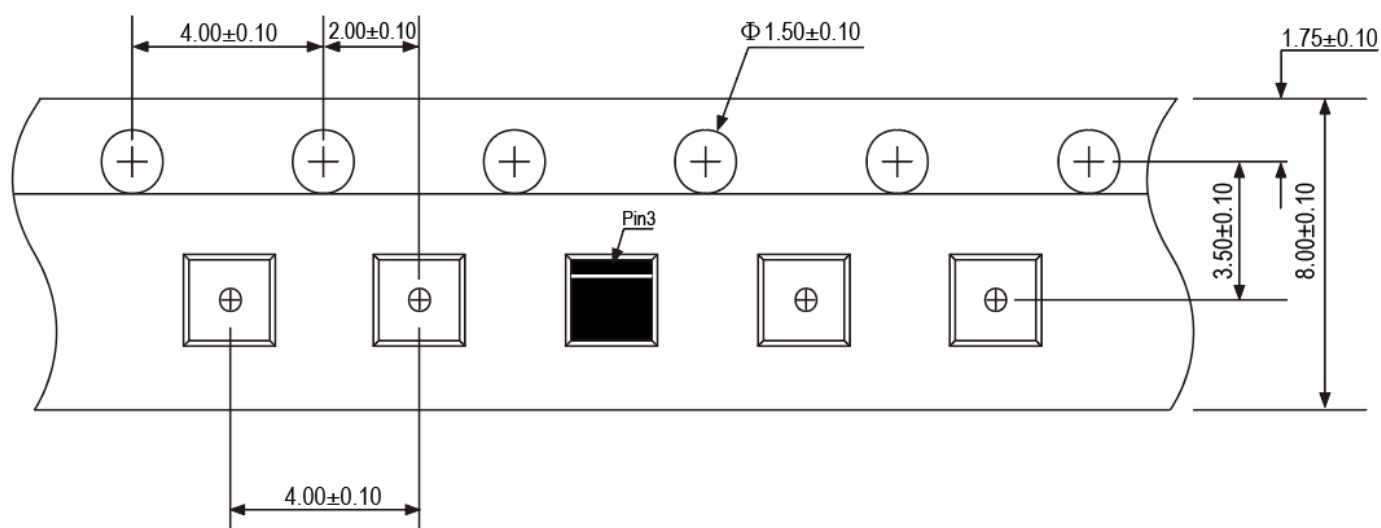
SYM	MILLIMETERS
A	1.60
B	1.10
C	1.30
D	1.05
E	0.50
F	0.40
K	0.40
H	0.25

TAPE AND REEL INFORMATION

Reel Dimensions



Tape Dimensions




 User Direction of Feed