

1-Line, Uni-directional, TVS Diode

Description

The STVS4V5DNG2 is an 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 STVS4V5DNG2 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 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 STVS4V5DNG2 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

Features

- Ultra small package: $1.0 \times 0.6 \times 0.5\text{mm}$
- Protects one data or power line
- Operating voltage: 4.5V
- Low clamping voltage
- 2-Pin leadless package
- 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) 40A ($8/20\mu\text{s}$)
- RoHS Compliant

Mechanical Characteristics

- Package: DFN1006-2 ($1.0 \times 0.6 \times 0.5\text{mm}$)
- Case Material: "Green" Molding Compound.
- Moisture Sensitivity: Level 1 per J-STD-020

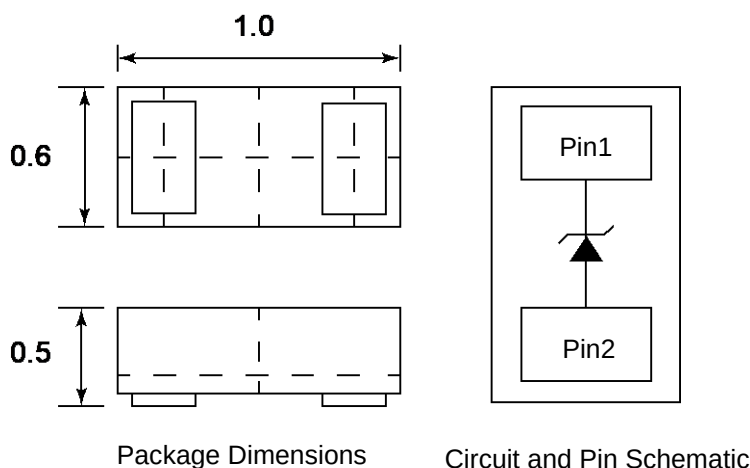
Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- Peripherals
- Audio Players
- Keypads, Side Keys, LCD Displays

Ordering Information

Part Number	Shipping	Reel Size
STVS4V5DNG2	10000/Tape & Reel	7 inch

Dimensions and Pin Configuration



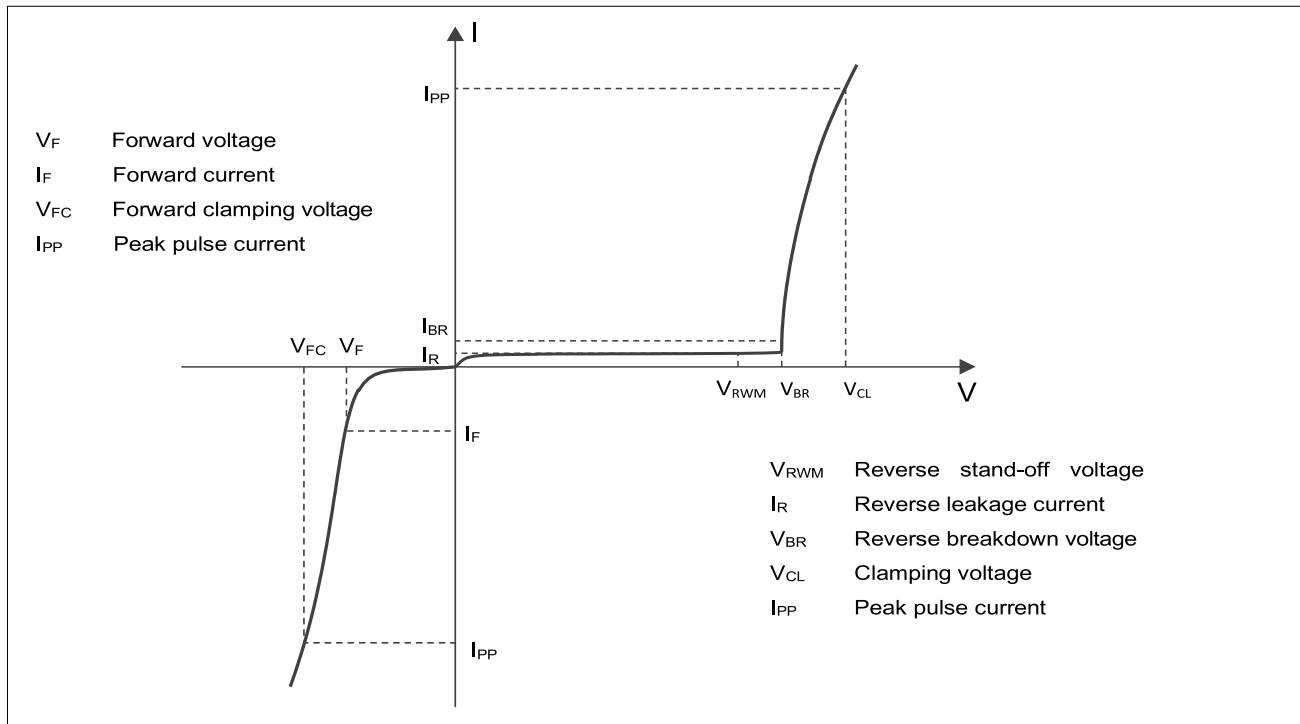
Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	PPK	560	W
Peak Pulse Current (8/20 μs)	I_{PP}	40	A
ESD per IEC 61000-4-2 (Air)	V_{ESD}	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 30	
Lead temperature	T_L	260	$^{\circ}\text{C}$
Junction Temperature	T_J	125	$^{\circ}\text{C}$
Operating Temperature Range	T_{OP}	$-40 \sim +125$	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

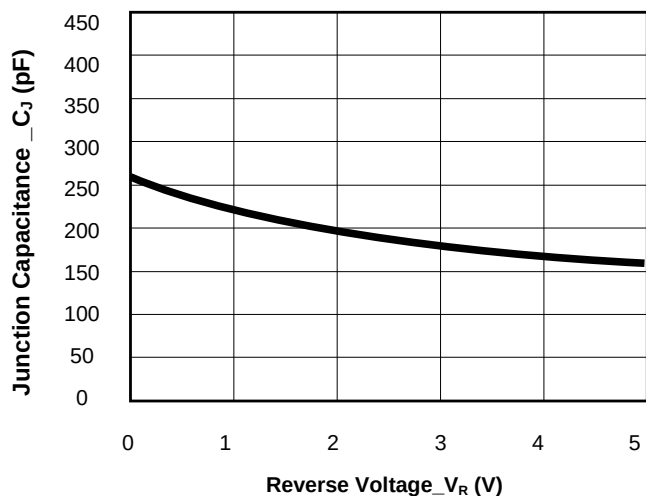
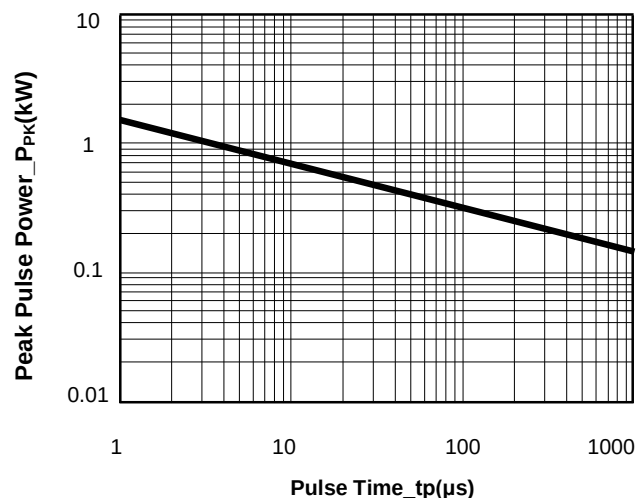
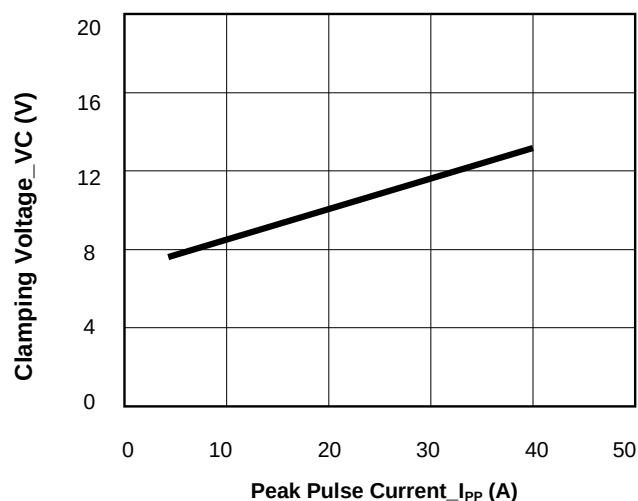
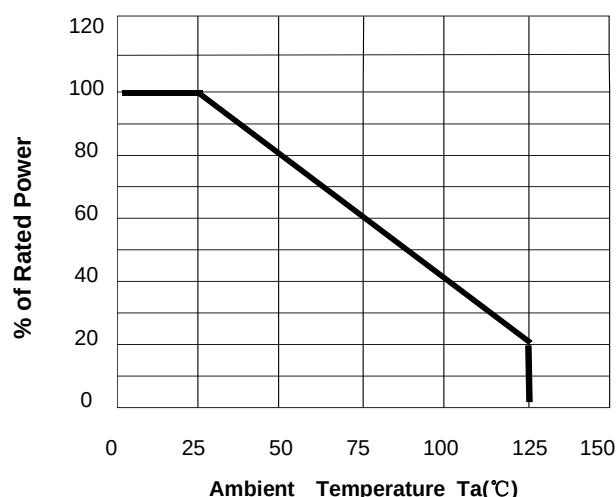
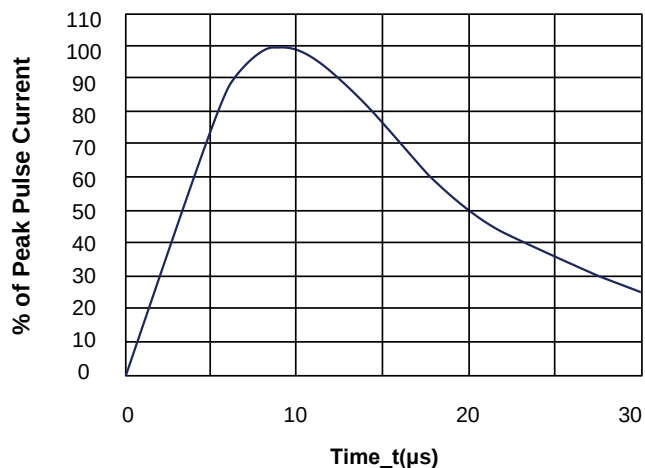
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			4.5	V	
Breakdown Voltage	V_{BR}	6			V	$I_T = 1\text{mA}$
Reverse Leakage Current	I_R			1	μA	$V_{RWM} = 4.5\text{V}$
Forward Voltage	V_F			1.1	V	$I_F = 10\text{mA}$
Clamping Voltage	V_C			9	V	$I_{PP} = 5\text{A}$ (8/20 μs pulse)
Clamping Voltage	V_C			14	V	$I_{PP} = 40\text{A}$ (8/20 μs pulse)
Junction Capacitance	C_J		260		pF	$V_R = 0\text{V}$, $f = 1\text{MHz}$

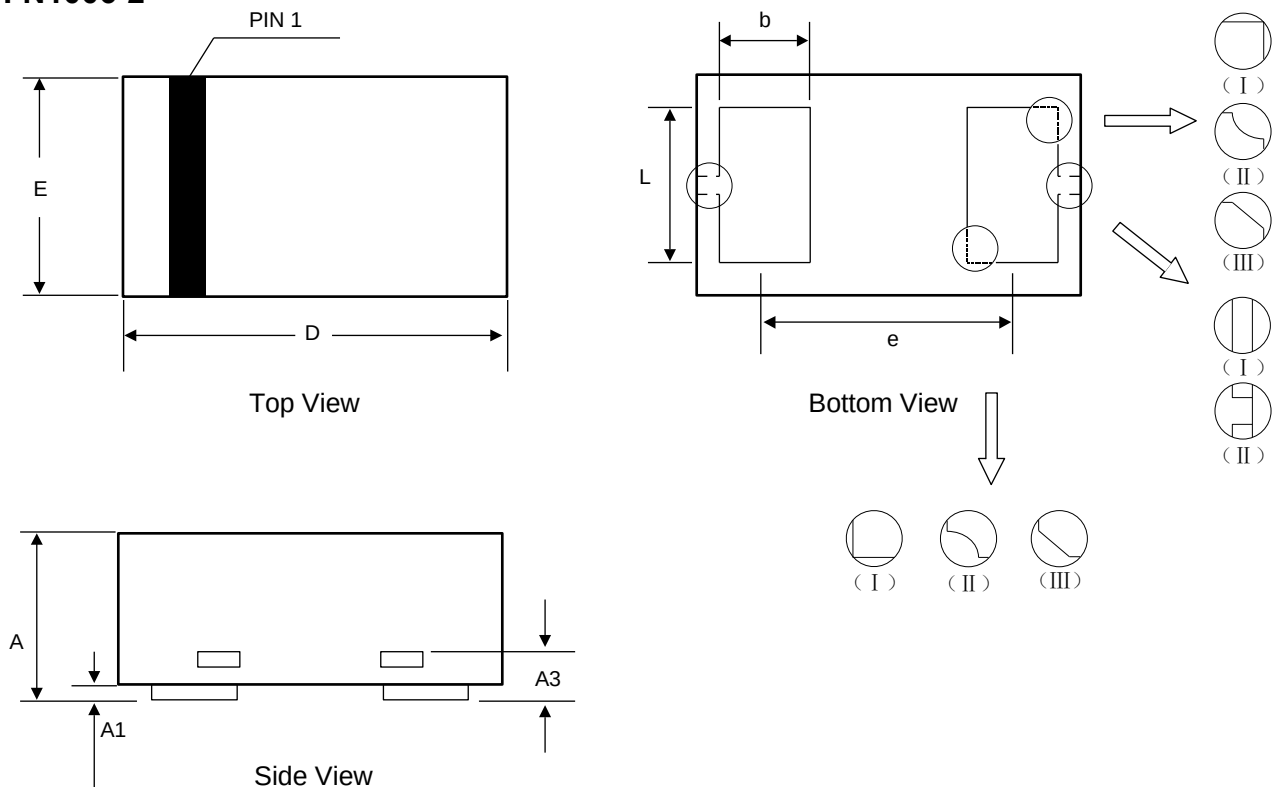
Electrical characteristics ($T_A = 25^\circ\text{C}$, unless otherwise noted)



Definitions of electrical characteristics

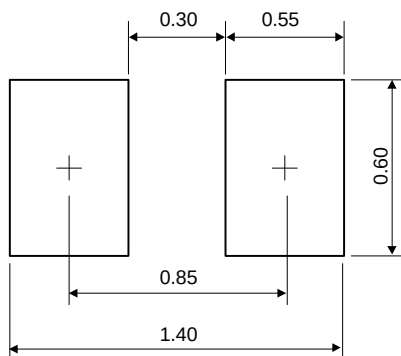
Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)

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

Package Outline Drawing DFN1006-2



Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.340	0.450	0.550
A1	0.000	0.020	0.050
A3	0.125 Ref.		
D	0.950	1.000	1.075
E	0.490	0.600	0.675
b	0.200	0.250	0.300
L	0.450	0.500	0.550
e	0.650 BSC		

Recommended PCB Layout (Unit: mm)



Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

Reel Dimensions

