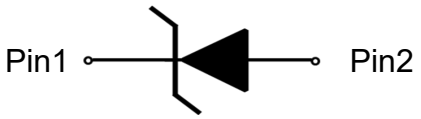
## Description

The XT3D5VU TVS diode is designed to replace multilayer varistors (MLVs) in portable applications such as cell phones, notebooks, and PDA's. It offers superior electrical characteristics such as low clamping voltage, low leakage current and high surge capability. It is designed to protect sensitive electronic components which are connected to power lines, from over-stress caused by ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and Lighting.

The XT3D5VU is in a SOD-323 package and will protect one unidirectional line. It may be used to provide ESD protection up to ±30kV (Contact and air discharge) according to IEC61000-4-2 , and used to protect USB voltage bus pin (8/20 us) according to IEC61000-4-5.

http//:www.xihangsemi.com

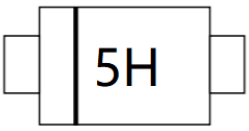
SOD-323




Circuit Diagram

## Features

- Working voltage: 5V
- SOD323 Package
- 2000 Watts peak pulse power ($t_p$=8/20us)
- Transient protection for data lines to
  IEC 61000-4-2 (ESD) ±30kV (air),
  ±30kV (contact)
  IEC 61000-4-5 (Surge) 110A (8/20us)
  IEC61000-4-4(EFT)40A(5/50ns)
- Low leakage current
- Low clamping voltage
- Solid-state silicon-avalanche technology




Marking

## Order Information

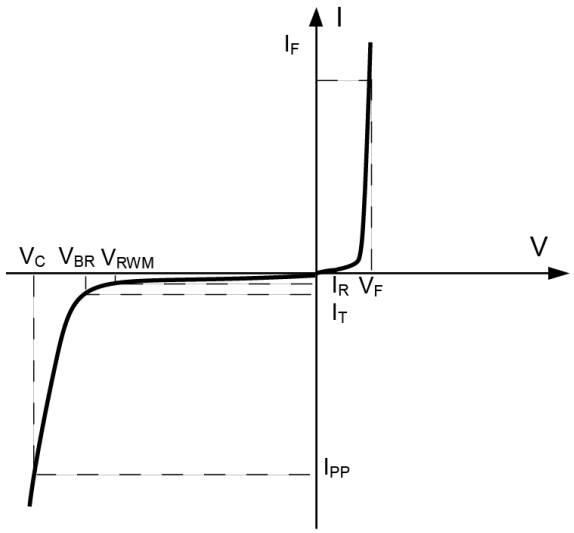
| Device | Package | Shipping |
|---|---|---|
| XT3D5VU | SOD-323 | 3000/Tape&Reel |

## Applications

- Power lines
- Personal digital assistants (PDA's)
- Microprocessors based equipment
- Notebooks, Desktops, and Servers
- Cell phone Handsets and Accessories
- Portable Electronics
- Peripherals

## Definitions of electrical characteristics

| Symbol | Parameter |
|---|---|
| $V_{RWM}$ | Reverse Stand-off Voltage |
| $I_R$ | Reverse Leakage Current @ $V_{RWM}$ |
| $V_{BR}$ | Reverse Breakdown Voltage @ $I_T$ |
| $I_T$ | Test Current |
| $I_{PP}$ | Reverse Peak Pulse Current |
| $V_C$ | Clamping Voltage @ $I_{PP}$ |
| $I_F$ | Forward Current |
| $V_F$ | Forward Voltage @ $I_F$ |
| $C_j$ | Junction Capacitance |
| $I_{PP}$ | Peak Pulse Current |



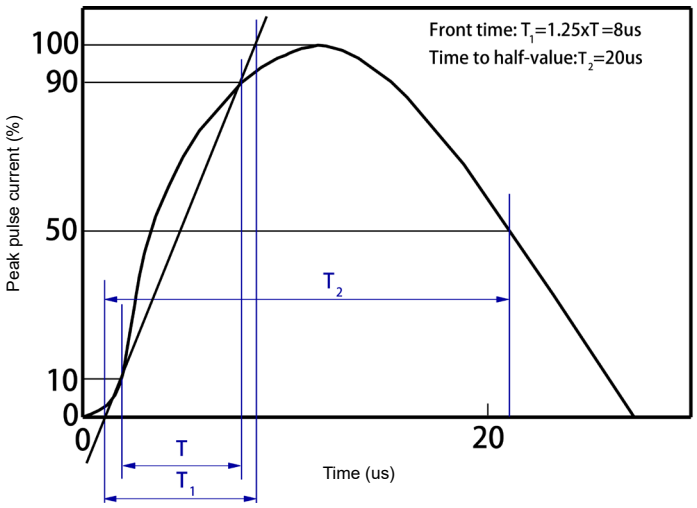

## Absolute Maximum Rating

| Rating | Symbol | Value | Units |
|---|---|---|---|
| Peak Pulse Power ( $t_P$ = 8/20μS ) | $P_{PK}$ | 2000 | W |
| ESD according to IEC61000-4-2 air discharge | $V_{ESD}$ | ±30 | kV |
| ESD according to IEC61000-4-2 contact discharge | | ±30 | kV |
| Lead Soldering Temperature | $T_L$ | 260 (10 sec) | ℃ |
| Operating Temperature | $T_{OP}$ | -55 to +125 | ℃ |
| Storage Temperature | $T_{STG}$ | -55 to +150 | ℃ |

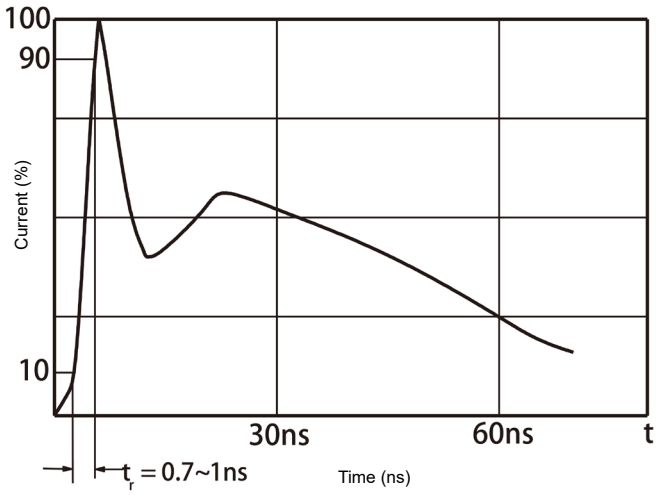
## Electrical Characteristics (Ta=25℃, unless otherwise noted)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| Reverse Stand-off Voltage | $V_{RWM}$ | | | | 5 | V |
| Reverse Breakdown Voltage | $V_{BR}$ | $I_T$=1mA | 6 | 7 | 8 | V |
| Reverse Leakage Current | $I_R$ | $V_{RWM}$ =5V | | | 1 | μA |
| Peak Pulse Current | $I_{PP}$ | $t_P$ = 8/20μs | | | 110 | A |
| Clamping Voltage | $V_C$ | $I_{PP}$=50A $t_P$ = 8/20μs | | 11 | 13 | V |
| Clamping Voltage | $V_C$ | $I_{PP}$=110A $t_P$ = 8/20μs | | 14 | 17 | V |
| Junction Capacitance | $C_j$ | $V_R$=0V f = 1MHz | 900 | 980 | 1050 | pF |

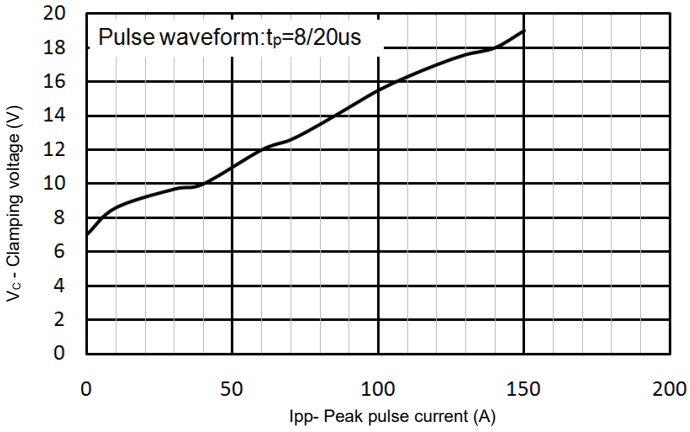
## Typical Characteristics (Ta=25℃, unless otherwise noted)



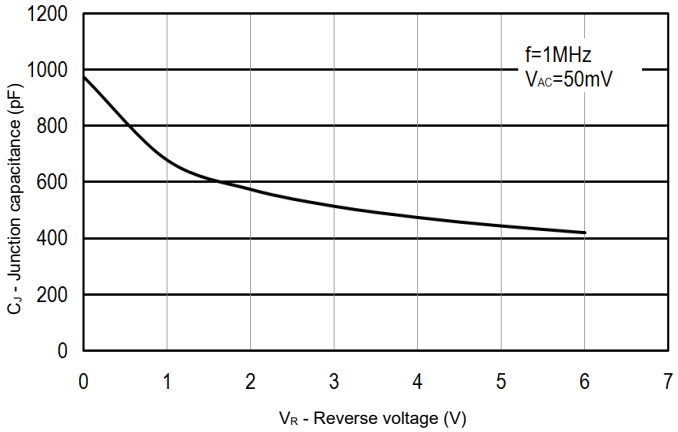

8/20 us waveform per IEC61000-4-5



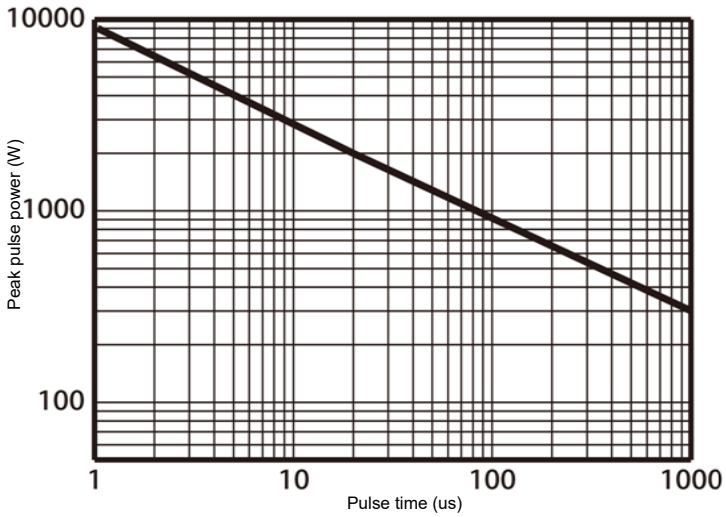

Contact discharge current waveform per IEC61000-4-2



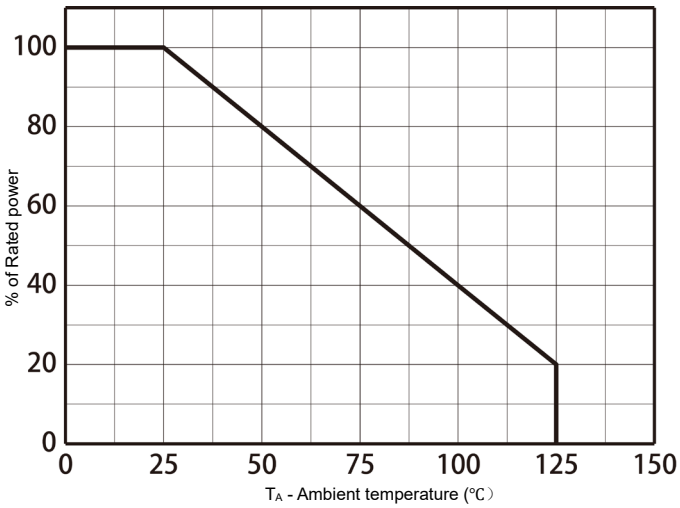

Clamping voltage vs. Peak pulse current




Capacitance vs. Reverse voltage

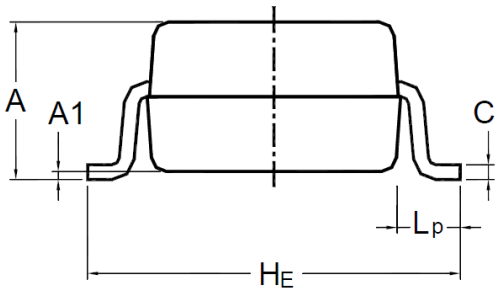


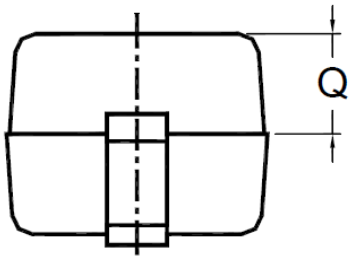

Non-repetitive peak pulse power vs. Pulse time

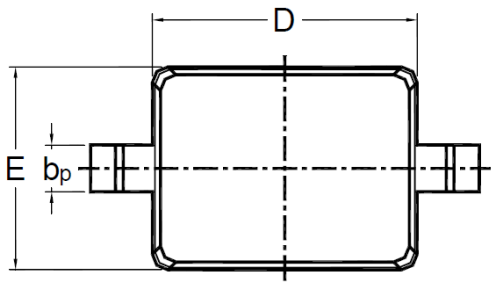



Power derating vs. Ambient temperature

## Package Outline Dimensions (SOD-323)

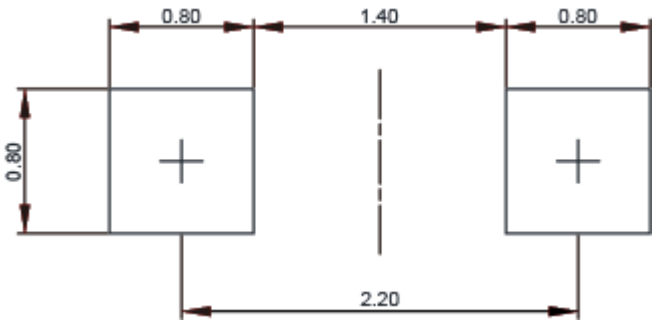



| Dim | Inches | | Millimeters | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 0.031 | 0.043 | 0.8 | 1.0 |
| $A_1$ | 0.000 | 0.004 | 0 | 0.1 |
| $b_p$ | 0.010 | 0.016 | 0.25 | 0.4 |
| C | 0.000 | 0.006 | 0 | 0.15 |
| D | 0.063 | 0.071 | 1.6 | 1.8 |
| E | 0.045 | 0.053 | 1.15 | 1.35 |
| $H_E$ | 0.091 | 0.110 | 2.3 | 2.8 |
| $L_P$ | 0.004 | 0.020 | 0.1 | 0.5 |
| Q | 0.012 | 0.020 | 0.3 | 0.5 |

## Recommend Land Pattern (Unit: mm)




Note:
This recommended land pattern is for reference purpose only.

## Load With Information