

Description

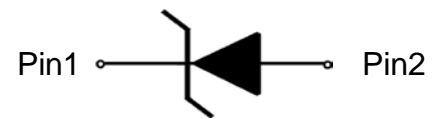
The XT3D12VU TVS diode is designed to replace multilayer varistors (MLVs) in portable applications such as cell phones, notebooks, and PDA's. It offers superior electrical characteristics such as low clamping voltage, low leakage current and high surge capability. It is designed to protect sensitive electronic components which are connected to power lines, from over-stress caused by ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and Lighting.

The XT3D12VU is in a SOD-323 package and will protect one unidirectional line. It may be used to provide ESD protection up to $\pm 30\text{kV}$ (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>



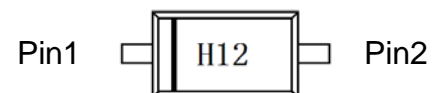
SOD-323



Circuit Diagram

Features

- ◆ Working voltage: 12V
- ◆ SOD323 Package
- ◆ 2000 Watts peak pulse power ($t_p=8/20\mu\text{s}$)
- ◆ Transient protection for data lines to IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (air), $\pm 30\text{kV}$ (contact)
- ◆ IEC 61000-4-5 (Surge) 80A (8/20us)
- ◆ Low leakage current
- ◆ Low clamping voltage
- ◆ Solid-state silicon-avalanche technology



H12=Device Code

The marking bar indicates the cathode

Marking

Applications

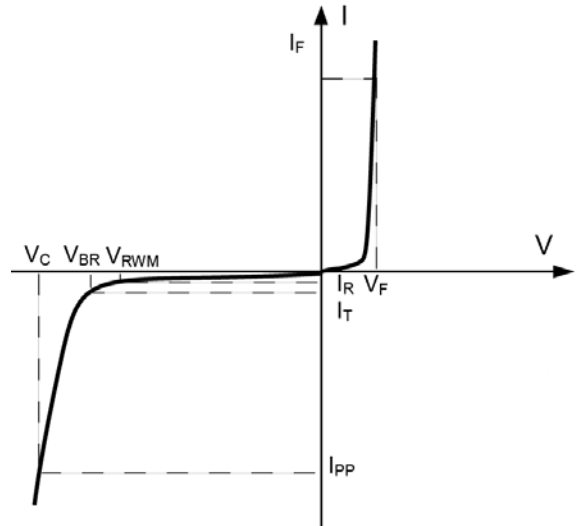
- ◆ Power lines
- ◆ Personal digital assistants (PDA's)
- ◆ Microprocessors based equipment
- ◆ Notebooks, Desktops, and Servers
- ◆ Cell phone Handsets and Accessories
- ◆ Portable Electronics
- ◆ Peripherals

Order Information

Device	Package	Shipping
XT3D12VU	SOD-323	3000/Tape&Reel

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



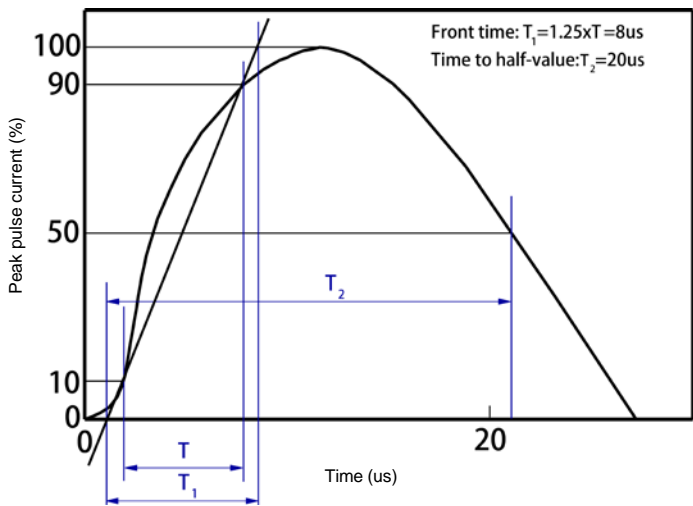
Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power ($t_p = 8/20\mu S$)	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)	$^{\circ}C$
Operating Temperature	T_{OP}	-55 to +125	$^{\circ}C$
Storage Temperature	T_{STG}	-55 to +150	$^{\circ}C$

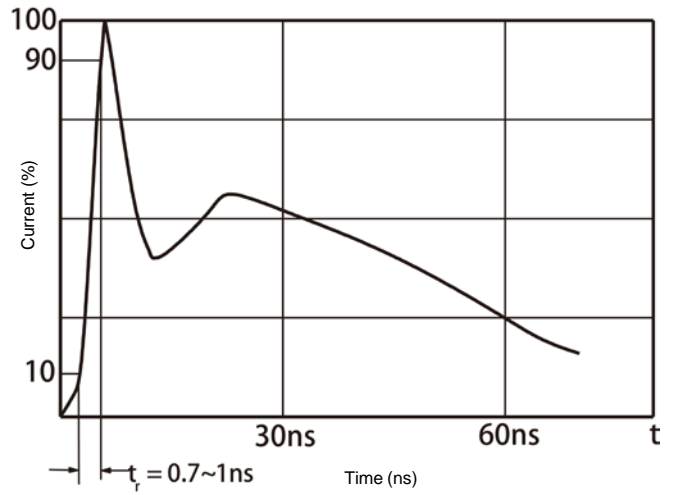
Electrical Characteristics (Ta=25 $^{\circ}C$, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				12	V
Reverse Breakdown Voltage	V_{BR}	$I_T=1mA$	13.5	14.8	15.5	V
Reverse Leakage Current	I_R	$V_{RWM}=12V$			1	μA
Peak Pulse Current	I_{PP}	$t_p = 8/20\mu s$			80	A
Clamping Voltage	V_C	$I_{PP}=30A$ $t_p = 8/20\mu s$			19	V
Clamping Voltage	V_C	$I_{PP}=50A$ $t_p = 8/20\mu s$			24	V
Clamping Voltage	V_C	$I_{PP}=80A$ $t_p = 8/20\mu s$			28	V
Junction Capacitance	C_j	$V_R=0V$ $f = 1MHz$	300	375	450	pF

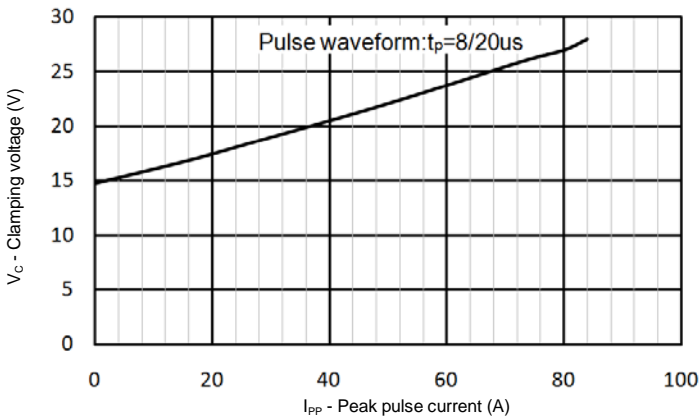
Typical Characteristics (Ta=25°C, unless otherwise noted)



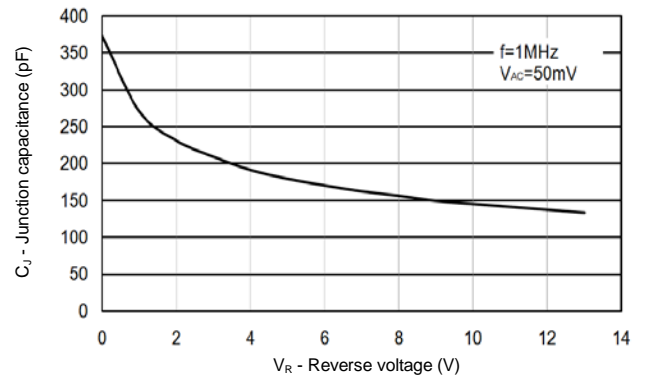
8/20 us waveform per IEC61000-4-5



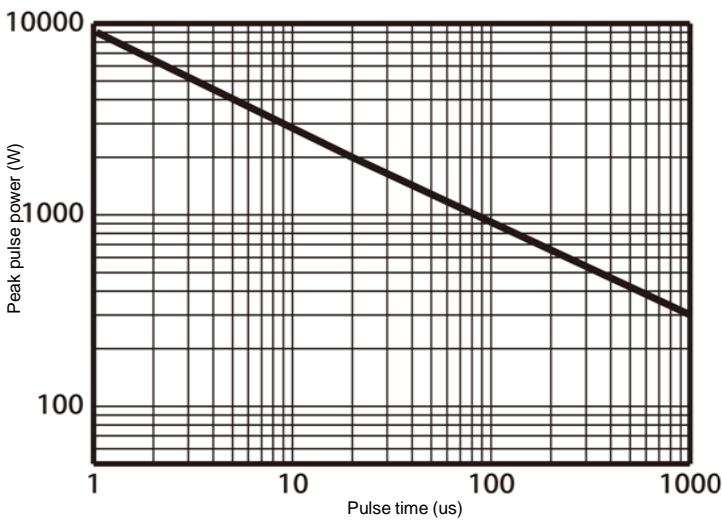
Contact discharge current waveform per IEC61000-4-2



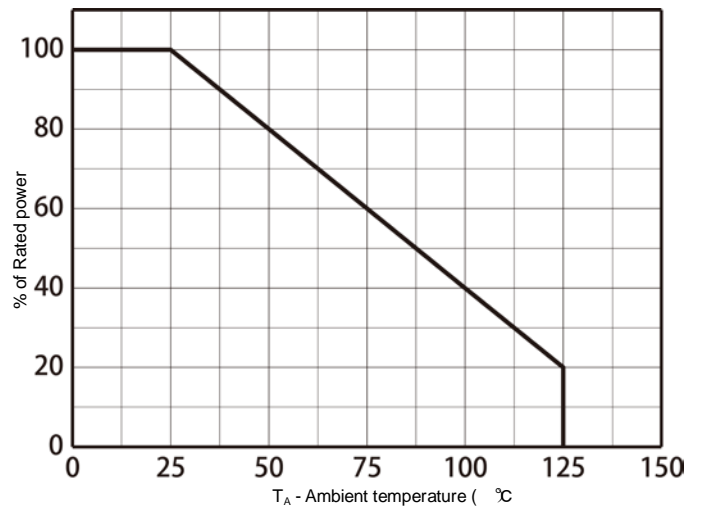
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverse voltage

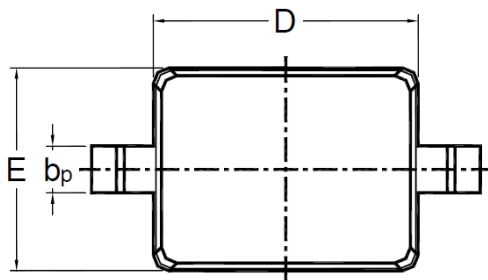
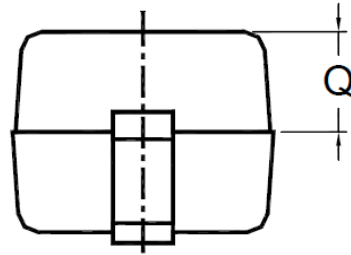
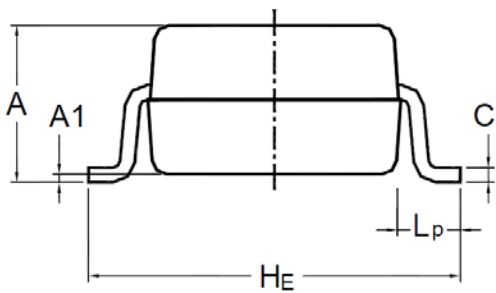


Non-repetitive peak pulse power vs. Pulse time



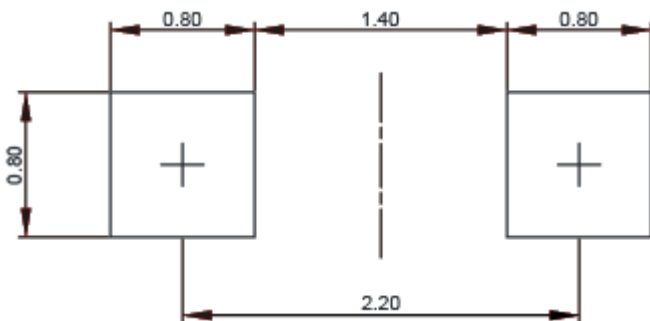
Power derating vs. Ambient temperature

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.