TS0301VEX

Bidirectional Ultra Low Capacitance TVS Array

Features

- Transient protection for high-speed data lines
  - IEC 61000-4-2 (ESD) ±30kv(Air)
  - ±30kV (Contact)
  - IEC 61000-4-4 (EFT) 40A (5/50ns)
  - IEC 61000-4-5(Lightning) 20A (8/20us)
- Protects one I/O line (bidirectional)
- Low clamping voltage
- Working voltages : 3.3V
- Low leakage current
- Response Time is < 1 ns

Applications

- Cell Phone Handsets and Accessories
- Microprocessor based equipment
- Personal Digital Assistants (PDA's)
- Notebooks, Desktops, and Servers
- Portable Instrumentation
- Peripherals
- USB Interface

Mechanical Characteristics

- SOD-323 package
- Flammability Rating: UL 94V-0
- Packaging:Tape and Reel
- High temperature soldering guaranted:260°C/10s
- Reel size: 7 inch

Description

TS0301VEX is an ultra-low capacitance ESD and Surge Protector designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces.

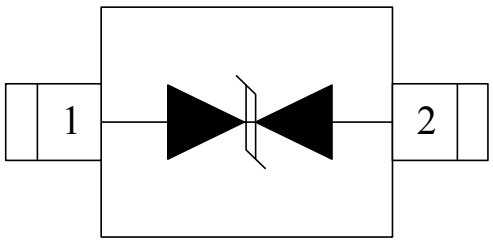
TS0301VEX is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), Level 4 (±15kV air, ±8kV contact discharge), IEC 61000-4-4 (electrical fast transient - EFT) (40A, 5/50 ns), IEC 61000-4-5 (Surge) (20A, 8/20μs), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.

TS0301VEX is in an SOD-323 package. The combined features of ultra-low capacitance and high ESD robustness make TS0301VEX ideal for applications where arrays are not practical. The low clamping voltage of the TS0301VEX guarantees a minimum stress on the protected IC.

Ordering Information

- Package: SOD-323
- Material: Halogen free
- Packing: Tape & Reel
- Quantity per reel: 3,000pcs

Pin Configuration



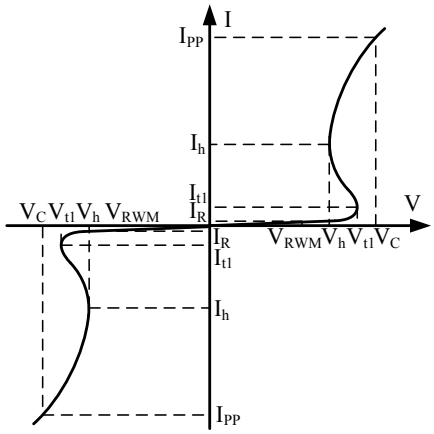
(Top View)

Absolute Maximum Rating

Symbol	Parameter	Value	Units
P_{PK}	Peak Pulse Power (8/20μs)	350	Watts
V_{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	±30 ±30	kV
T_{OPT}	Operating Temperature	-55 to +150	C
T_{STG}	Storage Temperature	-55 to +150	°C
T_{LST}	Lead Soldering Temperature	260	°C

Electrical Characteristics (T = 25°C)

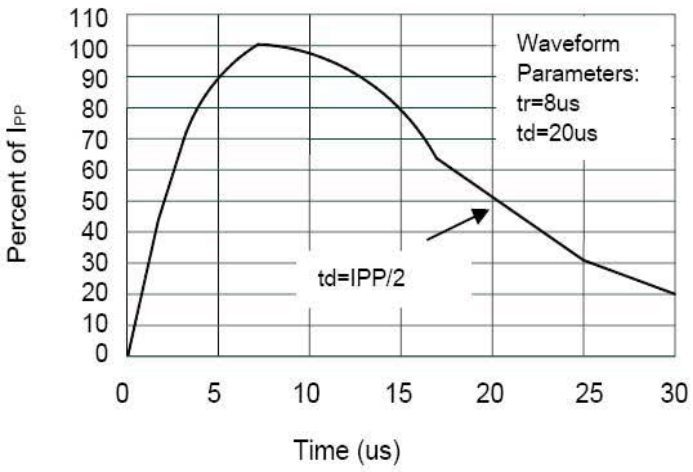
Symbol	Parameter
V_{RWM}	Nominal Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{t1}	Trigger Voltage
I_{t1}	Trigger Current @ V_{t1}
V_h	Holding Voltage
I_h	Holding Current @ V_h
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Maximum Peak Pulse Current
C_{ESD}	Parasitic Capacitance
C_Δ	Variation in C_{ESD} with Reverse Bias



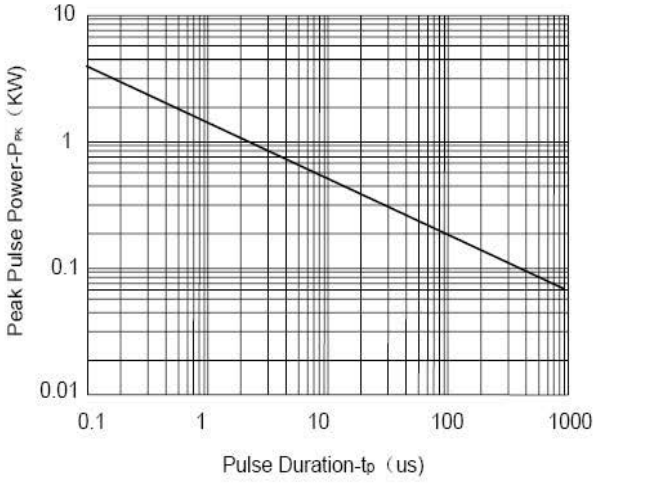
Bi-Directional TVS

Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}				3.3	V
I_R	V_{RWM} = 3.3V, T = 25°C		0.01	0.05	μA
V_{t1}	I_{t1} = 1μA	6.0		7.5	V
V_h	I_h = 1mA	3.5		4.5	V
V_C	I_{PP} = 2A, t_p = 8/20μs			7.0	V
V_C	I_{PP} = 20A, t_p = 8/20μs			16.0	V
C_{ESD}	V_R = 3.3V, f = 1MHz		4.0		pF
C_Δ	V_R = 0V ~ 3.3V, f = 1MHz		0.6		pF

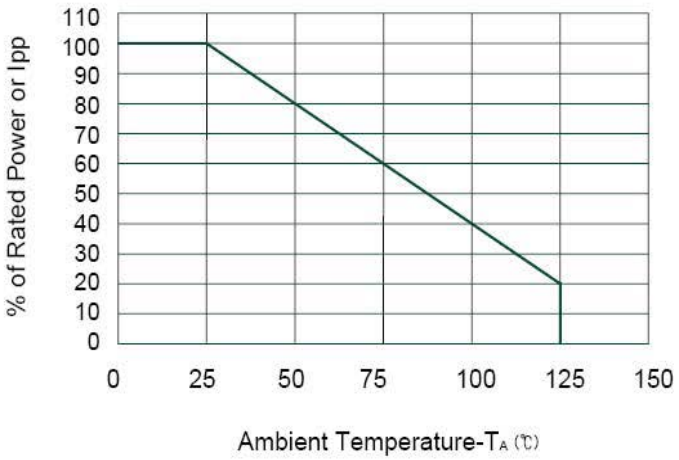
Electrical Characteristics Curve



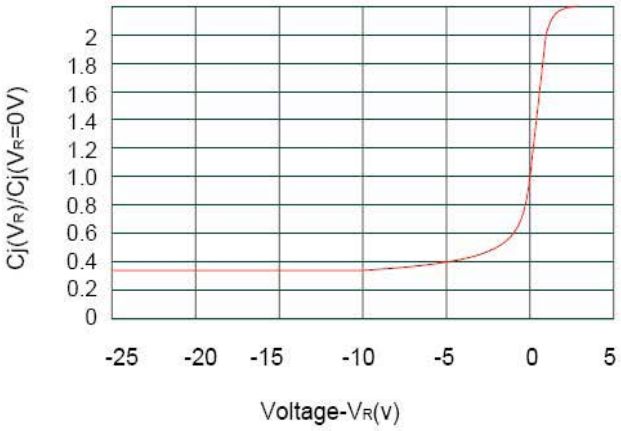
Pulse Waveform



Non-Repetitive Peak Pulse Power vs. Pulse Time



Power Derating Curve

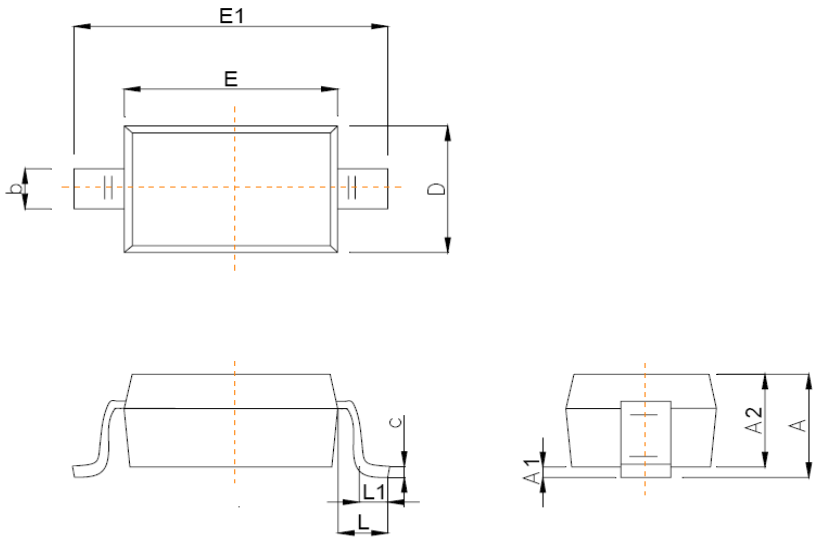


Junction Capacitance vs. Reverse Voltage

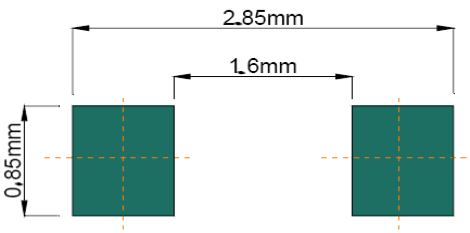
Package Outline

- SOD-323 package

Package Outline Dimensions

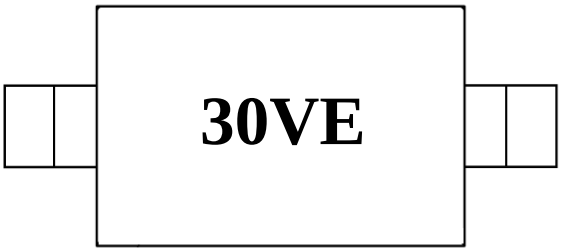


Symbol	Dimensions In Millimeters	
	Min	Max
A		1.00
A1	0.000	0.100
A2	0.800	0.900
b	0.250	0.350
c	0.080	0.150
D	1.200	1.400
E	1.600	1.800
E1	2.500	2.700
e	1.800	2.040
L	0.475 REF	
L1	0.250	0.400
θ	0°	8°



Recommended Pad outline

Marking Codes



Ordering Information

Part Number	Working Voltage	Quantity Per Reel	Reel Size
TS0301VEX	3.3V	3,000	7 Inch

Note:

(1) 30VE is the Part Number, fixed.

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