

Features

- ❑ Transient protection for high-speed data lines
 - IEC 61000-4-2 (ESD) ±30kV (Air)
 - ±30kV (Contact)
 - IEC 61000-4-4 (EFT) 80A (5/50 ns)
 - IEC 61000-4-5 (Surge) 80A (8/20µs)
- ❑ Low leakage current: 0.1µA @ V_{RWM} (Typical)
- ❑ Low operating and clamping voltage
- ❑ Each I/O pin can withstand over 1000 ESD strikes for ±8kV contact discharge

Description

TS0311PKX is a low-capacitance Transient Voltage Suppressor (TVS) array designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. TS0311PKX 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) (80 A, 5/50 ns), IEC 61000 -4-5 (Surge) (80 A, 8/20µs), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.

TS0311PKX is in an SOD-123F package. The combined features of low capacitance and high ESD robustness make TS0311PKX ideal for applications where arrays are not practical. The low clamping voltage of the TS0311PKX guarantees a minimum stress on the protected IC.

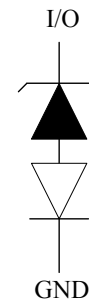
Applications

- ❑ Desktops, Servers and Notebooks
- ❑ Cellular Phones
- ❑ Portable Instruments
- ❑ Analog Inputs

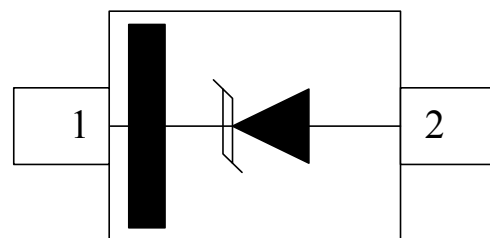
Mechanical Characteristics

- ❑ SOD-123F package
- ❑ Flammability Rating: UL 94V-0
- ❑ Marking: Part number
- ❑ Packaging: Tape and Reel

Circuit Diagram



Pin Configuration



SOD-123F
(Top View)

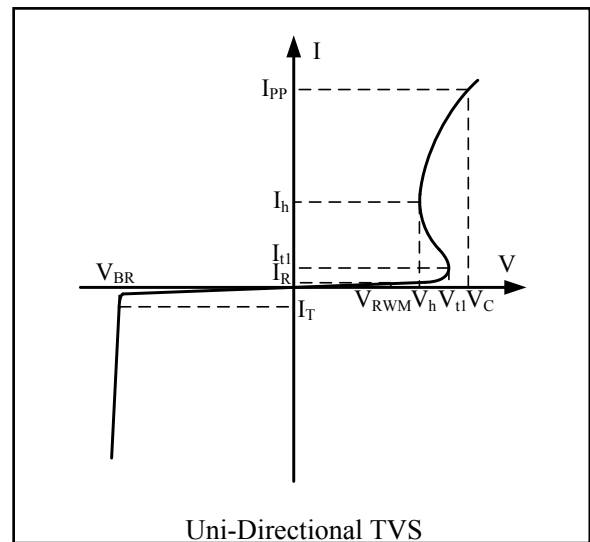


Absolute Maximum Rating

Symbol	Parameter	Value	Units
I_{PP}	Peak Pulse Current (8/20 μ s)	80	A
P_{PK}	Peak Pulse Power (8/20 μ s)	1000	Watts
V_{ESD}	ESD per IEC 61000-4-2 (Air)	± 30	kV
	ESD per IEC 61000-4-2 (Contact)	± 30	
T_{OPT}	Operating Temperature	-45 to +85	$^{\circ}$ C
T_{STG}	Storage Temperature	-55 to +150	$^{\circ}$ C

Electrical Characteristics (T = 25 $^{\circ}$ C)

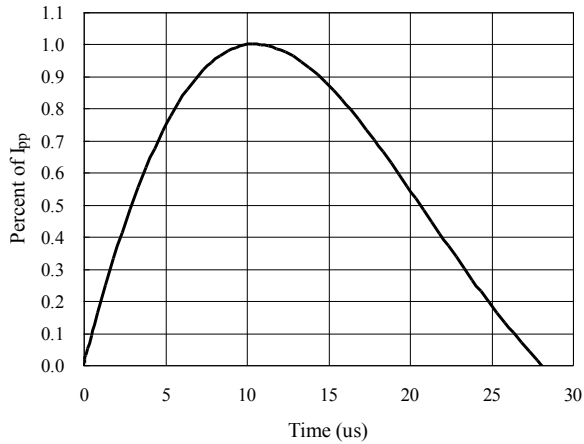
Symbol	Parameter
V_{RWM}	Nominal Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{t1}	Trigger Voltage
I_{t1}	Trigger Current @ V_{t1}
V_h	Holding Voltage
I_h	Holding Current @ V_h
V_C	Clamping Voltage @ I_{PP}
V_{CR}	Reverse Clamping Voltage @ I_{PP}
I_{PP}	Maximum Peak Pulse Current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



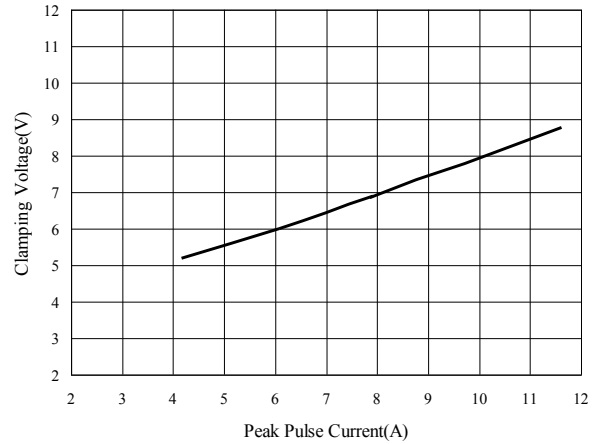
Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}				3.3	V
I_R	$V_{RWM} = 3.3V, T = 25^{\circ}C$		0.1	1.0	μ A
V_{t1}	$I_{t1} = 1\mu A$	3.5	3.7	4.5	V
V_h	$I_h = 1mA$	3.5		4.0	V
V_C	$I_{PP} = 2A, t_p = 8/20\mu s$			6.5	V
V_C	$I_{PP} = 10A, t_p = 8/20\mu s$			7.0	V
C_{ESD}	$V_R = 0V, f = 1MHz$			10	pF



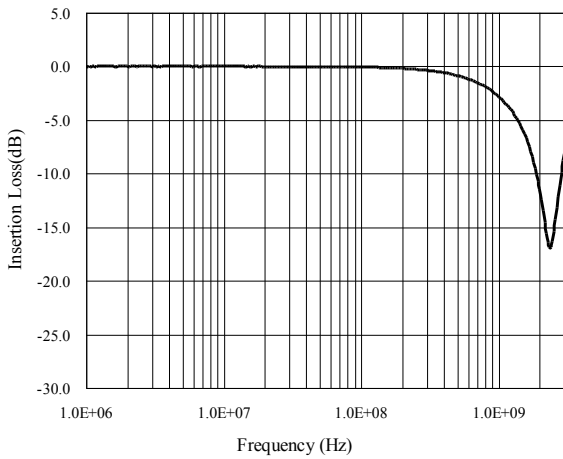
8/20µs Pulse Waveform



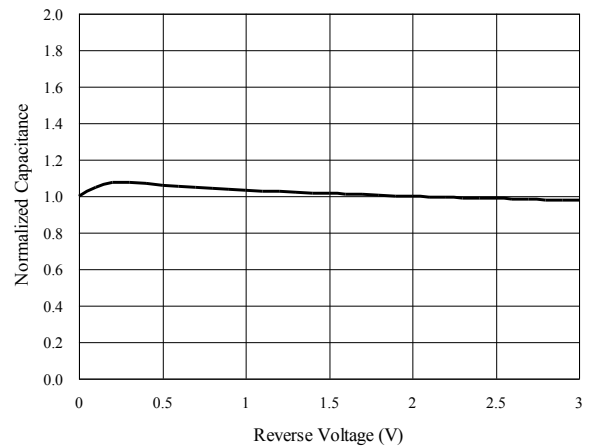
Clamping Voltage V_C vs. Current I_{PP}



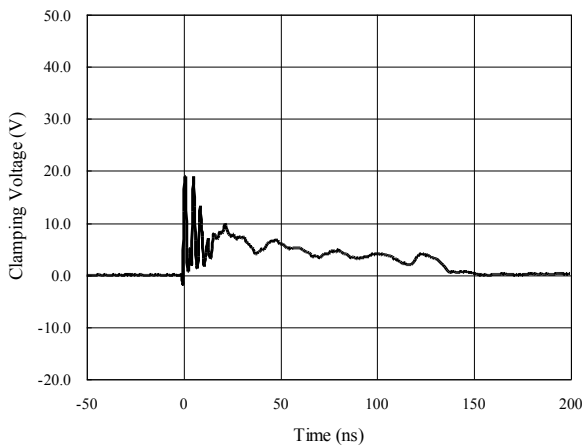
Insertion Loss S21



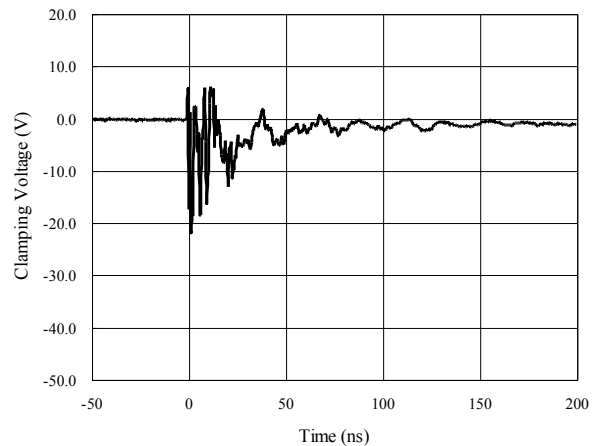
Normalized Capacitance vs. Voltage



ESD Clamping of I/O to GND (+8kV Contact per IEC 61000-4-2)



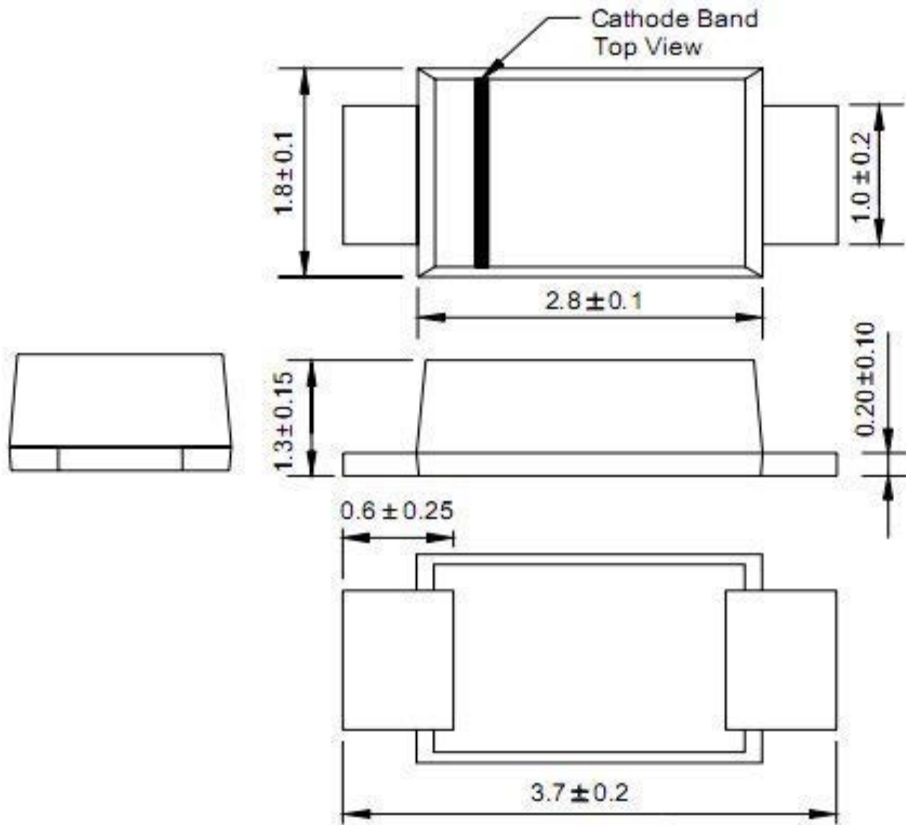
ESD Clamping of I/O to GND (-8kV Contact per IEC 61000-4-2)





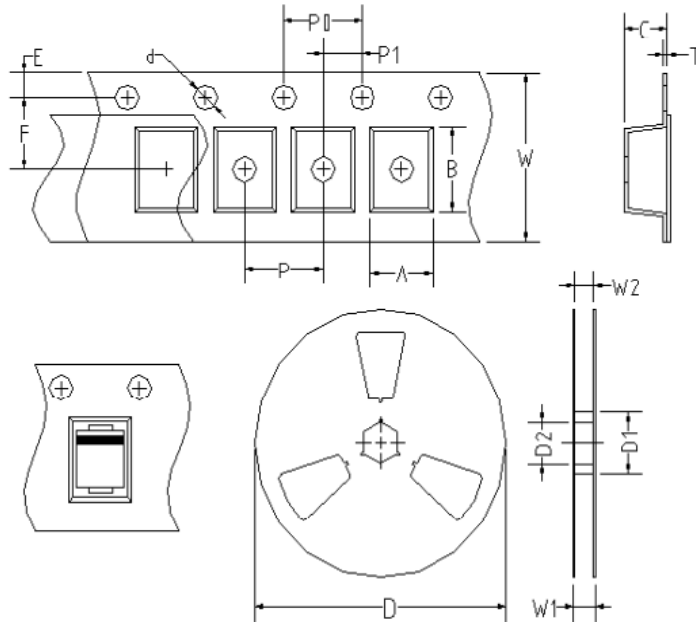
Package Outline

SOD-123F



Dimensions in millimeters

Tape and Reel Specification



REF	mm	inch
A	2.05±0.10	0.080±0.003
B	3.85±0.10	0.151±0.003
C	1.45±0.10	0.057±0.003
d	1.55±0.10	0.061±0.003
D	177.8±1.0	6.999±0.039
D1	20±1.0	0.787±0.039
D2	13.0±1.0	0.511±0.039
E	1.75±0.10	0.068±0.003
F	3.50±0.05	0.137±0.002
P	4.00±0.10	0.157±0.003
P0	4.00±0.10	0.157±0.003
P1	2.00±0.10	0.078±0.003
T	0.20±0.10	0.007±0.003
W	8.00±0.15	0.314±0.006
W1	16.2±1.5	0.637±0.006
W2	13.2±1.0	0.519±0.039

OUTLINE	REEL (PCS)	PER CARTON (PCS)	REEL DIAMETERS (mm)	CARTON SIZE(mm)		
				L	W	H
TAPING	3,000	252,000	177.8	385	275	385

Marking Codes



Ordering Information

Part Number	Working Voltage	Quantity Per Reel	Reel Size
TS0311PKX	3.3V	3,000	7 Inch

Note:

- "S31P" is part number, fixed.

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[P6KE13CA](#) [P6KE43CA](#) [P6KE6.8CA](#) [P6KE8.2](#) [P6SMBJ20CA](#) [JANTX1N6072A](#) [SR2835ESKG](#) [SA90CA](#)