

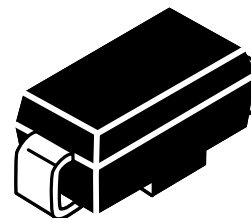
Transient Suppressor Protection Device (TSPD) Bi-directional, Surface Mount > PxxxxSx Series

Descriptions

Boarden TSPDs are designed to help protect sensitive telecommunication equipments from over voltage events as lightning strikes, power contact and power induction per as Telcordia GR-1089 and ITU-T K.20(K21). A TSPD appears as a very high impedance device under normal operating conditions, but will change its impedance to short to divert current to ground under over voltage events. TSPDs have a very high power energy absorb capability and very fast response time, which helps this product very suitable to be applied to Central Office Equipments (CO) and Customer Premise Equipments (CPE) in telecommunication field.

Features

- Excellent capability of absorbing transient surge
- Low Protection Voltage
- Low Leakage Current less than 2 μ A
- Bi-direction protection devices
- Quick response to surge voltage (ns level)
- Solid-state silicon technology
- RoHS compliant
- Meets MSL 1 Requirements
- IEC61000-4-2 (ESD) \pm 30kV (air), \pm 30kV (contact).



SMB
(JEDEC DO-214AA)

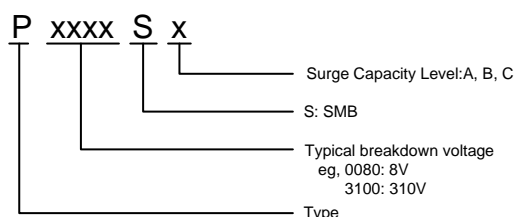


Circuit diagram

Order Information

Package	Qty per Box	Tape
SMB	500	7" Reel
	3000	13" Reel

Part Numbering System



Thermal Characteristics

Parameter	Symbol	Value	Unit
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C
Typical Thermal Resistance Junction to Lead	R _{uJL}	20	°C/W
Typical Thermal Resistance Junction to Ambient	R _{uJA}	100	°C/W

Surge Ratings

Series	Peak Pulse Current - I _{pp} (A)				I _{TSM} 50/60Hz	di/dt
	2/10 μ s	8/20 μ s	5/310 μ s	10/1000 μ s	A min	A/ μ s
A	200	150	75	45	20	500
B	250	250	100	80	25	500
C	500	400	200	100	30	500

Electrical Characteristics (TA=25°C unless otherwise noted)

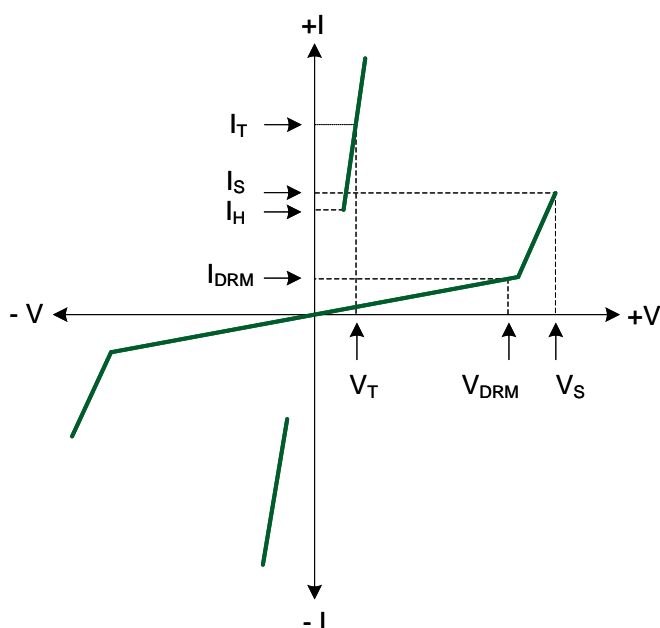
Type Number	V_{DRM} @ $I_{DRM}=5\mu A$	V_s @100kV/s	I_s	V_T @ $I_T=2.2A$	I_T	I_H	C_j
	max. (V)	max. (V)	max. (mA)	max. (V)	max. (A)	typ. (mA)	max. (pF)
P0080SA	6	25	800	4	2.2	120	55
P0300SA	25	40	800	4	2.2	120	55
P0640SA	58	77	800	4	2.2	120	45
P0720SA	65	88	800	4	2.2	120	45
P0900SA	75	98	800	4	2.2	120	40
P1100SA	90	130	800	4	2.2	120	35
P1300SA	120	160	800	4	2.2	120	35
P1500SA	140	180	800	4	2.2	120	30
P1800SA	170	220	800	4	2.2	120	30
P2300SA	190	260	800	4	2.2	120	25
P2600SA	220	300	800	4	2.2	120	25
P3100SA	280	360	800	4	2.2	120	25
P3500SA	320	400	800	4	2.2	120	20
P4200SA	380	500	800	4	2.2	120	20
P4800SA	440	600	800	4	2.2	120	20
P0080SB	6	25	800	4	2.2	120	60
P0300SB	25	40	800	4	2.2	120	65
P0640SB	58	77	800	4	2.2	120	45
P0720SB	65	88	800	4	2.2	120	45
P0900SB	75	98	800	4	2.2	120	40
P1100SB	90	130	800	4	2.2	120	40
P1300SB	120	160	800	4	2.2	120	40
P1500SB	140	180	800	4	2.2	120	40
P1800SB	170	220	800	4	2.2	120	45
P2300SB	190	260	800	4	2.2	120	60
P2600SB	220	300	800	4	2.2	120	45
P3100SB	280	360	800	4	2.2	120	45
P3500SB	320	400	800	4	2.2	120	40
P4200SB	380	500	800	4	2.2	120	40
P4800SB	440	600	800	4	2.2	120	40

Electrical Characteristics (TA=25°C unless otherwise noted)

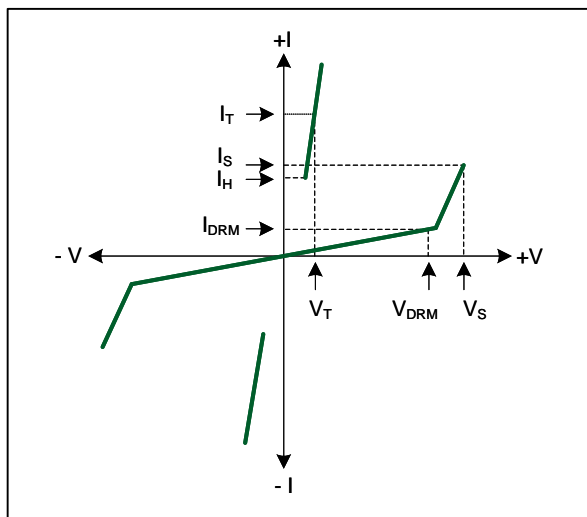
Type Number	V_{DRM} @ $I_{DRM}=5\mu A$	V_S @100kV/s	I_S	V_T @ $I_T=2.2A$	I_T	I_H	C_j
	max. (V)	max. (V)	max. (mA)	max. (V)	max. (A)	typ. (mA)	max. (pF)
P0080SC	6	25	800	4	2.2	120	75
P0300SC	25	40	800	4	2.2	120	75
P0640SC	58	77	800	4	2.2	120	55
P0720SC	65	88	800	4	2.2	120	60
P0900SC	75	98	800	4	2.2	120	65
P1100SC	90	130	800	4	2.2	120	55
P1300SC	120	160	800	4	2.2	120	50
P1500SC	140	180	800	4	2.2	120	50
P1800SC	170	220	800	4	2.2	120	55
P2300SC	190	260	800	4	2.2	120	65
P2600SC	220	300	800	4	2.2	120	65
P3100SC	280	360	800	4	2.2	120	55
P3500SC	320	400	800	4	2.2	120	50
P4200SC	380	500	800	4	2.2	120	45
P4800SC	440	600	800	4	2.2	120	45

I-V Curve Characteristics

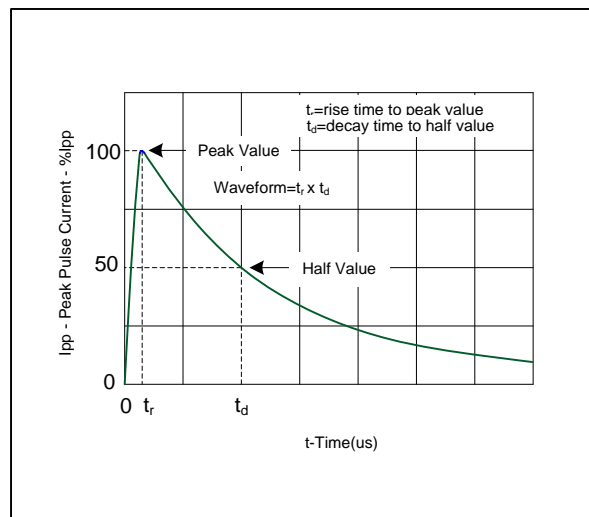
Parameter	Definition
C_j	Off-state Capacitance
I_S	Switching Current
I_{DRM}	Leakage Current
I_H	Holding Current
I_{PP}	Peak Pulse Current
I_T	On-state Current
I_{TSM}	Non-repetitive Peak Impulse Current
V_S	Repetitive Peak Off-state Voltage
V_{DRM}	Repetitive Peak Off-state Voltage
V_T	On-state Voltage



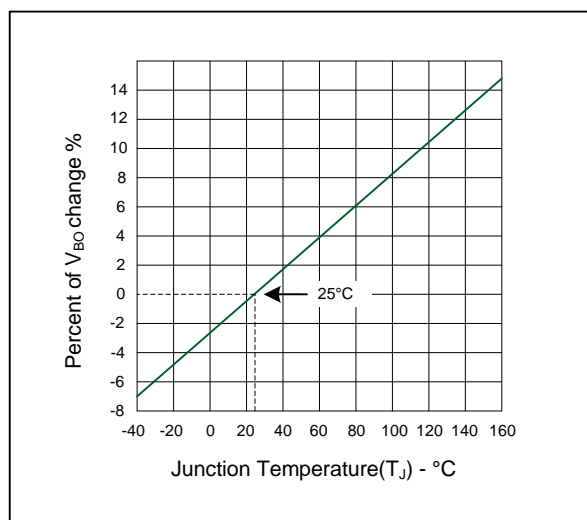
Typical Electrical Characters Applications



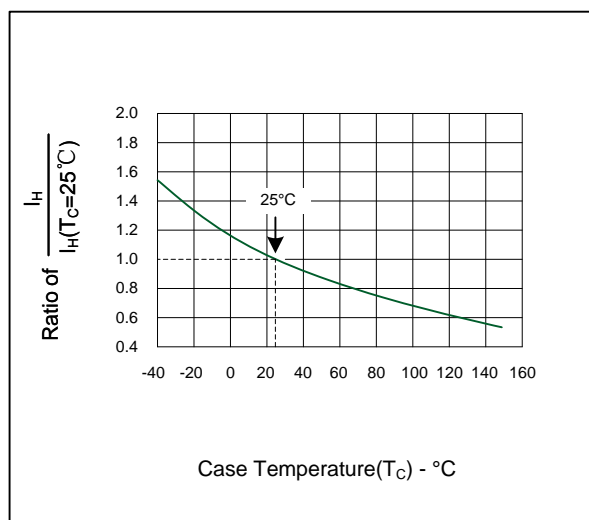
V - I Characteristics



Trxtd Pulse Waveform



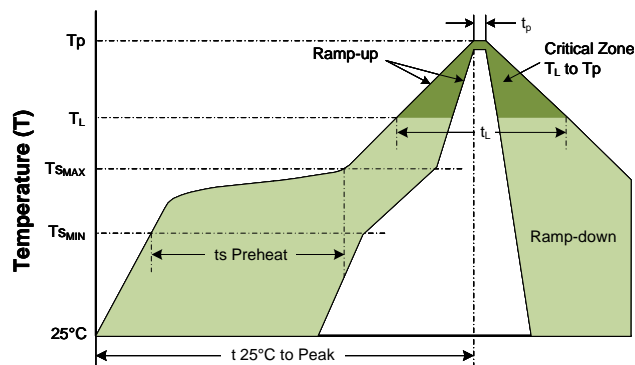
Normalized V_S Change versus Junction Temperature



Normalized DC Holding current versus Case Temperature

Soldering Parameters

Profile Feature	Lead-Free Assembly
Average Ramp-up Rate ($T_{S_{MAX}}$ to T_p) Average Ramp-down Rate (T_p to T_L)	3°C/second max. 6°C/second max.
Preheat • Temperature Min ($T_{S_{MIN}}$) • Temperature Max ($T_{S_{MAX}}$) • Time (t_s Preheat)	150°C 200°C 60-180 seconds
Time maintained above: • Temperature (T_L) • Time (t_L)	217°C 60-150 seconds
Peak/Classification Temperature • Temperature (T_p)	260 ^{+0/-5} °C
Time within 5°C of actual Peak Time (t_p)	20-40 seconds
Time 25°C to peak Temperature	8 minutes max
Do not exceed	280 °C



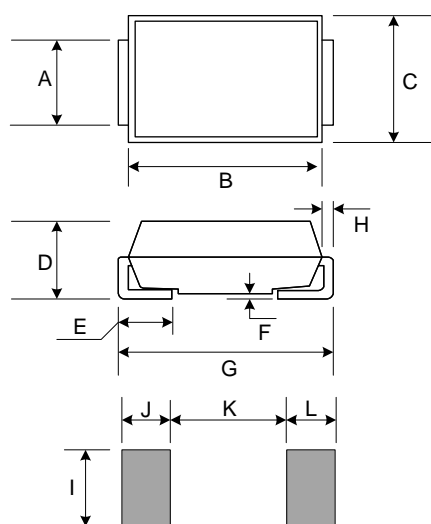
Flow/Wave Soldering (Solder Dipping)

Peak Temperature :	265 °C
Dipping Time :	10 seconds
Soldering :	1 time

Product Dimensions

Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.077	0.086	1.950	2.200
B	0.160	0.180	4.060	4.570
C	0.130	0.155	3.300	3.940
D	0.084	0.096	2.130	2.440
E	0.030	0.060	0.760	1.520
F	-	0.008	-	0.203
G	0.205	0.220	5.210	5.590
H	0.006	0.012	0.152	0.305
I	0.089	-	2.260	-
J	0.085	-	2.160	-
K	-	0.107	-	2.740
L	0.085	-	2.160	-

SMB (DO-214AA)



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Specifications are subject to change without notice.

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