

DATA SHEET

THYRISTOR SURGE SUPPRESSORS

MODEMS/LINE CARD

PXXXXSD series

RoHS compliant & Halogen free



Product specification— December 21, 2018 V.0



Thyristor Surge Suppressors (TSS) Data Sheet

Description

DO-214AA solid state protection thyristor protect telecommunications equipment such as modems, line cards, fax machines, and other CPE. P Series devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21 and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).



Features

Compared to surge suppression using other technologies, P Series devices offer absolute surge protection regardless of the surge current available and the rate of applied voltage (dv/dt). P Series devices:

- Cannot be damaged by voltage
- Eliminate hysteresis and heat dissipation typically found with clamping devices
- Eliminate voltage overshoot caused by fast-rising transients
- Are non-degenerative
- Will not fatigue
- Have low capacitance, making them ideal for high-speed transmission equipment
- Meets MSL level 1, per J-STD-020

Electrical Parameters

Parameter	Definition
V_{DRM}	Peak Off-state Voltage – maximum voltage that can be applied while maintaining off state
V_S	Switching Voltage – maximum voltage prior to switching to on state
V_T	On-state Voltage – maximum voltage measured at rated on-state current
I_{DRM}	Leakage Current – maximum peak off-state current measured at V_{DRM}
I_S	Switching Current – maximum current required to switch to on state
I_T	On-state Current – maximum rated continuous on-state current
I_H	Holding Current – minimum current required to maintain on state
C_O	Off-state Capacitance – maximum capacitance measured in off state
V_{PP}	Peak Pulse Voltage – maximum rated peak impulse voltage
I_{PP}	Peak Pulse Current – maximum rated peak impulse current

Electrical Characteristics

Part Number	V _{DRM} (V)	V _S (V)	V _T (V)	I _{DRM} (μA)	I _S (mA)	I _T (A)	I _H (mA)	C _O (pF)	V _{PP} 10/700μs (V)	I _{PP} 10/1000μs (A)	Marking
P0080SD	6	25	4	5	800	2.2	30	150	8000	200	P008D
P0150SD	15	25	4	5	800	2.2	30	150	8000	200	P015D
P0300SD	25	40	4	5	800	2.2	30	150	8000	200	P03D
P0640SD	58	77	4	5	800	2.2	50	100	8000	200	P06D
P0720SD	65	88	4	5	800	2.2	50	100	8000	200	P07D
P0900SD	75	98	4	5	800	2.2	50	100	8000	200	P09D
P1100SD	90	130	4	5	800	2.2	50	100	8000	200	P11D
P1300SD	120	160	4	5	800	2.2	50	100	8000	200	P13D
P1500SD	140	180	4	5	800	2.2	50	100	8000	200	P15D
P1800SD	170	220	4	5	800	2.2	50	100	8000	200	P18D
P2300SD	190	260	4	5	800	2.2	50	100	8000	200	P23D
P2600SD	220	300	4	5	800	2.2	50	150	8000	200	P26D
P3100SD	275	350	4	5	800	2.2	50	150	8000	200	P31D
P3500SD	320	400	4	5	800	2.2	50	150	8000	200	P35D


Notes:

- All measurements are made at an ambient temperature of 25°C.
- Off-state capacitance(C_O) is measured at 1 MHz with a 2V bias and is typical value.

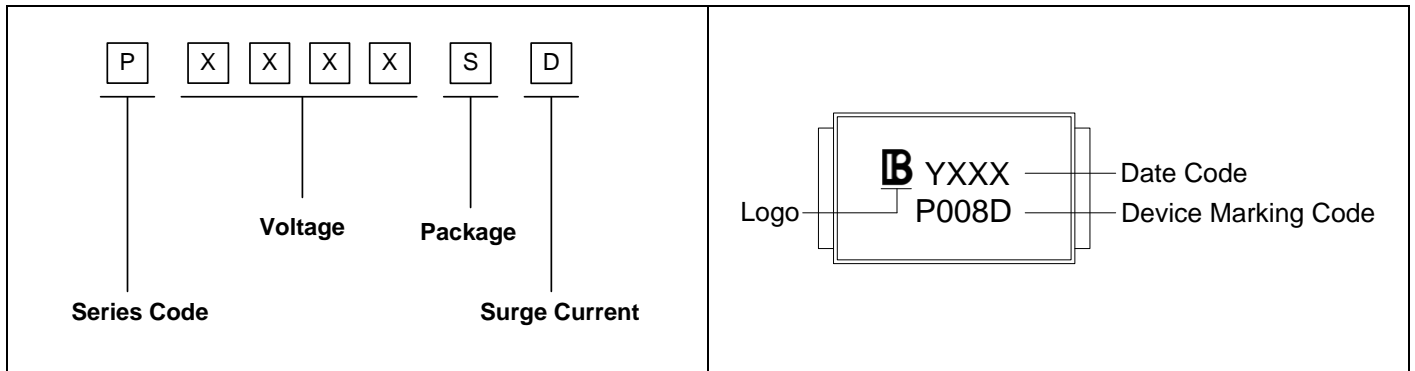
Surge Ratings

Series	I _{PP} 2×10μs (A)	I _{PP} 1.2/50μs & 8×20μs (A)	I _{PP} 10×160μs (A)	I _{PP} 10×700μs (V)	I _{PP} 10×1000μs (A)	I _{TSM} 60Hz (A)	di/dt (A/μs)
D	-	600	-	8000	200	70	500

Thermal Considerations

Package DO-214AA/SMB	Symbol	Parameter	Value	Unit
	T _J	Operating Junction Temperature	-40 to +125	°C
	T _S	Storage Temperature Range	-40 to +125	°C
	R _{θJA}	Junction to Ambient on printed circuit	90	°C/W

Part Number Code and Marking



Characteristics Curves

Figure 1. V-I Characteristics

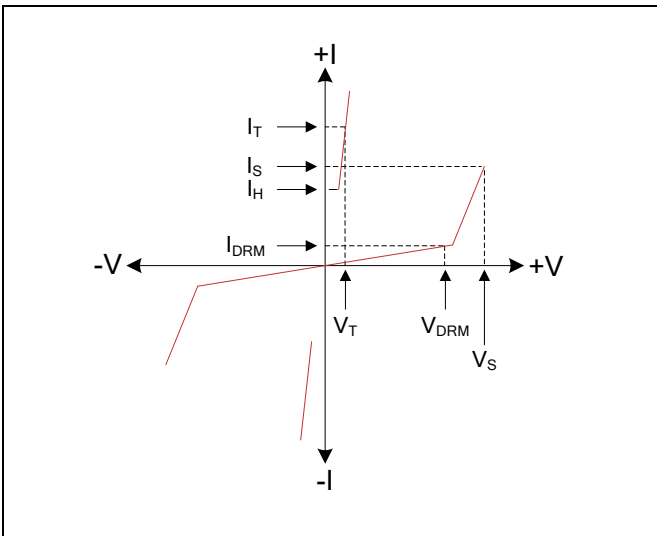


Figure 2. $t_r \times t_d$ Pulse Wave-form

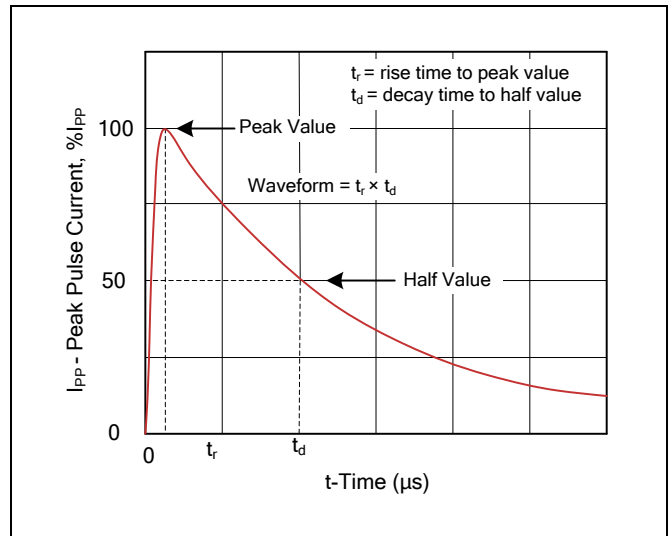


Figure 3. Normalized V_S Change versus Junction Temperature

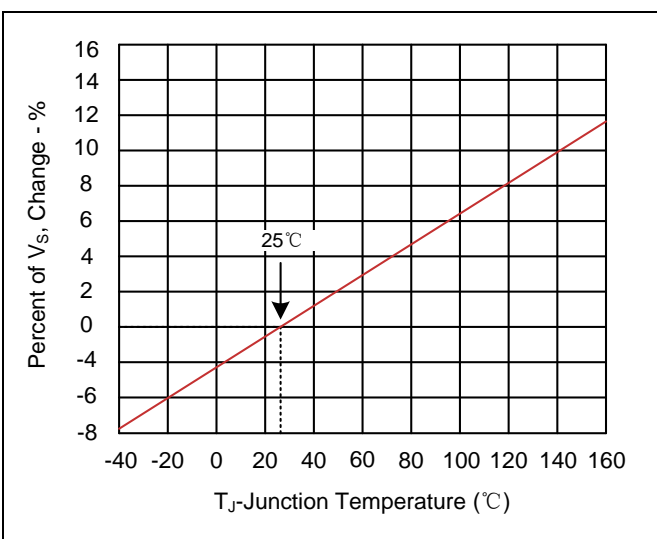
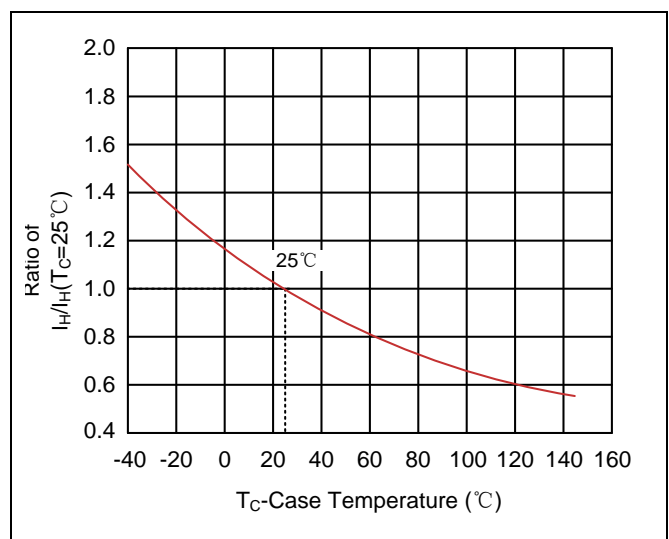
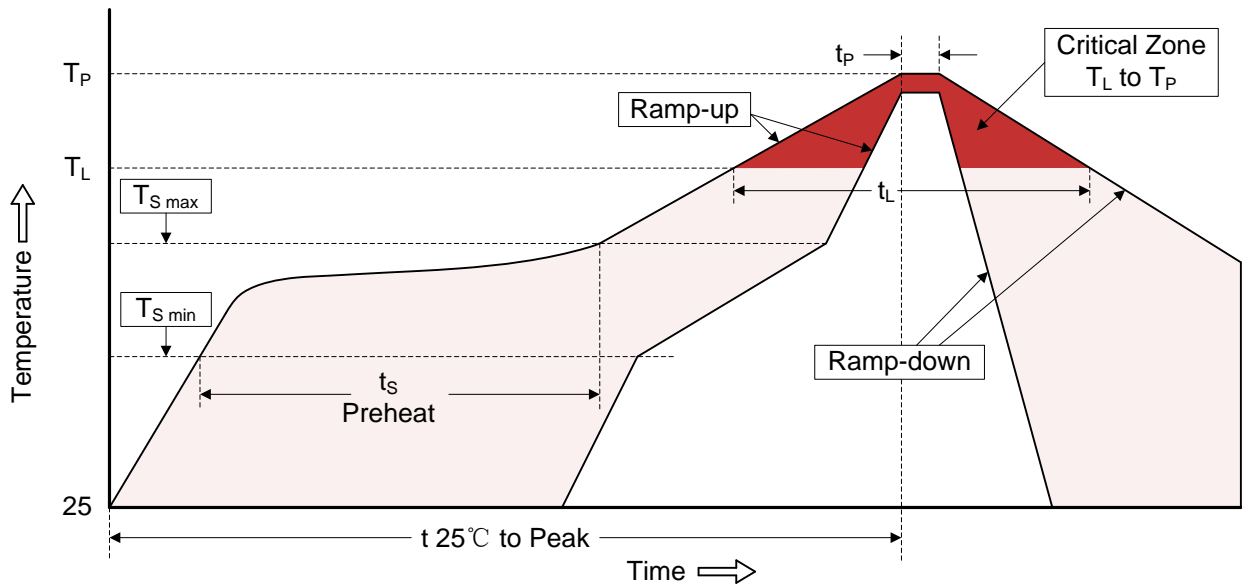


Figure 4. Normalized DC Holding Current versus Case Temperature



Recommended Soldering Conditions

Reflow Soldering



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_s)	150°C 200°C 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	3°C/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	217°C 60-150 seconds
Peak Temperature (T_P)	260°C
Time within 5°C of actual Peak Temperature (t_p)	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

Reliability

Test	Reference standard	Test conditions	Requirement
Temperature Cycling	IEC 60068-2-14 Test methodNb	Ta = - 55±3°C 30min Ta = 155±3°C 30min 10cycles	No visible damage, Electrical OK , ΔVb/Vb ≦5%
High temperature storage life	IEC 60068-2-2 Test methodB	Ta=155±2°C 96Hrs	No visible damage, Electrical OK , ΔVb/Vb ≦5%
High temperature reverse bias (H.T.R.B)	GJB128A-97 -Test method 1038	Ta=125±3°C; V=100% VR; DC Supply 168 Hrs	No visible damage, Electrical OK , ΔVb/Vb ≦5%
solder resistance(S/R)	GB/T2423-2007 -28	temperature of solder POT=260±5°C 10S±1s	No visible damage, Electrical OK , ΔVb/Vb ≦5%

Dimensions (SMB/DO-214AA)

Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
L	4.06	4.70	0.160	0.185
D	3.30	3.94	0.130	0.155
D1	1.90	2.20	0.075	0.086
T	5.21	5.59	0.205	0.220
T1	0.76	1.52	0.030	0.060
d	-	0.203	-	0.008
H	1.95	2.40	0.077	0.095

