

DATA SHEET

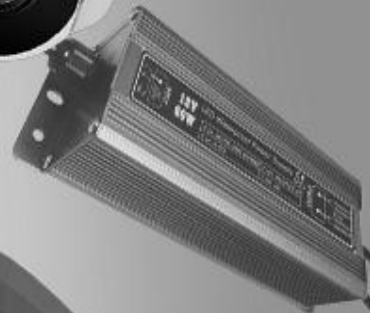
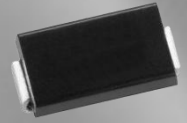
THYRISTOR SURGE SUPPRESSORS MODEMS/LINE CARD

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} (μ A)	I_S (mA)	I_T (A)	I_H (mA)	C_O (pF)	V_{PP} 10/700 μ s (V)	I_{PP} 10/1000 μ s (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.

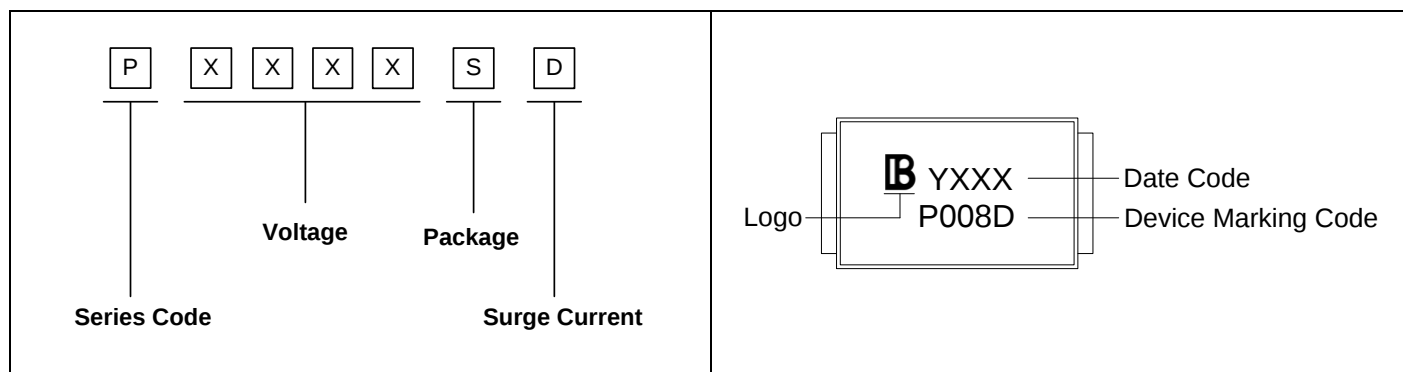
Surge Ratings

Series	I_{PP} 2 $\times$ 10 μ s (A)	I_{PP} 1.2/50 μ s & 8 $\times$ 20 μ s (A)	I_{PP} 10 $\times$ 160 μ s (A)	I_{PP} 10 $\times$ 700 μ s (V)	I_{PP} 10 $\times$ 1000 μ s (A)	I_{TSM} 60Hz (A)	di/dt (A/ μ s)
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
	$R_{\theta JA}$	Junction to Ambient on printed circuit	90	°C/W

Part Number Code and Marking



Characteristics Curves

Figure 1. V-I Characteristics

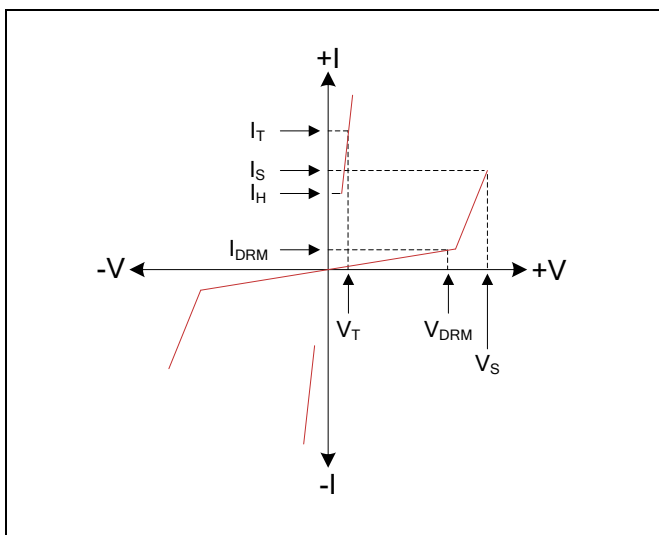


Figure 2. $t_r \times t_d$ Pulse Wave-form

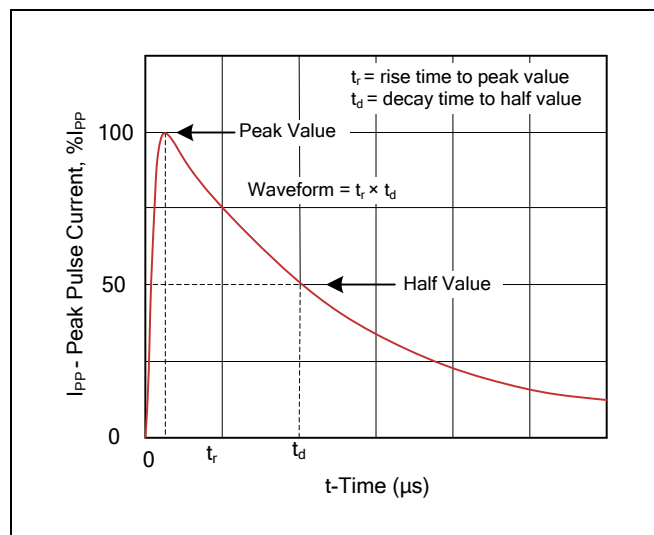


Figure 3. Normalized V_S Change versus Junction Temperature

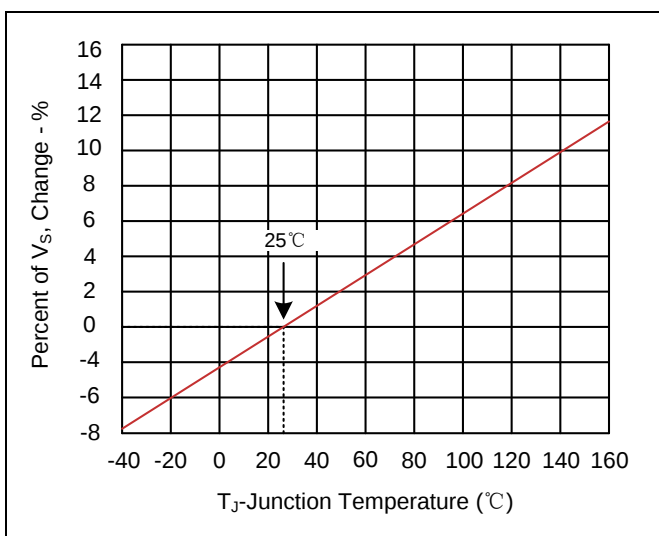
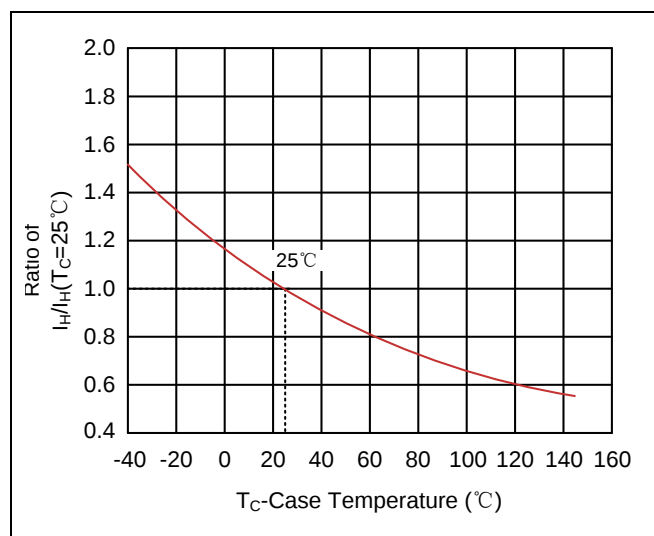
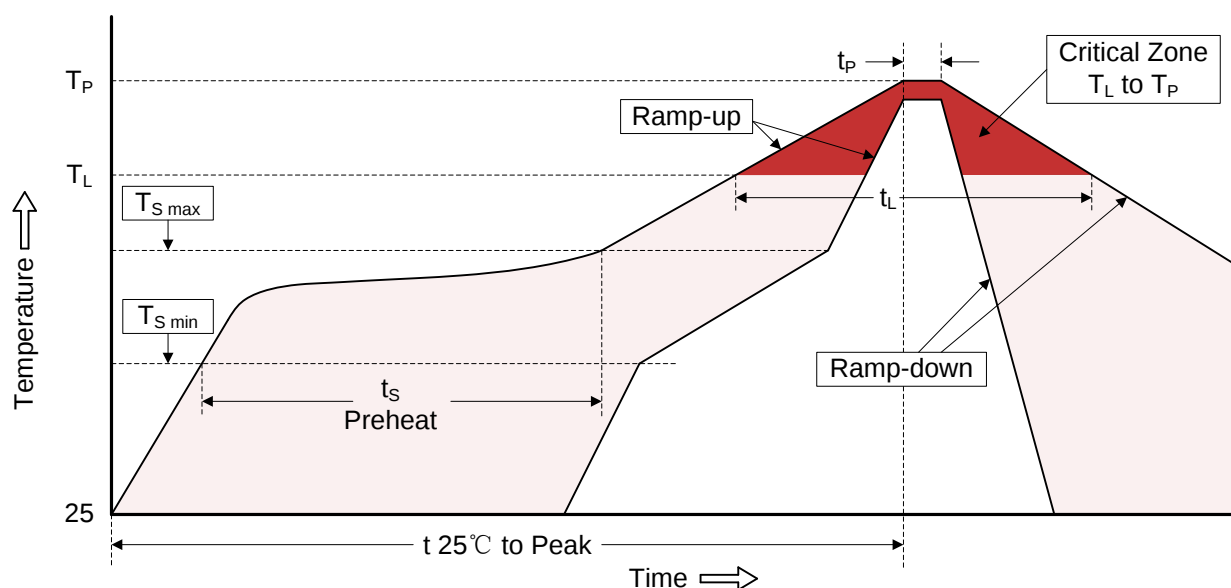


Figure 4. Normalized DC Holding Current versus Case Temperature



Recommended Soldering Conditions

Reflow Soldering



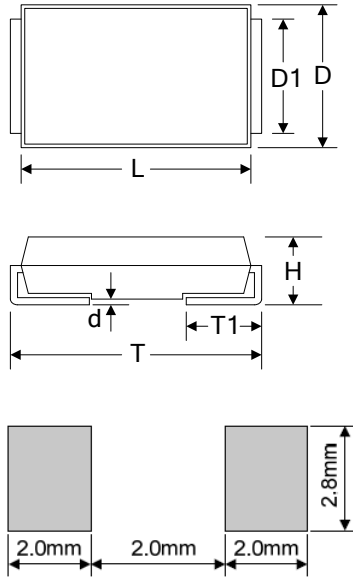
Recommended Conditions

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.

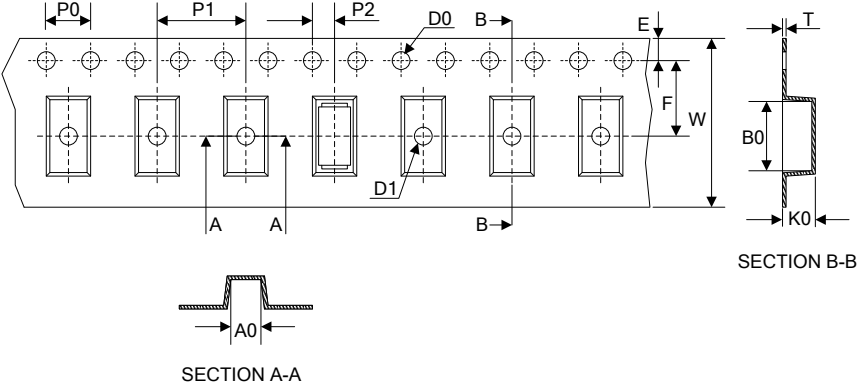
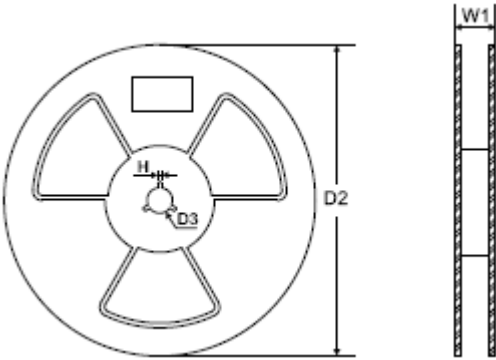
Reliability

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 , $\Delta V_b/V_b$ $\leq 5\%$
High temperature storage life	IEC 60068-2-2 Test methodB	Ta=155±2°C 96Hrs	No visible damage, Electrical OK , $\Delta V_b/V_b$ $\leq 5\%$
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 , $\Delta V_b/V_b$ $\leq 5\%$
solder resistance(S/R)	GB/T2423-2007 -28	temperature of solder POT=260±5°C 10S±1s	No visible damage, Electrical OK , $\Delta V_b/V_b$ $\leq 5\%$

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

Packaging

Tape		Symbol	Dimension (mm)
		W	12.00±0.30
		P0	4.00±0.10
		P1	8.00±0.10
		P2	2.00±0.10
		D0	Φ1.55±0.05
		D1	Φ1.55±0.05
		E	1.75±0.10
		F	5.50±0.10
		A0	3.76±0.10
		B0	5.69±0.10
		K0	2.70±0.10
		T	0.25±0.10
Reel		D2	Φ330.0±2.0
		D3	Φ13.5±0.5
		H	2.5±0.5
		W1	16.0±1.0
		Quantity: 2500PCS	
		P0080SD:3000PCS	