PXXXXSX Series

Thyristor Surge Suppressors

Descriptions

Thyristors protect telecommunications equipment such as modems, line cards,fax machines, and other CPE.

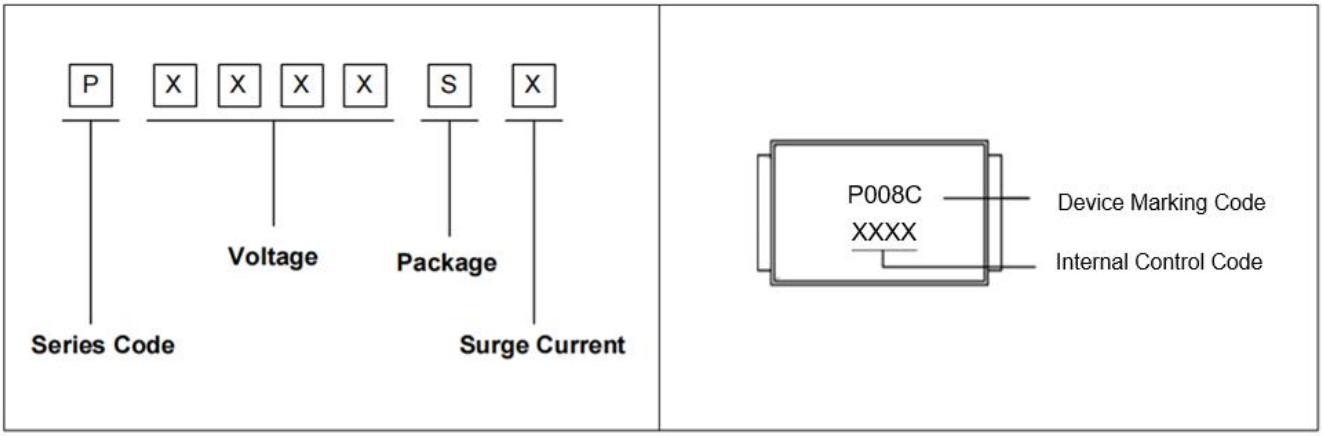
P Series devices are used to enable equipment to meet various regulatory requirements including GR 1089,ITUK.20, K.21 and K.45, IEC 60950, UL 60950, and TIA-968(Formerly known as FCC Part 68).

Features

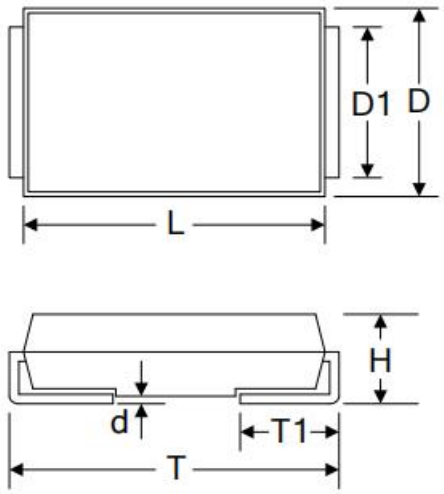
Compared to surge suppression using other technologies, P Series devices offer absolute surge protection regardless of the surge current available and the rate of applied voltage (dv/dt). P Series devices:

- 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

Part Number Code and Marking



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	2.65	0.077	0.104

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 VDRM
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** – typical current required to maintain on state
C_O	**Off-state Capacitance** – typical capacitance measured in off state
I_{PP}	**Peak Pulse Current** – maximum rated peak impulse current

Electrical Characteristics (Ta=25℃ Unless otherwise specified)

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)
P0080SA	6	25	4	5	800	2.2	50	50
P0080SB	6	25	4	5	800	2.2	50	70
P0080SC	6	25	4	5	800	2.2	50	100
P0300SA	25	40	4	5	800	2.2	50	70
P0300SB	25	40	4	5	800	2.2	50	70
P0300SC	25	40	4	5	800	2.2	50	100
P0640SA	58	77	4	5	800	2.2	150	50
P0640SB	58	77	4	5	800	2.2	150	60
P0640SC	58	77	4	5	800	2.2	150	100
P0720SA	65	88	4	5	800	2.2	150	50
P0720SB	65	88	4	5	800	2.2	150	60
P0720SC	65	88	4	5	800	2.2	150	100
P0900SA	75	98	4	5	800	2.2	150	45
P0900SB	75	98	4	5	800	2.2	150	55
P0900SC	75	98	4	5	800	2.2	150	90
P1100SA	90	130	4	5	800	2.2	150	45
P1100SB	90	130	4	5	800	2.2	150	55
P1100SC	90	130	4	5	800	2.2	150	90
P1300SA	120	160	4	5	800	2.2	150	45
P1300SB	120	160	4	5	800	2.2	150	55
P1300SC	120	160	4	5	800	2.2	150	90
P1500SA	140	180	4	5	800	2.2	150	40
P1500SB	140	180	4	5	800	2.2	150	60
P1500SC	140	180	4	5	800	2.2	150	85
P1800SA	170	220	4	5	800	2.2	150	40
P1800SB	170	220	4	5	800	2.2	150	60
P1800SC	170	220	4	5	800	2.2	150	85
P2300SA	190	260	4	5	800	2.2	150	35

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)
P2300SB	190	260	4	5	800	2.2	150	55
P2300SC	190	260	4	5	800	2.2	150	80
P2600SA	220	300	4	5	800	2.2	150	35
P2600SB	220	300	4	5	800	2.2	150	50
P2600SC	220	300	4	5	800	2.2	150	80
P3100SA	275	350	4	5	800	2.2	150	30
P3100SB	275	350	4	5	800	2.2	150	45
P3100SC	275	350	4	5	800	2.2	150	65
P3500SA	320	400	4	5	800	2.2	150	30
P3500SB	320	400	4	5	800	2.2	150	40
P3500SC	320	400	4	5	800	2.2	150	65

Notes:

1. All measurements are made at an ambient temperature of 25℃. I_{PP} applies to -40℃ through +85℃ temperature range.
2. Off-state capacitance(C_O) is measured at 1 MHz with a 2V bias and is typical value.
3. For surge ratings, see table below.

Surge Ratings

Series	I_{PP} 2×10μs (A)	I_{PP} 8×20μs (A)	I_{PP} 10×160μs (A)	I_{PP} 10×560μs (A)	I_{PP} 10×1000μs (A)	V_{PP} 10×700μs (V)	I_{TSM} 60Hz (A)	di/dt (A/μs)
A	150	150	90	50	45	2000	20	500
B	250	250	150	100	80	4000	30	500
C	500	400	200	150	100	6000	50	500

Thermal Considerations

Package DO-214AA/SMB	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature	-40 to +125	℃
	T_S	Storage Temperature Range	-40 to +150	℃
	$R_{\theta JA}$	Junction to Ambient on printed circuit	90	℃/W

Characteristics Curves

Figure 1. V-I Characteristics

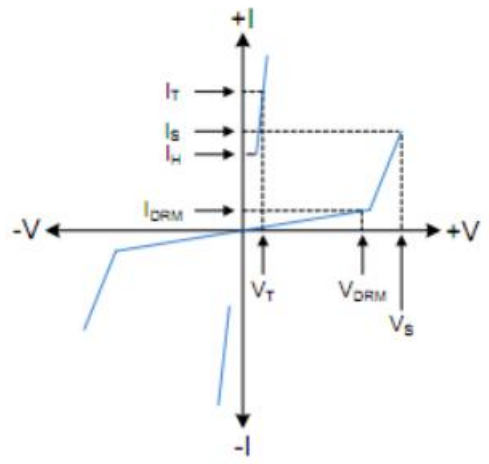


Figure 2. tr ×td Pulse Wave-form

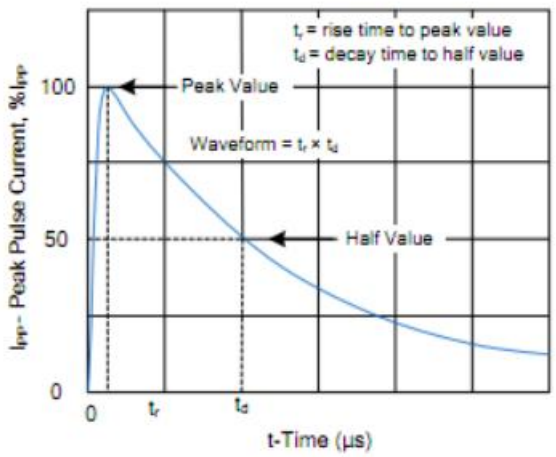


Figure 3. Normalized Vs Change versus Junction Temperature

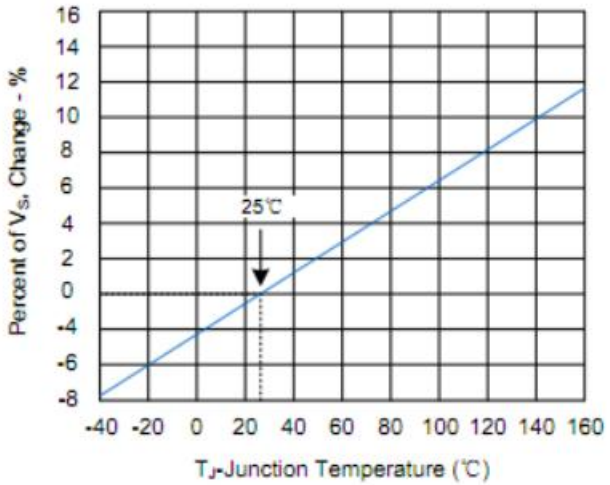
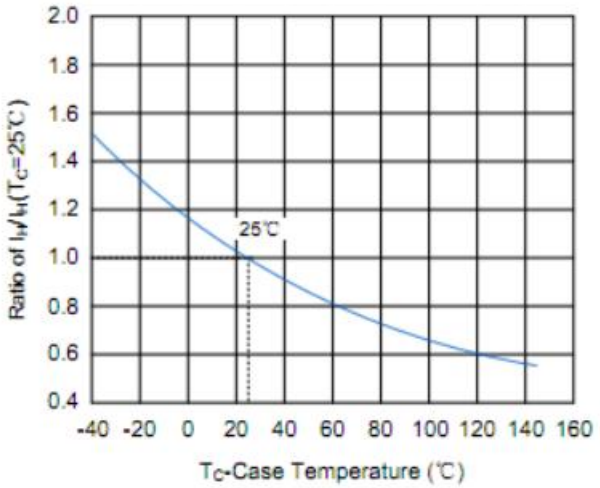
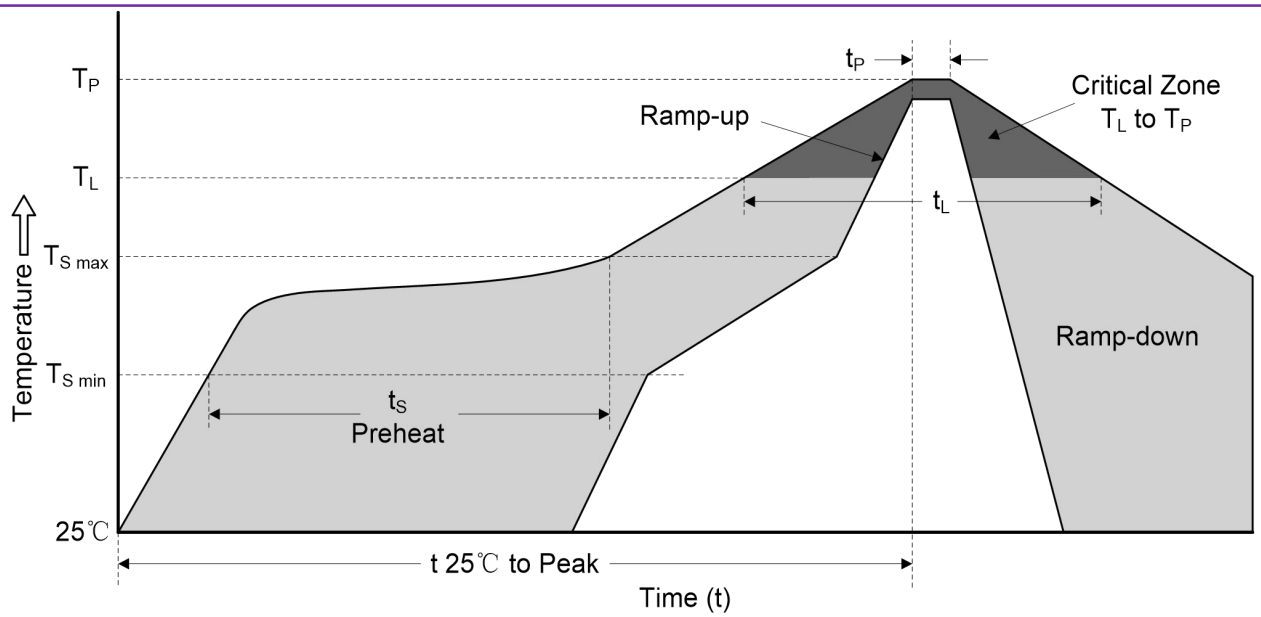


Figure 4. Normalized DC Holding Current versus Case Temperature



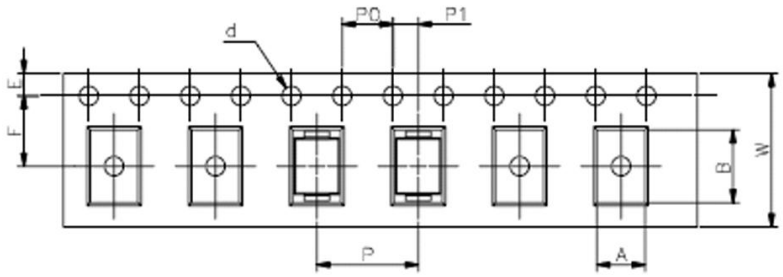
Recommended Soldering Conditions



Reflow Condition		Lead-free Assembly
Pre heat	-Temperature Min ($T_{S\ min}$)	150℃
	-Temperature Max ($T_{S\ max}$)	200℃
	-Time (min to max) (t_S)	60-180 seconds
Average ramp-up rate (T_L to T_P)		3℃/second max.
$T_{S\ max}$ to T_L -Ramp-up Rate		3℃/second max.
Reflow	-Temperature (T_L) (Liquidus)	217℃
	-Time (min to max) (t_S)	60-150 seconds
Peak Temperature (T_P)		260(+0/-5)℃
Time within 5℃ of actual Peak Temperature (t_P)		20-40 seconds
Ramp-down Rate		6℃/second max.
Time 25℃ to Peak Temperature(T_P)		8 minutes max.
Do not exceed		260℃

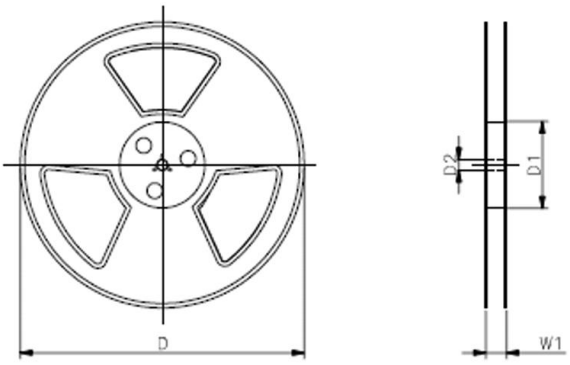
Packaging

Tape



Symbol	Dimension (mm)
W	12.00±0.20
P	8.00±0.20
P0	4.00±0.20
P1	2.00±0.20
d	Φ1.50±0.1
E	1.5±0.20
F	5.65±0.2
A	3.65±0.30
B	5.69±0.30

13〃Reel



D	Φ330.0
D1	100±3
D2	13.0±0.5
W1	16.8±2.0
Quantity: 3000PCS	