

# Thyristor Surge Suppressors

**PxxxxSX Series  
DO-214AA/SMB**

# Thyristor Surge Suppressors -PxxxxSX Series

## Description

DO-214AA/SMB Series are low capacitance devices designed to protect broadband equipment such as VOIP, DSL modems and DSLAMs from damaging overvoltage transients.

The series provides a surface mount solution that enables equipment to comply with global regulatory standards while limiting the impact to broadband signals.



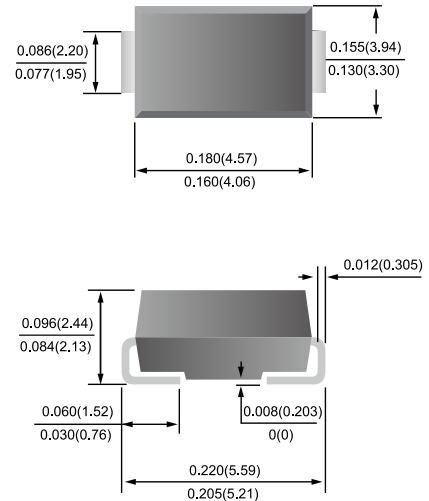
## Features

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:

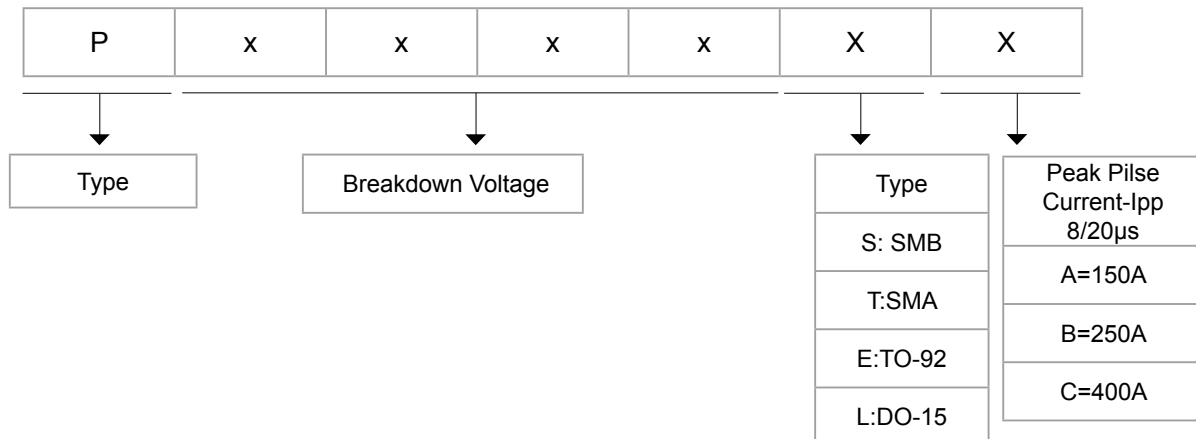
- Cannot be damaged by voltage
- Eliminate hysteresis and heat dissipation typically found with clamping devices
- Eliminate voltage overshoot caused by fast-rising transients
- Are non-degenerative
- Will not fatigue
- Have low capacitance, making them ideal for high-speed transmission equipment

## Dimensions

(mm)  
(inches)



## Part Number Code



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### Electrical Characteristics

Type Number	VDRM	IDRM	VS	IH	IS	IT	VT	CJ	
	V	µA	V	MA	MA	A	V	pFMin	pFMax
P0080SA	6	5	25	50	800	2.2	4	25	150
P0080SB	6	5	25	50	800	2.2	4	25	150
P0080SC	6	5	25	50	800	2.2	4	35	260
P0300SA	25	5	40	50	800	2.2	4	15	140
P0300SB	25	5	40	50	800	2.2	4	15	140
P0300SC	25	5	40	50	800	2.2	4	25	250
P0640SA	58	5	77	150	800	2.2	4	40	60
P0640SB	58	5	77	150	800	2.2	4	40	60
P0640SC	58	5	77	150	800	2.2	4	28	80
P0720SA	65	5	88	150	800	2.2	4	35	60
P0720SB	65	5	88	150	800	2.2	4	35	75
P0720SC	65	5	88	150	800	2.2	4	50	150
P0900SA	75	5	98	150	800	2.2	4	35	55
P0900SB	75	5	98	150	800	2.2	4	35	70
P0900SC	75	5	98	150	800	2.2	4	45	140
P1100SA	90	5	130	150	800	2.2	4	30	50
P1100SB	90	5	130	150	800	2.2	4	30	70
P1100SC	90	5	130	150	800	2.2	4	45	115
P1300SA	120	5	160	150	800	2.2	4	25	45
P1300SB	120	5	160	150	800	2.2	4	25	60
P1300SC	120	5	160	150	800	2.2	4	40	105
P1500SA	140	5	180	150	800	2.2	4	25	40
P1500SB	140	5	180	150	800	2.2	4	25	55
P1500SC	140	5	180	150	800	2.2	4	35	95
P1800SA	170	5	220	150	800	2.2	4	25	35
P1800SB	170	5	220	150	800	2.2	4	25	50
P1800SC	170	5	220	150	800	2.2	4	35	90
P2300SA	190	5	260	150	800	2.2	4	25	35
P2300SB	190	5	260	150	800	2.2	4	25	50
P2300SC	190	5	260	150	800	2.2	4	30	80
P2600SA	220	5	300	150	800	2.2	4	20	35
P2600SB	220	5	300	150	800	2.2	4	20	45
P2600SC	220	5	300	150	800	2.2	4	30	80
P3100SA	275	5	350	150	800	2.2	4	20	35
P3100SB	275	5	350	150	800	2.2	4	20	45
P3100SC	275	5	350	150	800	2.2	4	30	70
P3500SA	320	5	400	150	800	2.2	4	20	35
P3500SB	320	5	400	150	800	2.2	4	20	40
P3500SC	320	5	400	150	800	2.2	4	25	65

Notes:


- Is: Switching Current – maximum current required to switch to on state
- IDRM: Leakage Current – maximum peak off-state current measured at VDRM
- IH: Holding Current – minimum current required to maintain on state
- IPP: Peak Pulse Current – maximum rated peak impulse current
- IT: On-state Current – maximum rated continuous on-state current
- VDRM: Peak Off-state Voltage – maximum voltage that can be applied while maintaining off state
- VT: On-state Voltage – maximum voltage measured at rated on-state current
- VS: Switching Voltage – maximum voltage prior to switching to on state

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### Surge Ratings

Series	Peak Pils Current-Ipp(A)				
	2/10μs	8/20μs	10/160μs	10/560μs	10/1000μs
A	200	150	100	60	50
B	250	250	150	100	80
C	500	400	200	120	100

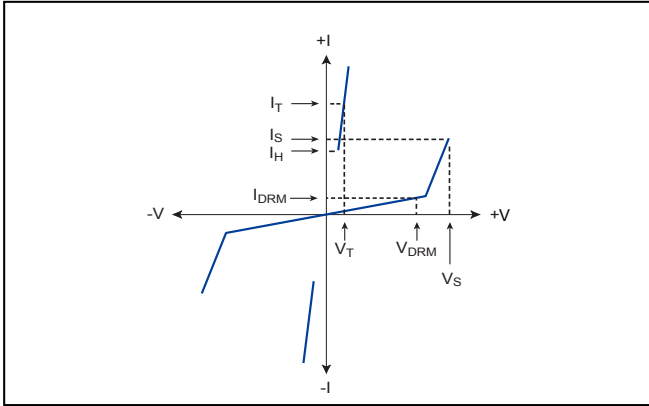
### Thermal Considerations

Package	Symbol	Parameter	Value	Unit
 DO-214AA	TJ	Operating Junction Temperature	-40 to +150	°C
	TS	Storage Temperature Range	-40 to +150	°C
	RθJA	Junction to Ambient on printed circuit	90	°C/W

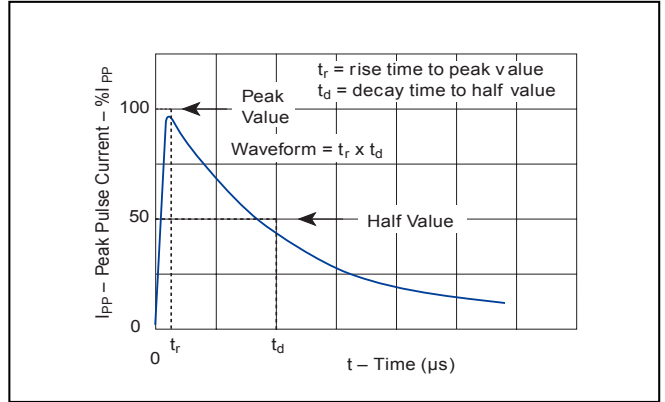
# Thyristor Surge Suppressors -PxxxxSX Series

## Characteristics Curves

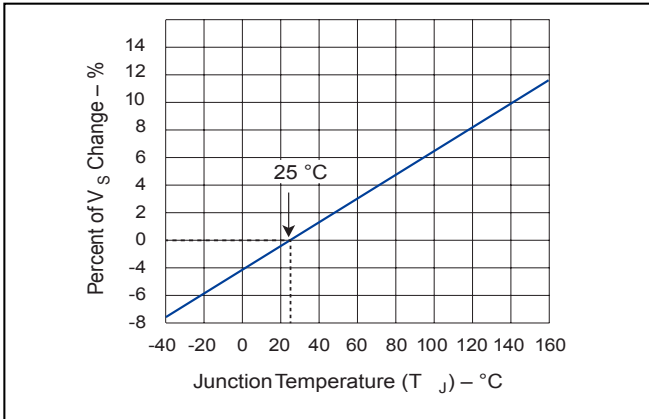
V-I Characteristics



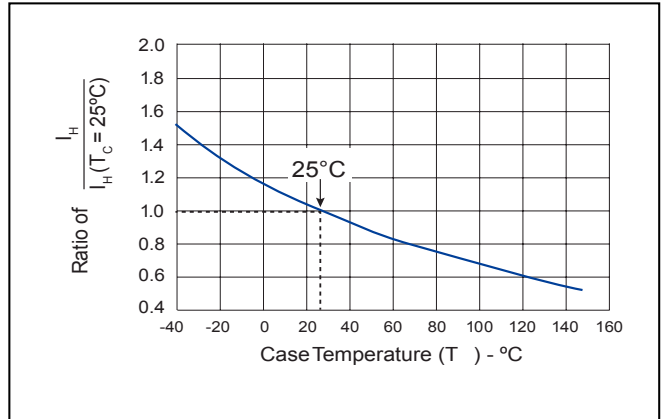
$t_r \times t_d$  Pulse Waveform



Normalized  $V_S$  Change vs. Junction Temperature

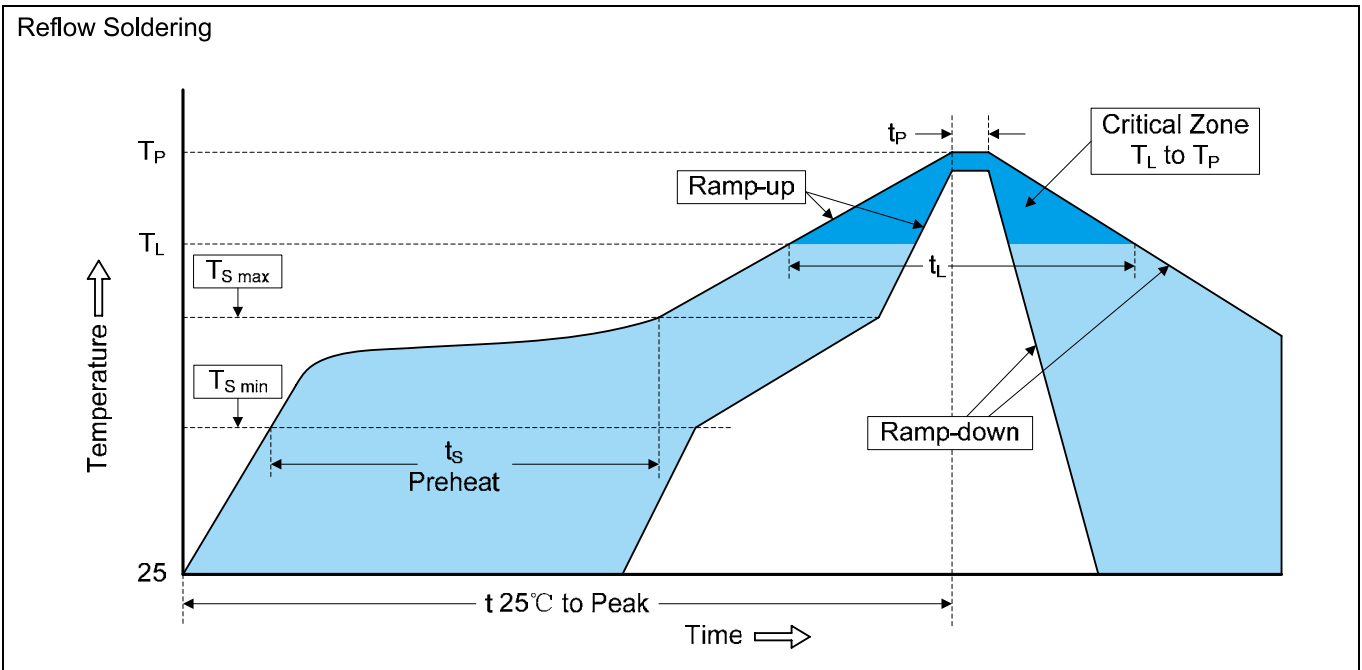


Normalized DC Holding Current vs. Case Temperature



## Thyristor Surge Suppressors -PxxxxSX Series

### Recommended Soldering Conditions



#### Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate ( $T_L$ to $T_P$ )	3°C/second max.
Preheat	
-Temperature Min ( $T_{S\ min}$ )	150°C
-Temperature Max ( $T_{S\ max}$ )	200°C
-Time (min to max) ( $t_s$ )	60-180 seconds
$T_{S\ max}$ to $T_L$	
-Ramp-up Rate	3°C/second max.
Time maintained above:	
-Temperature ( $T_L$ )	217°C
-Time ( $t_L$ )	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.

# Thyristor Surge Suppressors -PxxxxSX Series

## 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					

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