

Thyristor Surge Suppressors

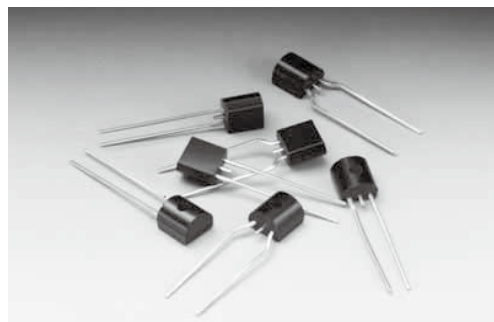
**PxxxxEX Series
TO-92**

Thyristor Surge Suppressors - PxxxxEX Series

Description

TO-92 Series are designed to protect baseband equipment such as modems, line cards, CPE and DSL from damaging overvoltage transients.

The series provides a cost-effective through-hole solution that enables equipment to comply with global regulatory standards.



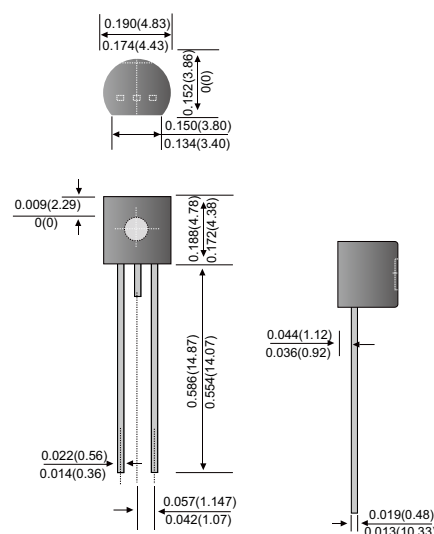
Features

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:

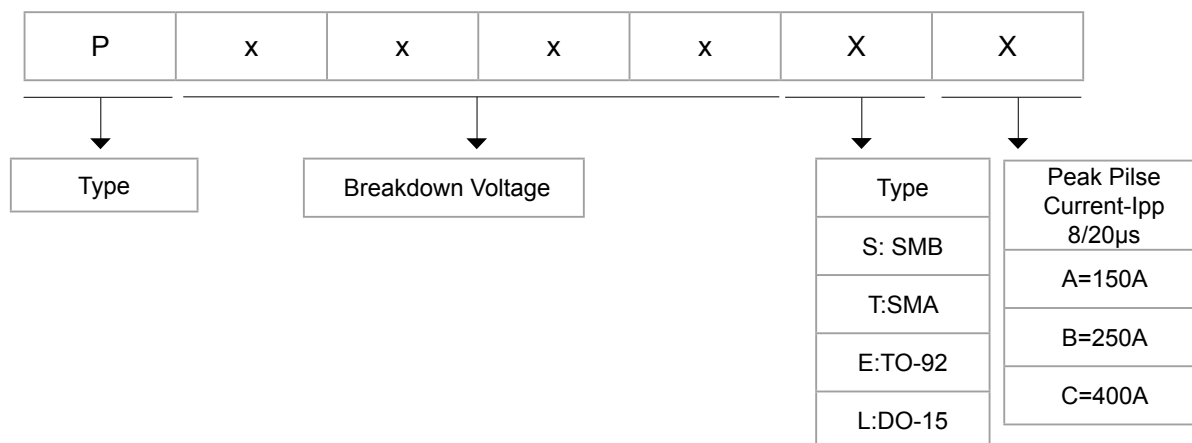
- Cannot be damaged by voltage
- Eliminate hysteresis and heat dissipation typically found with clamping devices
- Eliminate voltage overshoot caused by fast-rising transients
- Are non-degenerative
- Will not fatigue
- Have low capacitance, making them ideal for high-speed transmission equipment

Dimensions

(mm)
(inches)



Part Number Code



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Electrical Characteristics

Type Number	V _{DRM}	I _{DRM}	V _S	I _H	I _S	I _T	V _T	C _J	
	V	μA	V	MA	MA	A	V	pF _{Min}	pF _{Max}
P0080EA	6	5	25	50	800	2.2	4	25	150
P0080EB	6	5	25	50	800	2.2	4	25	150
P0080EC	6	5	25	50	800	2.2	4	35	260
P0300EA	25	5	40	50	800	2.2	4	15	140
P0300EB	25	5	40	50	800	2.2	4	15	140
P0300EC	25	5	40	50	800	2.2	4	25	250
P0640EA	58	5	77	150	800	2.2	4	40	60
P0640EB	58	5	77	150	800	2.2	4	40	60
P0640EC	58	5	77	150	800	2.2	4	55	155
P0720EA	65	5	88	150	800	2.2	4	35	60
P0720EB	65	5	88	150	800	2.2	4	35	75
P0720EC	65	5	88	150	800	2.2	4	50	150
P0900EA	75	5	98	150	800	2.2	4	35	55
P0900EB	75	5	98	150	800	2.2	4	35	70
P0900EC	75	5	98	150	800	2.2	4	45	140
P1100EA	90	5	130	150	800	2.2	4	30	50
P1100EB	90	5	130	150	800	2.2	4	30	70
P1100EC	90	5	130	150	800	2.2	4	45	115
P1300EA	120	5	160	150	800	2.2	4	25	45
P1300EB	120	5	160	150	800	2.2	4	25	60
P1300EC	120	5	160	150	800	2.2	4	40	105
P1500EA	140	5	180	150	800	2.2	4	25	40
P1500EB	140	5	180	150	800	2.2	4	25	55
P1500EC	140	5	180	150	800	2.2	4	35	95
P1800EA	170	5	220	150	800	2.2	4	25	35
P1800EB	170	5	220	150	800	2.2	4	25	50
P1800EC	170	5	220	150	800	2.2	4	35	90
P2300EA	190	5	260	150	800	2.2	4	25	35
P2300EB	190	5	260	150	800	2.2	4	25	50
P2300EC	190	5	260	150	800	2.2	4	30	80
P2600EA	220	5	300	150	800	2.2	4	20	35
P2600EB	220	5	300	150	800	2.2	4	20	45
P2600EC	220	5	300	150	800	2.2	4	30	80
P3100EA	275	5	350	150	800	2.2	4	20	35
P3100EB	275	5	350	150	800	2.2	4	20	45
P3100EC	275	5	350	150	800	2.2	4	30	70
P3500EA	320	5	400	150	800	2.2	4	20	35
P3500EB	320	5	400	150	800	2.2	4	20	40
P3500EC	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 Pulse 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
 TO-92	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

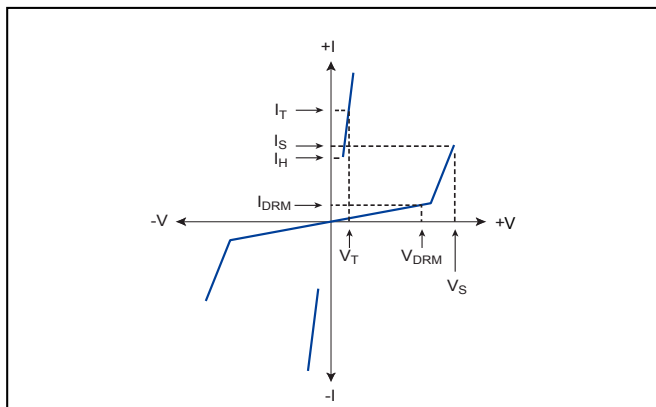
Thermal Considerations

Part Number	Description	Quantity
PXXXXEX	TO-92	1000 pcs

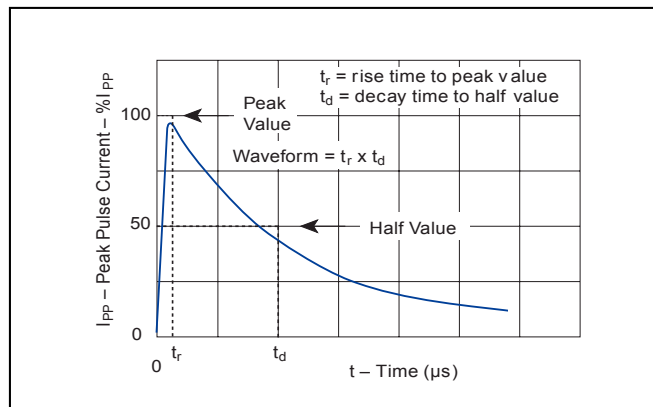
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Characteristics Curves

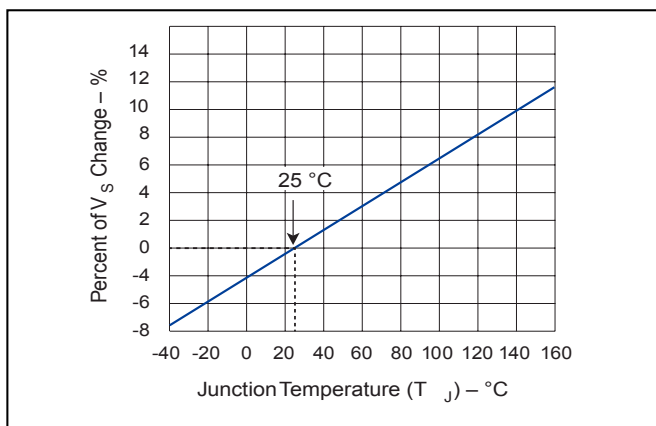
V-I Characteristics



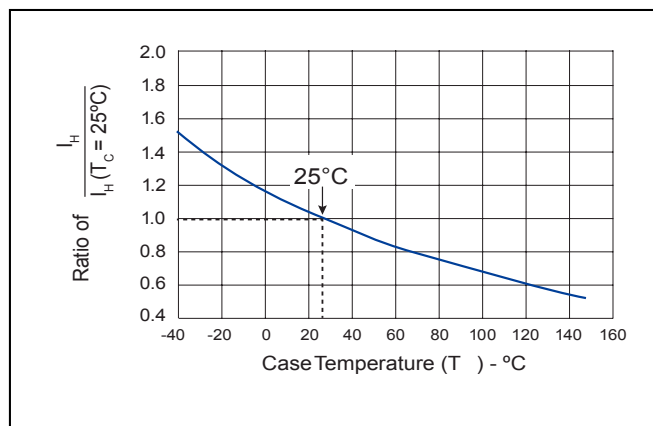
$t_r \times t_d$ Pulse Waveform



Normalized V_S Change vs. Junction Temperature



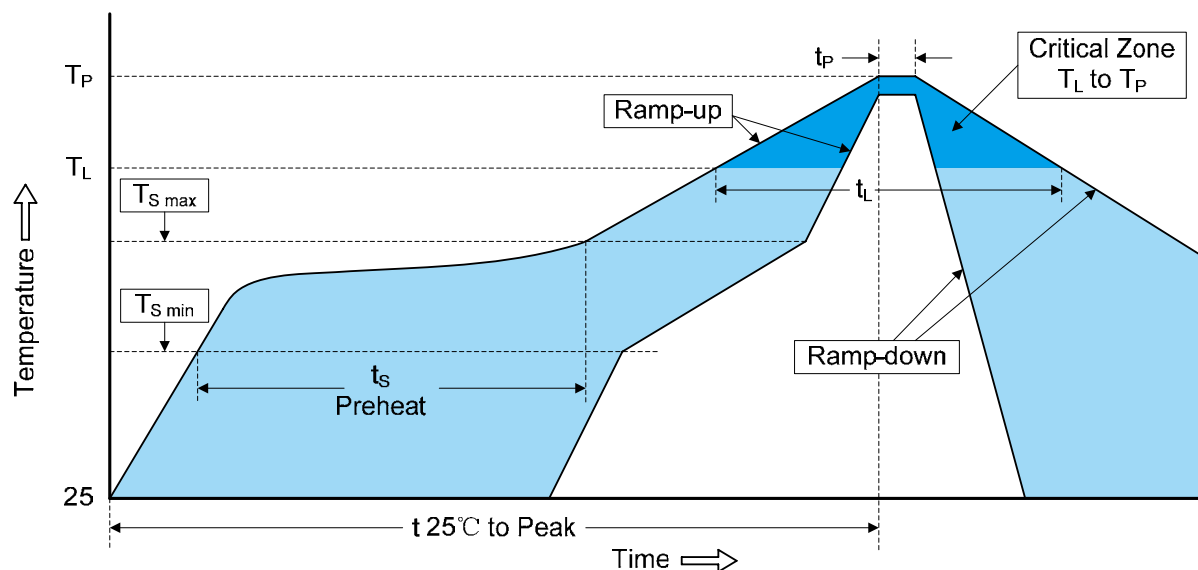
Normalized DC Holding Current vs. Case Temperature



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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.

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