Senchip

P Series

Over-voltage Protection Thyristor SPXXX0TA

ROHS

Description

DO-214AA P Series solid state protection thyristor protect telecommunications equipment such as modems, line cards, fax machines, and other CPE.

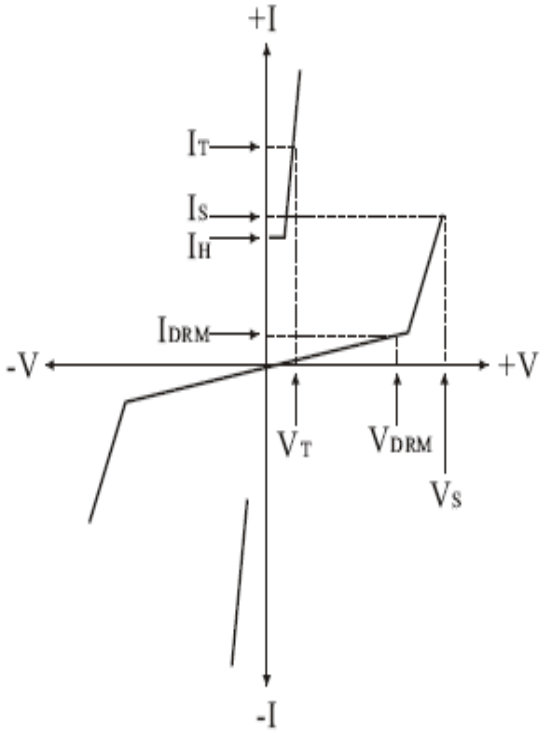
P Series devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21 and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

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 fatigu
- Have low capacitance, making them ideal for high-speed transmission equipment

Electrical Parameters

Parameter	Definition
C_O	**Off-state Capacitance** — typical capacitance measured in off state
di/dt	**Rate of Rise of Current** — maximum rated value of the acceptable rate of rise in current over time
I_S	**Switching Current** — maximum current required to switch to on state
I_{DRM}	**Leakage Current** — maximum peak off-state current measured at V_{DRM}
I_H	**Holding Current** — minimum current required to maintain on state
I_{PP}	**Peak Pulse Current** — maximum rated peak impulse current
I_T	**On-state Current** — maximum rated continuous on-state current
I_{TSM}	**Peak One-cycle Surge Current** — maximum rated one-cycle AC current
V_S	**Switching Voltage** — maximum voltage prior to switching to on state
V_{DRM}	**Peak Off-state Voltage** — maximum voltage that can be applied while maintaining off state
V_F	**On-state Forward Voltage** — maximum forward voltage measured at rated on-state current
V_T	**On-state Voltage** — maximum voltage measured at rated on-state current



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ElectricalCharacteristics

Part Number*	V_{DRM} Volts	V_S Volts	V_T Volts	I_{DRM} μ Amps	I_S mAmps	I_T Amps	I_H mAmps	C_O pF
SP0080TA	6	25	4	5	800	2.2	50	45
SP0300TA	25	40	4	5	800	2.2	50	45
SP0640TA	58	77	4	5	800	2.2	150	35
SP0720TA	65	88	4	5	800	2.2	150	50
SP0900TA	75	98	4	5	800	2.2	150	40
SP1100TA	90	130	4	5	800	2.2	150	35
SP1300TA	120	160	4	5	800	2.2	150	35
SP1500TA	140	180	4	5	800	2.2	150	40
SP1800TA	170	220	4	5	800	2.2	150	40
SP2000TA	180	220	4	5	800	2.2	150	40
SP2300TA	190	260	4	5	800	2.2	150	45
SP2600TA	220	300	4	5	800	2.2	150	35
SP3100TA	275	350	4	5	800	2.2	150	35
SP3500TA	320	400	4	5	800	2.2	150	30
SP4000TA	360	460	4	5	800	2.2	150	20
SP4500TA	400	540	4	5	800	2.2	150	20
SP5000TA	440	600	4	5	800	2.2	150	20

* For surge ratings, see table below.

Notes:

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

Surge Ratings

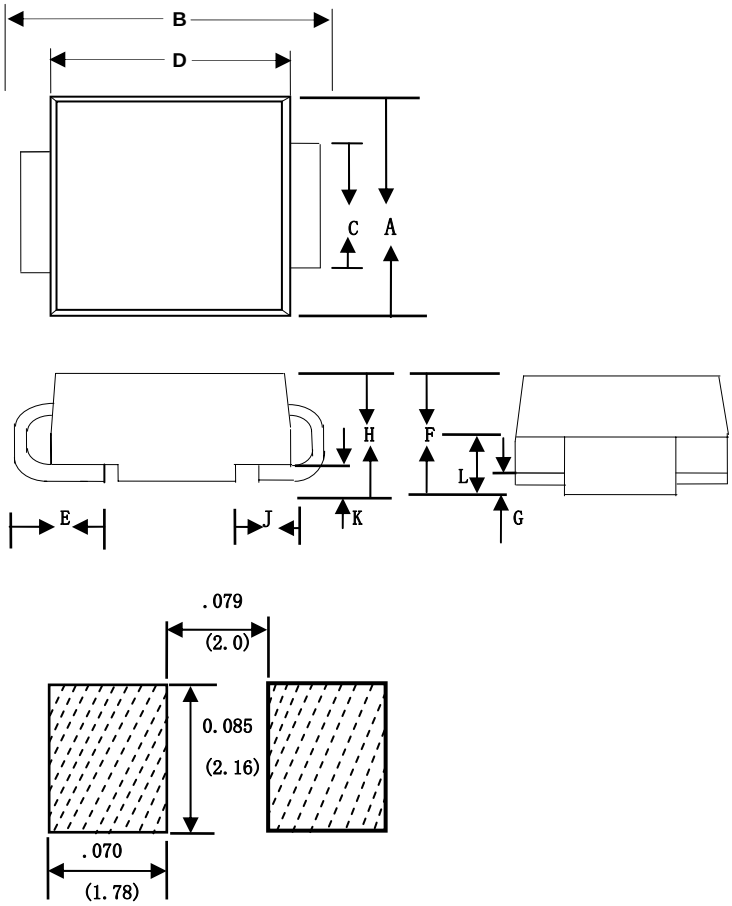
Series	I_{PP} 2x10 μs	I_{PP} 8x20 μs	I_{PP} 10x160 μs	I_{PP} 10x560 μs	I_{PP} 10x1000 μs	I_{TSM} 60 Hz	di/dt
	Amps	Amps	Amps	Amps	Amps	Amps	Amps/μs
A	150	150	90	50	45	20	500

Thermal Considerations

Package DO-214AA/SMB

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

Dimensions



SMA

Dimension	Inches		Millimeters	
	MIN	MAX	MIN	MAX
A	0.098	0.114	2.50	2.90
B	0.188	0.208	4.80	5.28
C	0.055	0.062	1.40	1.60
D	0.157	0.181	4.00	4.60
E	0.030	0.060	0.76	1.52
F	0.078	0.096	2.00	2.44
H	0.080	0.104	2.051	2.643
J	0.043	0.053	1.09	1.35
K	0.008	0.014	0.20	0.35
L	0.039	0.049	0.99	1.24

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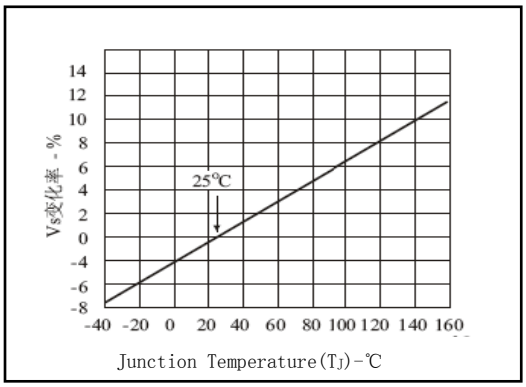
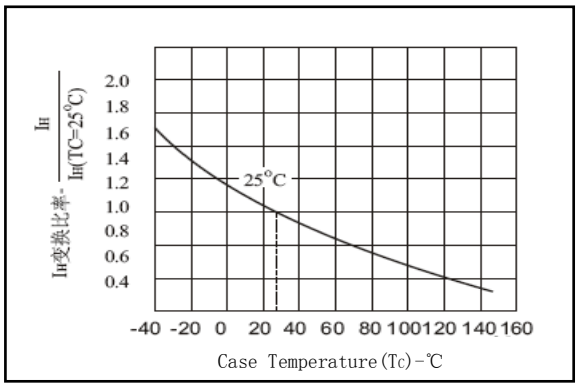
Summary of Packing Options

Package Type	Description	Packing Quantity	Industry Standard
DO-214AC TA 	Embossed Carrier Reel Pack	5000 PCS	EIA-481-1

Thermal Derating Curves



Normalized VS Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

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