

# DATA SHEET

## THYRISTOR SURGE SUPPRESSORS MODEMS/LINE CARD

P3500SC-R35

RoHS compliant & Halogen free



Product specification— August 06, 2021 V.1



## Thyristor Surge Suppressors (TSS) Data Sheet

### Description

DO-214AA Thyristor 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
$V_{DRM}$	<b>Peak Off-state Voltage</b> – maximum voltage that can be applied while maintaining off state
$V_S$	<b>Switching Voltage</b> – maximum voltage prior to switching to on state
$V_T$	<b>On-state Voltage</b> – maximum voltage measured at rated on-state current
$I_{DRM}$	<b>Leakage Current</b> – maximum peak off-state current measured at $V_{DRM}$
$I_S$	<b>Switching Current</b> – maximum current required to switch to on state
$I_T$	<b>On-state Current</b> – maximum rated continuous on-state current
$I_H$	<b>Holding Current</b> – typical current required to maintain on state
$C_O$	<b>Off-state Capacitance</b> – typical capacitance measured in off state
$I_{PP}$	<b>Peak Pulse Current</b> – maximum rated peak impulse current


## Electrical Characteristics

Part Number	Type ①	$V_{DRM}$ (V)	$V_S$ (V)	$V_T$ (V)	$I_{DRM}$ ( $\mu$ A)	$I_S$ (mA)	$I_T$ (A)	$I_H$ (mA)	$C_O$ (pF)	$V_{PP}$ 10/700 $\mu$ s (V)	$I_{PP}$ 10/1000 $\mu$ s (A)	Marking
P3500SC	R35	348.5	430	4	5	800	2.2	150	35	6000	100	P35C

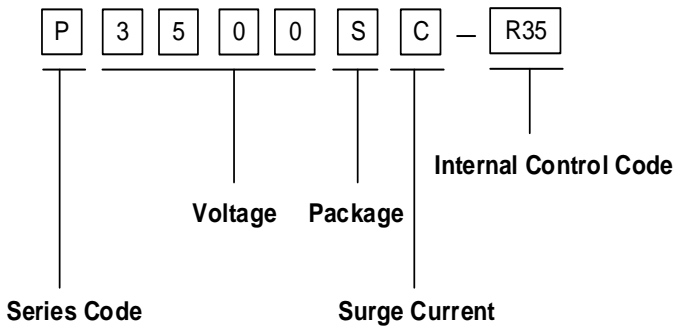
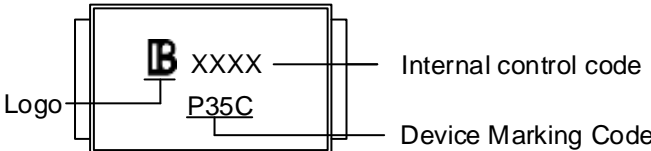
### Notes:

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

## 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 +150	°C
	$R_{\theta JA}$	Junction to Ambient on printed circuit	90	°C/W

## Part Number Code and Marking

	
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## Characteristics Curves

Figure 1. V-I Characteristics

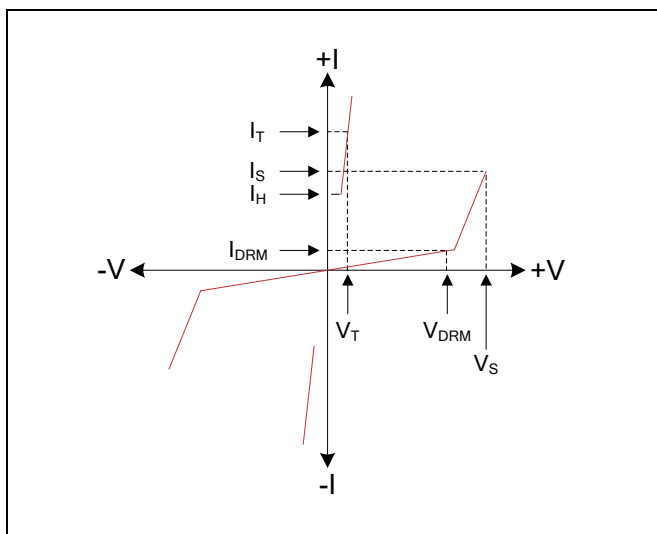


Figure 2.  $t_r \times t_d$  Pulse Wave-form

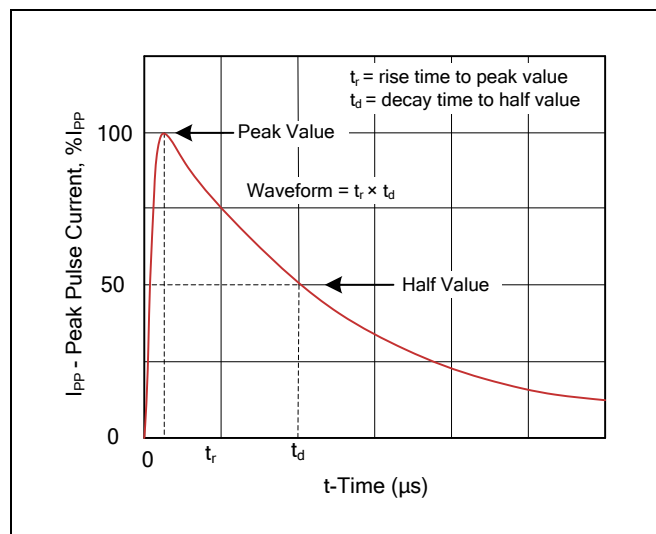


Figure 3. Normalized  $V_s$  Change versus Junction Temperature

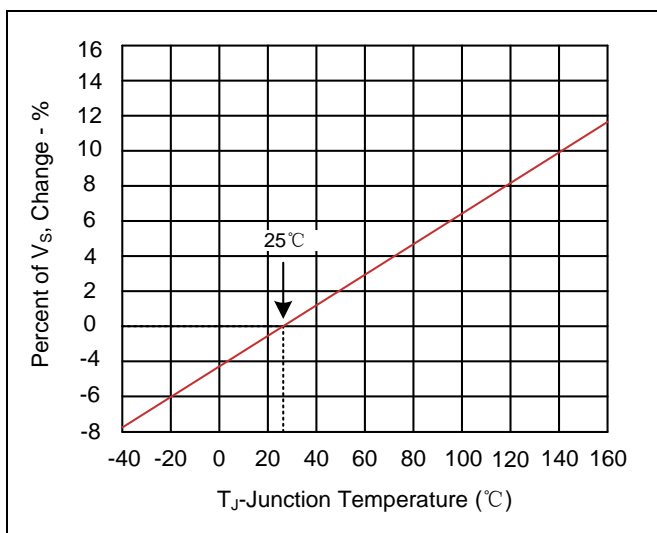
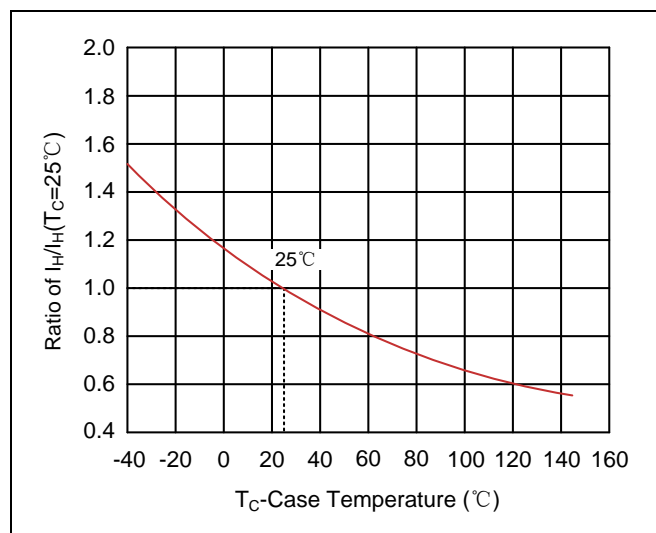
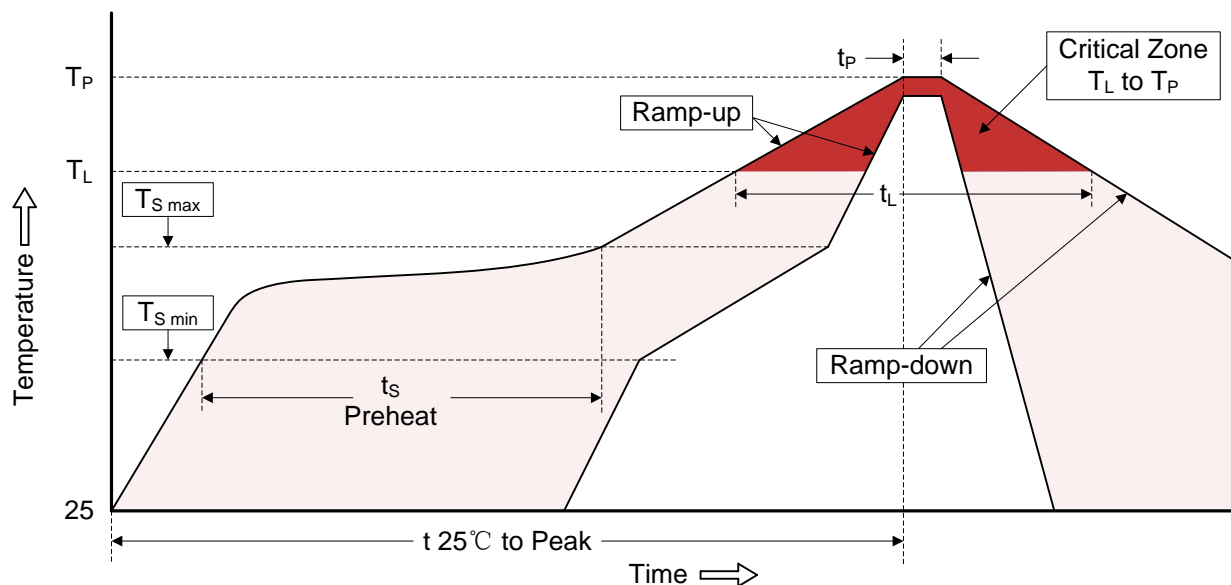


Figure 4. Normalized DC Holding Current versus Case Temperature



## Recommended Soldering Conditions

### Reflow Soldering



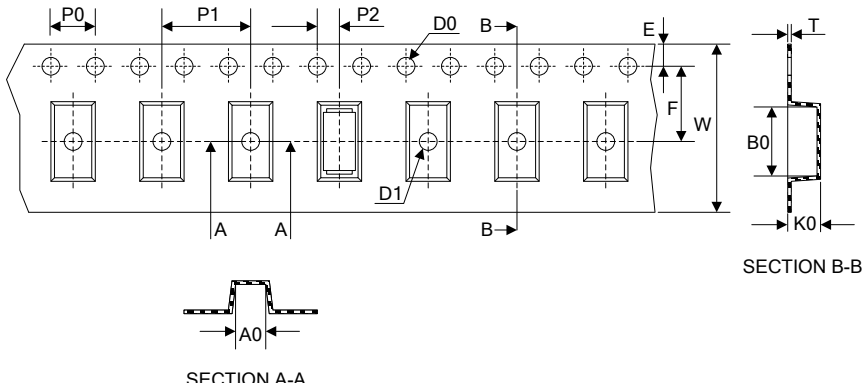
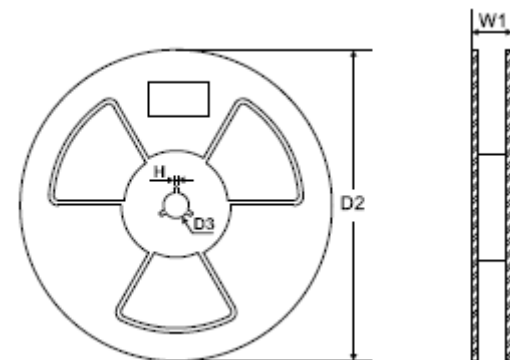
### Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate ( $T_L$ to $T_P$ )	3°C/second max.
Preheat <ul style="list-style-type: none"> <li>-Temperature Min (<math>T_{S\ min}</math>)</li> <li>-Temperature Max (<math>T_{S\ max}</math>)</li> <li>-Time (min to max) (<math>t_s</math>)</li> </ul>	150°C 200°C 60-180 seconds
$T_{S\ max}$ to $T_L$ <ul style="list-style-type: none"> <li>-Ramp-up Rate</li> </ul>	3°C/second max.
Time maintained above: <ul style="list-style-type: none"> <li>-Temperature (<math>T_L</math>)</li> <li>-Time (<math>t_L</math>)</li> </ul>	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.

## 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

## 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
13 " Reel		D2	Φ330.0±2.0
		D3	Φ13.5±0.5
		H	2.5±0.5
		W1	16.0±1.0
		Quantity: 3000PCS	

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