## P0080~P3500AA Serise

## Description

DO-214AC/SMA 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

## 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 |
| $V_T$ | **On-state Voltage –** maximum voltage measured at rated on-state current |

## P0080~P3500AA Serise

## Electrical Characteristics

| Part Number | $V_{DRM}$ Volts | $V_S$ Volts | $V_T$ Volts | $I_{DRM}$ μAmps | $I_S$ mAmps | $I_T$ Amps | $I_H$ mAmps | $C_O$ pF |
|---|---|---|---|---|---|---|---|---|
| P0080AA | 6 | 25 | 4 | 5 | 800 | 2.2 | 50 | 30 |
| P0300AA | 25 | 40 | 4 | 5 | 800 | 2.2 | 50 | 30 |
| P0640AA | 58 | 77 | 4 | 5 | 800 | 2.2 | 150 | 30 |
| P0720AA | 65 | 88 | 4 | 5 | 800 | 2.2 | 150 | 25 |
| P0900AA | 75 | 98 | 4 | 5 | 800 | 2.2 | 150 | 25 |
| P1100AA | 90 | 130 | 4 | 5 | 800 | 2.2 | 150 | 25 |
| P1300AA | 120 | 160 | 4 | 5 | 800 | 2.2 | 150 | 25 |
| P1500AA | 140 | 180 | 4 | 5 | 800 | 2.2 | 150 | 25 |
| P1800AA | 170 | 220 | 4 | 5 | 800 | 2.2 | 150 | 25 |
| P2300AA | 190 | 260 | 4 | 5 | 800 | 2.2 | 150 | 25 |
| P2600AA | 220 | 300 | 4 | 5 | 800 | 2.2 | 150 | 25 |
| P3100AA | 275 | 350 | 4 | 5 | 800 | 2.2 | 150 | 25 |
| P3500AA | 320 | 400 | 4 | 5 | 800 | 2.2 | 150 | 25 |

* 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 (CO) is measured at 1MHz with a 2 V bias is typical value.

## Surge Ratings

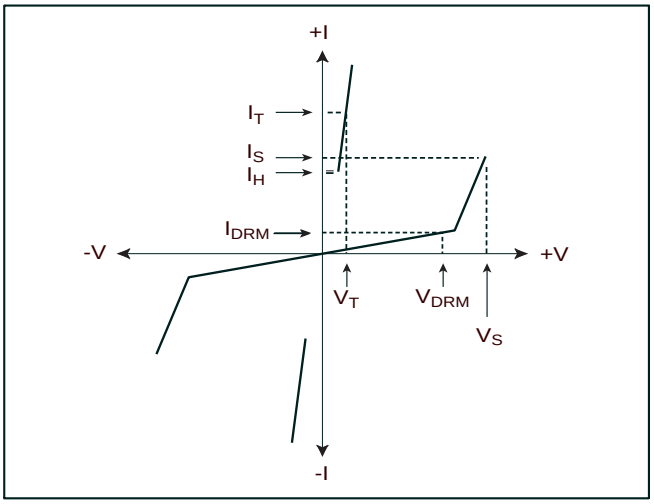
| Series | $I_{PP}$ 2×10μs Amps | $I_{PP}$ 8×20μs Amps | $I_{PP}$ 10×160μs Amps | $I_{PP}$ 10×560μs Amps | $I_{PP}$ 10×1000μs Amps | $I_{TSM}$ 60Hz Amps | di/dt Amps/μs |
|---|---|---|---|---|---|---|---|
| A | 150 | 120 | 60 | 35 | 30 | 15 | 500 |

## Thermal Considerations

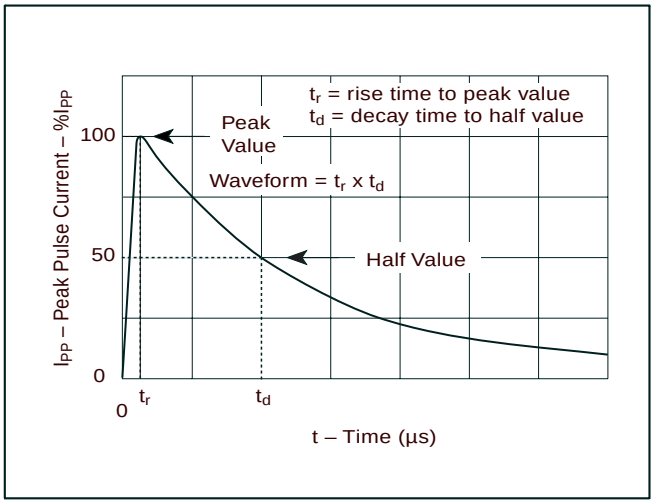
| Package DO-214AC/SMA | Symbol | Parameter | Value | Unit |
|---|---|---|---|---|
|  | $T_J$ | Operating Junction Temperature | -40 to +150 | ℃ |
| | $T_S$ | Storage Temperature Range | -40 to +150 | ℃ |
| | $R_{\theta JA}$ | Junction to Ambient on printed circuit | 90 | ℃/W |

## P0080~P3500AA Serise

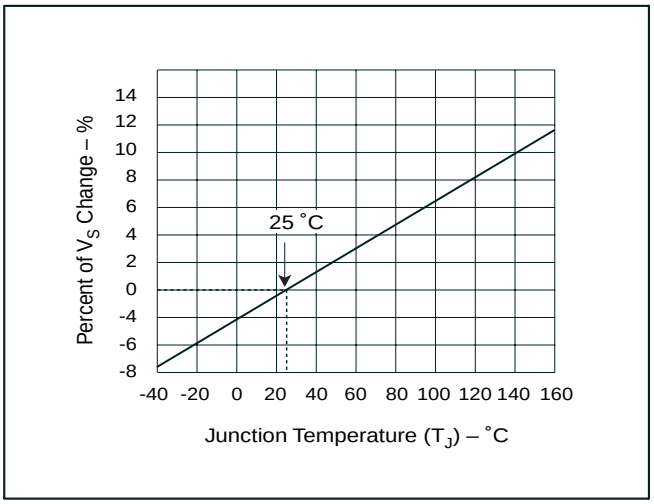
### Figure 1. V-I Characteristics



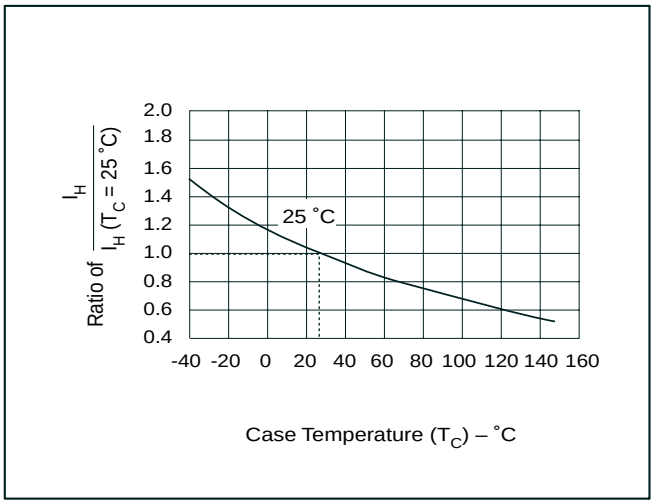

### Figure 2. tr x td Pulse Wave-form




### Figure 3. Normalized Vs Change versus Junction Temperature



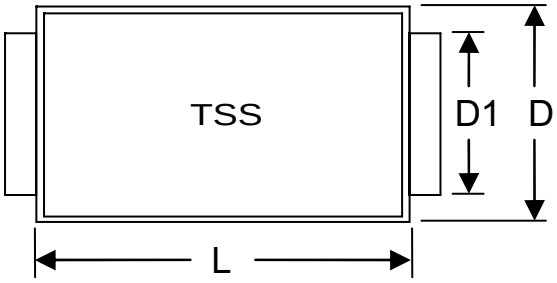

### Figure 4. Normalized DC Holding Current versus Case Temperature

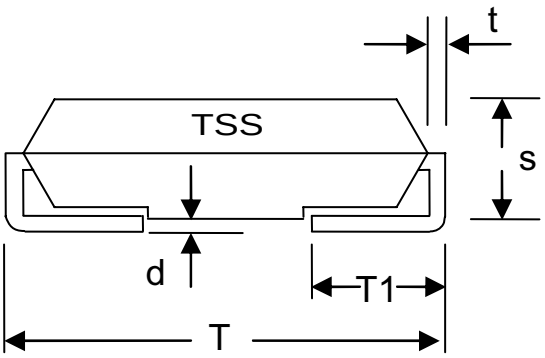


## P0080~P3500AA Serise

## Dimensions

DO-214AC/SMA




| Item | Millimeters | | Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| L | 3.99 | 4.50 | 0.157 | 0.177 |
| D | 2.54 | 2.79 | 0.100 | 0.110 |
| D1 | 1.25 | 1.65 | 0.049 | 0.065 |
| T | 4.93 | 5.28 | 0.194 | 0.208 |
| T1 | 0.76 | 1.52 | 0.030 | 0.060 |
| D | - | 0.203 | - | 0.008 |
| S | 1.98 | 2.29 | 0.076 | 0.090 |
| t | 0.152 | 0.305 | 0.006 | 0.012 |