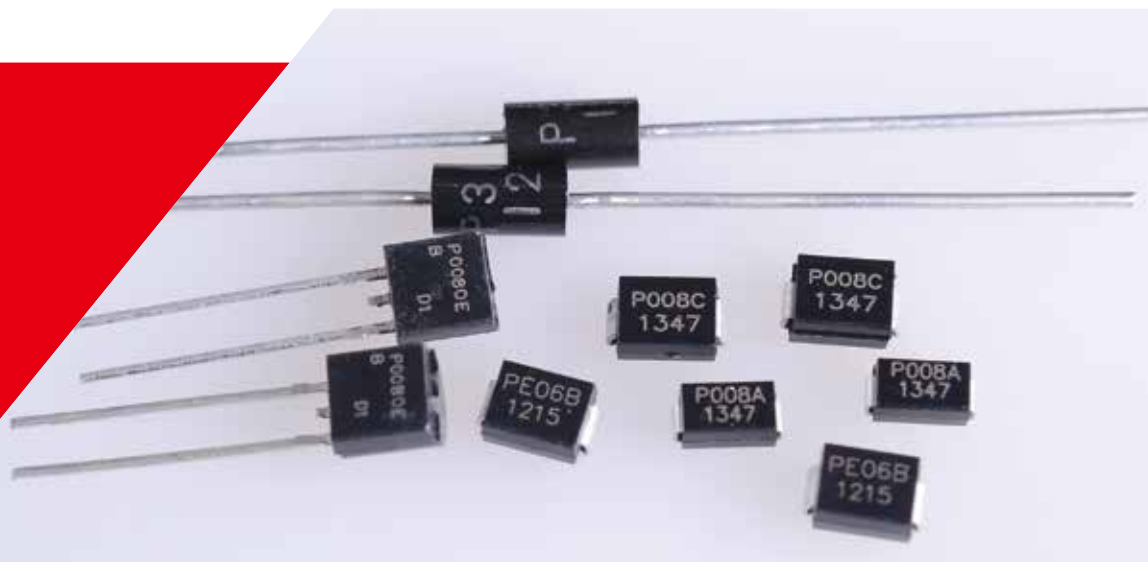




# Transient Voltage Suppressors

**PxxxxTX Series  
DO-214AC/SMA**

## Thyristor Surge Suppressors -PxxxxTX Series

### Description

DO-214AC/SMA 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.

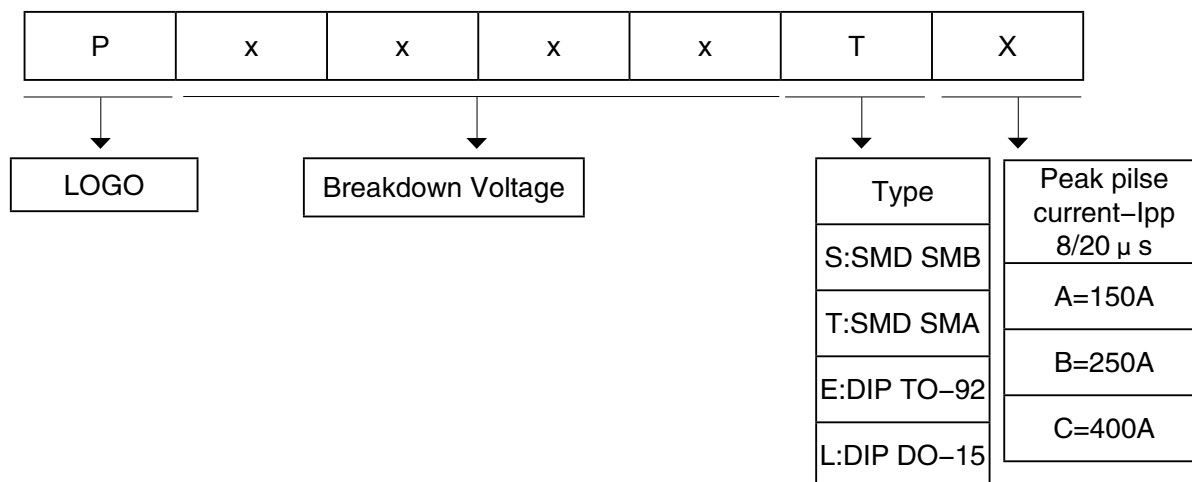


### Features

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

### Part Number Code



## Electrical Characteristics

| Type Number | VDRM | VBO | IH  | IS  | IT  | VT | CJ |
|-------------|------|-----|-----|-----|-----|----|----|
|             | V    | V   | MA  | MA  | A   | V  | PF |
| P0080TA     | 6    | 25  | 50  | 800 | 2.2 | 4  | 50 |
| P0300TA     | 25   | 40  | 50  | 800 | 2.2 | 4  | 70 |
| P0640TA     | 58   | 77  | 150 | 800 | 2.2 | 4  | 50 |
| P0720TA     | 65   | 88  | 150 | 800 | 2.2 | 4  | 50 |
| P0900TA     | 75   | 98  | 150 | 800 | 2.2 | 4  | 45 |
| P1100TA     | 90   | 130 | 150 | 800 | 2.2 | 4  | 45 |
| P1300TA     | 120  | 160 | 150 | 800 | 2.2 | 4  | 45 |
| P1500TA     | 140  | 180 | 150 | 800 | 2.2 | 4  | 40 |
| P1800TA     | 170  | 220 | 150 | 800 | 2.2 | 4  | 40 |
| P2300TA     | 190  | 260 | 150 | 800 | 2.2 | 4  | 35 |
| P2600TA     | 220  | 300 | 150 | 800 | 2.2 | 4  | 35 |
| P3100TA     | 275  | 350 | 150 | 800 | 2.2 | 4  | 30 |
| P3500TA     | 320  | 400 | 150 | 800 | 2.2 | 4  | 30 |

### 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

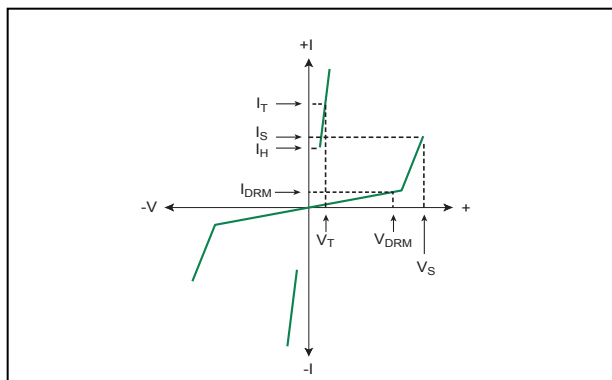
VT: On-state Voltage – maximum voltage measured at rated on-state current

| SERIES | Peak Pulse Current-Ipp(A) |        |          |          |           |
|--------|---------------------------|--------|----------|----------|-----------|
|        | 2/10μs                    | 8/20μs | 10/160μs | 10/560μs | 10/1000μs |
| A      | 200                       | 150    | 100      | 60       | 50        |

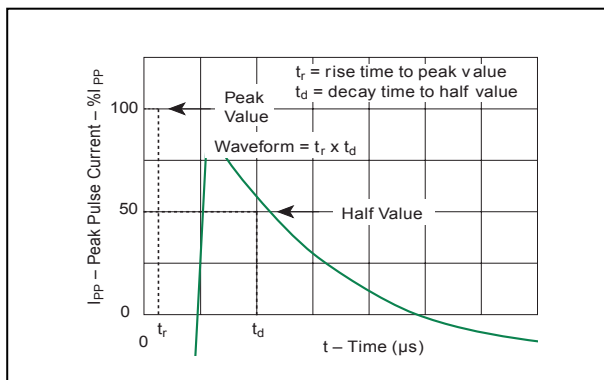
## Thermal Considerations

| Package SMA                                                                       | Symbol | Parameter                              | Value       | Unit |
|-----------------------------------------------------------------------------------|--------|----------------------------------------|-------------|------|
|  | 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 |

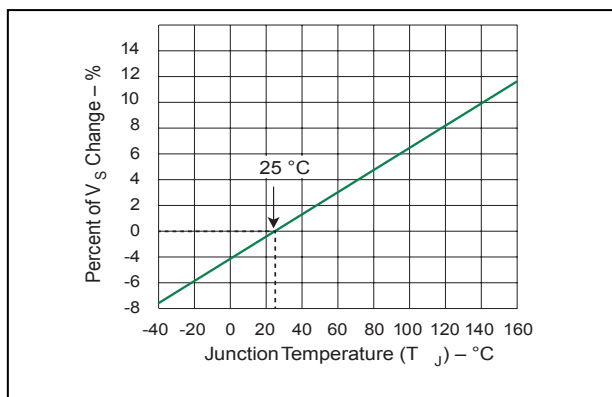
V-I Characteristics



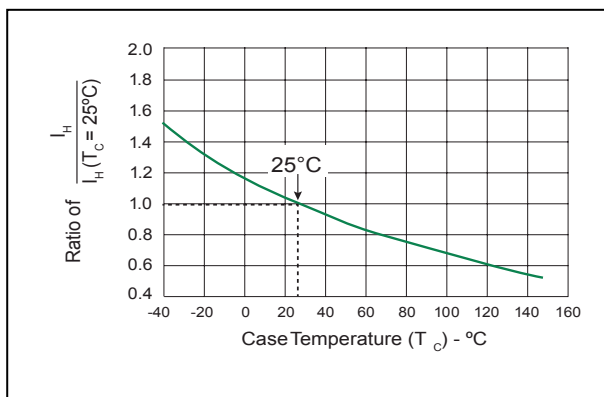
$t_r \times t_d$  Pulse Waveform



Normalized  $V_S$  Change vs. Junction Temperature



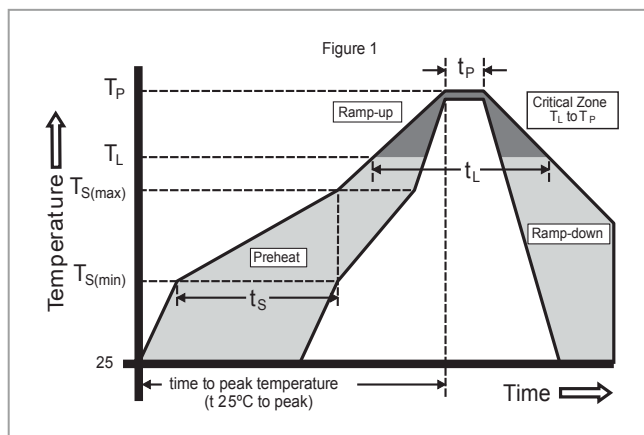
Normalized DC Holding Current vs. Case Temperature



# Thyristor Surge Suppressors -PxxxxTX Series

## Soldering Parameters

|                                                        |                                    |                               |
|--------------------------------------------------------|------------------------------------|-------------------------------|
| Reflow Condition                                       |                                    | Pb-Free assembly (see Fig. 1) |
| Pre Heat                                               | - Temperature Min ( $T_{s(min)}$ ) | +150°C                        |
|                                                        | - Temperature Max ( $T_{s(max)}$ ) | +200°C                        |
|                                                        | - Time (Min to Max) ( $t_s$ )      | 60-180 secs.                  |
| Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak) |                                    | 3°C/sec. Max.                 |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                   |                                    | 3°C/sec. Max.                 |
| Reflow                                                 | - Temperature ( $T_L$ ) (Liquidus) | +217°C                        |
|                                                        | - Temperature ( $t_L$ )            | 60-150 secs.                  |
| Peak Temp ( $T_p$ )                                    |                                    | +260(+0/-5)°C                 |
| Time within 5°C of actual Peak Temp ( $t_p$ )          |                                    | 30 secs. Max.                 |
| Ramp-down Rate                                         |                                    | 6°C/sec. Max.                 |
| Time 25°C to Peak Temp ( $T_p$ )                       |                                    | 8 min. Max.                   |
| Do not exceed                                          |                                    | +260°C                        |



## Physical Specifications

|                 |                                                               |
|-----------------|---------------------------------------------------------------|
| Lead Material   | Copper Alloy                                                  |
| Terminal Finish | 100% Matte-Tin Plated                                         |
| Body Material   | UL recognized epoxy meeting flammability classification 94V-0 |

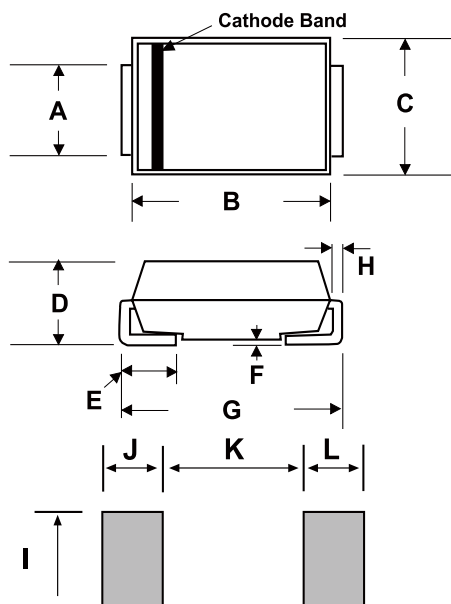
## Environmental Specifications

|                                  |                                                                                                                       |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| High Temp Voltage Blocking       | 80% Rated $V_{DRM}$ ( $V_{AC}$ Peak) +125°C or +150°C, 504 or 1008 hrs. MIL-STD-750 (Method 1040) JEDEC, JESD22-A-101 |
| Temp Cycling                     | -65°C to +150°C, 15 min. dwell, 10 up to 100 cycles. MIL-STD-750 (Method 1051) EIA/JEDEC, JESD22-A-104                |
| Biased Temp & Humidity           | 52 $V_{DC}$ (+85°C) 85%RH, 504 up to 1008 hrs. EIA/JEDEC, JESD22-A-101                                                |
| High Temp Storage                | +150°C 1008 hrs. MIL-STD-750 (Method 1031) JEDEC, JESD22-A-101                                                        |
| Low Temp Storage                 | -65°C, 1008 hrs.                                                                                                      |
| Thermal Shock                    | 0°C to +100°C, 5 min. dwell, 10 sec. transfer, 10 cycles. MIL-STD-750 (Method 1056) JEDEC, JESD22-A-106               |
| Autoclave (Pressure Cooker Test) | +121°C, 100%RH, 2atm, 24 up to 168 hrs. EIA/JEDEC, JESD22-A-102                                                       |
| Resistance to Solder Heat        | +260°C, 30 secs. MIL-STD-750 (Method 2031)                                                                            |
| Moisture Sensitivity Level       | 85%RH, +85°C, 168 hrs., 3 reflow cycles (+260°C Peak). JEDEC-J-STD-020, Level 1                                       |

## Thyristor Surge Suppressors -PxxxxTX Series

### Dimensions DO-214AC

Unit:mm



| DIM | Inches |       | Millimeters |       |
|-----|--------|-------|-------------|-------|
|     | Min    | Max   | Min         | Max   |
| A   | 0.049  | 0.065 | 1.250       | 1.650 |
| B   | 0.157  | 0.177 | 3.990       | 4.500 |
| C   | 0.100  | 0.110 | 2.540       | 2.790 |
| D   | 0.078  | 0.090 | 1.980       | 2.290 |
| E   | 0.030  | 0.060 | 0.780       | 1.520 |
| F   | -      | 0.008 | -           | 0.203 |
| G   | 0.194  | 0.208 | 4.930       | 5.280 |
| H   | 0.006  | 0.012 | 0.152       | 0.305 |
| I   | 0.070  | -     | 1.800       | -     |
| J   | 0.082  | -     | 2.100       | -     |
| K   | -      | 0.090 | -           | 2.300 |
| L   | 0.082  | -     | 2.100       | -     |

### Packaging

| Part Number | Component Package | Quantity | Packaging Option    | Packaging Specification |
|-------------|-------------------|----------|---------------------|-------------------------|
| PxxxxTX     | DO-214AC          | 2000     | Tape&Reel - 7' tape | EIA RS-481              |

### Tape and Reel Specification



## RuiLongYuan Electronics Co., Ltd.

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