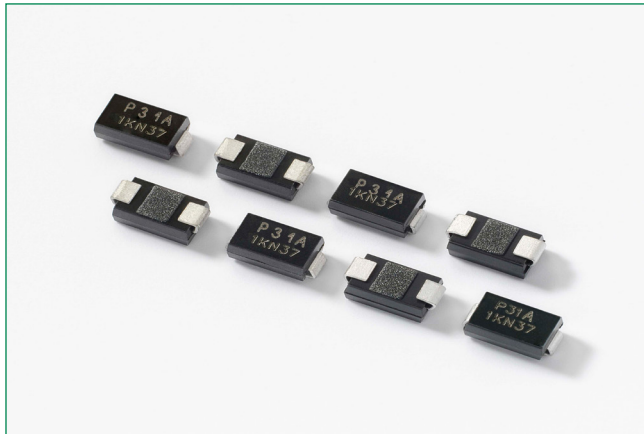


# Pxxx0S1xL Series

## SIDACtor® -DO-214AC



### Description

SIDACtor® SMA Thyristors Series are designed to protect baseband equipment such as phones, faxes, modems, line cards, CPE and DSL from damaging overvoltage transients.

The series provides a surface mount solution that enables equipment to comply with global regulatory standards.

### Features & Benefits

- Low voltage overshoot
- Low on-state voltage
- Does not degrade surge capability after multiple surge events within limit.
- RoHS Compliant and Halogen-Free
- Fails short circuit when surged in excess of ratings
- Low capacitance
- Pb-free E3 means 2nd level interconnect is Pb-free and the terminal finish material is tin(Sn) (IPC/JEDEC J-STD-609A.01)

### Additional Information



Resources



Accessories



Samples

### Applicable Global Standards

- TIA-968-A\*
- TIA-968-B\*
- ITU K.20/21/45 Enhanced Level\*
- ITU K.20/21/45 Basic Level
- GR 1089 Inter-building\*
- GR 1089 Intra-building
- IEC 61000-4-5 2nd edition
- YD/T 1082
- YD/T 993
- YD/T 950

\* Line impedance required to pass operationally

### Agency Approvals

| Agency | Agency File Number |
|--------|--------------------|
|        | E133083            |

### Schematic Symbol



### Electrical Characteristics

| Part Number | Marking | $V_{DRM}$<br>@ $I_{DRM}=5\mu A$ | $V_s$<br>@ $100V/\mu s$ | $I_H$  | $I_s$  | $I_T$ | $V_{T1}$<br>@ $I_T=2.2$ Amps | Capacitance<br>@ 1MHz, 2V bias |        |
|-------------|---------|---------------------------------|-------------------------|--------|--------|-------|------------------------------|--------------------------------|--------|
|             |         | V min                           | V max                   | mA min | mA max | A max | V max                        | pF min                         | pF max |
| P0080S1ALRP | P-8A    | 6                               | 25                      | 50     | 800    | 2.2   | 4                            | 25                             | 35     |
| P0220S1ALRP | P22A    | 15                              | 32                      | 50     | 800    | 2.2   | 4                            | 10                             | 30     |
| P0300S1ALRP | P03A    | 25                              | 40                      | 50     | 800    | 2.2   | 4                            | 10                             | 30     |
| P0640S1ALRP | P06A    | 58                              | 77                      | 150    | 800    | 2.2   | 4                            | 10                             | 30     |
| P1800S1ALRP | P18A    | 170                             | 220                     | 150    | 800    | 2.2   | 4                            | 10                             | 30     |
| P2300S1ALRP | P23A    | 190                             | 260                     | 150    | 800    | 2.2   | 4                            | 10                             | 30     |
| P2600S1ALRP | P26A    | 220                             | 300                     | 150    | 800    | 2.2   | 4                            | 10                             | 30     |
| P3100S1ALRP | P31A    | 275                             | 350                     | 150    | 800    | 2.2   | 4                            | 10                             | 30     |
| P3500S1ALRP | P35A    | 320                             | 400                     | 150    | 800    | 2.2   | 4                            | 10                             | 30     |
| P0080S1BLRP | P-8B    | 6                               | 25                      | 50     | 800    | 2.2   | 4                            | 20                             | 35     |
| P0220S1BLRP | P22B    | 15                              | 32                      | 50     | 800    | 2.2   | 4                            | 10                             | 30     |
| P0300S1BLRP | P03B    | 25                              | 40                      | 50     | 800    | 2.2   | 4                            | 10                             | 30     |
| P0640S1BLRP | P06B    | 58                              | 77                      | 120    | 800    | 2.2   | 4                            | 10                             | 30     |
| P1800S1BLRP | P18B    | 170                             | 220                     | 120    | 800    | 2.2   | 4                            | 10                             | 30     |
| P2300S1BLRP | P23B    | 190                             | 260                     | 120    | 800    | 2.2   | 4                            | 10                             | 30     |
| P2600S1BLRP | P26B    | 220                             | 300                     | 120    | 800    | 2.2   | 4                            | 10                             | 30     |
| P3100S1BLRP | P31B    | 275                             | 350                     | 120    | 800    | 2.2   | 4                            | 10                             | 30     |
| P3500S1BLRP | P35B    | 320                             | 400                     | 120    | 800    | 2.2   | 4                            | 10                             | 30     |

**Notes:**

- Absolute maximum ratings measured at  $T_a = 25^\circ C$  (unless otherwise noted).
- Components are bi-directional (unless otherwise noted).

# Pxxx0S1xL Series

## SIDACtor® -DO-214AC

### Surge Ratings

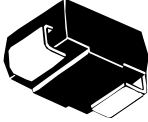
| Series | $I_{PP}$             |                   |                     |                     |                     |                    |                     |                      |                     | $I_{TSM}$<br>50/60 Hz | di/dt             |
|--------|----------------------|-------------------|---------------------|---------------------|---------------------|--------------------|---------------------|----------------------|---------------------|-----------------------|-------------------|
|        | 0.2/310 <sup>1</sup> | 2/10 <sup>1</sup> | 8/20 <sup>1</sup>   | 10/160 <sup>1</sup> | 10/560 <sup>1</sup> | 5/320 <sup>1</sup> | 10/360 <sup>1</sup> | 10/1000 <sup>1</sup> | 5/310 <sup>1</sup>  |                       |                   |
|        | 0.5/700 <sup>2</sup> | 2/10 <sup>2</sup> | 1.2/50 <sup>2</sup> | 10/160 <sup>2</sup> | 10/560 <sup>2</sup> | 9/720 <sup>2</sup> | 10/360 <sup>2</sup> | 10/1000 <sup>2</sup> | 10/700 <sup>2</sup> |                       |                   |
|        | A min                | A min             | A min               | A min               | A min               | A min              | A min               | A min                | A min               | A min                 | Amps/ $\mu$ s max |
| A      | 20                   | 150               | 150                 | 90                  | 50                  | 75                 | 75                  | 50                   | 75                  | 20                    | 500               |
| B      | -                    | 250               | 250                 | 90                  | 60                  | 75                 | 75                  | 55                   | 75                  | 25                    | 500               |

**Notes:**

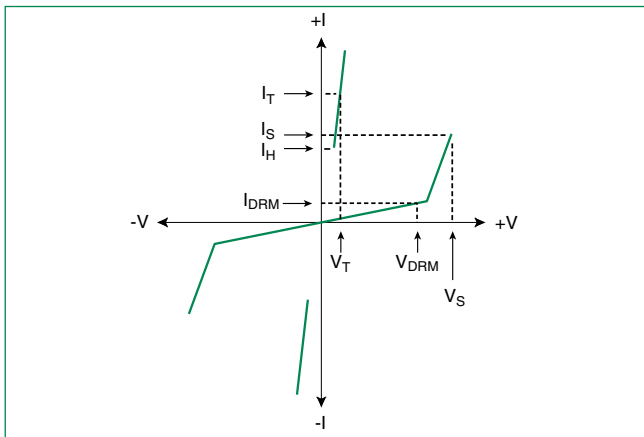
1 Current waveform in  $\mu$ s  
2 Voltage waveform in  $\mu$ s

- Peak pulse current rating ( $I_{PP}$ ) is repetitive and guaranteed for the life of the product that remains in thermal equilibrium.  
-  $I_{PP}$  ratings applicable over temperature range of -40°C to +85°C  
- The component must initially be in thermal equilibrium with -40°C  $\leq T_J \leq$  +150°C

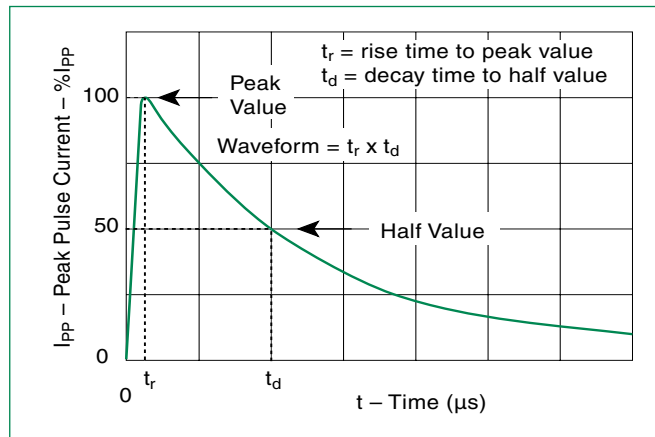
### Thermal Considerations

| Package  | Symbol          | Parameter                               | Value       | Unit |
|--|-----------------|---|-------------|------|
|  DO-214AC | $T_J$           | Operating Junction Temperature Range    | -40 to +150 | °C   |
|  | $T_S$           | Storage Temperature Range               | -65 to +150 | °C   |
|  | $R_{\theta JA}$ | Thermal Resistance: Junction to Ambient | 90          | °C/W |

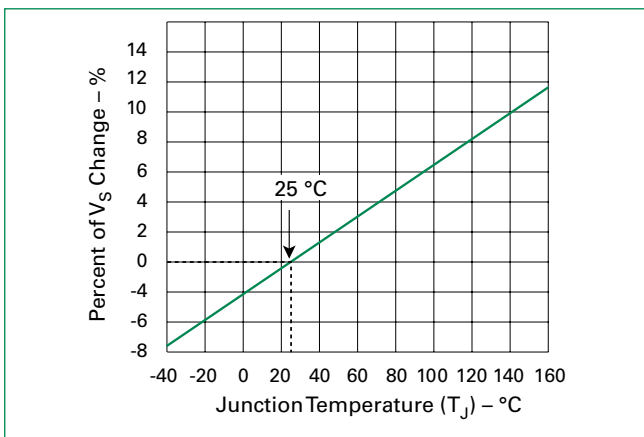
### V-I Characteristics



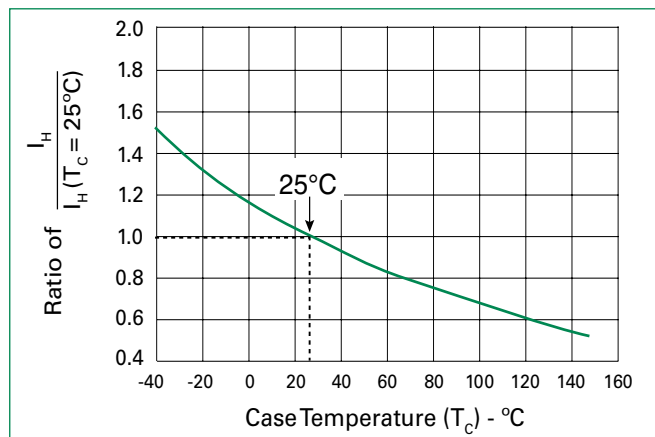
### tr x td Pulse Waveform



### Normalized $V_S$ Change vs. Junction Temperature



### Normalized DC Holding Current vs. Case Temperature

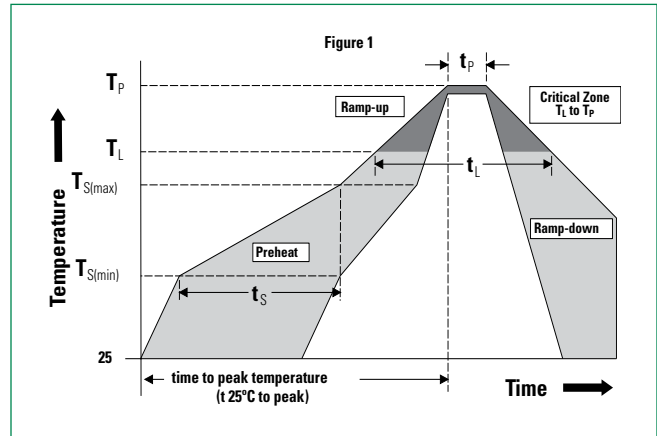


# Pxxx0S1xL Series

## SIDACtor® -DO-214AC

### Soldering Parameters

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



### Physical Specifications

|                        |   |
|------------------------|---|
| <b>Lead Material</b>   | Copper Alloy  |
| <b>Terminal Finish</b> | 100% Matte-Tin Plated                                       |
| <b>Body Material</b>   | UL Recognized epoxy meeting flammability classification V-0 |

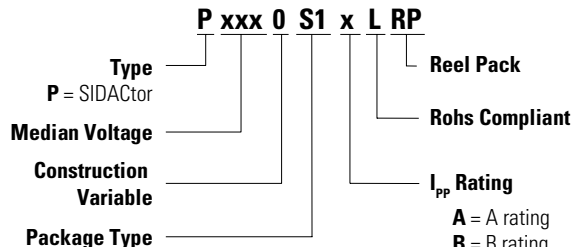
### Environmental Specifications

|   |  |
|---|--|
| <b>High Temp Voltage Blocking</b>       | 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 |
| <b>Temp Cycling</b>                     | -65°C to +150°C, 15 min. dwell, 10 up to 100 cycles. MIL-STD-750 (Method 1051) EIA/JEDEC, JESD22-A104                  |
| <b>Biased Temp &amp; Humidity</b>       | 52 $V_{DC}$ (+85°C) 85% RH, 504 up to 1008 hrs. EIA/JEDEC, JESD22-A-101  |
| <b>High Temp Storage</b>                | +150°C 1008 hrs. MIL-STD-750 (Method 1031) JEDEC, JESD22-A-101   |
| <b>Low Temp Storage</b>                 | -65°C, 1008 hrs.   |
| <b>Thermal Shock</b>                    | 0°C to +100°C, 5 min. dwell, 10 sec. transfer, 10 cycles. MIL-STD-750 (Method 1056) JEDEC, JESD22-A-106                |
| <b>Autoclave (Pressure Cooker Test)</b> | +121°C, 100%RH, 2atm, 24 up to 168 hrs. EIA/JEDEC, JESD22-A-102  |
| <b>Resistance to Solder Heat</b>        | +260°C, 30 secs. MIL-STD-750 (Method 2031)   |
| <b>Moisture Sensitivity Level</b>       | 85%RH, +85°C, 168 hrs., 3 reflow cycles (+260°C Peak). JEDEC-J-STD-020, Level 1  |

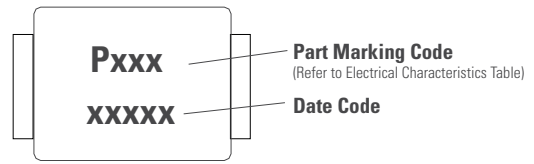
# Pxxx0S1xL Series

## SIDACtor® -DO-214AC

### Part Numbering

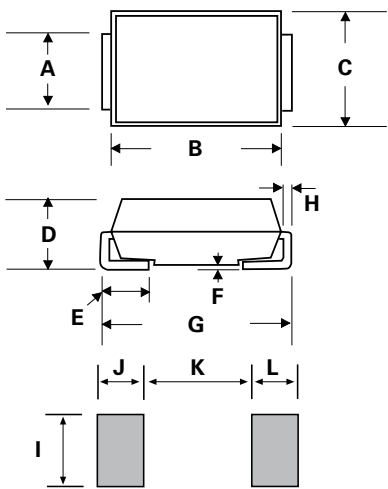


### Part Marking



### Dimensions

DO-214AC (SMA)

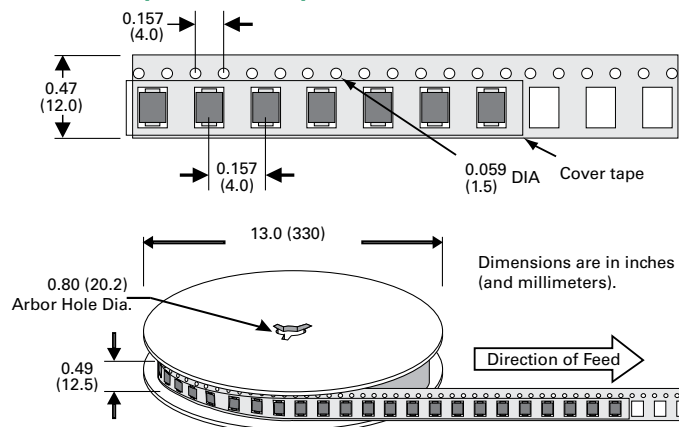


| Dimensions | Inches |       | Millimeters |       |
|------------|--------|-------|-------------|-------|
|            | Min    | Max   | Min         | Max   |
| A          | 0.049  | 0.065 | 1.250       | 1.650 |
| B          | 0.157  | 0.177 | 3.990       | 4.500 |
| C          | 0.100  | 0.110 | 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       | -     |

### Packing Options

| Package Type | Description                             | Packing Options Quantity | Added Suffix | Industry Standard |
|--------------|---|--------------------------|--------------|-------------------|
| S1           | DO-214AC Tape & Reel Pack 12mm/13" tape | 5000                     | RP           | EIA-481           |

### Tape and Reel Specification – DO-214AC



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