

# PxxxxS4xL Series

## SOD-123FL, 100A SIDACtor® Component



### Description

The PxxxxS4L component series is used to protect equipment such as TV/camera CVBS and/or other low voltage data communication from damaging overvoltage transients. The series provides a surface mount solution that enables equipment to comply with global regulatory standards.

### Features and Benefits

- Low voltage overshoot
- Low on-state voltage
- Does not degrade surge capability after multiple surge events within its ratings.
- Fails short circuit when
- Low capacitance
- 4kV 10/700 surge protection capability
- surged in excess of ratings

### Additional Information



Resources



Accessories



Samples

### Agency Approvals

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

### Applicable Global Standards

- TIA-968-A\*
- TIA-968-B\*
- ITU K.20/21 Enhanced Level\*
- ITU K.20/21 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

### Schematic Symbol



### Electrical Characteristics

| Part Number | Marking | $V_{DRM}$<br>@ $I_{DRM} = 5\mu A$ | $V_S$<br>@ 100V/ $\mu s$ | $I_H$  | $I_S$  | $I_T$ | $V_T$<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 |
| P0080S4BLRP | P-8B    | 6                                 | 25                       | 50     | 800    | 2.2   | 4                           | 15                             | 25     |
| P0220S4BLRP | P02B    | 15                                | 32                       | 50     | 800    | 2.2   | 4                           | 10                             | 30     |

**Notes:**

- Absolute maximum ratings measured at  $T_A = 25^\circ C$  (unless otherwise noted).
- Component is bi-directional (unless otherwise noted).

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### 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>  | 10/700 <sup>2</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> | 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/μs max           |       |
| B      | 20                   | 200               | 200                 | 90                  | 60                  | 75                 | 75                  | 55                   | 100                 | 25                  | 500                   |       |

**Notes:**

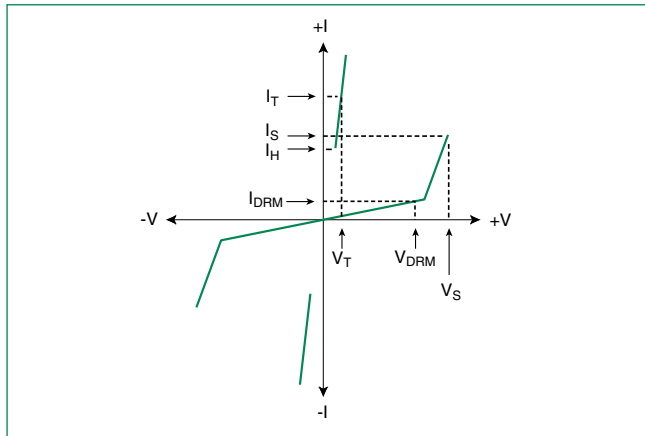
- 1 Current waveform in μs
- 2 Voltage waveform in μs

- Peak pulse current rating ( $I_{PP}$ ) is repetitive and guaranteed for the life of the product.
- $I_{PP}$  ratings applicable over temperature range of -40°C to +85°C
- The component must initially be in thermal equilibrium with -55°C ≤  $T_J$  ≤ +150°C

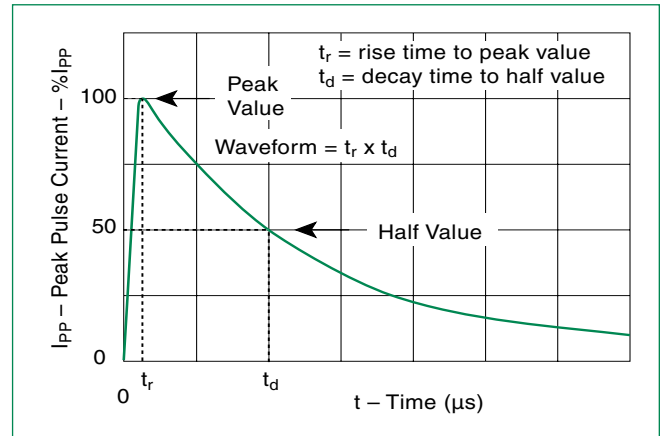
### Thermal Considerations

| Symbol    | Parameter                               | Value       | Unit |
|-----------|---|-------------|------|
| $T_J$     | Operating Junction Temperature Range    | -55 to +150 | °C   |
| $T_S$     | Storage Temperature Range               | -55 to +150 | °C   |
| $R_{θJA}$ | Thermal Resistance: Junction to Ambient | 90          | °C/W |

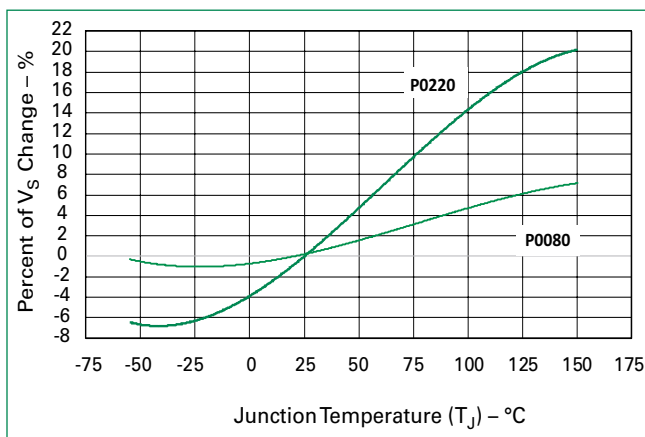
### V-I Characteristics



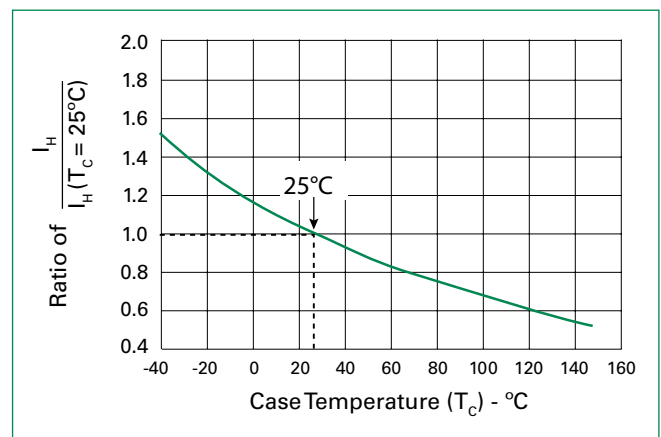
### tr x td Pulse Waveform



### Normalized VS Change vs. Junction Temperature



### Normalized DC Holding Current vs. Case Temperature

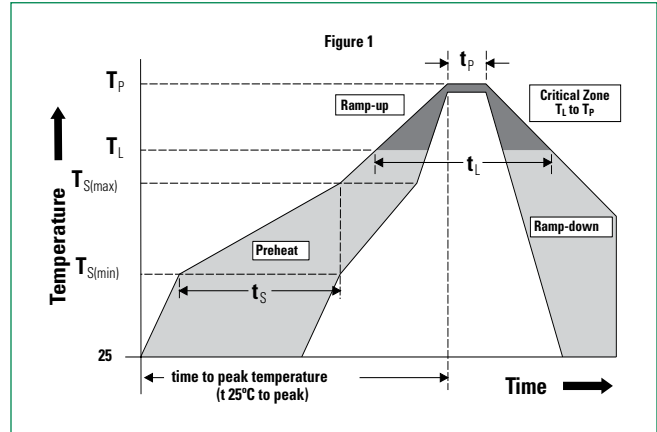


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### Soldering Parameters

|  |                                    |                               |
|--|------------------------------------|-------------------------------|
| <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) ( $t_s$ )      | 60-120 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 ( $t_r$ )            | 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                        |



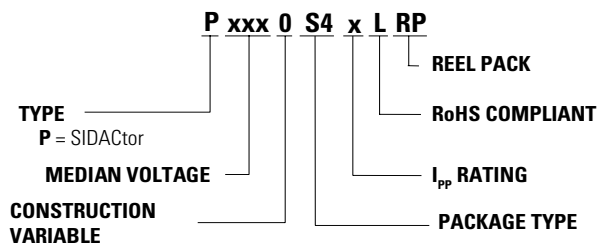
### Physical Specifications

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

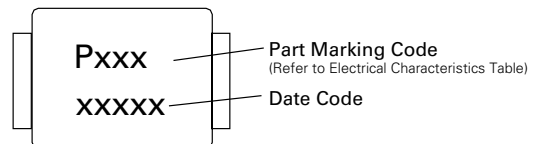
### Environmental Specifications

|                                   |  |
|-----------------------------------|--|
| <b>High Temp Voltage Blocking</b> | 80% Rated $V_{DRM}$ ( $V_{AC}$ Peak) $T_J$ , 1008 hrs. MIL-STD-750 (Method 1040) JEDEC, JESD22-A-101 |
| <b>Temp Cycling</b>               | 1000 cycles. JEDEC, JESD22-A104  |
| <b>Biased Temp &amp; Humidity</b> | 52 $V_{DC}$ (+85°C) 85%RH, 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>UHASt</b>                      | +130°C, 85%RH, 2atm, 96 hrs. EIA/ JEDEC, JESD22-A-118  |
| <b>Resistance to Solder Heat</b>  | +260°C, 10 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                      |

### Part Numbering



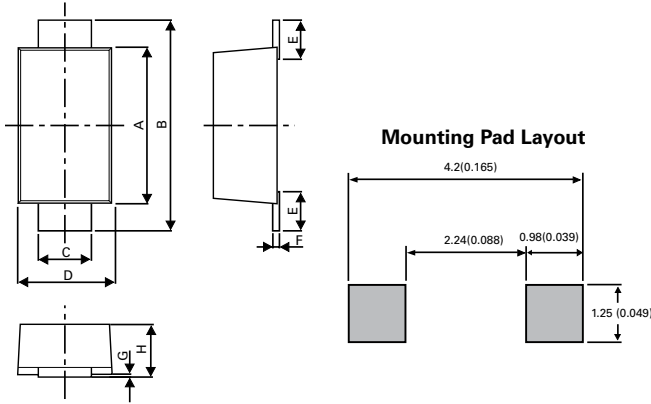
### Part Marking



# PxxxxS4xL Series

## SOD-123FL, 100A SIDACtor® Component

### Dimensions - SOD-123FL Package

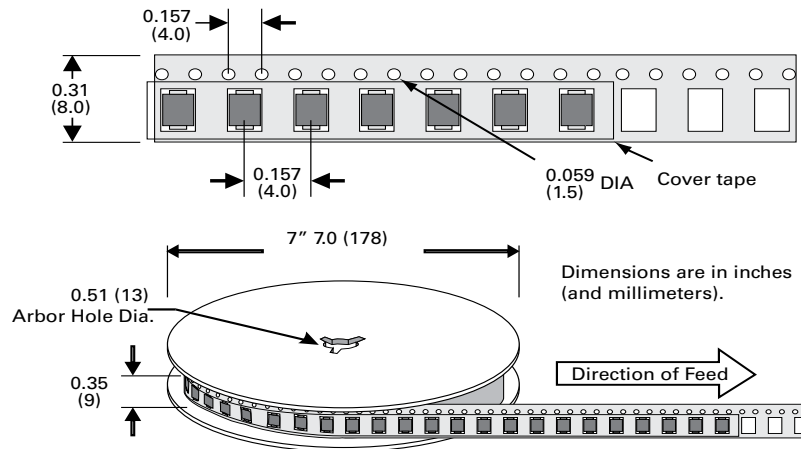


| Dimensions | Millimeters |      | Inches |       |
|------------|-------------|------|--------|-------|
|            | Min         | Max  | Min    | Max   |
| A          | 2.90        | 3.10 | 0.114  | 0.122 |
| B          | 3.50        | 3.90 | 0.138  | 0.154 |
| C          | 0.85        | 1.05 | 0.033  | 0.041 |
| D          | 1.70        | 2.00 | 0.067  | 0.079 |
| E          | 0.43        | 0.83 | 0.017  | 0.033 |
| F          | 0.10        | 0.25 | 0.004  | 0.010 |
| G          | 0.00        | 0.10 | 0.000  | 0.004 |
| H          | 0.90        | 1.08 | 0.035  | 0.043 |

### Packing Option

| Package Type | Description                            | Packing Options Quantity | Added Suffix | Industry Standard |
|--------------|--|--------------------------|--------------|-------------------|
| S4           | SOD-123FL Tape & Reel Pack 8mm/7" tape | 3000                     | RP           | EIA-481           |

### Tape and Reel Specification



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