**SIDACtor® Protection Thyristors**  
**High Surge Current Protection**  

**High Surge Current Series - DO-214**

**Description**

The High Surge Current DO-214 Series are SIDACtor® thyristors designed to protect equipment located in hostile environments from overvoltage transients. The series provides a 200A 10/1000 μs rated surface mount solution that enables equipment to comply with enhanced surge requirements now specified in regulatory and customer requirements.

**Features and Benefits**

- Low voltage overshoot
- Low on-state voltage
- Does not degrade surge capability after multiple surge events within limit.
- Fails short circuit when surged in excess of ratings
- 200A 10x1000 Surge Rating

**Agency Approvals**

<table>
<thead>
<tr>
<th>Agency</th>
<th>Agency File Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>E133083</td>
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</tbody>
</table>

**Pinout Designation**

Not Applicable

**Schematic Symbol**

![Schematic Symbol](image)

**Electrical Characteristics**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Marking</th>
<th>$V_{RMS}$ @ $I_{rms}=5\mu A$</th>
<th>$V_s$ @ 100V/μs</th>
<th>$I_s$</th>
<th>$I_{50}$</th>
<th>$I_{500}$</th>
<th>$V_i$ @ $I_{i}=2.2A$</th>
<th>Capacitance @1MHz, 2V bias</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>V min</td>
<td>V max</td>
<td>mA min</td>
<td>mA max</td>
<td>A max</td>
<td>V max</td>
<td>pf min</td>
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<td>P-8D</td>
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**Notes:**
- Absolute maximum ratings measured at $T_a = 25\degree C$ (unless otherwise noted).
- Components are bi-directional (unless otherwise noted).
- Will meet 4.4A power cross requirement without fire hazard.

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Revised: 05/16/16
### Surge Ratings

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<thead>
<tr>
<th>Series</th>
<th>0.2/310 1</th>
<th>2/10 1</th>
<th>8/20 1</th>
<th>10/160 1</th>
<th>10/560 1</th>
<th>5/320 1</th>
<th>10/1000 1</th>
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<tbody>
<tr>
<td>A min</td>
<td>A min</td>
<td>A min</td>
<td>A min</td>
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<td>A min</td>
<td>A min</td>
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<tr>
<td>D</td>
<td>—</td>
<td>1000</td>
<td>800</td>
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</tbody>
</table>

- **I_T** - Peak Pulse Current
- **I_TSM** - Peak Surge Current

### Thermal Considerations

<table>
<thead>
<tr>
<th>Package</th>
<th>Symbol</th>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
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<tbody>
<tr>
<td>DO-214AA</td>
<td><em>T_j</em></td>
<td>Operating Junction Temperature Range</td>
<td>-40 to +150</td>
<td>°C</td>
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<tr>
<td></td>
<td><em>T_s</em></td>
<td>Storage Temperature Range</td>
<td>-65 to +150</td>
<td>°C</td>
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<td><em>R_JA</em></td>
<td>Thermal Resistance: Junction to Ambient</td>
<td>90</td>
<td>°C/W</td>
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</tbody>
</table>

### V-I Characteristics

- **V_T** - Turn-On Voltage
- **I_T** - Threshold Current
- **I_S** - Holding Current
- **I_PP** - Peak Pulse Current
- **V_PP** - Peak Pulse Voltage

### t_r x t_d Pulse Waveform

- **t_r** - Rise Time
- **t_d** - Decay Time
- **I_P** - Peak Pulse Current

### Normalized _V_s_ Change vs. Junction Temperature

- **Percent of _V_s_ Change** vs. Junction Temperature (T_J) - °C

### Normalized DC Holding Current vs. Case Temperature

- **Ratio of _I_h_ (T_C = 25°C)** vs. Case Temperature (T_C) - °C
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 V-0 per Underwriters Laboratories

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, 24hr, 24 up to 168 hrs. EIA/JEDEC, JESD22-A-102

Resistance to Solder Heat +260°C, 30 secs. MIL-STD-750 (Method 2031)


Part Numbering

Type P: SIDACtor

Median Voltage

Construction Variable

Package Type

Part Marking

Pxxx O SDL RP

Type

P: SIDACtor

Median Voltage

Construction Variable

Package Type

Reel Pack

RoHS Compliant

I_{rup} Rating

Part Marking Code

(Refer to Electrical Characteristics Table)

Date Code

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High Surge Current Protection

Dimensions — DO-214AA

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Inches</th>
<th>Millimeters</th>
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Packing Options

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<tr>
<th>Package Type</th>
<th>Description</th>
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<th>Added Suffix</th>
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<tr>
<td>S</td>
<td>DO-214AA Tape and Reel Pack</td>
<td>2500</td>
<td>RP</td>
<td>EIA-481-D</td>
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Additional Information

- Datasheet
- Resources
- Samples

Tape and Reel Specification — DO-214AA

Dimensions are in inches (and millimeters).