Pxxx2SxLHL Series
Low IH Two-Chip SIDACtor® - DO214AA Broadband Optimized Protection

Description
Pxxx2SxLHL Series DO-214AA are very low capacitance SIDACtor® components designed to protect broadband equipment such as VoIP, DSL modems and DSLAMs from damaging overvoltage transients. This series provides a surface mount solution that enables equipment to comply with global regulatory standards, while limiting the impact to broadband signals.

Features and Benefits
- Low voltage overshoot
- Low on-state voltage
- Does not degrade surge capability after multiple surge events within limit
- Low distortion
- Fails short circuit when surged in excess of ratings
- 40% lower than comparable product
- RoHS Compliant and Halogen-Free
- Pb-free E3 means 2nd level interconnect is Pb-free and the terminal finish material is tin(Sn) (IPC/JEDEC J-STD-609A.01)
- Recognized to UL 497B as an Isolated Loop Circuit Protector

Applicable Global Standards
- TIA/968-A/B
- TU K.20/21/45
- EC 61000-4-5 2nd edition
- GR 1089 Intra-building
- YD/T 1082
- YD/T 993
- YD/T 950ITU K.20/21/45
- Enhanced*
- GR 1089 Inter-building*

Additional Information

Agency Approvals

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

Schematic Symbol

Electrical Characteristics

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Marking</th>
<th>V_{D(On)} @ I_{D(On)}=5µA</th>
<th>V_s @100V/µs</th>
<th>I_n</th>
<th>I_s</th>
<th>I_r</th>
<th>V_p @ I_r=2.2 Amps</th>
<th>@1MHz, 2V bias</th>
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<tbody>
<tr>
<td></td>
<td>P6002SCLHLRP</td>
<td>P602CL</td>
<td>550</td>
<td>700</td>
<td>20</td>
<td>800</td>
<td>2.2</td>
<td>8</td>
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</table>

Notes:
- Absolute maximum ratings measured at T_a = 25°C (unless otherwise noted).
- Components are bi-directional (unless otherwise noted).

* Additional series resistance may be required to comply.
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### Surge Ratings

<table>
<thead>
<tr>
<th>Series</th>
<th>I_{PP}</th>
<th>I_{TSM}</th>
<th>di/dt</th>
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<tbody>
<tr>
<td>0.2/310</td>
<td>50/60Hz</td>
<td>50/60Hz</td>
<td></td>
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<tr>
<td>0.5/700</td>
<td>50/60Hz</td>
<td>50/60Hz</td>
<td></td>
</tr>
<tr>
<td>2/10</td>
<td>50/60Hz</td>
<td>50/60Hz</td>
<td></td>
</tr>
<tr>
<td>8/20</td>
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<td></td>
</tr>
<tr>
<td>10/160</td>
<td>50/60Hz</td>
<td>50/60Hz</td>
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<tr>
<td>10/360</td>
<td>50/60Hz</td>
<td>50/60Hz</td>
<td></td>
</tr>
<tr>
<td>10/1000</td>
<td>50/60Hz</td>
<td>50/60Hz</td>
<td></td>
</tr>
<tr>
<td>5/310</td>
<td>50/60Hz</td>
<td>50/60Hz</td>
<td></td>
</tr>
<tr>
<td>10/700</td>
<td>50/60Hz</td>
<td>50/60Hz</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
1. Current waveform in µs
2. Voltage waveform in µs
- Peak pulse current rating (IPP) is repetitive and guaranteed for the life of the product.
- IPP ratings applicable over temperature range of -40ºC to +85ºC
- The component must initially be in thermal equilibrium with -40°C < T_J < +150°C

### Thermal Considerations

<table>
<thead>
<tr>
<th>Package</th>
<th>Symbol</th>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
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</thead>
<tbody>
<tr>
<td>DO-214AA</td>
<td>T_J</td>
<td>Operating Junction Temperature Range</td>
<td>-40 to +150</td>
<td>ºC</td>
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<tr>
<td>DO-214AA</td>
<td>T_S</td>
<td>Storage Temperature Range</td>
<td>-65 to +150</td>
<td>ºC</td>
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<tr>
<td>DO-214AA</td>
<td>R_{JA}</td>
<td>Thermal Resistance: Junction to Ambient</td>
<td>90</td>
<td>ºC/W</td>
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</table>

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**V-I Characteristics**

**t_r x t_d Pulse Waveform**

**Normalized V_S Change vs. Junction Temperature**

**Normalized DC Holding Current vs. Case Temperature**
Soldering Parameters

Reflow Condition
- Temperature Min (T_min)
- Temperature Max (T_max)
- Time (Min to Max) (t)

Pre Heat
- Temperature (T) (Liquidus)
- Temperature (t)

Average ramp up rate (Liquidus Temp (T_L) to peak)
3°C/sec. Max.

T_peak to TL - Ramp-up Rate
3°C/sec. Max.

Reflow
- Temperature (T) (Liquidus)
- Temperature (t)

Peak Temp (T_P)
+260 (+0/-5)°C

Time within 5°C of actual Peak Temp (t)
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

Environmental Specifications

High Temp Voltage Blocking
80% Rated V_{dss} (V_{dc} 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

Physical Specifications

Lead Material
Copper Alloy

Terminal Finish
100% Matte-Tin Plated

Body Material
UL Recognized compound meeting flammability rating V-0

Part Numbering

**Pxxx2SxLHL Series**
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Part Marking

**Pxxxx xxxxx**
Part Marking Code
(Refer to Electrical Characteristics Table)

Date Code
**Pxxx2SxLHL Series**

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### Package Dimensions — DO-214AA

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Inches</th>
<th>Millimeters</th>
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<tr>
<td>A</td>
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<td>3.30</td>
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<tr>
<td></td>
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<td></td>
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<td>C</td>
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<td></td>
<td>0.087</td>
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<td>D</td>
<td>0.159</td>
<td>4.05</td>
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### Packing Options

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<tr>
<td>S</td>
<td>DO-214AA Tape &amp; Reel</td>
<td>2500</td>
<td>RP</td>
<td>EIA-481-D</td>
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</tbody>
</table>

### Tape and Reel Specification — DO-214AA

Dimensions are in inches (and millimeters).

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