

# 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 product

## Additional Information



Resources



Accessories



Samples

## Agency Approvals

Agency	Agency File Number
	E133083

## Schematic Symbol



## 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 series resistance may be required to comply

## Electrical Characteristics

Part Number	Marking	$V_{DRM}@I_{DRM}=5\mu A$	$V_S@100V/\mu s$	$I_H$	$I_S$	$I_T$	$V_T@I_T=2.2\text{ Amps}$	@1MHz, 2V bias	
		V min	V max	mA min	mA max	A max	V max	pF min	pF max
P6002SCLHLP	P602CL	550	700	20	800	2.2	8	10	30

### Notes:

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

# Pxxx2SxLHL Series

## Low IH Two-Chip SIDACtor® - DO214AA Broadband Optimized Protection

### Surge Ratings

Series	$I_{PP}$									$I_{TSM}$ 50/60 Hz	di/dt
	0.2/310 <sup>1</sup> 0.5/700 <sup>2</sup>	2/10 <sup>1</sup> 2/10 <sup>2</sup>	8/20 <sup>1</sup> 1.2/50 <sup>2</sup>	10/160 <sup>1</sup> 10/160 <sup>2</sup>	10/560 <sup>1</sup> 10/560 <sup>2</sup>	5/320 <sup>1</sup> 9/720 <sup>2</sup>	10/360 <sup>1</sup> 10/360 <sup>2</sup>	10/1000 <sup>1</sup> 10/1000 <sup>2</sup>	5/310 <sup>1</sup> 10/700 <sup>2</sup>		
	A min	A min	A min	A min	A min	A min	A min	A min	A min		
C	50	500	500	200	150	200	175	100	200	30	500

**Notes:**

1 Current waveform in  $\mu s$

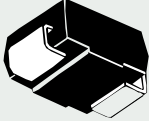
2 Voltage waveform in  $\mu s$

- Peak pulse current rating (IPP) is repetitive and guaranteed for the life of the product.

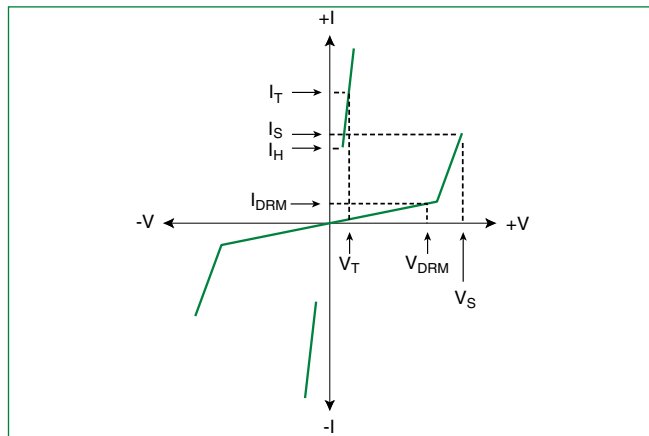
- IPP ratings applicable over temperature range of -40°C to +85°C

- The component must initially be in thermal equilibrium with -40°C < T<sub>J</sub> < +150°C

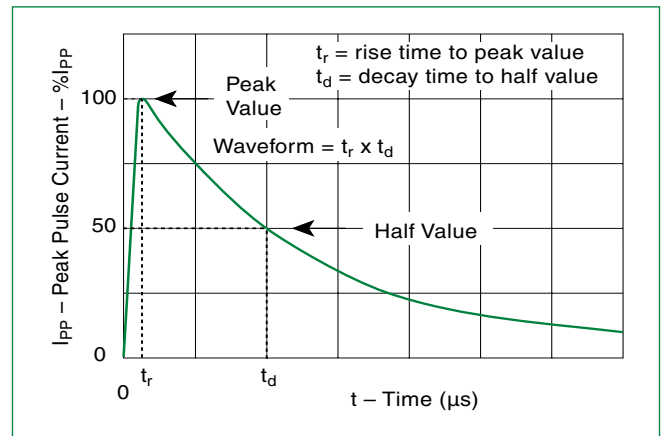
### Thermal Considerations

Package	Symbol	Parameter	Value	Unit
 DO-214AA	T <sub>J</sub>	Operating Junction Temperature Range	-40 to +150	°C
	T <sub>S</sub>	Storage Temperature Range	-65 to +150	°C
	R <sub>θJA</sub>	Thermal Resistance: Junction to Ambient	90	°C/W

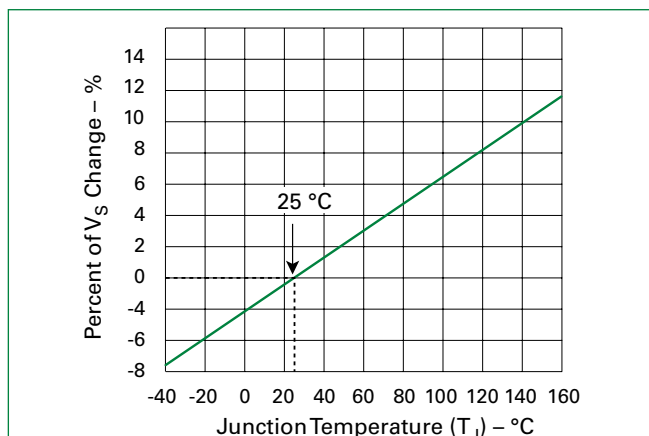
### V-I Characteristics



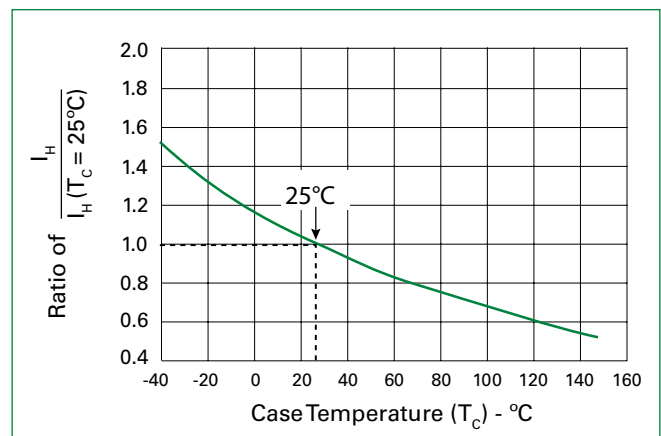
### t<sub>r</sub> x t<sub>d</sub> Pulse Waveform



### Normalized V<sub>s</sub> Change vs. Junction Temperature



### Normalized DC Holding Current vs. Case Temperature



# Pxxx2SxLHL Series

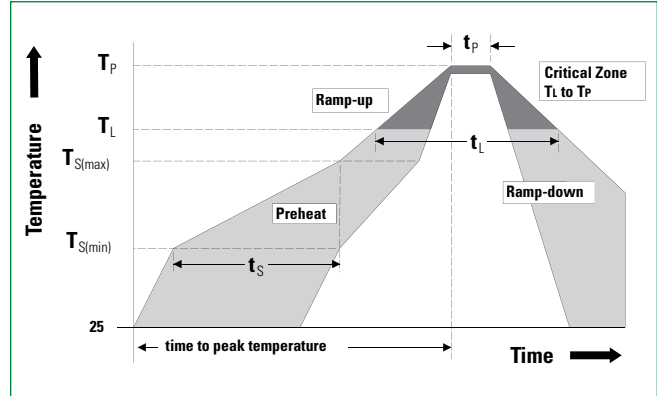
Low IH Two-Chip SIDACtor® - D0214AA Broadband Optimized Protection

## Soldering Parameters

<b>Reflow Condition</b>		Pb-Free assembly
<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

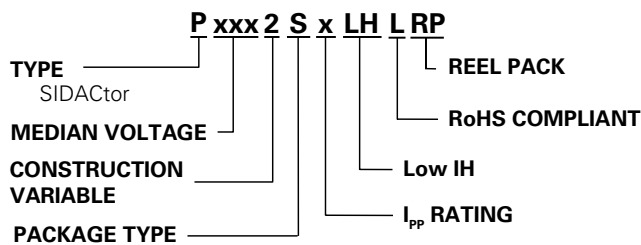
<b>Lead Material</b>	Copper Alloy
<b>Terminal Finish</b>	100% Matte-Tin Plated
<b>Body Material</b>	UL Recognized compound meeting flammability rating V-0



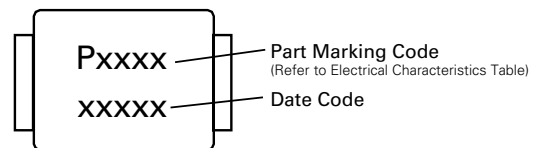
## Environmental Specifications

<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

## Part Numbering



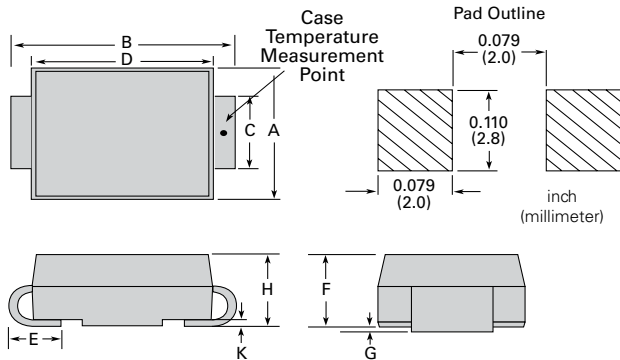
## Part Marking



# Pxxx2SxLHL Series

## Low IH Two-Chip SIDACtor® - DO214AA Broadband Optimized Protection

### Package Dimensions – DO-214AA

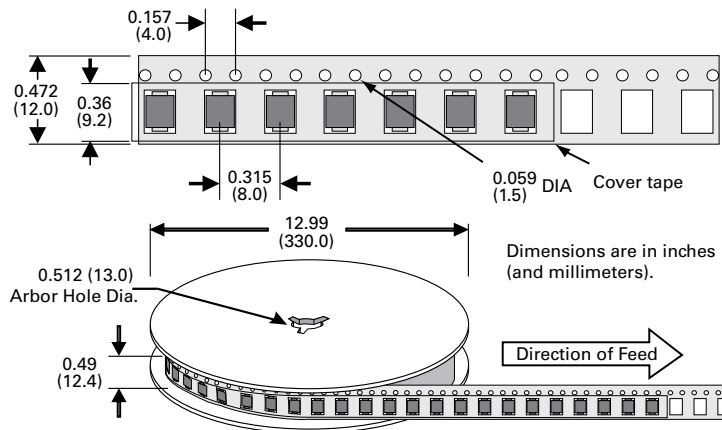


Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.130	0.156	3.30	3.95
B	0.201	0.220	5.10	5.60
C	0.077	0.087	1.95	2.20
D	0.159	0.181	4.05	4.60
E	0.030	0.063	0.75	1.60
F	0.075	0.096	1.90	2.45
G	0.002	0.008	0.05	0.20
H	0.077	0.104	1.95	2.65
K	0.006	0.016	0.15	0.41

### Packing Options

Package Type	Description	Quantity	Added Suffix	Industry Standard
S	DO-214AA Tape & Reel	2500	RP	EIA-481-D

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



**Disclaimer:** Littelfuse products are not designed for, and shall not be used for, any purpose (including, without limitation, automotive, military, aerospace, medical, life-saving, life-sustaining or nuclear facility applications, devices intended for surgical implant into the body, or any other application in which the failure or lack of desired operation of the product may result in personal injury, death, or property damage) other than those expressly set forth in applicable Littelfuse product documentation. Warranties granted by Littelfuse shall be deemed void for products used for any purpose not expressly set forth in applicable Littelfuse documentation. Littelfuse shall not be liable for any claims or damages arising out of products used in applications not expressly intended by Littelfuse as set forth in applicable Littelfuse documentation. The sale and use of Littelfuse products is subject to Littelfuse Terms and Conditions of Sale, unless otherwise agreed by Littelfuse. "Littelfuse" includes Littelfuse, Inc., and all of its affiliate entities. <http://www.littelfuse.com/disclaimer-electronics>.

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Thyristor Surge Protection Devices - TSPD category](#):*

*Click to view products by [Littelfuse manufacturer](#):*

Other Similar products are found below :

[BEP3100TA](#) [P0720SB](#) [P0720SC](#) [P1100SC](#) [P2300SB](#) [P2300SD](#) [P2600SB](#) [P3500SB](#) [SKKH 57/16E](#) [SKKH 72/22E H4](#) [SKKH 72/08E](#)  
[NP1100SAT3G](#) [NP3100SBT3G](#) [SK20NHMH10](#) [P3800FNLTP](#) [TISP4P035L1NR-S](#) [TISP4011H1BJR-S](#) [SKKH 72/20E H4](#) [SKKH 172/16E](#)  
[TISP4350H3BJR-S](#) [TISP4A265H3BJR](#) [TISP7082F3DR-S](#) [TB0640H-13-F](#) [TB3100H-13-F](#) [TB3100M-13-F](#) [TB3500L-13-F](#)  
[TD330N16KOFHPSA2](#) [P0080EAL](#) [P0080ECL](#) [P0080Q22CLRP](#) [P0080S3NLRP](#) [P0080SALRP](#) [P0080SAMCLRP](#) [P0080SB](#) [P0080SBLRP](#)  
[P0080SCLRP](#) [P0080SCMCLRP](#) [P0080SDLRP](#) [P3203UCLRP](#) [P0220SALRP](#) [P0220SCMCLRP](#) [P0300EAL](#) [P0300ECL](#) [P0300SALRP](#)  
[P0300SBLRP](#) [P0300SCLRP](#) [P0300SCMCLRP](#) [P3100Q12BLRP](#) [P0640SALRP](#) [P0640SBLRP](#)