

Fixed Voltage Series - DO-214



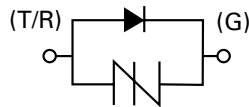
**Agency Approvals**

Agency	Agency File Number
	E133083

**Pinout Designation**



**Schematic Symbol**



**Description**

Fixed Voltage Series DO-214 are uni-directional SIDACtor® devices designed to protect SLICs (Subscriber Line Interface Circuit) from damaging overvoltage transients.

The series provides single line protection using a fixed voltage switching device for negative surges. All positive surges are routed through an internal diode to a ground reference.

**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
- Integrated diode for positive voltage surges
- 2nd level interconnect is Pb-free per IPC/JEDEC J-STD-609A.01

**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
- YD/T 1082
- YD/T 993
- YD/T 950

\*A-rated parts require series resistance

**Electrical Characteristics**

Part Number	Marking	$V_{DRM}$ @ $I_{DRM} = -5\mu A$	$V_S$ @ $100V/\mu s$	$I_H$	$I_S$	$I_T$	$V_T$ @ $I_T = 2.2$ Amps	$V_F$	Capacitance @ 1MHz, -2V bias	
		V min	V max	mA min	mA max	A max	V max	V max	pF	
										pF min
P0641SALRP	P61A	58	77	120	800	2.2	4	5	50	90
P0721SALRP	P71A	65	88	120	800	2.2	4	5	45	85
P0901SALRP	P91A	75	98	120	800	2.2	4	5	45	80
P1101SALRP	P01A	95	130	120	800	2.2	4	5	40	70
P1301SALRP	P131A	120	160	120	800	2.2	4	5	40	70
P1701SALRP	P17A	160	200	120	800	2.2	4	5	30	55
P0641SCLRP	P61C	58	77	120	800	2.2	4	5	65	200
P0721SCLRP	P71C	65	88	120	800	2.2	4	5	60	190
P0901SCLRP	P91C	75	98	120	800	2.2	4	5	60	180
P1101SCLRP	P01C	95	130	120	800	2.2	4	5	50	160
P1201SCLRP	P121C	105	140	120	800	2.2	4	5	50	160
P1301SCLRP	P131C	120	160	120	800	2.2	4	5	50	160
P1701SCLRP	P17C	160	200	120	800	2.2	4	5	40	130
P1101SDLRP	P01D	95	130	120	800	2.2	4	5	50	160
P1301SDLRP	P131D	120	160	120	800	2.2	4	5	50	160

Notes:  
- Absolute maximum ratings measured at  $T_a = 25^\circ C$  (unless otherwise noted).  
- Devices are uni-directional

### Surge Ratings

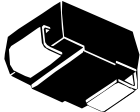
Series	$I_{PP}$									$I_{TSM}$ 50/60 Hz	di/dt
	0.2x310 <sup>1</sup> 0.5x700 <sup>2</sup>	2x10 <sup>1</sup> 2x10 <sup>2</sup>	8x20 <sup>1</sup> 1.2x50 <sup>2</sup>	10x160 <sup>1</sup> 10x160 <sup>2</sup>	10x560 <sup>1</sup> 10x560 <sup>2</sup>	5x320 <sup>1</sup> 9x720 <sup>2</sup>	10x360 <sup>1</sup> 10x360 <sup>2</sup>	10x1000 <sup>1</sup> 10x1000 <sup>2</sup>	5x310 <sup>1</sup> 10x700 <sup>2</sup>		
	A min	A min	A min	A min	A min	A min	A min	A min	A min		
A	20	150	150	90	50	75	75	45	75	20	500
C	50	500	400	200	150	200	175	100	200	30	500
D	—	1000	800	—	—	—	—	200	350	50	1000

Notes:

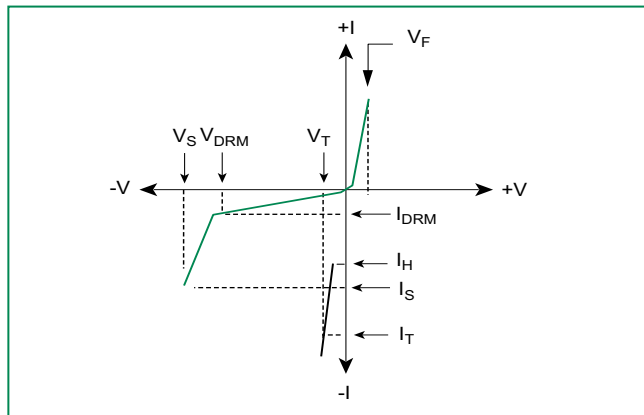
- 1 Current waveform in  $\mu$ s
- 2 Voltage waveform in  $\mu$ s

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

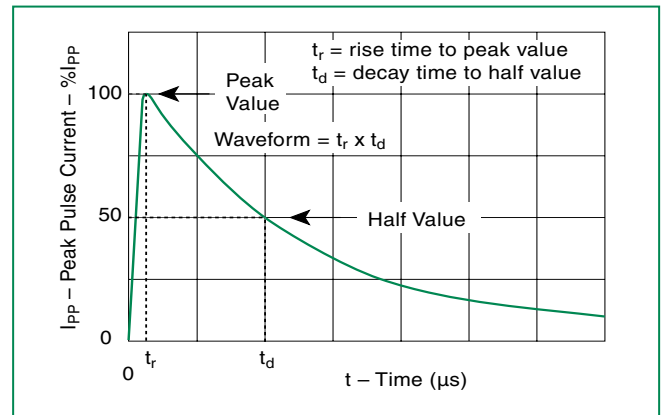
### Thermal Considerations

Package	Symbol	Parameter	Value	Unit
DO-214AA 	$T_J$	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

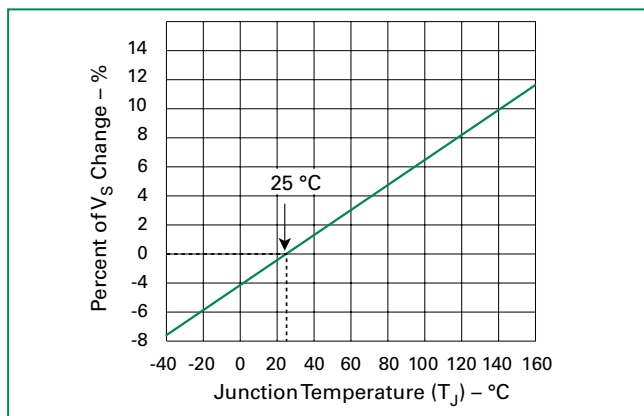
### V-I Characteristics



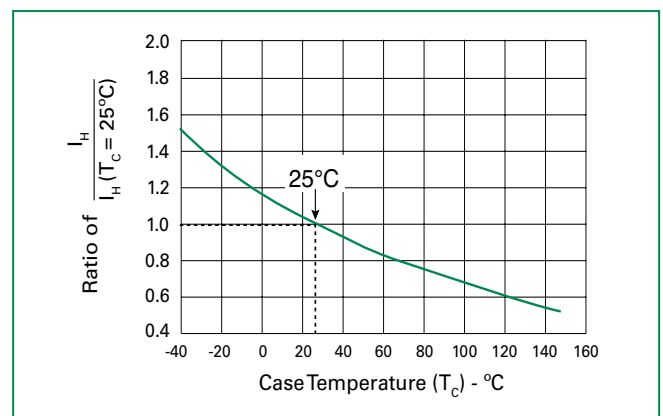
### $t_r \times t_d$ Pulse Waveform



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

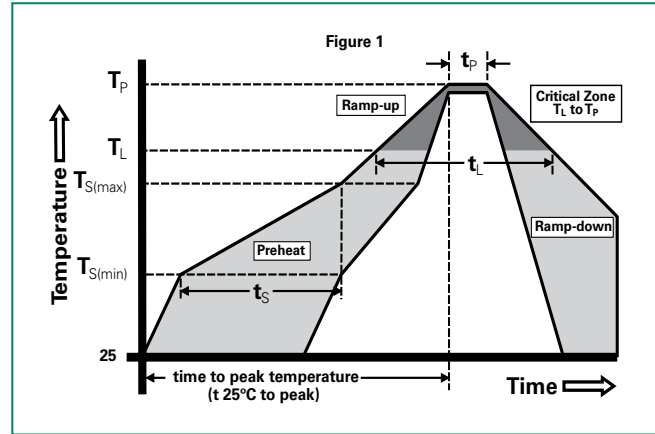


### Normalized DC Holding Current vs. Case Temperature



**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**

<b>Lead Material</b>	Copper Alloy
<b>Terminal Finish</b>	100% Matte-Tin Plated
<b>Body Material</b>	UL recognized epoxy meeting flammability classification 94V-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-A-104
<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

**Additional Information**



Datasheet

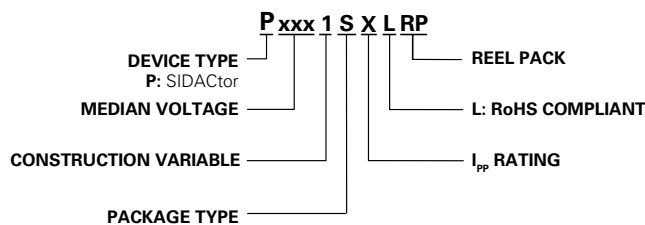


Resources

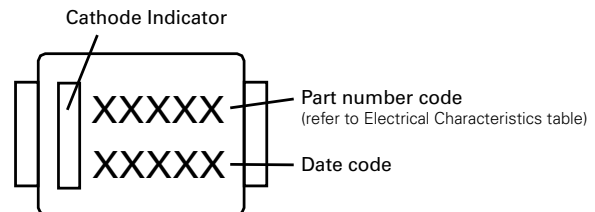


Samples

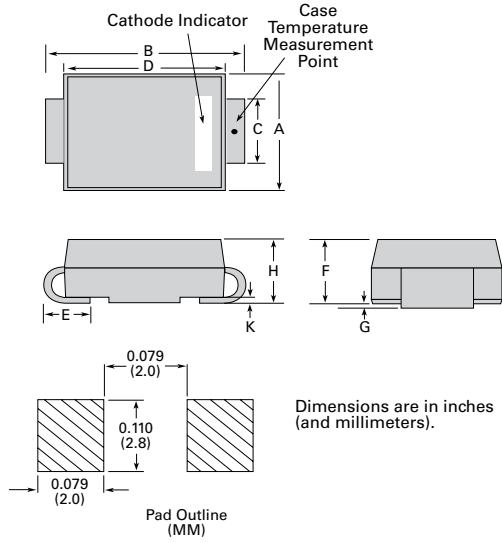
**Part Numbering**



**Part Marking**



### 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 Pack	2500	RP	EIA-481-D

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

