

Fixed Voltage Series - DO-214 (pxxx1s)



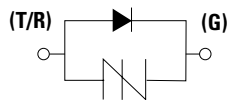
Agency Approvals

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

Pinout Designation



Schematic Symbol



Description

Fixed Voltage Series DO-214 (pxxx1s) are uni-directional SIDActo[®]r components designed to protect SLICs (Subscriber Line Interface Circuit) from damaging overvoltage transients. The series provides single line protection using a fixed voltage switching component for negative surges. All positive surges are routed through an internal diode to a ground reference.

Features and Benefits

- RoHS compliant, lead-free, and halogen-free
- 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
- Pb-free E3 means 2nd level interconnect is Pb-free and the terminal finish material is tin(Sn) (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 Intra-building*
- IEC 61000-4-5 2nd edition
- 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/ μs | 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 |
| P0181SALRP | P018A | 18 | 40 | 100 | 800 | 2.2 | 4 | 5 | 30 | 90 |
| 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 |
| P0641SDLRP | P61D | 58 | 77 | 120 | 800 | 2.2 | 4 | 5 | 65 | 200 |
| P0721SDLRP | P71D | 65 | 88 | 120 | 800 | 2.2 | 4 | 5 | 60 | 190 |
| P0901SDLRP | P91D | 75 | 98 | 120 | 800 | 2.2 | 4 | 5 | 60 | 180 |
| P1101SDLRP | P01D | 95 | 130 | 120 | 800 | 2.2 | 4 | 5 | 50 | 160 |
| P1301SDLRP | P131D | 120 | 160 | 120 | 800 | 2.2 | 4 | 5 | 50 | 160 |
| P1701SDLRP | P17D | 160 | 200 | 120 | 800 | 2.2 | 4 | 5 | 40 | 130 |

Notes:
 - Absolute maximum ratings measured at $T_J = 25^\circ C$ (unless otherwise noted).
 - Components are not appropriate for positive ringing systems.

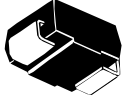
Surge Ratings

| Series | I_{PP} | | | | | | | | | I_{TSM} 50/60 Hz | di/dt |
|--------|--|--|--|--|--|--|--|--|---|-----------------------|----------|
| | 0.2/310 ¹ 0.5/700 ² | 2/10 ^{1,3} 2/10 ² | 8/20 ¹ 1.2/50 ² | 10/160 ¹ 10/160 ² | 10/560 ¹ 10/560 ² | 5/320 ¹ 9/720 ² | 10/360 ¹ 10/360 ² | 10/1000 ¹ 10/1000 ² | 5/310 ¹ 10/700 ² | | |
| | A min | A min | A min | A min | A min | A min | A min | A min | A min | A min | A/μs max |
| 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 |

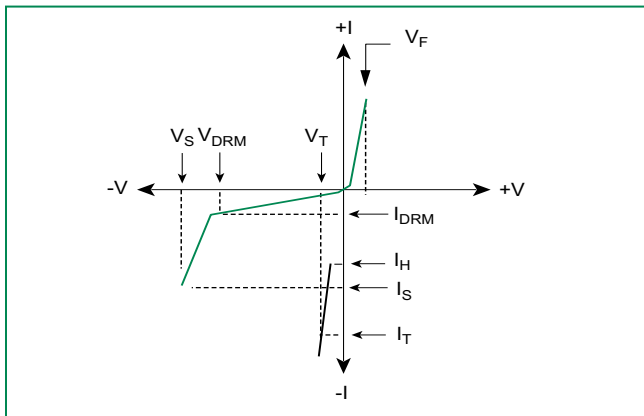
Notes:

- 1 Current waveform in μs
- 2 Voltage waveform in μs
- 3 2/10 of P0641SDLRP and P0721SDLRP is 800A min
- Peak pulse current rating (I_{PP}) is repetitive and guaranteed for the life of the product that remains in thermal equilibrium.
- I_{PP} ratings applicable over temperature range of -40°C to +85°C
- The component must initially be in thermal equilibrium with -40°C ≤ T_J ≤ +150°C

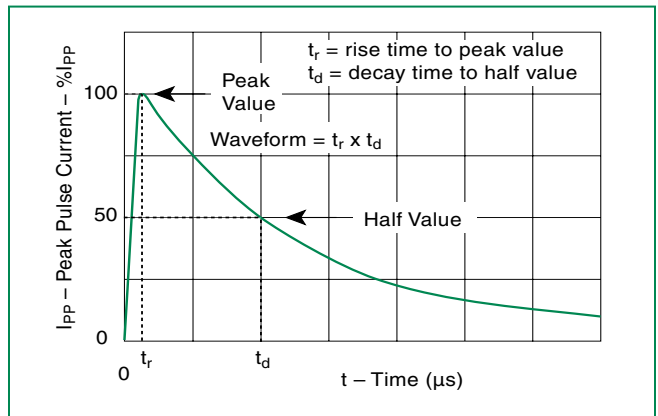
Thermal Considerations

| 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 |
| | $R_{θJA}$ | Thermal Resistance: Junction to Ambient | 90 | °C/W |

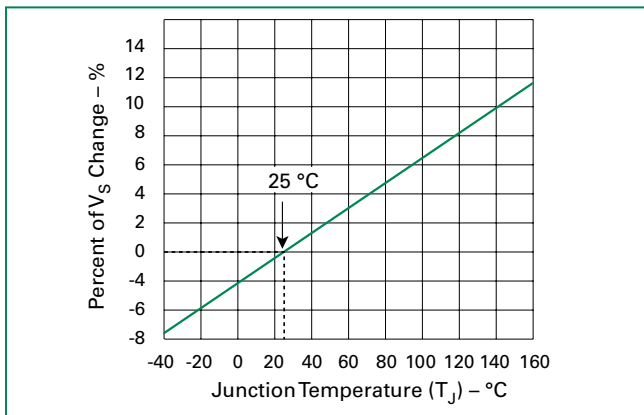
V-I Characteristics



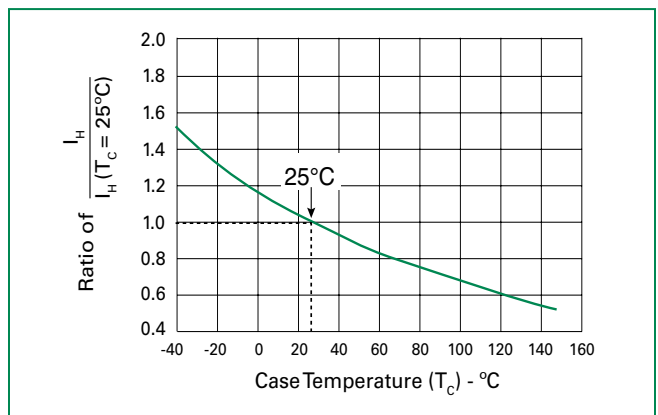
$t_r \times t_d$ Pulse Waveform



Normalized V_S Change vs. Junction Temperature

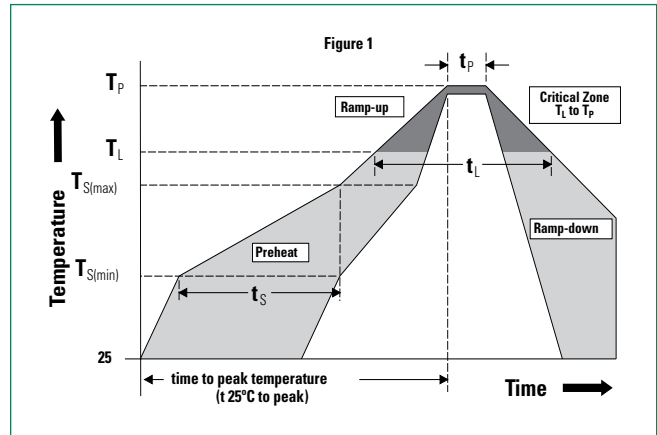


Normalized DC Holding Current vs. Case Temperature



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 PeakTemp (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 |

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-A104 |
| 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 | 85%RH, +85°C, 168 hrs., 3 reflow cycles (+260°C Peak). JEDEC-J-STD-020, Level 1 |

Additional Information



Datasheet

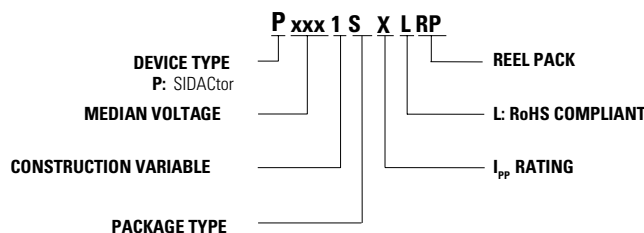


Resources



Samples

Part Numbering



Part Marking

