

HF RoHS Fixed Voltage TwinSLIC™ Series - Modified DO-214



Description

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

The series provides single port protection using fixed voltage switching devices for negative surges. All positive surges are routed through internal diodes to a ground reference.

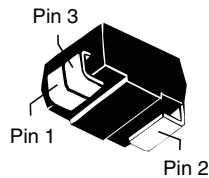
Features and Benefits

- Low voltage overshoot
- Low on-state voltage
- Does not degrade with use
- Fails short circuit when surged in excess of ratings
- Integrated diodes for positive voltage surges
- Single-port protection

Agency Approvals

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

Pinout Designation

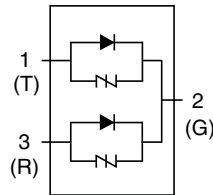


Applicable Global Standards

- 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

* Series resistance required

Schematic Symbol



Electrical Characteristics

| Part Number | Marking | V_{DRM} | V_S | I_H | I_S | I_T | V_T | V_F | Capacitance |
|-------------|---------|----------------------|----------------|--------|--------|-------|--------------------|-------|------------------------------|
| | | @ $I_{DRM} = 5\mu A$ | @ $100V/\mu s$ | | | | @ $I_T = 2.2$ Amps | | |
| | | V min | V max | mA min | mA max | A max | V max | V max | |
| | | Pin 1-2, 3-2 | | | | | | | |
| P0641CA2LRP | P62A | 58 | 77 | 120 | 800 | 2.2 | 4 | 5 | See Capacitance Values table |
| P0721CA2LRP | P72A | 65 | 88 | 120 | 800 | 2.2 | 4 | 5 | |
| P0901CA2LRP | P92A | 75 | 98 | 120 | 800 | 2.2 | 4 | 5 | |
| P1101CA2LRP | P02A | 95 | 130 | 120 | 800 | 2.2 | 4 | 5 | |
| P1301CA2LRP | P131A | 120 | 160 | 120 | 800 | 2.2 | 4 | 5 | |
| P1701CA2LRP | P17A | 160 | 200 | 120 | 800 | 2.2 | 4 | 5 | |

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

Capacitance Values

| Part Number | pF Pin 1-2 / 3-2 Tip-Ground, Ring-Ground | | pF Pin 1-3 Tip-Ring | |
|-------------|--|-----|---------------------------|-----|
| | MIN | MAX | MIN | MAX |
| | P0641CA2LRP | 40 | 70 | 20 |
| P0721CA2LRP | 35 | 70 | 20 | 45 |
| P0901CA2LRP | 30 | 65 | 20 | 40 |
| P1101CA2LRP | 25 | 55 | 15 | 35 |
| P1301CA2LRP | 25 | 45 | 15 | 30 |
| P1701CA2LRP | 25 | 40 | 15 | 25 |

Note: Off-state capacitance (C_o) is measured at 1 MHz with a 2 V bias.

Surge Ratings

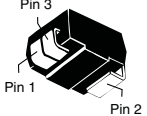
| Series | I_{PP} | | | | | | | | | I_{TSM} 50/60 Hz | di/dt |
|--------|--|--|--|--|--|--|--|--|---|-----------------------|-------|
| | 0.2x310 ¹ 0.5x700 ² | 2x10 ¹ 2x10 ² | 8x20 ¹ 1.2x50 ² | 10x160 ¹ 10x160 ² | 10x560 ¹ 10x560 ² | 5x320 ¹ 9x720 ² | 10x360 ¹ 10x360 ² | 10x1000 ¹ 10x1000 ² | 5x310 ¹ 10x700 ² | | |
| | 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 |

Notes:

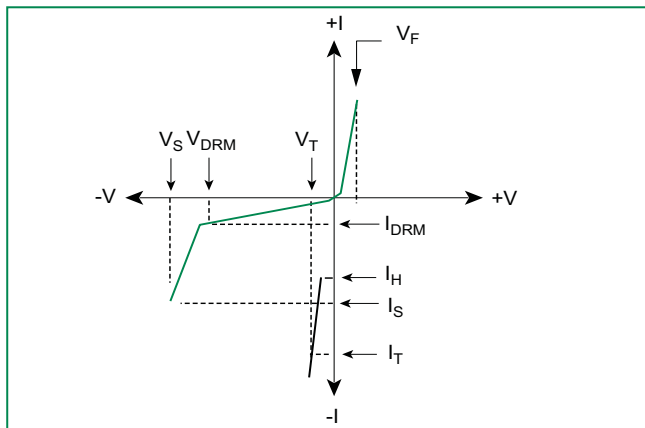
- Peak pulse current rating (I_{pp}) is repetitive and guaranteed for the life of the product.
- I_{pp} ratings applicable over temperature range of -40°C to +85°C
- The device must initially be in thermal equilibrium with -40°C ≤ T_j ≤ +150°C

1 Current waveform in μs
2 Voltage waveform in μs

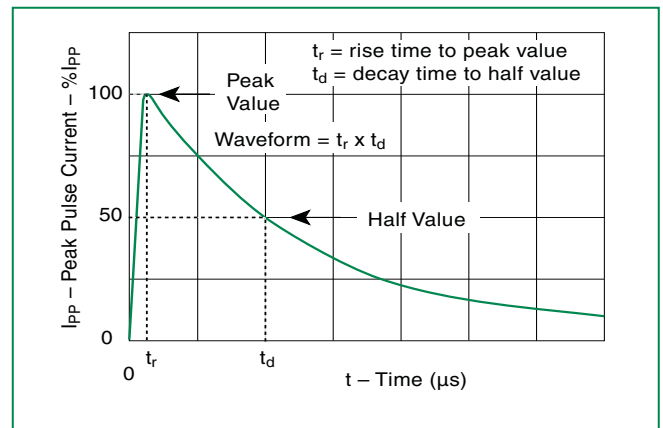
Thermal Considerations

| Package | Symbol | Parameter | Value | Unit |
|---|-----------------|---|-------------|------|
| Modified DO-214AA Pin 3  Pin 1 Pin 2 | 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 | 85 | °C/W |

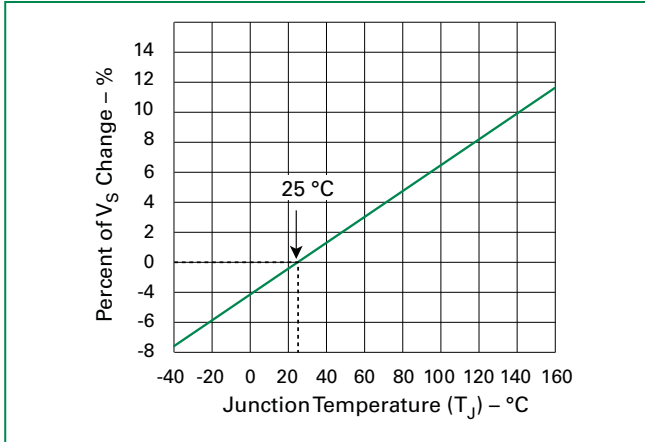
V-I Characteristics



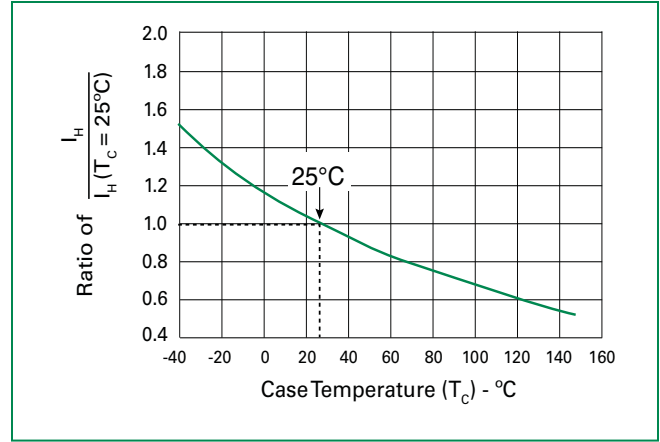
$t_r \times t_d$ Pulse Waveform



Normalized V_s Change vs. Junction Temperature

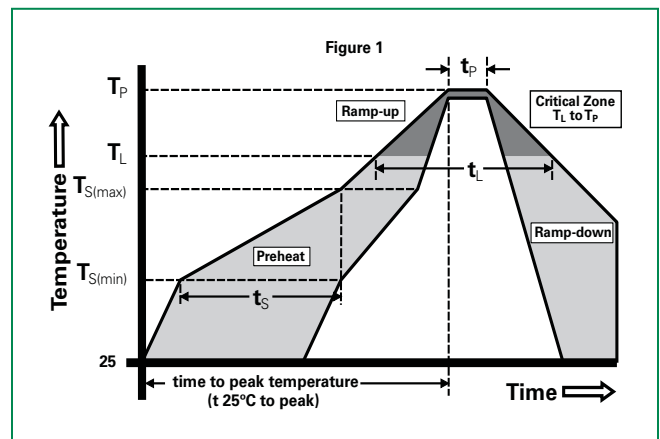


Normalized DC Holding Current vs. Case Temperature



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 |



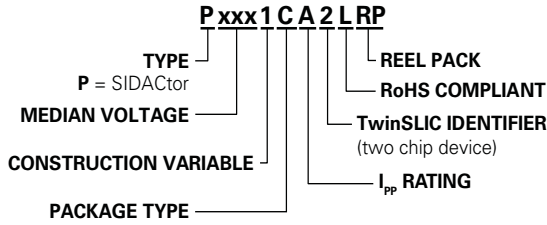
Physical Specifications

| | |
|------------------------|---|
| Lead Material | Copper Alloy |
| Terminal Finish | 100% Matte-Tin Plated |
| Body Material | UL recognized epoxy meeting flammability classification 94V-0 |

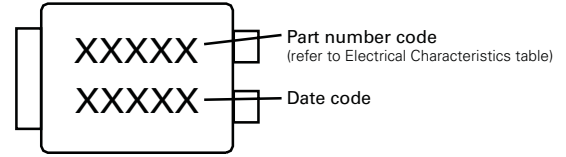
Environmental Specifications

| | |
|---|---|
| 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 |

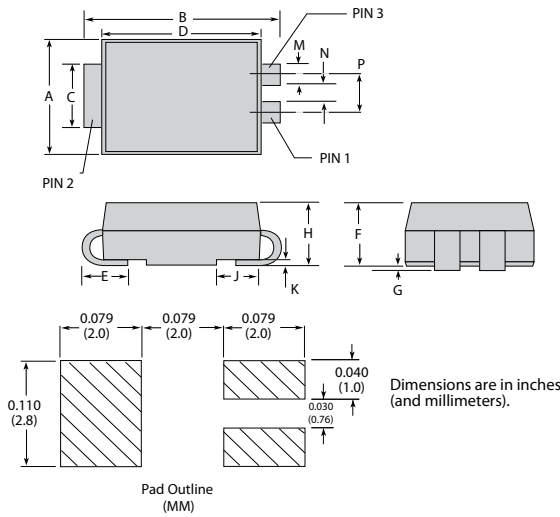
Part Numbering



Part Marking



Dimensions — Modified DO-214AA

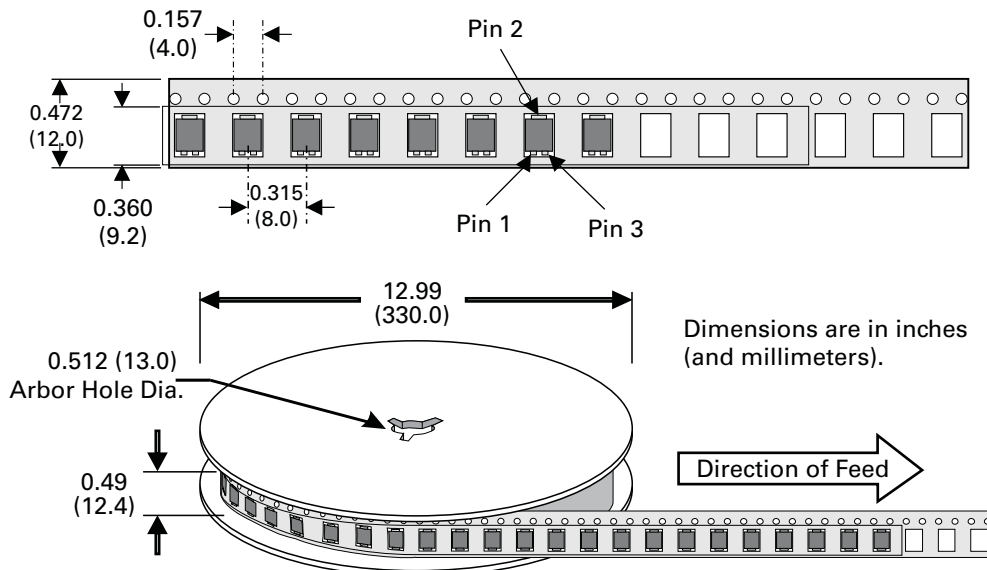


| Dimensions | Inches | | Millimeters | |
|------------|--------|-------|-------------|------|
| | Min | Max | Min | Max |
| A | 0.130 | 0.156 | 3.30 | 3.95 |
| B | 0.201 | 0.220 | 5.10 | 5.60 |
| C | 0.077 | 0.087 | 1.95 | 2.20 |
| D | 0.159 | 0.181 | 4.05 | 4.60 |
| E | 0.030 | 0.063 | 0.75 | 1.60 |
| 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 |
| M | 0.022 | 0.028 | 0.56 | 0.71 |
| N | 0.027 | 0.033 | 0.69 | 0.84 |
| P | 0.052 | 0.058 | 1.32 | 1.47 |

Packing Options

| Package Type | Description | Quantity | Added Suffix | Industry Standard |
|--------------|---|----------|--------------|-------------------|
| C | Modified DO-214AA 3-leaded Tape and Reel Pack | 2500 | RP | EIA-481-D |

Tape and Reel Specification — Modified DO-214AA





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