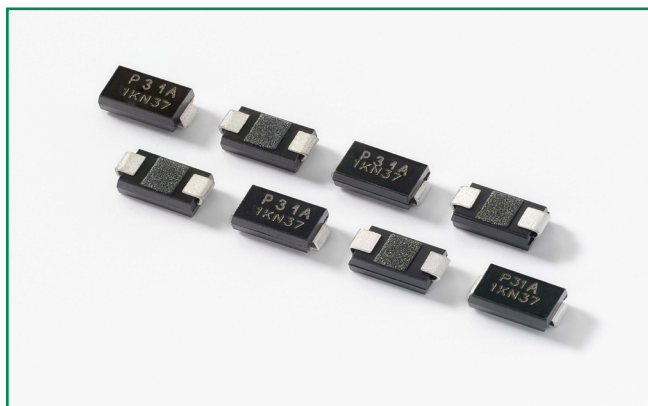


SIDACtor® Series - SMA



Agency Approvals

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

Applicable Global Standards

- TIA-968-A*
- TIA-968-B*
- ITU K.20/21/45 Enhanced Level*
- ITU K.20/21/45 Basic Level
- GR 1089 Inter-building*
- GR 1089 Intra-building
- IEC 61000-4-5 2nd edition
- YD/T 1082
- YD/T 993
- YD/T 950

* Line impedance required to pass operationally

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 | Capacitance @ 1MHz, 2V bias | |
|-------------|---------|---------------------------------|--------------------------|--------|--------|-------|---------------------------|--------------------------------|--------|
| | | V min | V max | mA min | mA max | A max | V max | pF min | pF max |
| P0080S1ALRP | P-8A | 6 | 25 | 50 | 800 | 2.2 | 4 | 25 | 35 |
| P0220S1ALRP | P22A | 15 | 32 | 50 | 800 | 2.2 | 4 | 10 | 30 |
| P0300S1ALRP | P03A | 25 | 40 | 50 | 800 | 2.2 | 4 | 10 | 30 |
| P0640S1ALRP | P06A | 58 | 77 | 150 | 800 | 2.2 | 4 | 10 | 30 |
| P1800S1ALRP | P18A | 170 | 220 | 150 | 800 | 2.2 | 4 | 10 | 30 |
| P2300S1ALRP | P23A | 190 | 260 | 150 | 800 | 2.2 | 4 | 10 | 30 |
| P2600S1ALRP | P26A | 220 | 300 | 150 | 800 | 2.2 | 4 | 10 | 30 |
| P3100S1ALRP | P31A | 275 | 350 | 150 | 800 | 2.2 | 4 | 10 | 30 |
| P3500S1ALRP | P35A | 320 | 400 | 150 | 800 | 2.2 | 4 | 10 | 30 |
| P0080S1BLRP | P-8B | 6 | 25 | 50 | 800 | 2.2 | 4 | 20 | 35 |
| P0220S1BLRP | P22B | 15 | 32 | 50 | 800 | 2.2 | 4 | 10 | 30 |
| P0300S1BLRP | P03B | 25 | 40 | 50 | 800 | 2.2 | 4 | 10 | 30 |
| P0640S1BLRP | P06B | 58 | 77 | 120 | 800 | 2.2 | 4 | 10 | 30 |
| P1800S1BLRP | P18B | 170 | 220 | 120 | 800 | 2.2 | 4 | 10 | 30 |
| P2300S1BLRP | P23B | 190 | 260 | 120 | 800 | 2.2 | 4 | 10 | 30 |
| P2600S1BLRP | P26B | 220 | 300 | 120 | 800 | 2.2 | 4 | 10 | 30 |
| P3100S1BLRP | P31B | 275 | 350 | 120 | 800 | 2.2 | 4 | 10 | 30 |
| P3500S1BLRP | P35B | 320 | 400 | 120 | 800 | 2.2 | 4 | 10 | 30 |

Notes:

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

Description

SIDACtor® SMA Thyristors Series are designed to protect baseband equipment such as phones, faxes, modems, line cards, CPE and DSL from damaging overvoltage transients.

The series provides a surface mount solution that enables equipment to comply with global regulatory standards.

Features and Benefits

- Low voltage overshoot
- Low on-state voltage
- Does not degrade surge capability after multiple surge events within limit.
- RoHS Compliant and Halogen-Free
- Fails short circuit when surged in excess of ratings
- Low capacitance
- Pb-free E3 means 2nd level interconnect is Pb-free and the terminal finish material is tin(Sn) (IPC/JEDEC J-STD-609A.01)

Schematic Symbol

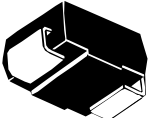


Surge Ratings

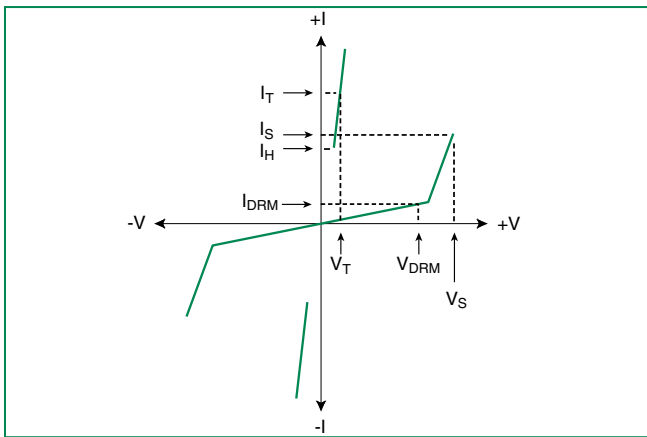
| Series | I_{PP} | | | | | | | | | I_{TSM} 50/60 Hz | di/dt |
|--------|----------------------|-------------------|---------------------|---------------------|---------------------|--------------------|---------------------|----------------------|---------------------|-----------------------|-------------|
| | 0.2/310 ¹ | 2/10 ¹ | 8/20 ¹ | 10/160 ¹ | 10/560 ¹ | 5/320 ¹ | 10/360 ¹ | 10/1000 ¹ | 5/310 ¹ | | |
| | 0.5/700 ² | 2/10 ² | 1.2/50 ² | 10/160 ² | 10/560 ² | 9/720 ² | 10/360 ² | 10/1000 ² | 10/700 ² | | |
| | A min | A min | A min | A min | A min | A min | A min | A min | A min | A min | Amps/μs max |
| A | 20 | 150 | 150 | 90 | 50 | 75 | 75 | 50 | 75 | 20 | 500 |
| B | - | 250 | 250 | 90 | 60 | 75 | 75 | 55 | 75 | 25 | 500 |

Notes:
 1 Current waveform in μs - Peak pulse current rating (I_{pp}) is repetitive and guaranteed for the life of the product that remains in thermal equilibrium.
 2 Voltage waveform in μs - 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

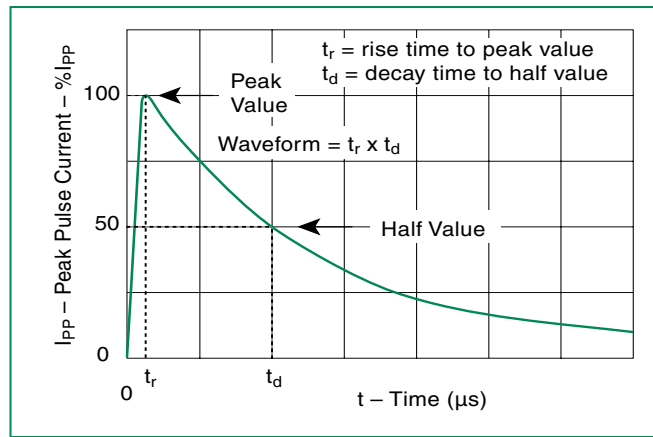
Thermal Considerations

| Package | Symbol | Parameter | Value | Unit |
|--|-----------------|---|-------------|------|
|  DO-214AC | 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 |

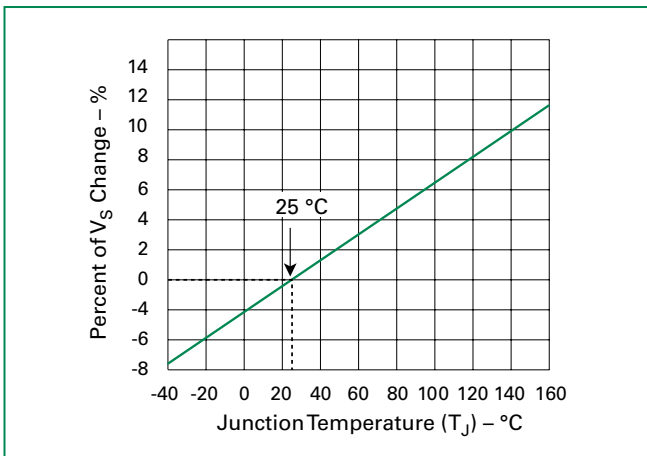
V-I Characteristics



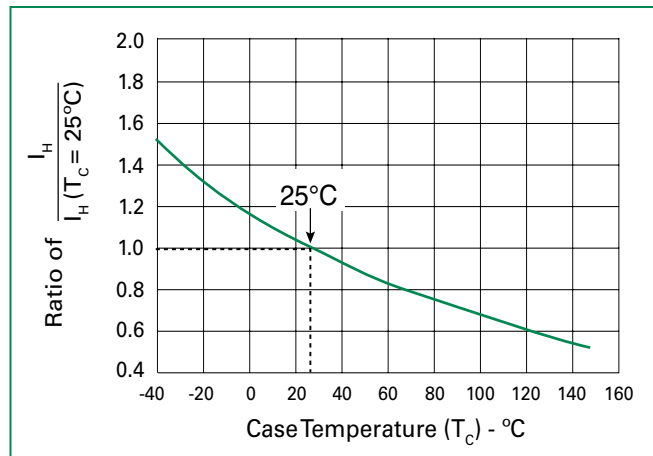
$t_r \times t_d$ Pulse Waveform



Normalized V_S Change vs. Junction Temperature

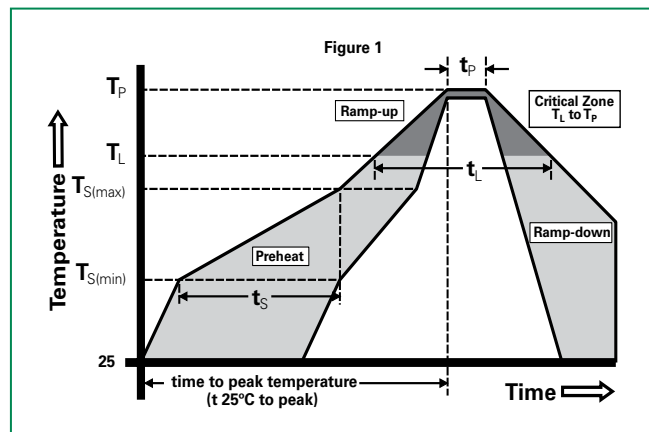


Normalized DC Holding Current vs. Case Temperature



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

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

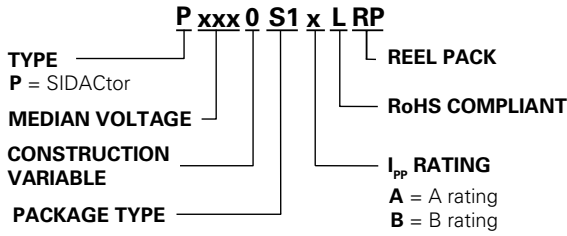


Resources

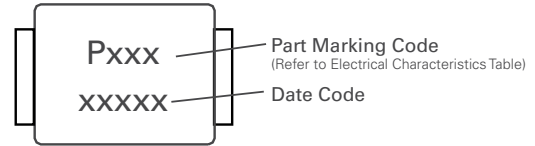


Samples

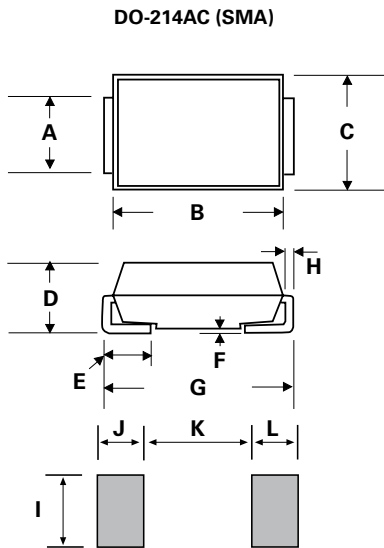
Part Numbering



Part Marking



Dimensions

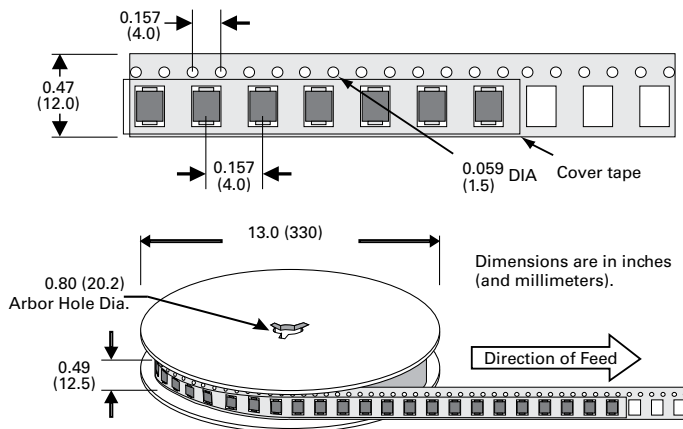


| Dimensions | Inches | | Millimeters | |
|------------|--------|-------|-------------|-------|
| | Min | Max | Min | Max |
| A | 0.049 | 0.065 | 1.250 | 1.650 |
| B | 0.157 | 0.177 | 3.990 | 4.500 |
| C | 0.100 | 0.110 | 2.540 | 2.790 |
| D | 0.078 | 0.090 | 1.980 | 2.290 |
| E | 0.030 | 0.060 | 0.780 | 1.520 |
| F | - | 0.008 | - | 0.203 |
| G | 0.194 | 0.208 | 4.930 | 5.280 |
| H | 0.006 | 0.012 | 0.152 | 0.305 |
| I | 0.070 | - | 1.800 | - |
| J | 0.082 | - | 2.100 | - |
| K | - | 0.090 | - | 2.300 |
| L | 0.082 | - | 2.100 | - |

Packing Options

| Package Type | Description | Packing Options Quantity | Added Suffix | Industry Standard |
|--------------|---|--------------------------|--------------|-------------------|
| S1 | DO-214AC Tape & Reel Pack 12mm/13" tape | 5000 | RP | EIA-481 |

Tape and Reel Specification — DO-214AC



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