

## SIDACtor Protection Thyristors

Package DO-214AA



## Description

Fast Delivery Time

SXXA,SXXB,SXXC Series SIDACtor Protection Thyristor protect telecommunications equipment such as ADSL Modems,Router, , Telephone, CCTV Camera,Digital Video Record,Video Capture Card,Twisted-pair video transmitter,CATV Splitter.....Etc.

SXXA,SXXB,SXXC Series SIDACtor Protection Thyristor are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20/21,IEC 61000-4-5, YD/T 1082,YD/T 993,YD/T 950,TIA-968-A ,TIA-968-B



## Features

Compared to surge suppression using other technologies, SXXA,SXXB,SXXC Series devices offer absolute surge protection regardless of the surge current available and the rate of applied voltage (dv/dt). SXXA,SXXB,SXXC Series devices:

- 100% Lead-Free(RoHs Compliant )
- Cannot be damaged by voltage
- Eliminate hysteresis and heat dissipation typically found with clamping devices
- Eliminate voltage overshoot caused by fast-rising transients
- Are non-degenerative
- Have low capacitance, making them ideal for high-speed transmission equipment

## Electrical Characteristics

| Parameter   | Definition                                                                                               |
|-------------|----------------------------------------------------------------------------------------------------------|
| $V_{DRM}$   | <b>Peak Off-state Voltage</b> — maximum voltage that can be applied while maintaining off state          |
| $V_S$       | <b>Switching Voltage</b> — maximum voltage prior to switching to on state                                |
| $I_H$       | <b>Holding Current</b> — minimum current required to maintain on state                                   |
| $I_S$       | <b>Switching Current</b> — maximum current required to switch to on state                                |
| $I_T$       | <b>On-state Current</b> — maximum rated continuous on-state current                                      |
| $V_T$       | <b>On-state Voltage</b> — maximum voltage measured at rated on-state current                             |
| Capacitance | <b>Off-state Capacitance</b> — typical capacitance measured in off state                                 |
| $I_{DRM}$   | <b>Leakage Current</b> — maximum peak off-state current measured at $V_{DRM}$                            |
| $I_{PP}$    | <b>Peak Pulse Current</b> — maximum rated peak impulse current                                           |
| $I_{TSM}$   | <b>Peak One-cycle Surge Current</b> — maximum rated one-cycle AC current                                 |
| di/dt       | <b>Rate of Rise of Current</b> — maximum rated value of the acceptable rate of rise in current over time |

### Electrical Characteristics



| Part Number | V <sub>DRM</sub><br>@I <sub>DRM</sub> =5 μ A | V <sub>S</sub><br>@100V/μs | I <sub>H</sub>    | I <sub>S</sub>    | I <sub>T</sub>   | V <sub>T</sub><br>@I <sub>T</sub> =2.2Amps | Capacitance<br>@1MHz,2V bias |
|-------------|----------------------------------------------|----------------------------|-------------------|-------------------|------------------|--------------------------------------------|------------------------------|
|             | V <sub>min</sub>                             | V <sub>max</sub>           | mA <sub>min</sub> | mA <sub>max</sub> | A <sub>max</sub> | V <sub>max</sub>                           | pF                           |
| S008A       | 6                                            | 25                         | 50                | 800               | 2.2              | 4                                          | 45                           |
| S03A        | 25                                           | 40                         | 50                | 800               | 2.2              | 4                                          | 45                           |
| S06A        | 58                                           | 77                         | 150               | 800               | 2.2              | 4                                          | 35                           |
| S07A        | 65                                           | 88                         | 150               | 800               | 2.2              | 4                                          | 50                           |
| S09A        | 75                                           | 98                         | 150               | 800               | 2.2              | 4                                          | 40                           |
| S11A        | 90                                           | 130                        | 150               | 800               | 2.2              | 4                                          | 35                           |
| S13A        | 120                                          | 160                        | 150               | 800               | 2.2              | 4                                          | 35                           |
| S15A        | 140                                          | 180                        | 150               | 800               | 2.2              | 4                                          | 40                           |
| S18A        | 170                                          | 220                        | 150               | 800               | 2.2              | 4                                          | 40                           |
| S21A        | 180                                          | 240                        | 150               | 800               | 2.2              | 4                                          | 40                           |
| S23A        | 190                                          | 260                        | 150               | 800               | 2.2              | 4                                          | 45                           |
| S26A        | 220                                          | 300                        | 150               | 800               | 2.2              | 4                                          | 35                           |
| S31A        | 275                                          | 350                        | 150               | 800               | 2.2              | 4                                          | 35                           |
| S35A        | 320                                          | 400                        | 150               | 800               | 2.2              | 4                                          | 30                           |
| S008B       | 6                                            | 25                         | 50                | 800               | 2.2              | 4                                          | 60                           |
| S03B        | 25                                           | 40                         | 50                | 800               | 2.2              | 4                                          | 65                           |
| S06B        | 58                                           | 77                         | 150               | 800               | 2.2              | 4                                          | 45                           |
| S07B        | 65                                           | 88                         | 150               | 800               | 2.2              | 4                                          | 45                           |
| S09B        | 75                                           | 98                         | 150               | 800               | 2.2              | 4                                          | 40                           |
| S11B        | 90                                           | 130                        | 150               | 800               | 2.2              | 4                                          | 40                           |
| S13B        | 120                                          | 160                        | 150               | 800               | 2.2              | 4                                          | 40                           |
| S15B        | 140                                          | 180                        | 150               | 800               | 2.2              | 4                                          | 35                           |
| S18B        | 170                                          | 220                        | 150               | 800               | 2.2              | 4                                          | 65                           |
| S21B        | 180                                          | 240                        | 150               | 800               | 2.2              | 4                                          | 60                           |

## Electrical Characteristics

continued



| Part Number | V <sub>DRM</sub><br>@I <sub>DRM</sub> =5 μ A | V <sub>S</sub><br>@100V/μs | I <sub>H</sub>    | I <sub>S</sub>    | I <sub>T</sub>   | V <sub>T</sub><br>@I <sub>T</sub> =2.2Amps | Capacitance<br>@1MHz,2V bias |
|-------------|----------------------------------------------|----------------------------|-------------------|-------------------|------------------|--------------------------------------------|------------------------------|
|             | V <sub>min</sub>                             | V <sub>max</sub>           | mA <sub>min</sub> | mA <sub>max</sub> | A <sub>max</sub> | V <sub>max</sub>                           | pF                           |
| S23B        | 190                                          | 260                        | 150               | 800               | 2.2              | 4                                          | 50                           |
| S26B        | 220                                          | 300                        | 150               | 800               | 2.2              | 4                                          | 45                           |
| S31B        | 275                                          | 350                        | 150               | 800               | 2.2              | 4                                          | 45                           |
| S35B        | 320                                          | 400                        | 150               | 800               | 2.2              | 4                                          | 40                           |
| S008C       | 6                                            | 25                         | 50                | 800               | 2.2              | 4                                          | 75                           |
| S03C        | 25                                           | 40                         | 50                | 800               | 2.2              | 4                                          | 75                           |
| S06C        | 58                                           | 77                         | 150               | 800               | 2.2              | 4                                          | 55                           |
| S07C        | 65                                           | 88                         | 150               | 800               | 2.2              | 4                                          | 60                           |
| S09C        | 75                                           | 98                         | 150               | 800               | 2.2              | 4                                          | 65                           |
| S11C        | 90                                           | 130                        | 150               | 800               | 2.2              | 4                                          | 55                           |
| S13C        | 120                                          | 160                        | 150               | 800               | 2.2              | 4                                          | 60                           |
| S15C        | 140                                          | 180                        | 150               | 800               | 2.2              | 4                                          | 50                           |
| S18C        | 170                                          | 220                        | 150               | 800               | 2.2              | 4                                          | 55                           |
| S21C        | 180                                          | 240                        | 150               | 800               | 2.2              | 4                                          | 85                           |
| S23C        | 190                                          | 260                        | 150               | 800               | 2.2              | 4                                          | 65                           |
| S26C        | 220                                          | 300                        | 150               | 800               | 2.2              | 4                                          | 65                           |
| S31C        | 275                                          | 350                        | 150               | 800               | 2.2              | 4                                          | 55                           |
| S35C        | 320                                          | 400                        | 150               | 800               | 2.2              | 4                                          | 50                           |
| S45C        | 400                                          | 540                        | 150               | 800               | 2.2              | 4                                          | 45                           |

## Notes:

-All measurements are made at an ambient temperature of 25°C .I<sub>pp</sub> applies to -40°C through +85°C temperature range .

-Off-state capacitance(C<sub>o</sub>) is typical value.

\*For surge ratings,see next page.

### Surge Ratings

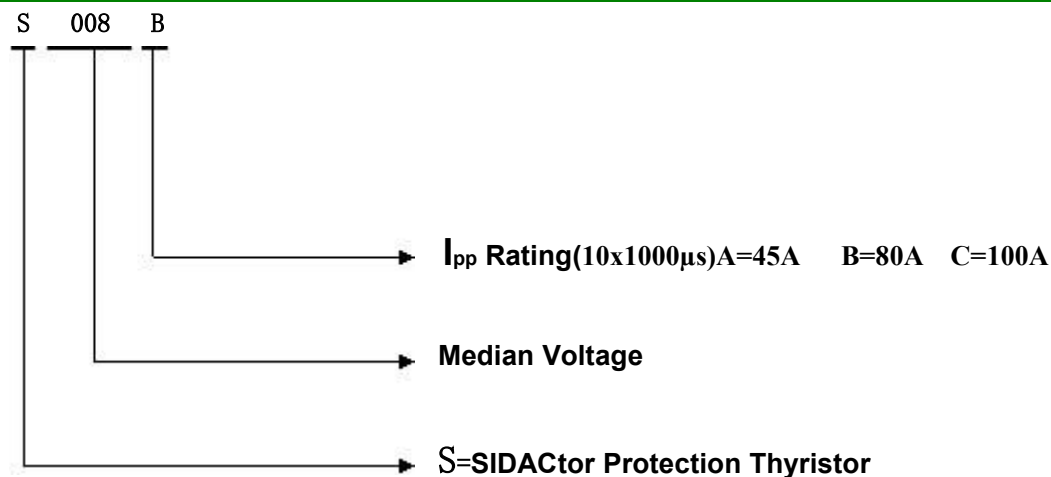


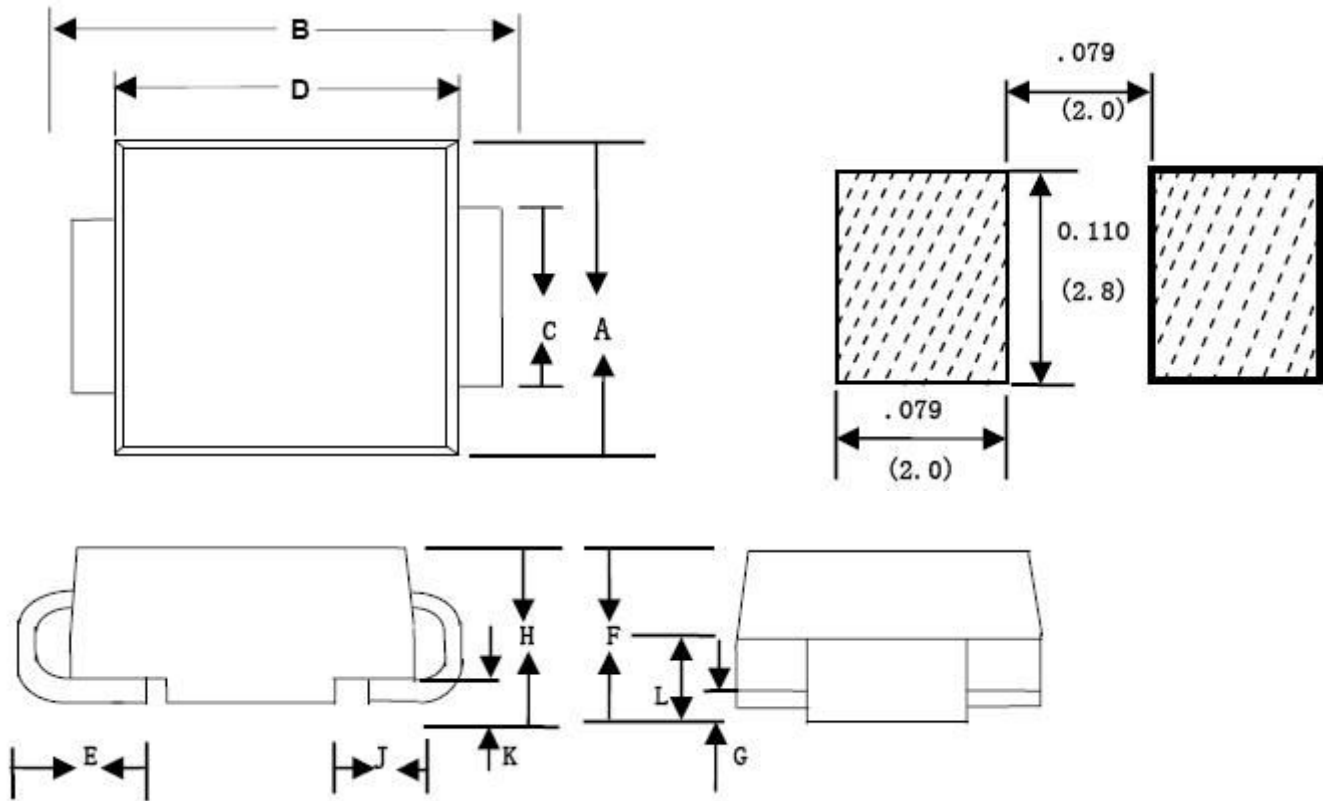
|        | $I_{pp}$<br>2x10 $\mu$ s | $I_{pp}$<br>8x20 $\mu$ s | $I_{pp}$<br>10x160 $\mu$ s | $I_{pp}$<br>10x560 $\mu$ s | $I_{pp}$<br>10x1000 $\mu$ s | $I_{pp}$<br>5x320 $\mu$ s | $I_{pp}$<br>5x310 $\mu$ s | $I_{pp}$<br>10x360 $\mu$ s | $I_{TSM}$<br>50/60Hz | di/dt         |
|--------|--------------------------|--------------------------|----------------------------|----------------------------|-----------------------------|---------------------------|---------------------------|----------------------------|----------------------|---------------|
| Series | Amps                     | Amps                     | Amps                       | Amps                       | Amps                        | Amps                      | Amps                      | Amps                       | Amps                 | Amps/ $\mu$ s |
| A      | 150                      | 150                      | 90                         | 50                         | 45                          | 75                        | 75                        | 75                         | 20                   | 500           |
| B      | 250                      | 250                      | 150                        | 100                        | 80                          | 100                       | 100                       | 125                        | 25                   | 500           |
| C      | 500                      | 400                      | 200                        | 150                        | 100                         | 200                       | 200                       | 175                        | 30                   | 500           |

### Thermal Considerations

| Package                                                                            | DO-214AA/SMB | Symbol          | Parameter                              | Value       | Unit  |
|------------------------------------------------------------------------------------|--------------|-----------------|----------------------------------------|-------------|-------|
|  |              | $T_J$           | Operating Junction Temperature Range   | -40 to +150 | °C    |
|                                                                                    |              | $T_S$           | Storage Temperature Range              | -65 to +150 | °C    |
|                                                                                    |              | $R_{\theta JA}$ | Junction to Ambient on printed circuit | 90          | °C /W |

### Description of Part Number





| Dimension | Inches |       | Millimeters |      |
|-----------|--------|-------|-------------|------|
|           | Min    | Max   | Min         | Max  |
| A         | 0.134  | 0.155 | 3.40        | 3.94 |
| B         | 0.205  | 0.22  | 5.21        | 5.59 |
| C         | 0.075  | 0.083 | 1.90        | 2.11 |
| D         | 0.166  | 0.185 | 4.22        | 4.70 |
| E         | 0.036  | 0.056 | 0.91        | 1.42 |
| F         | 0.073  | 0.087 | 1.85        | 2.2  |
| G         | 0.002  | 0.008 | 0.05        | 0.20 |
| H         | 0.077  | 0.094 | 1.95        | 2.40 |
| J         | 0.043  | 0.053 | 1.09        | 1.35 |
| K         | 0.008  | 0.014 | 0.20        | 0.35 |
| L         | 0.039  | 0.049 | 0.99        | 1.24 |

Packing Options

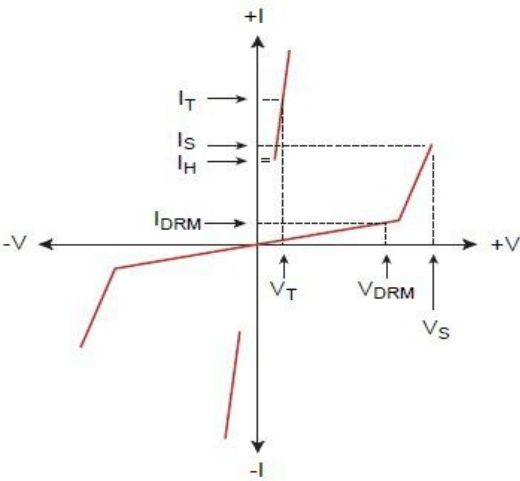
SGS

RoHS

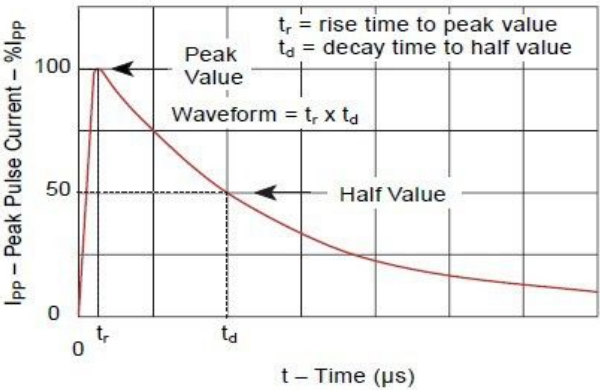
| Package Type | Description        | Packing Quantity | Industry Standard |
|--------------|--------------------|------------------|-------------------|
| A,B,C        | DO-214AA Reel Pack | 2500 PCS         | EIA-481-D         |

Characteristics Curve

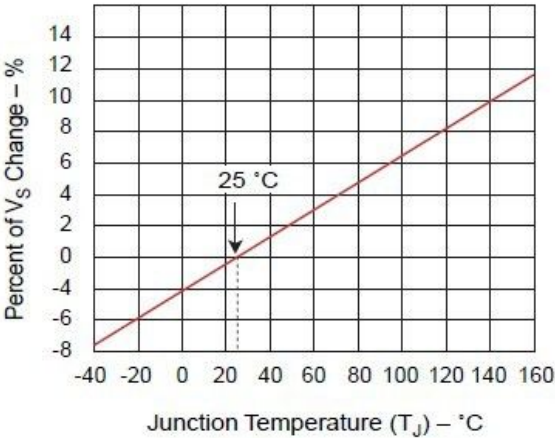
V-I Characteristics



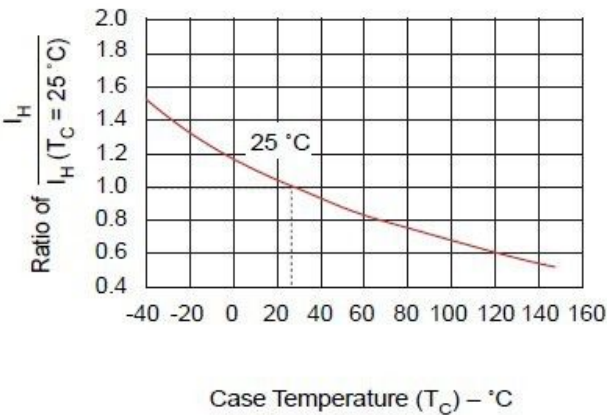
Tr x Td Pulse Waveform



Normalized Vs Change Versus Junction Temperature



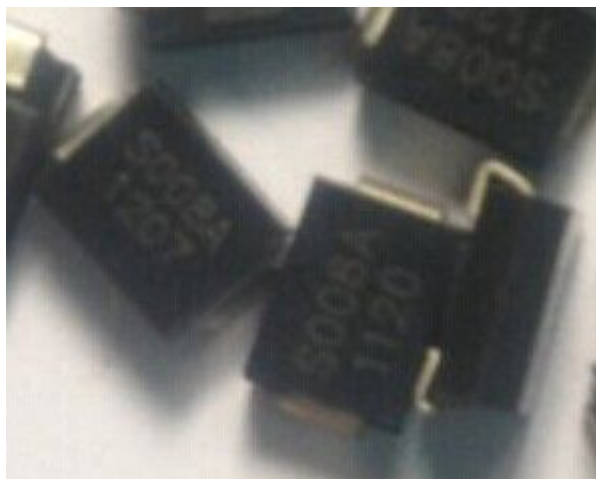
Normalized DC Holding Current Versus Case Temperature



## Sample pictures

S008A

**Fast Delivery Time**



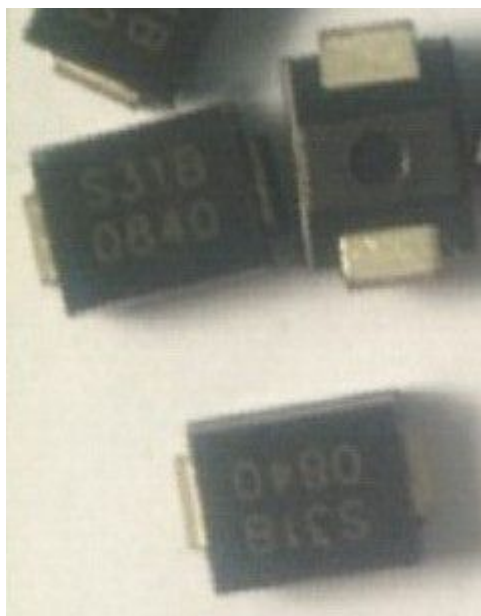
S008B

**Fast Delivery Time**



S35B

**Fast Delivery Time**



S06C

**Fast Delivery Time**

