

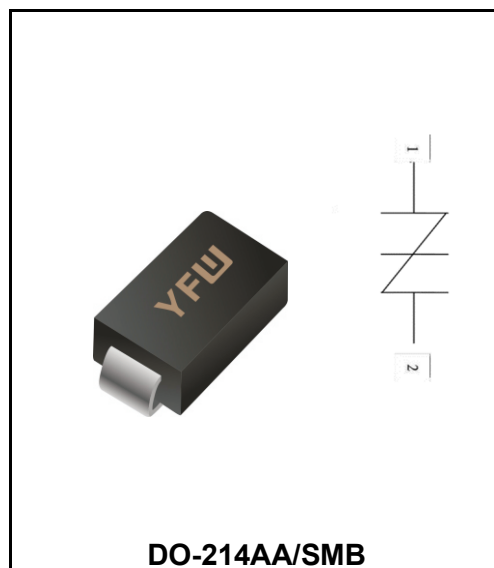
## Thyristors Surge Protection Device

### Features

- ♦ For surface mounted applications to optimize board space
- ♦ Low profile package
- ♦ Bidirectional crowbar protection
- ♦ Low leakage current :  $I = 5\mu A$  max
- ♦ Low on-state voltage
- ♦ Solid-state silicon technology

### Application

- ♦ TIA-968-A/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 2nd edition
- ♦ YD/T 1082 YD/T 993 YD/T 950



### Absolute Maximum Ratings (TA=25°C, RH=45%-75%, unless otherwise noted)

| Parameter                            | Symbol | Value       | Unit |
|--------------------------------------|--------|-------------|------|
| Storage temperature range            | Tstg   | -60 to +150 | °C   |
| Operating junction temperature range | Tj     | -40 to +150 | °C   |

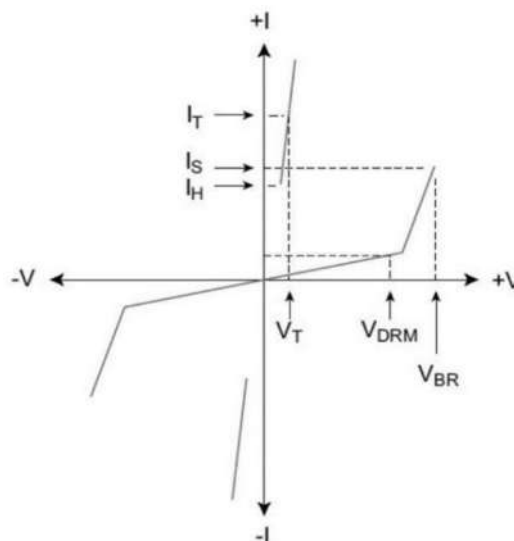
### Part Number Code

Series code: P SIDACTor → **P** **XXXX** **S** **B** ← Surge: 10/700uS 40Ω 4KV

$\uparrow$   $\uparrow$   
**V<sub>DRM</sub>** **SMB**

### Electrical Parameters & V-I Curve

| Symbol                 | Parameter              |
|------------------------|------------------------|
| <b>V<sub>DRM</sub></b> | Peak off-state voltage |
| <b>I<sub>DRM</sub></b> | Off-state current      |
| <b>V<sub>S</sub></b>   | Switching voltage      |
| <b>I<sub>S</sub></b>   | Switching current      |
| <b>V<sub>T</sub></b>   | On-state voltage       |
| <b>I<sub>T</sub></b>   | On-state current       |
| <b>I<sub>H</sub></b>   | Holding current        |
| <b>C<sub>O</sub></b>   | Off-state capacitance  |



**Electrical Characteristics (TA=25°C)**

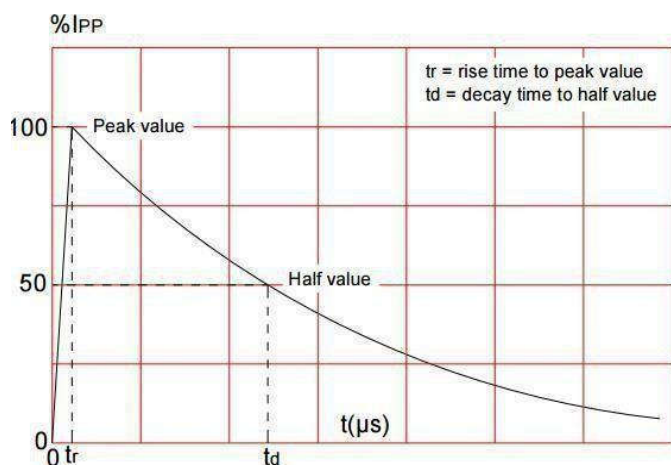
| Type    | V <sub>DRM</sub> | I <sub>DRM</sub> | V <sub>S</sub> | I <sub>S</sub> | V <sub>T</sub> | I <sub>T</sub> | C <sub>o</sub> | I <sub>H</sub> |
|---------|------------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|
|         | Min.             | Max.             | Max.           | Max.           | Max.           |                | Typ.           | Min.           |
|         | V                | uA               | V              | mA             | V              | A              | pF             | mA             |
| P0080SB | 6                | 5                | 25             | 800            | 4              | 2.2            | 80             | 20             |
| P0300SB | 25               | 5                | 40             | 800            | 4              | 2.2            | 100            | 50             |
| P0640SB | 58               | 5                | 77             | 800            | 4              | 2.2            | 80             | 100            |
| P0720SB | 65               | 5                | 88             | 800            | 4              | 2.2            | 80             | 100            |
| P0900SB | 75               | 5                | 98             | 800            | 4              | 2.2            | 75             | 100            |
| P1100SB | 90               | 5                | 130            | 800            | 4              | 2.2            | 75             | 100            |
| P1300SB | 120              | 5                | 160            | 800            | 4              | 2.2            | 75             | 100            |
| P1500SB | 140              | 5                | 180            | 800            | 4              | 2.2            | 70             | 100            |
| P1800SB | 170              | 5                | 220            | 800            | 4              | 2.2            | 70             | 100            |
| P2000SB | 180              | 5                | 220            | 800            | 4              | 2.2            | 70             | 100            |
| P2300SB | 190              | 5                | 260            | 800            | 4              | 2.2            | 65             | 100            |
| P2600SB | 220              | 5                | 300            | 800            | 4              | 2.2            | 65             | 100            |
| P3100SB | 275              | 5                | 350            | 800            | 4              | 2.2            | 60             | 100            |
| P3500SB | 320              | 5                | 400            | 800            | 4              | 2.2            | 60             | 100            |
| P4000SB | 360              | 5                | 460            | 800            | 4              | 2.2            | 60             | 100            |
| P4200SB | 390              | 5                | 500            | 800            | 4              | 2.2            | 60             | 100            |
| P4500SB | 420              | 5                | 540            | 800            | 4              | 2.2            | 60             | 100            |
| P5000SB | 500              | 5                | 600            | 800            | 4              | 2.2            | 60             | 100            |

**Notes:**

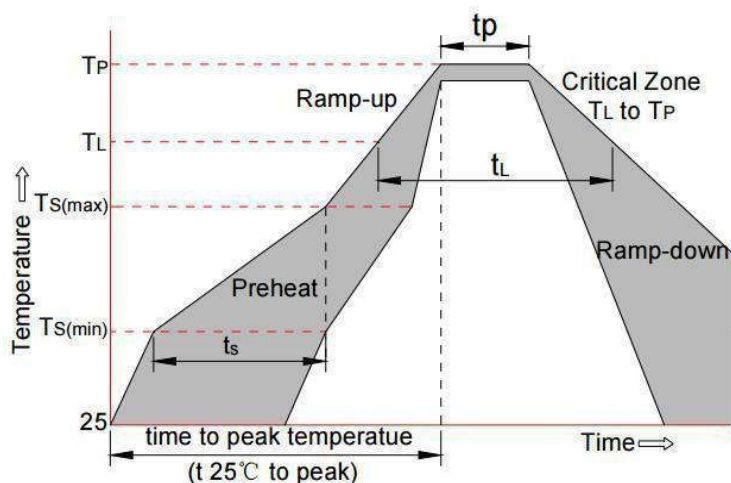
- All measurements are made at an ambient temperature of 25°C. IPP applies to -40°C through +85°C temperature range.
- Off-state capacitance (CO) is measured at 1 MHz with a 2 V bias and is typical value.

**Ratings And V-I Characteristics Curves (TA=25°C, unless otherwise noted)**

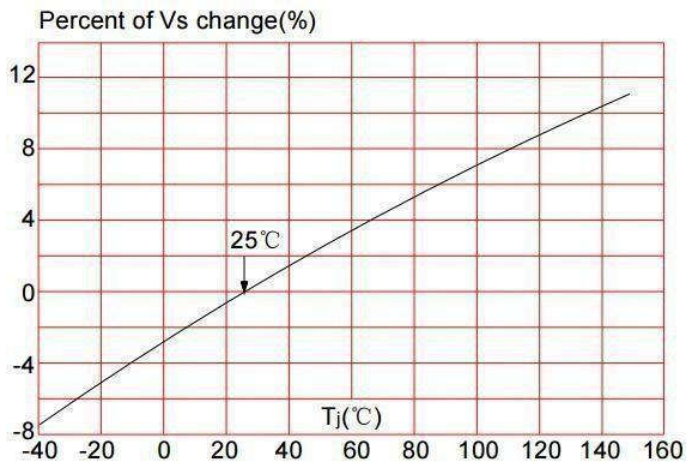
**FIG.1: tr × td pulse waveform**



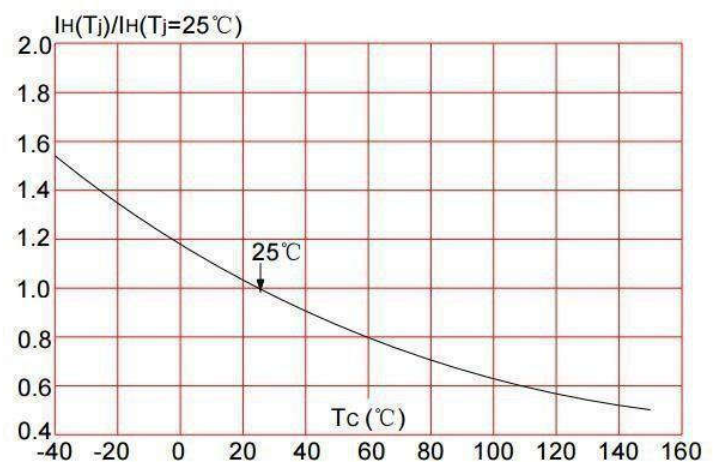
**FIG.2: Reflow condition**



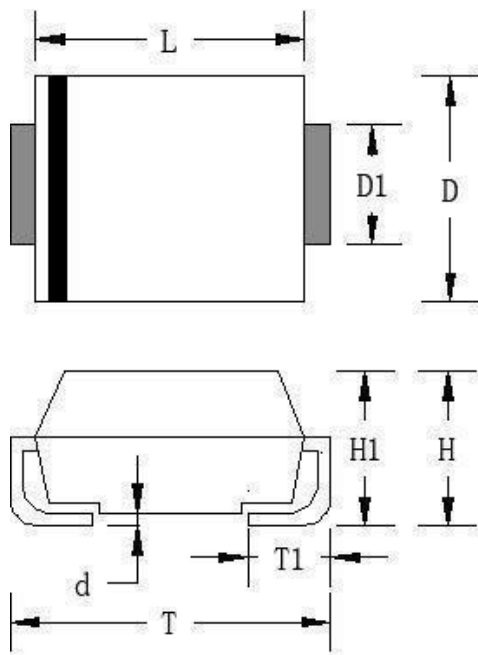
**FIG.3:** Normalized  $V_s$  change vs. junction temperature



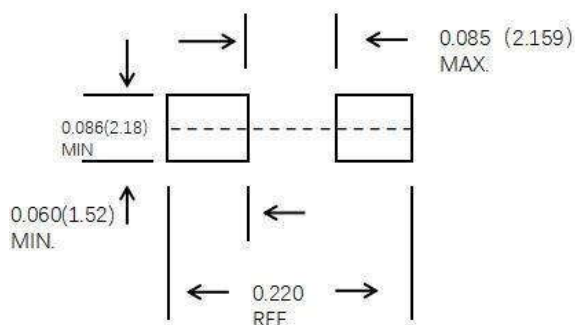
**FIG.4:** Normalized DC holding current vs. case temperature



### Package Dimension



| Ref.<br>(mm) | Millimeters |      | Inches. |       |
|--------------|-------------|------|---------|-------|
|              | Min.        | Max. | Min.    | Max.  |
| D            | 3.4         | 3.94 | 1.33    | 1.55  |
| D1           | 1.9         | 2.1  | 0.074   | 0.083 |
| L            | 4.22        | 4.7  | 0.166   | 0.185 |
| T            | 5.21        | 5.59 | 0.205   | 0.22  |
| T1           | 0.9         | 1.42 | 0.035   | 0.056 |
| d            | 0           | 0.23 | 0       | 0.009 |
| H            | 1.95        | 2.6  | 0.076   | 0.102 |
| H1           | 2           | 2.34 | 0.078   | 0.092 |



### Ordering Information

| Out line | Reel<br>(pcs) | Per carton<br>(pcs) | Reel diameters<br>(mm) |
|----------|---------------|---------------------|------------------------|
| Taping   | 3K            | 48K                 | 330                    |