

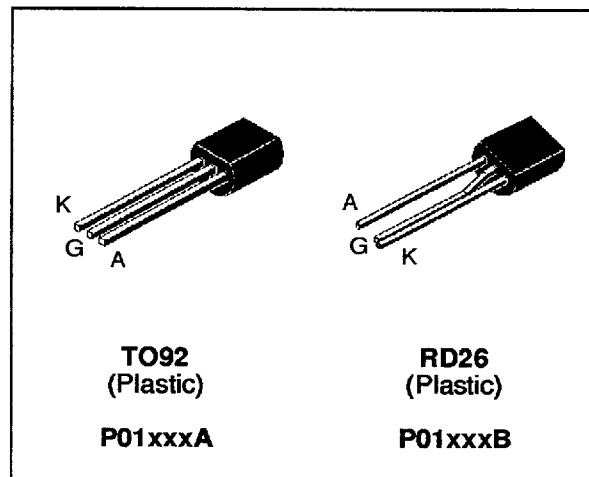
## SENSITIVE GATE SCR

### FEATURES

- $I_{T(RMS)} = 0.8A$
- $V_{DRM} = 100V$  to  $400V$
- Low  $I_{GT} < 1\mu A$  max to  $< 200\mu A$

### DESCRIPTION

The P01xxxA/B series of SCRs uses a high performance planar PNP technology. These parts are intended for general purpose applications where low gate sensitivity is required.



### ABSOLUTE RATINGS (limiting values)

| Symbol             | Parameter                                                                               |                    | Value                      | Unit       |
|--------------------|-----------------------------------------------------------------------------------------|--------------------|----------------------------|------------|
| $I_{T(RMS)}$       | RMS on-state current<br>(180° conduction angle)                                         | $T_I = 55^\circ C$ | 0.8                        | A          |
| $I_{T(AV)}$        | Mean on-state current<br>(180° conduction angle)                                        | $T_I = 55^\circ C$ | 0.5                        | A          |
| $I_{TSM}$          | Non repetitive surge peak on-state current<br>( $T_j$ initial = $25^\circ C$ )          | $t_p = 8.3$ ms     | 8                          | A          |
|                    |                                                                                         | $t_p = 10$ ms      | 7                          |            |
| $I^2 t$            | $I^2 t$ Value for fusing                                                                | $t_p = 10$ ms      | 0.24                       | $A^2 s$    |
| $di/dt$            | Critical rate of rise of on-state current<br>$I_G = 10$ mA $di_G/dt = 0.1$ A/ $\mu s$ . |                    | 30                         | A/ $\mu s$ |
| $T_{stg}$<br>$T_j$ | Storage and operating junction temperature range                                        |                    | - 40, + 150<br>- 40, + 125 | $^\circ C$ |
| $T_I$              | Maximum lead temperature for soldering during 10s at 2mm from case                      |                    | 260                        | $^\circ C$ |

| Symbol                 | Parameter                                                                    | Voltage |     |     |     | Unit |
|------------------------|------------------------------------------------------------------------------|---------|-----|-----|-----|------|
|                        |                                                                              | A       | B   | C   | D   |      |
| $V_{DRM}$<br>$V_{RRM}$ | Repetitive peak off-state voltage<br>$T_j = 125^\circ C$ $R_{GK} = 1K\Omega$ | 100     | 200 | 300 | 400 | V    |

P01xxxA/B

# THERMAL RESISTANCES

| Symbol   | Parameter                | Value | Unit |
|----------|--------------------------|-------|------|
| Rth(j-a) | Junction to ambient      | 150   | °C/W |
| Rth(j-l) | Junction to leads for DC | 80    | °C/W |

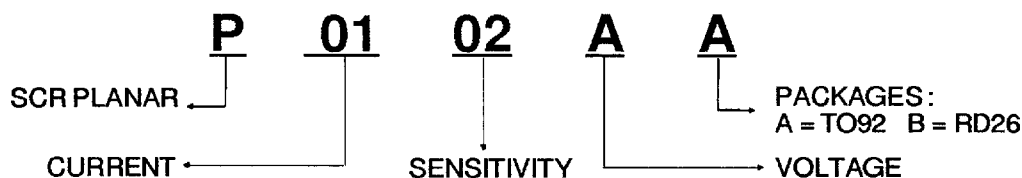
## GATE CHARACTERISTICS (maximum values)

$P_{G(AV)} = 0.1\text{ W}$   $P_{GM} = 2\text{ W}$  ( $t_p = 20\text{ }\mu\text{s}$ )  $I_{GM} = 1\text{ A}$  ( $t_p = 20\text{ }\mu\text{s}$ )

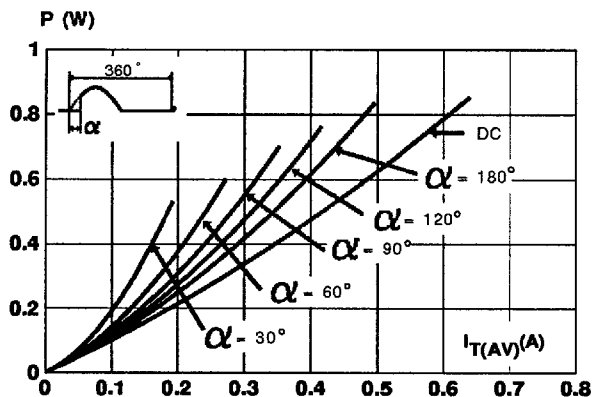
## ELECTRICAL CHARACTERISTICS

| Symbol                 | Test Conditions                                                                                                                                                                                       |                           |     |      | Sensitivity |    |     |    |     | Unit             |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----|------|-------------|----|-----|----|-----|------------------|
|                        |                                                                                                                                                                                                       |                           |     |      | 02          | 09 | 11  | 15 | 18  |                  |
| $I_{GT}$               | $V_D = 12\text{ V (DC)}$ $R_L = 140\Omega$                                                                                                                                                            | $T_j = 25^\circ\text{C}$  | MIN |      |             |    | 4   | 15 | 0.5 | $\mu\text{A}$    |
|                        |                                                                                                                                                                                                       |                           | MAX | 200  | 1           | 25 | 50  | 5  |     |                  |
| $V_{GT}$               | $V_D = 12\text{ V (DC)}$ $R_L = 140\Omega$                                                                                                                                                            | $T_j = 25^\circ\text{C}$  | MAX | 0.8  |             |    |     |    |     | V                |
| $V_{GD}$               | $V_D = V_{DRM}$ $R_L = 3.3\text{ k}\Omega$<br>$R_{GK} = 1\text{ K}\Omega$                                                                                                                             | $T_j = 125^\circ\text{C}$ | MIN | 0.1  |             |    |     |    |     | V                |
| $V_{RGM}$              | $I_{RG} = 10\mu\text{A}$                                                                                                                                                                              | $T_j = 25^\circ\text{C}$  | MIN | 8    |             |    |     |    |     | V                |
| $t_{gd}$               | $V_D = V_{DRM}$ $I_{TM} = 3 \times I_{T(AV)}$<br>$dI_G/dt = 0.1\text{ A}/\mu\text{s}$ $I_G = 10\text{ mA}$                                                                                            | $T_j = 25^\circ\text{C}$  | TYP | 0.5  |             |    |     |    |     | $\mu\text{s}$    |
| $I_H$                  | $I_T = 50\text{ mA}$ $R_{GK} = 1\text{ K}\Omega$                                                                                                                                                      | $T_j = 25^\circ\text{C}$  | MAX | 5    |             |    |     |    |     | mA               |
| $I_L$                  | $I_G = 1\text{ mA}$ $R_{GK} = 1\text{ K}\Omega$                                                                                                                                                       | $T_j = 25^\circ\text{C}$  | MAX | 6    |             |    |     |    |     | mA               |
| $V_{TM}$               | $I_{TM} = 1.6\text{ A}$ $t_p = 380\mu\text{s}$                                                                                                                                                        | $T_j = 25^\circ\text{C}$  | MAX | 1.93 |             |    |     |    |     | V                |
| $I_{DRM}$<br>$I_{RRM}$ | $V_D = V_{DRM}$ $R_{GK} = 1\text{ K}\Omega$<br>$V_R = V_{RRM}$                                                                                                                                        | $T_j = 25^\circ\text{C}$  | MAX | 1    |             |    |     |    |     | $\mu\text{A}$    |
|                        |                                                                                                                                                                                                       | $T_j = 125^\circ\text{C}$ | MAX | 100  |             |    |     |    |     | $\mu\text{A}$    |
| $dV/dt$                | $V_D = 67\%V_{DRM}$ $R_{GK} = 1\text{ K}\Omega$                                                                                                                                                       | $T_j = 125^\circ\text{C}$ | MIN | 25   | 25          | 50 | 100 | 30 |     | V/ $\mu\text{s}$ |
| $t_q$                  | $I_{TM} = 3 \times I_{T(AV)}$ $V_R = 35\text{ V}$<br>$dI/dt = 10\text{ A}/\mu\text{s}$ $t_p = 100\mu\text{s}$<br>$dV/dt = 10\text{ V}/\mu\text{s}$<br>$V_D = 67\%V_{DRM}$ $R_{GK} = 1\text{ K}\Omega$ | $T_j = 125^\circ\text{C}$ | MAX | 200  |             |    |     |    |     | $\mu\text{s}$    |

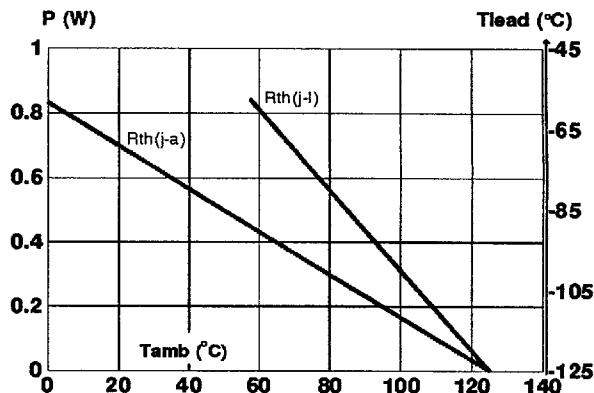
## ORDERING INFORMATION



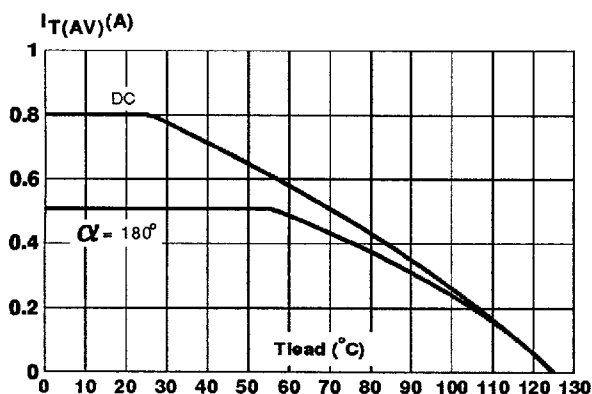
**Fig.1 :** Maximum average power dissipation versus average on-state current.



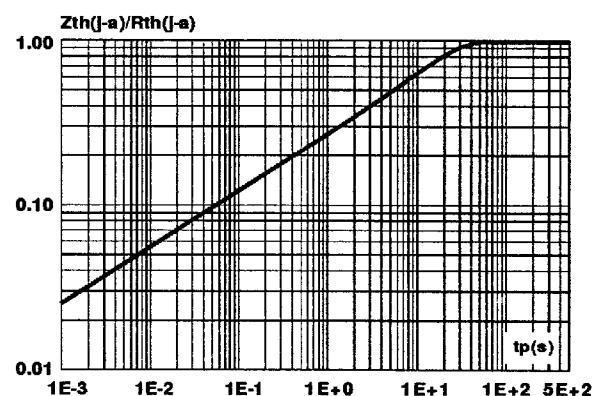
**Fig.2 :** Correlation between maximum average power dissipation and maximum allowable temperature ( $T_{amb}$  and  $T_{lead}$ ).



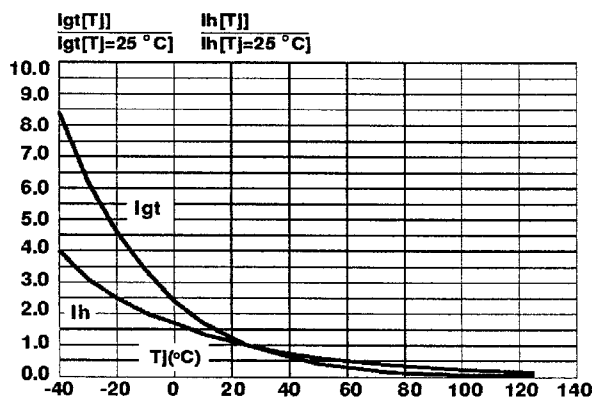
**Fig.3 :** Average on-state current versus lead temperature.



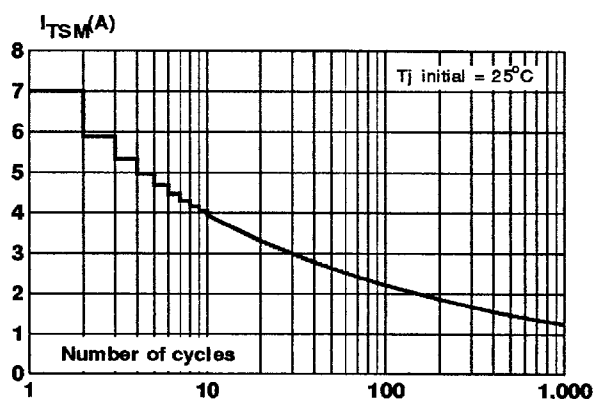
**Fig.4 :** Relative variation of thermal impedance junction to ambient versus pulse duration.



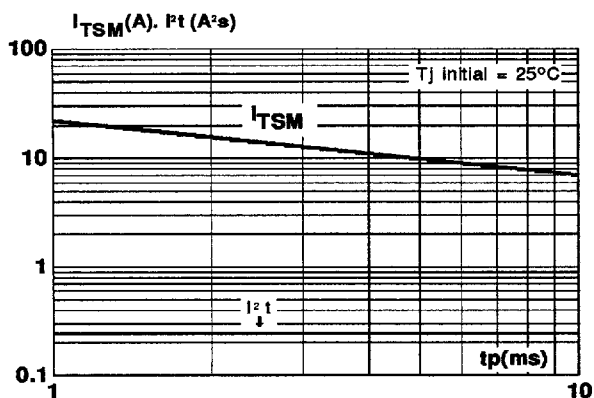
**Fig.5 :** Relative variation of gate trigger current and holding current versus junction temperature.



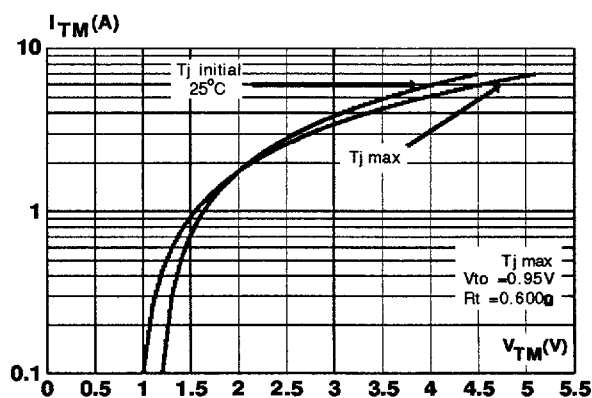
**Fig.6 :** Non repetitive surge peak on-state current versus number of cycles.



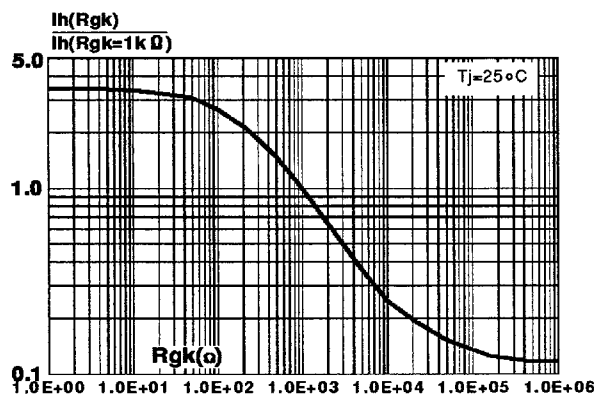
**Fig.7 :** Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t_p \leq 10\text{ms}$ , and corresponding value of  $I^2t$ .



**Fig.8 :** On-state characteristics (maximum values).



**Fig.9 :** Relative variation of holding current versus gate-cathode resistance (typical values).



**PACKAGE MECHANICAL DATA**  
**TO92 (Plastic)**

| REF. | DIMENSIONS  |      |      |        |       |       |
|------|-------------|------|------|--------|-------|-------|
|      | Millimeters |      |      | Inches |       |       |
|      | Typ.        | Min. | Max. | Typ.   | Min.  | Max.  |
| A    | 1.35        |      |      | 0.053  |       |       |
| B    |             |      | 4.7  |        |       | 0.185 |
| C    | 2.54        |      |      | 0.100  |       |       |
| D    |             | 4.4  | 4.8  |        | 0.173 | 0.189 |
| E    |             | 12.7 |      |        | 0.500 |       |
| F    |             |      | 3.7  |        |       | 0.146 |
| a    |             |      | 0.45 |        |       | 0.017 |

Marking : type number  
 Weight : 0.2 g

**PACKAGE MECHANICAL DATA**  
**RD26 (Plastic)**

| REF. | DIMENSIONS  |      |      |        |       |       |
|------|-------------|------|------|--------|-------|-------|
|      | Millimeters |      |      | Inches |       |       |
|      | Typ.        | Min. | Max. | Typ.   | Min.  | Max.  |
| A    | 2.54        |      |      | 0.100  |       |       |
| B    |             |      | 3.7  |        |       | 0.146 |
| C    | 1.35        |      |      | 0.053  |       |       |
| D    |             | 4.4  | 4.8  |        | 0.173 | 0.189 |
| E    |             | 12.7 |      |        | 0.500 |       |
| F    |             |      | 4.7  |        |       | 0.185 |
| G    |             |      | 3.0  |        |       | 0.118 |
| a    |             |      | 0.45 |        |       | 0.177 |

Marking : type number  
 Weight : 0.2 g

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