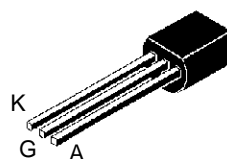


SENSITIVE GATE SCR
FEATURES

- $I_{T(RMS)} = 1.25A$
- $V_{DRM} = 200V$ to $800V$
- Low $I_{GT} < 200 \mu A$

DESCRIPTION

The X02xxxA series of SCRs uses a high performance TOP GLASS PNP technology. These parts are intended for general purpose applications where low gate sensitivity is required.



TO92
(Plastic)

ABSOLUTE RATINGS (limiting values)

| Symbol | Parameter | Value | Unit |
|--------------------|---|----------------------------|------------|
| $I_{T(RMS)}$ | RMS on-state current (180° conduction angle) | $T_I = 60^\circ C$ 1.25 | A |
| $I_{T(AV)}$ | Mean on-state current (180° conduction angle) | $T_I = 60^\circ C$ 0.8 | A |
| I_{TSM} | Non repetitive surge peak on-state current (T_j initial = $25^\circ C$) | $t_p = 8.3$ ms | 25 |
| | | $t_p = 10$ ms | 22.5 |
| I_t^2 | I_t^2 Value for fusing | $t_p = 10$ ms | A^2s |
| di/dt | Critical rate of rise of on-state current $I_G = 10$ mA $di_G/dt = 0.1$ A/ μs . | 30 | A/ μs |
| T_{stg} T_j | Storage and operating junction temperature range | - 40, + 150 - 40, + 125 | $^\circ C$ |
| T_I | Maximum lead temperature for soldering during 10s at 2mm from case | 260 | $^\circ C$ |

| Symbol | Parameter | Voltage | | | | Unit |
|------------------------|--|---------|-----|-----|-----|------|
| | | B | D | M | N | |
| V_{DRM} V_{RRM} | Repetitive peak off-state voltage $T_j = 125^\circ C$ $R_{GK} = 1K\Omega$ | 200 | 400 | 600 | 800 | V |

X02xxxA

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|----------|--------------------------|-------|------|
| Rth(j-a) | Junction to ambient | 150 | °C/W |
| Rth(j-l) | Junction to leads for DC | 60 | °C/W |

GATE CHARACTERISTICS (maximum values)

$P_{G(AV)} = 0.2 \text{ W}$ $P_{GM} = 3 \text{ W}$ ($t_p = 20 \mu\text{s}$) $I_{GM} = 1.2 \text{ A}$ ($t_p = 20 \mu\text{s}$)

ELECTRICAL CHARACTERISTICS

| Symbol | Test Conditions | | | Sensitivity | | | Unit |
|------------------------|--|---------------------------|-----|-------------|-----|----|------------------|
| | | | | 02 | 03 | 05 | |
| I_{GT} | $V_D = 12\text{V (DC)}$ $R_L = 140\Omega$ | $T_j = 25^\circ\text{C}$ | MIN | | 20 | 20 | μA |
| | | | MAX | 200 | 200 | 50 | |
| V_{GT} | $V_D = 12\text{V (DC)}$ $R_L = 140\Omega$ | $T_j = 25^\circ\text{C}$ | MAX | 0.8 | | | V |
| V_{GD} | $V_D = V_{DRM}$ $R_L = 3.3\text{k}\Omega$ $R_{GK} = 1\text{k}\Omega$ | $T_j = 125^\circ\text{C}$ | MIN | 0.1 | | | V |
| V_{RGM} | $I_{RG} = 10\mu\text{A}$ | $T_j = 25^\circ\text{C}$ | MIN | 8 | | | V |
| tg _d | $V_D = V_{DRM}$ $I_{TM} = 3 \times I_{T(AV)}$ $di/dt = 0.1\text{A}/\mu\text{s}$ $I_G = 10\text{mA}$ | $T_j = 25^\circ\text{C}$ | TYP | 0.5 | | | μs |
| 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} | $I_{TM} = 2.5\text{A}$ $t_p = 380\mu\text{s}$ | $T_j = 25^\circ\text{C}$ | MAX | 1.45 | | | V |
| I_{DRM} I_{RRM} | $V_D = V_{DRM}$ $R_{GK} = 1\text{k}\Omega$ $V_R = V_{RRM}$ | $T_j = 25^\circ\text{C}$ | MAX | 5 | | | μA |
| | | $T_j = 110^\circ\text{C}$ | MAX | 200 | | | μA |
| dV/dt | $V_D = 67\%V_{DRM}$ $R_{GK} = 1\text{k}\Omega$ | $T_j = 110^\circ\text{C}$ | TYP | 15 | 20 | 15 | V/ μs |
| tq | $I_{TM} = 3 \times I_{T(AV)}$ $V_R = 35\text{V}$ $di/dt = 10\text{A}/\mu\text{s}$ $t_p = 100\mu\text{s}$ $dV/dt = 2\text{V}/\mu\text{s}$ $V_D = 67\%V_{DRM}$ $R_{GK} = 1\text{k}\Omega$ | $T_j = 110^\circ\text{C}$ | MAX | 100 | | | μs |

ORDERING INFORMATION

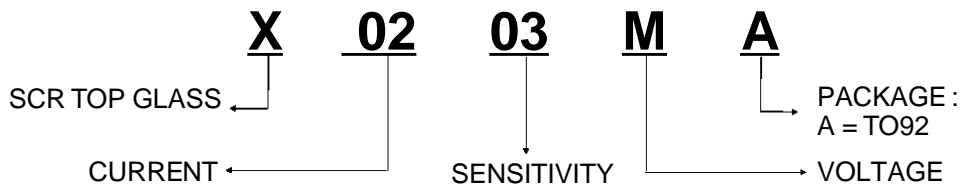


Fig.1 : Maximum average power dissipation versus average on-state current.

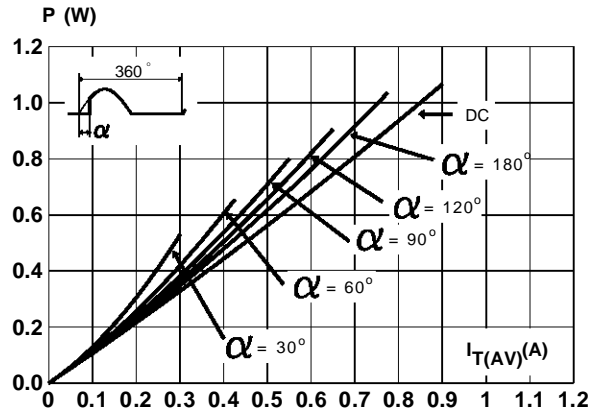


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperature (Tamb and Tlead).

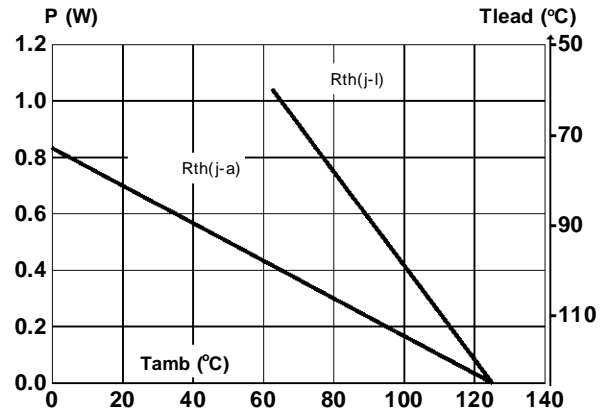


Fig.3 : Average on-state current versus lead temperature.

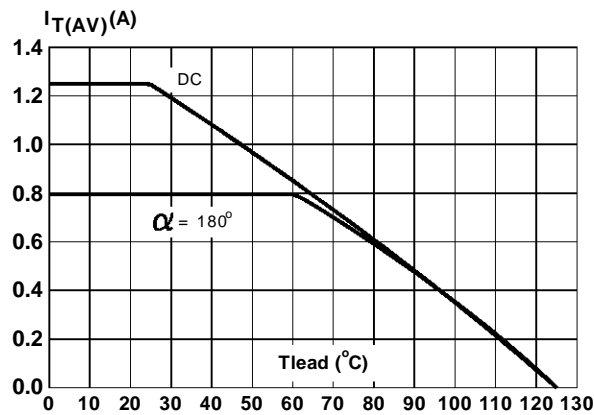


Fig.4 : Relative variation of thermal impedance junction to ambient versus pulse duration.

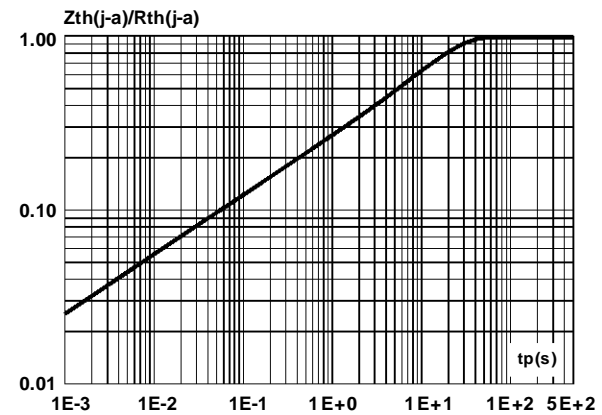


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

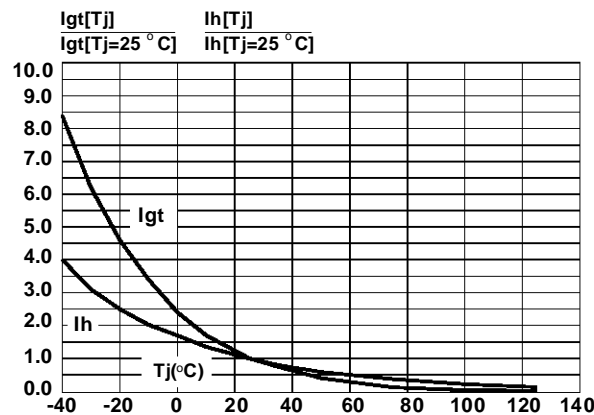
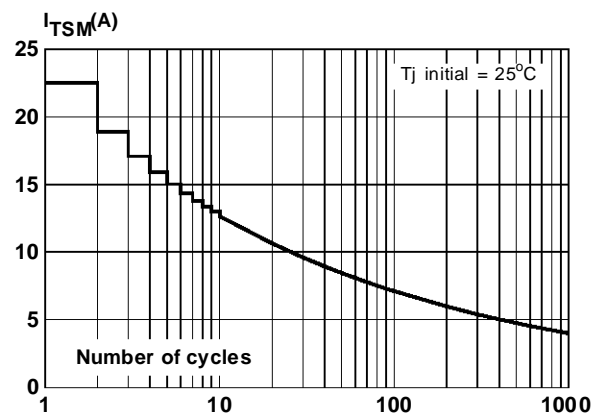


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.



X02xxxA

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 .

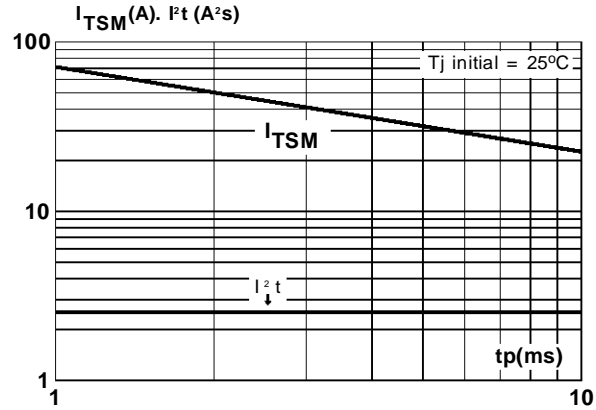
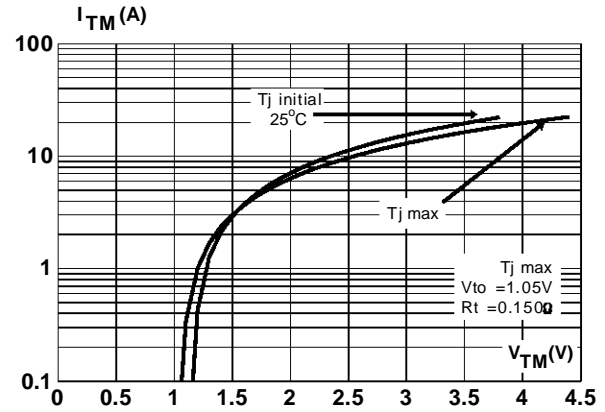


Fig.8 : On-state characteristics (maximum values).



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

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