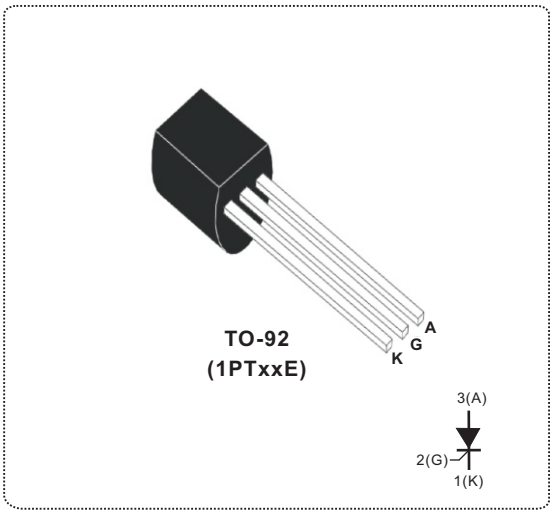
# Sensitive gate SCRs, 1A

## Main Features

| Symbol | Value | Unit |
|---|---|---|
| $I_{T(RMS)}$ | 1 | A |
| $V_{DRM}/V_{RRM}$ | 600 to 800 | V |
| $I_{GT}$ | 10 to 200 | µA |




## DESCRIPTION

Thanks to highly sensitive triggering levels, the 1PT series is suitable for all applications where the available gate current is limited, such as capacitive discharge ignitions, motor control in kitchen aids, overvoltage crowbar protection in low power supplies among others. Available in through-hole or surface-mount packages, they provide an optimized performance in a limited space area.

## ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUE | UNIT |
|---|---|---|---|---|---|
| RMS on-state current full sine wave (180° conduction angle ) | $I_{T(RMS)}$ | $T_c$ =85ºC | | 1 | A |
| Average on-state current (180° conduction angle) | $I_{T(AV)}$ | $T_c$ =85ºC | | 0.6 | A |
| Non repetitive surge peak on-state current (full cycle, $T_j$ initial = 25°C) | $I_{TSM}$ | F =50 Hz | t = 20 ms | 12 | A |
| | | F =60 Hz | t = 16.7 ms | 13 | |
| $I^2t$ Value for fusing | $I^2t$ | $t_p$ = 10 ms | | 0.72 | $A^2s$ |
| Critical rate of rise of on-state current $I_G = 2xI_{GT}$, $t_r$≤100ns | dI/dt | F = 60 Hz | $T_j$ = 110ºC | 50 | A/µs |
| Peak gate current | $I_{GM}$ | $T_p$ = 20 µs | $T_j$ = 110ºC | 0.5 | A |
| Forward peak gate power | $P_{GM}$ | $T_A$=25°C, Pulse width≤0.1µs | | 0.5 | W |
| Average gate power dissipation | $P_{G(AV)}$ | $T_j$ =110ºC | | 0.1 | W |
| Repetitive peak off-state voltage | $V_{DRM}$ | $T_j$ =25ºC | | 600 and 800 | V |
| Repetitive peak reverse voltage | $V_{RRM}$ | | | | |
| Storage temperature range | $T_{stg}$ | | | - 40 to + 150 | ºC |
| Operating junction temperature range | $T_j$ | | | - 40 to + 110 | |

## ELECTRICAL SPECIFICATIONS ($T_J$ = 25 ºC unless otherwise specified)

| SYMBOL | TEST CONDITIONS | | | 1PTxxxx | Unit |
|---|---|---|---|---|---|
| $I_{GT}$ | $V_D$ = 12V, $R_L$ = 100Ω | | Min. | 10 | μA |
| | | | Max. | 200 | |
| $V_{GT}$ | | | Max. | 0.8 | V |
| $V_{GD}$ | $V_D = V_{DRM}$, $R_L$ = 3.3KΩ<br>$R_{GK}$ = 1KΩ, $T_j$ = 110°C | | Min. | 0.2 | V |
| $I_H$ | $I_T$ = 50mA, $R_{GK}$ = 1KΩ | | Max. | 5 | mA |
| $I_L$ | $I_G$ = 1mA, $R_{GK}$ = 1KΩ | | Min. | 6 | mA |
| dV/dt | $V_D$ = 67% $V_{DRM}$, $R_{GK}$ = 1KΩ, $T_j$ = 110°C | | Min. | 10 | V/μs |
| $V_{TM}$ | $I_T$ = 1A, $t_P$ = 380 μs | $T_j$ = 25°C | Max. | 1.6 | V |
| $I_{DRM}$ | $V_D=V_{DRM}$, $V_R=V_{RRM}$ | $T_j$ = 25°C | Max. | 5 | μA |
| $I_{RRM}$ | $R_{GK}$ = 220Ω | $T_j$ = 110°C | Max. | 0.1 | mA |
| $V_{to}$ | Threshold voltage | $T_j$ = 110°C | Max. | 0.85 | V |
| $R_d$ | Dynamic resistance | $T_j$ = 110°C | Max. | 60 | MΩ |

## THERMAL RESISTANCE

| SYMBOL | Parameter | | VALUE | UNIT |
|---|---|---|---|---|
| $R_{th(j-c)}$ | Junction to case (AC) | TO-92 | 75 | °C/W |
| $R_{th(j-a)}$ | Junction to ambient (DC) | TO-92 | 150 | °C/W |

## PRODUCT SELECTOR

| PART NUMBER | VOLTAGE (xx) | | SENSITIVITY | PACKAGE |
|---|---|---|---|---|
| | 600 V | 800 V | | |
| 1PTxxE03 | V | V | 10~30 μA | TO-92 |
| 1PTxxE-05 | V | V | 20~50 μA | TO-92 |
| 1PTxxE-06 | V | V | 30~60 μA | TO-92 |
| 1PTxxE-08 | V | V | 50~80 μA | TO-92 |
| 1PTxxE-S | V | V | 70~200 μA | TO-92 |

## ORDERING INFORMATION

| ORDERING TYPE | MARKING | PACKAGE | WEIGHT | BASE Q'TY | DELIVERY MODE |
|---|---|---|---|---|---|
| 1PTxxE-yy | 1PTxxE-yy | TO-92 | 0.23g | 500 | Bag |

**Note**: xx = voltage, y = sensitivity

## ORDERING INFORMATION SCHEME

**1 PT 06 E - T**

**Current**

1 = 1A, $I_{T(RMS)}$

**SCR series**

**Voltage Code**

06 = 600V
08 = 800V

**Package type**

E = TO-92

**IGT Sensitivity**

03 = 10~30 μA
05 = 20~50 μA
06 = 30~60 μA
08 = 50~80 μA
S = 70~200 μA

Fig.1 Maximum power dissipation versus RMS on-state current (full cycle)

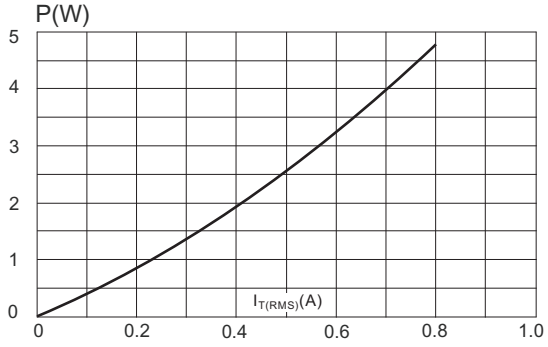



Fig.2 RMS on-state current versus case temperature (full cycle)

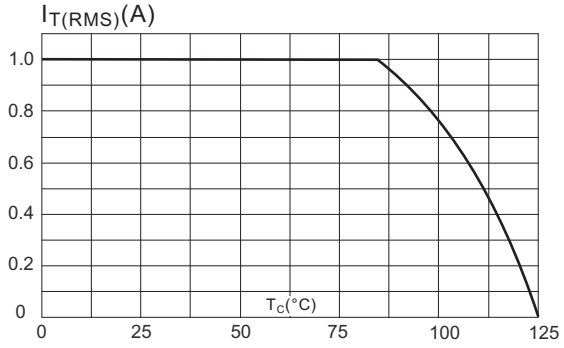



Fig.3 On-state characteristics (maximum values)

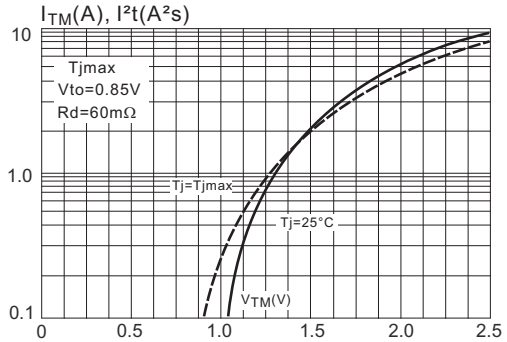



Fig.4 Surge peak on-state current versus number of cycles

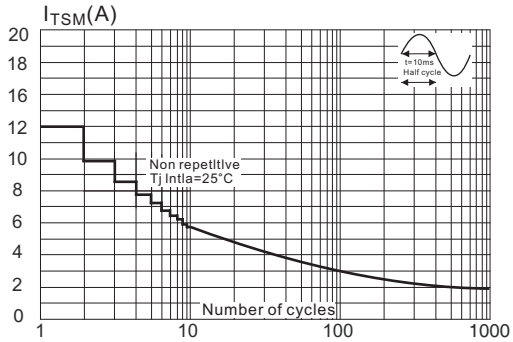


Fig.5 Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<10ms, and corresponding value of I²t

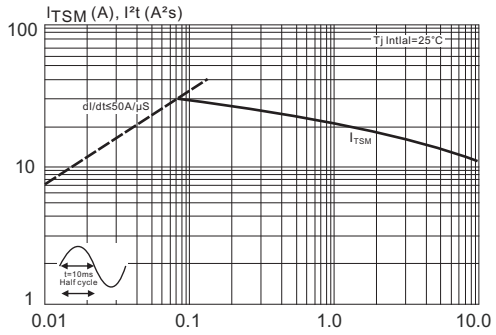
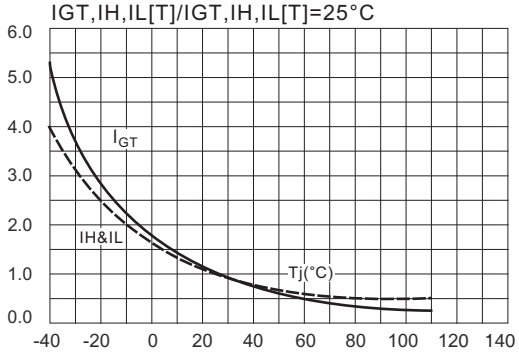
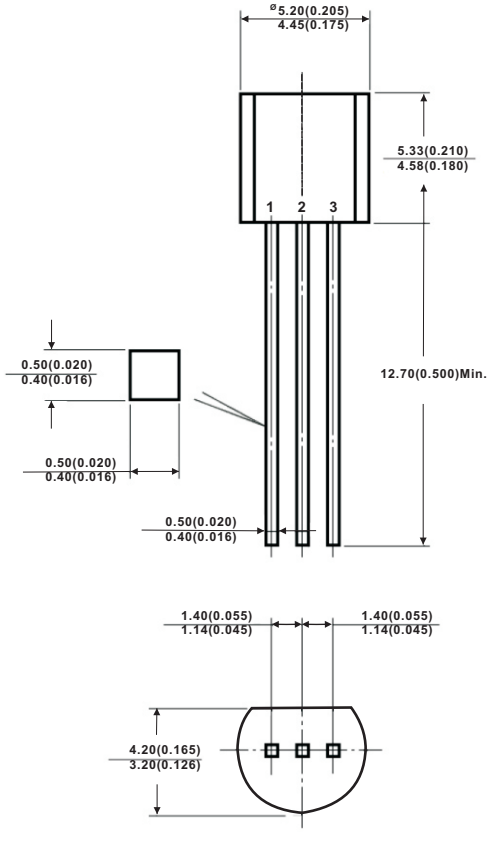


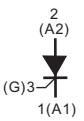

Fig.6 Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values)




## Case Style

### TO-92




All dimensions in millimeters(inches)