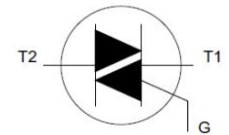
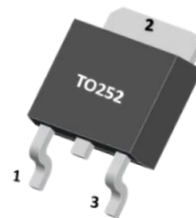


■ GENERAL DESCRIPTION

Glass passivated, sensitive gate triac in a plastic envelope, intended for use in general purpose bidirectional switching and phase control applications, where high sensitivity is required in all four quadrants.



Pin1:T1 Pin2:T2 Pin3:G

■ ABSOLUTE MAXIMUM RATINGS (TC=25°C, unless otherwise specified)

| SYMBOL | PARAMETER | TEST CONDITION | VALUE | UNIT |
|---------------------|---|----------------------|-------------|------------------|
| V _{DRM} | Repetitive Peak off-state voltage | T _j =25°C | 800 | V |
| I _{T(RMS)} | RMS on-state current full sine wave; T _{mb} ≤107°C | | 4 | A |
| I _{TSM} | Non-repetitive peak on-state current (Full sine wave T _J = 25°C prior to surge) | t = 20ms | 25 | A |
| | | t = 16.7ms | 27 | A |
| I ² t | I ² t for fusing | t=10ms | 3.1 | A ² S |
| di/dt | Repetitive rate of rise of on-state current after triggering I _{TM} = 6 A; I _G = 0.2A; dI _G /dt = 0.2A/μs | T2+, G+ | 50 | A/μs |
| | | T2+, G- | 50 | A/μs |
| | | T2-, G- | 50 | A/μs |
| | | T2-, G+ | 10 | A/μs |
| V _{GM} | Peak gate voltage | | 5 | V |
| I _{GM} | Peak gate current | | 2 | A |
| P _{GM} | Peak gate Power | | 5 | W |
| P _{G(AV)} | Average gate Power(over any 20ms period) | | 0.5 | W |
| T _j | Operating Junction Temperature | | 125 | °C |
| T _{stg} | Storage Temperature | | -40 to +150 | °C |

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. The device is guaranteed to meet performance specification within 0°C~70°C operating temperature range and assured by design from -20°C ~ 85°C.

3. Although not recommended, off-state voltages up to 800V may be applied without damage, but the triac may switch to the on-state. The rate of rise of current should not exceed 3A/μs.

■ THERMAL RESISTANCES

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|---------------------|--------|----------------|---------|-----------------------------|
| Junction to Ambient | TO-252 | $R\theta_{JA}$ | 62.5 | $^{\circ}\text{C}/\text{W}$ |
| Junction to Case | TO-252 | $R\theta_{JC}$ | 2.6 | $^{\circ}\text{C}/\text{W}$ |

■ ELECTRICAL CHARACTERISTICS($T_j=25^{\circ}\text{C}$ unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---------------------------|----------|---|---------------------------------------|------|-----|------|
| Gate trigger current | I_{GT} | T2+ G+ | $V_D=12\text{V}$ $I_T=0.1\text{A}$ | 2.5 | 10 | mA |
| | | T2+ G- | | 4 | 10 | mA |
| | | T2- G- | | 5 | 10 | mA |
| | | T2- G+ | | 11 | 25 | mA |
| Latching Voltage | I_L | T2+ G+ | $V_D=12\text{V}$ $I_T=0.1\text{A}$ | 3.0 | 15 | mA |
| | | T2+ G- | | 10 | 20 | mA |
| | | T2- G- | | 2.5 | 15 | mA |
| | | T2- G+ | | 4.0 | 20 | mA |
| Holding current | I_H | $V_D=12\text{V}$, $I_{GT}=0.1\text{A}$ | | 2.2 | 15 | mA |
| On-State Voltage | V_T | $I_T=5\text{A}$ | | 1.4 | 1.7 | V |
| Gate Trigger Voltage | V_{GT} | $V_D=12\text{V}$, $I_T=0.1\text{A}$ | | 0.7 | 1.5 | V |
| | | $V_D=400\text{V}$, $I_T=0.1\text{A}$, $T_j=125^{\circ}\text{C}$ | 0.25 | 0.40 | | |
| Off-state leakage current | I_D | $V_D=V_{DRM(max)}$, $T_j=125^{\circ}\text{C}$ | | 0.1 | 0.5 | mA |

DYNAMIC CHARACTERISTICS($T_j=25^{\circ}\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--|-----------|--|-----|-----|-----|------------------|
| Critical Rate of Rise of off-state Voltage | dV_D/dt | $V_{DM}=67\%V_{DRM(max)}$, $T_j=125^{\circ}$ Exponential waveform, Gate open circuit | | 50 | | V/ μs |
| Gate Controlled Turn-on Time | t_{gt} | $I_{TM}=20\text{A}$, $V_D=V_{DRM}$, $I_G=0.1\text{A}$ $di_G/dt=5\text{A}/\mu\text{s}$ | | 2 | | μs |

■ TYPICAL CHARACTERISTICS (1)

Fig 1. Maximum On-State Dissipation, P_{tot} Versus Rms On-state Current, $I_{T(RMS)}$ where α =conduction angle.

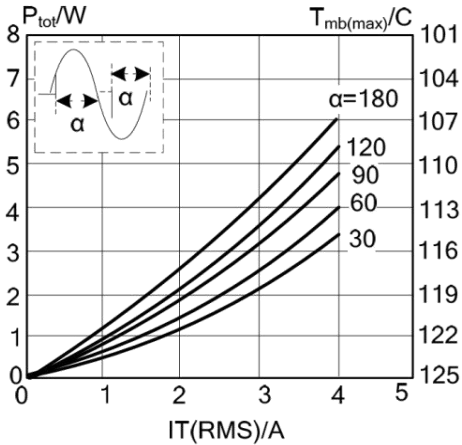


Fig 2. Maximum Permissible Non-repetitive Peak On-state Current, I_{TSM} , Versus Pulse Width t_p For Sinusoidal Currents, $t_p \leq 20ms$

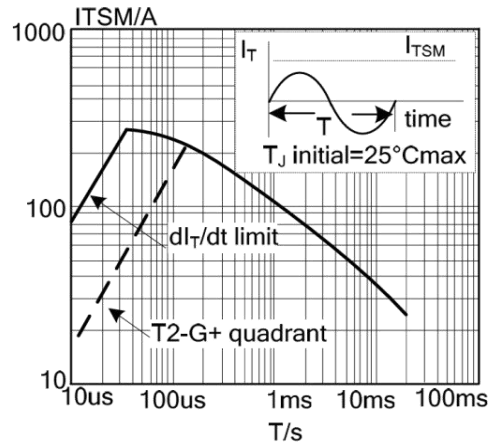


Fig 3. Maximum Permissible Non-repetitive Peak On-state Current, I_{TSM} , Versus Number Of Cycles, For Sinusoidal Currents, $f=50Hz$.

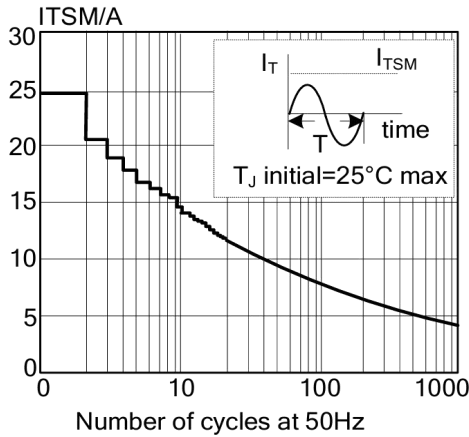


Fig 4. Maximum Permissible Rms Current, $I_{T(RMS)}$ Versus Mounting Base Temperature, T_{mb}

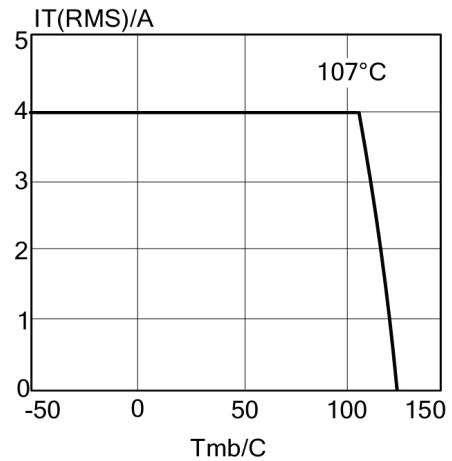


Fig 5. Maximum Permissible Repetitive Rms On-State Current, $I_{T(RMS)}$, Versus Surge Duration, For Sinusoidal Currents, $f=50Hz$, $T_{mb} \leq 107^\circ C$

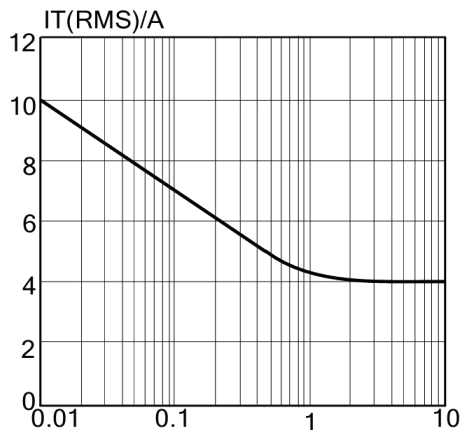
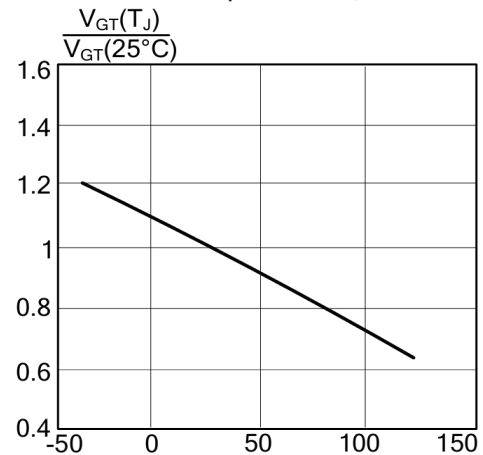


Fig 6. Normalised Gate Trigger Voltage, $V_{GT}(T_J)/V_{GT}(25^\circ C)$, Versus Junction Temperature, T_J



■ TYPICAL CHARACTERISTICS (Con.t)

Fig 7. Normalised Gate Trigger Current, $I_{GT}(T_J)/I_{GT}(25^\circ\text{C})$, Versus Junction Temperature, T_J

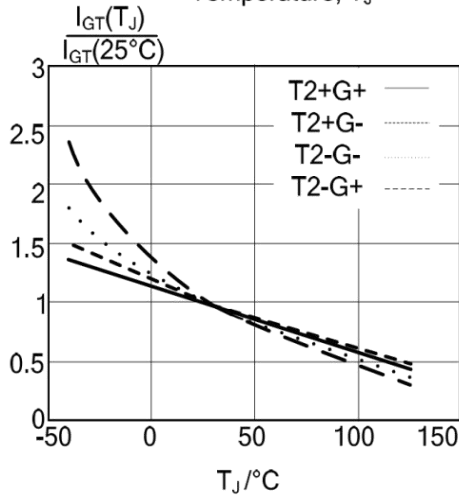


Fig 8. Normalised Latching Current, $I_L(T_J)/I_L(25^\circ\text{C})$ Versus Junction Temperature, T_J

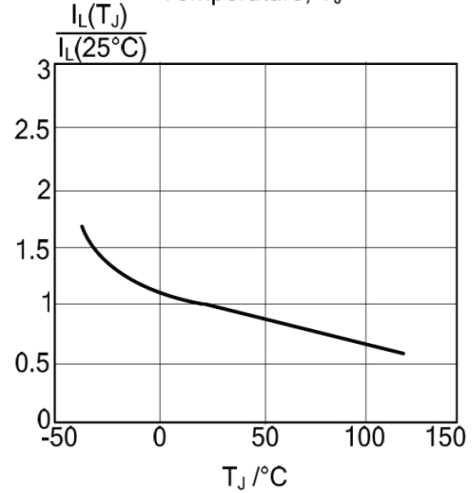


Fig 9. Normalised Holding Current, $I_H(T_J)/I_H(25^\circ\text{C})$, versus junction temperature, T_J

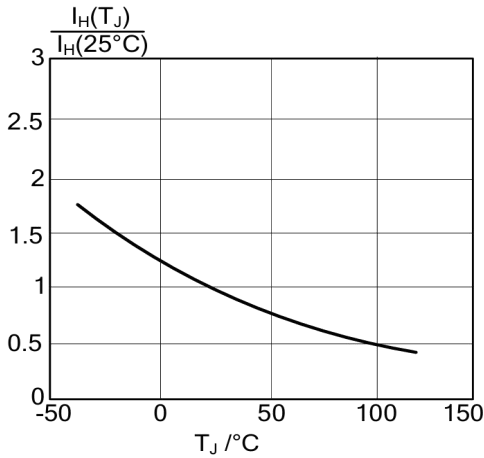


Fig 10. Typical And Maximum On-state Characteristic

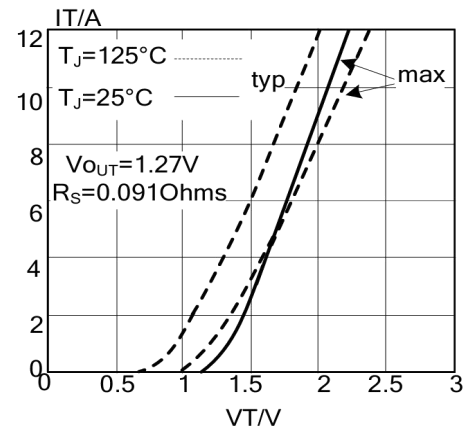


Fig 11. Transient Thermal Impedance Z_{thj-mb} , Versus Pulse Width t_p

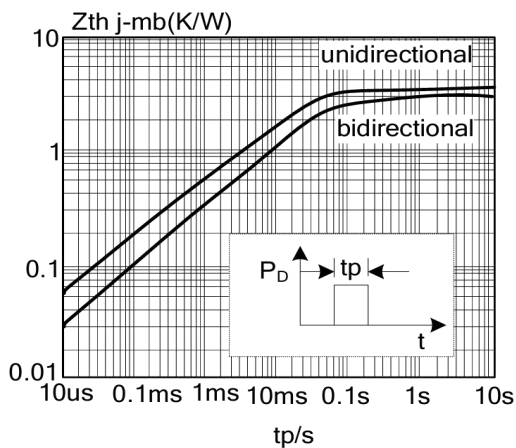
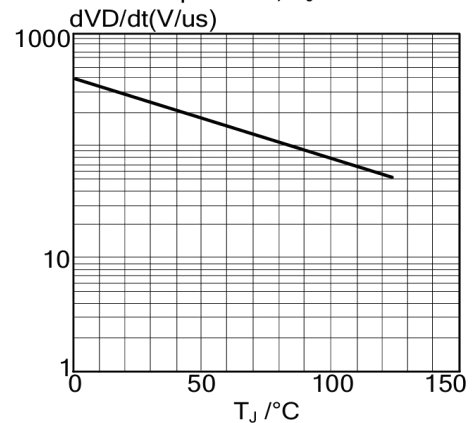
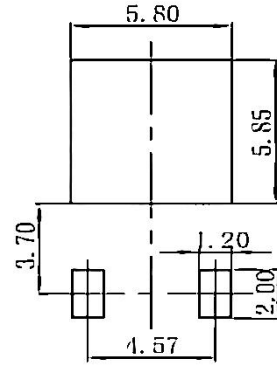
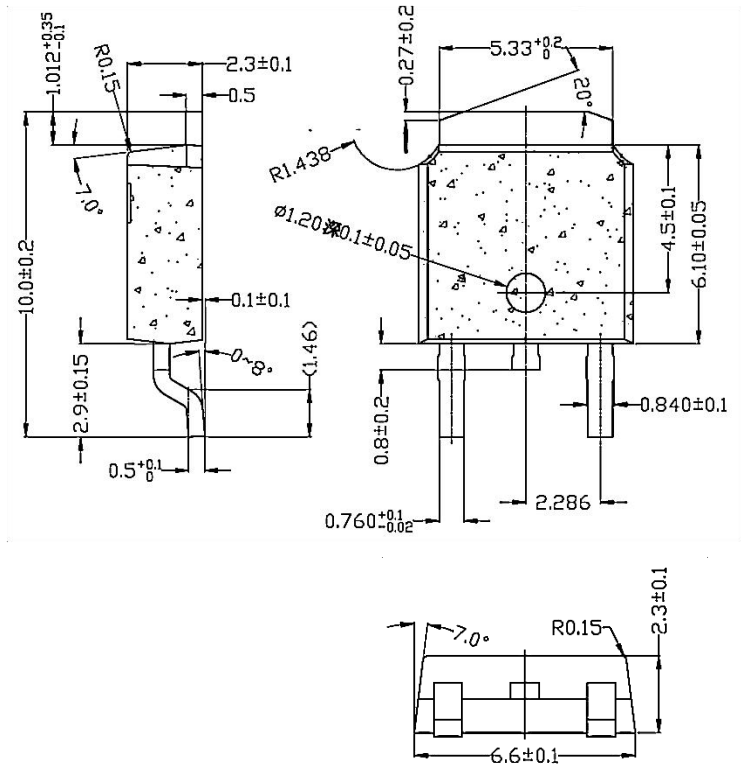


Fig 12. Typical Critical Rate Of Rise Of Off-state Voltage, dV_D/dt Versus Junction Temperature, T_J



TO-252 PACKAGE OUTLINE DIMENSIONS



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.