## DESCRIPTION:

With high ability to withstand the shock loading of large current, T405-800H series triacs provide high dv/dt rate with strong resistance to electromagnetic interface. With high commutation performances, 3 quadrants products especially recommended for use on inductive load.


TO-262

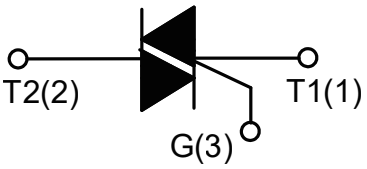

TO-251


TO-220A


TO-220F

## MAIN FEATURES

| Symbol | Value | Unit |
|---|---|---|
| $V_{DRM}$ /$V_{RRM}$ | 600/800 | V |
| $I_{T(RMS)}$ | 4 | A |




## ABSOLUTE MAXIMUM RATINGS

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Storage junction temperature range | | $T_{stg}$ | -40 - 150 | ℃ |
| Operating junction temperature range | | $T_j$ | -40 - 125 | ℃ |
| Repetitive peak off-state voltage ($T_j$=25℃) | | $V_{DRM}$ | 600/800 | V |
| Repetitive peak reverse voltage ($T_j$=25℃) | | $V_{RRM}$ | 600/800 | V |
| RMS on-state current | TO-251/ TO-220A(Ins)/ TO-220F(Ins) ($T_C$=100℃) | $I_{T(RMS)}$ | 4 | A |
| | TO-220A(Non-Ins)/ TO-262 ($T_C$=105℃) | | | |
| Non repetitive surge peak on-state current (full cycle, F=50Hz) | | $I_{TSM}$ | 40 | A |
| $I^2t$ value for fusing (tp=10ms) | | $I^2t$ | 8 | $A^2s$ |

| | | | |
|---|---|---|---|
| Critical rate of rise of on-state current ($I_G$ =2×$I_{GT}$) | dI/dt | 50 | A/μs |
| Peak gate current | $I_{GM}$ | 4 | A |
| Average gate power dissipation | $P_{G(AV)}$ | 1 | W |
| Peak gate power | $P_{GM}$ | 5 | W |

## ELECTRICAL CHARACTERISTICS ($T_j$=25℃ unless otherwise specified)

| Symbol | Test Condition | Quadrant | | Value | | | | Unit |
|---|---|---|---|---|---|---|---|---|
| | | | | TW | SW | CW | BW | |
| $I_{GT}$ | $V_D$ =12V $R_L$ =33Ω | Ⅰ-Ⅱ-Ⅲ | MAX | 5 | 10 | 35 | 50 | mA |
| $V_{GT}$ | | Ⅰ-Ⅱ-Ⅲ | MAX | 1.5 | | | | V |
| $V_{GD}$ | $V_D$ =$V_{DRM}$ $T_j$ =125℃ $R_L$ =3.3KΩ | Ⅰ-Ⅱ-Ⅲ | MIN | 0.2 | | | | V |
| $I_L$ | $I_G$ =1.2$I_{GT}$ | Ⅰ-Ⅲ | MAX | 10 | 20 | 50 | 70 | mA |
| | | Ⅱ | | 15 | 35 | 60 | 80 | |
| $I_H$ | $I_T$ =100mA | | MAX | 10 | 15 | 35 | 60 | mA |
| dV/dt | $V_D$=2/3$V_{DRM}$ Gate Open $T_j$ =125℃ | | MIN | 50 | 100 | 400 | 1000 | V/μs |

## STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX) | Unit |
|---|---|---|---|---|
| $V_{TM}$ | $I_{TM}$ =5.5A tp=380μs | $T_j$=25℃ | 1.5 | V |
| $I_{DRM}$ | $V_D$ =$V_{DRM}$ $V_R$ =$V_{RRM}$ | $T_j$=25℃ | 10 | μA |
| $I_{RRM}$ | | $T_j$=125℃ | 0.75 | mA |

## THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $R_{th(j-c)}$ | junction to case(AC) | TO-251 | 2.8 | ℃/W |
| | | TO-220A(Ins) | 3.0 | |
| | | TO-262/ TO-220A(Non-Ins) | 2.5 | |
| | | TO-220F(Ins) | 3.3 | |

**FIG.1:** Maximum power dissipation versus RMS on-state current

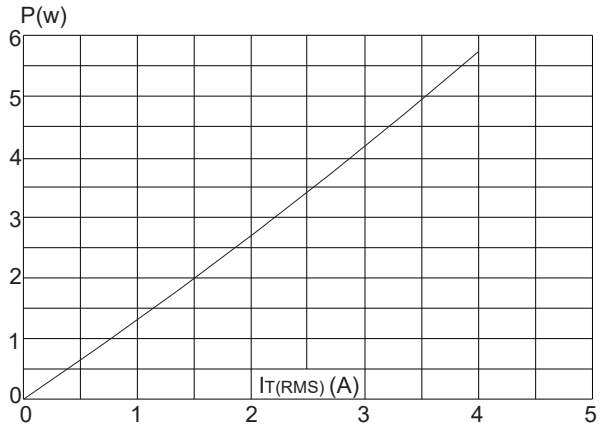



**FIG.2:** RMS on-state current versus case temperature

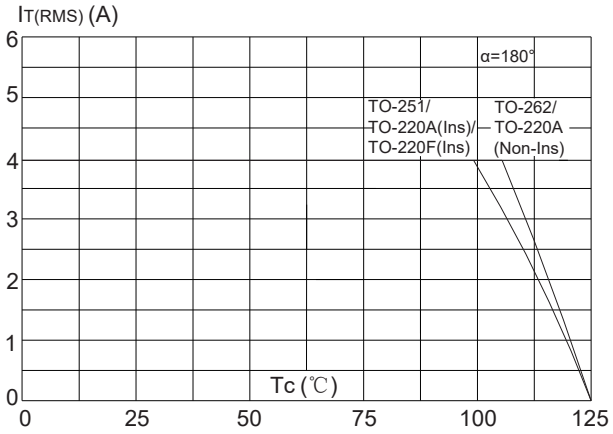



**FIG.3:** Surge peak on-state current versus number of cycles

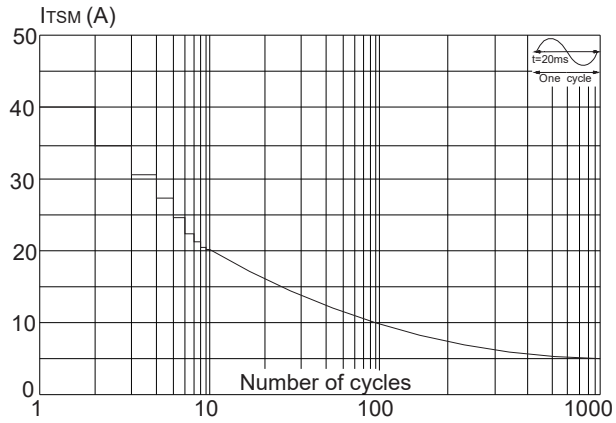



**FIG.4:** On-state characteristics (maximum values)

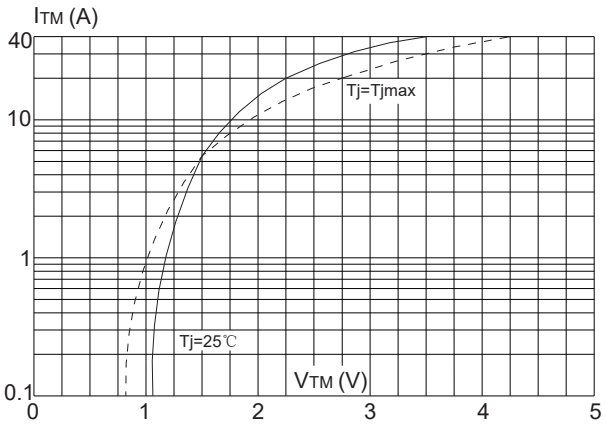



**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms and corresponding value of $I^2t$ (dI/dt < 50A/μs)

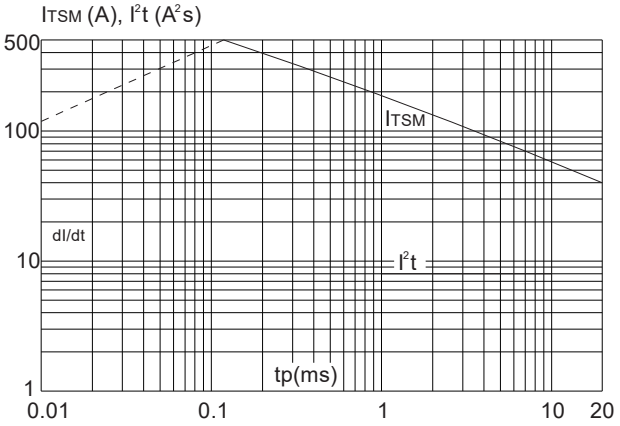



**FIG.6:** Relative variations of gate trigger current, holding current and latching current versus junction temperature