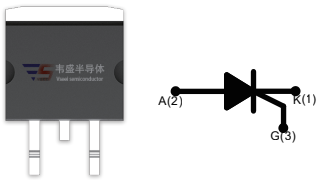
## DESCRIPTION:

With high ability to withstand the shock loading of large current, TN2540-800G series of silicon controlled rectifiers provide high dv/dt rate with strong resistance to electromagnetic interference. They are especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc.




TO-263

## MAIN FEATURES

| Symbol | JCT625 | JCT825 |
|---|---|---|
| $V_{DRM}$/ $V_{RRM}$ | 600V | 800V |
| $I_{T(RMS)}$ | 25A | |
| $I_{GT}$ | ≤40mA | |

## ABSOLUTE MAXIMUM RATINGS

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Storage junction temperature range | | $T_{stg}$ | -40-150 | ℃ |
| Operating junction temperature range | | $T_j$ | -40-150 | ℃ |
| 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-263 ($T_C$=90℃) | $I_{T(RMS)}$ | 25 | A |
| Non repetitive surge peak on-state current (tp=10ms) | | $I_{TSM}$ | 300 | A |
| $I^2t$ value for fusing (tp=10ms) | | $I^2t$ | 450 | $A^2s$ |
| 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 | Value | | | Unit |
|---|---|---|---|---|---|
| | | MIN. | TYP. | MAX. | |
| $I_{GT}$ | $V_D$=12V $R_L$=33Ω | - | - | 40 | mA |
| $V_{GT}$ | | - | - | 1.3 | V |
| $V_{GD}$ | $V_D$=$V_{DRM}$ $T_j$=150℃ $R_L$=3.3KΩ | 0.2 | - | - | V |
| $I_L$ | $I_G$=1.2$I_{GT}$ | - | - | 90 | mA |
| $I_H$ | $I_T$=500mA | - | - | 80 | mA |
| dV/dt | $V_D$=2/3$V_{DRM}$ Gate Open $T_j$=150℃ | 200 | - | - | V/μs |

## STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX) | Unit |
|---|---|---|---|---|
| $V_{TM}$ | $I_{TM}$=50A tp=380μs | $T_j$=25℃ | 1.55 | V |
| $I_{DRM}$ | $V_D$=$V_{DRM}$ $V_R$=$V_{RRM}$ | $T_j$=25℃ | 10 | μA |
| $I_{RRM}$ | | $T_j$=150℃ | 4 | mA |

## THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $R_{th(j-c)}$ | junction to case(AC) | TO-263 | 1.9 | ℃/W |
| $R_{th(j-a)}$ | junction to ambient | | 45 | |

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

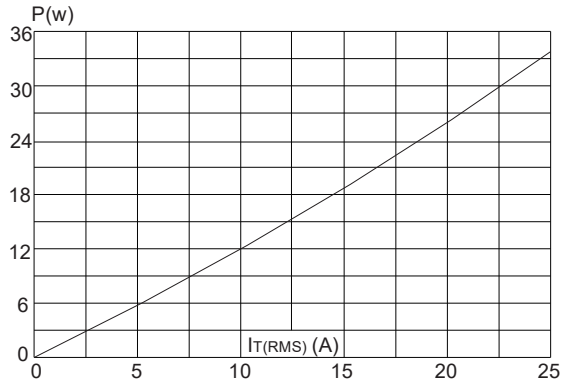



**FIG.2:** RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness:35μm)(full cycle)

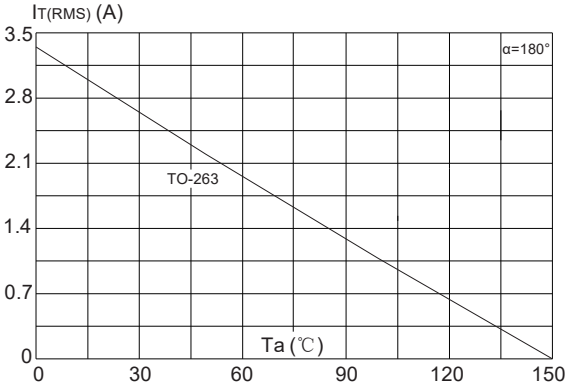



**FIG.3:** Surge peak on-state current versus number of cycles

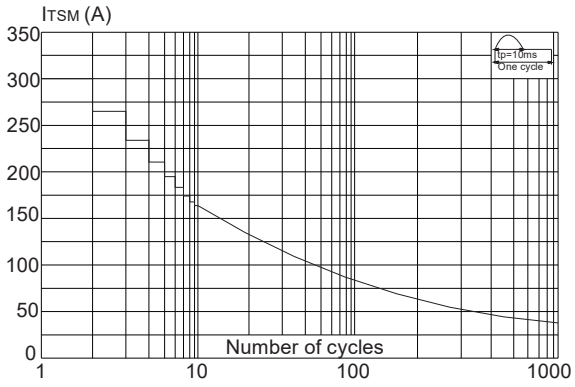



**FIG.4:** On-state characteristics (maximum values)

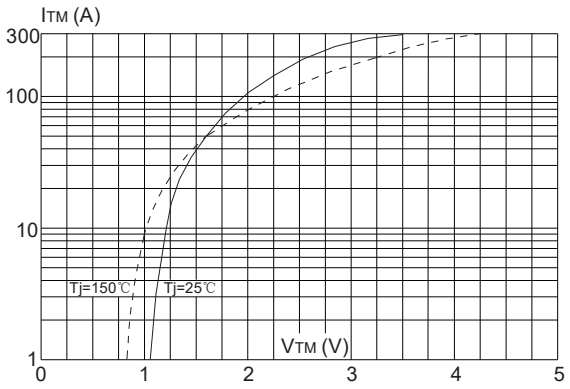


**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<10ms, and corresponging value of $I^2t$ (dI/dt < 50A/μs)

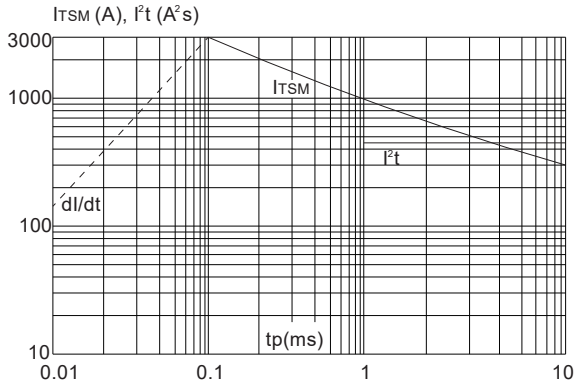
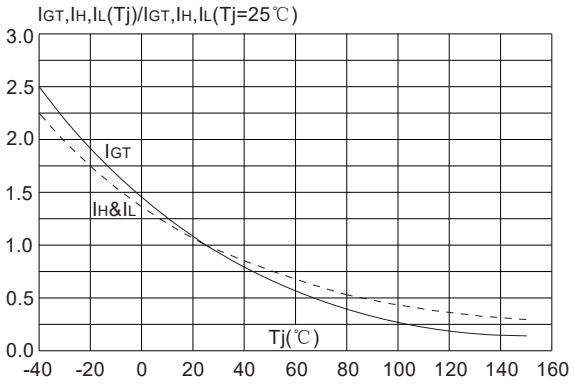



**FIG.6:** Relative variations of gate trigger current, holding current and latching current versus junction temperature




## SOLDERING PARAMETERS

| Reflow Condition | | Pb-Free assembly (see figure at right) |
|---|---|---|
| Pre Heat | -Temperature Min ($T_{s(min)}$) | +150℃ |
| | -Temperature Max ($T_{s(max)}$) | +200℃ |
| | -Time (Min to Max) (ts) | 60-180 secs. |
| Average ramp up rate (Liquidus Temp ($T_L$)to peak) | | 3℃/sec. Max |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate | | 3℃/sec. Max |
| Reflow | -Temperature($T_L$) (Liquidus) | +217℃ |
| | -Temperature($t_L$) | 60-150 secs. |
| Peak Temp ($T_p$) | | +260(+0/-5)℃ |
| Time within 5℃of actual Peak Temp ($t_p$) | | 20-40secs. |
| Ramp-down Rate | | 6℃/sec. Max |
| Time 25℃ to Peak Temp ($T_P$) | | 8 min. Max |
| Do not exceed | | +260℃ |