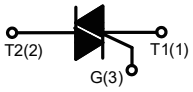
## DESCRIPTION:

The BT134W-600E SCR series with the parallel resistor between Gate and Cathode are especially recommended for use on straight hair, igniter, anion generator, etc.




SOT-223

## MAIN FEATURES

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

## 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 |
| Non repetitive surge peak Off-state voltage | | $V_{DSM}$ | $V_{DRM}$ + 100 | V |
| Non repetitive peak reverse voltage | | $V_{RSM}$ | $V_{RRM}$ + 100 | V |
| RMS on-state current | SOT-223/ SOT-223-2L ($T_C$=75℃) | $I_{T(RMS)}$ | 1 | A |
| Non repetitive surge peak on-state current (full cycle, F=50Hz) | | $I_{TSM}$ | 20 | A |
| $I^2t$ value for fusing (tp =10ms) | | $I^2t$ | 2 | $A^2s$ |
| Critical rate of rise of on-state current ($I_G$ =2×$I_{GT}$) | I - II -III | dI/dt | 50 | A/μs |
| | IV | | 10 | |
| Peak gate current | | $I_{GM}$ | 2 | A |
| Average gate power dissipation | | $P_{G(AV)}$ | 0.5 | W |
| Peak gate power | | $P_{GM}$ | 5 | W |

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

| Symbol | Test Condition | Quadrant | | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | T | D | E | |
| $I_{GT}$ | $V_D$=12V $R_L$=33Ω | Ⅰ-Ⅱ-Ⅲ | MAX | 5 | 5 | 10 | mA |
| | | Ⅳ | | 5 | 10 | 25 | |
| $V_{GT}$ | | ALL | MAX | 1.3 | | | V |
| $V_{GD}$ | $V_D$=$V_{DRM}$ $T_j$=125℃ $R_L$=3.3KΩ | ALL | MIN | 0.2 | | | V |
| $I_L$ | $I_G$=1.2$I_{GT}$ | Ⅰ-Ⅲ-Ⅳ | MAX | 8 | 10 | 20 | mA |
| | | Ⅱ | | 12 | 15 | 35 | |
| $I_H$ | $I_T$=100mA | | MAX | 5 | 10 | 20 | mA |
| dV/dt | $V_D$=2/3$V_{DRM}$ Gate Open $T_j$=125℃ | | MIN | 20 | 50 | 100 | V/μs |
| (dV/dt)c | (dI/dt)c=1.1A/ms $T_j$=125℃ | | MIN | 0.5 | 1 | 5 | V/μs |

## STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX) | Unit |
|---|---|---|---|---|
| $V_{TM}$ | $I_{TM}$=5A tp=380μs | $T_j$=25℃ | 1.7 | V |
| $I_{DRM}$ | $V_D$=$V_{DRM}$ $V_R$=$V_{RRM}$ | $T_j$=25℃ | 5 | μA |
| $I_{RRM}$ | | $T_j$=125℃ | 0.5 | mA |

## THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $R_{th(j-c)}$ | junction to case(AC) | SOT-223/ SOT-223-2L | 7.5 | ℃/W |
| $R_{th(j-a)}$ | junction to ambient | SOT-223/ SOT-223-2L | 60 | |

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

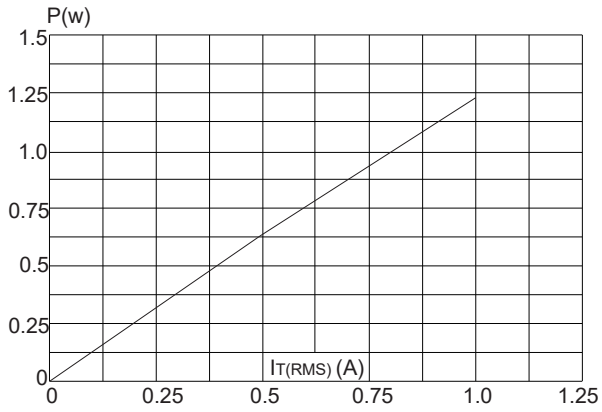



**FIG.2:** RMS on-state current versus ambient temperature (printed circuit board FR4, copper thickness: 35μm) (full cycle)

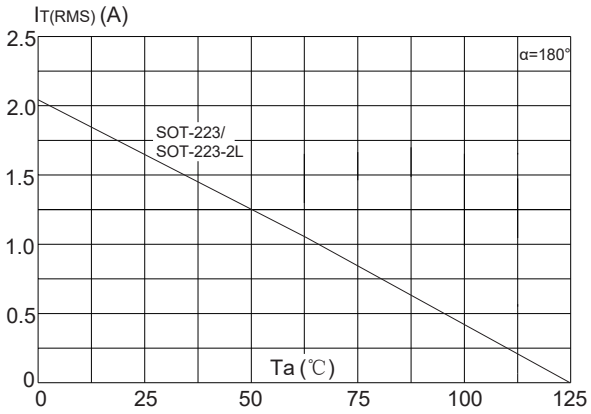



**FIG.3:** Surge peak on-state current versus number of cycles

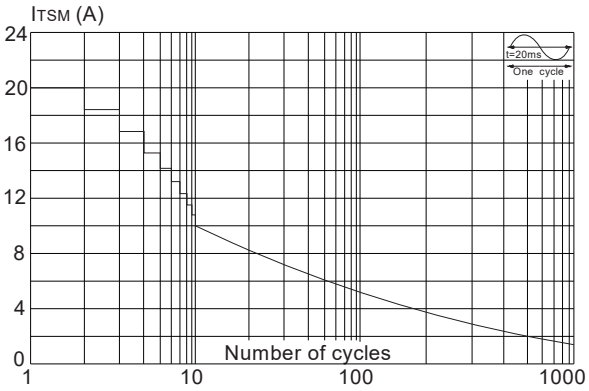



**FIG.4:** On-state characteristics (maximum values)

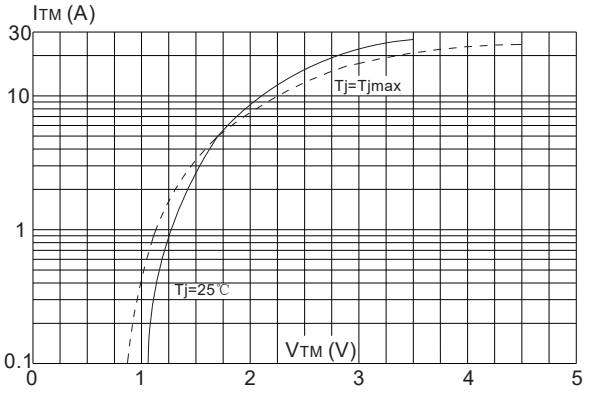



**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms and corresponding value of $I^2t$ (Ⅰ-Ⅱ-Ⅲ:dI/dt < 50A/μs; Ⅳ:dI/dt < 10A/μs)

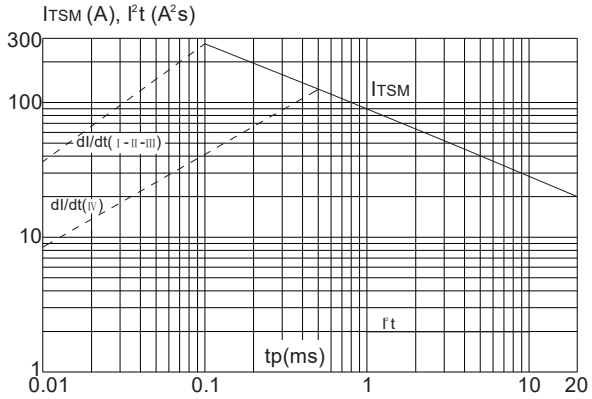



**FIG.6:** Relative variations of gate trigger current versus junction temperature

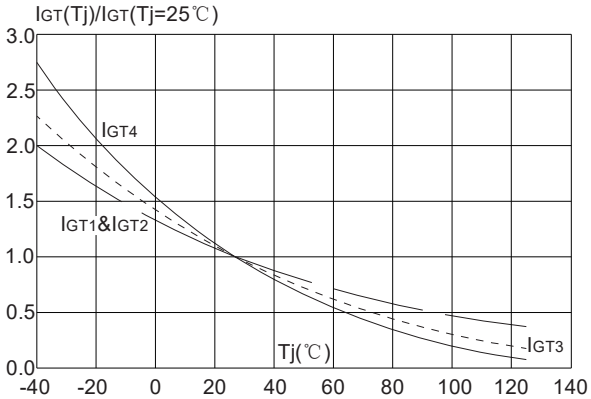


**FIG.7:** Relative variations of holding current versus junction temperature

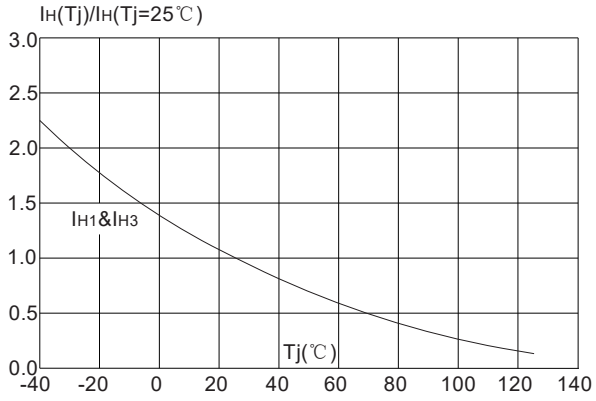
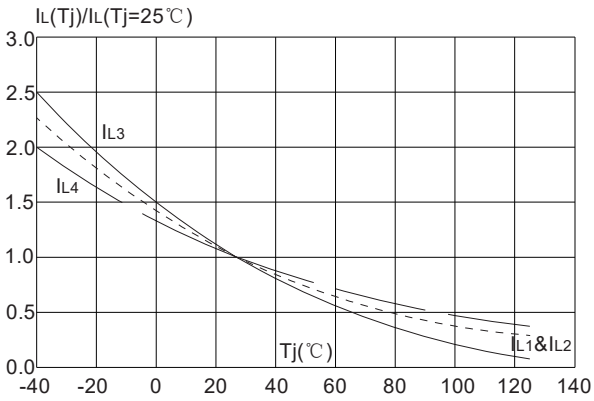



**FIG.8:** Relative variations of latching current versus junction temperature




## 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℃ |