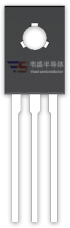
## DESCRIPTION:

The BT136X-600F SCR series with the parallel resistor between Gate and Cathode are especially recommended for use on straight hair, igniter, anion generator, etc.

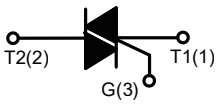

TO-220F


TO-220A


TO-220C


TO-126


TO-251




## MAIN FEATURES

| Symbol | Value | Unit |
|---|---|---|
| $I_{T(RMS)}$ | 4 | 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 | TO-251/ TO-220A(Non-Ins) /TO-220C ($T_C$=105℃) | $I_{T(RMS)}$ | 4 | A |
| | TO-220A(Ins)/ TO-220F(Ins) ($T_C$=100℃) | | | |
| | TO-202-3/ TO-126/SOT-82 ($T_C$=95℃) | | | |

| | | | | |
|---|---|---|---|---|
| Non repetitive surge peak on-state current (full cycle, F=50Hz) | | $I_{TSM}$ | 35 | A |
| $I^2t$ value for fusing (tp=10ms) | | $I^2t$ | 6.1 | $A^2s$ |
| 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 | F | |
| $I_{GT}$ | $V_D$=12V | Ⅰ-Ⅱ-Ⅲ | MAX | 5 | 5 | 10 | 25 | mA |
| | | Ⅳ | | 5 | 10 | 25 | 70 | |
| $V_{GT}$ | | 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 | MAX | 10 | 20 | 30 | 40 | mA |
| | | Ⅱ-Ⅳ | | 15 | 35 | 45 | 60 | |
| $I_H$ | $I_T$=100mA | | MAX | 5 | 15 | 25 | 30 | mA |
| dV/dt | $V_D$=2/3$V_{DRM}$ Gate Open $T_j$=125℃ | | MIN | 20 | 50 | 100 | 150 | V/μs |
| (dV/dt)c | (dI/dt)c=1.7A/ms $T_j$=125℃ | | MIN | 0.1 | 0.1 | 0.5 | 5 | V/μs |

## STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX) | Unit |
|---|---|---|---|---|
| $V_{TM}$ | $I_{TM}$=5.5A tp=380μs | $T_j$=25℃ | 1.6 | 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) | TO-251 | 2.8 | ℃/W |
| | | TO-220A(Ins) | 3.5 | |
| | | TO-220A(Non-Ins)/ TO-220C | 2.5 | |
| | | TO-220F(Ins) | 3.3 | |
| | | TO-126/SOT-82 | 3.7 | |
| | | TO-202-3 | 3.9 | |

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

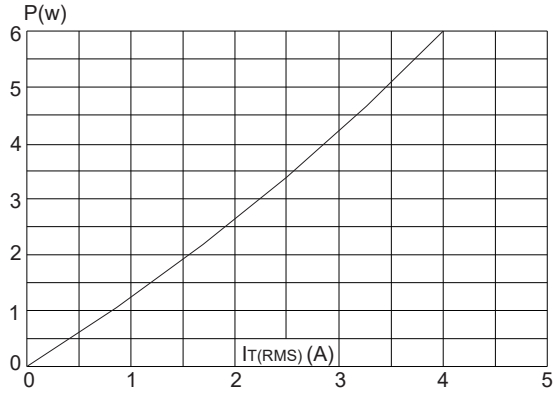



**FIG.2:** RMS on-state current versus case temperature

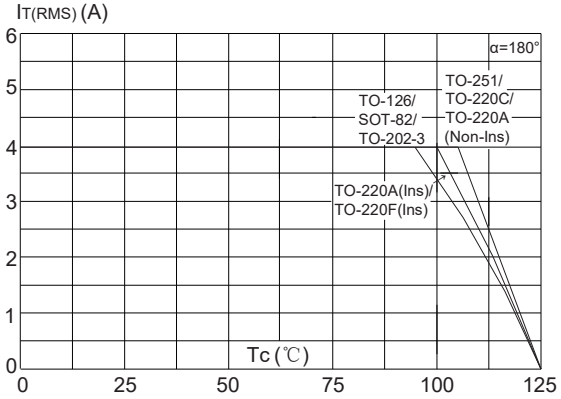



**FIG.3:** Surge peak on-state current versus number of cycles

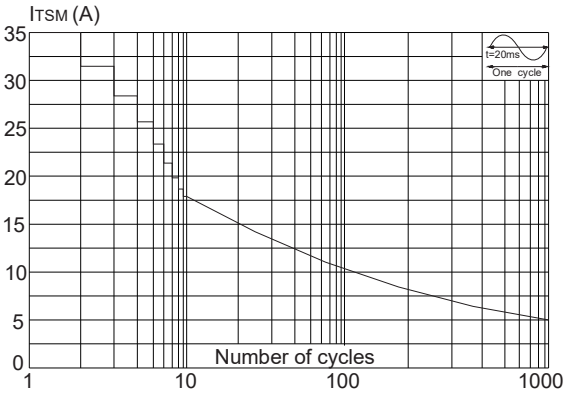



**FIG.4:** On-state characteristics (maximum values)

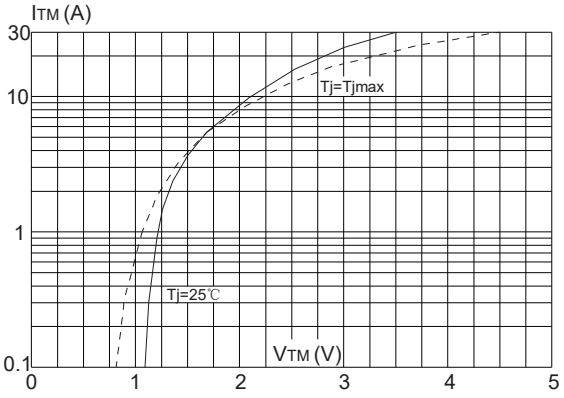



**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms and corresponding value of $I^2t$ (Ⅰ-Ⅱ-Ⅲ:dI/dt < 50A/μs; Ⅳ:dI/dt < 10A/μs)

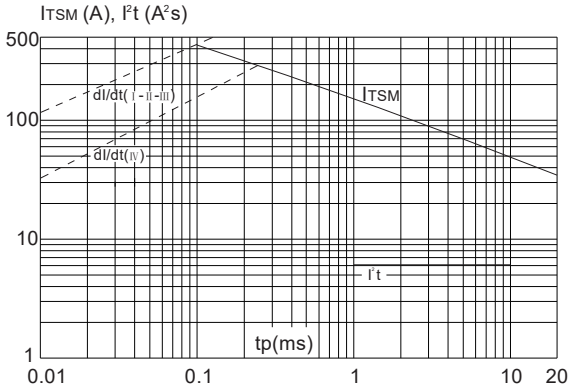



**FIG.6:** Relative variations of gate trigger current versus junction temperature

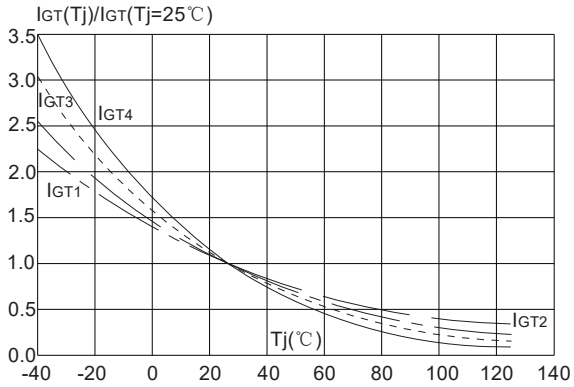


**FIG.7:** Relative variations of holding current versus junction temperature

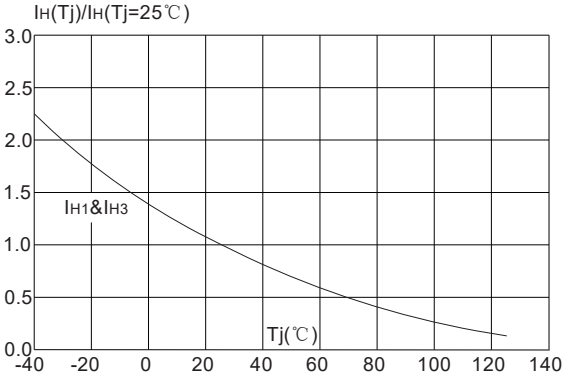



**FIG.8:** Relative variations of latching current versus junction temperature