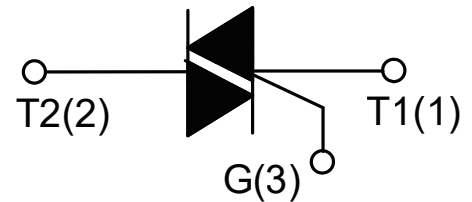
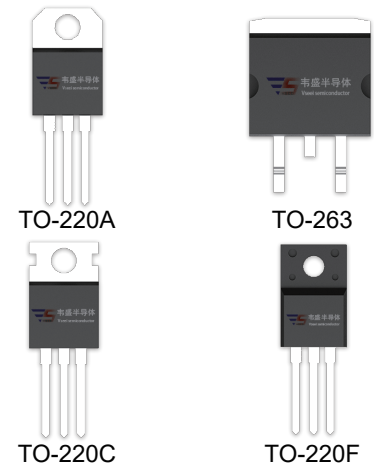


DESCRIPTION:

The BT139X-600E SCR series with the parallel resistor between Gate and Cathode are especially recommended for use on straight hair, igniter, anion generator, etc.

MAIN FEATURES

| Symbol | Value | Unit |
|-------------------|-------------|------|
| $I_{T(RMS)}$ | 16 | A |
| V_{DRM}/V_{RRM} | 600 and 800 | V |



ABSOLUTE MAXIMUM RATINGS

| Parameter | | Symbol | Value | Unit |
|---|--|--------------|-----------------|------|
| Storage junction temperature range | | T_{stg} | -40-150 | °C |
| Operating junction temperature range | | T_j | -40-125 | °C |
| Repetitive peak off-state voltage($T_j=25^{\circ}\text{C}$) | | V_{DRM} | 600/800 | V |
| Repetitive peak reverse voltage($T_j=25^{\circ}\text{C}$) | | 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-220C($T_c=100^{\circ}\text{C}$) | $I_{T(RMS)}$ | 16 | A |
| | TO-220F(Ins) ($T_c=85^{\circ}\text{C}$) | | | |
| | TO-263 ($T_c=75^{\circ}\text{C}$) | | | |
| | TO-220A(Ins) ($T_c=87^{\circ}\text{C}$) | | | |
| Non repetitive surge peak on-state current ($t_p=20\text{ms}$) | | I_{TSM} | 140 | A |

| | | | | |
|--|--------------|--------------------|-----|------------------|
| I ² t value for fusing (tp=10ms) | | I ² t | 98 | A ² s |
| 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°C unless otherwise specified)

| Symbol | Test Condition | Quadrant | | Value | | | | Unit |
|-----------------|---|--------------|-----|-------|----|-----|-----|------|
| | | | | D | E | F | B | |
| I _{GT} | V _D =12V R _L =33Ω | I - II - III | MAX | 5 | 10 | 25 | 50 | mA |
| | | IV | | 10 | 25 | 70 | 70 | |
| V _{GT} | | ALL | MAX | 1.3 | | | | V |
| V _{GD} | V _D =V _{DRM} T _j =125°C R _L =3.3KΩ | ALL | MIN | 0.2 | | | | V |
| I _L | I _G =1.2I _{GT} | I - III | MAX | 15 | 30 | 50 | 80 | mA |
| | | II - IV | | 20 | 40 | 100 | 120 | |
| I _H | I _T =100mA | | MAX | 10 | 25 | 40 | 60 | mA |
| dV/dt | V _D =2/3V _{DRM} Gate Open T _j =125°C | | MIN | 20 | 50 | 100 | 500 | V/μs |

STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX) | Unit |
|------------------|---|-----------------------|------------|------|
| V _{TM} | I _{TM} =20A tp=380μs | T _j =25°C | 1.6 | V |
| I _{DRM} | V _D =V _{DRM} V _R =V _{RDM} | T _j =25°C | 5 | μA |
| I _{RRM} | | T _j =125°C | 1 | mA |

THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|---------------|----------------------|--------------|-------|------|
| $R_{th(j-c)}$ | junction to case(AC) | TO-220C | 1.2 | °C/W |
| | | TO-220F(Ins) | 2.3 | |
| | | TO-263 | 2.7 | |
| | | TO-220A(Ins) | 2.1 | |

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

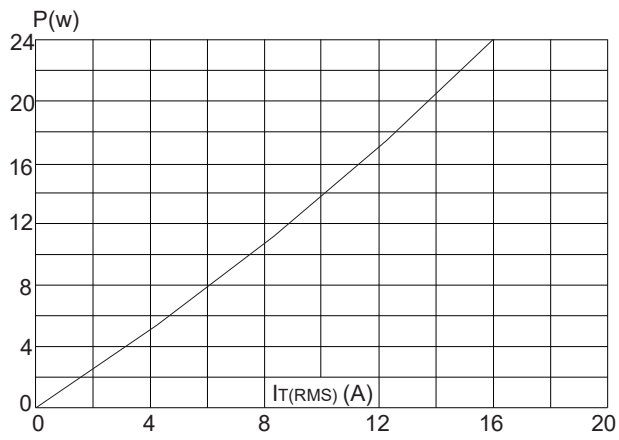


FIG.2: RMS on-state current versus case temperature

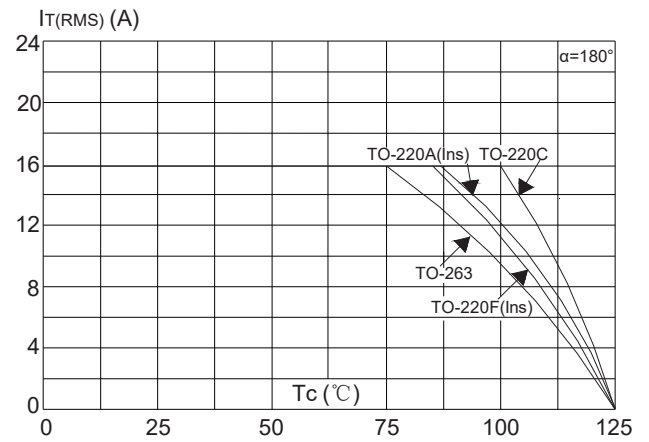


FIG.3: Surge peak on-state current versus number of cycles

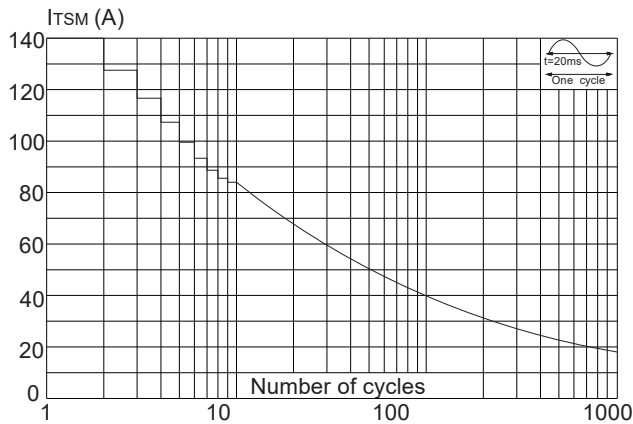


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$ and corresponding value of I^2t (I - II-III: $dI/dt < 50\text{A}/\mu\text{s}$; IV: $dI/dt < 10\text{A}/\mu\text{s}$)

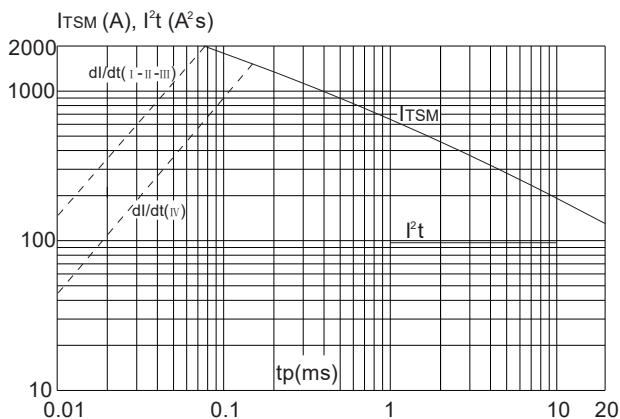


FIG.7: Relative variations of holding current versus junction temperature

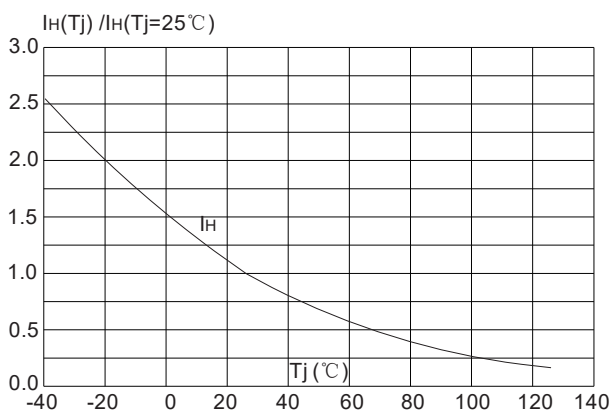


FIG.4: On-state characteristics (maximum values)

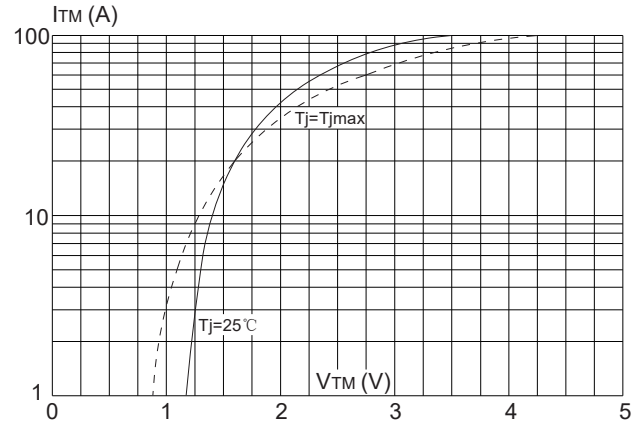


FIG.6: Relative variations of gate trigger current versus junction temperature

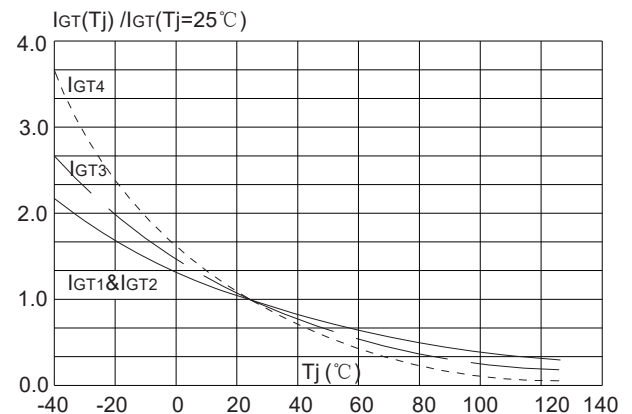


FIG.8: Relative variations of latching current versus junction temperature

