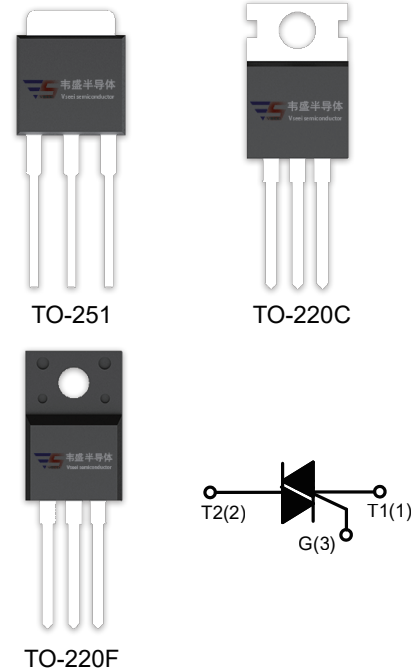


**DESCRIPTION:**

The BT138-600E 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
$I_{T(RMS)}$	12	A
$V_{DRM}/V_{RRM}$	600/800	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-251/ TO-220C( $T_c=95^\circ\text{C}$ )	$I_{T(RMS)}$	12	A
	TO-220F(Ins) ( $T_c=80^\circ\text{C}$ )			
Non repetitive surge peak on-state current (full cycle, F=50Hz)		$I_{TSM}$	95	A
$I^2t$ value for fusing ( $t_p=10\text{ms}$ )		$I^2t$	45	$\text{A}^2\text{s}$

Critical rate of rise of on-state current( $I_G=2 \times I_{GT}$ )	I - II -III	di/dt	50	A/ $\mu$ s
	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** ( $T_j=25^\circ\text{C}$  unless otherwise specified)

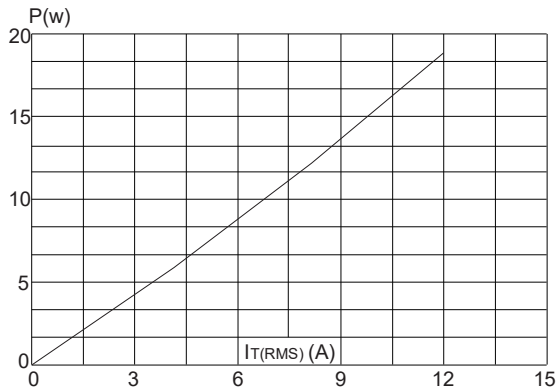
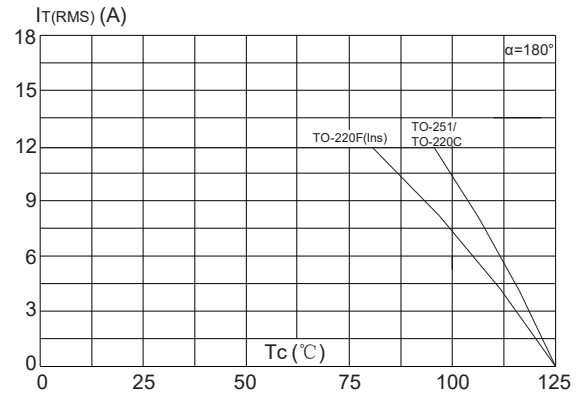
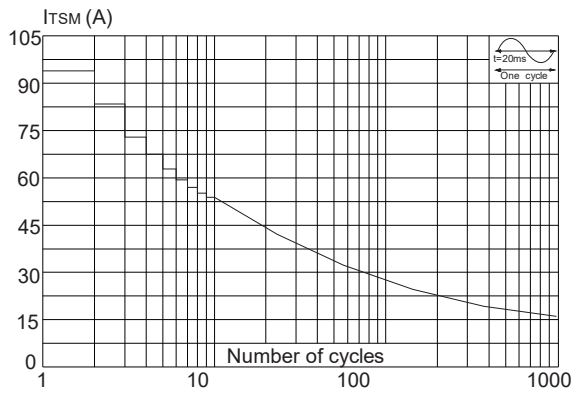
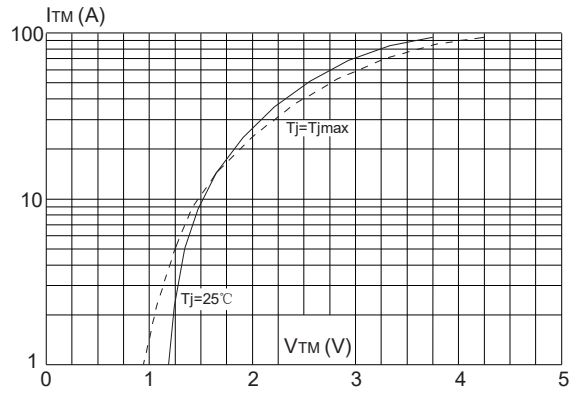
Symbol	Test Condition	Quadrant		Value			Unit
				D	E	F	
$I_{GT}$	$V_D=12\text{V } R_L=33\Omega$	I - II -III	MAX	5	10	25	mA
		IV		10	25	70	
$V_{GT}$		ALL	MAX	1.5			V
$V_{GD}$	$V_D=V_{DRM} T_j=125^\circ\text{C}$ $R_L=3.3\text{K}\Omega$	ALL	MIN	0.2			V
$I_L$	$I_G=1.2I_{GT}$	I - III	MAX	15	30	40	mA
		II - IV		20	40	80	
$I_H$	$I_T=100\text{mA}$		MAX	10	25	30	mA
dV/dt	$V_D=2/3V_{DRM}$ Gate Open $T_j=125^\circ\text{C}$		MIN	20	50	50	V/ $\mu$ s

**STATIC CHARACTERISTICS**

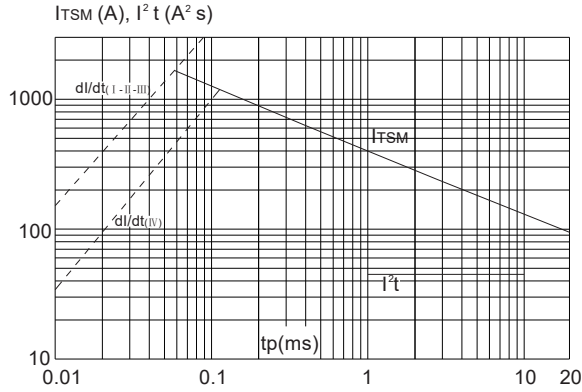
Symbol	Parameter		Value(MAX)	Unit
$V_{TM}$	$I_{TM}=15\text{A } t_p=380\mu\text{s}$	$T_j=25^\circ\text{C}$	1.6	V
$I_{DRM}$	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25^\circ\text{C}$	5	$\mu\text{A}$
$I_{RRM}$		$T_j=125^\circ\text{C}$	1	mA

**THERMAL RESISTANCES**

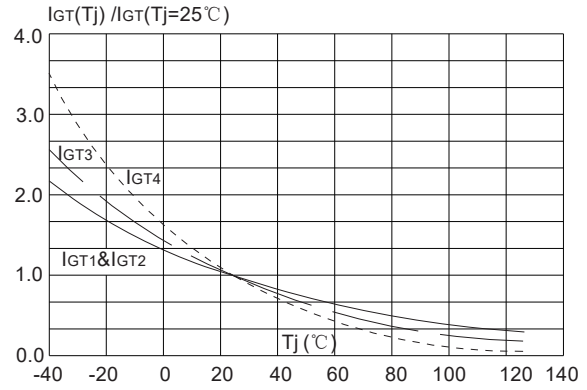
Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220C	1.4	$^\circ\text{C/W}$
		TO-220F(Ins)	2.5	
		TO-251	1.7	

**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)


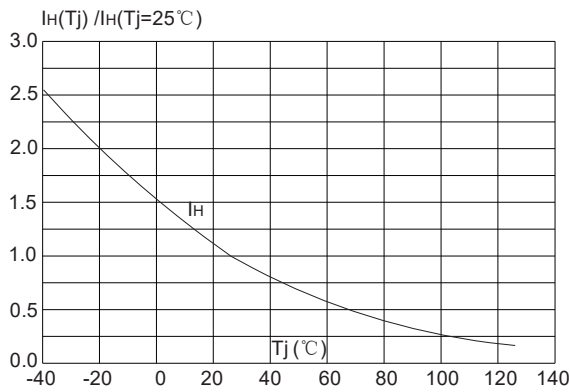
**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20\text{ms}$ , and corresponding value of  $I^2t$  ( I - II - III:  $dI/dt < 50\text{A}/\mu\text{s}$ ; IV:  $dI/dt < 10\text{A}/\mu\text{s}$ )



**FIG.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

