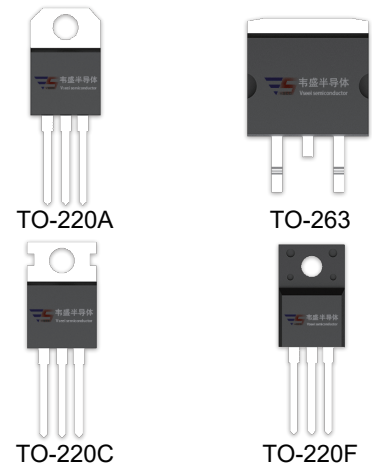
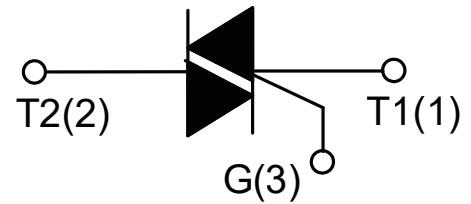


DESCRIPTION:

The BT139-600E 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^2t value for fusing ($t_p=10\text{ms}$)		I^2t	98	A^2s
Critical rate of rise of on-state current ($I_G=2 \times I_{GT}$)	I - II - III	di/dt	50	$\text{A}/\mu\text{s}$
	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	B	
I_{GT}	$V_D=12\text{V}$ $R_L=33\Omega$	I - II - III	MAX	5	10	25	50	mA
		IV		10	25	70	70	
V_{GT}		ALL	MAX	1.3				V
V_{GD}	$V_D=V_{DRM}$ $T_j=125^\circ\text{C}$ $R_L=3.3\text{K}\Omega$	ALL	MIN	0.2				V
I_L	$I_G=1.2I_{GT}$	I - III	MAX	15	30	50	80	mA
		II - IV		20	40	100	120	
I_H	$I_T=100\text{mA}$		MAX	10	25	40	60	mA
dV/dt	$V_D=2/3V_{DRM}$ Gate Open $T_j=125^\circ\text{C}$		MIN	20	50	100	500	$\text{V}/\mu\text{s}$

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	$I_{TM}=20\text{A}$ $t_p=380\mu\text{s}$	$T_j=25^\circ\text{C}$	1.6	V
I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^\circ\text{C}$	5	μA
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	1.2	°C/W
		TO-220F(Ins)	2.3	
		TO-263	2.7	
		TO-220A(Ins)	2.1	

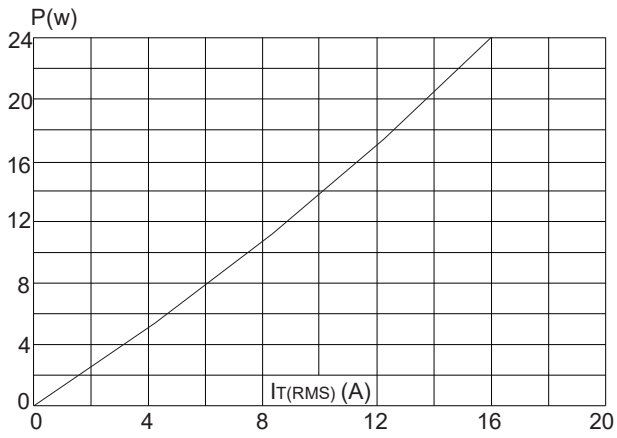
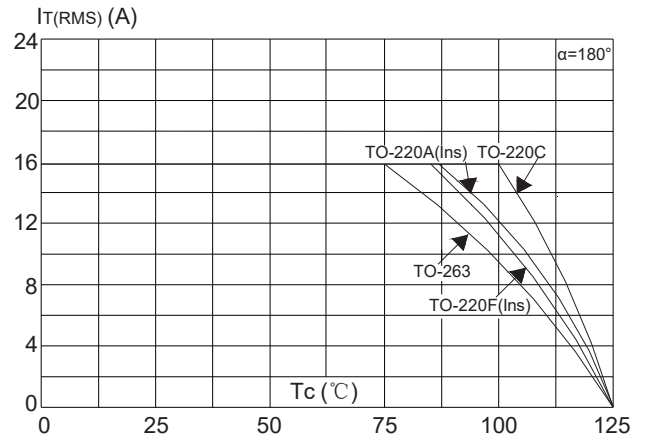
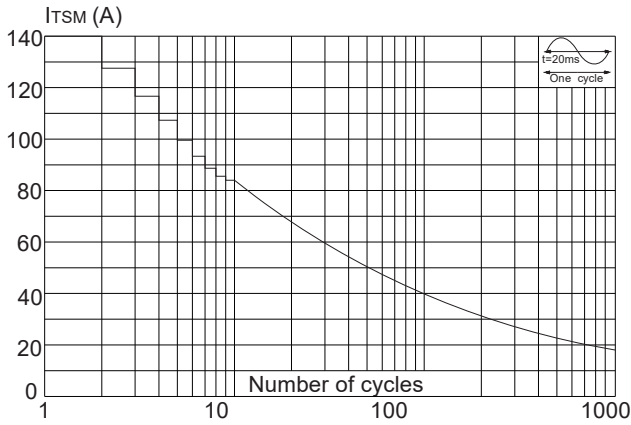
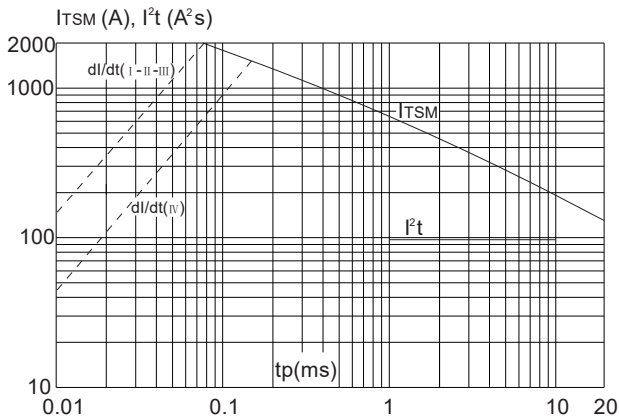
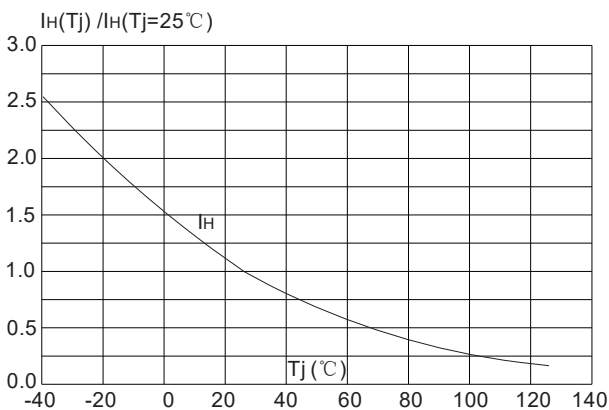
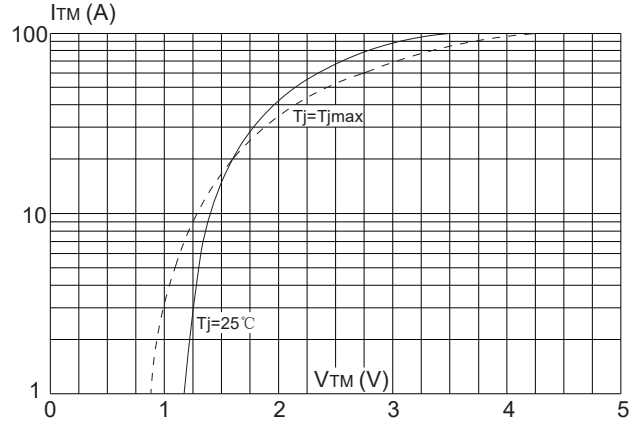
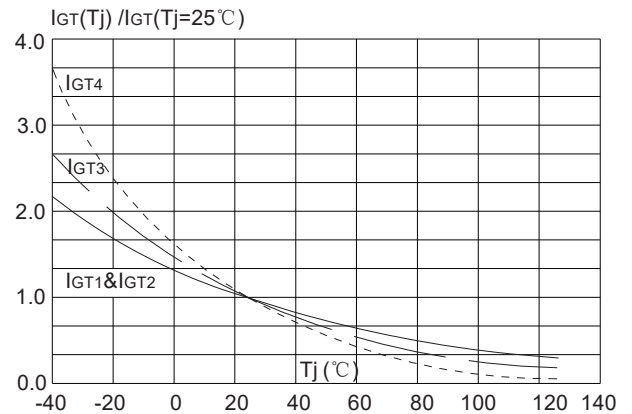
FIG.1 Maximum power dissipation versus RMS on-state current

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 $t_p < 20ms$ and corresponding value of I^2t (I - II - III: $di/dt < 50A/\mu s$; IV: $di/dt < 10A/\mu s$)

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
