DESCRIPTION:

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


TO-220A

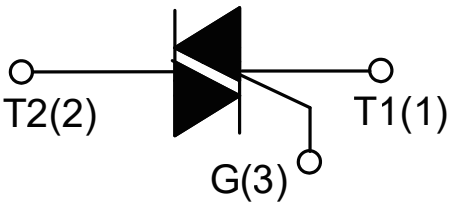

TO-263


TO-220C


TO-220F

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	℃
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-220C(T_C=100℃)	$I_{T(RMS)}$	16	A
	TO-220F(Ins) (T_C=85℃)			
	TO-263 (T_C=75℃)			
	TO-220A(Ins) (T_C=87℃)			
Non repetitive surge peak on-state current (tp=20ms)		I_{TSM}	140	A

I^2t value for fusing (tp=10ms)		I^2t	98	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
				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℃ 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℃		MIN	20	50	100	500	V/μs

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	I_{TM}=20A 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℃	1	mA

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220C	1.2	℃/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

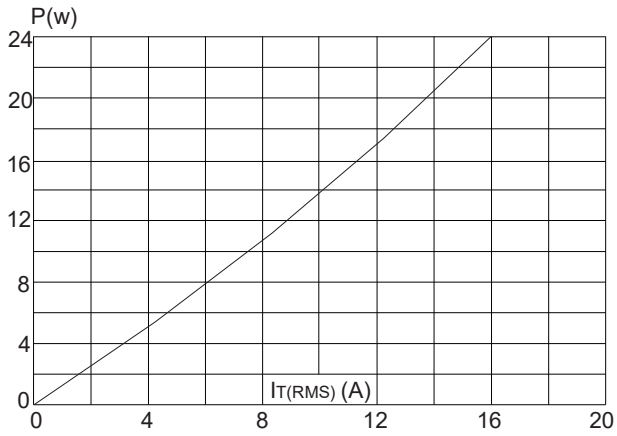


FIG.2: RMS on-state current versus case temperature

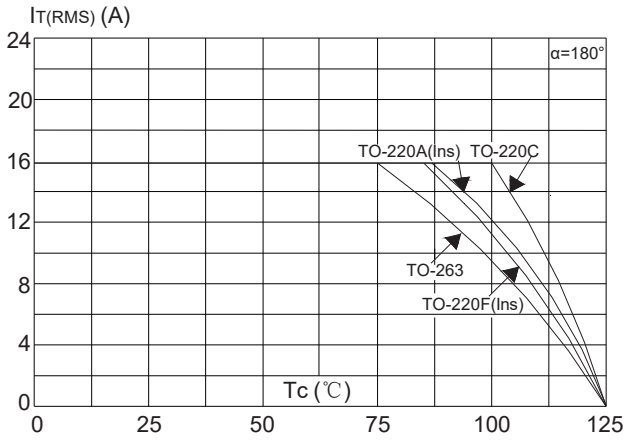


FIG.3: Surge peak on-state current versus number of cycles

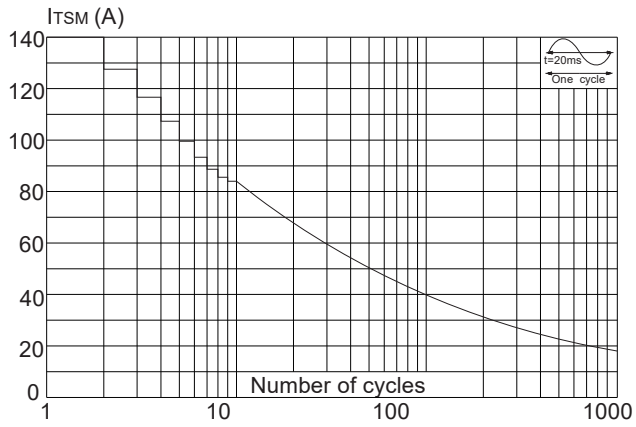


FIG.4: On-state characteristics (maximum values)

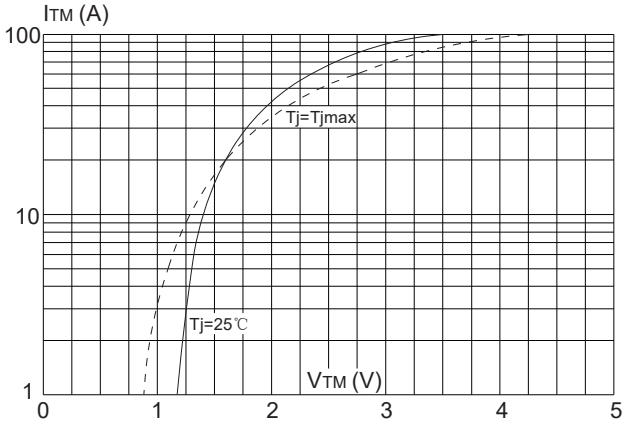


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms and corresponding value of I^2t (Ⅰ-Ⅱ-Ⅲ:dI/dt < 50A/μs; Ⅳ:dI/dt < 10A/μs)

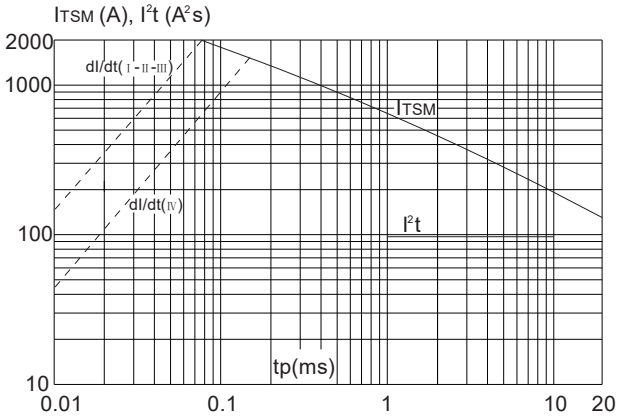


FIG.6: Relative variations of gate trigger current versus junction temperature

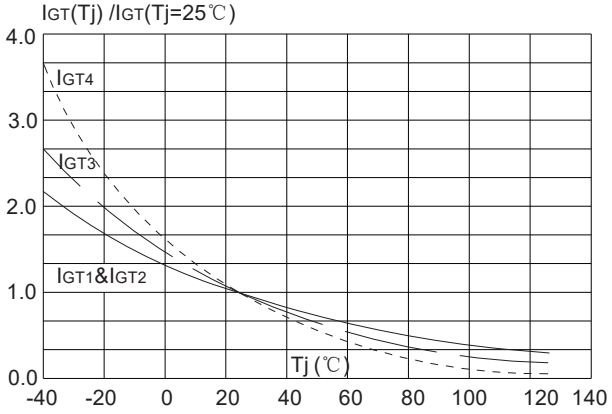


FIG.7: Relative variations of holding current versus junction temperature

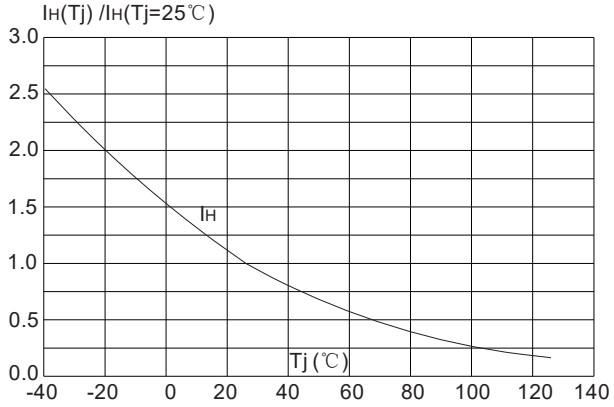


FIG.8: Relative variations of latching current versus junction temperature