

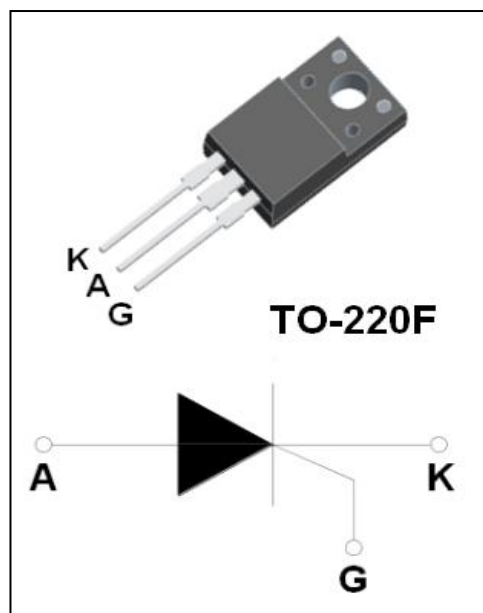


BT151 Series 12A SCRs

Thyristors(Silicon controlled rectifiers)

DESCRIPTION:

BT151 series of silicon controlled rectifiers, with high ability to withstand the shock loading of large current, provide high dv/dt rate with strong resistance to electromagnetic interference. They are especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc.



MAIN FEATURES

Symbol	BT151-600R	BT151-800R
V_{DRM}/V_{RRM}	600V	800V
$I_{T(RMS)}$	12A	
I_{GT}	$\leq 15mA$	

ABSOLUTE MAXIMUM RATINGS($T_j = 25^\circ C$ unless otherwise noted)

Symbol	Parameter	Value	Unit
T_{stg}	Storage junction temperature range	-40 - 150	$^\circ C$
T_j	Operating junction temperature range	-40 - 125	$^\circ C$
V_{DRM}	Repetitive peak off-state voltage	600/800	V
V_{RRM}	Repetitive peak reverse voltage	600/800	V
$I_{T(RMS)}$	RMS on-state current	12	A
I_{TSM}	Non repetitive surge peak on-state current (tp=10ms)	120	A
I^2t	I^2t value for fusing (tp=10ms)	72	A^2s
di_T/dt	Repetitive rate of rise of on-state current ($I_G=2 \times I_{GT}$)	50	$A/\mu s$
I_{GM}	Peak gate current	2	A
P_{GM}	Peak gate power	5	W
$P_{G(AV)}$	Average gate power dissipation	0.5	W

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THERMAL CHARACTERISTICS

Symbol	Parameter	Max	Unit
$R_{th(j-mb)}$	Thermal resistance,Junction to mounting base	4.5	$^{\circ}\text{C} / \text{W}$

ELECTRICAL CHARACTERISTICS($T_j = 25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditons	Min	Typ	Max	Unit
I_{GT}	Gate trigger current	$V_D = 12\text{V } R_L = 33\Omega$	--	4	15	mA
V_{GT}	Gate trigger voltage		--	0.7	1.5	V
I_L	Latching current	$I_G = 1.2I_{GT}$	--	--	40	mA
I_H	Holding current	$I_T = 500\text{mA}$	--	12	30	mA
dV/dt	Critical rate of rise of off- state voltage	$V_D = 2/3V_{DRM}$ Gate Open $T_j = 125^{\circ}\text{C}$	200	400	--	$\text{V}/\mu\text{s}$

STATIC CHARACTERISTICS($T_j = 25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditons	Min	Typ	Max	Unit
V_{TM}	Peak on-state voltage	$I_{TM} = 23\text{A } t_p = 380\mu\text{s}$	--	--	1.7	V
I_{DRM}	Peak repetitive blocking current	$V_D = V_{DRM}$	--	--	10	μA
I_{RRM}	Peak repetitive reverse current	$V_R = V_{RRM}$	--	--	10	μA
I_{DRM}	Peak repetitive blocking current	$V_D = V_{DRM} T_j = 125^{\circ}\text{C}$	--	--	1	mA
I_{RRM}	Peak repetitive reverse current	$V_R = V_{RRM} T_j = 125^{\circ}\text{C}$	--	--	1	mA



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

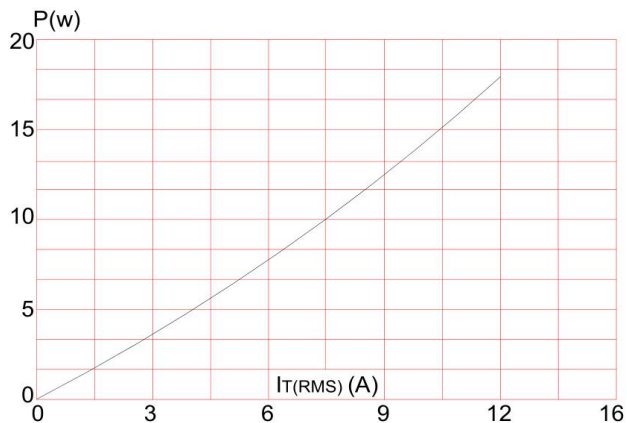


FIG.3: Surge peak on-state current versus number of cycles

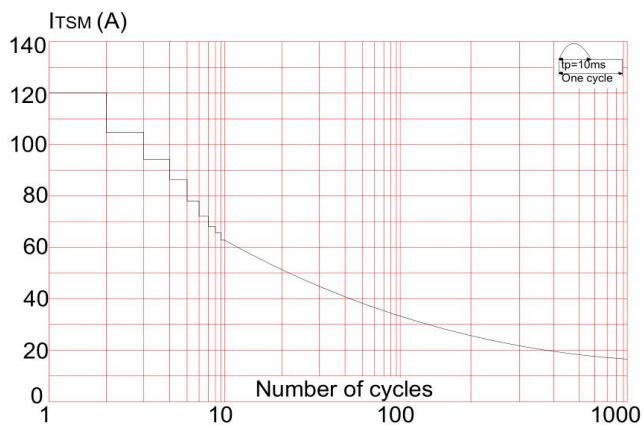


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10ms$, and corresponding value of I^2t ($di/dt < 50A/\mu s$)

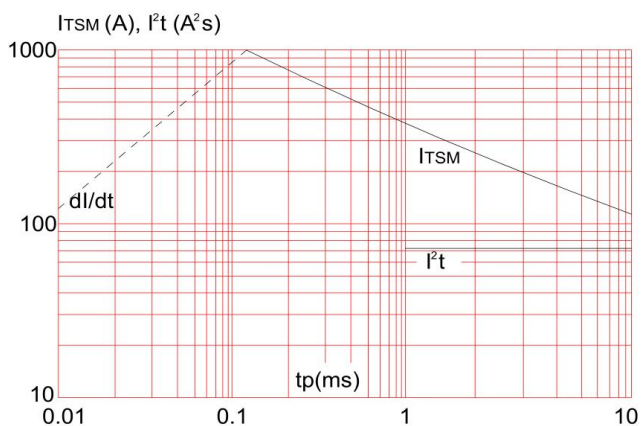


FIG.2: RMS on-state current versus case temperature

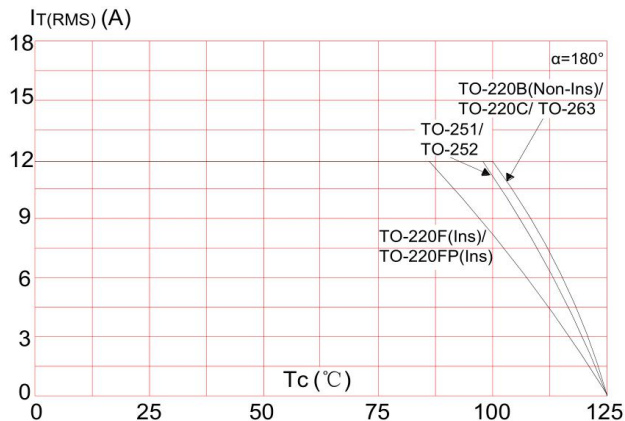


FIG.4: On-state characteristics (maximum values)

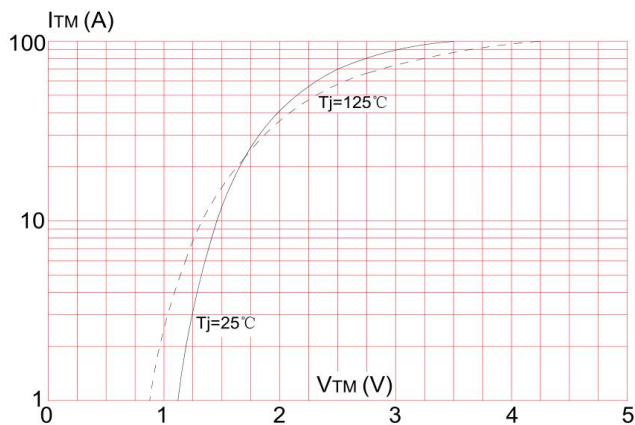
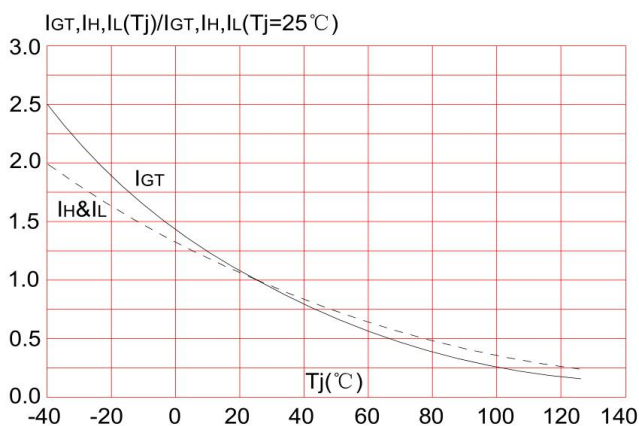


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



TO-220F Package Dimensions

UNIT: mm

SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	9.80		10.60	D		2.54	
A1		7.00		D1	1.15		1.55
A2	2.90		3.40	D2	0.60		1.00
A3	9.10		9.90	D3	0.20		0.50
B1	15.40		16.40	E	2.24		2.84
B2	4.35		4.95	E1		0.70	
B3	6.00		7.40	E2		1.0×45°	
C	3.00		3.70	E3	0.35		0.65
C1	15.00		17.00	E4	2.30		3.30
C2	8.80		10.80	α (度)		30°	

