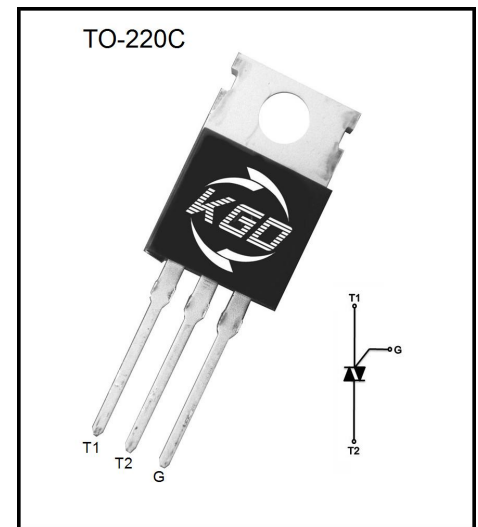


BT138 Series

- **Description:**
High current density due to mesa technology;Glass Passivation.
- **Applications**
BT138 series triacs is suitable for general purpose AC switching. They can be used as an ON/OFF Function in applications such as static relays,heating regulation,induction motor stator circuits... or for phase control operation light dimmers,motor speed controllers.
- **Features:**
Blocking voltage to 600 & 800V
On-state RMS current to 12A
Non-repetitive peak on-state current to 105A
- **Absolute Maximum Ratings**



Symbol	Parameter	Conditions	Value	Unit	
V_{DRM}	Repetitive peak off-state voltage	$T_J=25^\circ\text{C}$	600 & 800	V	
V_{RRM}	Repetitive peak Reverse voltage	$T_J=25^\circ\text{C}$	600 & 800	V	
$I_{T(RMS)}$	RMS on-state current (full sine wave)	$T_c=99^\circ\text{C}$	12	A	
I_{TSM}	Non-repetitive surge peak On-state current (full cycle, $T_J=25^\circ\text{C}$)	$f=60\text{Hz}, t_p=16.7\text{ms}$	105	A	
		$f=50\text{Hz}, t_p=20\text{ms}$	95		
I^2t	I^2t Value for fusing	$t_p=10\text{ms}$	45	A^2S	
I_{GM}	Peak gate current	$t_p=20\mu\text{s}, T_J=125^\circ\text{C}$	2	A	
$P_{G(AV)}$	Average gate power dissipation		0.5	W	
P_{GM}	Peak gate power dissipation	$t_p=10\text{ms}, T_J=125^\circ\text{C}$	5	W	
T_{STG}	Storage temperature		-40	150	$^\circ\text{C}$
T_J	Junction temperature		-40	125	$^\circ\text{C}$

● Electrical Characteristics

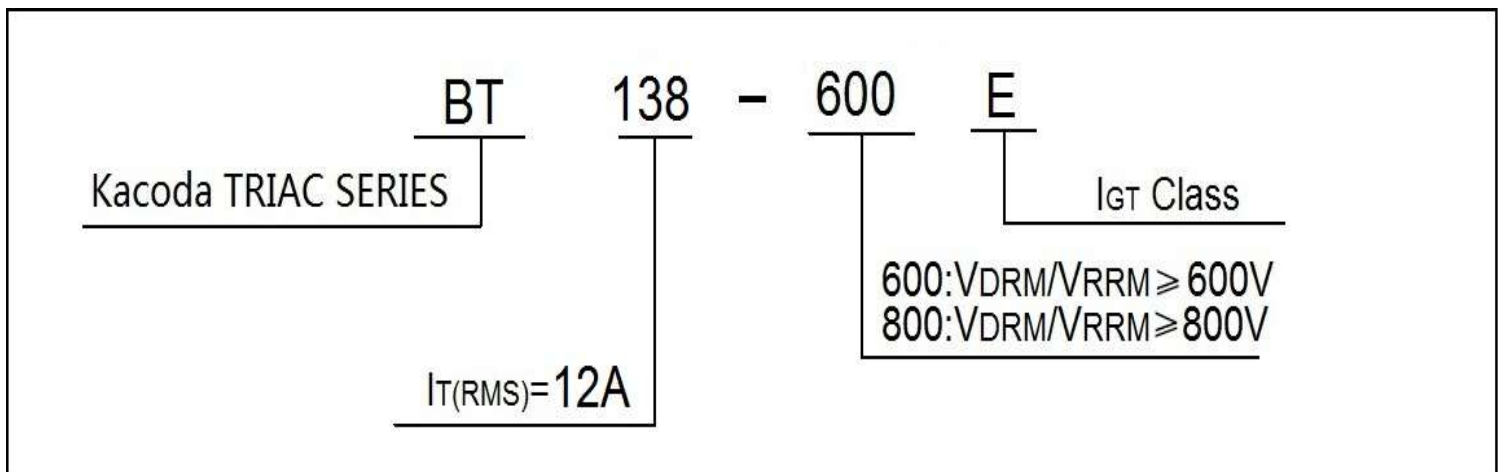
Symbol	Conditions	Quadrant	Value				Unit	
			D	E	F	G		
I_{GT}	$V_D=12V, R_L=33\Omega$	I - II - III	5	10	25	50	mA	
		IV	10	25	70	100		
V_{GT}		ALL	MAX	1.3			V	
V_{GD}	$V_D=V_{DRM}, R_L=3.3K\Omega, T_J=125^\circ C$	ALL	MIN	0.2			V	
I_L	$I_G=1.2I_{GT}$	I - III - IV	MAX	15	30	40	60	mA
		II		20	40	60	90	
I_H	$I_T=100mA$		MAX	10	25	30	60	mA
dv/dt	$V_{DM}=67\%V_{DRM}, \text{gate open}, T_J=125^\circ C$		MIN	5	10	50	200	V/ μs

● Electrical Characteristics

Symbol	Parameter	Numerical	Unit	
V_{TM}	$I_T=15A, t_p=380\mu s$	$T_J=25^\circ C$	1.65	V
I_{DRM}	$V_D=V_{DRM}, V_R=V_{RRM}$	$T_J=25^\circ C$	5	μA
I_{RRM}		$T_J=125^\circ C$	1	mA

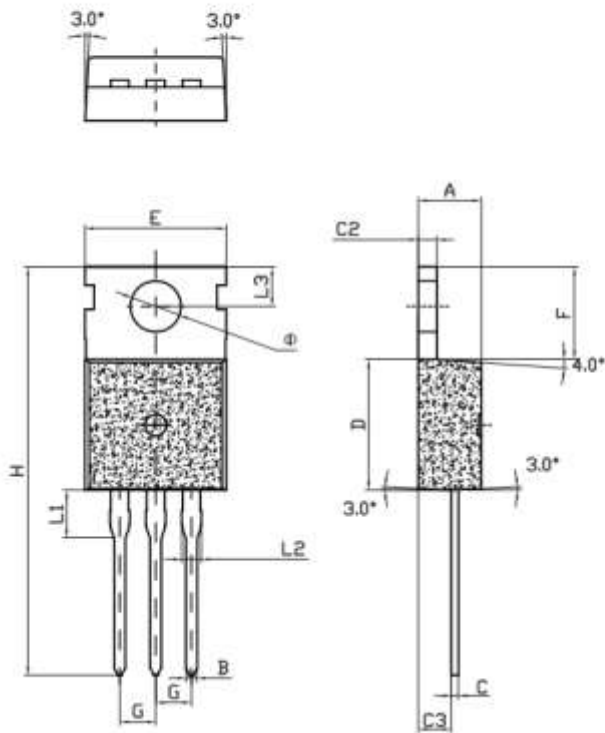
● Thermal Characteristics

Symbol	Parameter	Numerical(MAX)	Unit
$R_{th(j-c)}$	Junction to case(AC)	1.5	$^\circ C/W$

● Ordering Information


● Package Outline Dimensions

TO-220C



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.6	0.173		1.181
B	0.7		0.9	0.027		0.035
C	0.45		0.6	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.2		2.6	0.086		0.102
D	8.9		9.9	0.350		0.390
E	9.9		10.3	0.390		0.406
F	6.3		6.9	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	11.0		11.7
L1		3.2			0.126	
L2	1.14		1.7	0.045		0.067
L3	2.65		2.95	0.104		0.116
Φ		3.6			0.142	

● Marking:

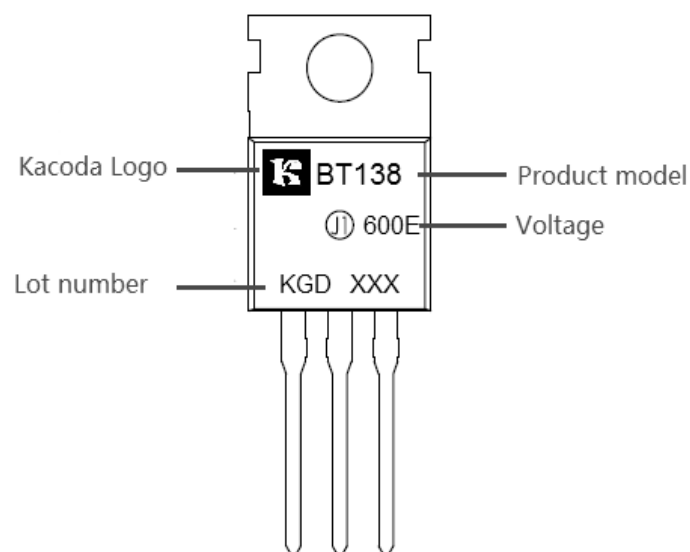


FIG.1:Maximum power dissipation versus RMS on-state current(full cycle)

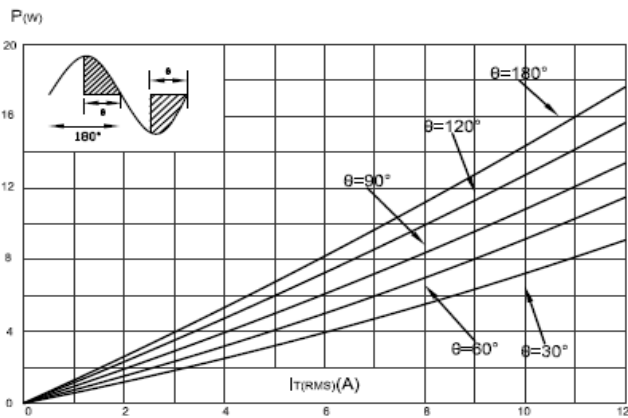


FIG.2:RMS on-state current versus case temperature(full cycle)

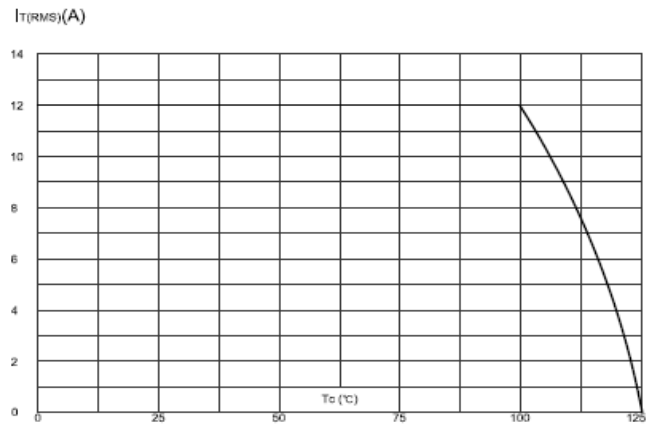


FIG.3:On-state characteristics (maximum values).

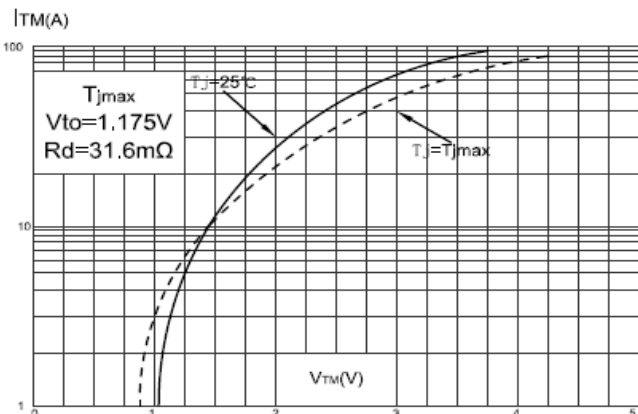


FIG.4:Surge peak on-state current versus number of cycles.

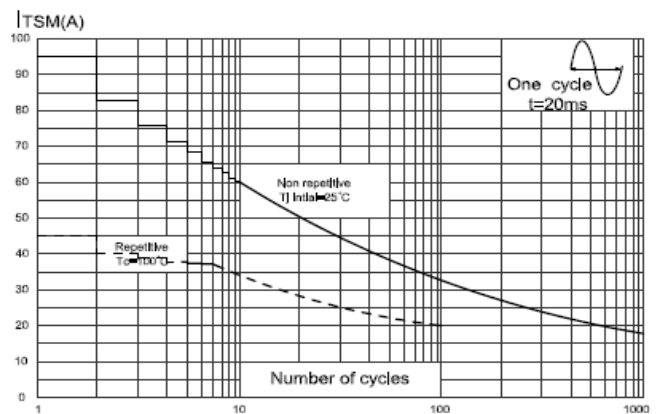


FIG.5:Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10ms$, and corresponding value of I^2t .

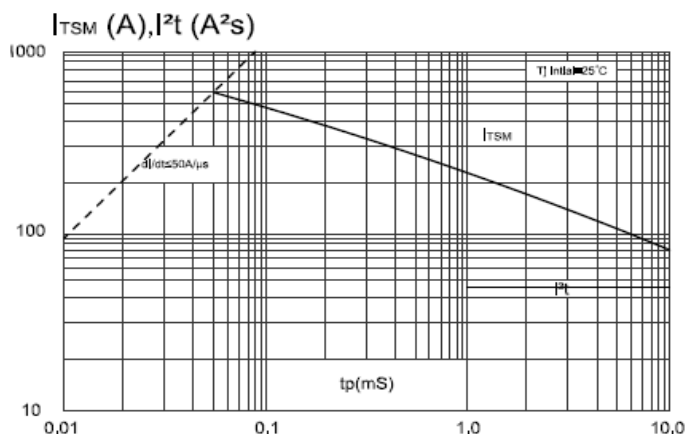


FIG.6:Relative variations of gate trigger current, holding current and latching current versus junction temperature(typical values)

