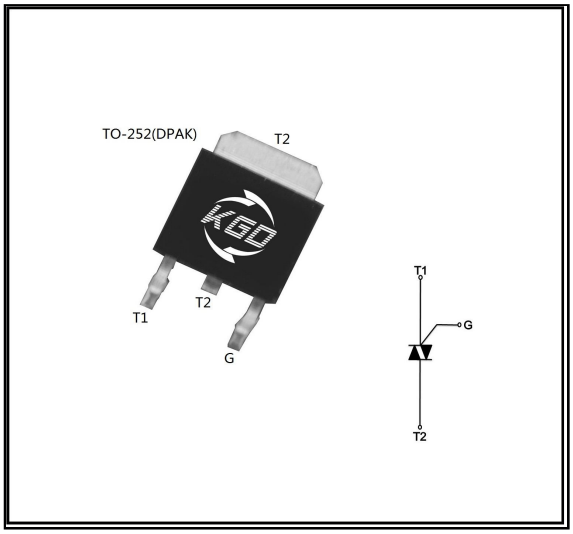
BT138S Series

- **Description:**
  High current density due to mesa technology;Glass Passivation.
- **Applications**
  BT138S 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 stating circuits... or for phase contol 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℃	600 & 800		V
V_{RRM}	Repetitive peak Reverse voltage	T_J=25℃	600 & 800		V
$I_{T(RMS)}$	RMS on-state current (full sine wave)	T_c=99℃	12		A
I_{TSM}	Non-repetitive surge peak On-state current (full cycle,T_j=25℃)	f=60Hz,tp=16.7ms	105		A
		f=50Hz,tp=20ms	95		
I^2t	I^2t Value for fusing	tp=10ms	45		A^2S
I_{GM}	Peak gate current	tp=20μs, T_J=125℃	2		A
$P_{G(AV)}$	Average gate power dissipation		0.5		W
P_{GM}	Peak gate power dissipation	tp=10ms, T_J=125℃	5		W
T_{STG}	Storage temperature		-40	150	℃
T_J	Junction temperature		-40	125	℃

Electrical Characteristics

Symbol	Conditions	Quadrant		Value				Unit
				D	E	F	G	
I_{GT}	V_D=12V,R_L=33Ω	Ⅰ-Ⅱ-Ⅲ	MAX	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=3.3KΩ,T_J=125℃	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},gate open,T_J=125℃		MIN	5	10	50	200	V/μs

Electrical Characteristics

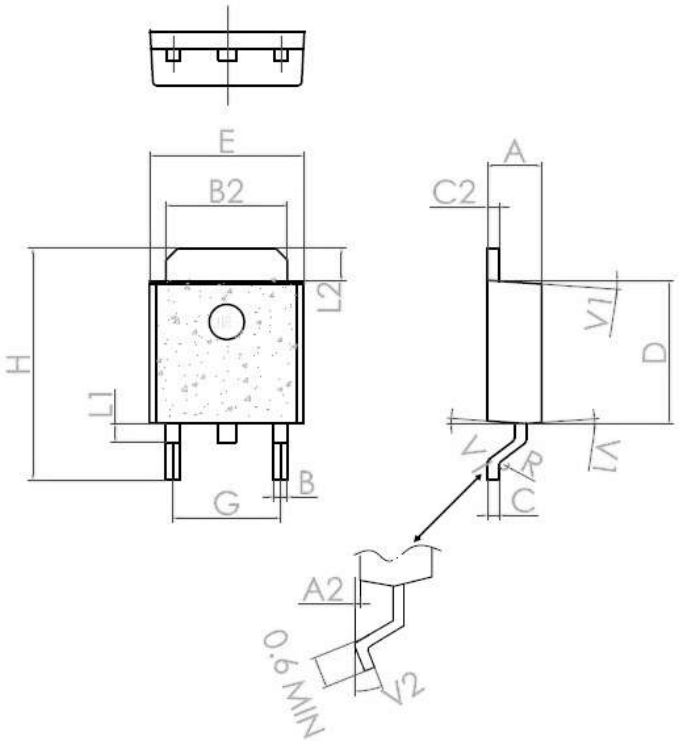
Symbol	Parameter		Numerical	Unit
V_{TM}	I_T=5A,tp=380μs	T_J=25℃	1.55	V
I_{DRM} I_{RRM}	V_D=V_{DRM},V_R=V_{RRM}	T_J=25℃	5	μA
		T_J=125℃	1	mA

Thermal Characteristics

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

- **Package Outline Dimensions**

TO-252 / DPAK



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.2		2.4	0.086		0.095
A2	0.03		0.23	0.001		0.009
B	0.55		0.65	0.021		0.026
B2	5.2		5.4	0.204		0.212
C	0.45		0.62	0.017		0.024
C2	0.48		0.62	0.019		0.024
D	6		6.2	0.236		0.244
E	6.4		6.6	0.251		0.259
G	4.40		4.60	0.173		0.181
H	9.35		10.1	0.368		0.397
L1		0.8			0.031	
L2	1.37		1.5	0.054		0.059
V1		4°			4°	
V2	0°		8°	0°		8°

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

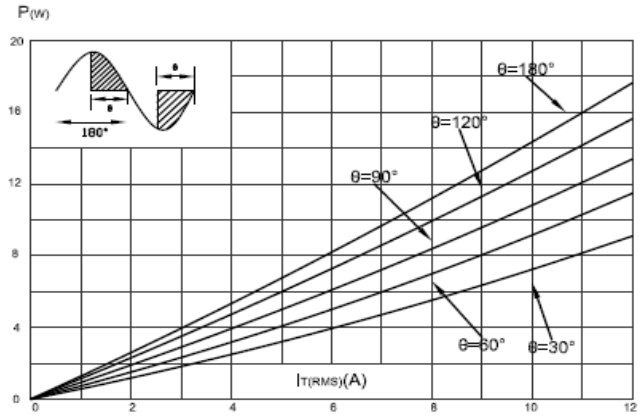


FIG.2:RMS on-state current versus case temperature(full cycle)

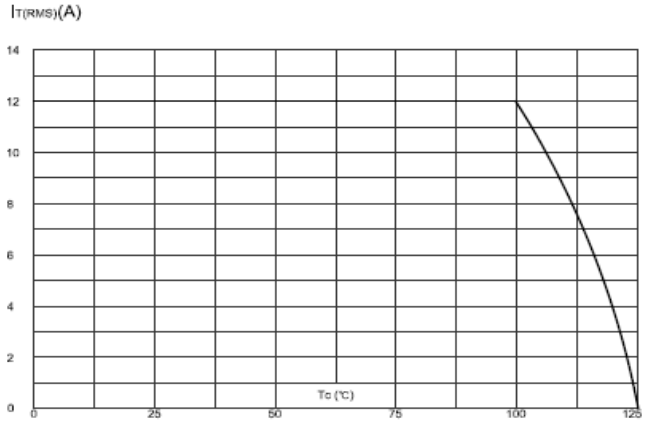


FIG.3:On-state characteristics (maximum values).

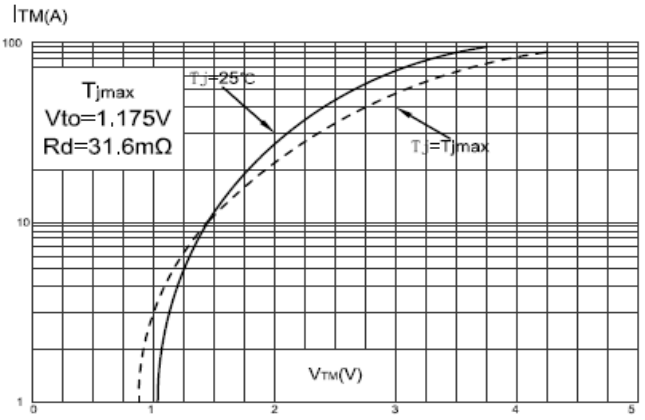


FIG.4:Surge peak on-state current versus number of cycles.

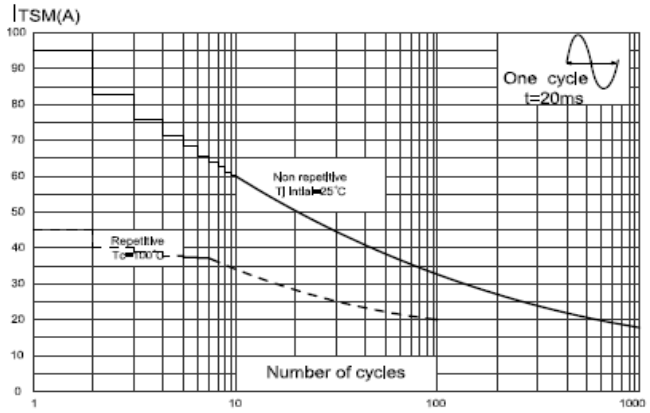


FIG.5:Non-repetitive surge peak on-state current for a sInusoIdaI pulse wIth wIdth tp<10ms,and corresponding value of I²t.

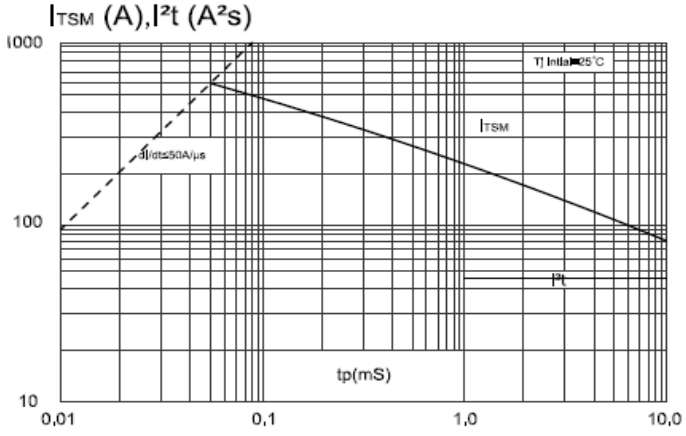


FIG.6:Relative variations of gate trigger current,holdIng current and latchIng current versus junctIon temperature(typIcaI values)