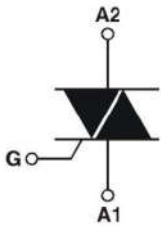
12A 4Quadrants TRIACs

Product Summary

Symbol	Value	Unit
$I_{T(AV)}$	12	A
V_{DRM} V_{RRM}	600/800	V
V_{TM}	1.55	V

Circuit diagram



TO-220C

Features

With high ability to withstand the shock loading of arge current, Provide high dv/dt rate with strong resistance to electromagnetic interference

Application

Power charger, T-tools, massager, solid staterelay, AC Motor speed regulation and so on.

Order Information

Part Number	Package	Marking	packing	packing Quantity
BT138	TO-220C	BT138 XXXX	Box	1000PCS/Box

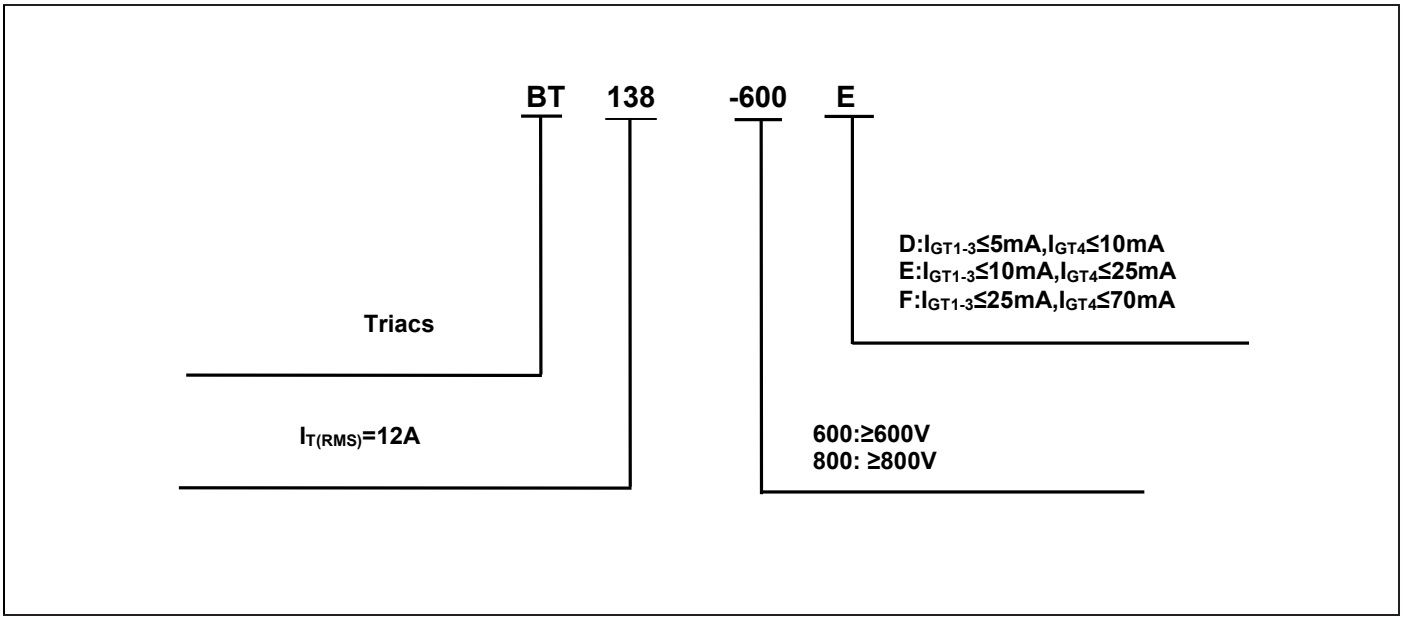
Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value		Unit
Repetitive peak off-state voltage	V_{DRM}	600/800		V
Repetitive peak reverse voltage	V_{RRM}	600/800		V
RMS on-state current	$I_{T(RMS)}$	12		A
Non repetitive surge peak on-state current (full cycle, F=50Hz)	I_{TSM}	95		A
I^2t value for fusing (tp=10ms)	I^2t	45		A^2s
Critical rate of rise of on-state current (I_G =2 x I_{GT})	dI/dt	I - II -III	50	A/μs
		IV	10	
Peak gate current	I_{GM}	2		A
Gate peak power	I_{GM}	5		W
Average gate power dissipation	$P_{G(AV)}$	0.5		W
Junction Temperature	T_J	-40~+150		°C
Storage Temperature	T_{STG}	-40 ~+125		°C

Electrical characteristics (T_A=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition		Value			Unit
				D	E	F	
Gate trigger current	I_{GT}	V_D=12V, I_T=0.1A, T_j=25℃, Fig.6	Ⅰ - Ⅱ -Ⅲ	≤5	≤10	≤25	mA
			Ⅳ	≤10	≤25	≤70	
Gate trigger voltage	V_{GT}		Ⅰ - Ⅱ -Ⅲ-Ⅳ	≤1.3			V
Gate non-trigger voltage	V_{GD}	V_D=V_{DRM}, Tj=125°C		≥0.2			V
Holding current	I_H	V_D =12V, I_{GT}=0.1A, Tj=25°C, Fig.6	Ⅰ - Ⅱ -Ⅲ-Ⅳ	≤10	≤30	≤30	mA
latching current	I_L		Ⅰ -Ⅲ-Ⅳ	≤15	≤30	≤40	mA
			Ⅱ	≤20	≤40	≤60	mA
Critical-rate of rise of commutation voltage	dV_D/dt	V_D=2/3V_{DRM} , Tj=125°C		≥10	≥20	≥50	V/us
STATIC CHARACTERISTICS							
Forward "on" voltage	V_{TM}	I_{TM}=15A,tp=380us,Fig.4		≤1.55			V
Repetitive Peak Off-State Current	I_{DRM}	V_D=V_{DRM} V_R=V_{RRM}	T_j=25°C	≤5		≤5	uA
Repetitive Peak Reverse Current	I_{RRM}		T_j=125°C	≤0.5		≤0.5	mA
THERMAL RESISTANCES							
Thermal resistance	Rth(j-c)	Junction to case		TYP.		1.4	°C/W
	Rth(j-a)	Junction to ambient		TYP.		60	°C/W

Ordering Information



Typical Characteristics

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

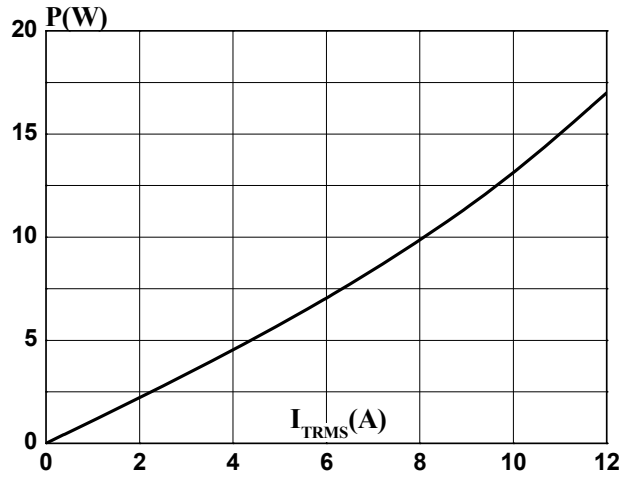


FIG.2: RMS on-state current versus case temperature (full cycle)

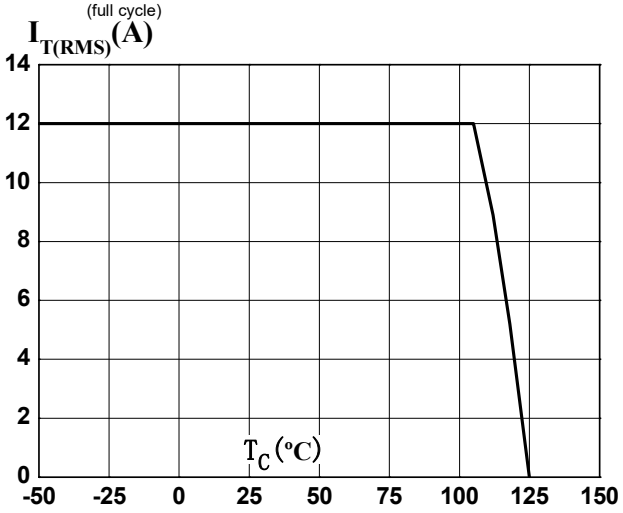


FIG.3: Surge peak on-state current versus number of cycles

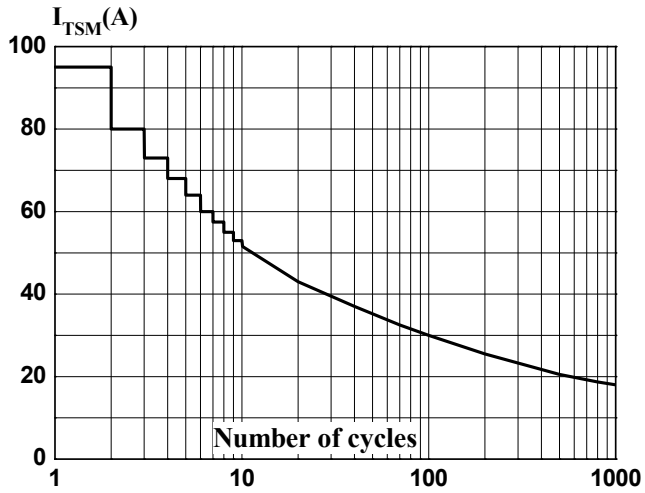


FIG.4: On-state characteristics (maximum values)

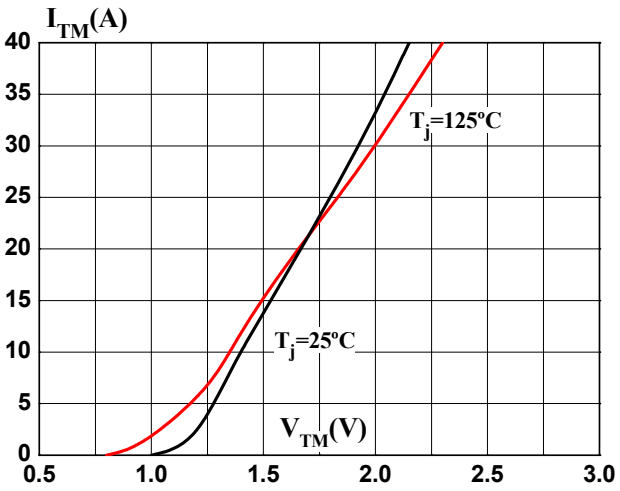


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10ms

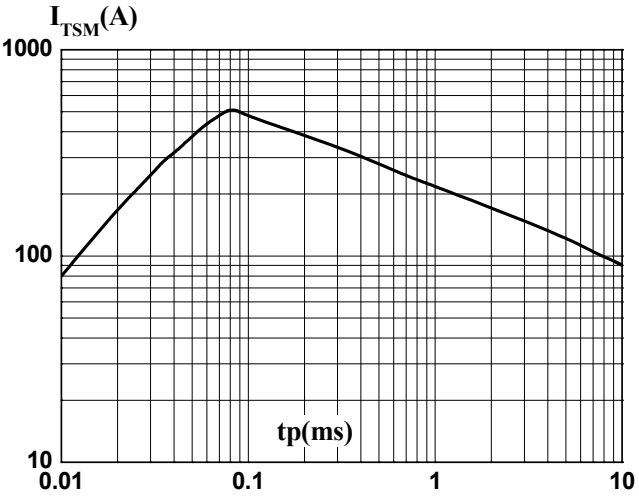
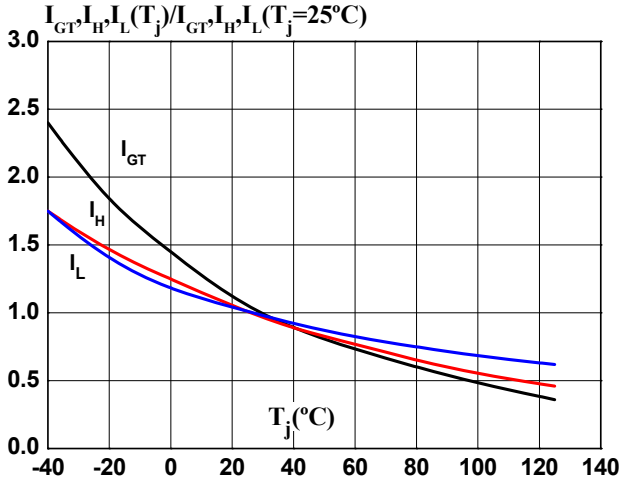
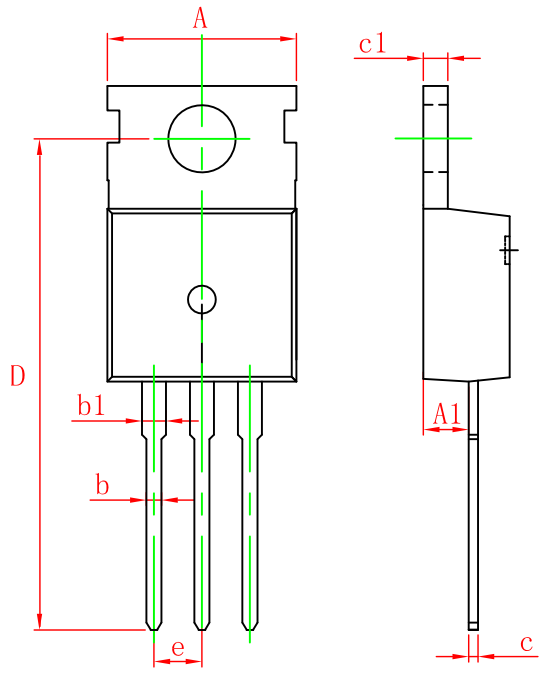


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)



Package Information

TO-220C



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	9.700	10.300
A1	2.150	2.550
b	0.710	0.910
b1	1.170	1.370
c	0.350	0.650
c1	1.200	1.400
D	25.100	27.100
e	2.540 TYP.	