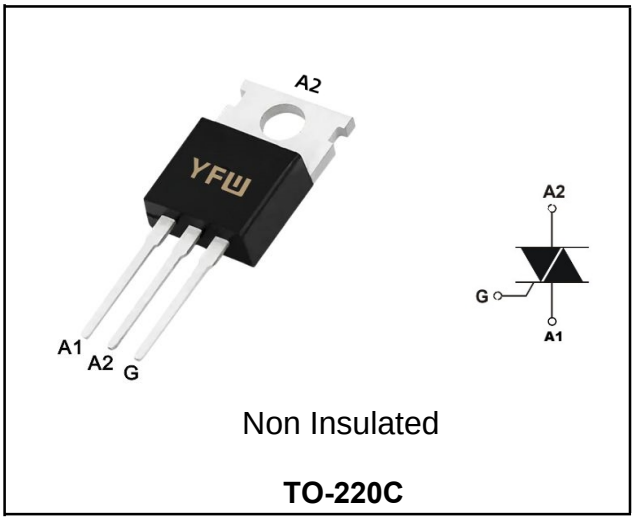
12A 4Quadrants TRIACs

Product Summary

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



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.

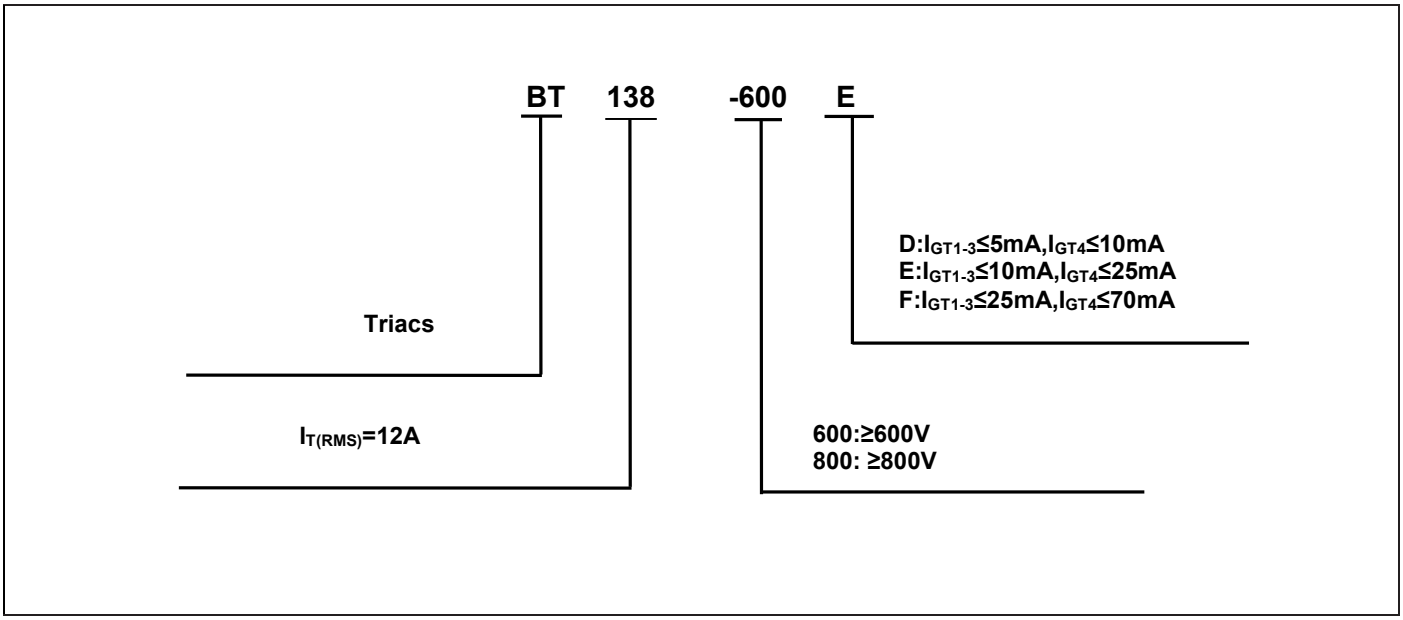
Absolute maximum ratings (Ta=25°C unless otherwise noted)

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)

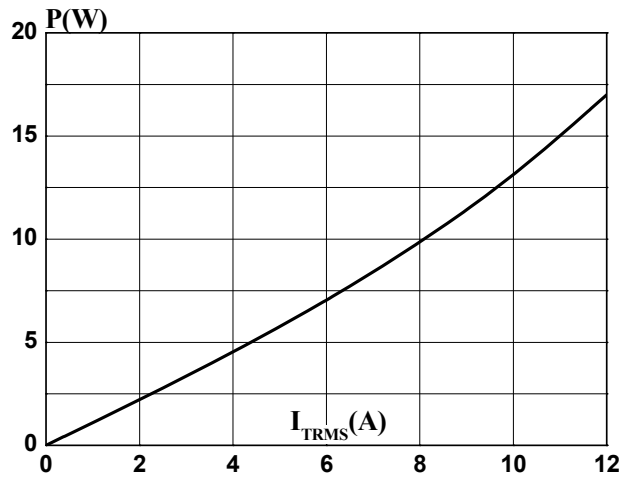


FIG.2: RMS on-state current versus case temperature (full cycle)

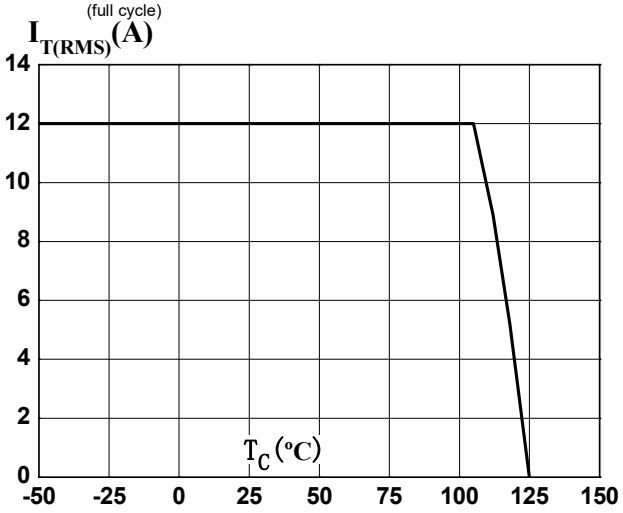


FIG.3: Surge peak on-state current versus number of cycles

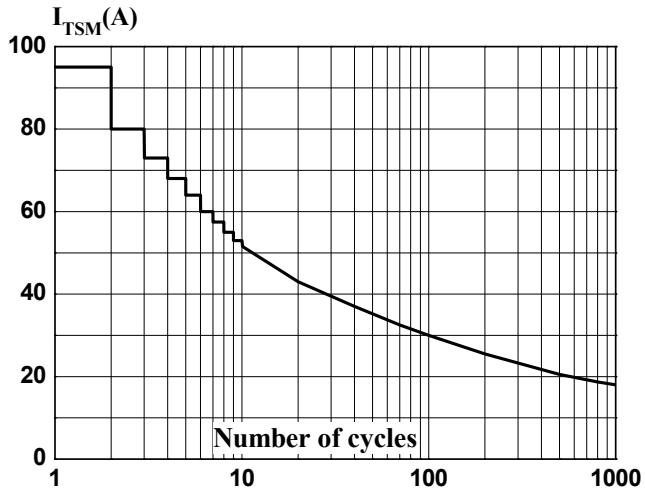


FIG.4: On-state characteristics (maximum values)

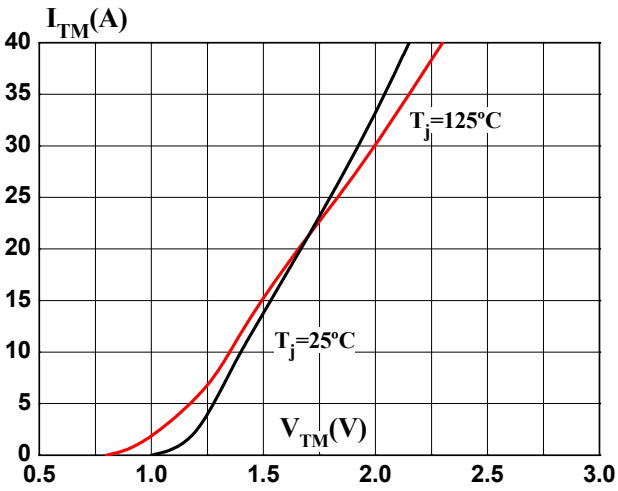


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10ms

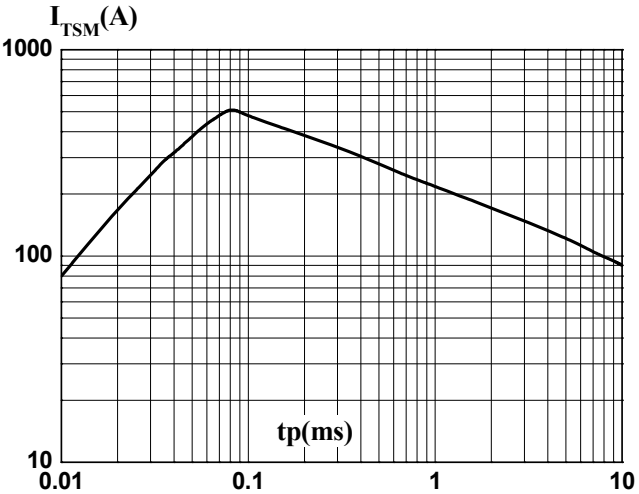
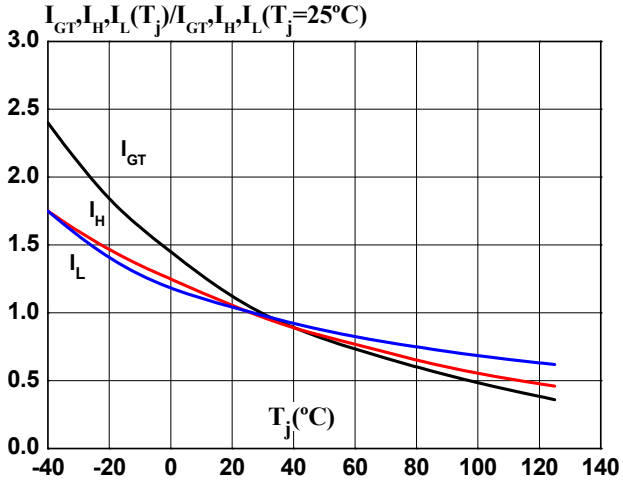
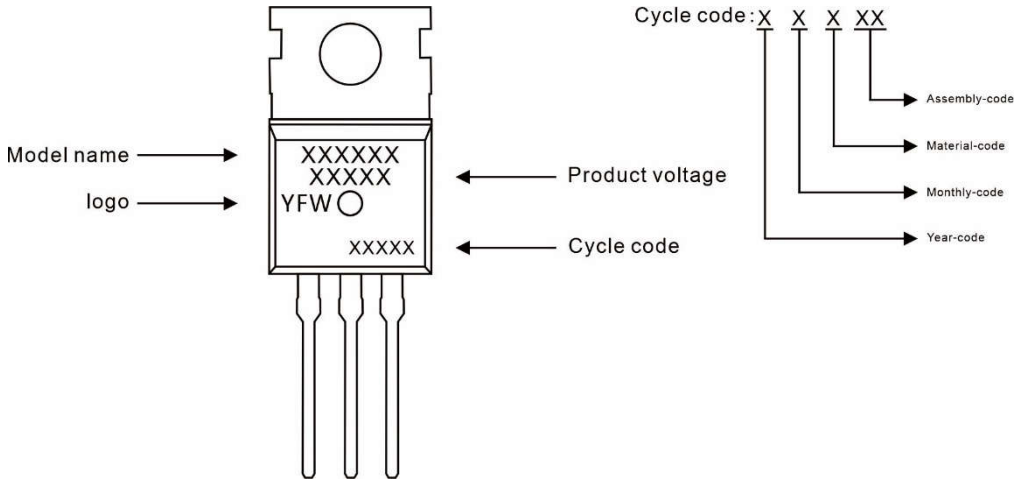


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)



Marking Diagram

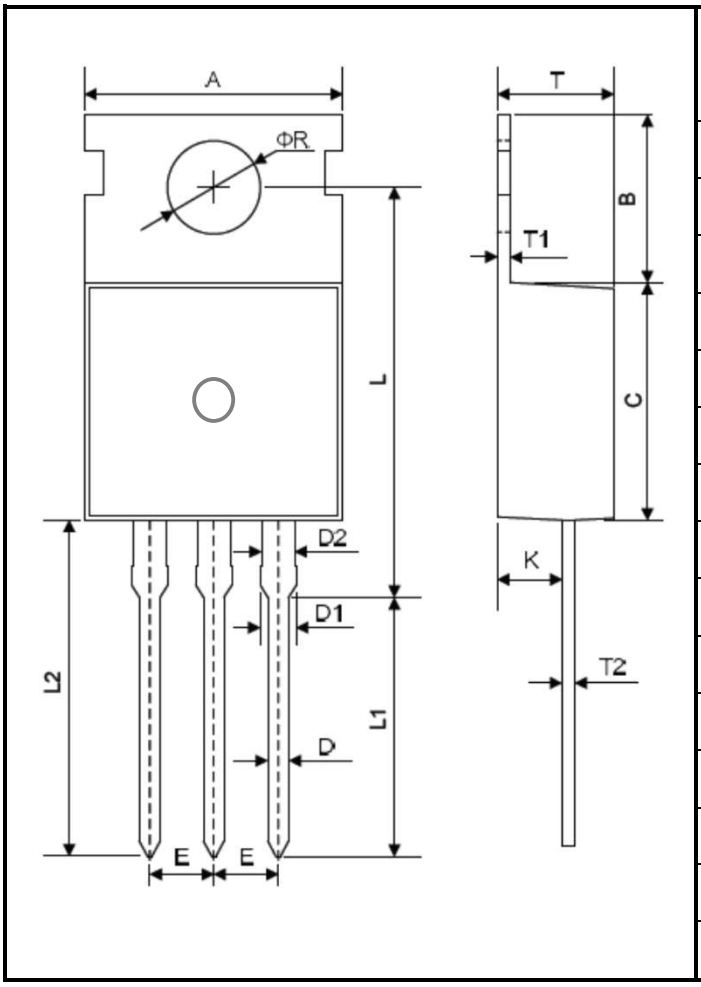


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
BT138	TO-220C	0.07oz(1.96g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

Package Dimensions

TO-220C



Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	9.70	10.40	0.382	0.409
B	6.13	6.82	0.241	0.269
C	9.00	9.40	3.54	0.37
D	0.70	0.92	0.0276	0.0362
D1	1.18	1.45	0.047	0.057
D2	1.22	1.32	0.048	0.052
E	2.34	2.74	0.092	0.108
L	15.70	16.14	0.62	0.64
L1	9.60	10.60	0.38	0.42
L2	12.60	13.60	0.50	0.54
K	2.20	2.75	0.087	0.108
T	4.30	4.71	0.169	0.185
T1	1.20	1.42	0.0472	0.056
T2	0.38	0.65	0.015	0.026
ΦR	3.55	3.78	0.14	0.15

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